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THE

Croonian Lectures

ON SOME

DISORDERS OF MOTILITY AND OF MUSCLE TONE,

WITH SPECIAL REFERENCE TO THE CORPUS STRIATUM.

Delivered before the Royal College of Physicians of London

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LECTURE I.*

Mr. President and Gentlemen,—It is my first duty to express to you, Sir, and to the Council of the College, the gratitude I feel in being honoured by the request to deliver the Croonian Lectures.

On not a few occasions within recent years the lecturer has selected a subject dealing with one or other aspect of the central nervous system, and for me the choice has been to some extent decided by the fact that for a long time the question of the possible functions of, and the diseases possibly to be assigned to, the corpus striatum has occupied my attention.

Twenty years have elapsed since there was admitted into the National Hospital under the care of Sir David Ferrier (whose house physician I then was) a young woman whose case proved to be the first adequately recognised as belonging to the group known as progressive lenticular degeneration, a disease in which unquestionably the most striking pathological feature is a disintegration of the corpus striatum. The impetus originally given to the study of this part of the brain by the work of a few observers abroad and at home has been vastly augmented during the last decade, till now the student of the subject is like to be bewildered by an unbelievably extensive literature, and has at his disposal a plethora of clinical material, due in major degree to the widespread occurrence of epidemic encephalitis and of sequelæ of that affection closely resembling paralysis agitans—a reputedly striatal disease.

Notwithstanding the abundant opportunities for investigation thus afforded, finality is far indeed from being reached in respect both of the pathology and the physio-pathology of the symptoms attributed to affections of the corpus striatum, and mere speculation is correspondingly rife. By way of a single illustration, motor symptoms as widely divergent as the complexity of an elaborate tic and the simplicity of a single muscle twitch or myoclonic contraction, as heterogeneous as palilalia and micrographia, are alike set down to striatal disease. Now, the corpus striatum is so situated that traumatic lesions are not calculated to produce any clear-cut picture of its symptomatology; its vascular supply is not derived from a single source; the morbid processes often involving its cell- and fibre-systems (e.g., that of epidemic encephalitis) are not restricted to the ganglia in question; the immediate vicinity of the corticospinal tracts sometimes renders it uncertain, in disintegration cases, whether there is not also concomitant interference with the function of these; even in Huntington's chorea, confidently regarded as a striatal affection because of the outfall of cells in the corpus striatum found with some frequency, every one knows that the cerebral cortex is also simultaneously implicated.

For these and a number of other reasons the ganglia situated in the base of the brain still, to a large extent, retain the characteristic of basements—viz., darkness. Since hypotheses erected on a still uncertain pathology have altogether outstripped clinical analysis, I have undertaken an objective investigation of various symptoms of a motor order some of which are assigned by many, on insufficient or erroneous grounds, as I shall endeavour to prove, to striatal disease. The need for further analysis along clinical lines is pressing, as will appear in the course of these lectures. The title has been deliberately chosen to avoid giving the impression, which might otherwise be gained, that the clinical phenomena to be considered are in my view and without comment to be set down to striatal disease and to that alone. This study, then, is concerned with the symptomatology of some affections commonly called "striatal," and with some types of movement commonly called "involuntary," as well as with certain problems arising therefrom.

The Syndrome of the Corpus Striatum.

In 1912, as a result of work on the disease to which the name of "progressive lenticular degeneration" was given, the following syndrome of the corpus striatum was put forward:

> "In pure, uncomplicated, bilateral lesions of the lenticular nucleus, and more generally of the corpus striatum, provided they are of sufficient size and of adequate duration, the clinical symptoms are bilateral involuntary movements, practically always of the tremor variety; weakness, spasticity, or hypertonicity (sometimes spasmodic contractions), and eventually contracture of the skeletal musculature; dysarthria or anarthria and dysphagia, and a degree of emotionalism; but without any sensory disturbance, without any true paralysis, and without any alteration in the cutaneous reflexes. If the abdominal reflexes are absent (apart from muscular rigidity), or the plantars of extensor type, then the syndrome is no longer pure."

While subsequent research has fully confirmed the general accuracy of this description, further investigation has filled in certain points then left more or less open, while in other respects, as we shall see, a more ingoing analysis of the symptoms then specified is now required.

In the same monograph the considerable resemblance between progressive lenticular degeneration and paralysis agitans was more than once alluded to, and approximate similarity of the pathology of the two conditions was reasonably surmised. This expectation is now known to have been correct, the essential pathology of Parkinson's disease consisting in degeneration of certain striatal cells and fibre-systems, and of parts of the efferent system of the same ganglion. Since progressive lenticular degeneration is comparatively rare, while Parkinson's disease and the Parkinsonian syndrome are common, we may take the latter as a working example of a mainly striatal malady.

During the last few years a tendency to schematic elaboration of alleged striatal symptoms on an ever-increasing scale has become an unreasonable feature of the literature of the subject, yet the cardinal symptomatology may still be summed up in three words: variability in muscle tone (dystonia), the appearance of "involuntary" movements, and the *seeming absence of "true paralysis."* As the last of these requires qualification and explanation, we may begin our study with it.

The "Voluntary" Motor System.

The term "voluntary," applied to movements, is in constant employment, but of elusive connotation. At a later point we may have opportunity to examine its meaning more closely; suffice it for the moment to say that "voluntary" movements are not *sui generis* in the sense of constituting a class apart; they are equivalent to "least automatic" movements, and all gradations may occur from "most automatic" to "least automatic." In objective characters they are not to be distinguished from other types of movement, equally coördinated and apparently purposeful, from which the element of "volition" is nevertheless awanting. No single criterion of an objective clinical kind (by string-galvanometer methods or otherwise) leads to differentiation; the "will" makes a subjective though not an objective contribution to a movement. Ordinarily speaking, we are in the habit of regarding as "voluntary" those movements which we have reason to believe are effected through the corticospinal or pyramidal tracts, to some extent because in the experimental animal movements (not, as a fact, strictly comparable to those of "volition") can be produced electrically via these tracts. The falsity of this deduction is apparent when we remember the ease with which movements can be electrically elicited from other paths never considered "volitional."

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* Lectures II., III., and IV. will appear in subsequent issues.

Consciously, we are in complete ignorance of the specific muscular units effecting a "voluntary" movement. Consciousness knows only movements and terminal joint displacements produced by movement, and this has sometimes been taken to argue the representation of movements only in the cerebral convolutions. Evidence will be adduced later which, I believe, disproves the contention. The point at present is, that a very large part of every "voluntary" movement is both "involuntary" and outside consciousness. The expression "voluntary muscular contraction". must therefore be regarded more as a *façon de parler* than a term of differentiating quality.

Similar difficulties follow in respect of the term "paralysis," which is equally vague and open to misinterpretation. The clinician admits degrees of "paralysis," but would have hesitation in defining with precision exactly what they signify. In a given "voluntary" movement the elements of power of muscular contraction, appropriate coördination of muscular units, rate of contraction, accuracy of timing, estimation of amount of contraction required, are among some of the factors in the attainment of a perfect end, and if in any of these the voluntary movement falls short it exhibits in that respect a degree of "paralysis" or "paresis." *If a movement is normal except for its unusual slowness of accomplishment there is "paralysis" of normal rapidity of contraction.* When, in the definition of the striatal syndrome cited above, mention was made of the "absence of true paralysis," the intention was to endeavour to separate the "paralysis" ensuing on lesions of the pyramidal system from the recognised "motor helplessness" of extrapyramidal cases, in which, as was shown, objective signs of involvement of the pyramidal paths (absence of the abdominal reflexes, presence of the Babinski plantar responses) were awanting. It was then suggested that the discovery of an appropriate expression for extrapyramidal "paralysis" was a desideratum.

As it is, such terms as "weakness," "paralysis," "paresis," and even such apparently more precise expressions as "direct weakness of the motor impulse to the agonists" (Foerster), have, in fact, little if any specificity, however convenient they may be. If the word "paralysis" is indispensable, it may be justifiably employed to indicate imperfection of movement in respect of *any* of the components of a normal movement, and cannot be confined to questions of muscular strength or power alone.

It became apparent to me some time ago that in order to determine with certainty whether any particular kinds of movement were as a fact impaired or lost in disease of the corpus striatum a complete examination of the motor phenomena from the point of view of normal muscular action of various types would have to be undertaken. The reader of the literature of the corpus striatum will find himself confronted by statements as to loss of movements which in the absence of definitions or expositions are exceptionally confusing. Thus he will be told there is, inter alia, "loss of primary automatisms" (C. and O. Vogt), "loss of associated movements" (Foerster), "loss of individual movements" (Jakob), "loss of the associated movements that accompany voluntary movements" (Stertz), "loss of primitive automatisms and of higher coördinations" (Binswanger), "loss of (palæokinetic) automatic and associated types of movement" (Ramsay Hunt), and so forth. (I say nothing of the attempts to localise these and other motor defects in different sections of the ganglia in question.) Accordingly, a scheme of examination has been devised and applied to a large number of cases, mainly of the Parkinson group, but including also a typical case of progressive lenticular degeneration and a number of choreics of the Sydenham, Huntington, and senile varieties, as well as cases of athetosis. The terms used will be explained as they occur.

CLASSIFICATION OF MUSCLES IN A NORMAL ACT.

A physiological classification of the various muscles taking part in a simple movement of the type called "voluntary" divides them into the following groups: (1) Prime movers or agonists (protagonists); (2) synergic muscles, or synergists; (3) fixation muscles, or fixers; (4) antagonists.

This classification differs somewhat from those of Winslow and Duchenne, and follows the much more recent one of Beevor. For simplicity's sake it may be modified to include (2) and (3) under the one heading of synergists. Thus in the elementary illustration of the movement for closure of the fist the agonists or *prime movers are the flexors of the fingers and thumb*; the synergists are the extensors of the wrist, while the antagonists are the extensors of the fingers. Beevor showed that in firm closure of the fingers the triceps and biceps act as fixation muscles when a certain measurable degree of contraction of the agonists is attained, and regarded the "fixation group" as *fulfilling an essential part in all movements* in distinction from the synergists, which he defined as "the muscles which are brought into the combination when a prime mover has, by passing over two or more joints, two or more actions of which only one is required; the synergics are the muscles which neutralise these undesired actions." In the above-given example the synergic muscles, the wrist extensors, serve to obviate flexor deviation of the wrist by the contracting long finger flexors, hence in reality their function is one of fixation. It is practicable, therefore, to include as synergists such muscles *as contract (invariably or variably) either to fix joints* other than that, or those, actively engaged in the particular movement required, or to enable the prime movers to execute their function with a maximum of effect.

Using the attribute "synergic" in this specific way, I do not speak of "synergic movements" or "movement synergias." In a *whole* movement *part* only is synergic; I shall not use the term to express a complete movement, or a movement concurrent with another. The necessity of this restrictive definition becomes apparent in view of the meaninglessness of any wider application. All the units in a voluntary movement coöperate, even though some may constitute a "coöperation of antagonism," as Hughlings Jackson might have said. If synergy is synonymous with coöperation it is otiose. There is the more need for terminological clarity at this point in that Tilney, whose contributions to a difficult subject deserve respectful consideration, appears inclined to employ the term "synergic unit" to include *all* the muscular components in a given movement—thus eliminating the muscular distinctions drawn above. For the present, however, it will be convenient to keep closely to a classification which has definite clinical merit.

"VOLUNTARY" MOVEMENT IN STRIATAL DISEASE.

(1) *Strength or Weakness of Movement.*

The customary clinical tests of muscular power have been employed in this connexion. They lack absolute value, but they possess considerable relative value if carried out by an examiner of experience, whose subjective standard is based thereon. Various rather elaborate methods have been devised to establish a scale of strength; the only apparatus I have employed has been the dynamometer, the same instrument *always being used, and in two ways—either by a* succession of grips first on one side and then on the other, or by alternate right and left grips. The most useful information has been obtained by selecting unilateral Parkinsonian cases, care being exercised rigorously to exclude those in which pyramidal function was not considered normal.

For illustration only three cases need be cited.

1. *Left-sided unilateral case.*

Consecutive.		Alternate.	
R. 150	L. 101	R. 145	L. 100
141	110	140	100
130	100	140	105
131	111	130	103

2. Right-sided unilateral case.

Consecutive.		Alternate.	
R. 82	L. 98	R. 71	L. 101
81	92	62	90
84	90	83	82

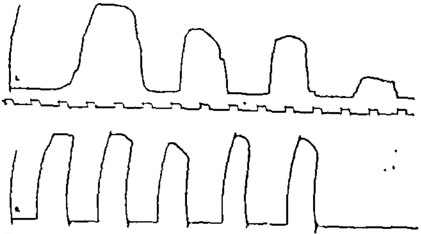
3. Bilateral case.

Consecutive.		Alternate.	
R. 72	L. 48	R. 52	L. 40
65	45	65	42
72	38	42	15

From an analysis of many similar records and a comparison with normal cases the disparity between the two sides in unilateral cases is clearly greater than can be accounted for by the natural right- or left-handedness of the individual concerned, and, also, in bilateral cases the reduction of power, as estimated by the dynamometer, is unmistakable. *The conclusion is that relative motor weakness is to be expected in striatal cases of the Parkinsonian type, varying within wide limits but definite enough.* This is in accordance with the experience of James Parkinson himself, who, in his celebrated "Essay on the Shaking Palsy," mentioned in his definition the occurrence of "lessened muscular power."

Another point brought out by dynamometer records concerns the question of progressive weakening in a series of similar movements. This is stated to be a characteristic of striatal affections, but my observations do not substantiate it; at least, not without some qualification. A glance at the above figures will show that in the unilateral instances similar movements (hand-grasping) are at first relatively better sustained on the *affected* than on the unaffected side. Only, however, *for a few* consecutive "voluntary" movements is this usually found; in a longer series the affected limb undoubtedly tends to weaken more than the other. This is in accordance with the remark of a right-sided Parkinsonian girl, who said: "I could hit anyone hard with the right hand several times quickly, but I couldn't do it slowly, or keep it up." If the arm is actively flexed against resistance at the elbow it eventually tires more readily than the normal. Successive movements of supination and pronation against resistance exhibit a similar tiring. If the patient stands and swings the extended arm in a wide circle from the shoulder reduction of the extent of the swing is eventually visible on the affected side in comparison with the other.

FIG. 1.



Case of unilateral (left) Parkinsonism. "Voluntary" contractions of right (lower tracing) and left (upper) quadriceps.

A good way of demonstrating the same phenomenon is by placing the patient in the recumbent position and getting him to make single consecutive "voluntary" contractions of the quadriceps group on the front of the thigh. The action of gravity is excluded and there is no displacement at the joint concerned, since he is requested not to lift his heel off the couch. From Fig. 1 it will be seen that on the right (normal) side the patient was able to make five successive "voluntary" contractions of the quadriceps in slightly over 11 seconds, the last being as good as the first; on the left (Parkinsonian) side there were four contractions in 12 seconds, and they exhibit a progressive reduction in extent, much more noticeable, however, in the fourth than in the first three. Another tracing from a less severely affected patient (Figs. 2 (A) and 2 (B)) shows five quadriceps innervations ("as quick as you can") in five seconds, all of normal amplitude, as compared with five in eight seconds, very limited in extent, on the affected (left) side.

FIG. 2 (A).

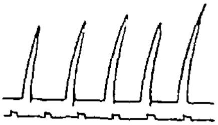
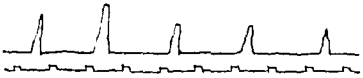


FIG. 2 (B).



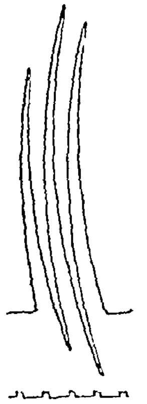
FIGS. 2 (A) and 2 (B).—Another case of unilateral (left) Parkinsonism. "Voluntary" contractions of right (A) and left (B) quadriceps.

The records from a well-marked case of unilateral Parkinsonism furnish clear evidence of similar weakness in respect of the "voluntary" movements of the long flexor of the forefinger (Figs. 3 and 4). On the right (unaffected) side the tracing reveals a free, quick, and wide movement of the finger, three consecutive and smoothly coördinated innervations taking place in less than three seconds. By comparison, three similar movements of the left forefinger ("crooking" of the finger) are very slow, extremely limited, and irregular, requiring no less than 17 seconds for their completion.

Among the movements particularly apt to exhibit weakness are those of separation of the fingers (interosseal). The Parkinsonian cannot readily "spread" his fingers, feebleness and a certain lack of precision being often seen; nor can he approximate the tip of the thumb and that of each of the other fingers in a quick, strong, and precise fashion. Abduction of the little finger is not infrequently almost nil. Movements of the tongue, too, both inside and outside the mouth, are especially prone to exhibit the same characteristics. It is protruded very imperfectly, and is not infrequently "bitten" in the course of mastication. Speaking generally, the defect is chiefly seen in small-muscle movements, those of larger muscular masses being less obviously imperfect, one reason for which may be simply that gradations of movement are more easily followed by the clinical eye in small than in large muscles, and minor variations of power more easily estimated (see also below).

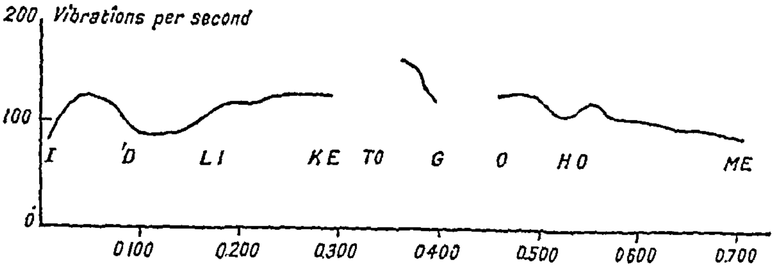
A further example of this imperfection of "volitional" movement in the smaller muscles is provided by those concerned in phonation and articulation. A common feature of the phonation process in paralysis agitans, progressive lenticular degeneration, and other striatal syndromes is the "mono-tonous" voice. *Parkinsonians* are compelled to give up singing. As Brissaud said, these patients lose "le chanson du langage," the inflections and modulations which characterise normal pronunciation. Their vocalisation is one long *monotone*. I asked Prof. E. W. Scripture to take records for me, one of a normal voice and one of a severe case of Parkinsonism selected for the purpose. The latter, I believe, is the first record of the kind that has been taken. The striking differences between the two can be realised by comparing Figs. 5 and 6. The sentence enunciated in each instance was "I'd like to go home," and while in both the duration was approximately 0·7 seconds, the record of the Parkinsonian is distinguished by complete absence of flexibility, measured in vibrations per second. In other words, here is evidence of imperfection of "voluntary" movement in a well-defined physiological group of small muscles, revealed by defect of range and of flexibility at a quick rate (that is, the record reveals the presence of muscular rigidity). To dissociate the quotas of these elements may be somewhat difficult, but in so far as they constitute a departure from normal "volitional" movement of the apparatus in question, they indicate a degree of motor "paresis" in the sense specified above.

FIG. 3.



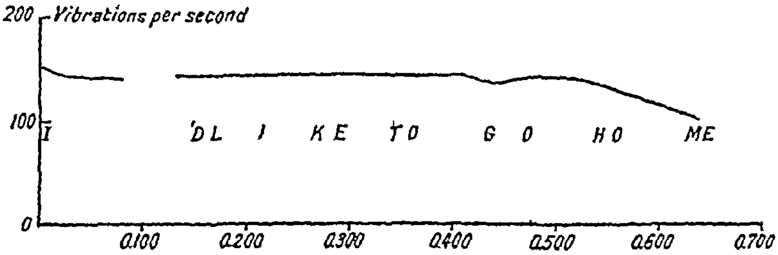
Case of unilateral (left) Parkinsonism. Normal "voluntary" contractions of right long flexor of forefinger.

FIG. 5.



See explanation in text.

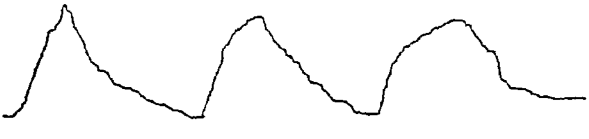
FIG. 6.



See explanation in text.

Reference may now be made to the ocular muscles. While as a general rule the external ocular muscles of the Parkinsonian are supposed to exhibit no motor abnormality, in a large number of instances a "punctuate" movement of lateral conjugate deviation is seen. The eyes move in a somewhat jerky fashion with fractional pauses at intervals in the course of the deviation. Such "punctuate" movement is, however, by no means confined to cases of the kind we are considering. In some respects it partakes of the *nature* of the "cog-wheel" phenomenon described below, and is probably to be assigned rather to a disorder of muscle tonus than to weakness of innervation. A more interesting observation is one that has long been a commonplace—viz., defect or failure of convergence. A high percentage of cases of paralysis agitans (and in this respect it is obviously advisable to deal for the moment only with idiopathic cases) reveal inability to converge, one or other eye usually swinging out, or at least failing to move inwards, at the appropriate moment. In one case the patient remarked spontaneously that one of his earliest symptoms was inability to light his cigar, since he could not with accuracy bring the lighted match to the end of it—a convergence-accommodation defect. Peripheral paresis of the internal recti being excluded by the normal participation of the muscles in other ocular combinations, we have here a fairly definite "paralysis" of a specific synkinesis or movement-combination—viz., that of *the above extrinsic muscles with the ciliary muscles* and the sphincters of the irides. (This synkinesis is unusual in that it comprises a union of somatic-motor and viscero-motor elements, but the fact that the sphincter iridis is phylogenetically a striate muscle must not be overlooked.)

FIG. 4.



Same as Fig. 3. Slow and limited "voluntary" contractions of left forefinger (affected).

Of its occurrence more than one explanation is possible.

In elderly folk the convergence-accommodation mechanism naturally tends to functional involution, but apart from this, its "paresis" occurs in Parkinsonians who are not old in years, while the symptom may be observed in post-encephalitic Parkinsonism as *a solitary ocular defect, the peripheral visual* apparatus being in other respects normal. Here, evidently, is a loss of a particular movement of a set of muscles with preservation of other movements of the same muscles. Hughlings Jackson held there are differences of "evolutionary rank" of movements of the same muscles, and, regarding convergence-*accommodation as a very "special"* movement, was rather at a loss to account for its retention in ordinary hemiplegia. Curiously enough, he does not appear to have viewed its bilaterality as an explanation for that pyramidal disease; he came, rather, to the conclusion that "convergence, as it has to do with distances, belongs to the *locomotor series (cerebellum)* and not to the tactual series (cerebrum)." His inference was that the movements of convergence are chiefly represented along with movements of the spine, arms, and legs for locomotion. Distance appreciation is doubtless connected with locomotor functions, but any supposition that the Parkinsonian failure of convergence is linked to the locomotion disorder is perhaps rather far-fetched, interesting though such a speculation may be. In a special series of observations I have been unable to satisfy myself that precisely those cases with convergence defect exhibit the most noteworthy disturbance of the "locomotor series." Be this as it may, the frequent impairment of the mechanism under consideration provides *further proof of weakness of "volitional" movement in striatal disorder.*

Weakness of closure of the eyes is fairly often encountered, especially in post-encephalitic cases. The patient *appears unable to "screw the eyes up tightly"*; the orbicular muscles usually pass into a *state of blepharospasmic trembling. If the eyes are* in fact closely shut *for a moment or two he not infrequently seems to be unable to maintain the voluntary* contraction tonically. The orbicular muscles of the mouth may act in a *similar fashion*; the Parkinsonian tends to have his mouth *open or his lips apart*, and *cannot always "purse them up" strongly*, as does the normal individual. *If he does, he cannot always maintain the tonic contraction.*

I attach no little importance to this *weakness of maintenance of contraction*, which, for that matter, can be demonstrated also in other small muscle movements, and is found (as I have shown) in cases of progressive lenticular degeneration as well. It furnishes proof of the inaccuracy of the common statement that Parkinsonian movement is always *characterised* by slowness of relaxation. *Further*, it is a *clinical* symptom the very opposite of that imagined by some to be typical of extrapyramidal disease—viz., so-called "perseveration" or "tonic innervation." I shall return to this question at a later stage.

As far as movements at large joints are concerned weakness is much less noticeable. *Movements of* trunk, head, and proximal limb segments against resistance are sustained with no little force, nor is restriction *of range as a* rule in evidence, at least contrasted *with that of* small muscles. *I have never* seen actual *loss of movement of a big joint in* Parkinsonism such as *may be observed* in any recent and severe hemiplegia, or, of course, in any paralysing lesion of the lower motor neurone. If the patient's limb is passively put into a position half-way towards that which he is *asked to assume actively, it will often be found to execute the movement* with greater power. Thus, if with leg fully extended he is required to flex at the knee, he will accomplish the movement more forcefully should the knee be first passively flexed to a right angle. Foerster appears to claim this phenomenon as an alleged peculiarity of striatal affections, but it is in reality a question of mechanical leverage—the adoption of an optimum position no less characteristic of normal musculature than of diseased.

To decide whether in the striatal affections exemplified by paralysis agitans and its congeners any predilection type of "paralysis" or "paresis" obtains, as we know is the case in pyramidal affections, we have at our disposal data of the varieties illustrated above, and *the general conclusion seems justified that those musculatures whose mass is small are found to exhibit feebleness of "voluntary" contraction, and that, for the body as a whole, this feebleness is in inverse ratio to the size of the muscle or muscles concerned.* A generalisation of this description, however, should not be taken too literally or mathematically, though I *believe it to* be clinically applicable.

We have seen that in regard to laryngeal, interosseal, *facial*, glossal, ocular and other small musculatures the contention seems substantiated. In respect of *their* movements there is found in a large number of instances such lessening or reduction *of range*, flexibility and quickness of contraction, such fatigability, such imperfect maintenance of contraction (*in some instances*) as constitute a definite enough "paresis" or "paralysis." When a hemiplegic patient *slowly* and laboriously extends his fingers we do not hesitate to describe the movement as "weak" or "paresed," and no adequate reason can be advanced *for refusing the same descriptive epithet* to the slow, laborious, and limited "*spreading*" of the *Parkinsonian fingers. Dynamometer records* prove the existence of muscular weakness in moderately *severe striatal cases, hence the non-specificity* of the term "paralysis" already alluded to.

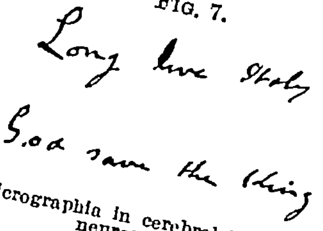
With *the exception of the ocular musculature*—where the defect is largely if not entirely confined *to the convergence-accommodation* mechanism—the small muscles in the distributions mentioned above *are weak for all movements.* They are muscles implicated in the execution of the most delicate of acquired *movements, especially so in the case of* fingers and phonation-articulation apparatus (larynx, tongue, lips); *muscles in which fractional gradations* of innervation are essential for the production of the finest changes, *as in speaking and in* precise and exact finger movements. This highly special class of acquired "voluntary" *movement, then*, suffers more than any other in diseases of the group in consideration, and offers in this connexion *no essential* difference from what obtains in pyramidal cases, except, it may be, *in regard to the speech* muscles. These are less likely to suffer in hemiplegia, owing to their bilateral *innervation. Consonantly* with this, unilateral Parkinsonian cases may exhibit little speech—i.e., *phonation-articulation*—disorder. The loss of highly specialised, recently acquired movements which Hughlings Jackson *thought so* characteristic *of* hemiplegic cases is paralleled by their impairment in *Parkinsonian cases.* One has only to observe the Parkinsonian *fumbling* with his buttons or his necktie, or *to ask his* patient whether he is still able to shave himself, *to be assured* of this. (Since the *advent of the safety razor* the argument has been rather "side-stepped.")

The cause or causes of the motor impairment exemplified in this *section* will be more conveniently discussed *after certain other* features of the "voluntary" nervous *system* in striatal disease have been examined.

Micrographia.

Under this same heading of "Strength or Weakness of Movement," the behaviour in paralysis agitans of the fine acquired movements of writing may be appropriately considered. The disturbance of movement known as "micrographia," described years ago by Arnold Pick, but recently resuscitated and alleged to be characteristic of striatal affections by Bernhard, Bing, and others, and indicative of actual paresis by Foerster, deserves remark. The symptom has interested me ever since the appearance of Pick's original paper in 1903 and long before attention was directed more specifically to the corpus striatum. The condition consists, as its *name* implies, in an obvious reduction in *size of the lettering of the* writer in comparison with his calligraphy before the development of the organic lesion affecting the change. It is writing in miniature. According to my own observations a distinction should be *drawn* between the micrographia which is *as* obvious at the beginning of a sentence as at its close, *and that* which consists rather in a telling *off into a smaller* lettering because of fatigue or other *inability to maintain* the range voluntarily. In respect of the former variety (to which perhaps the term *might be restricted*) in my experience *it is certainly neither confined to striatal cases nor in any sense pathognomonic of them.* Bernhard commits a *petitio principii* by *confining* his researches to cases in which striatal *disorder has been* evident or presumed. On the contrary, it may be observed in typical form in hemiplegia and *other corticospinal* conditions. For example, the writing reproduced in Fig. 7 is that of a patient who *developed a right* brachial monoplegia of cerebral *syphilitic origin*, from which a good degree of recovery *was made. He* was a professional mandolin player and complained *of two* residual symptoms: (1) he had lost all facility in making the fine movements of striking the mandolin strings with his "plectrum," though otherwise he could use the arm with ease; (2) since the "stroke" his handwriting had become unaccountably small in comparison with his previous style. The loss of the acquired movements of "plectrum"-striking constitutes a limb-kinetic apraxia in Liepmann's sense and definitely suggests a cortical origin for the disorder, while the concomitant and otherwise entirely monosymptomatic micrographia can legitimately and confidently be assigned in this case to disturbance of cortical function. From a case of cerebral arterio-sclerosis the writing seen in Fig. 8 was obtained. It was that of a patient with slight right hemiplegia and slight defect in speaking, and had been noticed since the onset of the right-sided weakness some months previously. No trace existed of the arterio-sclerotic muscular rigidity often assigned (by Foerster and others) to striatal disease, nor any symptom of a kind that could be referred to the ganglion. On the contrary, the evidence pointed to implication of the cortex in part of the distribution of the left sylvian artery.

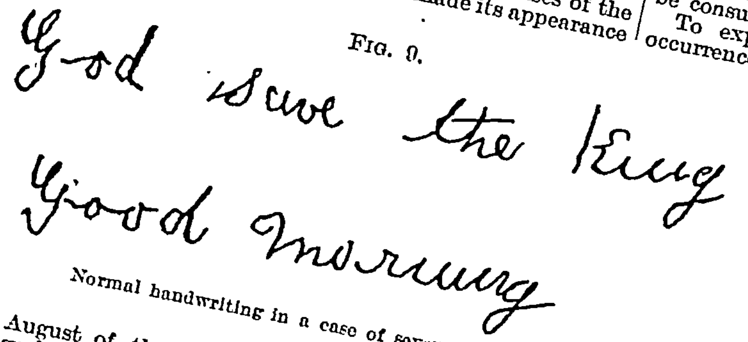
FIG. 7.


Long live Italy
God save the King

Micrographia in cerebral (cortical) neurosyphilis.

Taking next actual Parkinsonian cases, I have seen many in which severe striatal (or assumed to be striatal) symptoms have been unaccompanied by any micrographic disorder. Thus, the handwriting reproduced in Fig. 9 comes from a typical case of post-encephalitic Parkinsonism of an aggravated sort, the patient being one of the most immobile and rigid I have so far observed. When he was being tested with the dynamometer he did not reveal by a single muscular flicker otherwise the strong effort he was making with his right or left hand, but his calligraphy shows no departure, as far as size goes, from his previous normal. By way of contrast, however, the most pronounced micrographia in my collection is that of a lady who came under observation only a month or two ago, one of the encephalitis cases of the spring of 1924. Her Parkinsonism made its appearance in August of the same year, and her micrographia is such as to render her writing almost illegible (Fig. 10), yet, otherwise considered, the symptom-complex in her particular case is of only moderate degree.

FIG. 9.

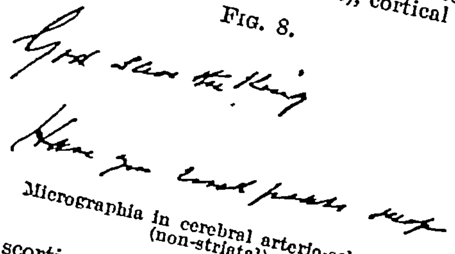

God save the King
Good morning

Normal handwriting in a case of severe Parkinsonism.

For the understanding of this difficult and somewhat involved subject preconceived ideas as to the function of the corpus striatum or its symptomatology in diseased states must be avoided. Micrographia should not be divorced either from its opposite, macrographia, or from the frequent concomitant of macropsia or micropsia. As far as I have noticed, Bing only of recent writers refers to these, solely, indeed, to macrographia, which he calls "megalographia," and thinks is of cerebellar origin. He uses the illustration as an argument for the existence of symptomatological opposites between striatal and cerebellar disease. Recent contributors to the subject have quite failed to take into consideration the variety of cases in which micrographia may occur, and its not infrequent connexion with disorders of vision and of the muscular sense.

In a paper read in 1916 at the Congress of the Ophthalmological Society of the United Kingdom, and published in their Transactions, numerous instances were adduced of the association of micrographia or macrographia with the visual disturbance of dysmetropsia—the term proposed for departures from the normal either in the minus (micropsia) or the plus direction (macropsia)—and the occurrence of this visual defect at peripheral (lowest), cortical (middle), and transcortical (highest) levels was fully exemplified, cases of hysteria, migraine, and cerebral tumours, of tabes dorsalis and disseminated sclerosis, &c., being selected for the purpose. With these clinical data before us, all that need now be said is that in cortical and transcortical conditions micrographia may be an accompaniment of macropsia, and, *mutatis mutandis*, macrographia of micropsia; or, alternatively, either variety of calligraphic defect may occur without visual disorder (as in the cases cited above). Again, micrographia often is met with where muscular rigidity is insignificant, as in some examples already given, and it may be seen in other instances where kinæsthetic factors have come into play. This latter association is of peculiar interest, for further details in regard to which the paper above referred to may be consulted.

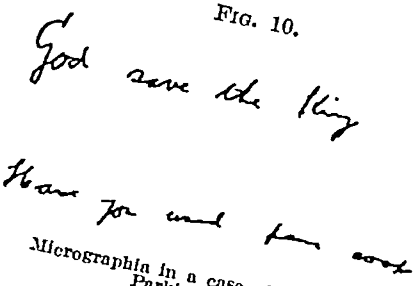
FIG. 8.


God save the King
Have you had peaceful sleep

Micrographia in cerebral arterio-sclerosis (non-striatal).

To explain its admitted, if far from constant, occurrence in paralysis agitans and post-encephalitic Parkinsonism, the following questions have to be answered: (1) Is it of transcortical, cortical, or subcortical origin, and (2) is it connected or unconnected with accommodation disorder? To take the latter first: Nearly all of the Parkinsonians with micrographia that have come under notice have exhibited impairment of the convergence-accommodation mechanism, but none of them has complained of the visual disorder I call dysmetropsia. Now our estimation of size can be shown to be regulated mainly by (1) retinal images and retinal disparation, (2) accommodation and convergence "effort," (3) certain psycho-physical factors (distinctness, relative size, light and shade, &c.). Paralysis or paresis of accommodation is often stated to be accompanied by micropsia, and spasm of accommodation by macropsia, but in innumerable instances I have satisfied myself that patients with one or both eyes under the influence of atropine are not aware of any dysmetropsic defect, and, further, in many cases of

FIG. 10.


God save the King
Have you [illegible] [illegible] [illegible]

Micrographia in a case of moderate Parkinsonism.

complete ophthalmoplegia externa and interna no such impairment is remarked. Besides, it is easy to show that in organic and non-psychical cases macrographia, not micrographia, is to be expected with micropsia. For these reasons one cannot feasibly link the micrographia of Parkinsonism to any defect of convergence.

As for the former of the questions stated above, an analogy from this same visual field is apposite. In different individuals the retinal image, retinal disparation, the *kinæsthesia of accommodative effort* (if there is such a thing), and the psychological factors already referred to briefly are all prominent in widely differing degrees, in the determination of the depth or distance of a visual object, and so of its size. Hence micropsia may result from lesions at one or other of three neural levels or, quite possibly, from lesions involving more than one. In a not dissimilar fashion we may discover the elements producing micrographia to have their anatomo-physiological site at one or other of the same three levels, or at more than one. Accordingly, we must take into account the possibility, as far as concerns Parkinsonian micrographia, of (1) infracortical disorders such as rigidity of antagonists; (2) central ("middle level") dysfunction, such as disturbance of pyramidal innervation for fine acquired movement; (3) "highest level," "transcortical" impairment, such as absence or diminution of the "will" to act, or the condition usually described as dyspraxia. Without further discussion in this place, enough has been said to prove that cortical and transcortical components may have as definite a share in the "lilliputian" symptom under review as those of lower level origin, and that *acceptance of the striatal theory, in any exclusive sense, is quite impossible.*

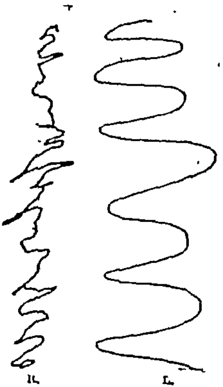
(2) *Beginning, Course, and Cessation of Movement.*

That the Parkinsonian is "slow off the mark" is matter of common observation. Recent measurements with special apparatus for muscular response to a single visual stimulus have given the figures of 0·21 seconds for normal individuals and 0·30 seconds for the subjects of paralysis agitans. With the comparatively simple recording methods which I have utilised myself the feature of slowness in starting and continuing movement has been abundantly exemplified (cf. Figs. 1, 2 (B), and 4). If the patient is at first able to make movements of practically normal rapidity ere long he becomes conscious of retardation. Thus in a well-marked unilateral (right) case the patient made a series of wheel movements of the extended right arm from the shoulder. For three or four complete revolutions the movement was normal, but it then became distinctly slower, the subject remarking spontaneously "it seems to require more effort of my will"; becoming ever slower, the revolutions ceased at the tenth time, whereas on the left they could be kept up indefinitely. Both in a clockwise and counter-clockwise direction the phenomena were similar. Slowness is so conspicuous a feature of all movements of the "volitional" order that it scarcely requires further illustration. It is none the less a variable feature. Apart from the fact already mentioned, that earlier movements may be accomplished in better time than later, the reverse occasionally is encountered, the rate improving slightly after one or two innervations. In all the actions of daily life, dressing, eating, &c., every Parkinsonian admits his unwonted delay in accomplishment. The "drag" is such as on occasion to bring volitional activity almost to a temporary standstill. Coupled with the retardation is a restriction in range and excursion to which allusion has already been made several times, and which is well exemplified in Fig. 11.

In a large number of cases, however, this slowness is more apparent than real, and is so declared to be by the patient himself. The characteristic slow, shuffling, and limited gait, reminiscent of the "démarche à petits pas" or brachybasia of the "lacunaire" or double hemiplegic (in which cases on occasion incidental involvement of the basal ganglia may occur), can be modified in a surprising fashion if the observer puts his arm inside the other's and invites him to step out. The brachybasia may then easily disappear. A member of our profession, suffering from paralysis agitans, made the curious remark to me that he found he could walk more quickly over the stones of a rocky sea-beach than on the flat, the reason probably being that he was compelled to take longer steps. Parkinsonians often run better than they walk, in this respect presenting an illuminating contrast to tabetics, in whom inability to run while still able to walk is an early sign I have frequently observed. They enter the out-patient room and come to the table with a little run. I have seen a subject of advancing paralysis agitans tuck up his feet and sprint along a garden path when progression at a walking pace was painfully slow. Another patient was actually able to proceed backwards, uphill, at a greater speed than forwards and on the level. James Parkinson gives a graphic description of more than one case in which "the inability for motion, except in a running pace, appeared to exist in an extraordinary degree." As a rule, this power of modification of an apparently hampered musculature is seen more in respect of the lower than of the upper extremities—a corollary, it may be, of the fact that the "voluntary" movements of the former are more, the latter less, "automatic." A remarkable circumstance connected with not a few cases of post-encephalitic Parkinsonism has been the variability in slowness and motor range-reduction at different periods of the day or night, at the instance of extrinsic or intrinsic stimuli, the action of which is far from being clearly understood. (In this connexion similar variability has been reported by one or two writers as taking place under the influence of hypnosis, but I am not in a position to add any personal contribution on this point. Improvement or disappearance of Parkinsonian micrographia under hypnosis has also been recorded.) At a hospital recently I saw a girl, suffering from typical and severe post-encephalitic Parkinsonism, who lay immobile in bed and whose movements in response to my requests were characteristically slow and laboured; yet I was assured her nurses had accidentally discovered that if she was "dumped" up and down on the bed several times in a sitting position she then was able to get up and walk round the ward normally! In the idiopathic disease such peculiar variability is far less in evidence, but if we connect the changeableness in movement described above for the idiopathic patient with the curious though rare phenomena of the post-encephalitic patient, we can only suppose the symptoms to depend less on structural lesions than on dynamic alterations of function, that from time to time innervation is facilitated by modification of the background of muscular hypertonus against which it is ever contending, that the tendency to "involuntary" contraction of the antagonists transiently relaxes. To these matters we shall return later. At any rate, we must concede the possibility of fluctuations in the muscular state greater than a glance at the seemingly immobile attitudes might lead us to imagine.

As for cessation of "voluntary" movement, my observations lend no support to the view according to which the muscles in action in Parkinsonian cases

FIG. 11.



Case of unilateral (right) Parkinsonian. Freehand to-and-fro movement of pencil from above down; L, normal; R, affected side.

may remain tonically contracted, perhaps for seconds, after the "voluntary" impulse has ceased. In no case have I been able to satisfy myself that any condition strictly analogous to "tonic innervation" occurs. By the latter expression is understood inability to decontract, to order or on a signal given, a "voluntarily" contracted muscle or group of muscles. Tonic innervation is of central origin, in the sense that the cases of it I have seen, and those reported by others, have all been due to cerebral lesions, but as far as the actual symptom of inability to relax a contracted muscular group is concerned, no clear clinical distinction can be drawn between it and the phenomenon commonly denominated myotonia. No criterion exists by which to judge when a contraction, "voluntarily" commenced, is prolonged sufficiently to be specified as "tonic," except that if it is maintained beyond the command to relax it is *ipso facto* pathological. Thus understood, tonic innervation in a mild form occurs in many morbid states (moderately severe hemiplegia, athetosis, &c.), but in my experience the phenomenon is so uncommon and uncertain in Parkinsonism as to be practically negligible. If the reader will look at Figs. 15† and 18, taken from cases of advanced bilateral post-encephalitic Parkinsonism, he will find proof of this. In one case, that of a young woman, voluntary action involving the hands and fingers was feeble and tremulous and rather limited in range, but after sustained "voluntary" contraction of the long finger flexors ("close the fist") and, synergically, of the wrist extensors, at the word "open" the long finger extensors instantly contracted and the wrist extensors instantly relaxed—that is to say, neither protagonists (prime movers) nor synergists exhibited any trace of tonic innervation (Fig. 15). In this respect the behaviour of the muscles is identical with that seen in any normal individual (Fig. 14). Similar records have been obtained for the action of trunk and neck prime movers, as well as for trunk synergists in arm movements (cf. Figs. 17 and 18).

(3) *Poverty of Movement.*

The term "poverty of movement" (Bewegungsarmut) has come into vogue to express the familiar symptoms of relative immobility and stationariness of position which are particularly characteristic of the subjects of the shaking palsy. No greater contrast can be imagined than is afforded by the akinesis of the latter, especially in the variety known as paralysis agitans sine agitatione, and the universal fidgetiness of the subjects of chorea. The Parkinsonian scarcely if ever manifests spontaneity in change of position; he literally "sits still." I have for a long time now been impressed by the fact that the average Parkinsonian never sits with his legs crossed, whereas nothing is more frequent in the normal individual than a seated position with one knee over the other. Glancing round the benches at my clinic at King's College Hospital one afternoon, I found 10 out of 20 students sitting in this way. Similarly, the Parkinsonian never sits with his arms folded, though here again is a commonplace change of attitude adopted frequently enough by the normal person. In a score of ways the absence of initiative, of spontaneity, of normal muscular play impresses itself on the observer. Among men a particularly common movement occurs in the course of ordinary conversation—viz., a movement of the hand and fingers to the chin, lips, and lower part of the face, but I have never yet seen a patient with paralysis agitans who has thus raised his hand. Women have a favourite "spontaneous" movement in similar circumstances—viz., toying with their wedding or other ring, but Parkinsonians do not do so. No changing expressions of emotion flit over the face—again providing a striking contrast with what obtains in chorea. This last remark raises an interesting point. Doubtless "spontaneous" movements contain "volitional" and "automatic" elements in inverse proportions—i.e., they are largely "automatic" and but faintly "voluntary"; on the other hand, change of position frequently results from the action of peripheral stimuli that certainly reach the sensorium, hence a conscious, "volitional," factor is not to be entirely excluded. But emotional expression is essentially "involuntary," so that in the patient with Parkinson's disease we note the absence, or poverty, *both* of "voluntary" motor action *and* of "involuntary" motor action, at least as far as the expression of the emotions is concerned. I attach importance to this conclusion, and since a "corresponding opposite" in encountered in cases of chorea the point will be referred to again.

Allusion was made above to variability in the course of Parkinsonian movement from time to time, and a similar variability characterises this "Bewegungsarmut." On occasion, especially in post-encephalitic cases, the patient appears to exhibit more freedom of movement than at others, and the ordinary "spontaneous" motions of everyday life are more in evidence. From patients of sufficient intelligence and introspection it is possible to gain some insight into the causation of their motionlessness, for I may say at once I consider the subjective factors of no less importance and significance than the objective.

CAUSES OF PARKINSONIAN AKINESIS.

(1) The general akinesis seems to me explicable largely by deprivation of, or serious reduction in, normal impulses to movement, both of the "voluntary" and the "spontaneous" kind. When asked, patients will admit the reduction of the need for or impulse to muscular action. Their "will to act" is impaired. They say in so many words that movement requires a greater effort of the will than previously. Everything is done "with an effort." And the curious thing is the rarity with which they seem to wish to make such efforts; on the contrary, they appear to contemplate this defect of motor function with a philosophical resignation. Those afflicted with the disease complain more of "losing the use" of their limbs, of loss of muscular power and of capacity for executing the ordinary fine movements of every day, than of mere "sitting still." We have seen that they can, as a fact, if they will, perform most of the movements of which superficially they appear incapable, but since this puts a tax on "effort" they simply do not make them.

Spontaneous change of position or posture being mainly a response to peripheral impressions, it may be designated a movement of reaction—a sort of "psycho-" reflex movement, for consciousness is probably faintly stirred. To these sense-impressions the Parkinsonian and the senile (for a similar decrease in motility is natural to the senescent) are alike indifferent, probably for more than one reason. In the case of the former, no evidence suggesting an afferent origin for the impairment is forthcoming; the peripheral nervous system on the sensory side all agree is normal. A questionnaire addressed to a number of intelligent Parkinsonian patients has elicited the answer that they rarely "feel the need" to change position, and this might conceivably be taken to argue for an actual reduction in afferent stimuli, owing to the relative fixity of the limb musculature. The muscles, however, are, many of them, in a condition of contraction; they are not "resting" or relaxed, immobile though the patient be; hence their sensory end-organs must be receiving stimulation. On the other hand, afferents from articular and periarticular tissues are probably to some extent restricted, but I cannot think this has a material bearing on the problem. That the immobility-effecting disturbance of function is not sensory receives support from another consideration.

Akathisia.

There are patients in whom immobility is actually a prominent symptom and yet who complain in a paradoxical way that "they cannot sit still," or only "with an effort." After a time they simply must get up and walk about, immobility having become intolerable; they say they feel "all strung up," or "tightened and screwed up," and so on. In other words, they feel, as does the normal individual, the cramping effect of an unchanging posture and have to move and stretch their limbs at intervals; the accumulation or summation of afferent excitations, derived from a largely motionless (though not resting) musculature, is such that the patient must rise and "work it off," only, however, to sink once more into the same state of motionlessness. Since, then, incoming impressions exist, the reduction of spontaneity in movement must have its origin on the effector side. Since I commenced to observe this phenomenon in the course of my studies more particularly of the last two years, I find that Bing has directed attention to it, and employed the term originally devised by Haskovec—"akathisia"—for cases of inability to "sit still" of hysterical or psychasthenic origin. Bing refers to various authors who have noted akathisia in paralysis agitans and post-encephalitic Parkinsonism, and while not committing himself to one explanation only, seems inclined to accept the view which some others have adopted and which is in accord with that here given. In my opinion akathisia is only an exaggeration of what is seen in normal individuals, and, since it has a psychogenic basis in some instances, it cannot be ascribed in any exclusive fashion to striatal disorder.

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† Figs. 14, 15, 17, and 18 will appear in Lecture II.

At this stage a word of caution must be entered as to indiscriminate use of the term *loss of movement* in connexion with Parkinson's disease. I have studiously avoided using the term "loss," apropos of reduction of voluntary and spontaneous movement, because I do not consider that the movements are in fact "lost" (with the few exceptions, and these only in part, already mentioned). *Because a patient does not make a movement it does not follow that he cannot.* It is of importance to bear this in mind when we discuss the functions of the corpus striatum at a later point.

(2) As for reduction of "voluntary" activity, the totality of sense-impressions at any given moment being in the Parkinsonian not much different from that of the normal person, we cannot ascribe the inaction to failure of extrinsic stimuli, although these doubtless play a part as one of the springs of action. Intrinsic stimuli, at whose bidding the "voluntary" motor system passes into activity, may perhaps have an ultimate sensory origin, but we cannot express this "impulse" in physiological terms; we know only that our patients say they are not as conscious of it as formerly. It is idle, therefore, to speculate whether such intrinsic stimuli are damped down centrally by a process of inhibition which rarely lifts, or are not forthcoming in adequate amount, or not endowed with sufficient potential. Perhaps this potential has an affective quality, and the "affect-quantum" essential for an impulse to generate action may be awanting. Apart from considerations of this kind the Parkinsonian knows from experience that voluntary movements are no longer effortless and facile, and desists *largely of his own accord.* Even in respect of this "sense of effort" not a little is obscure. Binswanger, for example, declares that in paralysis agitans "innervation-feeling" is lacking, yet what is signified thereby is not clear. We have already noted the absence of any sensory impairment in the disease, and cannot liken the motionlessness to that of the anæsthetic limb, all of whose dorsal spinal roots have been severed experimentally, as shown by Mott and Sherrington. Nor can "feelings" arising in the course of muscle innervation be lost; Parkinsonian muscles are not at rest. Besides, it is uncertain whether, and to what extent, kinæsthetic impressions can really exercise a stimulant effect, or their relative diminution result in immobility. Once more, no evidence is available to indicate that motor or efferent currents are themselves sensed. According to Titchener, "there is no such thing as a motor-cell sensation, a sensation corresponding to the innervation of a muscle or group of muscles," though Hughlings Jackson himself maintained that "the outgoing current, a motor cerebral current, is concerned with the physical processes during referrings of sensations to parts of the body"—in any case a view of little bearing on the present point. "Innervation-feeling," therefore, or rather its absence, offers no explanation of the phenomena. I suspect that by a "sense of effort" the patient signifies little else than the consciousness that his muscles no longer "answer," as the rudder "answers" the helmsman's lightest touch at the wheel; and *the conclusion, as indicated already more than once, is, that some at least of the akinesia of the Parkinsonian is the direct outcome of unwillingness to move, since the making of movement is no longer effortless.*

(3) The objective state of the peripheral motor apparatus is without doubt a factor, yet only one, in this general akinesia. No constant relationship between degree of peripheral rigidity and decrease of spontaneous or "voluntary" movement can be established, for the reason that the motor phenomena under discussion are frequently found where muscular rigidity is not a conspicuous feature. Relative immobility of facies and of limbs is often an early symptom in the disease, sometimes the earliest, before rigidity makes itself obvious. One of the earliest indications of the onset of the Parkinsonian "mask" is notable infrequency of ordinary blinking movements of the eyelids, but in other respects facial movements, "voluntary" and emotional, may still be normal, no trace of rigidity in any facial group being detectable. Reference has not as yet been made to the characteristic attitudes of limb segments in the disease, but it may be remarked here that they develop more or less *pari passu* with the immobility—i.e., it is an immobility in attitude or posture. Now no constant interrelation obtains between rigidity and attitude in the first instance, for the hands and fingers may assume attitudes involuntarily at an early stage when the corresponding muscles are not demonstrably rigid.

As the disease advances, however, a general tendency to muscular fixity becomes ever more obvious, implicating all skeletal groups more or less indifferently. It is due mainly to a hypertonic state of the musculature, an overaction of the tone-effecting apparatus, to which due attention will be devoted subsequently. As a consequence, when the innervating current of "volition" reaches the motor periphery, it finds that: (1) The muscle elements it would innervate are already in relative contraction; (2) the antagonists to the required movement are also in activity. At this stage we shall not pursue the analysis further, for the matter can be more conveniently dealt with in the sections on disorder of muscle tonus. My observations, however, will show that in spite of the background of muscular overtone "voluntary" innervation can accomplish its ends both as regards prime movers, synergists, and antagonists in a given movement, so that *the conclusion is permissible that the condition of the peripheral motor system is no more than one of the causes of Parkinsonian akinesia, and not necessarily the most important.*

We must beware in Parkinsonian cases of attributing to disease of the corpus striatum symptoms not in fact pathognomonic. A limb may be immobile, or relatively immobile, (1) because the lower motor neurones are "paralysed," as in poliomyelitis; (2) because there exists a combination of innervation weakness and muscular spasticity, as in hemiplegia; (3) because presumably normal innervation encounters a "block" in distal motor mechanisms, as in paralysis agitans (in part); (4) because central "impulses" are awanting, as in the same disease. Under (4) should be included, for the sake of completeness, certain cases of psychosis (catatoniac stupor, anergic stupor, &c.), in which the immobility is psychogenic and partakes of a negativistic character. *In short, akinesia, or poverty of movement, obviously may arise at one or more of lower, middle, or highest physiological neural levels (in Hughlings Jackson's sense), a possibility which renders invalid its ascription to the corpus striatum alone.* Failure to envisage ætiological differences in respect of the development of this symptom, as with others that have already been made the subject of investigation, has been a fruitful source of confusion; with the exception of Binswanger, most recent continental writers have over-emphasised the "hypokinetic-rigid" syndrome of the *corpus striatum* at the expense of other clinical conditions of which immobility is a symptom, but which are in no way associated with striatal disease.

(4) Somewhat similar explanations must apply to the general slowness, retardation, and limitation of "voluntary" movement in the disease, as well as to the muscular weakness. Here again a wide conception is indispensable. Allusion was made above to the "motor helplessness" of the subjects of paralysis agitans and of progressive lenticular degeneration, and in my original monograph on the latter disease the facts were fully exemplified. I found that "volitional movements may be good in range, but they are usually resisted with comparative ease. This muscular weakness is not to be confused with clumsiness or awkwardness from hypertonicity or tremor. There is *intrinsic muscular asthenia*; the patient is incapable of any sustained effort; he cannot close his eyes tightly for any length of time, cannot keep his tongue protruded, cannot maintain his grasp." At that time I endeavoured to avoid the use of the term "paralysis," hoping it might be confined to diseases of the pyramidal system. Further consideration has led me to modify this hope, for *quâ* weakness, limitation, slowness, I see little material distinction between hemiplegic and Parkinsonian cases. The differences between pyramidal and extrapyramidal cases are distinct enough, but not as regards the above points. The *general* approximation of cases of double hemiplegia, especially of the pseudobulbar variety, to cases of paralysis agitans sine agitatione was emphasised long ago by Hughlings Jackson and again by Brissaud, and in these recent years we have seen examples of post-encephalitic Parkinsonism in which the diagnosis from pseudobulbar palsy has been more than a little difficult.

Having demonstrated the existence, in numerous instances, of such weakness, slowness, and imperfect range of "volitional" movement as constitutes, in Foerster's words, an "unmistakable paresis," I do not agree with him that there is no predilection type. On the contrary, a special class of acquired movements—viz., those of the smaller muscular groups throughout the body—is particularly liable to be affected, as has already been fully exemplified. *The small muscles* are those employed in what James Parkinson called "any nicer kind of manipulation"; their failure "to answer with exactness to the dictates of the will" is their characteristic in more than one state of motor defect. As a class, they suffer more than any other in hemiplegic cases; derangement or outfall of fine finger movements is seen in hemiplegia, and of laryngeal, glossal, facial, and ocular movements (it may be) in double hemiplegia. In extrapyramidal, as in pyramidal cases, analogous but not necessarily identical imperfection of small movements is to be observed. It is true, as we have seen, that in some instances seemingly as definite "paralysis" of various small muscle activities characterises Parkinson's disease, as it does pyramidal disease: but no one considers the pyramidal morbid state the replica of the other. The rigidities are not identical, nor are the "paralyses"; when, however, we find general resemblances in the types of movement that suffer, we are entitled to seek an explanation that is physiological rather than anatomical. In other words, *I do not take the "weakness" of certain movements in striatal affections to imply a concomitant anatomical defect of the corticospinal system, or of similar movements in hemiplegia to be the sequel merely of the corticospinal interruption; in each case the movements are disordered because their physiological quality or character is such that they suffer most and earliest.* To account for the "weakness" in paralysis agitans Foerster postulates a second corticomuscular path passing through the globus pallidus and in simultaneous action with the ordinary corticospinal tract in "voluntary" innervation. To me this hypothesis seems completely unnecessary (apart from its anatomical dubiousness); the rigidity in Parkinson's disease is *general*, but the "weakness" is *special*, and I submit the latter cannot be accounted for merely by anatomical interruption, just as in hemiplegia the special type of motor defect cannot be the outcome merely of a haphazard interference (by hæmorrhage or otherwise) of an anatomical system. In each instance there is defect or loss of *some* movements; in each the same *sorts* of movement are disturbed: behind both instances, therefore, must lie a similar disorder of function, but it is not a similar disorder of structure.

ORGANISATION AND WORK OF A LIGHT DEPARTMENT IN A HOSPITAL FOR SURGICAL TUBERCULOSIS.*

By Sir HENRY GAUVAIN, M.D., M.C. Camb.,
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Though I have used lamps for light treatment for many years, and indeed had three German quartz mercury-vapour lamps in regular use for a considerable time before the war, it is only since the cessation of hostilities that I have been able to realise a long-cherished wish and have a properly planned and staffed light department. The great interest recently displayed in light treatment and the many requests I receive for assistance from practitioners and institutions desirous of installing apparatus for light treatment are my apology for this sketch of the organisation and work of the light department at Alton.

It may be of some help to those contemplating introducing light treatment into institutions which they serve or administer if I quite briefly outline the reasons which impelled me to establish a light department at Alton and the steps I took to plan and organise it.

Artificial Light Treatment.

First let me state that in this paper by light treatment I mean treatment by light produced by artificial means as opposed to sunlight. The term artificial sunlight I dislike as slovenly and misleading, and though the mercury-vapour lamps I have already alluded to were called artificial mountain suns, I have still to discover any lamp to which such a title can be legitimately or wisely given.

Though light treatment has been extensively scientifically investigated, especially during the last few years, it should be remembered that it owes its origin to shrewd clinical observation and its justification to clinical experience. Fascinating as are theories endeavouring to explain the biological action of light, they still remain incomplete, are sometimes contradictory, and are frequently confusing. Many and wide gaps in our knowledge still remain, and I recognise fully that the scientific principles of light therapy still rest on an incomplete and not too stable basis. I shall therefore confine myself here entirely to practical considerations.

Very considerable opportunities for the practice of sun treatment on an exceptionally extensive scale, both inland and at the seaside, had convinced me of its value in surgical tuberculosis. It was, therefore, natural that one should wish to employ light derived from artificial sources therapeutically.

The Light Department Introduced at Alton.

The cessation of hostilities, the sympathetic approval of the late chairman of the hospital, Sir William Treloar, and the generosity of a private subscriber, gave me the long-desired opportunity of founding a light department.

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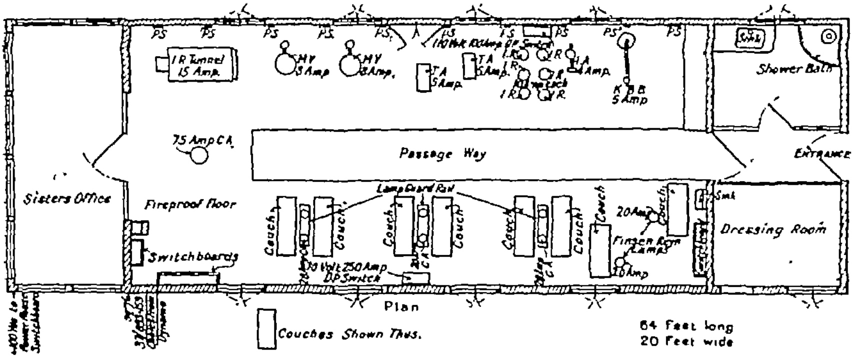
* A paper read before the Electro-Therapeutic Section of the Royal Society of Medicine.

It is apt to be forgotten by those contemplating artificial light treatment on any considerable scale that *this form of treatment* is *necessarily very expensive*. The initial purchase of the lamps is only the beginning and not the end of considerable expenditure. Much electric current must be consumed, the services of a skilled electrician are essential, the plant must be maintained and renewed, experimental work is almost essential, numerous accessories must be purchased, a staff of nurses must be trained, retained, and maintained. Indeed, the lamps are the least expensive item. Needless to say, this side of the matter was carefully and anxiously considered. I had to satisfy a generous but astute business man in the person of Sir William Treloar, on whom devolved the burden and the responsibility of financing the hospital, that in the interests of the patients under my care the expenditure contemplated, and which would be a constantly and probably increasing drain on the institution, was essential, unavoidable, and justifiable. I would emphasise this aspect, for I am convinced that at this stage an *elaborate* light department is neither essential nor justifiable for many institutions.

FIG. 1.



Ground plan of the Light Department. Couches are indicated on the carbon arc (70-volt) side: they are not shown on the 110-volt side. The iron arc, Kromayer, and Finsen-Reyn lamps are water-cooled; the water, circulating through these lamps, discharges into the sink. P.S.=10-ampère plug and switch. I.R.=Infra-red ray lamps. I.R. tunnel=Radiant heat (luminous rays) tunnel. M.V.=Mercury-vapour lamps (air-cooled). T.A.=Tungsten arc lamps. D.P.=Double-pole switches. K.B.B.=Kromayer type of water-cooled mercury-vapour lamp. C.A.=Carbon arc lamps. I.A.=Iron arc lamps.

The success which had attended sun treatment gave promise of success from artificial light and made its employment justifiable, the impossibility of obtaining certain results except by artificial light made it essential, and the natural course of evolution in a progressive institution made the establishment of such a department unavoidable. I had absolutely convinced myself of the need before I attempted to influence Sir William Treloar. No hospital for surgical tuberculosis in the country had a properly equipped and staffed light department. For lupus cases especially such equipment was an urgent need. Its value has been thoroughly demonstrated by Dr. Sequeira at the London Hospital, whose brilliant results in the treatment of lupus are so well known. There was no shadow of doubt that numerous cases demanded the treatment a light department alone could give. By the system of heating already employed all the electricity required for the light department could be generated free of cost other than fair wear and tear of the machinery. There already existed an admirable generating plant and a highly skilled and competent resident engineer who could install and maintain the new plant required without additional cost to the institution, and conduct the necessary experimental electrical work requiring investigation.

The next point to determine was whether a new building for the light department should be erected. Here I felt that it was a safe assumption to make that further possibilities exist and much further investigation is needed. Finality has *not* yet been reached, and therefore the present light department has been created in an adapted ward which could readily be spared. The present light department must therefore be regarded as probably needing modification and possibly considerable extension at an early date, but, when the time comes for further extension, no building will have to be scrapped, and the ward will revert to its original purpose. Such apparatus as remains of proved utility will simply be transferred to a specially designed building. Meanwhile we are acquiring at a minimum cost experience which will be available later. (Figs. 1 and 2.)

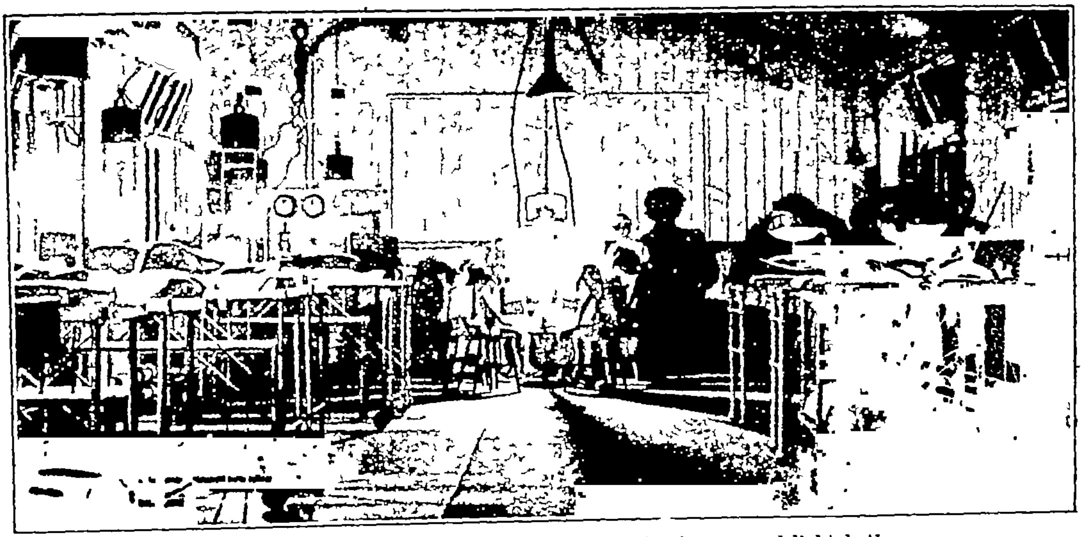
A ward was therefore selected as near as possible to the power-house to reduce the cost of cable. The ward is a simple wooden structure. The necessary cabling, wiring, and installation of the lamps was done by direct labour. To reduce the risk of fire the walls to a height of 4 feet and the floors were covered with sheets of asbestos, which has the advantage of being cheap, non-inflammable, a non-conductor of heat, and, in addition, has a dull non-reflecting surface, so that the patients and staff are not subjected to eye-strain by reflected light. In the power-house a motor generator was erected to break down our existing voltage of 110 to 70. In the trench dug two cables were laid, one to convey the current at 70 volts, the other current at 110 volts for lamps other than the Danish. Each has a main double-pole switch, where it enters the light department, so that the whole current can be instantly switched off in the light department as well as in the power-house should occasion require it. Necessary switchboards with ammeters and voltmeters, fuses, and abundant plugs for the 110-volt circuit are, of course, fitted. All the fittings, metal couches for recumbent cases, and even the mattresses on which the patients lie were made in the institution.

These essential preliminaries having been settled the nature of the installation to be provided and the means to be adopted for training the staff had to be considered.

The Finsen Institute, Copenhagen.

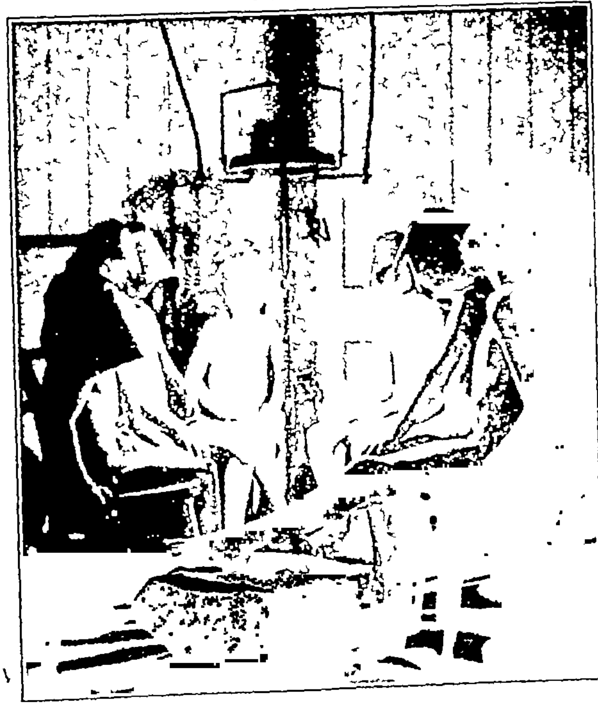
Naturally, the first place to turn to was the Finsen Institute, Copenhagen, and it appeared to me essential to make myself as fully conversant as possible

FIG. 2.



One end of the Light Department. Patients having general light baths.

FIG. 3.



The 75 ampère carbon arc lamp.

with the methods of phototherapy employed in this pioneer and famous institution. By the kindness of Dr. Axel Reyn, the director, I was permitted to visit the Finsen Institute and study its methods under his guidance. I would here like to express my gratitude for and appreciation of his generous kindness. He took infinite pains in instructing me in the admirable technique he employs. No detail was too trivial, no difficulty too great. I have the most profound admiration for the technique followed at the Finsen Institute, and the success which has been achieved there is a tribute to its thoroughness. The technical skill which has been employed in designing the lamps used, the exact care with which they are used, the ingenuity displayed in the application of the light in difficult cases, the meticulous cleanliness devoted to the lenses and applicators, the perfect drill, the splendid team-work, and the high degree of perfection of the carbons used as electrodes—these and other details aroused my sincerest admiration. I found that Dr. Reyn and his co-workers pinned their faith to the carbon arc for both the general light baths and for local treatment. General light baths with the carbon arc had been used at the Finsen Institute systematically and with success since 1913. The majority of the cases treated were lupus vulgaris. Dr. Reyn has shown that by combining general light baths with local treatment speedier, better, and more certain results were obtained. The use of general light baths was extended to other forms of tuberculosis, but lupus remains the most common form treated.

A second visit confirmed the favourable impressions derived from the first, and I determined that a large part of my light department should be based on the teachings of the Finsen Institute. I followed these to the best of my ability, modifying them where necessary for my particular needs, and copying them carefully where exact imitation was desirable. But another point was firmly impressed on me as the result of my visits. To obtain similar results it would be necessary to have identical apparatus and to employ identical technique. I must have not only carbon arc lamps, but carbon arc lamps as used at the Finsen Institute with Finsen carbons as electrodes, Finsen ideals of thoroughness, and genuine Finsen technique. To secure the last Dr. Reyn kindly arranged that one of the most competent of his trained sisters, a highly educated lady who spoke English fluently, should come to Alton to instruct the nurses in our light department, and, in addition, I arranged for one of our sisters to work at the Finsen Institute in Copenhagen. In each case the visit was of six months' duration and particularly competent sisters were selected. The result of this has been thoroughly satisfactory.

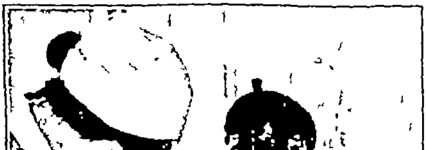
The installation obtained from the Finsen Institute was as follows. Two 75 ampère carbon arc lamps, each capable of treating eight ambulant patients simultaneously; six (i.e., three pairs) of 20 ampère carbon arc lamps for recumbent patients, and three water-cooled Finsen-Reyn 20 ampère carbon arc lamps for local treatment. With such an installation and by following rigidly the adopted technique, I felt confident that successful results could be anticipated. and that confidence has been justified. At the same time I felt that I must not limit my phototherapy to one particular method. Accordingly, I decided to make provision for testing and employing where desirable any other form of light which seemed of promise

During the last few years much attention has been paid to ultra-violet radiation, and especially to short-waved ultra-violet rays. Their value in rickets has especially been abundantly demonstrated, their tonic action has attracted much attention The discovery that the bactericidal power of the blood might be raised after exposure of patients gave alluring prospects. Indeed, the tendency has recently been to use short waved ultra-violet rays more and more, excluding or reducing the use of the longer-waved rays

Many so-called artificial sun lamps are rich in short-waved rays never found in the solar spectrum Makers will often point with pride to lamps which will produce a full erythema dose in three minutes. Such lamps are indeed attractive They are comparatively cheap, consume little current, have most striking and rapid action, are therapeutically very active, exceedingly short exposures are alone needed and can be tolerated, and they are very easily installed Accordingly, on my 110 volt circuit I made provision for these, and regularly continue to use mercury vapour, tungsten arc, iron arc, and other lamps In addition, I have tried several other lamps and numerous electrodes. Many of these have their uses, some are very valuable, especially in certain local conditions, but, on the whole, in surgical tuberculosis, at any rate, they have not come up to expectations. For solid clinical results, as far as I have observed them, I find myself more and more reserving them for the treatment of certain local conditions or even for certain stages in the evolution of local conditions. I admit their value, but had I to choose between them and the various types of Finsen lamps I should at the moment unhesitatingly select the latter.

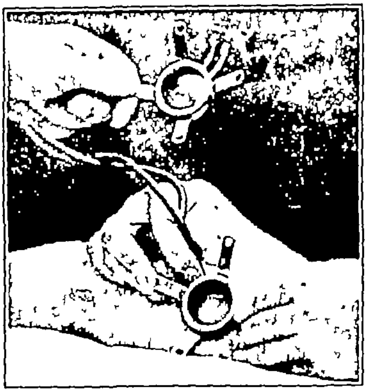
While many important investigations on the mode of action of light have been completed in the laboratory the subject is so complex, so many factors are involved, that I believe clinical experience is still our most reliable guide. When we consider the matter further, this attitude appears to me to be logical. The short-waved rays have very little penetrative power, but have a powerful superficial necrotic action, so that long exposure cannot be tolerated The total radiant energy introduced into the patient is therefore comparatively small Caution should be exercised in their use, and the existing tendency to employ them indiscriminately is not devoid of danger. I do not wish to speak dogmatically, for I fully appreciate the value of these rays in many conditions—in some, indeed, their action is remarkable, as, for example, in relieving acute neuritis of undiscovered origin. How these short-waved rays have acted I cannot tell, but the fact that they have given almost instantaneous relief remains. Nevertheless, until we know more about their mode of action my whole instinct is to be cautious in their employment.

FIG 4.



Finsen Reyn lamp.

FIG. 5

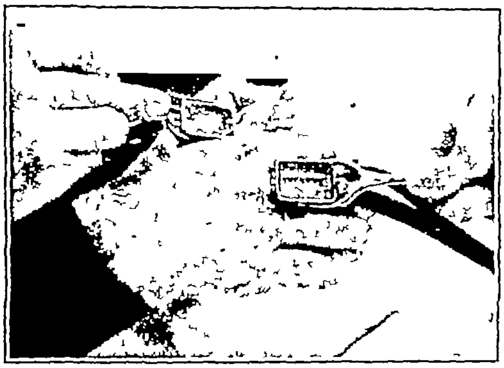


Applicators for treatment over muscular areas—e.g., limbs.

This leads to a very important matter in connexion with light treatment On the physical side it is possible to produce almost infinite varieties of radiant energy, and to use these rays in a variety of combinations. But while many observations have been made of their biological effects there is so much more to learn that just as you need a bacteriologist or pathologist for ordinary hospital routine so, it appears to me, you need a skilled laboratory worker in connexion with your light department. By the combined generosity of Sir Horace Plunkett and the Medical Research Council I have been able to secure such help in connexion with my light department, and we are fortunate in having obtained the whole-time services of Dr Bannerman, at Alton, for this purpose in the first light laboratory established in connexion with a hospital in this country. He is checking, investigating, and assisting us by every means in his power, and his work is proving of the utmost value The result of his observations will be the subject of communications from time to time

With regard to the actual work of the light department, I have planned arrangements somewhat differently from the Finsen Institute Experience in the administration of a large children's hospital has taught me the importance of constant and complete responsible supervision As you will see from the plan, the whole of the light department is visible and readily accessible. There are no cubicles, recesses, or separate treatment rooms, so that the sister in charge has everything always under her eye. In my opinion certainly children and generally adults should never receive light treatment unless under constant trained observation. Children may endanger themselves by playing, they may be faint or sick, they may interfere with and infect exposed wounds, some mishap may happen to the lights, or some unforeseen event may occur. If the ideal of trained supervision is realised, then separate rooms for separate lamps or special treatment are impracticable unless expense is no object. With children the necessary supervision is comparatively easy. The older boys or girls attend at different sessions. With adults separate sessions for each sex would also be observed or the light department duplicated. At Alton patients are treated behind screens only when their condition is such that privacy is essential, as in such conditions as lupus of the vulva receiving local light treatment.

FIG. 6.

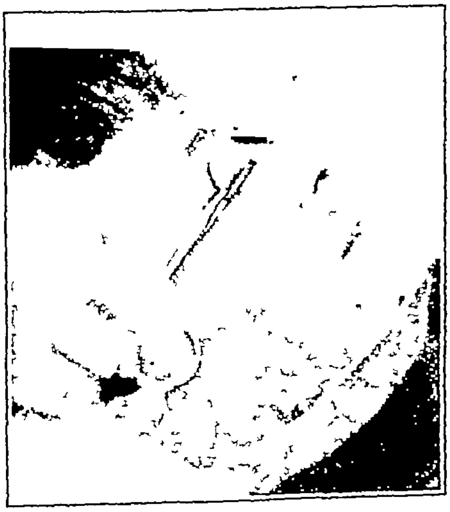


Oblong concave and convex applicators for digits or inter-digital spaces.

Two sisters-in-charge are therefore employed. At the busiest period of the day both are on duty. The nurses come on duty at 7.30 A.M. Actual treatment commences at 8 A.M. Local light treatments proceed continuously from that time with the Finsen-Reyn, tungsten, iron and other arcs, and the mercury-vapour lamps, until 7 P.M., with intervals for dinner and tea.

At the conclusion of treatment the department is thoroughly cleaned out, all lamps examined, the Finsen-Reyn lamps completely dismantled, each lens individually cleaned, every compressor similarly treated, and everything made ready for the following day. General light treatments with the carbon arcs are held daily from 9 till 11.30 A.M., and from 1.30 till 4 P.M. At each of these sessions six recumbent and eight ambulant patients are treated, so that 28 patients have general carbon arc light baths daily. I agree entirely with the experience of the Finsen Institute that two and a half hours on alternate days is ample for general light baths for individual patients. Fifty-six patients, therefore, are having such light baths every other day. That is usually sufficient for present requirements. If more general light baths with the carbon arc are needed, an additional session must be held or general light baths with other lamps be given. One 75-ampère arc is always held in reserve and may be used to give supplemental light treatments if needed. (*Fig.* 3.)

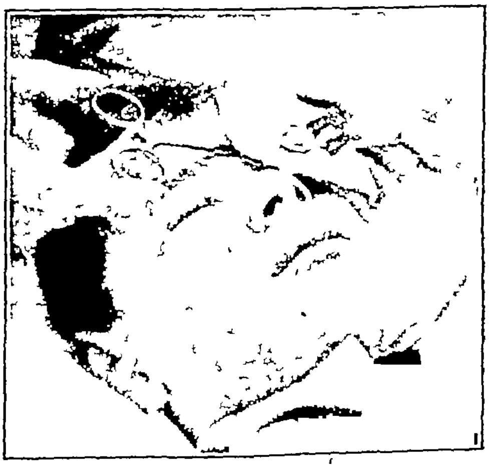
FIG. 7.



For treatment on the under surface of an eyelid. The eyelash is clipped by specially designed forceps.

Each patient having a general light bath is provided with a special simple brown paper shade for his eyes; this is cheaper, safer, and much more sanitary than goggles. Each member of the staff has his or her own goggles; convenient specially designed lorgnettes are used for occasional visitors. Each patient is also provided with a clean bathing slip, a clean face towel and bath towel for each treatment, and, in addition, ambulant patients have their own wooden sabots, which are scrubbed after use. During treatment patients are given water to drink. As *a general rule, exposure of half an hour per session* is given to new patients, increasing from one-quarter to half an hour per session to a maximum of two and a half hours. Ambulant patients face the light, sitting the first half of the session; during that time they frequently amuse themselves by singing or conversation. When their backs are exposed they are permitted to read. They sit as near to the lamps as the heat will permit, the nearer the better, as it will be remembered that the intensity of the light varies inversely as the square of the distance from its source. The current used is a direct current, the positive electrode is above; on the under side of that electrode an incandescent crater is formed, *the light is thus thrown down on to the patients* with minimum wasted diffusion. During treatment free perspiration occurs, and at the conclusion of treatment each ambulant patient proceeds to the douche room, where he is sprayed with tepid water, dried, and dresses in the dressing-room. Recumbent patients are washed on their stands after treatment, dried, and returned to their wards suitably clad. The sheets over their mattresses are removed and replaced by clean ones before each session. There is thus a considerable amount of laundry work inseparable from light department routine. Recumbent patients are irradiated on conveniently movable stands which we specially constructed at Alton. Adjacent stands are exchanged at half-time during each treatment, and patients are turned so that

FIG. 8.



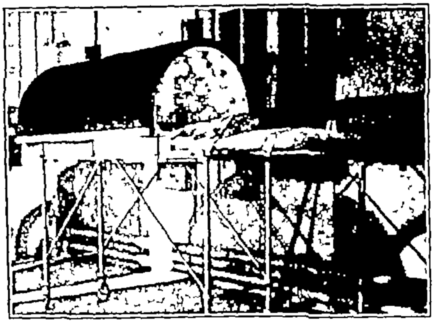
Applicator in position over everted eyelid.

each part of the body is equally irradiated, the patient's head being protected from the heat by adjustable asbestos shields. For recumbent treatment three 20-ampère lamps are needed for each two adults, two for each two children.

The Finsen-Reyn lamps (Fig. 4) are only used for the local treatment of lupus. Success with these lamps depends largely on the skill of the operator and the exercise of scrupulous cleanliness. Great attention is therefore paid to training selected nurses in their use. Nurses are not allowed to use these lamps until they have served three months in the light department and shape well. They are then given progressively difficult lesions to treat. Specially designed compressors are used for different regions of the body, as will be seen from Figs. 5 and 6. These compressors, of varying shapes and sizes appropriate to the part being treated, are each constructed of two pieces of clear quartz mounted in metal. In the space between each piece of quartz, cold water is in continuous circulation while treatment is in progress, during which time the compressor is kept firmly in apposition with the part being treated. The light from the Finsen-Reyn lamp is derived from an automatically-fed scissor-shaped arc, and is focused through a cylinder containing five quartz lenses. This tube, which is filled with pure distilled water, filters off most of the heat rays, and this filtration of heat is continued when the focused light is transmitted through the water-cooled compressor to the lesion. The distilled water in the cylinder is cooled by tap-water kept continuously circulating around it. These lamps are kept continuously in use, with the exception of Saturday and Sunday afternoons, Bank holidays, and during part of the month of August, when the light department is closed down. Fresh distilled water specially prepared and free from particulate matter is put in each cylinder daily. In addition to renewals, as occasion arises every lamp is completely overhauled at regular intervals. Treatment with the Finsen lamp usually occupies two hours for each area treated, but that varies to some extent according to the part involved. Thus, treatment of the under surface of the cocainised eyelid rarely is practicable or desirable for more than 20 minutes. (Figs. 7, 8.)

By the use of quartz compressors which exsanguinate the part treated much deeper penetration of the light is possible. The light appears to have a selective action on the infiltrated tuberculous tissue. An intense reaction occurs in the area treated, which lasts for several days, exceptionally weeks, and further local treatment on that spot is not repeated until the reaction subsides. It is of very great value indeed in the majority of cases to intermit the light baths after a period of treatment, this period varying with different patients. If the light baths both general and local are abandoned, say, for about a month and then resumed they are much more effective. Not only is this done, but the patients are then given the advantage of complete climatic change, scene and régime, as I have found that it is of surprising benefit to send the majority for this rest period to Hayling Island. Here during the summer months they may have particularly valuable natural sun treatment, immensely enhanced in suitable cases by graduated sea-bathing. I must not dwell on this point, but I cannot sufficiently emphasise its value. The effect on both the general health and the local lesion is marked.

FIG. 9.



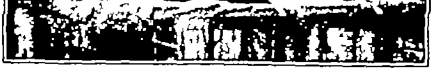
The tunnel: Radiant heat lamps (tungsten and carbon filament). The patient, on a sliding couch, is passed into the tunnel and cooled during treatment by an electric fan.

Lamps other than Carbon Arcs.

In the treatment of surgical tuberculosis by artificial light I would, at present, regard the Finsen side of the light department as of the greater importance, the other as accessory. The value of the other forms of lamps depends to a considerable extent on the skill with which they are used as substitutes for or combined with the various carbon arcs. To these I must briefly allude.

First, I would refer to what we call the "tunnel," which emits no ultra-violet light. (Fig. 9.) It consists merely of numerous filament lamps, carbon or tungsten, gas-filled or vacuum. It is simply radiant luminous heat. The patient, strapped on a stand, is pushed into the tunnel, and there exposed to the light of as many or as few lamps as desired. The heating effect is considerable, but the patient's skin is cooled by an electric fan which can be made to draw the air over him at varying speed. Meanwhile the long-waved light rays, having considerable penetrating effect, warm and activate the blood. The tunnel often provides a useful treatment immediately precedent to that from a short-waved lamp, such as the mercury vapour. Its greatest sphere of usefulness, however, is not in the treatment of surgical tuberculosis, but in certain other conditions.

FIG. 10.

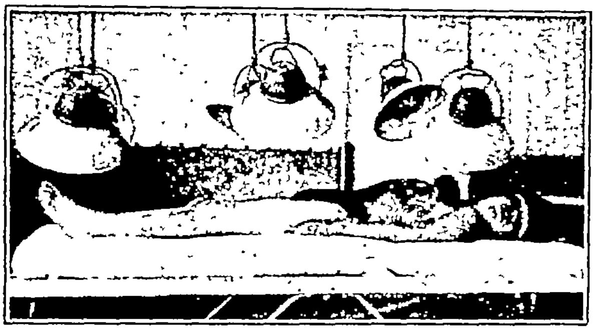


Treatment by mercury vapour lamp. Lamp in foreground has carbon filament lamps around to warm patient and activate the effect of the ultra-violet rays.

The air-cooled mercury vapour (Fig. 10) and tungsten arc lamps are so well known and so commonly used that the briefest reference will suffice. For general treatment in surgical tuberculosis they are not so valuable in my hands as the carbon arc. Rapid in their effects at first, their value appears to diminish after a few treatments. They may usefully prepare the way for, or sometimes be suitably used alternatively with, the carbon arc. In surgical tuberculosis they are more valuable for local lesions, sinuses, ulcerated lupus, suppurating or discharging glands, scrofuloderma, and the like. The water-cooled iron arc has a distinct value. It may be used with benefit in local superficial lesions. Its chief merit lies in its cheapness.

Long-waved infra-red rays are of doubtful value. (Fig. 11.) I believe they may be usefully employed for local lesions—e.g., tuberculous hips and knees in patients with low hæmobactericidal power where that is raised considerably temporarily by the use of general ultra-violet light baths. In such cases, while the bactericidal power of the blood is high, they will congest the part and I think in this way hasten the cure. For preliminary local treatment of lupus in regions other than the face, I use on the 110-volt circuit a water-cooled m.-v. lamp of the Kr. type, the value of which has been extended by the introduction of rod-like quartz applicators. The use of these applicators facilitates the treatment of mucous surfaces.

FIG. 11.



Electric radiators for infra-red rays.

I cannot now discuss the indications or contra-indications for artificial light in surgical tuberculosis, or the results achieved, and must omit many other matters associated with a light department.

One class of patient, however, should be mentioned—the patient who, though needing light treatment, is too ill to be brought to the light department or who would lose more by the movement than gain. For that patient the light department must come to him. By the kind coöperation of a well-known firm I am now engaged in perfecting a lamp specially designed for the needs of such a patient. Such a lamp must have certain essentials. It must be readily portable and simple in application, the ampèrage must be small as it will have to be plugged into an ordinary wall-plug, the light therefore must be concentrated on and yet extend the length of the patient. It must be so designed that the light generated can be used effectively and to the greatest advantage. Although certain mechanical difficulties remain yet to be overcome, I hope they will be very speedily surmounted.

It would be invidious to compare the relative merits of different makers' lamps. There are many admirable lamps on the English market to-day which may be safely recommended for special purposes with confidence. The long-flamed arc which has been advocated by and named after my friend Dr. Eidenow, is one in point. It is an excellent lamp, rich in ultra-violet light, and is rightly popular. An excellent arc lamp provided with four pairs of impregnated carbons is now on the market. It is an admirable lamp, economical in first cost and upkeep, and simple to use. It is rich in ultra-violet light, but should be used with discrimination. Indeed, I confess I have misgivings as to the use of powerful sources of ultra-violet light in the hands of the inexperienced.

Work Done in the Light Department.

During the 12 months from March 31st, 1924, to April 1st, 1925, but excluding the month of August, 1924, during which month the department was closed, the following treatments were given to patients suffering from various forms of non-pulmonary tuberculosis. Patients treated for other conditions are not here recorded.

General Carbon Arc Light Baths.

Boys	88	3787 treatments.
Girls	71	2420 „
Patients	159	6207 „

Finsen-Reyn Lamp Treatments.

(For the local treatment of lupus vulgaris.)

Boys	20	589 treatments.
Girls	26	768 „
Patients	46	1357 „

Other Light Treatments, including Mercury Vapour (Air-cooled) and Tungsten Arcs.

Boys	34	1166 treatments.
Girls	37	956 „
Patients	71	2122 „

Total Light Treatments.

Boys	142	5542 treatments.
Girls	134	4144 „
Patients	276	9686 „

Conclusion.

As I have confined myself to the title of this communication, I fully realise how incomplete my remarks must appear. It would be desirable to compare the relative merits of sunlight and light produced by artificial means, the indications for their combined or separate use, the advantage of simultaneously or subsequently employing other physiotherapeutic aids, notably aerotherapy, balneotherapy, diathermy, and the like, but that is beyond the scope of this paper. Nevertheless, such matters must be considered carefully in prescribing light treatment; especially should the indications for artificial light and sunlight be borne in mind. I have not the very slightest hesitation in stating emphatically that certain cases derive greater benefit from the one than the other, and others are only given the maximum help by the application of both, often supplemented by other physical aids to cure. Neither have I discussed artificial light therapy in other conditions than tubercle. But this I do say, the light department has been a valuable means of assisting me in the treatment of surgical tuberculosis, and without it much that is now being accomplished at Alton could not be done at all, while much more is very definitely aided.

WAGNER-JAUREGG TREATMENT OF DEMENTIA PARALYTICA.

BY S. GROSSMAN, M.R.C.S. ENG.

(*From the Therapeutic Department, Cardiff City Mental Hospital.*)

MUCH attention has been recently given to the Wagner-Jauregg treatment of dementia paralytica by the infection of the case with malaria. Very favourable reports have been published in this country and abroad, and we decided to give it a trial at this hospital. Although only eight patients were inoculated, the difficulties encountered and the results obtained are worth recording.

One of the difficulties was to obtain permission from responsible relatives to inoculate the patients with malaria. Unfortunately, the general public does not yet appreciate the meaning of "general paralysis of the insane," and although we have about 30 general paralytics at the hospital, permission was only obtained to inoculate eight of them.

Another great difficulty was to obtain quinine-free benign tertian malarial blood. No such blood was available for a time in Cardiff, and the organism does not often survive when the blood is sent from one part to another. The opinion of Dr. C. M. Wenyon is that there is no possibility of the parasite surviving unless the blood is inoculated directly into Bass's culture medium, and the tube enclosed in a thermos flask, and so kept warm on the journey. The parasite must also have a certain amount of dextrose, otherwise it dies immediately.

Through the kindness of Dr. John Hartigan, of the Royal Hamadryad Seamen's Hospital, Cardiff, we were enabled to obtain blood from a quinine-free patient suffering from benign tertian malaria. As recommended by Dattner and Kauders, the blood was collected in 0·5 per cent. sodium citrate in physiological salt solution, the dilution being 2 parts of blood to 1 part of the solution. The blood thus obtained was examined by Dr. W. Parry Morgan, city and county bacteriologist, and the parasites in it found to belong to the species *Hæmamœba vivax* (*Plasmodium vivax*).

One patient was immediately inoculated with the diluted malarial blood, the others being inoculated with blood obtained by venous puncture from a paralytic patient suffering from benign malaria.

Technique.

The technique is quite simple. Two c.cm. of blood were injected under the skin between the scapulæ, and a simple sterile dressing applied. The patient was allowed up, but the temperature was carefully recorded twice daily. The earliest case had an incubation period of eight days; the latest, and perchance the first case inoculated, had an incubation period of 21 days. A microscopic examination of the blood was made whenever a patient developed malaria to corroborate the diagnosis. When the first attack of malaria developed the patient was put to bed at once and isolated. The greatest care was taken to keep the ward free from mosquitoes. The quinine tolerance of the patients was previously ascertained, and in one case the patient refused to take quinine on account of its bitter taste. Euquinine (quinine ethylcarbonate) in 5-grain doses twice daily was substituted for quinine sulphate on account of its freedom from taste. The powder was given in milk.

In the other cases, where the malaria ran an uninterrupted course, we followed the advice of Prof. Pilcz, and after ten attacks checked it; during the first three days by 0·5 g. of quinine twice daily, and then once daily for two weeks. At the same time, a course of neosalvarsan was given intravenously once a week, commencing with 0·3 g. and working up to 0·6 g. One case developed marked jaundice, and another hyperpyrexia with exhaustion. The splenic enlargement was easily reduced by the quinine treatment. There were no deaths amongst the inoculated patients. During the attacks hallucinations and persecutory ideas were manifest in some cases.

Case Records.

The following is a brief description of each case:—

CASE 1.—Duration of disease about 12 months.

Before inoculation patient was exalted and deluded; had very frequent hysterical attacks, during which he became very restless and noisy; it took several nurses to keep him in bed; speech slurred; memory impaired; fibrillar tremor of the tongue; pupils equal, reacted very sluggishly to light. W.R. strongly positive in blood and cerebro-spinal fluid.

Incubation period, 21 days; number of rigors, 10.

Present Condition.—Patient tolerated treatment well, but refused to take quinine. Euquinine had to be given. Physical improvement marked; mental improvement slight. No hysterical attacks since treatment.

CASE 2.—Duration of disease about 12 months.

Before treatment patient very depressed, deluded, and took no interest in his surroundings; occasionally refused food; speech slightly slurred; memory fair; fibrillar tremor of tongue; pupils unequal and fixed. W.R. negative in serum; strongly positive in cerebro-spinal fluid..

Incubation period, 8 days; number of rigors, 10.

During treatment patient was very deluded and hallucinated; after the eighth rigor he became markedly jaundiced, and this lasted until the commencement of quinine treatment.

After treatment patient gradually improved in health and mind; was able to be employed on the gardens until his discharge from the hospital; at the time of discharge he was in good health and quite rational.

CASE 3.—Duration of disease, two years (malaria before admission; Panama before the war, Mesopotamia 1917).

Patient was admitted in June, 1922. He was very confused, entirely disorientated, deluded. Pupils reacted to light; speech not slurred; W.R. negative in blood, positive in cerebro-spinal fluid; cells, 17 per c.mm. Patient's mental condition gradually improved, and he was discharged on Nov. 20th, 1922.

Readmitted on May 20th, 1923: Very boisterous and grandiose, restless and exalted; memory poor; fibrillar tremor of tongue; speech slurred; pupils reacted to light. W.R. strongly positive in blood and cerebro-spinal fluid.

Incubation Period.—Patient did not react to two inoculations at 20 days' interval.

Present State.—Patient is in fairly good health, and in a slight remission.

CASE 4.—Duration of disease, four years.

Before inoculation patient was very exalted and deluded on admission; had ideas of grandeur; memory impaired; pupils reacted sluggishly to light; gait unsteady; speech slurred. W.R. positive in blood and cerebro-spinal fluid.

At the time of inoculation patient was in fairly good physical health, and in a mild remission.

Incubation period, 10 days; number of rigors, 10.

Present State.—Patient tolerated treatment well; was very deluded during treatment; remains deluded and demented; general health improved.

CASE 5.—Duration of disease, five years.

Before Inoculation.—Patient demented and deluded; speech slurred; memory poor; pupils fixed; fibrillar tremor of tongue; health fair. W.R. strongly positive in blood and cerebro-spinal fluid.

Incubation period, 12 days; number of rigors, 1.

Remarks.—Patient became extremely ill during first attack of malaria; temp., 107° F.; very restless, with signs of exhaustion; tepid sponging failed to reduce temperature; an intramuscular injection of 1 gr. of quinine acid hydrobromide was given, and repeated in three hours; temp. gradually became normal, but physical condition of patient did not allow continuance of malaria treatment.

Present State.—Patient's mental condition became worse for a time, but gradually improved; at present patient is demented; his physical condition is fair.

CASE 6.—Duration of disease, two years.

Before Inoculation.—Patient wildly excited and exalted; incoherent; speech slurred; pupils react sluggishly to light; tongue tremulous; gait unsteady; health indifferent. W.R. strongly positive in cerebro-spinal fluid.

Incubation period, 12 days; number of rigors, 10 (not very marked).

Present State.—Patient tolerated treatment well; physical condition improved; gait much more steady; no change in mental condition.

CASE 7.—Duration of disease, 15 months.

Before Inoculation.—Patient deluded and hallucinated; speech tremulous and slurred; memory poor; gait very unsteady; hypertonicity of the whole nervous system; blindness of left eye; right eye fixed; feeble physically. W.R. strongly positive in blood and cerebro-spinal fluid.

Incubation period, 13 days; number of rigors, 10.

During treatment patient was very deluded and hallucinated; ideas of persecution marked.

Present Condition.—Patient tolerated treatment well; gradually improved physically and mentally; at present usefully employed; mental condition good; still under observation at the hospital.

CASE 8.—Duration of disease, 15 months.

Before Inoculation.—Patient was in mild remission five months; speech not slurred; gait steady; health fair; employed in the ward; pupils reacted to light and accommodation. W.R. strongly positive in blood and cerebro-spinal fluid. Since May, 1923, when patient had a series of seizures, he became very confused; speech was slurred; gait unsteady; restless by day and night; frequent seizures; health fair.

Incubation period, 8 days.

Present Condition.—Patient had no rigors; blood did not show malaria parasites; for 12 days temp. raised to 101° F.; tolerated quinine; temp. became normal, but patient became very anæmic; mental condition became worse; bedridden.

General Results (One and a Half Years after Treatment).

Of the eight cases inoculated: (*a*) Two are in a state of complete remission; one has been discharged from the hospital; the other, who is still under observation, has regained his full power to work, and is quite rational. (*b*) In two cases the improvement in the physical condition of patients is marked, and in one there is a slight mental improvement. (*c*) Two cases have not reacted well to the malarial treatment, and their mental and physical conditions remain stationary. (*d*) In one case it was found necessary to terminate the treatment during the first rigor, as the patient was becoming exhausted. (*e*) In one case repeated inoculations with malaria were unsuccessful.

Conclusions.

1. The treatment of general paralysis with benign tertian malaria is justified; the technique is simple; the fever can be easily and quickly controlled by quinine. No malaria relapses have occurred.
2. The more recent the case, the better the prognosis; but even late cases improved physically.
3. The remissions are more marked than in untreated cases.
4. An attack of malaria appears to produce immunity to artificial inoculation.
5. Arsenical medication used in any chemical combination only has failed in the treatment of general paralysis of the insane.
6. The Wassermann reaction in the blood and cerebro-spinal fluid, the Ross Jones and Weichbrodt reactions in the latter, remained unchanged. Neither are the cell-contents of the cerebro-spinal fluid influenced by the production of malaria.
7. Even in cases of complete remission some physical signs of general paralysis of the insane remain—e.g., Argyll Robertson pupil; greasy complexion; exaggerated reflexes.

I beg to thank Dr. E. Goodall, medical superintendent, for permission to publish this article.

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MILK-BORNE EPIDEMICS.

BY F. W. C. BROWN, M.D., D.P.H. ABERD.,
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MILK-BORNE epidemics of infectious disease, although, fortunately, not very frequent, are events which the existing laws of public health have not been adequate to abolish from our records. The possibility of any of the commoner infectious diseases being spread in a locality through such an essential food as milk, which in great part is taken into the alimentary system in the uncooked state, will always be a source of danger under existing powers. There can be little doubt that milk is the one medium from which we must expect most danger as an infection-carrying agency, being as it is of all food substances the best fitted for the multiplication of pathogenic and non-pathogenic organisms.

The main questions which arise when any milk-producing source is suspected of being responsible for widespread sudden outbursts of infectious diseases are: first, how to determine by absolute proof that the milk is the source of infection, and, secondly, how the public health official is to act in order to put an end to that source. The question of absolute proof largely depends upon the bacteriologist in the case of those diseases for which a specific organism has been found associated—e.g., typhoid fever. Unfortunately, however, in the case of scarlet fever and some others, we cannot look for any assistance from a bacteriological report. We must gather what evidence is available from such factors as the suddenness or otherwise of the epidemic, and other active causes which are common knowledge and usually quoted by text-books on the subject.

Regarding the greater of the two questions, how is the official to act? The difficulties can be fully appreciated only by investigating an actual case, such as a newly-appointed official experiences when scarlet fever is the disease to be dealt with in a district where the Infectious Disease Prevention Act of 1890 has not been adopted by the local authority concerned. Let us assume, however, that action under this adoptive Act can be taken in the majority of cases. The question of prompt action must be fully appreciated in order to deal not only with an epidemic which is proved to be milk-borne, but with one which is only suspected of being so.

The medical officer probably has his suspicions aroused by the receipt of numerous notifications of a particular disease from the medical practitioners in his district, which on further inquiry show a common milk-supply; possibly one case is located at the farm supplying that milk. Steps may be, or certainly should be, taken to remove the case at the farm forthwith, but the transmission to the milk of the infection also requires serious and prompt consideration to be of any avail. The existing powers held under Section 4 of the I.D.P.A., 1890, give powers to prohibit sale of that milk, but any possible action can only be comparatively slow in comparison with the rapid dissemination of an infective organism. Furthermore, in dealing with a case in which no help towards proof of the milk being infected can be obtained by bacteriology (as with scarlet fever), the action of preventing the sale of the milk may lead to the question of proof in a court of law, should the milk vendor consider it worth his while to so proceed.

It would appear to be time to revise the powers of dealing more promptly and more adequately with this problem.

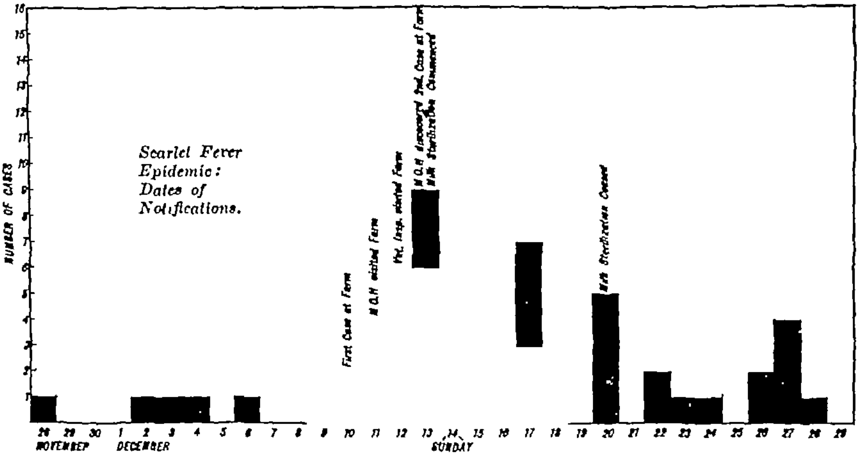
The Scarlet Fever Epidemic in Heywood in 1924.

The occurrence of an epidemic of scarlet fever in the borough of Heywood, Lancs, in December, 1924, revealed the necessity for prompt and hitherto untried methods of action. The facts which led up to the action taken by the writer may be quoted in the first instance.

Scarlet fever had not been in evidence to any abnormal extent until Dec. 10th, when the occurrence of a case at a farm supplying 180 quarts of milk daily was reported. During the following seven days 49 cases of scarlet fever were notified, the great majority of which had been receiving milk from that farm. The writer located the source of the infection at the farm, and, on visiting there, diagnosed a further case in the farmer's household. Both cases were forthwith removed to hospital and the usual disinfection carried out. Observations at the farm led to the belief that the case had ample chance of coming in contact with the milk stored in the dairy, which was not detached from the main building. The occupants of the household passed through the dairy in order to enter and leave the house. The case discovered was that of a child who was, in fact, seen to be playing with toys in and about the milk store.

Prompt action was deemed essential. To take steps under Section 4 of the I.D.P.A., 1890, would have entailed some days' delay, and one was met with the farmer's request that the milk be analysed.

It had been the writer's endeavour during 1920 to carry out laboratory experiments on a large scale on the exposure of certain pathogenic organisms in milk to varying temperatures, in order to further the knowledge necessary for rendering milk free from infection by pasteurisation methods. The results obtained were recorded in THE LANCET of August 18th, 1923, the most important conclusion arrived at being that *B. tuberculosis* in milk was rendered harmless to guinea-pigs when the infected milk had been exposed to a temperature of 60° C. for 20 minutes. During these experiments the thermal death-points of numerous other pathogenic organisms were noted, and in no case did any one of these survive this exposure to 60° C. Laboratory experiments, to be firmly established, require confirmatory tests to be carried out in practice in order fully to prove their value to the general public health. The above-mentioned epidemic therefore would appear to be a case for obtaining further proof of the actual value of pasteurisation methods; and although scarlet fever is not one of the diseases to which we can assign a specific micro-organism, yet the writer assumed that the causal organism would not be more resistant to heat than *B. tuberculosis*.



Steps were thereupon taken to carry out pasteurisation of all the milk produced at the farm in question without delay. On my suggesting to the farmer that an attempt might be made to "sterilise" the milk in order not to have his livelihood damaged for a week or two at least by prohibiting its sale, it was agreed to treat the milk by using what apparatus was available for this purpose at the farm. The apparatus consisted of an iron household wash-boiler with furnace below, several five-gallon milk-pails, and an all-glass thermometer.

The method adopted was that, with the boiler containing water kept at boiling point by the furnace, each pail was immersed in the extemporised water-bath and kept there until the temperature of the milk reached 65° C. The period required for the milk to reach this temperature was approximately 20 minutes. The pail was thereupon removed from the water-bath to make way for the next, and was then allowed to remain for 20 minutes in a warm situation. (It was found that by raising the temperature of the milk to 65° C. while in the water-bath, at the end of 20 minutes after removal the temperature had not fallen below the required 60° C.) The pail was then immersed in a trough of running cold water to reduce the temperature as much as possible before being transferred to the milk store ready for sale. In this way a continuous succession of pails were treated, and provided the furnace was fed, no hitch in the operations could occur.

The treatment of the milk was commenced on the day on which the second case of fever at the farm was diagnosed, and was carried out under supervision of the public health staff for the following seven days. By reference to the graph it will be seen that, by allowing an average of three days' incubation period following the first day of this improvised method of pasteurisation, a rapid diminution in the number of cases occurred. That a sudden fall to zero is not recorded does not disprove the beneficial effect of the pasteurisation. Many of the cases occurring from then onwards were traced to contact with the earliest cases, and consequently arose not directly (although probably indirectly) from the period during which the milk was the infective agent.

Suggestions for Similar Cases.

The experience gained by this epidemic would therefore, in the writer's opinion, seem to point to the usefulness of pasteurisation in dealing with a case in which action more stringent but perhaps more difficult to administer is contemplated.

To consider the better of the two feasible courses of action—e.g., (*a*) Section 4 of the I.D.P.A., 1890, and (*b*) pasteurisation—one must view the problem from a wide standpoint Any action under (*a*) entails delay through the red tape required by the wording of Section 4; and delay in preventing perhaps 600–1000 persons from consuming even one day's supply of infected milk is a serious consideration. Furthermore, when these powers become operative, the withholding of milk to such a large section of the community without due warning and preparation for their needs is an item requiring thought, especially where infants are concerned. On the other hand, by pasteurisation methods no delay need occur, no inconvenience to the community is entailed, and no hardships are imposed upon the conscientious farmer who may not be altogether to blame for having his milk-supply contaminated through channels difficult to discover. The question of apparatus need not be given much thought, as it is rare not to find in any farmhouse a wash-boiler the dimensions of which are sufficient to allow the immersion of the usual five-gallon pails used in dairy farms.

Clinical and Laboratory Notes.

STRANGULATED OBTURATOR HERNIA; LAPAROTOMY; RECOVERY.

BY WILSON TYSON, M.D.CAMB., F.R.C.S. EDIN.,
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THE rarity of this condition is sufficient excuse for recording a case which I saw recently in consultation with Dr. W. Hotson Palmer, to whom I am indebted for the clinical history.

Mrs. S., 49, a pale, thin woman, whose health had been indifferent for several months, and who had become noticeably thinner, was seen on August 14th, two days after a journey, because of vomiting and slight abdominal pain. She stated that lately she suffered from bilious attacks once or twice a month and was constipated. No abdominal distension and no rigidity; slight general tenderness. On August 20th condition appeared to have improved, and she sat up for several hours. On August 22nd condition obviously worse; facial expression distressed. Severe abdominal pain. No action of bowels after enema, though flatus was passed. Vomiting at intervals. Seen in consultation at 5 P.M. Temperature, 100° F.; pulse, 120. Abdomen considerably distended and tender on palpation. Well-marked ladder-pattern peristalsis. No swelling in femoral or inguinal regions. Rectal and vaginal examination negative. A diagnosis of intestinal obstruction was made, and an operation was performed the same evening, Dr. Palmer kindly acting as anæsthetist.

Operation.—A right paramedian incision beginning just above the level of the umbilicus. On opening the peritoneal cavity some clear fluid escaped. The cæcum was not distended, the ordinary hernial sites were explored without result, but a distended coil of small intestine was found fixed, and on being traced down was felt to be attached to the anterior wall of the pelvis. The abdominal incision was lengthened in a downward direction and a good view obtained, when it was found that a coil of small intestine was strangulated in the obturator foramen on the right side; beyond this point the intestine was collapsed. The rest of the bowel was carefully packed off and a gentle but unsuccessful attempt was made to withdraw the strangulated bowel from the foramen. A herniotomy knife was then introduced, and the membrane notched in a downward direction. Further enlargement was obtained by working the tip of the little finger into the aperture and stretching it. Gentle traction on the bowel resulted in reduction of the hernia. There was a well-marked ring of constriction round the bowel at the site of strangulation, but it appeared viable, and on milking the contents from the distended to the collapsed bowel its colour improved. The hernial aperture was closed with two 30-day catgut mattress sutures, the abdomen closed, and the patient put back to bed with the pelvis slightly raised so as to diminish the possibility of anything adhering to the recently sutured area.

Convalescence was uneventful. The duration of the illness previous to operation was ten days; the actual strangulation can only have been of short duration, as evidenced by the viable condition of the bowel.

Ætiology and Pathology.

Obturator hernia is most frequently met with in women who have been losing fat. Out of 63 cases collected by Macready,[1] 59 were in women, whilst of 73 cases collected by Pimbet,[2] 65 occurred in women. According to Treves[1] the average age is about 60. Hutchinson[3] states that only five cases of strangulated obturator hernia occurred at the London Hospital in 20 years, whilst Rendle Short[4] reports that only one case was met with in 25 years at the Bristol Royal Infirmary.

An obturator hernia follows the obturator vessels and nerve through the upper and outer part of the obturator foramen, and pushes before it the peritoneum, subperitoneal fat, and pelvic fascia. According to Hutchinson[3] it presents three varieties: (1) It may come through above the membrane and obturator externus, being covered by the pectineus and adductor brevis; (2) it may project into the substance of the obturator externus; (3) it may pass through a gap in the muscle itself. *Relation of vessels and nerve* is not constant. Hutchinson[3] states that the vessels, as a rule, are below and to the outer side of the sac. Rendle Short[4] says cases have occurred in which the artery formed a circle round the neck of the sac. The nerve is generally to the outer side.

Contents of Sac.—The hernia may be preceded by a lipoma, as in a femoral hernia. The sac is usually small, and you may get a Richter's hernia of the small intestine (here the signs of obstruction may not be complete, flatus and even fæces passing). Occasionally by steady enlargement and stretching the sac may contain viscera of considerable size—e.g., the uterus and appendages—a protrusion from the bladder or the vermiform appendix may be present. It may occur in conjunction with a femoral hernia on the same side or it may be bilateral.

Signs, Symptoms, and Diagnosis.

A globular swelling, which may give an impulse on coughing, may be present under the pectineus; it is less mobile than a femoral hernia, has no palpable neck, and occupies a position rather more internal. The thigh may be flexed in order to relax the pectineus, whilst attempts to produce extension cause severe pain; adduction is resisted, as this movement tends to squeeze the hernia against the obturator externus.[5] Symptoms of pressure on obturator nerve: (*a*) Shooting or fixed pain referred to the inner side of the knee, perhaps even towards the foot; (*b*) flexion of hip; (*c*) weakness or spasm of adductors; (*d*) impaired sensation in terminal cutaneous branches of the nerve.

H. W. Marshall[6] records a case of associated pain in the knee and penis.

Vaginal examination allows of palpation of the pelvic aspect of the obturator foramen and may assist in diagnosis. Unless there is a visible swelling in the upper and inner part of the thigh, the condition is rarely diagnosed before death or operation for intestinal obstruction.

Prognosis.

The mortality is high. Treves[1] says that when strangulation occurs the death-rate is nearly 90 per cent. Hutchinson[7] says that of the five cases operated on at the London Hospital, there was one recovery. Firth, quoted by Hutchinson, states that five cases were saved out of 25, whilst Auerbach gives 11 recoveries out of 25 cases. Probably with modern operative methods and less reluctance to submit to operation the percentage of recoveries will be greatly increased.

Treatment.

There are three methods of approach: (1) Abdominal, (2) femoral, (3) combined abdominal and femoral. Opinion has come round in favour of the abdominal route, and in the performance of this operation the following points may be noted. A powerful illumination and the Trendelenburg position are of great assistance. It is easy to close the canal by a purse-string or by mattress sutures, as the peritoneum is loose at this site. For this reason, as Rendle Short[4] points out, another sac may form; to avoid this, he resected a piece of rib cartilage and inserted it into the canal, drawing the peritoneum over it by a purse-string suture. A lateral incision with the herniotomy knife should be avoided on account of the vessels. If the hernial sac contained firmly adherent intestine or omentum, it might be necessary to combine laparotomy with exploration from the thigh. The risk of recurrence after operation has already been mentioned, and Van Zwalenburg[8] records a case of fatal recurrence six years after operation for radical cure.

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1. Treves's System of Surgery, ii., 735.
2. Erichsen's Surgery, ii., 888.
3. Hutchinson: Hernia, p. 165.
4. Brit. Med. Jour., 1923, i., 718.
5. Beesley and Johnson, p. 411.
6. Boston Med. and Surg. Jour., Sept. 18th, 1919.
7. Hutchinson: Hernia, p. 170.
8. Surgery, Gynecol., and Obstetrics, October, 1921.

A CASE OF THROMBO-ANGIITIS OBLITERANS OF TWENTY-TWO YEARS' DURATION.*

BY F. PARKES WEBER, M.D. CAMB., F.R.C.P. LOND.,
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THE patient to whom this note refers was shown by me at the Clinical Section of the Royal Society of Medicine on Dec. 13th, 1907,[1] and was described in detail in THE LANCET for Jan. 18th, 1908, under the heading Arteritis Obliterans of the Lower Extremity, with Intermittent Claudication ("Angina Cruris").[2] It was not till later in 1908 that Leo Buerger of New York[3] introduced the term "thrombo-angiitis obliterans"—the term that is now generally used for this kind of arterial disease.

M. M., a Russian Jew, aged 60 years, who came to England at the age of 25, was seen by me first in May, 1906. The symptoms had commenced gradually in 1902 or 1903 at the age of 38, with pain in the left foot on walking, of the nature of intermittent claudication. The disease progressed by exacerbations from time to time, but there were prolonged periods of quiescence, with remission or absence of pain. In 1916[4] both lower extremities showed typical erythromelalgia-like symptoms, as well as intermittent claudication and absence of pulsation in the dorsalis pedis arteries. No amputation had been performed, although the patient had passed through periods of very painful ischæmic ulceration, when gangrene seemed imminent. During one of these periods the pain, especially at night, which had commenced with slight ischæmic ulceration in one foot, lasted so long, in spite of treatment and rest in bed, that my house physician could not understand why the patient did not demand amputation as the only possible remedy. The case had been furthermore complicated from time to time (1909, 1910, 1914, 1915, 1916) with multiple foci of superficial (sometimes "nodular") phlebitis, such as has been often observed in other cases, notably in many of those described by Leo Buerger.[5]

In 1915 the patient developed a tender localised swelling in the position of the radial artery at the right wrist. Subsidence of this swelling was accompanied by apparent obliteration of the arterial channel, as evidenced by loss of pulsation. The swelling in question was seemingly due to thrombo-arteritis, and clinically analogous to the swellings which occur in nodular thrombo-phlebitis of superficial veins.

Of late the thrombo-angiitis in this case has been non-progressive, but in May, 1924, the patient was temporarily in hospital for what I regarded as a mild attack of gout at the base of both big toes. I found then to my astonishment that there was again fairly good pulsation in the left radial artery at the wrist.[6] With small doses of sodium salicylate and sodium bicarbonate the gout soon subsided, but there were also signs of chronic interstitial nephritis with high blood pressure. The urine contained a little albumin and a few granular tube-casts. The brachial systolic blood pressure was on the left (apparently sound) side 192 mm. Hg; and on the right side it was 185 mm. Hg. The painful intermittent claudication had compelled the patient to follow a sedentary mode of life which was doubtless associated with relative excess of food, and this combination had probably favoured the onset of gout and chronic interstitial nephritis. When I saw him again in March, 1925, he complained of vertigo. The urine contained a little albumin and a few hyaline and granular tube-casts. The brachial systolic blood pressure on the left side was 210 mm. Hg. It should be stated that the blood pressure in each arm had formerly (1907) been 185 mm. Hg. He still has typical intermittent claudication of both lower extremities. There is a curious network of dilated superficial venules on the back of both feet.

Family History.—The family history in the present case is remarkable. A son, aged 20, and a daughter, aged 18, both died in 1920 with diabetes mellitus. Another son formerly suffered from bronchitis and asthma. Another son, S. M., now aged 32, has been known to me since July, 1911. He formerly had a slightly enlarged spleen and used to suffer from recurrent attacks of headache and vomiting. A daughter (N. M.), of that son (S. M.), when she was 12 months old (1922), suffered from typical recurrent attacks of Raynaud's syndrome.[7] Her Wassermann reaction and the Wassermann of her father (S. M.) were negative.

The Wassermann of the present patient (the grandfather, M. M.) was examined on various occasions and was always found to be negative. Sugar was never found in his urine. There has been no evidence of saturnism. He used to be a rather free smoker of cigarettes, like nearly all patients affected with thrombo-arteritis obliterans, a disease which in London as well as in New York is found to be almost exclusively confined to Hebrews of the male sex, who themselves or whose parents have immigrated from Central Europe. Only four out of 500 cases collected by *Leo Buerger did not belong to the Semitic race.*[8]

I would add that at the German Hospital during the last two years a leg has been amputated in two bad cases (both Hebrew men) of thrombo-angiitis obliterans. In one of these cases, M. G. L., aged 48,[9] microscopic examination of the anterior tibial artery and the surrounding tissue in the amputated lower portion of the (left) leg showed a very remarkable perivascular and perineural inflammatory cell-infiltration. For this finding I am indebted to Sir Frederick Andrewes, who very kindly sent me a report of the microscopic examination. He agreed with me that this cell-infiltration might perhaps represent an ascending perivascular lymphatic inflammation, which had travelled up from a septic inflammatory focus in the foot. It certainly reminds me of the fibrotic "matting" around the vessels (due to old chronic perivascular changes),[5] described by Leo Buerger as having been found in some of his cases.[10]

References.

1. F. Parkes Weber; Proc. Roy. Soc. Med., Clin. Sect., 1907–08, i., 44.
2. Same author: THE LANCET, 1908, i., 152.
3. Leo Buerger: Thrombo-angiitis Obliterans—a Study of the Vascular Lesions leading to Presenile Spontaneous Gangrene, Amer. Jour. Med. Sci., Philadelphia, 1908, cxxxvi., 567.
4. See the article by F. Parkes Weber on Thrombo-angiitis Obliterans or Non-syphilitic Arteritis Obliterans of Hebrews, Quart. Jour. Med., Oxford, 1916, ix., 289.
5. Leo Buerger: The Circulatory Disturbances of the Extremities, 1924, p. 317 and elsewhere.
6. F. Parkes Weber: Return of Pulsation in Thrombo-angiitis Obliterans, Brit. Med. Jour., 1924, ii., 62.
7. Same author: Raynaud's Syndrome in a Non-syphilitic Infant, with a Remarkable Family History, Brit. Jour. Child. Dis., 1923, xx., 25. Since 1922 the child has been quite free from Raynaud's disease.
8. Leo Buerger: Op. cit., p. 277. See, however, E. D. Telford and J. S. B. Stopford: Thrombo-angiitis Obliterans, Brit. Med. Jour., 1924, ii, 1035.
9. The history of this patient had been previously recorded by Dr. Geoffrey Evans, Proc. Roy. Soc. Med., Clin. Sect., 1923, xvi., 12.
10. Leo Buerger: Op. cit., p. 320. He writes that during the stage of organisation or healing there is a development of fibrotic tissue in the adventitia, that binds together the artery, vein, and nerves.

MESSRS. J. and A. Churchill announce the early appearance of a new edition, with eight new coloured plates, of "Medical Ophthalmology," by Mr. R. Foster Moore, F.R.C.S.; a second edition of "Recent Advances in Medicine," by Dr. G. E. Beaumont and Prof. E. C. Dodds; and a new work entitled "The Diabetic Life: Its Control by Diet and Insulin," by Dr. R. D. Lawrence, chemical pathologist to King's College Hospital.

REMOVAL OF BETHLEM HOSPITAL.—The House of Lords passed the second reading of the Bethlem Hospital Bill, which provides for the removal of the hospital from its present site in the borough of Southwark to the Monks Orchard Estate at Addington in Surrey and Beckenham and West Wickham in Kent, and for the disposal of the existing buildings and convalescent home. Lord Southwark, having expressed a hope that the site might be preserved as an open space, Lord Burnham pointed out that if it was needed for public purposes a commercial price would have to be paid for it, otherwise provision for the insane would suffer. The London County Council have since decided to petition against the Bill on the ground that the utilisation of the site ought to be the subject of a scheme approved by the Minister of Health. It is urged that the land is needed for housing, recreative and educational purposes, and that the Bill in effect repeals a clause in the Bethlem Hospital Act of 1901 forbidding the letting of the site for a term of years "for building or for any other purposes."

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* Case shown at the Clinical Section, Royal Society of Medicine, May 8th, 1925.

Reviews and Notices of Books.

THE STOMACH AND UPPER ALIMENTARY CANAL IN HEALTH AND DISEASE.

By T. IZOD BENNETT, M.D. Lond., M.R.C.P., Assistant Physician to the Middlesex Hospital; Physician to the Royal National Orthopædic Hospital. London: William Heinemann. 1925. Pp. 344. 21*s*.

IN his preface the author justly alludes to the scarcity of modern books by English authors dealing with the disorders of the upper alimentary tract. And yet from his references to the literature (which includes some valuable contributions of his own) it is clear that the study of these disorders suffers no neglect in this country. The difficulty of presenting so vast a subject in a form which shall be both clear and comprehensive, and which shall embody the essentials of modern physiological and pathological teaching, has presumably acted as a deterrent to others. This difficulty the author has attempted, with no small measure of success, to overcome. He has brought to bear on the clinical problems of digestion a wealth of physiological experience, and by his familiarity with the work of his dental, radiological, and surgical colleagues, and with the needs of the student, he has avoided the imputation of producing a book of too specialist a character.

The chapters dealing with the stomach give a concise and clearly reasoned account of the present position of our knowledge of the pathology of peptic ulcer; of the disorders of gastric function dependent on organic disease; of the early diagnosis of carcinoma ventriculi; and of the scope of radiography, gastric analysis, and other laboratory investigations. Dr. Bennett is an advocate of the fractional test-meal, and his researches with the method lend authority to all his statements on gastric chemistry. A full description is given of the Sippy treatment of gastric ulcer, and while many will hold that equally good results may be obtained by less elaborate measures and that the treatment is not always well tolerated, the author claims to have employed it with satisfactory results. An account of the toxic alkalosis, which may occur in cases with commencing pyloric stenosis or renal inadequacy, should perhaps have been included. The list of indications for surgery in gastric and duodenal ulcer is most reasonable, and should give guidance to the general practitioner, whose difficulties have been increased of late by recurring disputes concerning the respective merits of surgical and medical treatment. The author asks us to hold him responsible for the opinions expressed in the book, but his general outlook is so sane and well in accord with current teaching that there is small room for disagreement. We think, however, that he somewhat over-emphasises the rarity of chronic gastritis, for is not this condition present in the majority of alcoholics, in many patients with bad pyorrhœa, and in all cases of acne rosacea? On the other hand, undue prominence is given to gastric syphilis, of which the proved cases are few.

The later chapters on diseases of the gall-bladder, liver, and pancreas contain some interesting views, especially in regard to paths of infection, and include reference to the work of Meltzer and Lyon and the indications for duodenal intubation, together with some helpful remarks on treatment. The earlier chapters, with the important exception of dental sepsis, add little to the accounts of the diseases of the mouth, pharynx, and œsophagus to be found in many of the modern text-books of general medicine.

If there is one major criticism of the book it is in relation to the poverty of its clinical description. Although the author is careful to insist on the importance of the interrogative and clinical overhaul, subjective symptoms—upon the interpretation of which all diagnosis of alimentary disease must in the first instance be based—receive too scant a reference. While it is essential that the student and practitioner should have an understanding of laboratory method and that they should appreciate its uses and limitations, it is equally essential that they should become more rather than less familiar with the early subjective and objective evidence of disease as seen at the bedside or in the consulting-room. A clearer statement of the indications for a "complete investigation," after the manner of the "indications for surgery," would enhance the utility of the book. The literary presentation and general arrangement of the volume is excellent; the illustrations (with the exception of the rather indistinct radiogram facing p. 181) and the diagrams are good; and there is a useful bibliography at the end of each chapter.

The book has no English competitor at the present time, and well-earned success may be anticipated for the volume, which will require subsequent issues to keep pace with our developing knowledge.

Diagnostik und Therapie der Magenkrankheiten.

Eighth and ninth editions. By Prof. Dr. I. BOAS, Berlin. Leipzig: G. Thieme. 1925. Pp. 817. R.M.42.

THE practitioner who has little German will probably hesitate before attempting to ingest the contents of this apparently verbose and weighty tome; but if he persists he will be amply rewarded for his effort. This text-book has long been a standard German work on diseases of the stomach, and it has been considerably enlarged and to some extent rearranged. The first half is devoted to general examination and methods of treatment; under the latter the author recommends the dry expression of the stomach contents in certain cases. In the second half some 450 pages are devoted to special diseases of the stomach. The book is well illustrated, and includes some rather intriguing coloured charts, which demonstrate the chemical contents of the more common foodstuffs and beverages; under the latter seven kinds of beer are analysed.

DIETETICS.

1. *Food and the Family.* By V. H. MOTTRAM, M.A., late Fellow of Trinity College, Cambridge; Professor of Physiology in the University of London. London: Nisbet and Co., Ltd. 1925. Pp. 240. 5*s*.

2. *Food Values.* What They Are and How to Calculate Them. Third edition. By MARGARET MCKILLOP, M.A., M.B.E., Fellow of King's College for Women, London. London: George Routledge and Sons, Ltd. 1925. Pp. 152. 3*s*. 6*d*.

3. *Diet in Health and Disease.* Sixth edition. By JULIUS FRIEDENWALD, M.D., Professor of Gastro-Enterology, and JOHN RUHRAH, M.D., Professor of Diseases of Children, University of Maryland School of Medicine, Baltimore. London and Philadelphia: W. B. Saunders Company. 1925. Pp. 987. 37*s*. 6*d*.

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Fresh herrings head the list for the cheapest way of obtaining a daily animal protein ration for only 2¾*d.*, and a subsistence diet of over 3000 calories can be obtained from fresh herrings, oatmeal, and cabbage, which costs only 5¾*d.* a day and yet contains all the physiological requisites! This rock-bottom diet serves as a background for criticism of food in general. The egg as a cheap food is exploded completely, for it appears that eggs are dearer than any other given food for proteins and dearer than most familiar foods except cod and sole for calories, while the vitamins contained in eggs can be obtained more cheaply in other ways. This is an example of how the subject is treated by one who seems to know as much about housekeeping as he does about physiology, and this is high praise. There are a few minor points which may be criticised. "Acidity" of the blood, even when the offending word is put between inverted commas (p. 80), is not a good term, and if "rarely met with outside the walls of a hospital" is never met with inside. To say that cod-liver oil will alter "the state of a child within a few hours from dullness and disinterest in food to playfulness and a good appetite" (p. 90) is surely exaggeration, and the statement that "all children brought up on dried milk need a teaspoonful or two of orange or tomato juice per day" (p. 100) is a little dangerous and vague in view of the fact that even this quantity will fail to prevent scurvy in some cases; in a book intended for the lay public the minimum should be set higher. We commend the book to all interested in the subject, and this is a very large section of the public.

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DIATHERMY IN GONOCOCCAL INFECTION.

Treatment of Gonococcal Infection by Diathermy. By E. P. CUMBERBATCH, M.A., B.M., B.Ch. Oxf., M.R.C.P., Medical Officer in Charge of the Electrical Department of St. Bartholomew's Hospital; and C. A. ROBINSON, M.B., B.Ch., D.M.R.E. *Camb.*, Medical Officer in Charge of Electrical Department, West Middlesex Hospital. London: Wm. Heinemann, Ltd. 1925. Pp. 150. 7*s.* 6*d.*

THIS admirable monograph records the results obtained by the writers in the treatment of gonococcal infection (with or without complications) by diathermy. The treatment is described in detail and the facts are presented so moderately as to leave no doubt in the mind of the unbiased that diathermy in the hands of careful experts has a wide field of usefulness in the treatment of these conditions. The authors very wisely do not claim absolute cure as inevitable after a course of treatment by diathermy, but their cases quoted—with clinical notes before and after treatment—are in almost every case highly satisfactory.

An appendix describes five cases of arthritis where the cervix uteri seemed to be the focus of infection, but where gonococcal infection was not proved by pathological tests; these cases showed gratifying improvement after application of diathermy to the urethra and cervix, and should stimulate practitioners who have patients suffering from arthritis to have a pelvic examination made in every case where the primary focus of infection has not been satisfactorily discovered.

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WE have here a sound guide to the chief operations of ophthalmic surgery. This book opens with two chapters for which house surgeons should be especially grateful: the first on surroundings and general preparation for eye operations, the second on instruments and their management. The operations described in the second part of the book are those which in the hands of the majority of experienced ophthalmologists procure the best results. Under the heading Cataract, linear extraction with a keratome and flap extraction with a Graefe knife, with or without iridectomy, are described in a way which should be really helpful, the numerous figures assisting much; the intracapsular methods—e.g., Smith's and Barraquer's—are only briefly referred to. Under Glaucoma the three main operations—the classical iridectomy and sclerectomy according to the two methods of Lagrange and Elliot—are fully described; less important operations such as the cyclodialysis of Heine are also referred to and figured.

The multiplication of methods described for lid operations in text-books is apt to be confusing to the student, especially the various operations for entropion and ectropion and for ptosis. The procedures detailed in this book are well chosen, but may need supplementing for exceptional cases. The operation for extirpation of the lacrymal sac is so important that it might have been given a rather fuller exposition, especially with regard to the normal anatomy of the lacrymal canal, and we miss any reference to the alternative (intranasal) methods of dealing with dacryocystitis.

The large number of illustrations help to make the descriptions intelligible. On the whole, this is one of the best books on the subject that has reached us.

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THIS little book on the nursing of consumption is full of useful obiter dicta, common sense, and wit. There can be no doubt that sanatorium nursing taxes the patience of a nurse to the utmost; outside the sanatorium there is nothing but bucolic monotony, and inside there is a routine seldom, if ever, enlivened by that whiff of chloroform and gleam of the surgeon's knife which provide the thrills making surgical nursing so curiously popular. Dr. Walker has done a great service in describing sanatorium nursing in such a way that, though she does not invest it with an impossible halo, she introduces a certain amount of much-needed colour into the picture.

Reviews and Notices of Books.

THE STOMACH AND UPPER ALIMENTARY CANAL IN HEALTH AND DISEASE.

By T. IZOD BENNETT, M.D. Lond., M.R.C.P., Assistant Physician to the Middlesex Hospital; Physician to the Royal National Orthopædic Hospital. London: William Heinemann. 1925. Pp. 344. 21s.

IN his preface the author justly alludes to the scarcity of modern books by English authors dealing with the disorders of the upper alimentary tract. And yet from his references to the literature (which includes some valuable contributions of his own) it is clear that the study of these disorders suffers no neglect in this country. The difficulty of presenting so vast a subject in a form which shall be both clear and comprehensive, and which shall embody the essentials of modern physiological and pathological teaching, has presumably acted as a deterrent to others. This difficulty the author has attempted, with no small measure of success, to overcome. He has brought to bear on the clinical problems of digestion a wealth of physiological experience, and by his familiarity with the work of his dental, radiological, and surgical colleagues, and with the needs of the student, he has avoided the imputation of producing a book of too specialist a character.

The chapters dealing with the stomach give a concise and clearly reasoned account of the present position of our knowledge of the pathology of peptic ulcer; of the disorders of gastric function dependent on organic disease; of the early diagnosis of carcinoma ventriculi; and of the scope of radiography, gastric analysis, and other laboratory investigations. Dr. Bennett is an advocate of the fractional test-meal, and his researches with the method lend authority to all his statements on gastric chemistry. A full description is given of the Sippy treatment of gastric ulcer, and while many will hold that equally good results may be obtained by less elaborate measures and that the treatment is not always well tolerated, the author claims to have employed it with satisfactory results. An account of the toxic alkalosis, which may occur in cases with commencing pyloric stenosis or renal inadequacy, should perhaps have been included. The list of indications for surgery in gastric and duodenal ulcer is most reasonable, and should give guidance to the general practitioner, whose difficulties have been increased of late by recurring disputes concerning the respective merits of surgical and medical treatment. The author asks us to hold him responsible for the opinions expressed in the book, but his general outlook is so sane and well in accord with current teaching that there is small room for disagreement. We think, however, that he somewhat over-emphasises the rarity of chronic gastritis, for is not this condition present in the majority of alcoholics, in many patients with bad pyorrhœa, and in all cases of acne rosacea? On the other hand, undue prominence is given to gastric syphilis, of which the proved cases are few.

The later chapters on diseases of the gall-bladder, liver, and pancreas contain some interesting views, especially in regard to paths of infection, and include reference to the work of Meltzer and Lyon and the indications for duodenal intubation, together with some helpful remarks on treatment. The earlier chapters, with the important exception of dental sepsis, add little to the accounts of the diseases of the mouth, pharynx, and œsophagus to be found in many of the modern text-books of general medicine.

If there is one major criticism of the book it is in relation to the poverty of its clinical description. Although the author is careful to insist on the importance of the interrogative and clinical overhaul. subjective symptoms—upon the interpretation of which all diagnosis of alimentary disease must in the first instance be based—receive too scant a reference. While it is essential that the student and practitioner should have an understanding of laboratory method and that they should appreciate its uses and limitations, it is equally essential that they should become more rather than less familiar with the early subjective and objective evidence of disease as seen at the bedside or in the consulting-room. A clearer statement of the indications for a "complete investigation," after the manner of the "indications for surgery," would enhance the utility of the book. The literary presentation and general arrangement of the volume is excellent; the illustrations (with the exception of the rather indistinct radiogram facing p. 181) and the diagrams are good; and there is a useful bibliography at the end of each chapter.

The book has no English competitor at the present time, and well-earned success may be anticipated for the volume, which will require subsequent issues to keep pace with our developing knowledge.

Diagnostik und Therapie der Magenkrankheiten. Eighth and ninth editions. By Prof. Dr. I. BOAS, Berlin. Leipzig: G. Thieme. 1925. Pp. 817. R.M.42.

THE practitioner who has little German will probably hesitate before attempting to ingest the contents of this apparently verbose and weighty tome; but if he persists he will be amply rewarded for his effort. This text-book has long been a standard German work on diseases of the stomach, and it has been considerably enlarged and to some extent rearranged. The first half is devoted to general examination and methods of treatment; under the latter the author recommends the dry expression of the stomach contents in certain cases. In the second half some 450 pages are devoted to special diseases of the stomach. The book is well illustrated, and includes some rather intriguing coloured charts, which demonstrate the chemical contents of the more common foodstuffs and beverages; under the latter seven kinds of beer are analysed.

DIETETICS.

1. *Food and the Family.* By V. H. MOTTRAM, M.A., late Fellow of Trinity College, Cambridge; Professor of Physiology in the University of London. London: Nisbet and Co., Ltd. 1925. Pp. 240. 5s.

2. *Food Values.* What They Are and How to Calculate Them. Third edition. By MARGARET MCKILLOP, M.A., M.B.E., Fellow of King's College for Women, London. London: George Routledge and Sons, Ltd. 1925. Pp. 152. 3s. 6d.

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MY MOORLAND PATIENTS.

By a Yorkshire Doctor. Edited by J. C. POWELL. London: John Murray. 1924. Pp. 242. 7*s.* 6*d.*

WE are glad to see that this book, the first edition of which was reviewed in our columns, is now issued in a cheaper edition, especially as the cheapness, so far as we can see, has not been put into the paper, the printing, or the illustrations. As a record of a state of manners and customs which are rapidly passing, or indeed have entirely disappeared, the volume is most valuable, and makes excellent reading. The "Yorkshire Doctor" was Dr. R. W. S. Bishop, who died in 1921.

EPSOM COLLEGE: THE ANNUAL MEETING.

THE annual meeting of the governors of Epsom College was held at the offices, 49, Bedford-square, London, W.C., on June 27th, when Dr. Raymond Crawfurd presided. The secretary read the names of the successful candidates as follows:—

"Christie," "Pugh," and Ordinary Pensionerships.

	Votes.		Votes.
*Baynes, Donald	4755	†Goulston, Arthur . ..	1428
†Ayres, Edith C.	2004	†Willis, Joseph D. . ..	1399
†Chatterton, Percy . ..	1468	‡Kennedy, Florence A..	1334
†Stephenson, Hilda ..	1440	‡Shaw, Annie C.	1124

* "Christie" Pensioner. † Ordinary Pensioners.
‡ "Pugh" Pensioners.

Foundation Scholarships.

	Votes.		Votes.
McClintock, John H. T..	10764	Ryle, Ian N...	6319
Lewthwaite, Christopher.	9800	Marsh, Thomas A. ..	6201
Emrys-Roberts, Hugh M.	9491	Sanderson, Paul B. ..	6026
Beck, Geoffrey A.	9025	Wolfenden, Henry C. L.	5668
Allen, Edward V. M. ..	8863	Farman, Henry C. ..	5095
Pinniger, John L.	8208	Kee, Eric M...	4821
Burgess, Christopher J. V.	6648		

Addressing the governors, the Chairman said that he hoped this would be a memorable year in the annals of the College and one pregnant of far-reaching results. Increased support from the profession and others had enabled the Council to face increased commitments in various directions. In their determination to attain the highest educational level, they had made substantial improvements in the pecuniary prospects of the masters. The year had seen the completion of the rebuilding of the chapel as a memorial to the masters and boys who fell in the war. The reconstructed chapel, a brick basilica of admirable internal proportions, now embodied worthily the spiritual aspirations of the College. A new chemical block, that had been thought and talked about for so many years, was now actually in hand, and had been made possible by several generous bequests that had come to hand. The vacated space would afford much-needed additional accommodation for class-rooms and lecture-room, and for an improved natural history museum. The Council were now in the position, by the munificence of a good benefactress, to carry out a complete transformation of the existing library, and to make it far more attractive and serviceable to the boys, and Dr. Crawfurd expressed the hope that similar help from some other quarter might be forthcoming towards the equipment of a museum, worthy of a school that supplies so many recruits to scientific professions; £500 would solve all difficulties in that direction. Another need of the College, that might well appeal to those of sporting instincts, was the levelling and extension of some parts of the playing fields, so that all the boys might play their games under more inspiriting conditions. The Bursar had secured an estimate for the work, which showed that it could be well done for £1500. These things were beyond the capacity of the normal revenue of the College; which this year was bearing the cost of an extensive substitution of electric light for gas, and which would almost at once have to provide better washing and drying facilities in the Lower School, and probably in the not distant future to undertake the centralisation of a scattered and wasteful system of heating and hot-water supply.

The Chairman concluded on a note of gratitude to all who had helped them; to their good subscribers, donors, and benefactors; to their organisation of local secretaries, which he wished to extend far more widely; to the great medical institutions, and the medical press. He also asked for special thanks to Mr. Gerald Stanley who had established at his own expense a scholarship giving free education at the College, and to Mr. Arthur Chudleigh, who had given to the chapel a silver-plated cross, six candlesticks, and vases for the altar, and an alms dish. He hoped that the generosity of all these might prove contagious in many quarters.

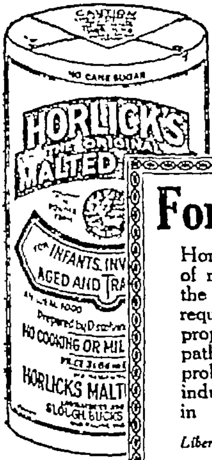
On the motion of the Chairman, the report of the income and expenditure account was adopted and the Council and officers for the year were elected or re-elected. On the motion of Dr. F. de Havilland Hall, seconded by Sir StClair Thomson, Dr. Crawfurd, who has worked so untiringly for the College and has collected over £1000 in subscriptions, was elected a Vice-President.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ANÆSTHETICS: PROVINCIAL MEETING.

A PROVINCIAL meeting of this Section was held on June 27th at Manchester, Mr. H. E. G. BOYLE, President, in the chair. The members were most hospitably entertained by their northern fellows, and after luncheon in the University Refectory adjourned to the lecture room and physiological laboratories.—Dr. H. P. FAIRLIE read a paper on Chloroform Anæsthesia, in which he deprecated the view that chloroform should never be used. It was, in his view, often the best anæsthetic, but only in the hands of those who were thoroughly experienced in its use. The fatigue caused to the patient by prolonged ether inhalation could often be averted by judicious employment of chloroform.—Dr. J. BLOMFIELD pointed out the difference between the two kinds of chloroform fatality, one avoidable and the other not, and agreed that when proper selection of anæsthetics for all cases was practised chloroform would often be chosen and used by the expert.—Dr. S. R. WILSON described the causation of ventricular fibrillation, and pointed out the fallacy of preliminary atropine if chloroform fatalities were ascribed to vagus inhibition.—Dr. W. J. MCCARDIE alluded to the advantages of mixture with varying proportions of chloroform.—Mr. G. RAMSEY PHILLIPS alluded to the arrangement for increasing concentration of chloroform into the Vernon Harcourt inhaler.—Dr. KIRKBY THOMAS described the safety inherent in the low position of the patient's head.—Dr. ANDREW WILSON described deaths which had occurred before the administration of the anæsthetic had commenced and agreed with the observations of Dr. Fairlie and Dr. Blomfield.—Dr. H. W. FEATHERSTONE described the difference in resuscitating those patients who collapsed under chloroform compared with similar cases under other anæsthetics.—In the laboratory Dr. S. R. WILSON and Dr. S. MCSWINEY demonstrated the effects of intravenous injection of adrenalin into animals anæsthetised with ether and with chloroform, and a number of charts and of different kinds of apparatus was also demonstrated.



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DIDIAL

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THE LANCET.

LONDON: SATURDAY, JULY 4, 1925.

MALARIA IN EUROPE.

IN 1924 the Permanent Health Committee of the League of Nations appointed a Malaria Commission composed of seven members, several experts, and a number of corresponding members to inquire into the incidence and epidemiology of malaria in Europe, and to investigate the problem of quinine administration. The results of these inquiries in Italy, Russia, and the Balkan States have recently been published,[1] and we are informed that further reports on other countries will be issued from time to time. The itinerary of the tour was a comprehensive one, and occupied a period of three months of continuous travel. Commencing in May, 1924, the Commission visited Dalmatia, Serbia, Greece, Bulgaria, Roumania, Russia (Ukraine, Don basin, Caucasus, Volga region, and Moscow), and Italy, eventually dispersing at Rome on August 28th. A large amount of data of a general nature has been accumulated, though no facts of a novel or striking nature have emerged. The greater part of the information was obtained from the health departments of the countries visited.

Special interest centres on the spread of malaria in Russia which has taken place since the war. The most malarial part of this country is undoubtedly the Middle Volga district. Before the war 400 cases of malaria for every 10,000 inhabitants were registered there yearly, and in 1923 in the German Republic of the Volga the disease became epidemic, so that approximately half the inhabitants were infected. This extraordinary spread of malaria in the Volga district, as indeed in the whole of Russia, was largely a result of the European War, aided by civil war in Russia with all its consequences. The population was forced through fear of starvation to emigrate to Turkestan, Bokhara, and the Caucasus, whence the severe forms (subtertian parasite) were imported. In the Volga district the geographical features of the river are held to be mainly responsible for the spread of the disease. It appears that the meadows on each side of the river are inundated in spring time, and on subsidence of the floods permanent pools remain which constitute the breeding grounds of mosquitoes. In this district there are, as a rule, two rises of malaria incidence during the year; the spring increase commences in March, when the anophelines are not found; the autumn epidemic, commencing about August, is undoubtedly spread by the swarms of newly-hatched mosquitoes which then abound. The spring epidemic consists, as has been noted in Salonica, Palestine, and elsewhere, almost entirely of benign tertian malaria, probably relapses of a previous infection; in August and September the subtertian parasite predominates, and has accounted for 85 per cent. of the cases. The quartan form appears to occur only at the cold season of the year. As regards Russia in general, the information indicates that the accounts of the effects of malaria, as described in some English journals, are greatly exaggerated. In that country epidemic malaria reached its maximum in 1923, when the deaths due to the disease were estimated at 60,000 (0·4 per mille of population), a figure hardly comparable with the average death-rate in badly infected districts in British India, where the disease usually causes a death-rate at least ten times that figure. The occurrence of epidemic malaria in Europe is by no means a new event. The most important factors concerned in the recent epidemic appear to have been: (1) The importation of new cases and carriers into areas where malaria was already endemic; (2) the importation and aggregation of susceptible people, particularly in connexion with the settlement of refugees and colonists in the endemic areas; (3) various social and economic circumstances, especially, in some countries, a great lack of quinine. Undoubtedly, if the countries concerned had a properly organised medical or sanitary service much could be done to eliminate nearly all these factors. As regards the endemicity of malaria in Europe, the important rôle of "house infection" in the spread and maintenance of the disease impressed itself greatly on the Commission. It is essentially a family or household affair, to be explained by the close and continuous association existing in most dwellings between the human source of infection, the insect carrier, and the human recipient to which the domestic habits of *Anopheles maculipennis* especially lend themselves.

The large amount of data collected by a commission of such a comprehensive nature makes it difficult to crystallise the main trend of the work, but the general impression may best be gathered from the wholly admirable summary by Colonel S. P. JAMES, the British representative. He points out that, with the exception of Italy, the vital statistics with reference to malaria are inadequate and are therefore not comparable with the methods usually employed in malarious tropical countries. In the absence of these necessary statistics the information as to the past and present incidence of malaria in the countries visited is vague and imperfect, but it is known that from time to time, at irregular intervals, all these countries have experienced, in addition to this endemic malaria, striking invasions of the disease in epidemic form, which has spread to localities previously free. Very little information could be obtained as to the effects of the recent epidemic wave. In Dalmatia, it is true, and in Serbian Macedonia numbers of patients were seen suffering from greatly enlarged spleen, the result, probably, of the epidemic disease, but elsewhere the epidemic had abated almost completely and the distribution of malaria has once more become restricted to its original endemic centres. Little information was likewise obtainable about the mortality which the epidemic may have caused in different countries and still less about the severity of the cases. To those with experience of malaria in tropical countries the absence of evidence of a high fatality was very surprising. The impression obtained, however, was that there is no area in Europe in which the fatality of the recent wave of malaria is even remotely comparable with the fatality of the disease as seen in the Punjab during the epidemic of 1908, when the deaths were 13 times more numerous than the normal. In Greek Macedonia the epidemic of 1923 is said to have caused 700 deaths amongst 10,000 refugees, but none of the figures given, either here or in Roumania or Bulgaria, is anything but approximately correct. In suggesting antimalarial measures due consideration has to be paid to the incompleteness of the sanitary services which has resulted from the war, and to the fact that in Europe malaria is one of the least, in contrast to the tropics, where it constitutes the most dangerous endemic disease. The Commission therefore deprecates the undertaking of costly antimalarial measures in circumstances where such action is of doubtful value and when the money would be better employed in other essential health services. Every effort should therefore be made to combat endemic malaria in Europe in the *houses* of the people themselves rather than in the environment. The competent sanitary authority should enter the houses of the people, treat those infected, and educate them to kill off the few sluggish "domesticated" anophelines whose wants are all supplied in that particular house and who constitute the chief sources of infection. In this simple way more good will be done than by the most extensive measures against larvæ and adult insects in the environment. Unfortunately, this decision involves the onus of overcoming the well-recognised difficulty that medical officers and sanitarians who have become interested in the elimination of breeding places and in engineering problems of drainage are usually loth to discard those measures. The outstanding fact is once more emphasised that it is by a well-equipped medical and public health service that malaria in Europe will be eventually eradicated. That this has been the case in England is set out forcefully by Colonel A. W. ALCOCK on another page. By applying this lesson to European countries in general the League of Nations Commission has rendered a valuable and permanent service.

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[1] League of Nations Health Organisation: Malaria Commission. Report on its Tour of Investigation in Certain European Countries in 1924. CH. 273. Geneva, March 25th, 1925. Published in Great Britain by Constable and Co., Ltd. 6s. 9d.

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PAY HOSPITALS FOR PATIENTS OF MODERATE MEANS.

SUNDAY last, June 28th, was "Hospital Sunday"; the financial results of the day have not yet been published, but it is to be hoped that a substantial sum will be returned to the coffers of the Metropolitan Hospital Sunday Fund. The hospitals are struggling against grave financial difficulties and their future is problematical unless they can be established on some sounder basis than the present one. Among other schemes proposed is the extension of their wards to paying patients. The question of institutional accommodation for the middle-class patient has become acute during recent years. Many schemes have been put forward on paper and several have been tried in practice, with a varying measure of success. The Conference of the British Hospitals Association, held in Manchester on June 25th, debated the subject once more. Sir WILLIAM MILLIGAN pointed out that the poor are admirably looked after and cared for, while the rich are quite competent to look after their own interests; but an increasingly large number of those of moderate means find it more and more difficult, owing to the expense entailed, to secure those benefits from recent advances in medicine and surgery to which they are entitled. Consequently, and more especially within recent years, large numbers of the middle classes are forced, often against their inclinations and wishes, to seek treatment in existing voluntary hospitals, with the result that waiting lists attain quite inordinate dimensions and serious economic loss to the community results from delay in admission and the prolonged abstention from work of the wage-earner. Moreover, the public have recognised that modern medicine and surgery have become more complex and more detailed, and that the numerous adventitious aids to exact diagnosis are found to exist to more advantage within the walls of some great institution rather than in the chambers of any individual physician or surgeon, however well equipped his consulting rooms may be. The tendency, therefore, to resort to institutional treatment is not unnatural, is becoming more accentuated every year, and is a tendency which is likely to go on growing, considering the undeniable advantages which it presents. The provision of a limited number of wards or beds for paying patients is already an accomplished fact in certain hospitals, and has been the means of meeting, to some slight extent, the existing demand for institutional treatment at moderate fees. At the moment it is at any rate a quite inadequate provision for existing requirements, does not always afford that privacy, which is its main objective, and proves a complicated arrangement so far as hospital accounts and hospital administration are concerned.

Sir WILLIAM MILLIGAN's proposal is that a "pay hospital" should be established in connexion with each large general hospital. Certain services, such as lighting, heating, laundering, catering, and nursing could be arranged in common for the two institutions, thus lightening the financial burden and widening the experience of the nursing staff. The fundamental regulations suggested by Sir WILLIAM MILLIGAN were:

1. That the Committee of Management should consist of three members elected by the parent hospital, three by the preference shareholders, and three prominent citizens, and should meet monthly.
2. That a resident medical officer should take charge of the patients under the direction of the specialist.
3. That no patient be admitted without a written recommendation from a duly registered medical practitioner.
4. That the income limit for admission should be £600 and the charge be 6 guineas per week; fees for special nurse, anæsthetic, X ray, or pathological report being extras.
5. That the patient be free to employ any member of the staff of any hospital, arranging the fees with him personally.
6. That the practitioner on whose recommendation the patient is admitted have free access to see his patient at any time but that he have no responsibility in the matter of treatment.
7. That if a case does not necessitate the advice of a consultant the onus of treatment shall rest with the resident medical officer after consultation with the patient's general practitioner, and that the former may perform an operation if the patient be unable to afford the fee of the consultant.
8. No case of phthisis or infectious disease shall be admitted.

Sir WILLIAM MILLIGAN put forward a specimen budget to show that the institution would be a sound financial proposition, and suggested that the financing of such a "pay hospital" might be approached in one of three ways:—

1. By borrowing the whole of the money at 5 per cent. on the security of the building and of the parent institution, and creating a sinking fund of 1 per cent., which would redeem it in 30¾ years.
2. One-half of the money required might be borrowed at 5 per cent. on the value of the building, and the other half by the issue of 6 per cent. cumulative preference shares and ordinary shares; or
3. The formation of a limited liability company with a capital of £50,000, divided into 30,000 £1 6 per cent. cumulative preference shares and 20,000 £1 ordinary shares, the whole of the ordinary shares to be held by the parent hospital.

As the subsequent discussion emphasised, the success of such a scheme depends entirely on the active coöperation of the medical profession. Whether this would be obtained seems to depend mainly on the wording of Clauses 2 and 6. The general practitioner is to be "allowed access" to his patients while in hospital, presumably as a friend, for the satisfaction of his scientific or personal interest in the case. It is doubtful whether there is anywhere in the world a more disinterested body of men than the general practitioners, but no amount of scientific enthusiasm or devoted service will support and educate a growing family. It is on these middle-class patients that the practitioner is dependent for his living; he can scarcely be expected to encourage a scheme that will take these patients off his visiting list as soon as he has diagnosed any serious malady. Nor can the patient be expected to desire the continued attendance of the practitioner when he finds himself under the care of a resident medical officer, whose competency is vouched for by his position in a great organisation. The "family doctor" is the backbone of the medical profession, and though he may have many failings in the eyes of the specialist and the research worker, it is by his improvement and not by his abolition that the public health will best be served. Some such scheme as that suggested by Sir William Milligan is undoubtedly called for, but it will have a greater hope of successful life if the general practitioner be left in charge of his patient as he would be in a nursing home, with the enormous advantage to everyone of coöperation with the hospital staff. The sisters in charge of nursing homes find no insuperable difficulty in the absence of a resident medical officer and the attendance of a number of general practitioners; there is no reason why the same working should not apply to the "pay hospital" The harassed practitioner fervently desires to see the establishment of some institutional treatment that shall be within the means of his poorer paying patients, but he very rightly and properly desires that any such scheme shall leave him in responsible charge of the conduct of the case.

WELFARE OF THE BLIND.

The fifth annual report of the Advisory Committee on the Welfare of the Blind indicates that further progress has been made towards the solution of the problem of making life tolerable for this unfortunate class of the community. Since the qualifying age for the receipt of the old age pension was lowered for blind people from 70 to 50, 85 per cent. of those so qualified are in receipt of the pension, the remaining 15 per cent. being presumably in possession of some private means. Schemes for promoting the welfare of blind persons have now been presented by the 146 local authorities concerned. All have been accepted and the great majority are in full operation. Of the total number of blind in England and Wales—36,518—more than 32,000 are over 16 years of age, and of these about one-quarter are actually employed either in workshops for the blind or as "home workers," the definition of which term appears to be somewhat elastic. The present report records some progress in the efforts made to obtain employment for blind persons in ordinary industrial concerns and in work normally performed by sighted persons. So far as the more skilled processes go this has not been found to be practicable, but a number of firms in the Midlands have expressed their willingness to give blind persons a trial period of employment on such operations as the preparing and labelling of tins, stringing tennis rackets, taping, smearing and packing of golf balls, armature winding, cardboard box making, gauging lamp glasses, assembling and packing cycle bells, and the sorting of hemp. As it is never expected that the average blind man can earn a living wage, the report recommends that voluntary agencies should receive official grants of not more than £20 per annum per head in respect of blind persons employed in ordinary factories and workshops.

There remain nearly 60 per cent. of the blind in the country who are classified as unemployable, some of them mental or physical defectives or afflicted with deafness, the majority of them having become blind in adult life, after which the difficulties of training for suitable employment are, of course, indefinitely increased. A great advance in the provision of assistance for unemployables has been made through the institution of the home-teaching service. At the present time there are 111 sighted and 159 blind or partially blind home-teachers employed by the various agencies and local authorities in the country in this capacity. Besides giving instruction in the reading of embossed literature and in simple pastime industries, they are expected to be friend and adviser to their pupils in domestic and social matters, and all those who are newly appointed are required to obtain the home-teachers' certificate of the College of Teachers of the Blind within two years. To well-educated young women with a natural ability for social welfare work the report commends this service as providing a useful field of work with fair remuneration, in which their efforts would be abundantly repaid by the results achieved. The report shows that consequent upon the passing of the Blind Persons Act of 1920 there has been a very substantial improvement in the general circumstances of the blind in the country. The triple partnership of the voluntary agencies, local authorities, and the State in dealing with the welfare of the blind has been more than justified. One matter is touched on in the report which needs to be emphasised. At present, owing to the lack of suitable schools for the partially blind, a good many of these children, more especially the high myopes, are being educated in blind schools, whereas it would be far more to their advantage, and ultimately an economy to the State, if schools or classes of the type initiated by the London County Council were made more generally available. The after-care of this class falls more properly within the sphere of the juvenile employment committees of local education authorities. The Board of Education are rightly proposing to press for the provision of further special accommodation for this class of children.

THE RADIOLOGY CONGRESS.

The International Congress of Radiology which is being held in London this week opened very pleasantly on Tuesday evening, June 30th, with a reception to the delegates and their friends, given by Dr. C. Thurstan Holland, the President, at the House of the Royal Society of Medicine, 1, Wimpole-street. A large number of guests was present, forming a truly international gathering. In the library an interesting display of old books dealing with medical electricity was on view, and in the Barnes Hall Dr. Murray Levick entertained the company with a description of penguin life in the Antarctic, illustrated with lime-light views taken by himself. This was followed by a cinematographic film of certain tuberculous conditions, demonstrated by Dr. Lewis Gregory Cole, of New York. The subsequent meetings of the Congress are being held in the Central Hall, Westminster, commencing with a discussion on international units and standards for X ray work, and concluding on Saturday, July 4th, with a meeting of the international delegates to consider the formation of an international committee. The work of the Congress is divided into three sections, radiology, physics, and actino-therapy respectively, and with regard to the latter branch we would draw attention to the paper on a Light Department in a Hospital for Surgical Tuberculosis, by Sir Henry Gauvain, in our present issue. This Congress has been promoted and organised jointly by three societies in Great Britain, all interested in similar objects, the Rontgen Society, the Electro-therapeutics Section of the Royal Society of Medicine, and the British Institute of Radiology, and it is a source of gratification to British radiologists that they have had promises of world-wide support. The Congress itself will determine whether this meeting will form the first of a regular periodic series of such meetings, but however that may be, we feel assured that the laborious work carried out by Dr. Holland, Dr. Stanley Melville (General Secretary), and the organising committee will prove a source of pleasure, interest, and profit to all whose interest lies in developing radiology—the infant prodigy of medicine,

Annotations.

"Ne quid nimis."

ROYAL COLLEGE OF PHYSICIANS OF LONDON: CENTENARY CELEBRATION OF THE PRESENT COLLEGE.

A CONVERSAZIONE was held at the House of the Royal College of Physicians on the evening of June 25th, to celebrate the centenary of the occupation of the present building of the College. The guests were received by the President, Sir Humphry Rolleston, and Lady Rolleston. A large number of Fellows, Members, and ladies attended. The College buildings are admirably adapted for a reception of this kind and the valuable possessions of the College were shown to great advantage. The library, where the President received the Fellows and guests, is a large and attractive room. The new lighting shows its contents to advantage, including the beautiful mace, which is one of the chief of the College treasures.

An interesting historical note was attached to the programme given to each guest on arrival. From this we learn that the Royal College of Physicians was founded by Thomas Linacre, the famous scholar, who obtained from King Henry VIII. a Royal Charter, dated Sept. 23rd, 1518, granting certain powers to the College for the purpose of controlling those who practised medicine in the City of London and seven miles around. The powers of the College were extended by later charters so that authority was exercised over all those who practised medicine in England, with the exception of doctors of medicine of Oxford and Cambridge Universities. Thomas Linacre was elected the first President, and five other physicians were named as Fellows of the College with power to add to their number. The first meetings of the College, for the transaction of business, were held in Linacre's house in Knightrider-street, in the City, and here the College remained until 1614, when a new house was provided at Amen Corner, on the site of the present House of the Canons Residentiary of St. Paul's. This College House was burned down in the Great Fire of 1666, and in 1674 the College removed to a new building in Warwick-lane, in the City, which had been built from the designs of Sir Christopher Wren. Here it remained until 1825, when it removed to the present building. The library contains about 40,000 volumes, of which more than 4000 were printed before the year 1600. The collection is not confined to medical works alone, for it contains sections comprising early editions of the classics, theology, law, and the sciences. The College possesses 112 portraits in oil of distinguished Fellows, and the collection is representative of many of the portrait painters in England during the last three centuries. These are placed in the large library, the Censors' room, the reading room, and on the staircase. The handsome panelling to be seen in the Censors' room dates from the year 1674, and was removed from the College in Warwick-lane, where it was placed through the munificence of Dr. Baldwin Hamey. The portraits of past Presidents and Fellows form a most striking and interesting collection. They are shown to great advantage in the library, Censors' room, reading room, and hall of the College. Among these, those painted by Gainsborough, Reynolds, and Romney are specially worthy of notice. There is also a portrait by Van Dyke and a painting by Zoffany.

Among the entertainments there was a fine exhibition of cinematograph films illustrating nature-study. It was pleasant to hear that these were of British origin. An interesting programme of music was given by the Vale Lane Sextette. The engraved portraits of Fellows of the College on view in the small library and book-store were well chosen and attracted a good deal of attention.

The conversazione was a most successful one. This notable historic incident in the history of the College was, by common consent, very suitably commemorated, and those present spent an interesting and instructive evening. The President and those responsible for the arrangements are greatly to be congratulated on the success of a very interesting commemorative function.

THE USE OF ARSENIC IN PUERPERAL FEVER.

THE use of arsenical salts in puerperal infection was the subject of a paper by Marbais at the Congress of Strasbourg in 1923. Dr. H. Lapervenche has now published a record of 28 cases treated in this way at the obstetric clinic in Bordeaux. The salts employed were sulpharsenol (Pluchon) and novarsenobenzol (Billon), which were shown to have a strong bactericidal action on streptococci in vitro and in rabbits. They can be used prophylactically in cases where the labour has been prolonged and infection is suspected. The only contra-indications are the presence of serious hepatic trouble and uræmia, cancer, and what the author calls "bacillaires," presumably the subjects of chronic bacterial infections. It is usual to allow a day to elapse between the first and second injections, and then to give injections on two successive days with an interval of one day between. The urine should be watched for albumin. Intravenous or subcutaneous injections of 0·1 gr. of N.A.B. or 0·06 gr. of sulpharsenol is the initial dose, and subsequent injections should not rise higher than 0·15 gr. of N.A.B. and 0·12 gr. of sulpharsenol. No evil results were noted beyond the local discomfort of the injection, and the results were most gratifying, the fever being controlled by the drug. These cases were streptococcal, and syphilis was excluded by the Wassermann reaction. The method seems worthy of a more extended trial.

JAMES MEASE.

IN the number of *Annals of Medical History*, published in March, 1925, being No. 1 of Vol. VII., Dr. William Snow Miller, of Wisconsin, reprints a paper read before the Medical History Seminar of the University of Wisconsin in November, 1923. The subject of the paper is Dr. James Mease, who is interesting as being the author of the first contribution of note upon hydrophobia published in America. From another point of view he is of interest to ourselves as having fallen foul of William Cobbett (an easy thing to do), and Cobbett, as readers may know, was a good friend to THE LANCET in early days. Mease graduated in medicine in 1792, being one of the first seven graduates from the medical department of the University of Pennsylvania. This University had arisen after sundry vicissitudes out of the College of Philadelphia, which, in its turn, was begotten by a pamphlet written by Benjamin Franklin in 1749. Mease's paper upon hydrophobia was first published in the *American Museum* in 1790, and this paper was subsequently elaborated into his thesis for the doctorate. Dr. Miller gives many quotations from the thesis which show that Mease was in advance of his time in his views on the disease. He maintains that disease only arises from a "poison of a peculiar nature in the saliva of a rabid animal, belonging to the genus *canis*." He also is of opinion that the poison, to manifest its effects, must find entrance to the body through a wound. As to treatment he recommended excision of the bitten place, if possible, together with the cautery before any symptoms had appeared. After they appeared he considered any treatment useless. The year after his graduation—namely, in 1793—there was a serious epidemic of yellow fever in Philadelphia during which Mease was attacked and was treated by Rush, being bled to the extent of 75 oz. in five days. He recovered and was appointed port medical officer of Philadelphia. Benjamin Rush, the professor of clinical medicine in the University, treated the fever by free purgation and copious bleeding, methods which were warmly supported by Mease, although other medical men disapproved of them. These dissenters found a mouthpiece in Cobbett, who published a bitter attack upon Rush in *Peter Porcupine's Gazette*, which led to an action for libel in which Cobbett was cast in 5000 dollars damages. Mease gave evidence in favour of Rush and this led to an attack on him by Cobbett in the opening number of his other paper the *Rush Light*. Like most people in authority Mease also got into trouble with certain persons owing to his allowing vessels to proceed from Philadelphia to Burlington without performing quarantine, and Dr. Miller gives a full account of the quarrels. Mease was not only a physician, but an active member of Philadelphia society, giving generous support to that city's many intellectual and humanitarian institutions. He married in 1800 Sarah Butler, by whom he had two daughters and three sons. The sons, on attaining the age of 16, changed their name to Butler under their grandfather's will and one of them, Pierce, married Fanny Kemble. Mease died in Philadelphia in 1846.

FRAMBŒSIAL OSTEITIS.

THE remarkable condition called "goundou" or "henpuye," and characterised by bony outgrowths on the sides of the nose, has been recognised as prevalent in parts of tropical Africa since MacAlister in 1882 noted the existence of "horned men in Africa." In 1900 Chalmers described the disease on the Gold Coast in THE LANCET[1] under the name of henpuye, and reported five cases, though he doubtless saw many others and operated on several; he was the first to attribute its causation to framboesia or yaws. Major Botreau-Roussel, of the French Colonial Army Medical Service, has now published[2] a most complete work on this curious affection. After four years' residence on the Ivory Coast, during which time he only saw one case, chance brought him two patients, on whom he operated with success; as a result more and more patients came for treatment, until he had seen 180 cases and operated on 113. The outgrowths on the nose limit the field of vision and, in the more extreme cases, to such an extent as seriously to handicap the sufferer in the struggle for existence, which is a severe one in these regions; and the author believes that many of these unfortunates are quietly destroyed by their relatives, who cannot afford to feed a useless member of society. It is not surprising, therefore, that the natives should come from long distances to be relieved of their disability by operation.

From his unequalled experience of the disease, Major Botreau-Roussel has formed an opinion on the following points. The lesions of the face are the most striking but not the most frequent symptom of an osteitis which may attack the greater part of the skeleton, the long bones, and especially the tibia, being the most commonly affected. The osteitis is definitely caused by framboesia, and usually begins either during or shortly after the framboesial eruption. Patients suffering from the osteitis are refractory to inoculation with framboesia; in the one case in which the onset of the osteitis was observed, at the sixth month of the framboesial eruption, both the bony and cutaneous lesions yielded to treatment by novarsenobenzol. The author makes some interesting observations on the geographical distribution of the disease; commonest on the Gold and Ivory Coasts, it occurs throughout tropical Africa, and has been found in the West Indies, Central and South America, China, Sumatra, Malay, and New Guinea. No case has been reported from Europe, but the author believes that some cases labelled leontiasis ossea would have been called "goundou" had they occurred in the tropics; he concludes that true leontiasis is due to hereditary syphilis, and that the *Treponema pallidum* and the *Treponema pertenue*, the causative organism of yaws, are able to produce very similar lesions.

Major Botreau-Roussel's work is profusely illustrated and forms a notable contribution to the study of an important tropical disease.

INTERNATIONALISM AND MEDICINE.

WE have received from Dr. A. A. Warden, of Paris, an interesting communication under this title, in which he points to the recent visit to Europe of our American colleagues as a proof of the spread of the feeling that medicine is an international affair. The view has been expressed so often and so fully in these columns that we need not reproduce Dr. Warden's words, while we agree with him that medicine in its national and international relations occupies no different place to that occupied by science, literature, and art. All developments of these immediately add to the common stock of wisdom of the world in a degree proportionate to the dissemination of new work. But Dr. Warden singles out medicine as the great activity which might promote the cause of international peace if (and it is a large "if") all those who practise it should refuse to have anything to do with the conduct of a war. There is both truth and ingenuity in his argument that the services of medicine, while they alleviate the horrors of war, may also prolong those horrors by maintaining a continuous supply of fighting men and, through the prevention of epidemics, a continuous supply also of those who minister to the forces. This position has been pointed out before, but we doubt if it would act as a common inducement to medical men all over the world not to place their services at the disposal of their countries. Dr. Warden suggests that this is a question which might well be submitted to an international gathering of medical men, and brings the idea forward in order to ascertain how far it receives support in this country.

INOCULATION AGAINST CATTLE DISEASE IN SOUTH AFRICA.

MR. L. E. W. Bevan, M.R.C.V.S., has been doing good work in Southern Rhodesia, and in reports[1] to the Secretary to the Minister of Agriculture and Lands, Salisbury, he gives an account of his findings. He has devised a special vaccine for use against infectious abortion of cattle which he names "devitalised vaccine." His aim has been to retain in the vaccine only those elements required to call out in the treated animal the maximum quantity of specific antibodies. The particular virtue claimed for the vaccine is that it can be applied without risk during pregnancy, so that the resistance to infection is maintained until the danger of infection has gone by. Reports received from cattle owners who have used the vaccine are encouraging, and from hundreds of careful experiments and observations at the laboratory the efficacy of the vaccine has been verified. Mr. Bevan thinks that the best plan of campaign in dealing with an outbreak of infectious abortion is to seek out and eliminate the source of infection, to disinfect cow-sheds, kraals, and infected watering-places, to get rid of non-breeding cows and those constantly returning to the bull, to test all bulls and remove reactors, and to vaccinate all cows in danger of becoming infected. He regards it as essential to continue this policy over a *series of years*. Infectious abortion of cattle merits drastic treatment, both on its own account and because of its apparent infectivity to man. Out of 80 cases of Malta fever admitted to Rhodesian hospitals at least one-half came from areas where goat's milk had not been consumed but where infectious abortion existed at the time among the cattle. Mr. Bevan holds that the Rhodesian strain of *B. abortus* may be closely related to *M. melitensis*. In dealing with trypanosomiasis in cattle he has experimented with a preparation containing antimony and arsenic injected subcutaneously, a procedure which has in many cases enabled the owners of fly-struck cattle to carry on farming operations which they feared would have to be abandoned. Successful inoculation has also been practised against red-water and gall-sickness which are responsible for enormous losses among cattle. Protection of imported stock from infection by ticks until the immunity resulting from inoculation has time to develop is an important measure. Mr. Bevan has had the opportunity of dealing with disease on a far larger scale than veterinarians have in these isles, and has made good use of his opportunities.

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[1] THE LANCET, 1900, i., 20.

[2] Frambœsial Osteitis, or "Goundou." By Major Botreau-Roussel. Paris: Masson et Cie. 1925. Pp. 129.

[1] Southern Rhodesia: Report of the Director of Veterinary Research, 1924. Inoculation of Cattle Against Red-water and Gall Sickness, Bulletin No. 536.

NEW DRUGS FROM SOUTH AMERICA.

THE recent Mulford Biological Exploration of the Amazon basin, under the direction of Dr. H. H. Rusby, resulted in bringing back to the United States much interesting material, and amongst this were at least two drugs which, it is predicted, may have some therapeutic application. Caapi, the first of these, is the root and rhizome of a woody vine, *Banisteria caapi*, which grows in the central portion of the Amazon basin. The plant belongs to the *Malpighiaceæ*, a large family of tropical woody climbers, but no other member of this family is known to possess similar medicinal properties. The use of this drug by the natives in Colombia was first described by Humboldt and Spruce, and, later, two German explorers, Weiss and Schmidt, made extensive observations on its use and obtained photographs of natives under its influence, but their researches were apparently never published. Dr. Rusby heard of the plant from these workers, and with the aid of his photographer, Mr. Gordon MacCreagh, obtained material for study. In another part of South America Dr. O. E. White discovered the drug in use under the name of "ayahasco." In Bolivia it appears that caapi is used mainly as a stimulating beverage, similar to tea and coffee; but in Colombia the drug is used for the specific purpose of giving courage and fortitude in facing danger and enduring suffering. Dr. Rusby has given an account of the effect of this drug, from which the following passage is taken[1]:—

> "Within a very short time after drinking the decoction, there is a powerful effect on the nervous system and on the circulation. The cutaneous circulation is checked, as manifested by a strong pallor. The subject is restless, and occupies a standing position. There is an intensely anxious or fixed expression to the countenance, and there are convulsive tremors. This condition lasts but a few minutes and is followed by a violent reaction, in which the blood rushes to the surface and the man becomes highly or even violently active. Fear, and even prudence, is entirely destroyed and he becomes extremely active muscularly. He is ready to fight anything and everybody, or any number of enemies and suffering is disregarded. He rushes about and seeks an enemy with utmost eagerness. This condition lasts for hours, and is followed by more or less exhaustion and somnolence. The nature of this somnolence is in doubt. Some accounts indicate it is a narcotic effect and that there are unnatural dreams and visions. Others indicate that it is the natural reaction following weariness or exhaustion."

A chemical examination of caapi has shown that it contains three, and possibly four, alkaloids, one of which is closely related to morphine. Three alkaloids have been separated with great difficulty—a phenolic alkaloid, a non-phenolic alkaloid forming a hydrochloride which is only soluble with difficulty, and the third, a non-phenolic alkaloid forming a more readily soluble hydrochloride.

The other drug which appears to be of pharmacological interest is extracted by the Indians of Central Bolivia by boiling portions of a plant known as miré (pronounced mee-ray). The plant is said to be a member of the nightshade family, and is employed by the natives as a muscular paralysant and remedy for cutaneous parasites. In full doses the natives report that it produces paralysis of all the voluntary muscles without any disturbance of sensation or intellect, while a profuse perspiration of the cold type is produced, and this perspiration is said to be capable of destroying all cutaneous parasites. Animal experiments carried out by Dr. T. S. Githens[2] indicate that miré causes paralysis of the voluntary muscles by an action on the spinal cord, a stimulation of the peripheral motor apparatus, resulting in twitching of the muscles, a stimulation of the salivary and sweat mechanisms and sometimes of peristalsis, while the heart is slowed, probably from vagal stimulation.

BRITISH MEDICAL ASSOCIATION: COMING EVENTS.

DURING the present month two important events in the life of the Association will take place. The first is the opening, on Monday, July 13th, of the Association's new premises, designed by Sir Edwin Lutyens, R.A., in Tavistock-square, London. The ceremony will be performed by H.M. the King, who will be accompanied by H.M. the Queen, and the Archbishop of Canterbury will dedicate and open the Memorial Gates erected by the Association as a tribute to the 574 members who fell in the Great War. The Reception Committee has not found it possible to get into touch with the relatives of all these deceased members and would, we understand, welcome application for tickets from any who have not been reached. The gathering will include delegates of medical bodies not only from Great Britain but from the dominions, colonies, and from foreign countries. The second event is the ninety-third annual meeting of the Association, to be held in Bath from Tuesday, July 21st, to Friday, the 24th, under the presidency of Dr. Frederick George Thomson, physician to the Royal United Hospital. The presidential address will be given on Tuesday evening, and the annual exhibition of surgical appliances, foods, drugs, and books will be officially opened on the same day. The various scientific sections meet during the forenoons of Wednesday, Thursday, and Friday, July 22nd–24th. The annual dinner will take place on Thursday, July 23rd; and the popular lecture will be delivered by Sir W. H. Bragg, F.R.S., on Friday, July 24th, at 8 P.M. The annual Representative Meeting will begin on Friday, July 17th, and be continued on the three following week-days. The statutory annual general meeting will be held on July 21st, at 2 P.M., and the conference of secretaries on Wednesday, July 22nd, on the evening of which day the secretaries' dinner will take place. Saturday, July 25th, will be given up to excursions to places of interest in the neighbourhood. The honorary local general secretary for the annual meeting is Mr. W. G. Mumford, F.R.C.S., to be addressed at the B.M.A. Committee Rooms, Bath, where he will be assisted by Dr. R. G. Gordon.

THE ROYAL MEDICAL BENEVOLENT FUND GUILD.

THE scanty support given to the Royal Medical Benevolent Fund is a grave blot on the escutcheon of the medical profession. In order to assist this most deserving charity a number of ladies formed themselves in 1909 into a Guild for the purpose of soliciting additional subscriptions and assisting the work of the fund by personal service. The fifteenth annual report of the Guild records a successful year of work. So rapidly are the activities growing that it has been found necessary to rent a permanent office at 58, Great Marlborough-street. The established branches are in a satisfactory condition and money has been raised by dances, bridge parties, American teas, bazaars, and other special efforts. There are, however, many provincial towns where no branch has yet been formed and it is most desirable that the work should be extended to every part of the country. One of the most engaging activities of the Guild is the "Father Christmas branch," which sends Christmas gifts to the sad cases on its books, sweets and books for the children, and money for the elderly. It is at the festive season that the burden of a hard life becomes more bitter, and a small remembrance such as the Guild is able to provide brings a feeling of joy quite disproportionate to the value of the gift. The heavy rentals demanded for single rooms as well as the general increase in cost of living and crowding of the labour market has reduced many of these people to real starvation; their appeals are almost always for work, but modern conditions afford little hope of livelihood to the untrained or partially-trained and elderly worker. The Guild allows money grants to the aged, the sick, and for special emergencies, such as removal, purchase of surgical appliances, spectacles or dentures, holidays, and the acquisition of some means of livelihood such as a typewriter. The fundamental principle underlying the work is to help people to help themselves. Scarcely more pathetic, but still graver from the point of view of the community, are the young children whose education cannot be completed owing to the death of their father. Much valuable service would be lost to the State if the Guild were not able to save these children from the lives of uncongenial and unproductive labour into which poverty would force them. The attention of practitioners and their wives is drawn to the value of the work being done by this Guild. The Secretary is Miss Thomson, 60, South Molton-street, W. 1.

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[1] Jour. Amer. Pharm. Assoc., February, 1924, p. 93.

[2] Loc. cit., p. 102.

THE SECRETARYSHIP OF THE ROYAL SOCIETY OF MEDICINE.

AT its last meeting the Council of the Royal Society of Medicine selected a successor to Sir John MacAlister from a large number of applicants, the choice falling upon Mr. Geoffrey R. Edwards, B.A. Camb. Mr. Edwards was educated at St. Paul's School and St. John's College, Cambridge. He studied in Germany in order to qualify for the Woods and Forests Department of the Indian Civil Service, and continued this work in India. On his return to this country he joined the Royal Air Force as a pilot, was wounded, and had to alight in enemy country, entailing an imprisonment of 14 months in Germany. Subsequently, Mr. Edwards served on the Repatriation Commission in Germany and on the Inter-Allied Aeronautical Commission of Control. When finally demobilised he obtained the appointment of assistant secretary to the National Physical Laboratory, Teddington, where he had considerable experience in library and editorial work, in organisation, and in receiving. Mr. Edwards has travelled in most European countries and speaks French and German. He takes up the duties for which he is so well qualified on Sept. 1st next, and we wish him well in a position of great importance and interest. We are glad to learn that the Society has decided to mark Sir John MacAlister's retirement by appealing for funds to raise a memorial to his great work for medicine over a period of 38 years. Fellows of the Society will be glad to have the opportunity of constituting a permanent memorial of the man to whom the very existence of the Society is chiefly due. The proposal is to ask Sir John MacAlister to sit for his portrait, to be rendered in oil or stone.

THE JOHNSTON-LAVIS GEOPHYSICAL BEQUEST.

THE late Dr. H. J. Johnston-Lavis, who was both a medical man and a distinguished geologist, bequeathed to University College, London, his geophysical collection of some 20,000 specimens and a remarkable library of books and pictures relating to volcanic phenomena. These have been housed at 184, Gower-street, a few doors from University College, where the collection was formally opened on June 25th by Sir Henry Miers, F.R.S., Vice-Chancellor of the University of Manchester. Sir John Rose Bradford presided, and among those present was Dr. de Lavis-Trafford, the son of the donor, who is qualified in medicine in France. Johnston-Lavis, who was descended from a Huguenot family, "de Lévis," received his primary education at the Grammar School, Iver, Bucks. While there, the story goes, a school-fellow threw a stone at him. Young Johnston-Lavis, although in pain, examined the stone with curiosity, and further investigation showed the missile to be a fossil echinoderm. This event stimulated his interest in geology, and the stone formed the first specimen in his collection. In 1878 he became a student at University College, studied medicine at St. Mary's Hospital, and qualified with the M.R.C.S. in 1878. While a medical student all his leisure was devoted to geological studies, and at 18 he joined the Geologists' Association, in the following year became a member of the Geological Society, and at the age of 20 published his first geological paper. The value of geology to medicine was shown in his essay, which gained the Parkin Prize of the Royal College of Physicians of Edinburgh in 1914. This discussed the physics and chemistry of volcanic eruption and the physical effects of eruptions on human beings and animals. For many years Johnston-Lavis was Professor of Vulcanology in the Royal University of Naples and, as Prof. Miers pointed out, he was the very embodiment of the scientific spirit in all the work which he did. The gift forms a permanent expression of the donor's affection for the College and the University.

BENJAMIN BROADBENT.

Benjamin Broadbent, who died on June 25th at the age of 75, was a younger brother of the late Sir William Broadbent and, like him, a forceful person. He will be remembered as a pioneer in child welfare work. For many years chairman of the Huddersfield Health Committee, he entered with enthusiasm into the efforts of the medical officer of health, Dr. S. G. Moore, to save the lives of infants dying from preventable causes in the borough. In 1904 Mr. Broadbent accepted the civic chair for the definite reason that he believed it would give him greater scope for combating infant mortality. He offered a gift of £1, secured by a promissory note, to every baby born in Longwood (where his woollen mills were situated) during his year of office, who was still alive at the end of 12 months, the object being to ascertain where births had taken place, so that they might be followed up. During the year 112 infants were born in that ward, of whom only four failed to claim their birthday present; at the end of ten years 98 were still alive, and only seven were known to have died. The first promissory note was taken to the house by Miss Broadbent, and thus began a system of voluntary home visiting. In the following year the Huddersfield and District Public Health Union was instituted, with Mr. Broadbent as president. This Union, which secured the help of more than 100 volunteers, worked in close coöperation with the Public Health Department. A fee of 1s. offered for any notification of birth received within two days was largely successful, but failed in just those cases where it was most needed, and it was chiefly due to the representations made by Mr. Broadbent and Dr. Moore that in 1906 compulsory notification of births was introduced by Act of Parliament. A fundamental aim of Mr. Broadbent's work for child welfare was to keep mother and child together in the home, and to give help to both. His influence had much weight in the establishment of the National Association for the Prevention of Infant Mortality, for which he drafted the constitution. Again, it was on Mr. Broadbent's suggestion that, at a Mansion House Conference in 1917, it was decided to form a small committee to act in conjunction with Lord Rhondda to go into the question of a Ministry of Health. As recently as July, 1924, two striking articles appeared in the *Times* over the signature of Benjamin Broadbent, showing the results of a careful personal investigation into the "Ten Best Towns" for infant life. He was one of the speakers appointed to take part in the International Summer School to be held at Geneva in August of this year, when his subject was to have been Beginnings of Infant Welfare in Great Britain. Mr. Broadbent had the satisfaction, not granted to all pioneers, of seeing the fruits of his labour.

DENICOTINISED TOBACCO.

A NUMBER of people appear to be specially sensitive to the toxic effects of nicotine and its associated alkaloids contained in tobacco. Some of them are deterred from smoking at all; more of them smoke in excess of what they know to be good for their physical and mental efficiency. Dealers have endeavoured to meet the needs of these people by supplying tobacco from which the nicotine has been removed, in whole or in part. We published not long ago, at the request of a business firm, some analyses of the nicotine-content of tobacco treated with a view to reducing the percentage of nicotine. While the flavour and smoking quality remained, as far as we could ascertain, unchanged, it was possible to show that denicotinisation had taken place to the extent of 10 to 20 per cent. It must not, however, be assumed that every so-called " nicotine-free " tobacco placed on the market is in fact such, for a communication has recently been made[1] by Dr. L. Frank, scientific member of the Chief Health Office in Berlin, showing that the Chemical Institute attached to the Health Office was unable to confirm the withdrawal of nicotine from a number of tobacco samples so described. In two samples, in fact, the percentage of nicotine was higher in the treated than in the ordinary variety of tobacco as obtained from the same firm before treatment. The increase has a possible explanation in the greater dryness of the treated tobacco. The registered process of denicotinisation in this case appears to consist in the exposure of the tobacco, whether cigars or cigarettes, for a long time to a moist atmosphere, succeeded by a rapid rise of temperature to 150° C. in an exhaust chamber. Whether the unsuccess in the samples examined was to be ascribed to the process itself or to deficient technique in carrying it out Dr. Frank does not pretend to decide, but he does warn physicians not to recommend to their patients the use of cigars and cigarettes alleged to be denicotinised, without further evidence than the maker's assurance.

A RECEPTION will be held at the Royal College of Surgeons of England, Lincoln's Inn-fields, on Monday evening, July 13th, in connexion with the Convention of English-speaking Ophthalmological Societies. Fellows and Members of the College wishing to attend should apply to the Secretary, Mr. S. Forrest Cowell, at the College for cards of invitation before July 10th. The Convention meets from July 14th to July 16th, under the Presidency of Mr. Treacher Collins, Mr. C. B. Goulden (79, Portland-place, W.) being the General Secretary.

THE committee of the Torbay Hospital has received the sum of £100,000 from Mrs. Ella M. Rowcroft for the erection of the proposed hospital and chapel at Hengreave House. The site had already been purchased and this munificent gift will cover the whole cost of building, leaving the committee to raise only the sums for furnishing and equipment. Subscriptions have already been received and the donor hopes that the required amount may be completed before the hospital is opened, and also that there may be a sufficient surplus to form a substantial foundation for an endowment fund. The only conditions of the gift are that the chapel shall be erected in accordance with a plan and specification to be approved by the donor and shall contain a special window chosen by her, and that no vivisection or cognate treatment shall be permitted on the premises. An additional £6500 are provided to endow the stipend of the chaplain. A special effort is to be made to raise a further sum of £20,000 for endowment. The work is to be put in hand without delay.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXXIX.—THE TREATMENT OF ABDOMINAL ADHESIONS.

THE scope of this paper is limited to a consideration of abdominal adhesions secondary to inflammatory processes or to operation, and does not include the various recognised types of colonic adhesions whose sites and appearances are constant—e.g., Jackson's membrane.

Inflammatory Adhesions.

In the first place, we must recognise that the formation of adhesions following inflammation of, or operation on, abdominal organs is a natural and life-saving process. It is only when these adhesions interfere with the normal functions that the patient seeks advice and treatment.

Adhesions which result from inflammation may cause severe symptoms of acute or subacute obstruction, and these are more liable to occur following a lesion in the lower abdomen. While in some patients symptoms supervene shortly after the acute attack, others may enjoy many years of unimpaired health before symptoms supervene. Cases are frequently seen in which the signs strongly suggest cancer of the colon and in which it is difficult to estimate the true significance of a history of " a bad attack of inflammation of the bowels " 15 to 20 years previously. Tuberculous adenitis of the mesentery is not an infrequent cause of acute or subacute obstruction, either by the formation of bands stretching across the abdominal cavity from the infected gland, or by actual attachment of the bowel to the gland. In cases of the latter type the prognosis ought to be guarded, because frequently the gland is acutely inflamed as the result of secondary infection from the bowel, and its close relationship to the large mesenteric vessels makes the development of thrombosis, embolism, or generalised infection fairly probable. The development of inflammatory adhesions tends to mask the signs and symptoms of the original lesion. For example, when a gastric or duodenal ulcer has become adherent to neighbouring organs the regularity of the appearance and disappearance of the pain in relation to the taking of food becomes less noticeable and is replaced by a continual discomfort or dragging pain. The seasonal remissions from pain also become incomplete or altogether absent.

Traumatic Adhesions.

After every abdominal operation a certain degree of peritoneal adhesions necessarily occurs. In the majority of cases no signs or symptoms result. In other cases discomfort develops and the surgeon must carefully consider whether at the primary operation an important lesion had been overlooked or has subsequently developed—e.g., a duodenal ulcer or gall-stones in a case on which appendicectomy has been performed—or whether in a neurasthenic patient operation has been performed on insufficient evidence owing to exaggeration of the original symptoms.

The "Adhesions Diathesis."

In the treatment of adhesions there is no difference between those of inflammatory or traumatic origin except, of course, that the former call for more urgent treatment of the primary focus, increase the difficulties at operation, and may cause a more prolonged convalescence. A great deal of experimental work has been done to try to elucidate the causes of postoperative adhesions and to devise methods for their prevention, but progress has been slow and unsatisfactory. Sepsis of low virulence, excessive trauma, and incomplete hæmostasis are without doubt important predisposing factors. In certain other cases an "adhesions diathesis" is said to be the cause. It is well known that certain individuals may suffer from acute and widespread peritonitis, that the abdomen may be opened, swabbed, packed, and drained without the development of any subsequent trouble from adhesions, while a slight and strictly limited operation in other cases may lead to prolonged crippling and suffering.

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[1] Deutsch. med. Wochenschr., 1925, i., 481.

Points of Technique.

Strict attention to the established rules of surgical technique will greatly reduce the number of cases of "adhesions diathesis." Injury to the visceral and parietal peritoneum by mechanical or chemical means occurs all too easily, and in the subsequent repair harmful adhesions may result. It is now generally believed that the use of iodine or picric acid in the preparation of the skin is not conducive to the formation of adhesions if ordinary care be taken to protect the intestines from escaping outside the abdominal cavity. The use of strong disinfectants for lavage or for the moistening of packs is, however, to be strongly condemned. Undue exposure of the intestines to the air causes an injurious drying of the peritoneum and predisposes to the development of adhesions. Opinion is divided as to whether packs ought to be used dry or moistened in saline. In experimental work on guinea-pigs no marked difference between the two methods was noted, but the observations were not conclusive because in neither group did extensive adhesions develop. The use of rubber dam or jaconet to protect the intestines from the gauze is theoretically of advantage but mechanically is difficult to apply. All raw or bruised surfaces should be carefully and systematically covered by normal peritoneum whenever possible. The use of detached pieces of omentum to cover denuded surfaces is of doubtful value, as Mann[1] has shown that they quickly become converted into fibrous tissue with all its tendency to contraction and adhesion. The graft also shows very poor resistance to septic invasion. The use of undetached great omentum, the lesser omentum or ligamentum teres to cover raw surfaces is more likely to be of permanent benefit, but care must be taken that no undue strain is put upon these structures, or trouble will supervene, particularly after an operation in the lower abdomen, where a short omentum has been pulled down to protect the posterior surface of the wound.

Introduction of fluids such as liquid paraffin, vaseline, and gum acacia in gelatin into the abdominal cavity has not proved of practical value in the prevention of adhesions, nor has the introduction of oxygen after closure of the wound. In closing the abdomen care should be taken to evert the cut edges of the posterior rectus sheath and parietal peritoneum, thereby minimising the raw surface to which bowel may become adherent. Attempts have been made to overcome the harmful effects of adhesions by the early induction of peristalsis. Pituitary extract, eserine, and hormotone by hypodermic injection, and aperients injected into the bowel at operation or given by mouth soon after operation have been advocated. It is doubtful, however, if any of these methods can have a direct action on the bowel, which remains temporarily paralysed as the result of handling for about 24 hours; by this time the "glueing" together of coils of intestines by lymph will have laid the foundation of fibrous and permanent adhesions. All that can result is a drawing out of the fine adhesions before permanent deformity of the gut has occurred.

Relief of Post-Operative Pain and Discomfort.

Regulation of the bowels by suitable diet, regular habits, aided by mild non-irritating aperients, such as liquid paraffin, and massage, together with the assurance that the pains and aches are only temporary, will lead to a cure in many cases. In more resistant cases the use of heat in the form of hot fomentations or of "radiant heat" will be found to give considerable relief. Some patients complain of pain and dragging in the wound itself, and it is frequently difficult to determine whether the "fons et origo mali" is in the abdominal wall or is the pull of adherent intestine on its posterior aspect. The distinction may sometimes be made by observing whether or no the injection of novocaine into the abdominal wall gives immediate relief. If the point of pain or tenderness is well localised in the wound the use of a counter irritant—e.g., emplast. epispasticus or the injection of 20 to 40 c.cm. of normal saline into the abdominal wall—will be found to be very beneficial in some cases.

Operative Measures.—Should symptoms persist, and particularly if signs of acute obstruction develop, operation is called for and should on no account be postponed, in spite of the natural objection to a second operation. Very extensive interference with the blood-supply of the small intestine may rapidly and insidiously take place in a patient suffering from abdominal adhesions. Repeated attacks of vomiting, a tongue tending to be dry and coated, with perhaps some slight distension of the abdomen, are enough to justify exploration without waiting for other text-book symptoms of obstruction. A large incision should be made extending well beyond the limits of the scar of the previous operation in order to expose an area of peritoneum which has not been injured previously and to which it is unlikely the abdominal organs have become adherent. The opening into the peritoneal cavity should be made slowly under direct vision, unobscured by blood, and with a sharp knife in preference to scissors. By using this method injury to a knuckle of bowel which may, perchance, be adherent will be recognised before its lumen has been opened and another area further from the original wound selected. After the peritoneal cavity has been opened and the original wound reached, the cutting must be done with great care as a segment of intestine is frequently adherent to the posterior surface. In some cases a narrow band will be found to be the cause of the trouble and its ligature and division is all that is necessary. The more difficult cases, however, are those which show widespread adhesions, and it is often difficult to determine which of these is giving rise to trouble. Extensive "glueing" of the segments of the bowel does not cause symptoms, and one must look for the sharp angulation or narrowing which is the responsible factor. A loop of bowel showing dilatation and hypertrophy may be of great help in guiding one to the proper quarter. In the separation of adhesions I would again emphasise the advantage of a sharp knife used cautiously in place of scissors or any form of blunt dissector. All raw surfaces must be covered as well as possible and all bleeding stopped. Accidental punctures into the intestine or wounds involving its serous and muscular coats must be carefully closed, while in cases of extensive damage resection of the segment may be the quickest and most efficient method of treatment. Drainage should not be employed unless there has been persistent and uncontrollable oozing of blood or extensive soiling of the peritoneal cavity, as the presence of a foreign body predisposes to the formation of further adhesions.

WILLIAM ANDERSON, M.B. Aberd., F.R.C.S. Eng.,
Assistant to the Professor of Surgery, The University, Aberdeen; Assistant Surgeon, Royal Infirmary, Aberdeen.

UNIVERSITY OF BRISTOL.—The Markham Skerritt Memorial Prize has been awarded to Macdonald Critchley, M.D. Bristol. This prize was founded in memory of the late Dr. Markham Skerritt and is awarded every three years to that medical member of the University of Bristol who, in the opinion of the board of the medical faculty, has in the previous three years published the best original work in any branch of medical science. During 1924 Dr. Critchley has published the following papers: The Parkinsonian Syndrome (*Bristol Med.-Chir. Jour.*), Present Position of Parathyroid Therapy (*Pract.*), The Calcium Content of the Cerebro-spinal Fluid (with O'Flynn) (*Brain*).

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[1] Mann: Surg. Clin. of N. Amer., 1921, i.

Special Articles.

THE ANOPHELES MOSQUITO IN ENGLAND.

By A. W. Alcock, C.I.E., F.R.S.,
LT.-COL. I.M.S. (RETD.); LATE PROFESSOR OF MEDICAL ZOOLOGY IN THE UNIVERSITY OF LONDON.

Diffusion of knowledge of the fact that the malaria parasite undergoes in the anopheles mosquito those necessary stages of development that fit it for passage from one human being to another has not been accompanied by a corresponding understanding of the necessary circumstances in which this potential danger from the insect becomes realised in a general onset of malarial fever.

Imagining that both the anopheles and considerable numbers of relapsing malaria convalescents are recent introductions into these islands, and that the malefic powers of the insect are unconditioned, the public seems quite ready to believe the alarming prophecy that a general outbreak of malaria is impending in this country unless immediate steps be taken to exterminate the anopheles. It is necessary, therefore, that the public should understand that anopheles mosquitoes are as native to this country as the sparrows and the starlings; that malarial fever—known to our forefathers as "fever and ague"—is also native here, but from having been in former times extremely common is now almost extinct as a native disease, notwithstanding the constant re-introduction of malaria parasites in the blood of convalescents annually returning from India and other parts of the tropical dominions; and that this gradual process of extinguishing malaria was carried well the right side of the public safety-point without any attempts at exterminating the anopheles mosquitoes, and, indeed, long before the malaria parasite and its vital associations with a mosquito of any sort had been discovered. It is advisable, in short, that the public should be taught as a most conspicuous illustration of the value of sanitation, how, in a country that possesses an efficient sanitary administration, a creature so potentially dangerous but so difficult to exterminate as the anopheles mosquito can be permitted to exist, *in its proper natural stations*, without menace to the public health.

Native Village and Modern City.

That the nature of the sanitary environment is the main factor in determining the influence of a potentially dangerous species of anopheles upon the public health is easiest understood by comparing an unsophisticated native village with a modern Anglicised city—both situated in a malarious tropical province—by comparing, for instance, an ordinary village in Lower Bengal with the European quarter of Calcutta. The native village, more or less obstructed by jungly growth, stands on soil that for much of the year is waterlogged; the surface of the ground is broken, so that, as there is no drainage, every chance hollow may be a temporary nursery of anopheles during the rainy season; moreover, there also are innumerable permanent breeding-grounds. Above all, the clusters of thatched, cow-dung-plastered huts and *baris*—damp, dark, ill-ventilated—in which the most part of the people live, are ideal haunts and permanent harbourage for the adult anopheles. In such conditions the villagers and the anopheles live together in close intimacy, and the swiftly succeeding swarms of anopheles must always be sucking the blood of infected human beings and returning the infection indiscriminately to the village population.

The state of Calcutta at the end of the eighteenth century, as described by Busteed, seems to have been almost worse than that of a Bengal village. The houses of the Europeans may have been large, but they had not glazed windows, and the entire settlement "at this time stood in what was little better than an undrained swamp, in the immediate vicinity of a malarious jungle . . . and the ditch surrounding it was . . . an open cloaca." Even into the early part of the nineteenth century the place was known as a white man's grave. But before the end of the nineteenth century the European quarter of Calcutta, so far as the essentials of sanitation are concerned, had attained the standards of a high civilisation: insanitary native *bustees* had been cleared away, ways and spaces were well kept, surface drainage was sufficient, and the drainage of the neighbouring *maidan* was magnificent. The tanks, or reservoirs, which in early days had been the water-supply of the city, still remained as more or less ornamental relics, and still served as breeding-grounds for plenty of anopheles mosquitoes, and among them the dangerous *Anopheles funestus*; but dry and well-ventilated rooms are not attractive to anopheles, and these insects did not make their way into well-constructed houses, so that good authorities doubted whether primary cases of malarial fever *originated* any longer in the European quarter of Calcutta. We must consider what is likely to happen to such insects as still might get into rooms so unsuitable to their taste. Are they as likely to bite human beings—or to light upon an infected human being—as they would be in a native village? Are they likely to remain in a situation so inhospitable long enough to develop an infection (10 to 20 days) if it were acquired? Such a favouring concurrence of events is likely to happen only where large numbers of anopheles and large numbers of infected human beings exist for a considerable time in constant association in an environment that suits the insect.

Story of Malaria in England.

To estimate present-day possibilities of danger from our native British anopheles we have to consider the history of malaria in England in the light of the foregoing comparison. The result will be to show that in the old pre-sanitary days, when the state even of cities like London was almost as bad as that of an Indian village, "fever and ague" was extremely common here, and that with the progress of sanitation it disappeared except as an insignificant localism—and all in entire ignorance and unconcern of the anopheles mosquito.

It is doubtful whether it is now generally realised how common malaria was in this country—and even in London—in the days of our forefathers. The bill of mortality for the London area for the year 1665 included 5257 deaths from "fever and ague" in a population that must have been less than one-tenth of what it is now; and if it be objected that this was the year of the Great Plague, when deaths from that disease might have been deliberately concealed under a less fearful name, it may be replied, on the other hand, that the spring and summer of that year were seasons of a phenomenal drought that would have played havoc with mosquitoes. But there is no need to search for inaccessible records; books familiar to every educated Englishman—the "Canterbury Tales," the plays of Shakespeare, the diaries of Pepys and of Evelyn, and Swift's "Journal to Stella"—give us plenty of information on the subject. An evil that comes most readily to Chaucer's imagination in "The Nun Priest's Tale" is a "fevere *terciane, or an agu*, that may be your bane." What with direct speech and metaphor there are more than a dozen striking references to ague and quotidian shakings in Shakespeare's most familiar plays. Pepys's business was several times hindered by "my lord's" ague, and one of his merry parties was interrupted by the ague-fit of a lady guest. Evelyn has a good deal to say about Charles the Second's ague; he tells of one dangerous attack when the king insisted on having the new remedy "quinquina"; he describes his own little son's death at Deptford from "a quartan ague"; and he gives a full account of the *popular* cure—bathing the legs in milk as hot as could be borne and drinking carduus posset—by which he cut short one of his own attacks of ague. Swift, writing in 1711 from Chelsea, tells Stella that "people here are troubled with ague . . . which is a very common disease here," even Queen Anne and Lady Masham not escaping; and he chuckles over his pun on the fellow who "pretends to cure agues, and has set out a sign, and spells it 'egoes' . . . but I was sure [the cure] was not by a *spell.*"

Change in Sanitary Environment.

Again it is doubtful whether a generation familiarised with sanitary conventions from its cradle realises what our forefathers endured in consequence of their ignorance and indifference in matters of sanitation. What London itself was like in the latter part of the seventeenth century—and there is no good reason for supposing that it was worse than other British towns—is tersely described in Mr. W. G. Bell's recently published book on "The Great Plague in London in 1665"; the description well suffices to explain the prevalence of fever and ague at that time. In the absence of drainage there must have been a profusion of temporary breeding-places for the anopheles among the crooked, obstructed, unpaved ways, and domestic wells and ill-kept streams must have provided permanent breeding-grounds in plenty; while dark, damp, ill-ventilated rooms, in houses constructed largely of wood and confined by accumulations of garbage, must have been attractive harbours for the adult anopheles.

When the sanitary environment of the present time is contrasted with this domestic and civic indifference of those pre-sanitary days it is easy to understand how an intimacy between humanity and anophelinity has been broken, and how, in consequence, malaria has disappeared from this country, except here and there within the limits of a few scattered and rather "wild" areas whence a case of indigenous malaria is occasionally reported as an interesting curiosity. With this conquest over malaria there has not been a concurrent subjugation of the anopheles. Those now innocuous insects may not perhaps exist to-day in the City of London, but all the three British species—*maculipennis*, *bifurcatus*, and *plumbeus*, all of them susceptible to malarial infection—exist in fair numbers within the residential area around London, and at least two of them exist in great numbers in certain populous country districts.

Contributory Mitigating Influences.

Before considering exactly how a sanitary environment has managed, quite accidentally, to separate anopheles from mankind in this country, certain other factors that must have helped to mitigate the risk from the insect as this separation progressed must be taken into account.

First there is the limited infectivity of the insect in our variable climate. Whatever may happen under conditions of temperature and humidity that can be controlled in the laboratory, it is certain that the proportion of insects that develop an infection when left exposed to natural influences after feeding on a suitable malaria patient is in this country very inconstant, and may even be as low as 3·3 per cent. of a considerable batch. It appears, indeed, that if it could be imagined desirable to attempt to make our British anopheles generally infective under the sanitary regimen of the present day, the attempt could get fairly floated only in a summer having fairly long spells of weather that is hot without also being dry. But, as any ordinary proposition, it is obvious that as the numbers of anopheles diminish with the disappearance of temporary breeding-places by drainage, this variable infectivity of the insect in a variable climate would tell in reducing malarial fever.

Then there is the protection afforded by domestic animals. Roubaud, in France, attributes the absence of malaria in parts of that country where the anopheles are abundant (*anophélisme sans paludisme*) to the increase of domestic animals, particularly cattle, and more particularly stalled cattle. He has gone so far as to assert that in some such districts the anopheles have become functionally and even structurally adapted to cattle (*zoophile*) and have developed a correlated aversion to man. There is, however, no general concord of evidence that the insect prefers the blood of cattle to that of horses, or pigs, or rabbits, or man, though there would perhaps be more general agreement that it prefers a cattle-shed or a stable even when empty to a well-constructed house even when it is inhabited.

The Two Outstanding Factors in Prevention.

From this last promontory can be seen the two outstanding items of sanitary progress that most seem to have worked together in ridding this country of malaria and preventing its reintroduction in spite of the abundance of susceptible anopheles—namely, drainage and generally improved housing. The importance of drainage in restricting breeding-places and drying the soil is too well understood to require further comment. But the equal importance of dry, light, airy houses seems to have been realised only by Dr. C. W. Daniels, Colonel S. P. James, and a few others. And yet there are some facts of common observation that suggest the influence of the house. There is the significant fact that in certain Indian cantonments—and these not notoriously malarious—there may be (or once was to be) found some one particularly malarious house having the opprobrious name of "Fever Hall." Colonel James, too, has emphasised the existence in the Medway estuary of little nests of native malaria focused in a particular street, or a particular house where the anopheles make themselves at home. Conversely, there are places not a few, in the residential area around London, where anopheles larvæ are to be found in any pond and adult anopheles in any cowshed or stable, though search for an anopheles in the excellent modern residence close by would be vain. Moreover, there is more than one salubrious spot within a few hours of London—once ague-stricken, but where ague is now a vague and almost obliterated tradition—in which in July 50 anopheles larvæ may be taken from a stream at one dip of a cup, and in October adult anopheles innumerable may be caught in a cowshed or a stable though none will be found in well-built and well-kept houses not a hundred yards distant. Why anopheles is so susceptible to the effects of a dry atmosphere is a biological question that does not seem to have been investigated; the absence (in all the British species) of the thick coat of scales possessed by other kinds of mosquitoes may have something to do with it. But there is nothing strange in its shunning a particular sort of house close to its haunts; there are several other kinds of blood-sucking flies that show the same discrimination.

Conclusion.

The conclusion of the whole matter is that it is chiefly an absence of a sanitary environment that makes anopheles dangerous, just as it is chiefly an absence of a sanitary environment that makes the generality of germ-carriers and germs dangerous. In places where the sanitary environment does not exist—e.g., most rural areas in the tropics—and in expeditionary camps, where the natural environment may have to be defied, anopheles is a danger that requires prompt and special attention. But in places like these islands, where an efficient sanitary service is maintained, anopheles is *not* a real danger to the public health, and as also it is *not*, like certain species of *Ochlerotatus* and like *Culex pipiens*, an ordinary nuisance—since it may be found, by search, in swarms where the inhabitants are quite ignorant of its existence—any deliberate attempts to exterminate the insect would truly be *ἀνωφελής*, or, rather, *ἀνωφελέστατον*, that is to say, most unprofitable; for such attempts would give endless annoyance to farmers, who have quite enough trouble to put up with as things are, and also would tend to shake public confidence in the established sanitary administration.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 1349.)

MEDICAL SERVICES IN THE FACTORY.

Evidence of Sir T. M. Legge, M.D.

(App. XLII. and Q. 13515–13726.) Sir Thomas Legge, Senior Medical Inspector of Factories, gave evidence not in an official capacity but as embodying his personal views. His principal contention was that, although the worker in the factory went to his panel doctor when he became ill, there was no provision whereby the clinical knowledge of the insurance doctor was utilised in preventive work in the factory. He showed this by a chart with arrows pointing away from the factory and the workshop indicating that the workers stream from the factory to their panel doctors when they become ill. There was no return stream from the panel into the factory to try to prevent sickness claims arising there, which must ultimately fall on the National Health Insurance Funds. The duties of the factory surgeon were merely to certify fitness or disablement. The witness was sure that there was no chance of the creation of a new whole-time service of medical men as factory surgeons in this country.

> The only way . . . . in which the services of those who have the clinical experience suitable for the medical supervision can be obtained is, I believe, by some broadening of the National Health Insurance Act, so that in industrial areas certain practitioners should be given, as their panel work, the duty of keeping the industrial workers as far as possible from succumbing to illness and so becoming a charge on the insurance funds.

The witness said that he thought that both employers and trade-unionists would welcome medical supervision in the factory by a medical man for whose services they both contributed. Sir Thomas Legge urged the importance of including within the medical curriculum the relation of occupation to health, and said that much of the sickness and incapacity among the workers was preventable.

> I do not regard industrial hygiene and industrial medicine as an entity in itself, but simply as a specialised part of general medicine and surgery, from which they cannot properly be detached. Early clinical evidence of disease predisposed to, accentuated, or produced by, industry is wanted (1) for diagnosis, (2) for prevention, and (3) for treatment.

THE MINISTRY OF HEALTH INQUIRY ROOM.

(App. XLI. and Q. 13412–13514.) The clerk in charge of the inquiry room at the Ministry of Health gave evidence with regard to the number of inquiries which he received in the course of the year. The average number of personal calls is 3000 and there is a similar number of telephone calls. Surprisingly few complaints against the medical service are received, and it has been noted that with very few exceptions those persons who speak to the detriment of the insurance medical service have never been under the treatment of a panel practitioner.

NATIONAL SAILORS' AND FIREMEN'S UNION.

(App. XLIII. and Q. 13954–14058.) Mr. T. Chambers, who is in charge of the work of the union as an approved society, said that it was a registered trade-union with a membership of 58,000. The seafarer must always be a special problem within every national industrial problem. The method of collecting contributions from seamen appears from experience to be unsatisfactory. Numbers of men lose their cards or destroy them altogether, and this results in loss of credits to the Society and loss and inconvenience to the member when he is claiming benefit. The witness made suggestions for meeting this difficulty, involving the abolition of the contribution card system. Although he said that he saw grave difficulties in the way of segregating the whole body of seamen in one approved society because of the changes in employment, he thought that if this step were taken, it was essential that the Society should be under the control of its own members—in other words, the National Sailors' and Firemen's Union was quite competent to be that Society.

As to medical benefit for seamen, the witness saw no reason for any special arrangements, and said that their members who came under the ordinary machinery of the Act never made any complaint that they experienced difficulty in getting medical attention when they needed it. The Society pays less into the general medical benefit pool in respect of its members, because it gets a rebate for the periods in which seamen are abroad. This sets funds free for other benefits, and the Society give dental treatment including a contribution of about one-half towards the cost of dentures.

LOYAL ORDER OF ANCIENT SHEPHERDS.

(App. XLIV. and Q. 14059–14250.) This is a friendly society with branches called lodges. Evidence was given by Mr. John Grieve and Mr. A. J. E. Saunders. It followed in many respects evidence given by other friendly orders, including the objection to pooling surpluses, and the favouring of a limitation of additional cash benefits. The evidence contains a suggestion that the income limit for compulsory National Health Insurance should be raised from £250 to £350, on a level with the limit in the Workmen's Compensation Act, but the witnesses were unable to say that they were aware of any real demand for this.

In view of the expectation that the Society could give dental benefit out of surplus, they suggested that priority should be given in any development to the treatment of dependants.

> We are of opinion that a first step towards the establishment of a public medical service could be made by extending medical benefit to dependants of insured persons. We believe our members would be willing to pay an increased contribution for this purpose. The average man is more concerned to know that his dependants are provided with proper medical attention than he is about himself. Since the inception of National Health Insurance, although he finds himself entitled to free medical attention for himself, he finds it more difficult to provide for his dependants owing to the increased fees now charged by the medical profession for private service.

This Society thinks that serious consideration should be given to the possibilities of administering workmen's compensation on lines similar to National Health Insurance. A suggestion in the evidence that medical umpires should be appointed to settle questions in dispute between the panel doctor and the regional medical officer gave rise to a lengthy examination of the witnesses as to the merits of such a proposal. It was suggested to them that their object was merely to relieve themselves of the responsibility of determining in the light of the medical evidence whether a member should continue to receive benefit on the ground of incapacity for work. They said that their difficulty arose from the fact that the regional medical officer was not empowered to give a decision. He too often evaded the issue or left it too vague. They agreed that if he was able to give a decision they would not need the suggested umpire.

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* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247–8); The Provision of Medical Benefit (Feb. 7th, pp. 301–3; Feb. 14th, pp. 355–6; Feb. 21st, pp. 403–5); Financial Provisions of the Act (Feb. 28th, pp. 454–7); Medical Certification and the Regional Medical Staff (March 7th, pp. 508–9); The Approved Societies and the Money Benefits (March 14th, pp. 564–5; March 21st, pp. 623–4); Evidence of the Hearts of Oak Society (March 28th, pp. 677–9); Evidence of the National Conference of Industrial Assurance Approved Societies and of the Manchester Unity Approved Society (April 4th, pp. 731–3); Evidence of Independent Order of Rechabites, of Rational Association Friendly Society, and of Miners' Societies (April 11th, pp. 784–6; April 18th, p. 839); Evidence of Mr. Alban Gordon (April 18th, pp. 839–40); Evidence of Joint Committee of Approved Societies, of Stock Exchange and Lloyds' Health Insurance Societies, and of Group of Catholic Approved Societies (April 25th, pp. 889–91); Evidence of the National Insurance Beneficent Society (May 2nd, pp. 943–4); Evidence of the British Medical Association (May 9th, pp. 993–5); Evidence of the British Dental Association and other Dental Organisations (May 16th, pp. 1044–6); Evidence of the Insurance Committees (May 23rd, pp. 1097–8); Evidence of Various Approved Societies (May 30th, pp. 1135–6); Evidence of the British Medical Association (June 6th, pp. 1184–6; June 13th, pp. 1248–50; June 20th, pp. 1315–6); Evidence of other Medical Bodies (June 20th, p. 1316; June 27th, p. 1348); Individual Evidence (June 27th, p. 1348).

References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1369.

MEDICINE AND THE LAW.

Medical Evidence in Accidental Deaths.

A correspondent asks our opinion on the following occurrences: (1) A man falls from a roof, fractures his skull, and is killed instantly. (2) A man commits suicide by a gas oven and dies. On both occasions a doctor was sent for and went, and in each case an inquest was held, but no medical evidence was called. It appears that a coroner is not obliged by law to call medical evidence in cases where apparently it can add nothing material to what is known as to the cause of death. No doubt medical men will not always believe that he has acted with discretion in having no medical evidence given. Mr. R. Henslowe Wellington, himself a medical coroner, wrote in 1906 ("The King's Coroner," vol. ii., p. 23): "It is not always necessary to have medical evidence at an inquest, so that the expense of calling it should not be incurred unless the coroner is satisfied that a skilled and scientific examination is necessary in order to determine the cause of death," and (p. 68) "The immediate cause of death may be shock, due to being knocked down or run over by a train, and the remote cause as to who if anyone was to blame for the death; or a person may have been seen to throw himself from a height, or deliberately cast himself into a river and drown." The object in calling medical witnesses in all such cases—namely, the elimination of other causes of death than the obvious one—could only be attained by post-mortem examination, and generally speaking would hardly be worth the expense. But a man might have died of heart failure before falling off a roof or before the gas in a gas oven operated sufficiently to kill him, and this would be worth finding out in the case of an accident if a question of insurance turned on it. In such a case, however, medical evidence would be called, unless there was independent evidence proving an accident. The medical man summoned to an inquest and not called is, of course, entitled to his fee. The Act says (Coroners Act, 1887, Sec. 22): "A legally qualified medical practitioner who has attended at a coroner's inquest in obedience to a summons of the coroner under this Act shall be entitled to receive such remuneration as follows—" which evidently contemplates the conditions described.

A Question of Time-limit.

An important decision affecting the time-limit within which actions can be brought against the officials of public authorities in connexion with the performance of their official duties was given in the Divisional Court in the case of Freeborn *v.* Leeming. The plaintiff, Mr. G. Freeborn, injured by a motor-car, was treated in the Kendal Workhouse Infirmary by Dr. R. Leeming, as medical officer to the guardians, from Sept. 5th to Oct. 15th, 1923, when he left by his own wish and went to his home in Lincolnshire. It was there found by other medical men that he had suffered all the time from a dislocated hip, which Dr. Leeming had failed to discover or to treat, and that it was then too late for the dislocation to be reduced. It was found by the county court judge, on Freeborn bringing an action against Dr. Leeming, that there had been negligence, and he awarded £1800 damages, holding that the action, commenced six months and ten days after the plaintiff left the defendant's care and was not barred by the Public Authorities Protection Act, 1893; the cause of action did not arise until damage resulted to the plaintiff from the negligence, and that such damage only resulted at the time when, if he had been properly treated, he would have been able to return to work. Section 1 (*a*) of the Act in question provides that an action shall not lie "unless it is commenced within six months next after the act, neglect, or default complained of, or, in case of a continuance of injury or damage, within six months next after the ceasing thereof." Mr. Justice Salter (with whom Mr. Justice Swift agreed) held that the county court judge had decided rightly that the words "a continuance of injury or damage" meant a continuance of the act which caused the damage (Carey *v.* Mayor of Bermondsey, 20 *Times* L.R. 2), but that he was wrong in holding that no damage occurred in the case of the plaintiff until within six months of the commencement of the action. It was argued that if the dislocation had been reduced the plaintiff would have had to remain in bed for several weeks, and that therefore during such a period he suffered no damage. His lordship however, held that this was not so, but that the damage began to accrue from the time when the failure to discover the dislocation took place, the result of the failure being that during the time that followed it the plaintiff was becoming worse instead of better. His lordship on these grounds gave judgment allowing the appeal, and expressing regret that he had had to come to that conclusion.

The Medical Witness's Fee.

Dr. X was recently subpœnaed to give evidence on behalf of the plaintiff in a claim for compensation after an accident. The plaintiff won his case, and Dr. X is informed by the plaintiff's lawyer that he is entitled to a fee of 1 guinea plus 5s. expenses, but, as the defendant has not yet paid costs, Dr. X has not yet come by his money. Hitherto he has always been paid 2 guineas a day for attendance at court. Should he remain unpaid, Dr. X would like to know on whom he has any legal claim, and for how much. Speaking generally, costs of witnesses are fixed by a taxing-master or by the registrar of the county court, according to prescribed scales, with certain discretion. Presumably the solicitor was right in this case in his statement of the amount due to Dr. X after taxation, and if and when the defendant pays Dr. X will receive that sum. In the absence of any agreement for remuneration beforehand, he is unlikely to obtain more unless the plaintiff chooses to pay more. Should Dr. X find himself unable to get payment in any other way, he can claim against the plaintiff, but in that case it would be prudent to ascertain first whether the plaintiff is able to pay if he has received nothing from the defendant. Certain obvious precautions should be taken by a medical man when called upon to give evidence in a court of law. When a subpœna is served on him, he should ask for "conduct money" to which he is entitled before going to court, being not obliged to obey the subpœna until he has received it. If called on in court to give evidence, he can ask to have his fee paid before being sworn, and the judge will then decide what is a proper fee in the circumstances. In most cases, even if not called, he would still be entitled to his fee. Any witness who expects a higher fee than that ordinarily allowed on "taxation between party and party" should arrange the matter clearly then and there if he wishes to avoid disappointment afterwards. Fees thus arranged between witness and client are usually higher than those allowed on taxation.

Manchester Royal Infirmary. — Sir William Cobbett has resigned the chairmanship which he has held for 21 years on account of ill-health, and Mr. R. P. Goldschmidt has been appointed to succeed him. Sir William Cobbett was knighted at the opening of the new infirmary by King Edward in 1909.

BUCHAREST.

(FROM OUR OWN CORRESPONDENT.)

Food Preservatives and Food Adulteration.

IN the *Medical Practicant* Dr. Jámbor writes on this subject. He says that the necessity of preserving food in some way had been recognised since ancient times. The development of the science of chemistry had placed in the hands of the manufacturer means of preserving food hitherto unknown and means of matching foods in tints and colours. He believes that the education of the public in regard to artificial colouring of foods would be quite as effective as legislation. After August 1st the new food law requires that all food products entering Roumania artificially coloured shall bear a label with a statement to that effect. The material for colouring need not be declared, except in the one case of sulphate of copper. The chief sanitary commissioner's advice to food makers is to cease using colours, and especially if the colouring is under suspicion of any kind. Concerning antiseptics in relation to foods, he thinks the rights of the consumer are paramount. He believes that there never should be an antiseptic added to foods, except when absolutely necessary, unless the consumer orders it for himself. There is, he thinks, a legitimate use for sulphurous acid as employed in the fumigation of dried fruits, and the burning of the sulphur match in wine barrels, a method which has come down from antiquity, but when it is used, as at present, greatly to excess for preserving a poor wine and putting on the market a new wine before it is aged, such use is unwarrantable. He believes that the application of the principle of honesty would cover all the needs of a food law.

Intestinal Tuberculosis in Children.

A type of tuberculosis occurring in children of farmers is described by Dr. Popovici. It affects principally the intestinal lymph glands and, though rarely fatal, may constitute a grave illness. The children become emaciated, pale, suffer from abdominal pain and tenderness around the umbilicus, headache, insomnia, and slight rise of temperature in the evening. The cervical and submaxillary glands are frequently swollen. The disease may progress very rapidly for a time, and then take on a chronic type, which is more apt to be prolonged in the older children. After the subjective symptoms disappear, anæmia and general weakness persist for a considerable period. Dr. Popovici attributes the occurrence of the disease to the fact that there was an epidemic among the cows of the district, and although their milk was wholesome (the epidemic consisting only of the occurrence of some external manifestations) it was nevertheless of very poor quality.

Removal of Large Sharp Bodies from the Œsophagus.

In the Medical Society of Cluj Dr. Koleszár spoke about the difficulty of extracting large sharp bodies from the œsophagus. He said that external œsophagotomy is the operation usually advised for their removal. The technique of the operation is difficult and the results are inconstant. It follows from this that if careful extraction can be accomplished through the mouth the results must be better than by operation, especially if operation be in the hands of a somewhat inexperienced surgeon. Dr. Koleszár cites the history of two cases which showed him conclusively that the incision of the œsophagus for the extraction of foreign bodies, even in apparently desperate cases, might not always be necessary. The technique practised is as follows. The œsophagus is exposed by the usual incision on the left side of the neck. The incision made is at least 0 cm. in length, or longer if necessary, to give the operator a full view of the œsophagus. Instead of opening the organ he practises the following method (Kramer's method). While lifting the patient's head forward and pulling the larynx up with the left hand, he endeavours with two fingers of the right hand in the wound, under the control of the X ray screen, to push the foreign body into a different position in the œsophagus. After some effort in each case this manipulation proved successful, and he was able to pass the usual slender œsophageal forceps through the mouth and remove the body which previously had resisted all forms of intrabuccal manipulation. He considers that inasmuch as the statistics show that œsophagotomy is connected with a very high mortality-rate, any method which enables the operator to remove the body without subjecting the patient to such very high risk must be of great value.

Inflammatory Process of the Sigmoid Flexure.

Dr. Dumitrescu-Mante, lecturer to the University of Bucharest, read a paper in the Bucharest Medical Society on the above subject. He drew attention to the frequency of benign inflammatory processes in and about the sigmoid flexure. As separate and distinct affections these have not received proper study and have frequently been overlooked or else wrongly diagnosed as cancer. They may be acute or chronic and are frequently followed by strictures of a moderate grade. Although extremely troublesome, they are generally amenable to treatment without operation. The use of the barium enema and the sigmoidoscope mark a very great advance in diagnosis, since a great portion of the sigmoid flexure may now be inspected directly by the latter method. Even exploratory laparotomy is often less successful than direct inspection, since the interior of the gut often gives more information than the exterior. It may well happen that the walls of the flexure are thickened to such an extent by simple chronic inflammation that the operator may have considerable doubt as to the nature of the condition. The most common symptoms are pain, irregularities of defæcation, and tenderness. The loop may be palpated as a thickened mass or as a distinct tumour. An acute sigmoiditis may be the result of simple chronic constipation. Fever and general malaise are common here, and occasionally attacks of obstruction, which yield, however, to castor oil and enemata. A mild general infection is probably set up from an acute ulceration or a diverticulum in which the fæces stagnate, with secondary irritation of the peritoneum. Inspection will generally show an œdematous and hyperæmic mucous membrane. If the intestines are distended with air, the sigmoid will not balloon out. In the chronic cases the patients are frequently so cachectic that the diagnosis of carcinoma seems probable. The mucous membranes are also very vascular here, but areas of pigmentation from former hæmorrhages are very common. The stools frequently contain mucus and blood. Follicular inflammation is rare, but may also readily be diagnosed with the proctoscope. The treatment of all these conditions calls for regulation of food and stools, mild astringent irrigations, and tonic drugs.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

The Annual Meeting of the A.M.A.

ONE of the more important incidents, and certainly the most exciting, of the recent meeting of the American Medical Association at Atlantic City was the discussion of a quarrel now going on between the Judicial Council of the Association and the Life Extension Institute. The latter organisation was incorporated, largely through the efforts of its President, Mr. Harold A. Ley, in 1913. The object of the institute was to encourage periodical medical examinations as a means to study early symptoms, to secure early treatment, and so save life. The Institute, though for several years run at a financial loss, has been successful in promoting the idea of medical examinations, and according to the report of the Metropolitan Life Insurance Company, whose policy-holders are entitled to free examination by an arrangement with the Institute, it has been notably successful in reducing the mortality-rate among its clients. In the year 1923 a dividend of 3¼ per cent. was paid on the preferred stock. Apparently it is only within the last two years that the officers of the American Medical Association have taken umbrage at this campaign. At the last annual meeting in Chicago the Judicial Council issued a report on the practises of certain "commercial organisations." The Life Extension Institute believes that it recognises references to its own procedure in this report and has printed a refutation in parallel columns of the statements in this report which it says are untrue. This year the Judicial Council is called on by a resolution in the House of Delegates—a resolution which warmly resents the imputation of dishonesty made by the Life Extension Institute—to present information or proof that will vindicate its position, "so that suitable action may be taken by this House."

On the motion of the Reference Committee on Reports of Officers, the following resolutions were carried :—

Resolved.—That it is the sense of this House of Delegates that periodic health examinations should be conducted by medical men and neither dominated by, nor controlled by, lay organisations, for the reason that the relation between the patient and the physician is an individual matter and anything that disturbs such relationship is detrimental to the best interests of the patient ; and it is further

Resolved.—That it is the sense of the House of Delegates that every Fellow and Member of the American Medical Association should live up to the spirit and letter of this resolution.

If these resolutions should be carried out it is obvious that the Life Extension Institute would disappear. Actually two members of their Hygiene Reference Board have resigned, but the remainder, including some of the most prominent members of the American medical profession, seem to be standing behind the organisation. The indications are that the Institute will survive, and continue to work both for private applicants and for the life insurance companies.

Medical Education.

The report of the Council on Medical Education and Hospitals includes some interesting figures. In 1900 there were 160 medical schools in the United States—more than half the world supply. In all but about 30 the entrance requirements were absent or nominal ; many schools had no laboratories and were not even attached to hospitals. Now, of the 70 medical schools teaching clinical subjects 34 have their own teaching hospitals and 30 have access to other hospitals by which satisfactory clinics are being regularly held. Seventy-five colleges, or 93·7 per cent., have entrance qualifications "similar to those of the rest of the world." The expense of maintaining these colleges has naturally increased. Students' fees have been raised, but even now cover only one-quarter of the increased expense. The number of approved post-graduate schools has increased from 20 to 50 in the last ten years.

WOMEN'S MEMORIAL IN YORK MINSTER: UNVEILING CEREMONY.

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At the same time as the ceremonial was taking place in York, similar services were being held in Canada, South Africa, South and West Australia, Tasmania, and New Zealand.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The thirty-third meeting of the Commission was held in Edinburgh on June 23rd, Prof. Alexander Gray in the chair. Evidence on the question of the supply of medicines and drugs in Scotland under the Insurance Scheme was given by Mr. Rutherford Hill on behalf of the General Council of Panel Chemists of Scotland. The National Farmers Union of Scotland, represented by Mr. J. C. Henderson, submitted evidence as to the position of agricultural societies in the scheme and the need for reducing the rate of contribution for agricultural workers in view of their higher standard of health. Dr. A. Asher, of Thurso, gave evidence on various aspects of the medical service under the Act in rural areas. —The thirty-fourth meeting was held at the Home Office, Whitehall, on June 25th. Lord Lawrence of Kingsgate in the chair. Evidence was submitted on behalf of the Queen Victoria's Jubilee Institute for Nurses by Miss Peterkin, Mrs. Bruce Richmond, and Major H. F. Cadell : the College of Nursing by Miss Watt, Miss Viney, and Miss Bremner ; the Incorporated Midwives Institute by Miss Doubleday and Miss Gilligan ; and the Scottish Midwives Association by Miss Barker. Thereafter Mr. J. L. Cohen, of the Department of Economics, Cambridge University, gave evidence on the structure of the Insurance Scheme and the need for fundamental alterations in certain directions.

BUCHAREST.

(FROM OUR OWN CORRESPONDENT.)

Food Preservatives and Food Adulteration.

IN the *Medicul Practicant* Dr. Jámbor writes on this subject. He says that the necessity of preserving food in some way had been recognised since ancient times. The development of the science of chemistry had placed in the hands of the manufacturer means of preserving food hitherto unknown and means of matching foods in tints and colours. He believes that the education of the public in regard to artificial colouring of foods would be quite as effective as legislation. After August 1st the new food law requires that all food products entering Roumania artificially coloured shall bear a label with a statement to that effect. The material for colouring need not be declared, except in the one case of sulphate of copper. The chief sanitary commissioner's advice to food makers is to cease using colours, and especially if the colouring is under suspicion of any kind. Concerning antiseptics in relation to foods, he thinks the rights of the consumer are paramount. He believes that there never should be an antiseptic added to foods, except when absolutely necessary, unless the consumer orders it for himself. There is, he thinks, a legitimate use for sulphurous acid as employed in the fumigation of dried fruits, and the burning of the sulphur match in wine barrels, a method which has come down from antiquity, but when it is used, as at present, greatly to excess for preserving a poor wine and putting on the market a new wine before it is aged, such use is unwarrantable. He believes that the application of the principle of honesty would cover all the needs of a food law.

Intestinal Tuberculosis in Children.

A type of tuberculosis occurring in children of farmers is described by Dr. Popovici. It affects principally the intestinal lymph glands and, though rarely fatal, may constitute a grave illness. The children become emaciated, pale, suffer from abdominal pain and tenderness around the umbilicus, headache, insomnia, and slight rise of temperature in the evening. The cervical and submaxillary glands are frequently swollen. The disease may progress very rapidly for a time, and then take on a chronic type, which is more apt to be prolonged in the older children. After the subjective symptoms disappear, anæmia and general weakness persist for a considerable period. Dr. Popovici attributes the occurrence of the disease to the fact that there was an epidemic among the cows of the district, and although their milk was wholesome (the epidemic consisting only of the occurrence of some external manifestations) it was nevertheless of very poor quality.

Removal of Large Sharp Bodies from the Œsophagus.

In the Medical Society of Cluj Dr. Koleszár spoke about the difficulty of extracting large sharp bodies from the œsophagus. He said that external œsophagotomy is the operation usually advised for their removal. The technique of the operation is difficult and the results are inconstant. It follows from this that if careful extraction can be accomplished through the mouth the results must be better than by operation, especially if operation be in the hands of a somewhat inexperienced surgeon. Dr. Koleszár cites the history of two cases which showed him conclusively that the incision of the œsophagus for the extraction of foreign bodies, even in apparently desperate cases, might not always be necessary. The technique practised is as follows. The œsophagus is exposed by the usual incision on the left side of the neck. The incision made is at least 9 cm. in length, or longer if necessary, to give the operator a full view of the œsophagus. Instead of opening the organ he practises the following method (Kramer's method). While lifting the patient's head forward and pulling the larynx up with the left hand, he endeavours with two fingers of the right hand in the wound, under the control of the X ray screen, to push the foreign body into a different position in the œsophagus. After some effort in each case this manipulation proved successful, and he was able to pass the usual slender œsophageal forceps through the mouth and remove the body which previously had resisted all forms of intrabuccal manipulation. He considers that inasmuch as the statistics show that œsophagotomy is connected with a very high mortality-rate, any method which enables the operator to remove the body without subjecting the patient to such very high risk must be of great value.

Inflammatory Process of the Sigmoid Flexure.

Dr. Dumitrescu-Mante, lecturer to the University of Bucharest, read a paper in the Bucharest Medical Society on the above subject. He drew attention to the frequency of benign inflammatory processes in and about the sigmoid flexure. As separate and distinct affections these have not received proper study and have frequently been overlooked or else wrongly diagnosed as cancer. They may be acute or chronic and are frequently followed by strictures of a moderate grade. Although extremely troublesome, they are generally amenable to treatment without operation. The use of the barium enema and the sigmoidoscope mark a very great advance in diagnosis, since a great portion of the sigmoid flexure may now be inspected directly by the latter method. Even exploratory laparotomy is often less successful than direct inspection, since the interior of the gut often gives more information than the exterior. It may well happen that the walls of the flexure are thickened to such an extent by simple chronic inflammation that the operator may have considerable doubt as to the nature of the condition. The most common symptoms are pain, irregularities of defæcation, and tenderness. The loop may be palpated as a thickened mass or as a distinct tumour. An acute sigmoiditis may be the result of simple chronic constipation. Fever and general malaise are common here, and occasionally attacks of obstruction, which yield, however, to castor oil and enemata. A mild general infection is probably set up from an acute ulceration or a diverticulum in which the fæces stagnate, with secondary irritation of the peritoneum. Inspection will generally show an œdematous and hyperæmic mucous membrane. If the intestines are distended with air, the sigmoid will not balloon out. In the chronic cases the patients are frequently so cachectic that the diagnosis of carcinoma seems probable. The mucous membranes are also very vascular here, but areas of pigmentation from former hæmorrhages are very common. The stools frequently contain mucus and blood. Follicular inflammation is rare, but may also readily be diagnosed with the proctoscope. The treatment of all these conditions calls for regulation of food and stools, mild astringent irrigations, and tonic drugs.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

The Annual Meeting of the A.M.A.

ONE of the more important incidents, and certainly the most exciting, of the recent meeting of the American Medical Association at Atlantic City was the discussion of a quarrel now going on between the Judicial Council of the Association and the Life Extension Institute. The latter organisation was incorporated, largely through the efforts of its President, Mr. Harold A. Ley, in 1913. The object of the institute was to encourage periodical medical examinations as a means to study early symptoms, to secure early treatment, and so save life. The Institute, though for several years run at a financial loss, has been successful in promoting the idea of medical examinations, and according to the report of the Metropolitan Life Insurance Company, whose policy-holders are entitled to free examination by an arrangement with the Institute, it has been notably successful in reducing the mortality-rate among its clients. In the year 1023 a dividend of 3¼ per cent. was paid on the preferred stock. Apparently it is only within the last two years that the officers of the American Medical Association have taken umbrage at this campaign. At the last annual meeting in Chicago the Judicial Council issued a report on the practises of certain "commercial organisations." The Life Extension Institute believes that it recognises references to its own procedure in this report and has printed a refutation in parallel columns of the statements in this report which it says are untrue. This year the Judicial Council is called on by a resolution in the House of Delegates—a resolution which warmly resents the imputation of dishonesty made by the Life Extension Institute—to present information or proof that will vindicate its position, "so that suitable action may be taken by this House."

On the motion of the Reference Committee on Reports of Officers, the following resolutions were carried:—

Resolved.—That it is the sense of this House of Delegates that periodic health examinations should be conducted by medical men and neither dominated by, nor controlled by, lay organisations, for the reason that the relation between the patient and the physician is an individual matter and anything that disturbs such relationship is detrimental to the best interests of the patient; and it is further

Resolved.—That it is the sense of the House of Delegates that every Fellow and Member of the American Medical Association should live up to the spirit and letter of this resolution.

If these resolutions should be carried out it is obvious that the Life Extension Institute would disappear. Actually two members of their Hygiene Reference Board have resigned, but the remainder, including some of the most prominent members of the American medical profession, seem to be standing behind the organisation. The indications are that the Institute will survive, and continue to work both for private applicants and for the life insurance companies.

Medical Education.

The report of the Council on Medical Education and Hospitals includes some interesting figures. In 1000 there were 160 medical schools in the United States—more than half the world supply. In all but about 30 the entrance requirements were absent or nominal; many schools had no laboratories and were not even attached to hospitals. Now, of the 70 medical schools teaching clinical subjects 31 have their own teaching hospitals and 30 have access to other hospitals by which satisfactory clinics are being regularly held. Seventy-five colleges, or 03·7 per cent., have entrance qualifications "similar to those of the rest of the world." The expense of maintaining these colleges has naturally increased. Students' fees have been raised, but even now cover only one-quarter of the increased expense. The number of approved post-graduate schools has increased from 20 to 50 in the last ten years.

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Public Health Services.

THE HEALTH OF LONDON IN 1924.

Sir William Hamer, medical officer of health and school medical officer to the London County Council, estimates the mid-year civilian population of the County of London in 1924 as 4,576,505, and there were in addition 9495 non-civilian residents. The marriage-rate was 17·2, about the same as in the previous year. The birth-rate was 18·6, as compared with 20·1 in 1923 and 20·9 in 1922. A diagram shows that while the birth-rate has been halved since 1870, the marriage-rate has remained practically stationary. Thus the birth-rate for 1871–75 was 35·3 and the rate for 1921–25 was 20·0. During the same quinquennia the marriage-rates were 19·6 and 18·0 respectively. The regularity of the diagram is broken by the increase in the marriage-rate caused by the war marriages and a temporary subsequent increase in the birth-rate.

The *death-rate* was 12·2, as compared with 11·4 in the previous year. The increase is chiefly due to the increased fatality of measles among children under 5 years of age, and the greater number of deaths at ages over 45 due to the greater prevalence of influenza. Encephalitis lethargica caused a considerable number of deaths. The cancer and phthisis deaths increased somewhat, while a decrease occurred in the mortality from diarrhœa and enteritis. A table is given showing the death-rates for the county and the 29 metropolitan boroughs. The infant mortality for London was 69·0; the typhoid fever-rate 0·01; the phthisis-rate 0·98; and the cancer-rate 1·42. Turning to the metropolitan boroughs and excluding the small resident population of the City (13,621), the highest birth-rates were found in Shoreditch (25·0) and Bermondsey (24·3); the lowest in Westminster (11·2), Holborn (13·4), and Hampstead (13·5). The lowest death-rates from all causes occurred in Lewisham (10·4), Woolwich (11·0), Wandsworth (11·1) and Fulham (11·1); while the highest were 14·3 in Finsbury and 14·1 in Southwark. The best infant mortality-rates were in Lewisham (48), Hampstead (56), Stoke Newington (56), Wandsworth (57), and Hackney (59). Bethnal Green had a typhoid-rate of 0·10, the only other boroughs which reached 0·03 being Hampstead and Deptford. The highest rates from phthisis were 1·4 in Southwark, 1·24 in Chelsea, 1·23 in Finsbury, and 1·22 in Woolwich; the lowest being 0·66 in Hampstead, 0·68 in Kensington, 0·7 in Stoke Newington, 0·72 in Lewisham, and 0·73 in Wandsworth. The highest cancer-rates were 1·83 in St. Marylebone and 1·72 in Hampstead; the lowest being 1·0 in Paddington and 1·02 in Bethnal Green. Deaths caused by vehicles and horses show an increase. In London there were 593, 166 being children under 15. Taking for comparison Great Britain as a whole, motor vehicles caused more than eight deaths per day in 1924, being an increase of 24 per cent. on 1923. In the United States during 1924 motor vehicles caused 52 deaths per day, being an increase of 4 per cent. on the 1923 figure.

The condition of Europe as regards *small-pox* was more favourable than recently, but the presence in the North and Midlands of a mild form of small-pox was a continual menace to London. Prompt and correct diagnosis and efficient administration, in the absence of full protection by vaccination and revaccination, are the chief measures by which London is protected. The County Council places at the disposal of medical officers of health and medical practitioners in London and certain neighbouring areas the services of its expert medical staff for assistance in diagnosis, and coöperates with all the sanitary and port authorities in the country. A history is given of the five cases of small-pox which occurred in London during 1924 and of the four persons, who sojourned in London, en route for other destinations, and were attacked by small-pox after leaving.

In London the death-rate from *diphtheria* and *scarlet fever* was practically stationary, while in New York diphtheria showed a small increase on the comparatively low rate for 1923. Sir William Hamer has previously shown that from 1859 to the end of the nineteenth century New York had a far heavier death-rate from diphtheria than England and Wales or London, and suggested that in New York City, before it was extended, diphtheria deaths frequently included scarlet fever and other forms of throat inflammation. This view is confirmed by a diagram showing the similar behaviour of diphtheria and scarlet fever mortality, when taken together, in New York and London from 1866 to 1924. Except for the period from 1870 to 1890 the mortality curve of the two cities from these two diseases is very much alike. Another interesting diagram dealing with the diphtheria record of 24 towns in this country shows the remarkable way in which diphtheria gradually spreads from one part of this country to another. "The impression left on the mind," says Sir William Hamer, "is one of an eminently infectious disease, but of one which spreads quite slowly from one area, town, or country to another, so that whereas in a period of four, five, or more years a continent or large area may suffer severely, the extent to which portions of such continent or other large area are involved varies greatly within the series of years under review." The outstanding fact is that widespread epidemics of throat disease have shown a tendency to occur in Europe and America at recurring intervals of some 20 to 30 years. It has also been noted that epidemics of influenza influence throat epidemics.

There were six cases of human *anthrax* reported during the year, one of which proved fatal. In four cases the employment of the patients involved handling imported hides; the fifth case was a girl of 10, whose father and brothers handled hides, and the sixth case was thought to have contracted it from a shaving-brush. Notified cases of *encephalitis lethargica* numbered 605. In 64 cases the diagnosis was revised, reducing the number to 541, with 122 deaths and a case fatality of 45·0 per cent. The prevalence of the disease was most marked in April and May. Sir William Hamer considers in detail the relationship between influenza and cerebro-spinal fever, poliomyelitis and polio-encephalitis, and encephalitis lethargica. The pandemic of influenza in 1918 was preceded by unusual prevalence of cerebro-spinal fever in 1915, and of poliomyelitis in 1916, and was succeeded by the encephalitis prevalences of 1921 and 1924. After discussing the matter at length, Sir William Hamer inclines "to accept the conclusion that the whole group of epidemic diseases primarily affecting the nervous system exhibits a close family likeness (epidemiologically speaking) and a very close relationship, too, with influenza."

After full consideration of the circumstances of the Bethnal Green prevalence of *typhoid fever* during 1924, Sir William Hamer thinks that the various facts elucidated point very suggestively to small plaice or dabs as the source of infection. "Prior to 1906 these fish, he says, were widely implicated on several occasions in London. This cause, however, ceased to operate in 1909 and (with an exception in 1911) remained conspicuous by absence until after the war. It is suggested that this source of danger, judging from London experiences in the autumns of 1923 and 1924, has recurred and that a close watch should be kept.

The need for removing conditions likely to cause patients to discontinue attendance at the *venereal disease clinics* is receiving careful attention, and the fact that during 1924 the ratio of attendances to venereal cases was in the proportion of 32 to each new case is valuable evidence of improvement in methods. Such a ratio has never been greater in countries where compulsory notification has been adopted.

The Public Health Committee is investigating the possibility of arranging for a large scale test of artificial light treatment under satisfactory conditions, in association with the Education Committee and in consultation with the Ministry of Health.

School Report.

The school report contains several cheering items. For example, the children classed as below the normal in nutrition numbered 6·2 per cent., as compared with 12·8 per cent. in the year before the war. Had it not been for the vigilance of the head teachers and the school care committee in bringing into timely operation the remedial agencies, which now exist to an extent undreamt of before the war, the prolonged period of unemployment must have produced disastrous results. Again the percentage of verminous conditions found was 16·1, the lowest yet recorded, and the number of cases of scabies treated was the lowest since 1914. The devoted work of the school nursing staff, supported by the influence of the head teachers, has "literally revolutionised the standard of personal cleanliness attained by elementary school-children in London." In 1923 the proportion of older girls with hair completely free from vermin reached 80 per cent. for the first time. In 1924 the figure was 82·5 per cent. In 1902, when the work began, "the conditions found were indescribable," but in 1913 the free-from-vermin figure had only reached 67·2 for the older girls. Conditions as regards teeth have improved greatly, but "there still remains a very serious amount of dental decay."

Visual acuity also shows improvement. In 1913 the percentage of children aged 12 with vision 6/12 or worse was boys 22·7, girls 25·7. For 1924 the figures were boys 20·1, girls 21·6. The difference between the two sexes, which Sir William Hamer attributes to the employment of girls in indoor occupations involving eyestrain, has thus been reduced from 3 to 1·5. The Jewish schools show an abnormally heavy incidence of visual defects, and in this case the boys come out worse than the girls, and this is attributed to the effect upon the boys of long hours spent in the evenings studying Hebrew.

There were a number of *special inquiries* made during 1924. One was made at the request of Sir George Newman with regard to the signs and effects of congenital syphilis. Dr. Nairn Dobbie investigated the past history of children with heart disease in order to ascertain the early signs of cardiac implication. Dr. Elizabeth M. McVail followed up the school history of premature infants, and found that if such babies survived to school age there was no very great deviation from the normal in general physique. Dr. Percy Stocks made investigations on blood pressure, and found that up to 11 years the mean systolic pressure rises uniformly, that during adolescence the gradient is temporarily increased and reaches a uniform level at the eighteenth year, showing no further rise up to the age of 35 or 40; and that the diastolic pressure rises uniformly until adolescence, more slowly up to 17, then rapidly to 20, after which it falls slightly to 35. Dr. Stocks's investigations do not support the commonly accepted rule that blood pressure rises uniformly throughout life.

An inquiry with regard to the results of operations on tonsils and adenoids supports the view that complete removal of the tonsillar tissue is desirable. The result of the first and second reinspections of children found with defects showed that 75·5 per cent. of such children had been satisfactorily treated. Dental cases present the greatest difficulty, and apart from dental cases 82 per cent. of the ailments were remedied. Convalescent camp schools and arrangements for sending debilitated children to convalescent homes for short periods did good work. The camp school at Bushey Park dealt with 16,200 boys between June, 1919, and December, 1924. It is hoped shortly to establish new open-air schools on Brixton Hill and near Ken Wood. Open-air classes were held in connexion with 95 ordinary elementary schools as compared with 80 in 1923. Attention to physical education is "decidedly on the up grade." Over 11,000 girls were taught to swim during the year and 2875 life-saving certificates were gained. Net-ball is the chief organised game played by the girls. Health classes with special exercises for round shoulders, lateral curvature, lordosis, and flat-foot give good results, and were in operation at 41 schools at the end of the year. Dr. F. C. Shrubsall has specially investigated the effects of encephalitis lethargica and also supplies a report on the mental examination of delinquent children, which includes inquiries made with regard to this subject in the Canadian provinces and the Northern United States.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 20th, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 80; scarlet fever, 1310; diphtheria, 830; enteric fever, 58; pneumonia, 821; puerperal fever, 41; cerebro-spinal fever, 0; acute poliomyelitis, 3; acute polio-encephalitis, 1; encephalitis lethargica, 61; dysentery, 3; ophthalmia neonatorum, 101. There were no cases of cholera, plague, or typhus fever notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 3 deaths from enteric fever, 62 from measles, 12 from scarlet fever, 62 from whooping-cough, 21 from diphtheria, and 32 from influenza. In London itself the deaths from influenza numbered 8, from whooping-cough 11, and from diphtheria 1.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. J. H. Lightfoot is placed on the Retd. List with the rank of Surg. Capt.

ROYAL ARMY MEDICAL CORPS.

Capt. J. A. Cowan retires, receiving a gratuity.

TERRITORIAL ARMY.

Lt.-Col. W. Bowater to be Bt.-Col.

Maj. H. F. Humphreys to be Lt.-Col. and to comd. the 143rd (South Midland) Field Ambulance, vice Bt.-Col. W. Bowater.

Capt. F. M. Halley is restd. to the estabt.

Lt.-Col. (Brevet Col.) D. J. Graham is retired on completion of tenure of comd. and retains his rank.

Maj. D. M. C. Church (I.M.S. r.t.) to be Maj.

Capt. R. F. Linton resigns his commn. and retains the rank of Capt.

Capt. G. S. Lewis (late R.A.M.C., S.R.) to be Capt.

A. O. Bekenn and G. W. Robinson to be Lts.

Supernumerary for Service with O.T.C.—Capt. R. B. Green (late R.A.M.C., S.R.) to be Capt., and J. Whillis to be Lt., both for service with the medical unit, Durham University, O.T.C.

INDIA AND THE INDIAN MEDICAL SERVICE.

Lt. C. R. Henderson to be Capt.

The King has approved the retirement of Col. P. Dee and Lt.-Cols. R. Bryson (on account of ill-health) and A. M. Fleming.

Aziz Khan Mahomed Khan and Ganeshrao Venkatrao Golforkeri to be Temp. Lts.

Capt. J. M. R. Hennessy has been succeeded as Superintendent of the Borstal Institution at Lahore by Capt. N. Briggs; Maj. Thomas acts as Civil Surgeon, Poona, and Maj. B. F. Eminson acts as Civil Surgeon, Karachi. Maj. W. A. Mearns, Officiating Director of Public Health, United Provinces, has been appointed a member of the State Board of Medical Examinations, United Provinces, vice Lt.-Col. C. L. Dunn, resigned. Rai Bahadur Dr. D. D. Pandya, Assistant Director of Public Health, in charge Provincial Hygiene Institute, Lucknow, is continued in his appointment as a member of the State Board of Medical Examinations. Lt.-Col. W. D. Ritchie has been placed on special duty in Assam; Lt.-Col. G. Tate has been appointed Professor of Midwifery, King Edward Medical College, Lahore; and Mr. H. A. Taylor acts as Lecturer on Dental Surgery, Medical College, Calcutta, vice Mr. J. R. Gill.

Leave has been granted to the following officers: Lt.-Col. G. W. Maconachie, Superintendent of Prisons, Madras; Col. Hakle, Inspector-General of Civil Hospitals; Maj.

St. J. E. Handricks, civil surgeon and superintendent, District Jail, Bhandara; Maj.-Gen. Robinson, Director of Medical Services in India; Lt.-Col. Mackie, director, Bombay Bacteriological Laboratory; Maj. H. W. Acton, professor of pathology and bacteriology, School of Tropical Medicine and Hygiene, Calcutta; Capts. W. A. C. Netscher, medical officer, Eastern Bengal Railway, Kanchrapara; R. E. Murray, civil surgeon, Shahpur; Lt.-Col. Murphy, director of public health, Bombay; Lt.-Col. Davenport Jones, civil surgeon, Karachi; and Lt.-Col. Steel, civil surgeon, Poona.

DEATHS IN THE SERVICES.

Major-General Sir Henry Neville Thompson, K.C.M.G., C.B., D.S.O., late R.A.M.C., died on June 21st at Osborne aged 64. The son of the Rev. M. N. Thompson, rector of Clonmany, Donegal, he graduated in arts and medicine at Trinity College, Dublin, in 1883, entered the Army Medical Service in the following year, and reached the rank of surgeon-major in 1896. In 1898 he became major, R.A.M.C., lieutenant-colonel in 1904, and colonel in 1913. He served in the Nile Expedition of 1898 (medal and Khedive's medal); in the South African War, 1900–02 (mentioned in despatches, Queen's medal with five clasps, and the King's medal with two clasps, and D.S.O.). In the late war he was A.D.M.S., 2nd and 48th Divisions; D.D.M.S., VI. Corps; and D.M.S., First Army and British Army of the Rhine (mentioned in despatches seven times, and received the K.C.M.G. and C.B.). Additional honours included the decoration of the French Croix de Guerre and the American Distinguished Service Medal. He was also a Grand Officer of the Portuguese Order of St. Aviz, and held the Coronation and Delhi Durbar Medals and the King George Coronation Medal.

Correspondence.

"Audi alteram partem."

THE PROBLEM OF MALIGNANCY.

To the Editor of THE LANCET.

SIR,—Dr. A. E. Barclay's important suggestion regarding what he calls the existence of an *x* factor *in malignant disease* is of deep interest to us as we have been working for some years on this matter. Our results up to date are embodied in a recently published book.[1] It will be sufficient here to say that we believe—on what we think to be strong evidence—*that chronic intestinal infections and consequent* toxæmia from organisms of the non-lactose-fermenting type play a most significant part in the causation of cancer. We do not doubt there are other factors—diet, for example, influences these infections in a very marked manner, but toxæmias are of primary importance; correspondingly vaccines given at suitable intervals (long pauses being needed between doses) bring about marked effect in a large percentage of cases of malignant disease.

We are, Sir, yours faithfully,
EDWARD BACH.
CHARLES E. WHEELER.

June 26th, 1925.

To the Editor of THE LANCET.

SIR,—Dr. A. C. Jordan, in his kindly comment on my paper, is apparently in entire agreement with me, but would have me go further. The unknown *x* that I postulate he would have me name as "the toxæmia of stasis." This, however, is going a great deal further than my own observations would in any sense justify. X may possibly be a toxæmia, but if it is intestinal in origin, surely the removal of the faulty intestine, together with the *complete* removal of the growth, must inevitably cure the patient. So far as I am aware, there is no evidence pointing in this direction.

To attribute all and every disease to intestinal stasis and to label as "stasis" conditions in the bowels which are compatible with healthy longevity, is, to my mind, unscientific. Because they see what appears to be delay, *according to their ideas as to* what should happen, the stasis school would have us at once label this supposedly pathological delay as the cause of all our ills, whether it be cancer or bad teeth. Surely it is more likely that our structure is so ordered as to tolerate these terrible "*cesspool*" *conditions*, and that they may actually serve a useful function in the economics of life. The human frame is not made to standard, and what is one man's meat is another man's poison. So also what is stasis in one man is normal function in another. Where one man suffers from depression and headaches, and is thoroughly tired of the world if he does not have a daily evacuation, another suffers from other ills if he attempts to worry his intestines into a daily habit when his natural cycle would be an evacuation every two or perhaps three days. To see robust health and the apple face of perfect health in a woman whose habit is, and always has been, a motion once every three weeks or month should surely cause the most ardent stasis enthusiasts to call a halt.

What we need is some idea as to the possible normal variations as regards the passage of the intestinal contents. *So far neither Dr. Jordan nor any of the* "stasis school" have convinced me of the soundness of their premises, and I am a long way from identifying my hypothetical *x*, the underlying cause of cancerous growth, with the much abused "toxæmia of stasis."—I am, Sir, yours faithfully,

Manchester, June 26th, 1925. A. E. BARCLAY.

THE TREATMENT OF PERFORATED GASTRIC AND DUODENAL ULCER.

To the Editor of THE LANCET.

SIR,—Statements have been recently made that the operation for closure of a perforation effects permanent cure of the ulcer. My personal experience does not endorse this teaching. I have seen cases in which the symptoms of ulceration afterwards became as accentuated as before, and in which posterior gastro-jejunostomy without loop and without clamps followed by rest cured the patients. And during the 28 years which I have exclusively practised this method (with catgut suture of mucous coat and silk of serous) I have not seen a case of peptic ulcer follow.

My plan in cases of acute perforation is to open the abdomen as quickly as possible, *involute* the opening by interrupted silk Lembert sutures, and fix a patch of omentum over same. Having completed the toilet, the parietal wound is united by interrupted through-and-through double silkworm-gut sutures, leaving space *at upper angle for passage* of a wisp of silkworm-gut. This drain is not removed before the fifth day. The patient is then kept at rest in bed for one month on milk with the addition of glucose, whisky, or brandy to taste. After a few days' *trial of additions, preference* is generally expressed for the milk which is always diluted with citrate or other water. Posterior gastro-jejunostomy is then performed and similar rest and diet continued for another month, at the end of which a month of milk pap, glucose, and egg nog dietary begins.

Before discharge the patient's menu for the ensuing year is mapped out, with rider to cleanse his teeth morning and evening with a soft brush and soda or plain water, to eat meat cooked to a turn, to eschew bread and other carbohydrates in quantity, to follow the good example of all reasonable animals by resting for at least half an hour after the midday meal, to limit fruit-eating to early breakfast, and to take at lunch and dinner his coefficient of whatever alcoholic beverage suits him best. To which is added: avoid alcohol between meals, *do not smoke* before lunch, and do not be tempted to imbibe milk or tea with a meat meal.

If some such plan of post-operative rest and dietary were generally adopted we should hear more of the virtue of gastro-jejunostomy and less about that of gastrectomy. The cells have got to do the healing, and given the general feeble power of resistance which exists in everyone who develops a chronic ulcer of stomach, there is no reason to assume that the chances of cure will be enhanced by the substitution of a large acute wound for a small chronic one. The employment of the cautery for removal of benign ulcers of stomach is not in harmony with the natural laws which favour prompt restitution of normal tissue.

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[1] Chronic Disease: a Working Hypothesis. London: H. K. Lewis. 7*s.* 6*d.*

To all about to undertake gastric surgery I commend the careful study of two illuminating contributions to surgical science: Hilton's "Rest and Pain," and Paterson's "The Lure of the New."

I am, Sir, yours faithfully,

Buenos Aires, May 10th, 1925. JOHN O'CONOR.

THE ALLEVIATION OF CHRONIC PROGRESSIVE DEAFNESS.

To the Editor of THE LANCET.

SIR,—We have every reason to be grateful to Mr. George C. Cathcart for calling attention to a form of treatment which deserves much more serious consideration than it has received up to the present. After three years' experience I can fully endorse Mr. Cathcart's favourable view. My results are particularly gratifying in children, in those cases where the middle-ear deafness has not been relieved by the removal of tonsils and adenoids, or by a subsequent course of inflation.

I also should be glad to know more on the subject of the pathological explanation of the improvement in the old-standing cases, as has been mentioned by previous correspondents. The inventor of the apparatus, Mr. Zund-Burguet, himself believes that actual circulatory and nutritive changes occur in the middle-ear structures and cochlea as the result of the intense physiological stimulation. Some change at the peripheral end-organ is likely, as otherwise it is impossible to explain why tinnitus and vertigo disappear. But perhaps the change may be more central, in the nerve paths and synapses linking up the auditory nucleus with the centres in the temporal lobes. These may have been disused for years and are reawakened to function, in which case a true re-education occurs. The improvement could then be explained on the same lines as the improvement in one or both ears which patients very occasionally experience as the result of using the head-phones of the wireless.

I am, Sir, yours faithfully,

Leicester, June 27th, 1925. JOHN A. KEEN.

Obituary.

HENRY GRÆME ANDERSON, M.B.E., M.D. GLASG., F.R.C.S. ENG.

THE sudden death of Mr. H. Græme Anderson, surgical consultant to the Royal Air Force, from angina pectoris on June 28th last removes a capable surgeon from the medical world of London at the early age of 43. Mr. Anderson received his medical education at the University of Glasgow, and in London at King's College and the London Hospital. He graduated M.B., Ch.B. Glasg. in 1904 and five years later obtained the Fellowship of the Royal College of Surgeons of England. In 1919 he gained the M.D. Glasg. with commendation. After graduation Mr. Anderson held hospital appointments for nearly five years, two of which were spent as surgical registrar and pathologist at the Metropolitan Hospital, followed by two years in a similar capacity at St. Mark's Hospital for Cancer and Diseases of the Rectum. At the time of his death he was surgeon to St. Mark's Hospital, senior assistant surgeon to the Belgrave Hospital for Children, and surgical specialist to the Ministry of Pensions. In August, 1914, he joined the Royal Navy as a surgeon lieutenant and was attached as surgeon to the original R.N. Air Service expedition, and was subsequently transferred as major to the Royal Air Force Medical Service. He was appointed surgeon to the British Flying School at Vendôme, France, in 1917, and in 1918–19 was surgeon to the Central R.A.F. Hospital.

Becoming associated with the Royal Naval Air Service early in his period of war service he set about studying the various medical problems of flying with skill and enthusiasm—himself taking a pilot's certificate. Naturally the surgical side claimed his particular attention, although he by no means confined his interests to this, but studied generally the best means of effective selection and care of pilots in the widest sense. In addition to various papers he subsequently embodied his experiences in a valuable book on the "Medical and Surgical Aspects of Aviation" (Oxford Med. Publications, 1919). After the war he resumed practice in Harley-street, but remained surgical consultant to the Royal Air Force, and of him in this capacity Group-Capt. Martin Flack, the Director of Medical Research (R.A.F.), writes: "His services proved of the very greatest value, not only on account of his all-round skill as a surgeon, but on account of the fact that, owing to his intimate acquaintance with aeronautics, he was able also to assess the effect upon flying of various disabilities from the psychological and aeronautical points of view. By his charming personality he earned himself a special place in the affection of his colleagues of the Royal Air Force Medical Service; by his skill he earned the gratitude of his many patients in that service. His early death is a blow to all who were connected with him in these duties, and it can be truly said that he leaves a place which it will be very difficult to fill."

Mr. Anderson, in addition to his work in aviation, made many important contributions to surgical literature dealing with diseases of the rectum. In Burghard's "System of Operative Surgery" he wrote the article on Combined Operations for Excision of the Rectum, and in the "Encyclopædia of Medicine and Surgery for Practitioners," the section on the Rectum. Several papers in the medical journals deal with the treatment of hæmorrhoids.

Mr. J. P. Lockhart-Mummery writes: "Henry Græme Anderson's sudden death is a great blow to all who knew him. He was just at the age when he was coming into the fulfilment of his ambitions, and the results of his many years of hard work were beginning to earn their own reward in steadily increasing practice and reputation. Mr. Anderson was a colleague of mine at St. Mark's Hospital for so long that it is difficult to realise that his ready help and sympathy are no longer available. He was a keen sportsman, and was particularly interested in boxing. There have been few boxing matches of importance in London in recent years at which he was not to be seen at the ring side. He was one of the founders of the Proctological Section of the Royal Society of Medicine, and modern rectal surgery owes very much to Mr. Anderson for the advances of the last ten years.

Mr. Anderson is survived by his widow and a daughter.

WILLIAM JAMES JOHNSTONE STEWART, M.D. EDIN., D.P.H. CAMB.

WE regret to record the death of Dr. W. J. J. Stewart, medical superintendent of the Willesden Municipal Hospital. Dr. Stewart had been in poor health for some time, and his final illness was the result of influenza contracted early this year.

Born in 1868, he studied medicine at the University of Edinburgh and King's College, London, graduating M.B., C.M. Edin. in 1891. Four years later he obtained the D.P.H. Camb., and, in 1896, the M.D. Edin. He devoted his life to the study of infectious diseases and the administration of isolation hospitals, and he was recognised as one of the first authorities on these subjects in the country. During the war he was chosen by the War Office to take charge of the Addington Park War Hospital for soldiers suffering from infectious diseases. He built up and administered this large hospital in a manner which gave the highest satisfaction to both the military and civil authorities concerned. Dr. Stewart had been in the service of the Willesden Council for the past 22 years, and during his period of office the hospital came to be regarded by the public and by the council as one of the best of the municipal institutions of Willesden.

Dr. G. F. Buchan writes of him: "Dr. Stewart's loss will be felt keenly by all his colleagues, for he was a genial man with a kindly heart and ever ready to exert himself and take any amount of trouble to help his juniors and further their interests. Dr. Stewart was one of the many silent workers in the municipal service whose works are more the subject of criticism than of praise, but who nevertheless at all times and in all circumstances perform their duties with a singleness of purpose and conscientiousness which is characteristic of the official life of this country."

Dr. Stewart leaves a widow, to whom we extend our sympathy.

HAMILTON DRUMMOND, M.B., B.S. Durh., F.R.C.S. Edin.

It is with sincere regret that we record the tragic death, at the age of 41, of Mr. Hamilton Drummond, who was one of the best-known surgeons in Newcastle-on-Tyne. Mr. Drummond was the victim of a fatal accident on June 27th, while motoring to Newcastle from Fourstones, where he was serving in his capacity of Major, R.A.M.C.T., at the summer camp of the Northumberland Hussars. It is presumed that his car swerved and so overturned, whereby he sustained a fractured leg and other injuries, and died six hours after the accident. Mr. Drummond was a son of Sir David Drummond, C.B.E., M.D., Pro-Vice-Chancellor of Durham University, and President of the University of Durham College of Medicine. He studied medicine at the Newcastle-on-Tyne School of Medicine and at the London Hospital, graduating M.B., B.S. Durh. in 1906. In 1912 he became a Fellow of the Royal College of Surgeons of Edinburgh. Before taking up practice as a surgeon in Newcastle Mr. Drummond held in succession several valuable house surgeonships, and was a demonstrator of anatomy in University College of Medicine of Durham. From surgical registrar at the Royal Victoria Hospital, Newcastle, he became assistant surgeon to that hospital, and at the time of his death was consulting surgeon to the Jubilee Infirmary, North Shields, the Haltwistle War Memorial Hospital, and the Princess Mary Maternity Hospital, Newcastle.

Mr. Drummond made many contributions to surgical literature, particularly on conditions of the lower bowel.

The late Dr. J. L. Dalby.—Dr. John Lyttleton Dalby, who died at Hove on June 23rd, had practised for a number of years in Brighton and Hove, where he was held in general esteem. He was still in the prime of life, his death following an urgent operation. He was the only son of the late Major Dalby, of Ealing, and studied medicine at St. Bartholomew's Hospital, becoming a licentiate of the Royal College of Physicians in 1894 and M.R.C.S. in the same year.

Hospital Cooking by Electricity.—A new electrical cooking equipment has just come into operation at the Bucks County Mental Hospital at Stone, near Aylesbury, and it is claimed that this is the first asylum to make this departure. Considerable economies are looked for in consequence, and it is said that 17 per cent. of the shrinkage in meat in the course of cooking will be saved. There are over 800 patients, but the equipment is capable of cooking for 1000.

Medical News.

University of Cambridge.—At the Third Examination for medical and surgical degrees held recently the following candidates were examined and approved in the undermentioned subjects:—

Part I., Surgery, Midwifery, and Gynæcology.—A. Barker, W. A. Barnes, I. C. P. Beauchamp, C. B. Buckley, R. C. L'E. Burges, N. F. C. Burgess, J. W. D. Buttery, G. A. H. Buttle, R. T. Chadwick, J. E. Church, D. R. T. Clendon, A. C. Copley, A. F. D. Darlington, J. H. T. Davies, R. K. Debenham, J. V. Dockray, A. Elliot-Smith, V. H. Ellis, C. A. Francis, J. H. Francis, J. A. Galletly, S. E. Gawthrop, J. H. Gibbons, N. M. Goodman, H. W. Gordon, J. L. Groom, K. H. A. Gross, J. H. Hannan, P. M. D'A. Hart, C. H. Hilliard, J. C. Hogg, L. E. Houghton, R. H. Metcalfe, E. F. Malony, J. L. Morgan, H. W. Nicholson, G. F. Oakden, L. V. Pearson, C. P. Pinckney, K. G. Salmon, D. G. Shields, A. Simpson-Smith, H. B. Stallard, R. S. Tooth, K. H. Uttley, and H. M. Woodman.

Part II., Principles and Practice of Physic, Pathology, and Pharmacology.—T. F. Anderson, W. A. Bourne, H. F. Brewer, G. A. H. Buttle, W. E. Chiesman, W. R. F. Collis, H. V. Coverdale, J. E. D. Crozier, C. H. C. Dalton, J. H. T. Davies, P. O. Davies, V. W. Dix, J. M. Doble, H. W. Eddison, J. L. Edwards, A. Elliot-Smith, G. S. W. Evans, K. Fletcher-Barrett, J. H. Francis, P. M. D'A. Hart, N. H. R. Hatfield, R. A. Hickling, J. Holmes, M. C. H. Kingdon, R. L. Lancaster, D. P. Marks, J. P. Marsden, L. P. Marshall, L. M. Maybury, K. F. T. Mills, E. B. Murrell, G. L. F. Rowell, J. Russell Smith, A. J. Smythe, E. W. P. Thomas, S. Vatcher, H. A. Ware, and I. M. Harmer (Girton).

University of Sheffield.—At the undermentioned examinations held recently in the Faculty of Medicine the following candidates were successful:—

M.D.—Clara D. Tingle.

Final M.B., Ch.B.—With Honours: John Wilke (with distinction in Surgery and Gynæcology). Ordinary: Douglas L. Brown, John S. Calcutt, Ralph K. Dowson, Dorothy L. Gregory, Marion Hirst, Wilfrid Malone, Samuel Newsom, George W. Rippon, and Lucy T. Winskill.

Final L.D.S. Examination (Part I.).—George H. Rayner.

University of London.—His Majesty in Council has declared his approval of the amendment of the statute governing the membership of Convocation. Hitherto bachelor graduates have only been able to join Convocation after the expiration of three years from the date of graduation. The attention of Convocation and the Senate was directed to this three years' barrier at the request of the Twentieth Century Society of London Graduates and, under the statute as now amended, all graduates who have attained the age of 21 years are entitled to be registered as members of Convocation.

At a meeting of the Senate of the University of London, held on June 24th, Prof. E. A. Gardner, Litt.D., was re-elected Vice-Chancellor for the year 1925–26.—Correspondence has passed between H.M. Treasury and the University on the subject of the Bloomsbury site. The main outcome of the correspondence is that, as the Treasury is not able to hold out any hope that Parliament could be asked to contribute a larger sum than £370,000, representing the commercial value of the site and buildings of King's College in the Strand, the Senate find themselves compelled to decline the offer, made by the Treasury in 1920, which was accepted by the Senate on the condition that terms of removal would be negotiated between the Government, the Council of King's College, and the Senate of the University. The Senate point out that this condition obviously cannot now be fulfilled.—The title of Emeritus Professor of Hygiene and Public Health in the University was conferred on Sir William J. R. Simpson as from the end of the present session on his retirement from King's College, after 27 years' service, on the closing of the department of bacteriology and public health.—The University Studentship in Physiology for 1925–26, of the value of £50 and tenable for one year in a physiological laboratory of the University or of a school of the University, has been awarded to Mr. Isaac Cohen, Ph.D., B.Sc. He proposes to carry out research on tethelin under the direction of Prof. E. C. Dodds at the Bland-Sutton Institute of Pathology at the Middlesex Hospital Medical School.

University of Paris: Faculty of Medicine.—A post-graduate vacation course in the diseases of children will be held from July 24th to August 14th at the Hôpital des Enfants Malades, 149, Rue de Sévres, Paris, under the direction of Prof. Nobecourt, assisted by Prof. Lereboullet. Lectures and demonstrations will be given twice daily by members of the hospital staff, and an instructional clinic will be conducted each morning by Prof. Nobecourt. The fee for the course is Fr.150. Further information may be obtained from the secretary to the Faculty of Medicine, The University, Paris.

UNIVERSITY OF BRISTOL.—The thesis presented by Francis J. Hector, M.B., Ch.B. Bristol, for the degree of M.D., has been approved by the examiners.

WIRELESS FOR HOSPITALS.—The Wireless for Hospitals Fund, initiated by the proprietors of the *Daily News*, now has between £14,000 and £15,000 in hand, and the advisory council of the fund has decided to equip the largest hospitals first. Twelve of them, beginning with St. Thomas's (630 beds) and ending with the London Temperance (130 beds) are to be supplied as quickly as possible.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE: APPROVED DESIGN.—Mr. P. Morley Horder's design for the new building has been unanimously adopted by the board of management. Competition was limited to five architects who had specialised in the planning and equipment of the type of building required, and Sir Frank Baines, Director of Works at H.M. Office of Works, acted as assessor. Mr. Morley Horder becomes the architect of the building.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The Midland branch of this society proposes to commemorate the knighthood just bestowed upon the medical officer of health for Birmingham by holding a complimentary dinner to Sir John and Lady Robertson at the Queen's Hotel, Birmingham, on Friday, July 10th, at 7 for 7.30 P.M. All members of the Society of Medical Officers of Health are invited to attend this dinner and to bring guests. Early application for tickets (10*s.* 6*d.* not including wines) should be made to Dr. R. H. H. Jolly, hon. secretary, Health Offices, Town Hall, Wolverhampton.

STRASBOURG.—A post-graduate course in dermatology and venereology will be held from Sept. 21st to Nov. 7th, under the direction of Prof. L. M. Pautrier, assisted by Profs. A. Barré, L. Blum, G. Canuyt, Merklen, and others. Complete and practical instruction in all aspects of the specialty will be given at the civil hospital and at the various clinics of the town. The fee is Fr.200. Also a course in laboratory methods and in the general pathological anatomy of the dermatoses will be held if sufficient names are received (minimum, five); the fee will be Fr.150. Full particulars may be obtained from Prof. L. M. Pautrier, 2, Quai St. Nicolas, Strasbourg.

MEDICAL RESEARCH COUNCIL: ROCKEFELLER MEDICAL FELLOWSHIPS.—The Medical Research Council announce that they have awarded Rockefeller Medical Fellowships, tenable in the United States of America during the academic year 1925–26, to the following: Dr. David Campbell, Pollok lecturer in pharmacology and therapeutics, University of Glasgow; Dr. William H. Craib, *M.C.*, house physician, Guy's Hospital, London; Miss Katherine H. Coward, D.Sc., assistant in biochemistry, University College, London; Dr. William S. Dawson, senior assistant, Maudsley Hospital, London; Dr. Howard W. Florey, John Lucas Walker student, University of Cambridge; Mr. Arthur D. Ritchie, lecturer in physiological chemistry, University of Manchester; and Dr. George P. Wright, Macgregor student and demonstrator in histology, University College, London. Dr. Craib, Dr. Florey, and Mr. Ritchie have been appointed on modified conditions while holding scholarships or emoluments from other sources. Mr. Ritchie's Fellowship is being held during a short period of work in Canada this summer.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On July 9th Mr. G. Grey Turner will lecture on Gall-stone Ileus—a Pitfall for the Practitioner, at 5.30 P.M. in the West Lecture Hall, at 1, Wimpole-street, W. The Prince of Wales's General Hospital (North-East London Post-Graduate College, Tottenham, N.) will hold a vacation course from August 4th to the 15th in medicine, surgery, and the specialties. The mornings will include demonstrations of clinical and laboratory methods, in the afternoons groups of illustrative cases, &c., cliniques in the wards and the various out-patient departments. Formal lectures will be given at 4.30 P.M., to which members of the Fellowship of Medicine will be welcomed. Beginning on the same date the All Saints' Hospital will give a month's special course dealing with diseases of the urinary system. Clinical demonstrations will be given and a special lecture each Wednesday afternoon. From August 24th to Sept. 5th the Queen Mary's Hospital, Stratford, have arranged an intensive course in medicine, surgery, and the special departments. A feature of the course is the new department opened for gynæcology and obstetrics. The fee for both intensive courses is £3 3*s.* each, or £2 2*s.* for either week, and for the special course in urology £5 5*s.* Copies of the syllabus of each, together with the Fellowship programme of the general course of instruction available under its scheme, may be obtained from the Secretary at 1, Wimpole-street, W.

WATFORD MEMORIAL HOSPITAL.—Princess Mary last week opened the Watford and District Peace Memorial Hospital of 108 beds, which has been erected at a cost of £60,000.

PRESENTATION OF AN OUT-PATIENTS' DEPARTMENT. An anonymous Wakefield man, now resident in the United States, has promised to provide a new out-patients' department at the Clayton Hospital, Wakefield. Such a department is urgently needed, the existing one being entirely inadequate; last year there were nearly 40,000 attendances.

STREATFEILD RESEARCH SCHOLARSHIP.—Applications are invited for this scholarship which is awarded for the promotion of research in medicine and surgery by a committee of the Royal College of Physicians of London and of the Royal College of Surgeons of England. The scholarship is worth about £250 per annum, and is tenable for three years. Further directions will be found in our advertisement columns.

THE King has sanctioned the following promotions in and appointments to the Order of the Hospital of St. John of Jerusalem in England:—As *Knights of Grace*: Lieut.-Colonel F. S. Lambert, R.A.M.C. (T.); Major-General Sir Samuel Guise Moores; Dr. Frederick J. Waldo; Captain William Thomas Wood, R.A.M.C.; Dr. Arnold Woodford Izard; and Dr. Donald Moore Barry. As *Esquires*: Dr. John Calderwood Strathearn, Dr. Walter Chaloner Rigby, Dr. John Rodley, and Dr. William Haining Curse.

MANCHESTER INFIRMARY: APPEAL FOR NEW NURSES' HOME.—The Manchester Royal Infirmary has issued an appeal for £150,000 to build and equip a new nurses' home which is urgently required for accommodation of an increased staff. The patients in the Royal Infirmary are well nursed, but at a too great cost to the health of the nurses. The day staff works 63 hours a week and the night staff 73 hours. The following data are given for comparison:—

Hospital.	Hours of work.	
	Day.	Night.
Aberdeen..	52	62
Sheffield	56	64
Newcastle	60	69
Manchester	63	73

The board desire to give an all-round working week of 56 hours. The working hours of the maids must also be shortened. In order to do this, 87 additional nurses and 85 additional maids will be required. The nurses, by means of a bazaar, have already raised £5000.

NEW TILBURY HOSPITAL.—Lady Inchcape opened, on June 24th, the new wards of the Tilbury Hospital, erected by the Seamen's Hospital Society on a site rented from the Port of London Authority and within the area of Tilbury Docks. This is an extension of the Passmore Edwards Tilbury District Cottage Hospital founded in 1890, which provides beds not only for seamen, but also for the sick of the surrounding neighbourhood. Of the two new wards, which will accommodate 52 patients, one is for women. Built by Messrs. Mowlem, they were designed by Mr. Stanley Hamp in bungalow style ("not," said Sir Arthur Clarke, the chairman of the society, "that they are a bungle for they are not, but we do owe for them," and, very pertinently, Lady Inchcape thereupon handed to him Lord Inchcape's £500 subscription). The buildings are carried on concrete rafts, and the walls are of hollow triangular cement blocks, hard outside, soft within, securely keyed together. The ceilings are coved and white, but the lower 8 feet of the walls is painted a restful grey which lessens eyestrain. The operating theatre is all white. The floors are also greyish, mottled ("Marvel" flooring), not noisy, of composition similar to the well-known sawdust and gypsum. The bedside lockers are of solid construction and, when turned through a right angle, make steady bed-tables for patients confined to bed. The windows are iron-framed, and in two halves; as the window is opened by the handle, the lower part of the lower half moves outwards and the upper inwards, while the upper sash at the same time moves parallel (lower out, upper in), thus rain is excluded and incoming air directed upwards, so that draughts do not blow on the patients. Angles are all rounded, and the doors are teak, smooth finished to prevent dust lodging; the handles, too, are teak, and the lavatory taps are white-enamelled iron, so there is little to polish anywhere. There is a coal fire in each ward, but otherwise the heating throughout is by radiators, the cooking by gas and steam. In the Nurses' Home each nurse's room has a fixed basin with hot and cold taps over it, and there are sitting and recreation rooms. Two of the beds in the hospital were already endowed, and the chairman was happy in being able to announce that King George's Fund for Seamen would give £1000 to endow another.

THE death of Mr. Thomas Mark Hovell, F.R.C.S. Edin., the well-known laryngologist, at the age of 72 years, is announced as having occurred at Hatfield on June 30th. Mr. Hovell was lecturer on diseases of the throat at the London Hospital and consulting surgeon to the Golden-square Hospital.

THE managers of the Pinsent-Darwin Studentship in Mental Pathology announce that no award has been made this year.

DONATIONS AND BEQUESTS.—Mr. Henry Cornelius Baker, Clifton, Bristol, bequeathed £1000 each to the Bristol Royal Infirmary, the Bristol General Hospital, and Dr. Barnardo's Homes, and £500 each to the Royal Hospital for Women and Children, Bristol, to Müller's Orphanage, and the Bristol Eye Hospital.—During the past month the Royal Manchester Children's Hospital has received subscriptions and donations amounting to £810, including £500 from the Manchester War Memorial Committee.—Sir David Lionel Goldsmid Stern-Salomons, Tunbridge Wells, bequeathed £5000 to Gonville and Caius College, Cambridge, for the fund for increasing the College buildings, and to the Royal Institution some of his scientific apparatus.

ST. BARTHOLOMEW'S HOSPITAL POST-GRADUATE COURSE.—A course of instruction for qualified practitioners will be given at St. Bartholomew's Hospital during the summer vacation from Sept. 7th to 18th inclusive. The object in view is to afford practitioners an opportunity of attending the practice of a large metropolitan hospital and medical college for a short period and of receiving systematic teaching from members of the hospital staff at a time when ordinary lectures and classes for students are in abeyance. A composition fee of ten guineas entitles the practitioner to attend any of the arranged classes as well as the ordinary hospital practice, including wards, out-patients, special departments, operations, and post-mortems. Either of the two weeks may be taken for a fee of six guineas. Application should be made to the Dean, Dr. T. W. Shore, at the Medical College, St. Bartholomew's Hospital, London, E.C.

LANCASHIRE AND CHESHIRE MINERS' CONVALESCENT HOME.—The corner-stones of the convalescent home for the miners of Lancashire and Cheshire, which is to be built at Bispham near Blackpool, was laid on June 20th. The home will be built and equipped out of the Lancashire and Cheshire Welfare Committee's share of the welfare levy of one penny per ton on the coal output for five years, authorised under Section 20 of the Mining Industry Act of 1920. This share on May 31st last, with interest, was £283,406. The estimated cost of the building is about £105,000, and equipment is expected to cost about £20,000. The balance will be invested and the income devoted to the maintenance and upkeep of the home, the site of which is about 7½ acres in extent, facing the sea. The home is planned to accommodate 125 patients, but dormitories for 100 only are at first being provided. Construction was begun in September last and the building is expected to be finished in June next.

"BAY MOUNT," PAIGNTON.—The third annual report gives a clear indication that this comparative newcomer to the ranks of inebriates' homes is rapidly approaching the ideals which have been discussed from time to time in these columns with regard to the treatment of alcohol and drug addicts. The medical superintendent, Dr. Stanford Park, carefully defines what he means by the word "cure"—namely, "that all active craving has been removed and will not come back unless cultivated by the use of alcohol," and then reports that 88 per cent. of those patients classified as curable on admission during the year under review remain cured to date, while 57 per cent. of those classified as incurable have likewise remained free from relapses. It is interesting to note that of the women patients a high proportion of those suffering from alcoholic addiction have undergone some major operation on their reproductive organs. Dr. Park points out with reference to drug addicts that thanks to the Dangerous Drugs Act, patients who are not doctors have little chance of relapsing, and he expresses the hope that as older addicts die off or are cured, drug cases should eventually become extinct."

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Select Committee on Nursing Council Rules.

ON Wednesday, June 24th, a Select Committee of the House of Commons was appointed to consider the rules of the General Nursing Council with regard to the prescribed training for nurses and the reservation of seats on the Council for matrons. The following are the members of the Select Committee: Sir R. Barnett, Sir G. Berry, Mr. R. Davies, Mr. Fisher, Lieut.-Colonel Fremantle, Sir C. Forestier-Walker, Mr. G. Hurst, Sir R. Luce, Colonel Sinclair, Miss Wilkinson, and Mr. R. Wilson.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 24TH.

Institutional Treatment of Sleepy Sickness.

Dr. HADEN GUEST asked the Minister of Health whether any special institutional treatment was available for cases of encephalitis lethargica, and whether any special homes are available for cases of children permanently damaged by this disease.—Sir KINGSLEY WOOD replied: My right hon. friend is advised that no special institutional provision is required for cases of this disease in the acute stage, and that such cases may, in general, be properly admitted to isolation hospitals, infirmaries, or general hospitals. As regards the second part of the question, the provision of a special institution for the reception of children suffering from the after-effects of this disease, who cannot be admitted to mental hospitals, is now under consideration.

Proposed Removal of Bethlem Hospital.

Dr. HADEN GUEST asked the Minister of Health whether, in view of the proposed removal of Bethlem Hospital from Southwark to a site outside London, he proposed to call a conference of those interested in the matter with a view to the preservation of the site of Bethlem as a permanent open space.—Sir KINGSLEY WOOD replied: Inquiries made by my right hon. friend have not indicated that any useful purpose would be served by calling a conference, but further attempts will be made to see if this matter cannot be settled without pursuing the controversy which has arisen through a Parliamentary Committee.

Yaws in East Africa.

Colonel DAY asked the Secretary of State for the Colonies whether he was aware of any increase in the prevalence of yaws in East Africa; and, as its cure by intramuscular injections of bismutho potassium sodium tartrate was very inexpensive, being approximately one-tenth of a penny per injection, would he take steps to secure the coöperation of those responsible for the government of Kenya and Tanganyika in order that this bismuth preparation might become available in larger quantities.—Mr. AMERY replied: I am not aware of any increase in the prevalence of yaws in East Africa, but it is undoubtedly serious. The remedy mentioned in the question is referred to in the report of the East African Commission, where reference is made to the delay in utilising in Kenya the experience gained in Tanganyika. But the remedy has been in active use in Kenya for at least three years, and I do not think that any special action is necessary.

THURSDAY, JUNE 25TH.

Deaths from Insect Bites.

Mr. HERBERT WILLIAMS asked the Minister of Health how many deaths were caused in 1924 in England and Wales by the bites of insects.—Mr. N. CHAMBERLAIN replied: There were 12 deaths in England and Wales in 1924 which were caused, according to medical certificate or coroner's inquisition, by the bite of an insect.

Closing of Broad-street Pensions Clinic.

Captain HUDSON asked the Minister of Pensions if he would explain why disabled men were now being sent for treatment to the clinic at Bulinga-street, Millbank, who previously attended the clinic at Broad-street; and if, owing to the inconvenience which would be caused to the disabled men if the Broad-street clinic was closed, he would try to arrange that it should be kept open and the cases for treatment divided between the Bulinga-street and Broad-street clinics.—Major G. C. TRYON replied: The number of cases requiring only out-patient treatment is in the natural course diminishing, and in consequence, though every effort is made to meet the convenience of pensioners, the clinic accommodation has necessarily from time to time to be reduced. The Holborn Clinic belongs to the British Red Cross Society and they have intimated that they cannot continue the clinic unless the number of patients is increased. With the general decline in the number of cases this is not possible and consequently the patients have to be diverted to the more permanent clinics of the Ministry—among others that at Bulinga-street, where I may say the facilities for all varieties of treatment and the means of access are particularly good.

Excessive Rates of Maternal Mortality.

Mr. **GROVES** asked the Minister of Health whether he had considered the report of the chief medical adviser for his department for 1924, in which it was stated that excessive rates of maternal mortality were found in the aggregate in most rural areas, such as Breconshire, Westmorland, Montgomeryshire, Radnorshire, and in highly industrial areas engaged in textile manufacture and coal-mining, and especially in such county boroughs as Halifax, Blackpool, Rochdale, Huddersfield, Swansea, Bradford, Bury, Oldham, Dewsbury, and Blackburn, and whether he proposed any special measures to afford the people of these areas additional medical or institutional treatment in order to remedy this state of affairs.—Mr. N. **CHAMBERLAIN** replied: The answer to the first part of the question is in the affirmative. As regards the second part the authorities of most of the areas mentioned are already taking steps, as a result of the issue of the circular to which I referred in my reply on May 20th, to provide additional facilities for the antenatal examination and institutional treatment of pregnant women, and the medical officers of my department pay special attention to these points on the occasion of their visits to these areas.

Panel Practitioners and Sight-testing.

Mr. **BENNETT** asked the Minister of Health whether he had issued an order that in future optical benefits might only be granted on the certificate of the panel practitioner and after sight-testing by a medical man; and, seeing that the general medical practitioner knew little or nothing of sight-testing, would he say whether he had received any representations on the subject from qualified opticians.—Mr. N. **CHAMBERLAIN** replied: The new model scheme for the provision of ophthalmic benefit by approved societies as an additional benefit contains a provision to the effect that, except in the case of repair or renewal of optical appliances, an applicant for the benefit must have obtained and furnished his society with a written recommendation from a medical practitioner. I have received representations on the subject both from bodies representing opticians and in the opposite sense from representatives of the medical profession, including ophthalmic specialists, and these representations have had due consideration.

Publication of Evidence given to Trevethin Committee.

Mr. **BENNETT** asked the Minister of Health whether he was aware that Colonel L. W. Harrison, of the Ministry of Health, at the Congress of the Royal Institute of Public Health at Brighton, on May 29th, objected to Mr. H. Wansey Bayly, hon. secretary of the Society for the Prevention of Venereal Disease, quoting from the evidence of witnesses before Lord Trevethin's Committee of Inquiry, on the ground that such evidence was confidential; whether the Ministry of Health had received from the Committee of Inquiry any communication to the effect that the evidence of witnesses before that Committee would be treated as confidential; and, seeing that typewritten copies of evidence were being supplied on application to those who gave it without any stipulation being made that such copies were confidential, would he say what was the reason for the non-publication of the evidence before this Committee.—Mr. N. **CHAMBERLAIN** replied: The reply to the first part of the question is in the affirmative and to the second part in the negative. I understand that the Committee decided not to ask for the publication of the evidence.

Danger of Insecticides on Apples.

Colonel **DAY** asked the Minister of Health whether he was aware that Bordeaux mixture (sulphate of copper and lime), containing a proportion of arsenic, was being used as an insecticide on apples; and, as these apples were frequently eaten by children before being cleaned, would he take action to secure the removal of any insecticide deposit before the apples were packed or sold for human consumption.—Mr. N. **CHAMBERLAIN** replied: Yes, sir. The matter has been under the observation of my department for a number of years, but the quantities of arsenic which had been actually found on apples exposed for sale had been so minute as not to justify the institution of special restrictive measures.

Deaths from Ptomaine Poisoning.

Colonel **DAY** asked the Minister of Health whether he was aware of any increase in the number of deaths from ptomaine poisoning, following the eating of tinned foods; and whether the recommendations contained in the report of the Committee of Inquiry on Impure Foods were to be carried into effect.—Mr. N. **CHAMBERLAIN** replied: The number of deaths reported as due to ptomaine poisoning during the five years 1920 to 1924 was 32, 48, 22, 21, and 10 respectively. It is not possible to state in how many of these cases the poisoning was due to the eating of tinned foods, but the numbers can only be a small fraction of the totals already given. A draft of regulations to give effect to the principal recommendations of the Departmental Committee on Preservatives and Colouring Matters in Foods has been published, and I am now considering the form in which the regulations shall be finally made.

Tuberculous Cattle and Sheep.

Lieut.-Colonel **HENEAGE** asked the Minister of Health what percentage of cattle and sheep were found to be tuberculous when slaughtered for food, giving the percentage separately for bullocks, cows, and heifers.—Mr. N. **CHAMBERLAIN** replied: I regret that I cannot give the figures for the whole of the country. The figures given by the medical officer of health for the City of London as regards the Aldgate slaughter-houses (figures which are probably somewhat below the average for the whole country) are as follows:

	1923.	*1924.*
Number of bovine animals slaughtered	38,817	40,058
Percentage found to be tuberculous:		
All bovines	0·31	0·45
Bulls	2·40	4·40
Calves	0·04	0·04
Cows	25·45	28·00
Heifers	11·11	3·10
Oxen	1·20	2·00

Tuberculosis is scarcely ever found in sheep slaughtered for food.

MONDAY, JUNE 29TH.

Ambulance Committee's Recommendations.

Dr. **LITTLE** asked the Minister of Health whether the recommendations of the Ambulance Committee of King Edward's Hospital Fund have received his consideration; and whether he proposed to give effect to them.—Mr. N. **CHAMBERLAIN** replied: So far as these recommendations can be dealt with by administrative action they have been put into operation. So far as they require legislation I fear that they must await the general measure of Poor-law reform which I have in contemplation.

Health of Gold Coast Miners.

Mr. **THURTLE** asked the Secretary of State for the Colonies whether he had yet received the report upon the health statistics of the native mine workers in Gold Coast Colony; and whether it was proposed to publish this report.—Mr. **AMERY** replied: The report has been published on behalf of the Gold Coast Government by the Crown Agents for the Colonies, and copies may be purchased from them. I will place a copy in the library.

Medical Service in African Colonies.

Lieut.-Colonel **ANGUS MCDONNELL** asked the Secretary of State for the Colonies the number of qualified medical officers allowed for in the establishments of the West African Crown Colonies and East African Crown Colonies and Protectorates respectively; whether all the positions were filled; and, if not, what was the number under authorised establishment strength.—Mr. **AMERY** replied: The estimates for the four West African Colonies provide for a total of 246 qualified medical officers. There are at present 32 vacancies after allowing for selected candidates at present under instruction in tropical medicine. In the East African Medical Service, which includes the medical staff of Kenya, Uganda, Nyasaland, Zanzibar, Somaliland and Tanganyika, the authorised strength is 152. There are seven posts unfilled. The medical department of Northern Rhodesia has an establishment of 13 medical officers, and there is one vacancy at present.

Ambulance and First-aid Work at Wembley.

Colonel **DAY** asked the Parliamentary Secretary to the Overseas Trade Department how many trained nurses or trained staff, either men or women, were employed at the ambulance stations of the British Empire Exhibition, and what their remuneration was respectively; who was responsible for engaging them; how many voluntary or semi-trained men and women were employed in this ambulance or first-aid work; what was their remuneration or out-of-pocket expenses, and by whom were these amounts paid; and how many hours each respective class was expected to be on duty.—Mr. A. M. **SAMUEL**, Parliamentary

Secretary to the Overseas Trade Department, replied: I am informed by the British Empire Exhibition authorities that the following trained staff are employed at the ambulance stations of the Exhibition at the rates indicated:—One wardmaster and dispenser at £5 5*s.* per week; one assistant and dispenser at £4 4*s.* per week; one matron at £4 4*s.* per week; and one sister at £3 3*s.* per week. I understand that the wardmaster and the assistant were engaged by the Exhibition authorities, and the matron and sister by the joint committee of St. John's Ambulance and the British Red Cross Society, and that they work eight hours a day. The following semi-trained voluntary workers are also employed: 12 nurses, 45 orderlies, who are provided by the above-mentioned societies alternately a month at a time. I am informed that they work on five-hour shifts and receive an allowance of 2*s.* 6*d.* each per shift for expenses, which is paid by the Exhibition authorities. In addition to the above-mentioned staff there are three qualified medical practitioners.

Local Authorities and House Building.

Mr. RILEY asked the Minister of Health the number of local authorities which have built or are now building houses under the 1924 Housing Act; the number of houses sanctioned under that Act; and the weekly rents charged, exclusive of local rates, for such houses.—Sir KINGSLEY WOOD replied: Four hundred and fifty-nine local authorities in England and Wales have so far received approval to schemes under the Housing (Financial Provisions) Act, 1924, the number of houses authorised being 61,484—59,947 to be erected by the local authorities and 1537 by private enterprise. Of these 4428 had been completed by local authorities and 33 by private enterprise on June 1st; and 15,855 and 184 respectively were under construction at that date. I am advised that in general the rents charged approximate to the rents of houses erected under the Housing, &c., Act, 1923.

Accident in Ammonia Factory.

Miss WILKINSON asked the Home Secretary whether his attention has been drawn to the case of Mr. George Charles Bainbridge, who, as the result of a fall while employed at the works of the Synthetic Ammonia and Nitrates, Limited, of Billingham, was now detained in a mental institution; whether he was aware that no compensation has been paid and that the man was not in receipt of national health insurance; and whether, seeing that the man fell in a doorway near the carbon monoxide plant and that the laboratory at Harrogate, while unable to certify that Bainbridge had been gassed, did contend that he sustained concussion as the result of the fall, he would inquire into this case.—Sir W. JOYNSON-HICKS: I have made inquiries with regard to this case and am informed that after a full hearing the judge accepted the view that the man had been suddenly seized with an acute brain illness which caused him to collapse in the position in which he was found, and decided that his condition was not due to an accident arising out of and in the course of his employment.

TUESDAY, JUNE 30TH.

Ex-Service Men and Tuberculosis.

Brigadier-General BROOKE asked the Minister of Pensions whether he was aware that it was the custom to give ex-Service men whose tuberculosis was admitted as attributable to war service only four weeks' institutional treatment; and, seeing that satisfactory results could not be expected within such a limited period, if he would grant longer periods of treatment.—Lieut.-Colonel G. F. STANLEY replied: My hon. and gallant friend has, I fear, been seriously misinformed. It has been the policy, both of my right hon. friend and of his predecessors, in coöperation with the Ministry of Health, to secure as far as possible preferential treatment for disabled men suffering from tuberculosis due to their war service, and I am glad to say that the average period of in-patient treatment in these cases is not one month, but four months.

SHEFFIELD ROYAL INFIRMARY.—Notwithstanding that 42 new beds have been in daily occupation from the beginning of the year, the waiting-list continues to grow and now numbers 1750. A further 33 beds are being opened immediately.

LEIGH INFIRMARY EXTENSIONS.—The foundation-stones of the Leigh Infirmary extension and the new nurses' home will be laid on July 25th. The total cost for the extensions and for the purchase of additional land, furnishing, and other expenses will be about £30,000. Towards this sum about £23,000 has been collected during the past 18 months. An effort is to be made in the town to raise £7000 in order to open the buildings free from debt.

NATIONAL PHYSICAL LABORATORY:
THE ANNUAL INSPECTION.

AT the invitation of the President of the Royal Society a large number of people gathered at Teddington on June 23rd for the annual inspection by the General Board of the National Physical Laboratory. This occasion affords to many who are interested in science a valuable opportunity to gain an insight into the work of a great scientific institution. The march of science is so rapid that each year sees the expansion of the laboratory which is so essential if progress is to be maintained. Of outstanding interest in this growth may be mentioned the new high voltage laboratory now under erection, which will house the 1,000,000-volt transformer and thus render possible a study of the problems of high voltage electric transmission for which there is an increasing demand. The erection of an adequate laboratory for the Physics Department, at present distributed in three separate buildings, will begin this year, and marks but another step towards increased efficiency. The visitor this year is struck by the increasing application of X rays for the elucidation of the problems presented by the various materials used in industry and science. The medical profession realised from the moment of their discovery the flood of light X rays could throw upon the internal conditions of the human body, and slowly the rays are being turned on all matter revealing information of far-reaching importance.

An inspection of the *Radiology Department* of the laboratory shows how varied are the uses to which X rays are put. The structure of several metals and alloys have been studied by the X ray spectrometer. Laue photographs have been taken of diamonds used as pivot bearings with a view to discovering the conditions necessary to good bearing. Examination for flaws in metals and castings is carried out with a high voltage X ray installation, whilst the rapid elimination of soda glass clinical thermometers is effected by subjecting batches of thermometers to a fluoroscopic test. The increasing application of X rays has led to improvements in X ray tubes and in the methods of obtaining the high vacuum necessary to them. In this work of improvement the Radiology Department continues to play its part. Work in high vacuum research is being continued and an all-steel vacuum pump has been evolved which is compact, simple in use, and possesses distinct advantages over the earlier form produced by the laboratory. Experiments with hot cathode metal X ray tubes of high output are in progress. An experimental tube capable of carrying continuously 30 m.a. at 70 kilovolts has been designed. The tube is permanently attached to a vacuum pumping apparatus and means are adopted whereby targets of different metals may be easily fitted to the tube. The rapid simplification of vacuum pumps leads one to think that soon they will be more widely used in conjunction with gas X ray bulbs to maintain a constant gas pressure under running conditions and thus remove the main objection to this type of tube. Researches on the scattering of the gamma rays of radium, which led to important results last year, are being continued, and measurements of the absorption and scattering coefficients of X rays are being made. The Radiology Department is noteworthy for its complete equipment for routine measurements, enabling on the one hand the accurate determination of the radium contents of tubes and applicators, and on the other the investigation of the lead equivalent and homogenicity of X ray protective materials.

The *Department of Sound* continues to make good progress in the photography of sound by the spark method, and interesting results were shown of the way in which sound is reflected from various types of reflector. The study of the transmission and reflection of sound by partitions is being continued and special chambers have been erected for the work. The ripple-tank method of investigating features of wave reflection has been considerably improved by providing the lamp illuminating the tank with a revolving shutter, which works in synchrony with the tuning-fork vibrator. The intermittent illumination of the tank results in a fascinating stationary picture of the ripples and enables one to study with ease the refraction of waves passing through different thicknesses of liquid. Considerable improvements have been effected in apparatus used for *measuring carbon dioxide in the air of closed spaces such as* the holds of ships. Excessive quantities of carbon dioxide have been found harmful to consignments of fruit, and the need for rapid and simple estimation of the gas has been urgent. Several types of dial-recording instruments have been made, which should find a much wider field of service than that for which they were originally designed.

In the *Department of Heat* the number of clinical and precision mercury thermometers tested remains at approximately the same level as in previous years. In parallel with this testing work, research is being carried out in platinum resistance thermometry and a new type of resistance bridge is being used for the purpose, which allows thermometric measurements of the highest precision to be made.

Of the remaining *Departments of Aero-dynamics, Metallurgy, Metrology, Wireless Telegraphy and Electrotechnics*, the last two are perhaps of more immediate medical interest. That arrangements have been made by the Electrical Department *for the measurement of direct currents up to 10,000 ampères*, and that a 5000-volt direct current set has been installed for the testing of apparatus used in railway equipment is indicative of the wide range of measurement catered for at the laboratory. That the National Physical Laboratory is largely concerned in the pursuit of accuracy is well illustrated in the comparatively new methods for the measurement of radio frequencies, which by the use of quartz resonators give an accuracy of 1 part in 10,000 *for a range of wave-lengths from 25,000 to 30,000* metres.

The National Physical Laboratory is to be congratulated upon its record for the past year and upon the high degree of efficiency and accuracy it has attained in all departments. The laboratory is playing a worthy part in the progress of the national industries.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.

MONDAY, July 6th, to SATURDAY, July 11th.—WEST LECTURE HALL, Royal Society of Medicine, 1, Wimpole-street. Lecture arranged by the Fellowship of Medicine and *open to members of the* medical profession. Thursday, July 9th, at 5.30 P.M., Mr. G. Grey Turner: Gallstone Ileus—A Pitfall for the Practitioner.—QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, E. —Special Course in *Diseases* of Children daily from 10 A.M., morning and afternoon sessions covering demonstrations, ward round, out-patient departments, and operations. (First week.)—ST. PETER'S HOSPITAL, Henrietta-street, W.C. Special Course in Urology. Clinical work every afternoon throughout the week. Lectures: Monday, Mr. J. Alban Andrews: Genito-Urinary Tuberculosis; Tuesday, Mr. Swift Joly: *Urinary Calculi*; *Wednesday*, Mr. Clifford Morson: The Technique of Renal Surgery; Thursday, Mr. F. J. F. Barrington: Non-Tuberculous Infections of the Urinary Tract; Friday, Sir John Thomson-Walker: Urinary Obstruction.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

TUESDAY, July 7th.—4.30 P.M., Dr. L. R. Yealland: The Diagnosis and Treatment of Functional Nervous Disease.

FRIDAY.—4.30 P.M., Mr. W. Ibbotson: Hoarseness, its Causation and Treatment.

Daily.—Clinics in General and Special Departments. Demonstrations, Operations, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, July 6th.—11 A.M., Surgical Registrar: Surgical Wards. 12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Donald Armour: Operations.

TUESDAY.—11 A.M., Dr. McDougal: Electrical Dept. 2 P.M., Mr. Tyrrell Gray: Operations. 3 P.M., Dr. Pritchard: Medical Wards.

WEDNESDAY.—11 A.M., Medical Registrar: Medical Wards. 2 P.M., *Dr. Burnford: Medical Wards.* 2 P.M., Dr. Dowling: Skin Dept.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 11 A.M., *Sir Henry Simson: Gynæcological* Ward. 12 noon, Surgical Registrar: Surgical Pathology.

FRIDAY.—12 noon, *Dr. Pritchard*: Modern Methods of Medicine. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept. 4 P.M., Dr. Archer: Bio-chemistry.

SATURDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

THE LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W.C. 2.

TUESDAY, July 7th.—*5 P.M.*, Dr. *Graham Little*, M.P.: Occupational Dermatoses.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone-road, N.W.

THURSDAY, July 9th.—*5 P.M.*, Mr. *Lane Roberts*: Clinical Features of Obstructive Labour.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, July 9th.—4 P.M., *Dr.* Robert Hutchison: Diet after the Period of Infancy.

Appointments.

HODGSON, H. K. GRAHAM, M.B., B.S. Durh., D.M.R.E. Camb., has been appointed Honorary Radiologist, King's College *Hospital.*

LANE-ROBERTS, C. S., M.S. Lond., F.R.C.S. Eng., Obstetric Surgeon (with charge of out-patients), Royal Northern *Hospital*, Holloway-road.

MOFFATT, JAMES, M.B., Ch.B. Glasg., Medical Officer of Health to the Durham Rural Council and Medical Officer to the Houghall Isolation Hospital.

ROBINSON, W., M.D., Ch.B. Leeds, Medical Superintendent of the City of London Mental Hospital at Stone, near Dartford.

St. Mary's Hospitals, Manchester: BRIDE, J. W., M.D. Lond. and Manch., Honorary Assistant Surgeon; FERGUSON, R. A., M.B., Ch.B., and JOHNSTONE, MARGUERITE, M.B., Ch.B. Birm., House Surgeons at Whitworth-street West *Hospital*; SHEEHAN, EILEEN, M.B., Ch.B. Manch., and HUMBLE, GRETA E., M.B., Ch.B., House Surgeons at High-street Hospital.

Salford Royal Hospital: WARBURTON, EDWARD J., M.R.C.S., L.R.C.P. Lond., House Surgeon; ALLAN, MALCOLM, M.B., Ch.B. Glasg., Casualty House Surgeon; MAGEE, ANDREW V., M.B., Ch.B. Glasg., House Physician.

University of Manchester: DIGGLE, F. HOLT, F.R.C.S., and LANGLEY, G. J., M.D. Lond., Hon. Assistant Lecturers in Physiology; BRAMWELL, J. CRIGHTON, M.D. Manch., Hon. *Assistant* Lecturer in Experimental Physiology.

Certifying Surgeons under the Factory and Workshop Acts: SMITH, J. W., M.B., Ch.B. Manch. (Borrowash District, Derby), and DUNCAN, A. G. B., M.D. Aberd. (Kidsgrove District, Stafford).

Vacancies.

For further information refer to the advertisement columns.

Birmingham Union, Western-road House and Children's Receiving Homes—Res. M.O. £575.

Bloomsbury Dispensary, 12, Bloomsbury-street, W.C.—Res. M.O. £250.

Bradford Royal Infirmary.—Res. Surg. O. £160.

Bolton, Townleys Hospital, Farnworth.—Second Asst. M.O. £225.

Bury County Borough.—Asst. M.O.H., &c. £600.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Res. M.O. £250. Also H.P. at rate of £200.

Croydon County Borough.—Asst. M.O.H. and Asst. Sch. M.O. £600.

Eastbourne Royal Eye Hospital.—Hon. Ophth. S.

Edinburgh University.—Chair of Public Health. £1000.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. for six months. £50.

Lanark County.—Bacteriologist and Pathologist. £750.

Liverpool, Brownlow Hill Infirmary.—M.O. £600.

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Mansfield Borough.—Asst. M.O.H. £600.
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Notes, Comments, and Abstracts.

HOSPITALS AND THE MILK-SUPPLY.*

By R. Veitch Clark, M.B., B.Sc. Edin., D.P.H.,

MEDICAL OFFICER OF HEALTH TO THE CITY OF MANCHESTER.

The milk-supply is of special importance in hospital work as it forms the main food of patients in the crucial period of their illness. The three main qualities of a good milk-supply are: (*a*) the maintenance of a minimum standard of chemical composition—fats, non-fatty solids, &c.; (*b*) the possession of what are known as the biological properties of milk—i.e., the presence of vitamins, immune bodies, &c.; (*c*) the maintenance of a satisfactory standard of bacteriological purity.

A great deal of work on the immune bodies conveyed in milk has been done both in human milk and in cow's milk. The immunities possessed by the newly born child are very markedly affected by the milk ingested and adults will unquestionably be similarly affected. There is no doubt that in the fight of the body against illness such properties in the food do at times determine the swing of the balance towards recovery when it would otherwise turn against the patient, with general illness as well as with septic and specifically infectious conditions.

Vitamin Content of Milk.—Bacterial Contamination.

Milk contains all three of the main groups of vitamins. The constitution of these substances is not yet known; they can only be recognised by their absence—i.e., by the consequences of their deficiency in food. It would be unjustified to assume that their action is confined to the one avenue suggested by the specific conditions set up by that deficiency. Indeed, the group of fat-soluble vitamins clearly exert a profound influence on the growth and activity of the whole of the bodily organism.

Milk is one of the best media for the growth of practically all of the well-known bacteria, and the processes involved in its production and distribution for general consumption expose it to a degree of contamination which makes it perhaps the least cleanly food in general use. The infection of milk by the bacteria producing the acute infectious fevers, such as enteric fever, scarlet fever, and diphtheria, results in such large and rapidly spreading outbreaks of these diseases, and the danger to the public welfare is so obvious and now so well recognised, that immediate and energetic measures are always taken to eliminate the infected milk from general use and to discover and remove the source of infection. These infections are not, however, constant in milk; they arise as a direct contamination from human sources which, with modern means of investigation, can practically always be discovered. The regularly occurring bacterial contamination of milk is of much greater significance.

Out of 75 samples taken from the general milk-supply of Manchester during 1922–25 tubercle bacilli were found in 12; but no tubercle was present in any sample of the hospital milk. The actual number of bacteria is very greatly less in the latter than in the former, and this diminution of bacterial content is the more striking in that the hospital milk-supplies all come from considerable distances and there is no ice carriage of any description supplied. The conditions only differ from those of the general milk distribution to the public, in that the milk churns have overlapping lids and are sealed at the farm. Over a period of 23 years the results of the examination for tubercle in milk sent to Manchester reveals an average infection with this condition of 9·48, or nearly 1 in 10 of the milk supplied. The incidence of bovine infection varies considerably according to the site affected in man, but to say that tuberculosis of bovine origin accounts for over 50 per cent. of the non-pulmonary tuberculosis of the country is making an extremely conservative statement. It is much more likely that it will account for at least 70 per cent. of the non-pulmonary type of tuberculosis. In the city of Manchester the annual average of non-pulmonary tuberculous conditions notified in persons under 15 years of age during the last 11 years was 494. There is, therefore, a certainty of at least 250 persons being annually infected with tuberculous milk to such an extent as to produce active disease in Manchester alone. These are the cases that are known to the public health authority, and there is no doubt that a very considerable percentage do not come under observation. A significant point is that owing to the impossibility of proper veterinary supervision of the farms during the war the milk did, in these years, show the occurrence of the infection of tuberculosis. This is clear evidence that adequate supervision of farms can eradicate tubercle from the milk-supply. Ordinary careful, skilled supervision can reduce the bacterial contamination of milk a long way towards the standard which has been set by the Ministry of Health in the best of the graded milks established under the Milk (Special Designations) Order, 1923, made under the Milk and Dairies (Amendment) Act, 1922.

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* Abstract of a paper read at the British Hospitals Association Conference held at Manchester on June 25th, 1925.

The importance of a relatively small bacterial contamination lies in two factors: (1) that bacteriological examination of milk is an extremely exacting gauge of the cleanliness of milk production and milk handling, and (2) that it is an index whereby a reasonable margin of safety can be assured in relation to the incidence of such intestinal diseases as acute or epidemic diarrhœa, and the intestinal troubles which are characteristic of infancy and old age, and the weaknesses of severe illness. That diarrhœa can be controlled by proper handling of milk has been abundantly proved during recent years, more especially in connexion with the remarkable fall in epidemic diarrhœa amongst infants, which is without doubt mainly attributable to the prevention of infection of milks and infant foods, or the measures taken to destroy that infection before such foods are administered to the children.

Over 20 years ago an inquiry was conducted in Yorkshire as to the main source of infection of milk with intestinal organisms, an investigation which was carried out on an extensive scale and with the most meticulous care, and the results showed that the primary and major infection occurred in the cowshed. It is exactly this source of infection that is controlled by the supervision of the source of milk supplied to our hospitals. It is particularly one which can be watched by every hospital authority in the country, and by so doing, and letting it be known generally that it is done, a unique opportunity is afforded to hospital boards of management to act as leaders of thought and action in the public welfare in this matter.

The Hospital Milk-supply in Manchester.

The municipal hospitals of Manchester obtain a satisfactory milk-supply by inserting into the conditions of the contract the following clauses:—

> The milk shall contain not less than 3·25 per cent. of fat and 8·75 per cent. of solids (not fat), and be free from the infective matter of tuberculosis.
>
> The milk must be subject to the approval of the Committee, who will return, at the expense of the contractor, any milk found on delivery to be inferior in quality or in any way unsuitable for the purpose intended, and the contractor will be required to supply other milk of approved quality in place thereof. By way of additional precaution the Committee reserve the right, if they are dissatisfied with the milk delivered or offered for delivery, by resolution, absolutely to cancel the contract.
>
> The milk must be placed in cans and sealed by the farmer before being despatched by train, and on arrival at the station the milk must be especially and immediately despatched to the hospitals, and not taken to any intermediate place. The herd and premises must be at all times open to inspection and examination by the Committee's veterinary officer.
>
> The farm from which the milk is supplied must be kept in a sanitary condition as well as the appliances used, and the process adopted in handling the milk must be satisfactory to the corporation.

There has never been at any time difficulty in getting tenders sent in under these specific conditions, and there is always considerable competition. The price paid for the milk is, as a rule, slightly in excess of the ordinary commercial sale price obtained by the farmer, the extra being paid in respect of special services rendered by the farmer in guaranteeing a definite quantity daily, rather than in respect of any particular condition which the contract places upon him in the manner of milk production. There can be little doubt that if the conditions which Manchester imposes with a view to obtaining a really clean and tubercle-free milk were generally practised throughout the country there would not be any genuine grounds for increase on this account in the price of milk supplied to the public in general.

Farm Conditions.

The veterinary services are supplied to the farmers free, the supervision being carried out by the veterinary surgeon on the staff of the public health department specifically in charge of the city's milk-supply. Such a supervision is unquestionably a public health measure and should be available to the farming community throughout the country, just as the services of the preventive medical staff of the country are available to the public in connexion with general infectious disease. This type of work is clearly undertaken in the interests of the nation at large and should be met out of the national and local purse.

The farms to which the contract is given are inspected by the veterinary surgeon once or twice per month. The herds are examined and all the conditions under which the milk is produced are subjected to careful scrutiny. The churns are of an approved type, with overlapping lid, and are periodically inspected for their soundness and they are each sealed with a red seal before being despatched. In each farm an installation of steam sterilisation for the churn is required. Overalls are worn by the milkers and strict personal cleanliness is required both in the milking and the grooming of the cows. The evening and morning milks must not be mixed. The relationship of the veterinary surgeon to the farmers has always been of an extremely friendly nature and much valuable help and advice is available to the farmer in consequence of this amicable coöperation. Any matters affecting the welfare of the herd, including the feeding, and breeding for increased milk production, have always been an essential part of the work of the veterinary surgeon. In one notable instance the advice as to breeding has resulted in an increase of the yield of milk from about 450 gallons per cow per annum to 700 gallons per cow per annum. No farmer who has had the contract with the hospital has failed to achieve prosperity in his work, the continuous professional advice and help which the farmer has received having reduced sickness amongst the herds.

A valuable aid to the production of a clean and non-injurious milk-supply to the hospitals has been introduced by the practice of supplying to each farmer contracting for the hospitals' supply a copy of the results of the bacteriological examination of all the hospitals' milks, each source of supply being shown separately, but only the individual farmer's own name being mentioned. This stimulates a healthy competition amongst the farmers without giving any detailed information as to the results of the working of farms other than that of the recipient. Unquestionably, raw milk, produced under the best possible conditions, contains all the valuable biological and other ingredients which make milk par excellence the food of infancy, of old age, and of the sick, and it is clearly the duty of every public body to provide for the infirm in hospitals a food supply which is by nature especially fitted to tide them over the dangerous crises of their illnesses. This milk should contain to the fullest possible extent the immune or protective bodies and the vitamins, and any unnecessary and possibly dangerous bacterial contamination should be eliminated.

INCOME-TAX CONCESSION: DEPRECIATION ALLOWANCE ON MOTOR-CARS.

THE Government has now conceded the long-outstanding claim for depreciation and/or obsolescence in respect of motor-cars used by medical men. It will be remembered that on two occasions recently we pointed out the existence of a curious anomaly. The right to claim car wear and tear was confined to traders, and a doctor, whose practice equally necessitated the use of a car, could not claim the same allowance. As long ago as 1920 a Royal Commission recommended that the allowance should not be restricted to traders, and this overdue concession has at last been granted. In future medical men will be allowed each year a percentage of the written-down value of the motor-car. The allowance is usually 20 per cent. and is deducted not from the year's profits, but from the assessment average based on the preceding three years. In the event of a car being wholly dispensed with and replaced by another an allowance is made against that year's profits representing the cost of the car replaced after deducting (1) the total amount of any allowance made for wear and tear, and (2) any sum realised by the sale.

A QUEER STORY.

A CORRESPONDENT writes with indignation of a story entitled "On the Table," which appeared in *Truth* for June 24th. The gist of the story can be told shortly. Two quite recently qualified medical men, one of whom bears the well-known name of a living surgeon, share the operative work of a hospital, each of them alternately operating and giving the anæsthetic. The anæsthetist for the time being, giving chloroform and ether to a feeble old man with malignant gastric ulcer, lets his attention lapse, and finds that the patient has stopped breathing, and is in fact dead. The thrill of the story then occurs.

> "He saw with appalling clearness what would inevitably happen. A death like this, actually upon the operating table, could never pass without an inquest, and an inquest meant the press. In the fraction of a second he saw it all—the headlines, the scandal, the inspired articles demanding protection for the public that could not protect itself, the verdict. That would be favourable, of course, but what would the great British public care for that beside the scandal? It must injure the profession; it must injure the hospital. . . . It was a thing too monstrous to contemplate, by some means or other it must be prevented."

To avoid all this the anæsthetist pretends to surgeon, sister, and nurse that the patient is still living; his abdomen is hastily sewn up, and he is taken back to the ward, artificial respiration being applied the while, the anæsthetist alone keeping his hand on the pulse. Only after return to the ward does he admit that there is no pulse to feel. "I am sorry to say," he says, "that this man has died." "Devilish

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BY R. VEITCH CLARK, M.B., B.Sc. EDIN., D.P.H.,

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> The milk must be subject to the approval of the Committee, who will return, at the expense of the contractor, any milk found on delivery to be inferior in quality or in any way unsuitable for the purpose intended, and the contractor will be required to supply other milk of approved quality in place thereof. By way of additional precaution the Committee reserve the right, if they are dissatisfied with the milk delivered or offered for delivery, by resolution, absolutely to cancel the contract.
>
> The milk must be placed in cans and sealed by the farmer before being despatched by train, and on arrival at the station the milk must be especially and immediately despatched to the hospitals, and not taken to any intermediate place. The herd and premises must be at all times open to inspection and examination by the Committee's veterinary officer.
>
> The farm from which the milk is supplied must be kept in a sanitary condition as well as the appliances used, and the process adopted in handling the milk must be satisfactory to the corporation.

There has never been at any time difficulty in getting tenders sent in under these specific conditions, and there is always considerable competition. The price paid for the milk is, as a rule, slightly in excess of the ordinary commercial sale price obtained by the farmer, the extra being paid in respect of special services rendered by the farmer in guaranteeing a definite quantity daily, rather than in respect of any particular condition which the contract places upon him in the manner of milk production. There can be little doubt that if the conditions which Manchester imposes with a view to obtaining a really clean and tubercle-free milk were generally practised throughout the country there would not be any genuine grounds for increase on this account in the price of milk supplied to the public in general.

Farm Conditions.

The veterinary services are supplied to the farmers free, the supervision being carried out by the veterinary surgeon on the staff of the public health department specifically in charge of the city's milk-supply. Such a supervision is unquestionably a public health measure and should be available to the farming community throughout the country, just as the services of the preventive medical staff of the country are available to the public in connexion with general infectious disease. This type of work is clearly undertaken in the interests of the nation at large and should be met out of the national and local purse.

The farms to which the contract is given are inspected by the veterinary surgeon once or twice per month. The herds are examined and all the conditions under which the milk is produced are subjected to careful scrutiny. The churns are of an approved type, with overlapping lid, and are periodically inspected for their soundness and they are each sealed with a red seal before being despatched. In each farm an installation of steam sterilisation for the churn is required. Overalls are worn by the milkers and strict personal cleanliness is required both in the milking and the grooming of the cows. The evening and morning milks must not be mixed. The relationship of the veterinary surgeon to the farmers has always been of an extremely friendly nature and much valuable help and advice is available to the farmer in consequence of this amicable coöperation. Any matters affecting the welfare of the herd, including the feeding, and breeding for increased milk production, have always been an essential part of the work of the veterinary surgeon. In one notable instance the advice as to breeding has resulted in an increase of the yield of milk from about 450 gallons per cow per annum to 700 gallons per cow per annum. No farmer who has had the contract with the hospital has failed to achieve prosperity in his work, the continuous professional advice and help which the farmer has received having reduced sickness amongst the herds.

A valuable aid to the production of a clean and non-injurious milk-supply to the hospitals has been introduced by the practice of supplying to each farmer contracting for the hospitals' supply a copy of the results of the bacteriological examination of all the hospitals' milks, each source of supply being shown separately, but only the individual farmer's own name being mentioned. This stimulates a healthy competition amongst the farmers without giving any detailed information as to the results of the working of farms other than that of the recipient. Unquestionably, raw milk, produced under the best possible conditions, contains all the valuable biological and other ingredients which make milk *par excellence* the food of infancy, of old age, and of the sick, and it is clearly the duty of every public body to provide for the infirm in hospitals a food supply which is by nature especially fitted to tide them over the dangerous crises of their illnesses. This milk should contain to the fullest possible extent the immune or protective bodies and the vitamins, and any unnecessary and possibly dangerous bacterial contamination should be eliminated.

INCOME-TAX CONCESSION: DEPRECIATION ALLOWANCE ON MOTOR-CARS.

THE Government has now conceded the long-outstanding claim for depreciation and/or obsolescence in respect of motor-cars used by medical men. It will be remembered that on two occasions recently we pointed out the existence of a curious anomaly. The right to claim car wear and tear was confined to traders, and a doctor, whose practice equally necessitated the use of a car, could not claim the same allowance. As long ago as 1920 a Royal Commission recommended that the allowance should not be restricted to traders, and this overdue concession has at last been granted. In future medical men will be allowed each year a percentage of the written-down value of the motor-car. The allowance is usually 20 per cent. and is deducted not from the year's profits, but from the assessment average based on the preceding three years. In the event of a car being wholly dispensed with and replaced by another an allowance is made against that year's profits representing the cost of the car replaced after deducting (1) the total amount of any allowance made for wear and tear, and (2) any sum realised by the sale.

A QUEER STORY.

A CORRESPONDENT writes with indignation of a story entitled "On the Table," which appeared in *Truth* for June 24th. The gist of the story can be told shortly. Two quite recently qualified medical men, one of whom bears the well-known name of a living surgeon, share the operative work of a hospital, each of them alternately operating and giving the anæsthetic. The anæsthetist for the time being, giving chloroform and ether to a feeble old man with malignant gastric ulcer, lets his attention lapse, and finds that the patient has stopped breathing, and is in fact dead. The thrill of the story then occurs.

> "He saw with appalling clearness what would inevitably happen. A death like this, actually upon the operating table, could never pass without an inquest, and an inquest meant the press. In the fraction of a second he saw it all—the headlines, the scandal, the inspired articles demanding protection for the public that could not protect itself, the verdict. That would be favourable, of course, but what would the great British public care for that beside the scandal! It must injure the profession; it must injure the hospital. . . . It was a thing too monstrous to contemplate, by some means or other it must be prevented."

To avoid all this the anæsthetist pretends to surgeon, sister, and nurse that the patient is still living; his abdomen is hastily sewn up, and he is taken back to the ward, artificial respiration being applied the while, the anæsthetist alone keeping his hand on the pulse. Only after return to the ward does he admit that there is no pulse to feel. "I am sorry to say," he says, "that this man has died." "Devilish lucky for us," the surgeon rejoins, "that fellow did not die on the table."

It is quite wrong to suppose that the patient's death in bed subsequent to the operation would avoid the necessity of informing the coroner. The crucial point, of course, is not where the patient died, but whether he was still under the anæsthetic. Newly qualified house surgeons at hospitals in this country do not perform major abdominal operations. No doubt the attention of a house surgeon, as of any other human being, may lapse sometimes, but this simply could not occur *during* the administration of an anæsthetic. The story is written by someone without adequate knowledge.

THE TRAFFIC IN WOMEN AND CHILDREN.

THE presidents of the great women's associations throughout the world have been circularised with an inquiry as to the conditions obtaining in their respective countries in regard to the traffic in women and children. The League of Nations has now published a summary of the replies received, prepared by Mme. Avril de Sainte Croix. The answers reveal unanimity of opinion throughout the world and a general sense of need for coördination of preventive work. Its contents are already too condensed to be abstracted here and the pamphlet should be consulted by all interested in the subject. Information is given of the conditions of women in South Africa, Austria, Belgium, Canada, Denmark, America, Finland, France, Great Britain, Hungary, Greece, Latvia, New South Wales, Norway, Holland, Poland, Portugal, and Czecho-Slovakia.

AN IMPROPER SUGGESTION.

A MEDICAL man sends us a letter which he has received from the patentees and sole makers of a new self-adjusting truss for hernia, stating that several of these trusses have recently been sold direct to doctors, and have, they are assured, given complete satisfaction to the wearers. "We shall be happy," the letter concludes, "to send the truss quite free of expense for your inspection and to allow you 15 per cent. on sales." The suggestion in the last sentence is improper. The sale of any appliance on a doctor's recommendation is dependent on the patient's belief that the recommendation is based solely upon the merits of the article recommended.

INCOME-TAX ALLOWANCES.

To the Editor of THE LANCET.

SIR,—I am quite sure in my own mind that medical practitioners often overpay income-tax, and I think that here THE LANCET might be of assistance. Would it be possible to ask readers to send for your private information—unless no objection to publicity was mentioned—a list of the various allowances made to them by their local inspectors? The capricious nature of the demands made would then, in my opinion, become clear, as well as the fact that they had not infrequently been met without protest. If you could give help to readers, based on such evidence in reply to definite questions, we should many of us be very much obliged.

I am, Sir, yours faithfully,
A MEDICAL PRACTITIONER.
July 1st, 1925.

AN UNREGISTERED APPLICANT.

To the Editor of THE LANCET.

SIR,—I understand that advertisements for an assistant or a locum tenens have been answered by Mr. K. R. G. Shaw. Practitioners should be warned that, before engaging him, it is desirable that inquiry as to his registration should be made at the office of the General Medical Council.

I am, Sir, yours faithfully,
NORMAN C. KING,
Registrar, General Medical Council.
44, Hallam-street, Portland-place, London, W.,
June 26th, 1925.

COMPULSORY ISOLATION OF INFECTIOUS DISEASE.

To the Editor of THE LANCET.

SIR,—Quite recently in discussion I learned from a medical man in a rural district, and also from a member of a rural district council, that medical men possessed no power in rural areas to segregate cases of dangerous disease. I also obtained evidence that doctors and sanitary inspectors who had provided facilities for the removal to isolation hospitals of dangerous infectious cases were powerless in the face of ignorant opposition offered by parents and others It may be news to the public in general, and to some member of the medical profession, that doctors actually possess the requisite powers under a 50-year-old Act of Parliament.

For your information I beg to quote from a letter received by me from the Secretary of the Ministry of Health, dated June 19th, as follows :—

"I am to state that patients suffering from any dangerous infectious disorder, whether in urban or rural districts, can only be removed compulsorily to hospital in accordance with the provisions of Section 124 of the Public Health Act, 1875. That section provides for the compulsory removal of patients in certain circumstances by an order of a justice on a certificate signed by a legally qualified medical practitioner. With regard to the alleged failure to isolate patients treated in their homes, I am to refer you to Section 126 of the Public Health Act, 1875, under which, in the case of any dangerous infectious disorder, penalties are prescribed for the exposure, without proper precautions, of infected persons."

I am, Sir, yours faithfully,
HERBERT MOORE PIM.
Cley, Norfolk, June 22nd, 1925.

⁂ It should be common knowledge in the health service that Section 124 of the Public Health Act, 1875, allows a justice's order to be obtained for persons "without proper lodging or accommodation," and a higher court has decided that magistrates in considering "proper accommodation" may pay regard to "means of isolation." This section has been used for the compulsory removal of badly-housed cases of scarlet fever and typhoid, but the mere threat to use it is usually sufficient.—ED. L.

SALE OF BIOLOGICAL DRUGS UNDER LICENCE IN THE U.S.A.

THE issue of *Public Health Reports* for May 29th, 1925, issued by the United States Public Health Service, contains a revised table of the establishments holding licences issued by the Treasury Department in accordance with an Act of Congress of July, 1902, entitled "An Act to regulate the sale of viruses, serums, toxins, and analogous drugs in the district of Columbia, to regulate inter-State traffic in said articles, and for other purposes." The licences granted do not imply an endorsement of the claims made by the manufacturers, but the granting of a licence does mean that inspection of the establishment concerned and laboratory examinations of samples of its products are made regularly to ensure the observance of safe methods of manufacture, to ascertain freedom from contamination, and to determine the potency of those drugs for which standards or tests have been established. The American licensed establishments in this list number 36. Of foreign establishments the *Report* enumerates the following, in each case specifying the products for which licences have been issued.

Institut Pasteur de Paris. Diphtheria antitoxin; tetanus antitoxin; anti-anthrax serum; anti-dysenteric serum; anti-plague serum; anti-streptococcic serum; bacterial vaccines made from cholera vibrio, plague bacillus, *Staphylococcus albus*, and *Staph. aureus*.

Farbwerke Hoechst (vorm. Meister, Lucius and Brüning), Hoechst am Main. Diphtheria antitoxin; tetanus antitoxin; anti-streptococcic serum; normal horse serum; tuberculin old; tuberculin T. R.; tuberculin B. E.; tuberculin B. F.; bacterial vaccines made from cholera vibrio, gonococcus, *Staphylococcus albus*, *Staph. aureus*, and *Staph. citreus*; typhoid bacillus; sensitised bacterial vaccine made from typhoid bacillus; arsphenamine; neoarsphenamine; sodium arsphenamine; silver arsphenamine; neosilverarsphenamine; sulphoxylarsphenamine.

E. Merck, Darmstadt. Tuberculin ointment (Moro).

Connaught Antitoxin Laboratory, University of Toronto, Canada. Diphtheria antitoxin; tetanus antitoxin.

Les Etablissements Poulenc Frères, 92, Rue Vieille-du-Temple, Paris, III. Bacterial vaccines made from gonococcus, *Micrococcus tetragenus*, pertussis bacillus, *Staphylococcus albus*, *Staph. aureus*, and *synococcus*.

Laboratoire de Biochemie Médicale, 92, Rue Michel-Ange, Paris. Sulpharsphenamine.

Istituto Sieroterapico Milanese, Milan. Anti-anthrax serum, bacterial vaccines made from gonococcus, pneumococcus, *Staphylococcus albus*, *Staph. aureus*, *Staph. citreus*, and streptococcus; neoarsphenamine. Selling agents for the United States: Neother Products Co., 50, Union-square, New York City.

Boots Pure Drug Co., Ltd., Nottingham. Arsphenamine Diglucoside.

Etablissements Mouneyrat, Villaneuve-la-Garenne, Seine. Phospharsphenamine.

Institut National de Vaccinotherapie, 26, Rue Pages, Suresnes (Seine): Bacterial vaccines made from colon bacillus, enterococcus, Friedländer bacillus, *Micrococcus catarrhalis*, *Micrococcus tetragenus*, pneumococcus, *Staphylococcus albus*, *Staph. aureus*, and streptococcus.

Behringwerke, A. G., Marburg-am-Lahn. Bacterial vaccines made from gonococcus, *Staphylococcus albus*, and *Staph. aureus*.

THE

Croonian Lectures

ON SOME

DISORDERS OF MOTILITY AND OF *MUSCLE TONE*,

WITH SPECIAL REFERENCE TO THE CORPUS STRIATUM.

Delivered before the Royal College of Physicians of London

BY S. A. KINNIER WILSON, M.D., B.SC. EDIN., F.R.C.P. LOND.,

PHYSICIAN FOR OUT-PATIENTS, NATIONAL HOSPITAL, QUEEN-SQUARE; JUNIOR NEUROLOGIST, KING'S COLLEGE HOSPITAL; CONSULTING NEUROLOGIST, METROPOLITAN ASYLUMS BOARD.

LECTURE II.*

MR. PRESIDENT AND GENTLEMEN,—Hitherto our investigation of the characteristics of "voluntary" movement in affections of the corpus striatum has been prosecuted on general lines. It is time to turn to a more precise examination of individual "voluntary" acts for differing parts of the body musculature, as an essential preliminary to an analysis of various kinds of so-called "involuntary" movement occurring in these diseases. There is the more need for this investigation in that we are now approaching a clinical field where confusion reigns supreme in respect of nomenclature. Among the tangled mass of movements described by different observers as "primitive automatisms," "higher coördinations," "associated movements," "position alterations," "reaction reflexes," "reflex synergias," "movement synergias," "associated reactions," "automatised voluntary movements," "reaction movements," and what not, the student may well be excused if he loses his way. (The above terms have been culled *verbatim* from the pages of various writers on the subject and might be added to considerably.) The need for classification is urgent, but it can be met only by first analysing normal movement and by coming to a decision on definitions.

BEHAVIOUR OF MUSCULAR COMPONENTS OF "VOLUNTARY" MOVEMENT IN STRIATAL DISEASE.

I have already indicated the lines I shall follow in this connexion. I shall take a normal movement to have as constituents the actions of prime movers or protagonists, synergists (including fixation muscles), and antagonists respectively. I shall not call the whole a "synergic unit," or a "movement synergia," but simply a movement, with the component parts just enumerated.

The following are the single or combined movements that have been studied in normal persons and in a large number of cases coming into the category of striatal disease:—

I. Head, face, and neck.

1. Shut eyes, with or without resistance; eyeballs roll up.
2. Turn eyes to side; head turns also.
3 Open mouth, *against resistance*; head extends.
4. Turn eyes up; forehead wrinkles, head extends.
5. In supine position, flex head on chest; recti abdominis contract.
6 Flex head against resistance; platysmas, omohyoids, hyoid depressors contract.
7. With head in one extreme lateral position (say, right) rotate it slowly to left; left posterior rotators contract first, and right sternomastoid only after head is well past the mid-line. And vice versa.

II. Shoulder, arm, hand, and fingers.

1. Abduct extended arm at shoulder; opposite erector spinæ contracts.
2. Adduct extended arm from horizontal position; homolateral rectus abdominis and erector spinæ contract (only if against resistance).
3. In erect position, advance extended arm to horizontal level in front—both erectores spinæ contract; rotate it horizontally backwards—homolateral erector spinæ at once relaxes; bring it forward again on horizontal level—the same erector spinæ contracts again; depress extended arm once more to side—homolateral erector spinæ once more relaxes.
4. With arm flexed at elbow and forearm pronated, supinate (biceps does this); triceps contracts to prevent further flexion at elbow.
5. Flex fingers in grasping; extensors of wrist contract. Increase grasping movements; triceps contracts.
6. Open closed hand; extensors of wrist relax; flexors of wrist contract.
7. Extend wrist with fingers closed—extensores carpi radiales and ulnaris contract; without stopping wrist extension, open fingers—the wrist extensors at once relax, while the extensors of the fingers continue the upward movement.
8. Press thumb firmly against forefinger; flexor carpi ulnaris contracts.
9. Abduct little finger; *extensor ossis metacarpi pollicis* contracts.
10. Extend thumb; extensor and flexor carpi ulnaris contract.
11. Abduct forefinger; thumb nearly always flexes or adducts and, if so, extensors of thumb contract.

III. Trunk and legs.

1. Supine position; lift one extended leg (i.e., flex at hip); contralateral hamstrings (internal or external group, or both) contract.
2. Supine position; lift head and shoulders up; recti abdominis contract, then both recti femoris.
3. Erect position, abduct one extended leg at hip; opposite tensor fasciæ femoris contracts.
4. Flex spine—i.e., bend forwards (not against resistance); both erectores spinæ contract.
5. Bend backwards—i.e., extend spine; recti abdominis contract. Combining (4) and (5), recti and erectores alternately contract and relax.
6. Incline spine to right or left; opposite erector spinæ contracts.

This scheme contains a description of the precise behaviour of muscular components in a number of normal movements and movement-combinations, and has been carried out *in extenso* in many examples both of paralysis agitans and of postencephalitic Parkinsonism.

With minor qualifications to be referred to immediately, *my definite conclusion is, that these movements are executed normally by Parkinsonians—that is to say, the movements follow normal physiological lines and are neither lost nor perverted.* I have not seen a single instance either of failure to perform the movement (except as below), or of interference with normal physiological order. In what might be termed "movements of sequence" (viz., I. 7, II. 7, III. 5 above), I have not found any departure from the normal. By this term I mean movements which are begun by one muscle or muscular group and continued by another. My former chief, the late Dr. C. E. Beevor, devoted attention to these, showing the order of action to be so fixed physiologically that it cannot be voluntarily modified, and that if one muscle in the total act fails its place cannot readily be taken by another which might appear suitable for the purpose. He said, "it rather reminds one of some highly organised establishments where if one of the servants is incapacitated it is no one's place to do the work, which is consequently left undone." The qualifications I would make are, that if the action of the agonists is inherently weak that of the other components is correspondingly feeble and therefore difficult to recognise, though as a general rule the introduction of an element of resistance against which to work intensifies the "voluntary" effort and so may bring out the constituents better. For example, I find that the triceps often will not partake in the hand-grasping movement (II. 5 above) because the latter cannot be executed with sufficient power. Further, some of the finger movements specified above, notably abduction of the little finger, may *in fact almost fail, for reasons already sufficiently* gone into. Again, in some normal persons part of the movement is facultative rather than obligatory—e.g., in I. 4 the forehead may not wrinkle; we must avoid, therefore, an overestimation of such "loss" in Parkinsonian cases. The study of these movements, finally, in seriously advanced cases of the disease is open to the objection that myogenic contractions may have set in, and this will naturally vitiate the clinical findings.

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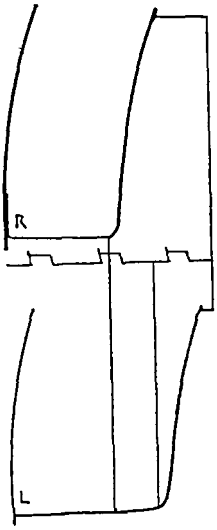
* Lecture I. appeared in THE LANCET last week.

FIG. 12.



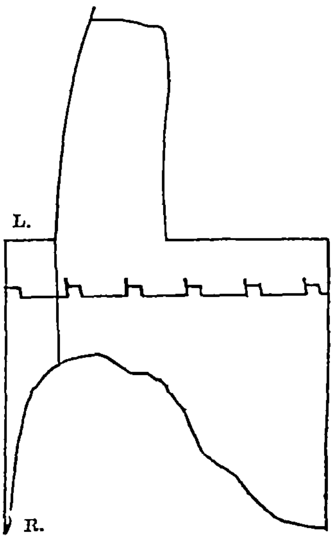
Curves of contraction of the recti femoris in the combined movement of sitting up from a supine position. Unilateral Parkinsonian case. The affected muscle (left) contracts about three-quarters of a second later than that on the normal side.

The main conclusion stands, and has weight. I find myself, therefore, unable to confirm in a general sense the observations of Foerster, who states that in pallidal cases (as he calls them) the eyes do not roll up when they are closed against resistance, the head does not move when the eyes are deviated laterally, and so on. As a consequence, *the theory according to which the "loss" of these "Mitbewegungen"* (an unfortunate terminology), *in reality the components in a total single movement, is held to prove that the corpus striatum is a "centre" for their normal activation, is shown to be based on erroneous observation and to have no foundation in fact.*

I may take this chance of again entering a caveat against the view that because muscular action is hindered or encounters obstacles it is *pro tanto* "lost." In some instances of excessive muscular rigidity, especially among postencephalitic cases, the movement of the head accompanying lateral deviation of the eyes is minimal, yet to describe it as "lost" and at the same time to ignore the multiplicity of factors in Parkinsonian immobility would be a mistake. Of the comparative slowness with which the above enumerated movements are sometimes performed there can, of course, be no question, nor of the frequent weakness of some of them. In respect of the slowness, the records from unilateral cases of postencephalitic Parkinsonism are instructive. In the movement of raising the shoulders from the supine position (III. 2 above) the normal individual contracts both recti femoris simultaneously and within a very brief period after the shortening of the recti abdominis. In unilateral cases delay in the contraction of the rectus femoris on the affected side has been constantly found, but I have failed to note any difference in this respect in that of the twin recti abdominis. For example, Fig. 12 gives a tracing from a case of this kind, showing on the Parkinsonian side a delay of about three-quarters of a second in the contraction of the muscle on the front of the left thigh compared with that on the right (unaffected) side. Fig. 13 gives another record of the same kind, where the difference in time of contraction is almost one second. The fact that I have found no certain distinction in rate of contraction between the two recti abdominis (once or twice a very slight retardation on the affected side has seemed present) is doubtless to be explained by the physiological unity of the two (though to this there are exceptions), according to Broadbent's hypothesis. But the difference in the case of the two recti femoris is striking. Their rôle in the movement is that of accessory prime movers; arising from the ilium, they are flexors of the hip and their shortening serves to bring the pelvis into a more vertical position. No delay in contraction took place as regards the first prime movers (recti abdominis) in the cases from which the tracings were obtained, no doubt owing to their bilateral innervation. The two recti femoris contract with equal *power*, as the curves indicate; and when the patient is given the order to lie down again it is seemingly the healthy muscle that decontracts the more slowly, the Parkinsonian muscle relaxing faster (Fig. 13). No trace of tonic innervation or of slow relaxation with a "lengthening reaction" is here observable.

In some instances from my records, on the other hand, weakness is discernible while slowness of contraction or relaxation cannot be detected. We have seen (II. 6 above) that when the closed fist is opened the extensors of the wrist immediately relax while the extensors of the fingers contract. Fig. 14 shows the constituent actions as they occur in the normal individual, relaxation of the former and contraction of the latter being practically simultaneous. Figs. 15 and 16 are from cases of Parkinson's disease; in Fig. 15, on the signal given, the wrist extensors are seen to relax at the same moment as the finger extensors contract, without any retardation, and notwithstanding the obvious tremor with which the movement is accompanied. In Fig. 16 the lower tracing shows clearly the gradual weakening of the contraction of the wrist extensors before the signal—in other words, the *inability to maintain an innervation* which often characterises Parkinsonism. On the signal, however, the normal procedure at once occurs, though the decontraction of the wrist extensors is fractionally slower than the contraction of the finger extensors and exhibits the so-called "cogwheel" phenomenon (to be afterwards discussed).

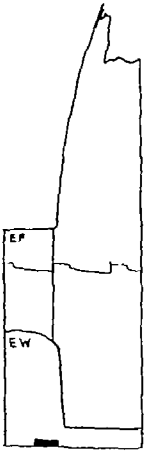
FIG. 13.



Similar to Fig. 12. Unilateral Parkinsonian case. The rectus femoris of the normal side (right) contracts before the other and also takes longer to decontract as the patient lies back again.

Equally instructive are the tracings of the combined movement described under II. 3 above. The extended arm (say, left) is advanced to the shoulder level in front, swept back in a circle-arc on this horizontal level, brought forward again, then down to the side. As this is being done the left erector spinæ contracts, relaxes, contracts again, relaxes again. Fig. 17, from a normal individual, is to be compared with Fig. 18, from a severe case of chronic postencephalitic Parkinson syndrome. It must be borne in mind, to understand the meaning of the tracings, that in the erect position the erectores spinæ of the normal person are not in action; in the Parkinsonian, with his typical forward inclination of the trunk, they are, on the contrary, in strong ("involuntary") contraction. Now when the two records are examined the reader will see that, notwithstanding the steady "postural" contraction of the spinal muscle in the Parkinsonian, its successive "voluntary" contraction and relaxation follow normal physiological lines; it rises and falls exactly as does the normal erector spinæ, at the appropriate signals. Particularly instructive are the two points (1) that at the beginning of the "voluntary" movement the already posturally contracted erector spinæ *contracts still further;* (2) that when it is beginning to relax normally as the movement is coming to a close it springs again into this steady "involuntary" contraction. (Although the Parkinsonian record is slower than the other the two are not in this respect comparable, since no attempt was made to have the patient perform the movement quickly.) The actions of the erector spinæ during the execution of the combined movement are not characterised either by undue retardation or by limitation of range; that is to say, that component of a "voluntary" movement of the synergic action of which the patient is quite unaware (no one in thus advancing and rotating *the arm has any idea that the* erector spinæ constantly partakes therein), and which, as indicated at the outset, is "involuntary" in the sense that it is inevitable and largely outside consciousness, can and does impress itself on the existing background of postural "involuntary" contraction, modifying the latter in the course of its own appropriate action. A single instance of this description shows incidentally the unsatisfactory character of the usual distinctions drawn between "voluntary" and "involuntary," for we have here the idea of *degrees of involuntariness*, one major and the other minor, one part of a so-called "voluntary" act, the other part of a so-called postural contraction. Further, these illustrations serve to lend point to the statement made in the introduction, that in objective characters, clinically speaking, "voluntary" movements are not to be distinguished from those in which the element of "volition" is lacking. Neither the examiner's finger nor the myographic tracing reveals any difference between the contraction of the erector spinæ at (*c*) (Fig. 18), and at (*d*) (same Fig.), but the former, according to the usual conceptions, is "voluntary" and the latter "involuntary." As a clinician, I cannot say where "volitional" activity ends and "non-volitional" activity begins.

FIG. 14.



Normal hand, with fist closed "voluntarily." On the signal ("open the hand") the extensors of the fingers contract and the extensors of the wrist relax simultaneously.

The conclusion is, that notwithstanding weakness, slowness, rigidity, and tremor, the ordinary muscular components of "voluntary" movement behave physiologically in cases of striatal disease, contrary to the views of not a few writers on the subject.

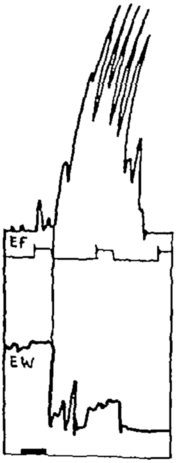
We may now pass to the consideration of another class of movement, which I shall call

MOVEMENTS OF COÖPERATION.

By this expression I wish to signify movements that are auxiliary to other, also "voluntary" movements, preceding or accompanying these as the case may be. Thus when a person seated on a chair is requested to stand up he first of all brings *his feet* in underneath his body, to a sufficient extent, in any case, to place them under, or almost under, his centre of gravity. An essential preliminary to the main movement, the rising up, it aids the latter by enabling it to be *performed with appropriate* ease and may therefore be described as a movement of coöperation. Other writers have called it an "associated movement," an "automatic movement," a "reaction movement," and have declared specifically that such are defective or lost in disease of the corpus striatum. The expressions, "automatic movements" or "automatisms," however, must be avoided, for all degrees exist, from "most automatic" to "least automatic" (i.e., "voluntary"), and no one can say when a movement passes out of the "voluntary" into the "automatic" group. If I have to go down an unknown staircase in the dark, I will gauge the height of the first few steps by feeling with my feet; having estimated it I will probably thereafter proceed more quickly, but I do not pass from a "voluntary" to an "automatic" movement thereby, as if these are two different *sorts* of movement; my stepping movement, a "voluntary" movement, is "variably automatic." Nor is it appropriate to call the movement of drawing the feet under the body a "reaction movement," as Foerster does; in one sense all movements are reaction movements, and the expression becomes meaningless. I shall reserve the term for *another group (to be referred to immediately)* where definite stimuli are used to provoke response. Finally, as we shall see, the expression "associated movement" is equally devoid of specificity unless it is properly restricted in its connotation.

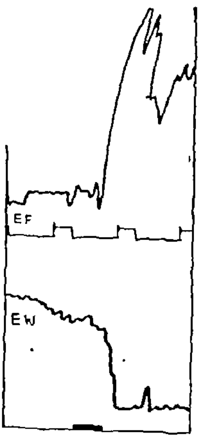
This movement of coöperation, then, I have found to be as a fact present in all cases of Parkinsonism provided the feet are, prior to the assumption of the erect position, placed a little way out from the chair. Applying the test to normal individuals, I have noticed that they can rise up without this auxiliary and preliminary leg flexion as long as the knee angle does not exceed, say, 135°; even then, only with an obvious effort do they "throw themselves" up. Exactly the same principle applies to the Parkinsonian; since he rarely sits with limbs extended, and his customary attitude is one of flexion, his feet are already in a position *de choix* as a rule, *and he can rise* without the auxiliary flexion, but put them out a little and invariably he brings them in to begin with, slowly and unequally as may be. *To say that this and analogous movements are "lost" and to argue therefrom that the corpus striatum is a centre for "automatic" or "associated" movements is, therefore, a fundamental mistake.* Similar remarks apply to the slight outward movement of the feet (extension of the legs) which takes place almost invariably after the normal person has resumed his seat, provided his limbs are close to the chair, or touching it, as he sits down. (This movement, however, is scarcely one of coöperation,

FIG. 15.



Case of severe Parkinson's disease. On the signal ("open the hand") the extensors of the fingers contract and those of the wrist relax simultaneously, in spite of rigidity and tremor.

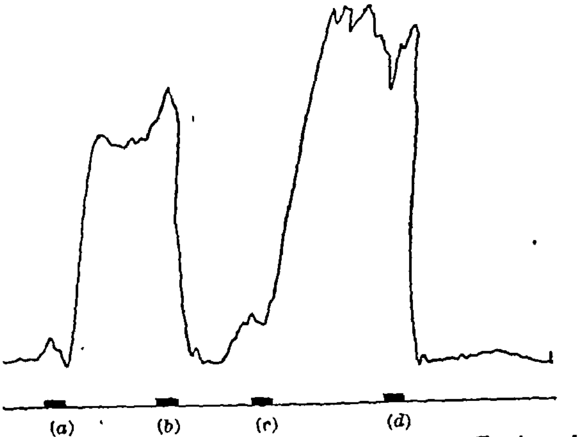
FIG. 10.



Similar case to Fig. 15. Same correct physiological interrelation of extensors of fingers and of wrist. Note how the "voluntary" contraction (synergic) of the extensors of the wrist weakens before the signal (inability to maintain a "voluntary" contraction).

but rather of relaxation, since sitting with limbs flexed at the knees to less than a right angle may become uncomfortable.) The common flexion attitude of the Parkinsonian explains the usual absence of the little outward extension, but in not a few cases (and these not instances of only moderate rigidity) it is readily observable. In one case of bilateral Parkinsonian symptoms (left side more affected than right) the movement constantly occurred on the left side, but never on the other.

FIG. 17.



Normal subject. Combined movement No. II. 3. Tracing of contractions of homolateral erector spinæ. (*a*) Extended arm advanced to horizontal level in front: e.s. contracts; (*b*) arm swept back on same level: e.s. relaxes; (c) arm brought forward again: e.s. contracts; (*d*) arm brought down to side: e.s. relaxes.

Another movement of coöperation to which attention has been given is that accompanying the movement of turning round on a chair. When a person, seated on a chair, is asked to turn—i.e., move his body—round to right or left (hands clasped in the lap), he first of all abducts the leg of the side to which he is to move, then as this auxiliary movement is closing he turns his body, and when the latter movement, similarly, is coming to its end he moves up the other leg in adduction to its fellow. As a rule the head turns simultaneously with the trunk. In the case of Parkinsonian patients the same sequence is commonly observable; occasionally the contralateral leg is slightly adducted before abduction of the homolateral limb, while the head may turn before the trunk, curiously enough. No outfall of subsidiary movement is found to occur, however, in spite of these occasional variations, which, for that matter, sometimes characterise the same act in the normal person.

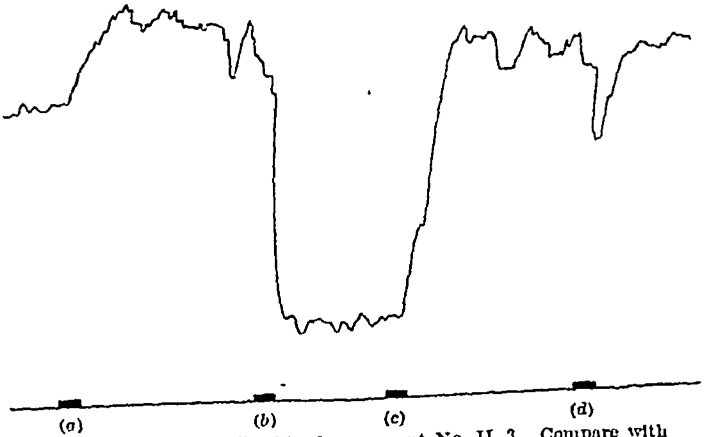
More interesting is the swinging action of the arms in walking, and in a way more important, in view of the fact that it is constantly referred to as an "associated movement," and its supposed "loss" in striatal disease as constantly taken to argue the existence of a physiological centre for "associated movements" in the normal corpus striatum.

"ASSOCIATED" MOVEMENTS.

Few terms are as much in vogue and at the same time as vague in meaning as this is, and its inherent indefiniteness will remain, unless, indeed, each writer will specify the exact sense in which he employs it. In ordinary neurological parlance the term, I take it, is used to denote the involuntary movements of one limb, say one arm or segment of the arm, which may be seen to accompany forceful voluntary movements of its fellow on the other side. Such movements have long been known to be readily elicitable, more particularly in cases of hemiplegia and diplegia—in the former condition usually from the *sound* to the *affected* side, in the latter indifferently from either. The "associated" movement on the second side may, or may not, be a "mirror" movement of that on the first side (to employ the expressions devised by Hughlings Jackson in his descriptions of the variety of epilepsy that bears his name); it often "spreads" on the second side in a way not to be seen on the first. Foerster speaks of them as "the normal [sic] synergias of pyramidal cases"—an unfortunate expression, in view of the fact that they are found in diseased states. It is confusing to find included by Foerster under the same term those muscular actions (extension of the wrist during closure of the fingers, &c.) which we have seen are precisely the normal muscular components of a total single normal movement. Moreover, this author places in the same category of "normal synergias" the spread of movement in hemiplegic cases from one group to another in the *same* limb, as when such a patient cannot flex his forearm without pronating and abducting at the same time, and also the "mass movements" of tetraplegia and spastic paraplegia. No distinction, apparently, is drawn by him between the "associated movements," in his sense, of normal individuals and of hemiplegics, normal and abnormal being classed together; and, finding them both awanting, as he considers, in pallidal cases, he reaches the conclusion already indicated, that the normal corpus striatum is the centre for this type (these types) of movement.

There is here, I consider, a plain error of deduction. Most observers are agreed on the general absence in striatal cases of the above-mentioned and well-known "associated movements" of pyramidal cases, widespreading, tonic, reflex movements which are the result of release of function of lower and older motor mechanisms, and which are *pathological* in the sense that for their appearance a pathological *condition* of the corticospinal system is usual. But it is illegitimate to maintain that the absence in *striatal* disease of the pathological "associated movements" that are proper to the diseased *pyramidal* system argues for their localisation in the basal ganglia. Taking Foerster's own statement, that they are also to be found in the form of "mass movements," we know the latter may be seen in cases of total transverse lesion of the cord—a condition with which the corpus striatum has nothing to do in any direct sense, since it is anatomically severed and as much out of action as in destroying striatal lesions. *The conclusion is unmistakable, that this type of "associated movement" is not effected through the globus pallidus and has no connexion therewith.*

FIG. 18.



Parkinsonian case. Combined movement No. II. 3. Compare with Fig. 17. (For details, see text.)

As for the ordinary "movement synergias" of normal persons—*i.e.*, the normal muscular components of a single movement—the "normal involuntary associated movements of agonistic synergists," in Foerster's elaborate phrase—we have already found them to be typically present in Parkinsonian and other striatal cases, and it is therefore impossible to subscribe to his theory, that they are effected by sensory impulses streaming to the globus pallidus via the optic thalamus from the beginning to the end of "voluntary" movement and *ipso facto* disappear in disease of that part of the basal ganglia. This theory is based on erroneous observation.

Arm-swinging in Walking.

Leaving pathological (pyramidal) "associated movements" and normal components of "voluntary" movement (which ought never to be classed in the group under discussion) on one side, we next ask ourselves whether any other variety remains. And here we may revert to the question of the swinging movements of the arms in walking. My own investigations lead me to suggest they should be regarded rather as "movements of coöperation" in the sense defined above. They are auxiliary movements, practised to enable the individual to maintain balance better during the act. Though normal, they are in no respect inevitable, for the simple reason that anyone can walk with his hands clasped behind his back, or with his arms held stiffly in front or in any other artificial fashion. He will at once, however, be conscious of the lack of ease in walking thus, and will revert with relief to the normal swinging. At the other extreme is the powerful use made of the swinging arms by expert athletes in walking races, when the upper limbs can be seen to be voluntarily utilised by exaggerated sweeping movements across the chest with a view to facilitating progress. I cannot assent, therefore, to the opinion either that this arm movement is a constant normal "associated movement," or that it is purely "automatic."

Of its common reduction or cessation in Parkinsonian cases let me admit at once there can be no question. If the normal individual is carefully watched, the movement, I find, largely consists of moderate flexion at the elbow, with but slight advance of the limb at the shoulder. On the whole, the arm moves through a wider range in front of the mid-axillary line than behind it. Now if a Parkinsonian be watched as he walks with body stripped, absence of any forward movement at the shoulder will at once claim the observer's attention, and as a slight advance at the proximal end of the limb would, of course, result in a materially wider excursion at the distal end, its failure to occur will affect the whole limb. In a fair number of instances, however, some flexion at the elbow takes place. In other, asymmetrical, examples of the disease the less affected arm will move with some freedom as compared with the worse; in unilateral cases the sound arm will move normally enough, but this class of case sometimes presents unusual and interesting features. A moment's thought will remind us that the normal arm is moving with the impeded leg, and I find on observation of several such examples that the movement of the sound upper limb is made to correspond with and in a sense to compensate for the defect of the opposite lower limb. Thus in one case (largely right-sided) the left arm was always advanced to a distinctly *greater* extent than usual, and this corresponded strictly to a slower advancement of the weak right leg. In another case (also right-sided), the normal left arm was never quite at the side, but was held in advance continuously and made a swinging movement through a rather reduced range in this advanced position. In unilateral instances the movement of the sound arm is "variably automatic."

It is instructive to note how frequently intelligent patients are aware of this imperfection of arm-swinging during their walk, even at a comparatively early stage, but if they are asked deliberately to swing the arms—"as they should do"—curious effects may result. For example, while some will manage for a time to move the arms alternately and appropriately, the movement will have a somewhat unnatural look; others, again, as I have seen more than once, move the arms forward and backward together in a ridiculous way; another patient (unilateral left-sided case), told to swing the left arm "properly" as she walked, did so only at the expense of the right arm, saying, "If I try to swing my left arm my right arm stops swinging." Patients, too, who when given a similar request hold both arms forward with a minimum of swing have been observed. In one case the patient made the spontaneous remark that the left arm (affected side) "felt different"; "in walking I feel as if the left arm has no weight, as if it were hanging by a thread." Another made the candid and illuminating observation: "It is easier not to swing my arms."

The explanation of this frequent though not universal phenomenon is to be found by reference to more than one consideration. Undoubtedly the factor of proximal rigidity plays a significant rôle, as is immediately evident when the patient walks stripped; involuntary contraction of deltoid and upper arm muscles keeps them relatively tense, and no alternating "play" between anterior and posterior groups is observable. I have not yet seen a case of reduction of this specific arm movement in which those muscles could be said to exhibit normal muscle tone. The hemiplegic patient does not swing his rigid arm. The matter of muscular "effort," again, cannot be ignored, and the same remarks are applicable in this respect as have been offered above, apropos of the Parkinsonian's general immobility. Largely "automatic" though the arm-swinging be, it encounters resistance; hence not to do it is "easier." In forcing the movement deliberately the Parkinsonian encounters the same difficulty as with any of his "voluntary" movements, and the result is one or other of the various anomalies already enumerated. Nor must it be forgotten, as before-mentioned, that arm movements are not absolutely essential in the walking act, and since the patient can as a fact walk without their aid, the faint element of conscious volition which should assist in stimulating them to action is ignored.

My conclusion, therefore, is to the effect that, this arm-swinging being neither constant, essential, nor purely "automatic," and partaking more of the nature of movements of coöperation or auxiliary movements than of involuntary or reflex associated movements, its reduction or absence in cases of striatal disease cannot be regarded as in any way supporting a theory of the localisation of "associated movements" or of "automatisms" in the corpus striatum.

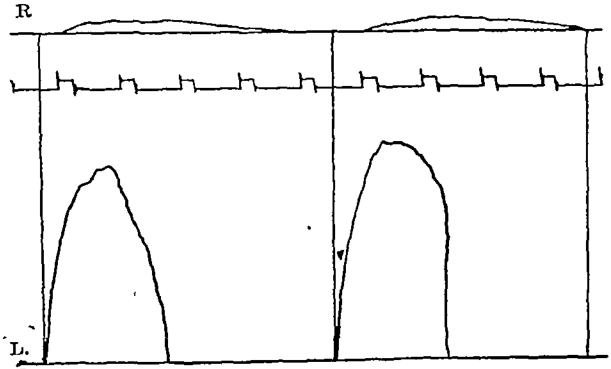
PRESENCE OF CERTAIN "ASSOCIATED MOVEMENTS" IN STRIATAL DISEASE.

Finally, under this heading, I wish to direct attention to the frequent or almost constant occurrence, mainly in unilateral cases of Parkinsonism and allied conditions, of a variety of "associated movement" from the *affected* to the *sound* side, but not, as a rule, vice versa. Many times have I had occasion to observe how in the performance of individual "voluntary" movements with the affected arm, hand, or fingers (especially in the case of the latter two) an identical, "mirror" movement is executed on the sound side, smaller in range as a rule and usually at least as slow as the other—sometimes, in fact, more prolonged. For instance, abduction of the little finger on the weak side is accompanied by the same movement of the normal finger, extension of the wrist on the affected side by extension of the wrist on the other, and so on. In ordinary bilateral cases these phenomena are very often awanting, but should one side be more affected than the other they are commonly still to be seen, always from the more weak to the less weak side. So much is this the case that the observer can thus sometimes decide, by a rapid and simple test, which of the two sides is the more involved.

The tracing reproduced in Fig. 19, taken from a unilateral case, shows how flexion of the forefinger of the affected arm (below), relatively good if somewhat tremulous, is accompanied by a fine flexion of the forefinger of the normal hand, beginning a fraction of a second later, considerably more restricted in range, and, in this instance, continuing a second or two after the movement of the first side has ceased. (Kinematograph films that I have had taken give more striking examples of the crossed muscular action.)

Movements of this character have been described in another connexion by Pierre Marie and Foix as "syncinésies d'imitation," and are stated to occur indifferently from either side in cases of hemichorea and hemiathetosis. The peculiarity here remarked is their occurrence mainly *from* the *affected*, or more affected, *to* the *sound*, or less affected, side in cases of striatal disease, which, according to the usual views, are characterised by absence of all "associated movements." Comment has already been made on the loose way in which this expression is employed, so much so that it is in danger of becoming valueless; but while the phenomena just described differ in some respects from the familiar involuntary "associated movements" of pyramidal affections they clearly exhibit in point of fact the element of "association" and deserve attention. They can be, and often are, inhibited, especially if the subject becomes aware that the examiner's attention is directed to the crossed movement rather than to the requested movement of the weak limb; but they are not found to occur in normal people, where individualisation of movement is perfectly developed, and I do not believe, as do Marie and Foix, in the existence of a "normal tendency" to imitation by one side of the movements of the other. Simple though the movement is, a satisfactory explanation is not easily found. The conjecture might be hazarded that the peculiar unilaterality, the occurrence mainly on the unaffected, or less affected, side, points to an "overflow" of the innervation current at a low (cord) level to the corresponding motor centre of the other side, conceivably because of the relative "block" encountered by it in the (affected) muscle units to which it is directed; this tendency to cross-innervation is readily inhibitable from the cortex. Since no such obstacle is met on the healthy side, there is no tendency when *it* is innervated for the current to cross to the affected side. I do not think that any explanation based on bilateral representation of individual movements in the cortical motor centres applies here; we cannot say it is in any way customary for such corresponding muscular groups to be innervated simultaneously and identically, at least in the case of the muscles of the fingers and hands, where marked individualisation is the rule.

FIG. 19.



Unilateral Parkinsonian case. "Associated movement" of right (normal) index finger during "voluntary" flexion of left forefinger (affected side). The associated contraction is much less in degree but lasts longer.

In further contradiction of the general opinion as to loss of "associated movements" in striatal affections, a word may be said on a peculiar variety of synkinesis which I first noticed a number of years ago in cases of paralysis agitans and which has been repeatedly observed in patients suffering from the diseases of this group, while it is according to my investigations of but rare occurrence in normal persons. When the Parkinsonian is asked to make a series of successive right and left conjugate deviating movements of the eyeballs (the head being kept steady) he very frequently blinks his eyelids as the eyes pass from one extreme lateral position to the other. The blinking movement, of which he appears to be unaware, is sometimes quick, sometimes slow and deliberate. In more than one case a quick double eyelid flicker has been distinctly and repeatedly observed. This transient complete or incomplete eyelid closure is the more noteworthy in that Parkinsonians as a rule are conspicuous for the poverty of blinking movements, as has been made the subject of previous allusion. Now normal subjects, who blink easily and readily, do not show this particular "associated movement" to anything like the same extent, though I do not say it is never seen. So high a proportion of Parkinsonian patients exhibit it that I have come to regard it as more typical of that condition than of any other. Yet no explanation of this eye-blinking associated movement that I can think of can be said to be satisfactory, and for the present I am content to note its existence.† (A kinematographic film of this "associated movement" was exhibited.)

Summing up our clinical data and our deductions therefrom, we are justified in the *general conclusion, that striatal disease is not characterised by complete outfall of "associated movements"; we naturally do not expect the special variety discoverable in pyramidal affections to be present in extrapyramidal disease and therefore cannot in any sense describe it as "lost"; other varieties are actually found in striatal maladies and not in normal subjects; others still have been erroneously included in this class of movement and any argument based on their reduction or absence is thereby vitiated.*

MOVEMENTS OF REACTION AND DEFENCE.

In this category are comprehended movements in response to definite stimuli and those performed by way of protection or defence from some nocuous excitation. Such motor responses are frequently designated "reflex movements," but this term is undesirable. In the intact organism an immediate response to a nocuous stimulation is called "reflex," as when the eyes are closed on the flash of a bright light (in any flashlight group photograph a percentage of the "sitters" are seen to have their eyes shut). Yet in numerous instances a conscious element cannot be said to be excluded. The hand is moved with urgency from the contact of a hot surface, but the sensory impulse must reach the cortex first, there to awaken a conscious sensation of heat. Otherwise expressed, the "reflex" arcs extend to the cortical level, *and if so it is preferable they should* be distinguished as a class from reflexes confined to lower physiological levels, however analogous their mechanism.

The general statement is frequently made by those concerned to defend current conceptions of striatal function that in striatal disease all movements of reaction and of defence ("automatisms") are impaired or lost, whence we may infer the tacit assumption is drawn either that consciousness enters into striatal activity or that striatal "automatisms" blend in some undefined way with higher (cortical) coördinated movements. My own observations in this respect also lend no countenance to the theory of striatal function erected thereon.

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† I have under my care in hospital at present a remarkable case of postencephalitic Parkinsonism in a young woman. She exhibits extremely slow, incomplete, and punctuate lateral deviation of eyes to right and left, but she has discovered for herself that if she lets her eyelids droop, or shuts the eyes, as she deviates the eyeballs conjugately from side to side, their movement becomes at once quicker and more complete.

When testing for the class of movements now under review it is imperative the subject should have no cognisance of what is about to be tried out. I devised a series of chair-tilting tests in which the patient's chair was abruptly moved in one direction or another by an assistant behind him, while the observer was seated in front. The degree to which conscious knowledge of the tests to be made interferes with the reactions is sufficiently indicated by the remark of a patient whose responses became less and less as the examination proceeded and who, when comment was made thereon, said, "I know now you won't really let me fall off." Cases of severe generalised Parkinsonism were selected for the purpose, the patient being seated on a chair with hands on lap and then tilted abruptly forwards or backwards or to one or other side. A single series may be briefly summarised to illustrate results. In this instance the case was that of a woman of 28, suffering from the postencephalitic variety.

(1) Tilted to L. The left leg was at once abducted, the left arm extended, abducted away from the trunk, and directed towards the corner of a table which stood near. As further falling to the left continued, the right arm was in turn brought across and directed also to the table. There was no movement of the right leg.

(2) Tilted to R. The right arm was immediately extended and abducted and the fingers extended as if to save from the floor. The left leg was notably abducted, extended, and elevated, as if to counterbalance the right lateral deviation. No movement was observed in left arm or right leg.

(3) Tilted backwards. Both arms were at once thrown out in extension in front, both legs were abducted, and slightly extended at the knees.

Pushing tests were utilised in the same case, the subject having the eyes closed to obviate foreknowledge.

(1) Sudden push backwards. Both arms were thrown out in front in full extension.

(2) Sudden push to L. and R. respectively. In each instance there was marked quick abduction of the ipsilateral leg, with slight abduction of the contralateral arm.

All sorts of variations have been seen in different subjects, and in some the reactions have been considerably restricted as compared with the above. Thus in the case of a man of 27 (postencephalitic form) in whom the left side was distinctly more affected that the right, chair-tilting to the *left* evoked abduction of the *right* leg, then feeble abduction of the left, while the edge of the chair was gripped with the right hand; whereas, on tilting to the *right* only the *right* leg was abducted, and no movement of the left limbs was detected. On sudden pulsion backwards the same individual's reaction was confined to slight but definite advancing of the right arm. Another patient whose responses to these tests seemed peculiarly meagre (a girl of quick intelligence, she early realised that she would not be allowed to hurt herself), was asked to bend backwards as far as she could, on the pretence of examination of the back muscles. The supporting hands were suddenly removed, when at once both her arms were thrown forward and she tried to catch hold of the assistant standing in front.

In view of these findings, which might be readily amplified, we shall be careful in our interpretation of the seeming absence of reaction among Parkinsonians to peripheral stimuli of differing sorts. Foerster, for example, says they exhibit no movements of reaction to irritation from flies, but neither do the moribund, nor the profoundly asthenic from serious illness, nor those in whose case for other physical reasons the reaction requires an effort. "It is easier not to." Indifference and apathy led to similar absence of reaction on the part of the long-suffering soldier on the Gallipoli Peninsula. In short, so manifold are the factors leading to this apparent poverty of reaction movements, and so clearly is there resident in them a cortical, because conscious, element, that their ascription to striatal function can be dismissed as a conjecture lacking inherent probability no less than any clinical support.

The question can be further probed by resort to the familiar tests for defence-reactions to stimuli along the sense avenues of touch, sight, hearing, &c. With the proviso that the subject be unaware of what is to be examined for, the nostril, ear, or throat can be tickled, visual or auditory excitations of a sufficiently "threatening" or "alarming" character utilised, or painful cutaneous stimuli employed, and in practically all instances a response or reaction will be evoked, proving the inaccuracy of the general statement already referred to. If the hand be suddenly passed across in front of the patient's eyes with a threatening gesture he blinks and may withdraw the head; at the unexpected bursting of an air-filled paper bag he also blinks; when the auditory meatus, or the nostril, is tickled with a paper "spill" the head is inclined away, and so forth. Only in exceptional instances do such reactions fail. Thus I have seen tears running from the eyes of a Parkinsonian when his anterior nares were tickled, yet no outward reaction was otherwise noticeable: another patient blinked his eyes when a feather entered his external auditory meatus but the head did not move away. I have convinced myself, further, of the general inaccuracy of the view according to which patients with paralysis agitans furnish no visible evidence of a reaction to painful cutaneous stimuli; on the contrary, withdrawal from the nocuous excitation in my experience rarely fails. If the fauces are irritated with a paper "spill" moderate "gagging," with movement of eyes and mouth, results more or less regularly.

In seeking an explanation for the occasional absence, and less infrequent reduction, of movements of reaction and defence we do not require, as hinted above, to go past the factors already enumerated, in particular, that of awareness, the action of which has been sufficiently demonstrated. I shall not be misunderstood, I hope, when I say also that with certain patients of the hospital class the rôle played during examination by a "superior" is so passive as of itself to tend to reduce external reactions to a minimum. Many patients by no means as generally immobile as the Parkinsonian will submit to repeated pin-pricking in sensory tests with stoical calm, and the same is true of ordinary sole-stimulation in investigating the plantar reflex. As a persistent background in rigid cases is the muscular state, which of itself, as we have several times had occasion to remark, contributes to reduction of facile reactions, to an extent, indeed, that cannot be ignored.

MOVEMENTS OF EXPRESSION.

Hitherto our concern has been exclusively with the so-called "voluntary" motor system and its activities when there is reason to believe the striatal system is largely out of action, but I must now refer to another class of movement which, commonly called "involuntary," is nevertheless more conveniently discussed at this stage than later, when we come to examine chorea, tremor, and athetosis.

Scarcely any greater clinical contrast can be imagined than between the mobile and facile emotional expressions of the Sydenham's choreic and the "starched" and "fixed" facies of the Parkinsonian. In the latter it is not an absence of all expression but rather a fixity of expression, a lack of ease in passing from one expression to another, a lingering exteriorisation of emotion, with which we have to deal.

Though not specifically alluded to in the classical monograph of James Parkinson, the Parkinsonian "mask" is a classic symptom, not requiring elaboration by any writer of to-day. I may state briefly that patients can and do both laugh and cry, that their expressions frequently exhibit an exaggeration amounting almost to a *rire* or *pleurer spasmodique*, and that in unilateral cases the affected side moves more slowly than the other in the expanding or unfolding of its expression, but tends to maintain this after the other has become normal again. A distinction is to be drawn, none the less, between the true *rire et pleurer spasmodiques* of the pseudobulbar and the exaggerated facial emotional expression of the Parkinsonian, in that the "convulsive" element of the former is awanting in the latter instance, in which also there is far less implication of the respiratory part of the mechanism for the display of emotion, while the quality of the laugh is often inferior. As a postencephalitic patient remarked, "I used to have a ringing laugh, but now I make a silly noise." It is not that, as in pseudobulbars, double hemiplegics, cases of disseminated sclerosis, and so on, the facio-respiratory emotional apparatus is "released" into exaggerated action, but that the apparatus itself, an "involuntary" mechanism, is subject to the same muscular disabilities, so to speak, as have been described in the case of the "voluntary" motor system. For we are dealing, as is immediately understandable, with skeletal, not with unstriped, muscles; the problem pertains to the "involuntary" use of a "voluntary" musculature. Now there is no good reason to suppose the "inward" or central (psychical) part of the mechanism has undergone a change; the Parkinsonian is no less conscious than the normal person of the stimulus that conduces to laughter or awakens tears; hence such abnormalities as he shows must be set down, inter alia, to the existing hypertonic condition of the muscles involved, that rigidity which seriously interferes with facility in or versatility of muscular play. In a study of the subject published a year or two ago attention was specifically drawn to impairment of the expression of the emotions from organic lesions, and allusion was made to alterations consequent on paresed, rigid, ataxic, and other states of the facio-respiratory apparatus; among these, Parkinsonian rigidity is to be included. The important point that I wish to make at present is that *the mimic or expressional movements under consideration are "most automatic" or "least voluntary," but they nevertheless reveal disorder of function as definitely as do so-called "voluntary" movements.* (I am in no sense dealing here with the varying respiratory disturbances that have been observed within the last few years among the sequelæ of epidemic encephalitis.) It is the more necessary to stress this point in view of the distinction which some have attempted to prove exists between "voluntary" and "involuntary" use of the musculature in paralysis agitans, the former exhibiting defects of function and the latter not. The evidence now adduced lends no support to this attempted differentiation. (See also below.)

Poverty or lack of movements of the limbs in gesture and expression is, of course, a mere corollary of what we have learned as to the "Bewegungsarmut" in general. The "mimische Starre" or mimic fixity of the Parkinsonian, inclusive both of facies and of limbs, is a consequence of more than one factor, of factors already sufficiently discussed, and is, in my opinion, erroneously described as a mimic "paralysis," for reasons given above. Hence, when Binswanger and others argue as it were backwards from the symptomatological to the physiological, and place in the corpus striatum a "higher coördination centre for unconscious mimic and gesture play," they misinterpret the clinical phenomena in the first instance and overlook other significant clinico-anatomical data in the second. For, in the article already alluded to on "Pathological Laughing and Crying," I have brought forward evidence to suggest that there are corticifugal (non-pyramidal) paths from the frontal lobes via the optic thalamus to the facio-respiratory centres in the pons and medulla, and that these are the routes taken by emotional impulses to modify the facio-respiratory synkinesis in the direction either of laughter or the reverse; genuine absence of emotional movement, genuine emotional palsy, occurs from lesions situated *ex hypothesi* anywhere on these tracts, from the cortex to at least as low as the pons. *No theory attributing emotional disorders to disease of the corpus striatum alone can be accepted, since it fails to include a number of germane clinical and pathological facts.*

Muscle Tone.

By muscle tone is commonly understood that condition of contraction of a resting muscle which exists without "voluntary" innervation and which holds the limb in a given position. It also exists when the limb is passively supported, for the muscles do not "sag" or hang flaccid. When, further, the limb is passively moved a mild resistance to the displacement is encountered; when it is held and shaken the segments concerned exhibit no flail-like swinging as do those of a limb considered to be hypotonic or atonic. Thus muscle tone gives a shape to muscles, and is in evidence both in resting (static) and moving (kinetic) states of the musculature. According to the researches of Sir Charles Sherrington, tone is in reality postural contraction, that is to say, it is a moderate contraction of muscle-fibres effected reflexly by sensory excitations arising in peripheral end-organs, substantially those of the muscles themselves. In virtue of this reflex contraction, a muscle will adapt itself to the maintenance of any posture, whether the fibres are in fact in a shorter or longer anatomical state; the property of adjustment of length of fibre, and of exercise of contracting power whatever the length, he described as "plasticity," whence has arisen the use of the term "plastic tone," to be referred to immediately. All clinicians agree that lesions interrupting the proprioceptive reflex arc underlying muscle tone confirm the conception by producing, as a fact, loss of tone.

The point next arises whether this muscular function of reflex contraction is subserved by all or by a special group of striated muscle-fibres. I can now only refer in the very briefest fashion to a hypothesis that has gradually developed more particularly during the last decade, to the effect that all fibres partake in postural tone but that (as the form of the hypothesis due especially to Hunter has it) there is a subdivision of labour, so to say; some fibres, said to be histologically recognisable, are innervated by the motor or efferent limb of the proprioceptive arc alluded to above—i.e., by the somatic nervous system—and contract reflexly during change of posture; they are considered to be responsible for what has been called "contractile tone," because they contract in response to appropriate stimuli. Other fibres, stated to be histologically distinguishable, are innervated by the sympathetic nervous system, but they are not contractile; their length is supposed to be *passively* altered during the activity of neighbouring contractile fibres (the first group); and their postulated function is to remain at a given fixed length once movement of the others has ceased, and thus to aid or support the maintenance of posture determined otherwise. They are said to be responsible for "plastic tone"—i.e., the element in postural tone concerned with the adaptation of a muscle to the new posture assumed after movement. "Plastic tone" and "contractile tone" together make up "postural tone."

While Hunter asserts the sympathetically innervated fibres for "plastic tone" are *non-contractile*, he makes no reference, as far as I have seen, to the old Vulpian's phenomenon (1862), recently reinvestigated by Langworthy. The latter finds that stimulation of the lingual nerve (containing bulbar autonomic fibres) leads to slow wavy contractions of the tongue muscles after complete degeneration of the hypoglossal nerve-endings by previous section, and is inclined, therefore, to believe in the possibility of *contraction* via the sympathetic nervous system.

Be this as it may, the identity of tone and of contraction cannot be seriously questioned. For physiological proof of this statement the clinician has to turn to recent work with the string galvanometer (personally I have had no opportunity of prosecuting such researches and must rely in this respect on the investigations of others). Very briefly, it has been shown by exact methods that an action-current exists in normal muscle at rest, that there is no notable difference in the action-current as between active ("voluntary") movement and passive movement, that the action-current of normal muscle differs from that of rigid and spastic muscles only quantitatively, not qualitatively. Further, the curves of the current during passive movement of a hypertonic muscle are the same as those of strong "voluntary" innervation; no qualitative distinction is to be *found between the action-currents* (during both active and passive movement) of Parkinsonians and of hemiplegics; or between the action-currents of the same conditions when the muscles are at rest. In respect of this latter point, the curves both in hemiplegia and in paralysis agitans are more marked than in resting normal muscle, and in paralysis agitans rather more than in the pyramidal affection (Hansen, Hoffmann, von Weizsäcker, Wachholder, Mann and Schleier, and others). The general conclusions are, that tone and "active" innervation are analogous phenomena, that only quantitative differences are to be detected between the action-currents of "voluntary" innervation and of hypertonic states of pyramidal and extrapyramidal origin, that the muscle tone exhibited on passive movement in these morbid conditions (resistance to stretching) is entirely analogous to the so-called tetanic innervation of "voluntary" contraction. A number of years ago Lewandowsky maintained that "tonus is nothing else than the observation of a particular attitude for which the same laws hold good as for the carrying out of a movement."

What actually happens when "volition" innervates a resting tonic muscle is probably that it strengthens the existing ("involuntary" or reflexly produced) contraction, as is suggested by a significant experiment of Graham Brown, to which attention was drawn in my paper on "The Old Motor System and the New." According to Holmes, tone "fuses with muscular contractions otherwise aroused [e.g., by 'volition'], reinforcing them, making them more tonic." The reader is referred again to the tracing obtained from the erector spinæ of a Parkinsonian during the combined arm movement described above (Fig. 18). From this record it is clearly established that the existing "involuntary" or postural contraction of that muscle (its tone—in this instance, hypertonia) is *reinforced* by the "volitional" element of active contraction, so that the curve rises still further, if somewhat slowly. I attach importance to this demonstration, since Hunter asserts (without, seemingly, offering evidence in support) that "in voluntary movement postural tone, made up of a contractile and a plastic component, is first *inhibited*" (italics mine); according to my observations this is incorrect.

The difficulties of gauging tone by ordinary clinical methods are considerable; we estimate the "*feel*" of the muscles by reference to our own subjective standard based on knowledge derived from palpation of many presumably normal muscles; we observe attitude; we impress a passive movement on the muscle concerned; we calculate its "stretchability." From what has been already shown at various previous stages in our discussion, the difficulty is increased by inability to separate "voluntary" from "involuntary" contraction by objective clinical methods; by the fact that the conscious patient will often "unintentionally" coöperate during passive movement, so-called; by the varying degree of "automatism" in any frequent movement; by recognition of the truth that not all attitudes are "involuntary." In view of the physiological data obtained by the string-galvanometer method, moreover, we are really asking ourselves to estimate merely *quantitative* differences, a task of obvious arduousness. While major degrees of hypo- or hyper-tonia do not, as a rule, offer any difficulty, minor degrees escape us clinically, and the passing from a reflexly determined contraction to an incipient "voluntary" contraction (without displacement) is for practical purposes not determinable. Conversely, we lack methods for gauging with exactitude at what point a postural tone reaction fixes or stabilises a movement begun by "volition."

A further introductory word is necessary in respect of the recent tendency to differentiate somewhat rigorously and schematically movement from posture, and kinetic from static muscular contractions. Speaking generally, "volition" is taken to imply *movement*, and reflex action, *posture*, yet the inapplicability of the generalisation must be plain to the reader; posture is often maintained "voluntarily," and much reflex action is of a definite kinetic character. Movement is in reality a series of changes of posture, and Sherrington has stated that the distinction between reflexes of posture and reflexes of movement is not clear-cut. That two entirely separable mechanisms should be responsible for posture and movement respectively is *primâ facie* improbable, in view of this statement of Sherrington's for reflex action, and of the known phenomena of "voluntary" action. Cogent arguments against this differentiation have recently been urged by Bard, with whose contentions I find myself in substantial agreement.

MUSCLE TONE IN STRIATAL DISEASE.

Study of an average case of Parkinsonism or of progressive lenticular degeneration, even by the comparatively crude clinical methods to which we have resort, at once reveals the presence of increase of muscle tone. The muscles stand out and have shape; where their tendons are visible these are salient; to the palpating finger they are firm and *tense*; they offer definite resistance to passive extension, and more force is required to effect passive displacement. Further, such patients exhibit "at rest" an attitude, indicative of access of tone in certain groups.

Distribution of Muscle Hypertonia.

The bellying of the skeletal musculature is more or less universal, but is more recognisable, on the whole, in those groups whose contraction underlies the maintenance of specific Parkinsonian attitudes (sternomastoids, erectores spinæ, deltoid, biceps brachii, *supinator longus*, wrist extensors, long finger flexors, interossei, thenar and hypothenar groups, knee flexors, tibialis anticus, &c.). Rigidity—i.e., resistance to passive movement—is so widespread that it may be described as general, though it is more pronounced at the larger joints, being presumably there a question simply of muscle mass. Even when a limb or limb segment is passively put in such a position as to relax muscles as far as possible hypertonia is evident. In the recumbent posture the sternomastoids do not relax. When any joint of any limb is passively displaced resistance is encountered whatever the direction of the displacement. We have already had evidence pointing to the implication even of quite small muscles—e.g., those of the larynx—in this generalised rigidity, and it is doubtful whether the external ocular muscles completely escape. In the result, the patient can often be passively moved *en bloc*; if the head be rocked about the trunk follows its every move, and so on. A degree of rigidity equal to that of the severest pyramidal cases is probably attained but seldom (unless, indeed, the stage of myogenic contracture has been reached); it is not so easy to pull a Parkinsonian about by one leg, the other following, as it is in the case of a pronounced spastic paraplegia.

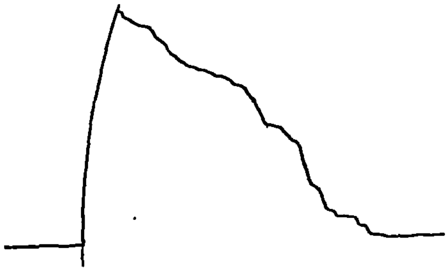
Characters of the Muscular Hypertonia.

When the hypertonic muscle of the striatal case is passively stretched resistance is felt from beginning to end of the movement; in the milder cases the origin and insertion points of the muscle to be tested should first be approximated and the passive stretching should be comparatively fast. If the stretching is quite slow little or no resistance may be demonstrable. The explanation doubtless is to be sought in the stimulation of proprioceptive end-organs by the abruptness of the initial passive movement, with consequent reflex increase of the muscular contraction and therefore of resistance. Strümpell is of the opinion that striatal rigidity remains more or less the same whether the passive movement be slow or abrupt, gentle or powerful, but my observations do not confirm this view, nor do I consider it can be applied as a clinical method of distinguishing pyramidal from extrapyramidal rigidity. Figs. 20 and 21 are two records from the same muscle (biceps brachii) of an advanced postencephalitic Parkinsonian; in the former of these the muscle (already contracted) was passively and slowly extended in the course of three seconds; in the latter, the same movement was made abruptly and strongly, occupying not more than a quarter or a third of a second, and the characteristic "cogwheel" character of the resistance stands out with greater clearness in it than in the other.

The statement has already been made that the rigidity is practically universal in striatal cases; in the various divisions of the musculature it varies in degree only. It is found, therefore, in muscle groups which in pyramidal affections exhibit little or none of such hypertonia (see also below). Like one or two other phenomena of postencephalitic Parkinsonism, it may show a curious reversibility, fluctuating from time to time in an unexpected degree—a character not met with to the same extent in pyramidal cases. In deep sleep careful observations by my house physicians have proved it to be markedly reducible, frequently if not constantly. Cutaneous sensory stimuli exercise no apparent effect on its character; it is not temporarily "broken down" thereby, in contradistinction to what obtains in pyramidal disease. It seems to be aggravated by cold and reduced by warmth.

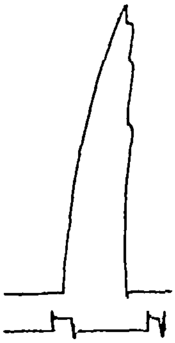
In spite of the plausibility of the view that muscle rigidity is mainly responsible for impairment of "voluntary" movement, I am not able to satisfy myself there is always a specific connexion between the two. I have not found that movement is always braked by the existing rigidity and brought to a standstill more or less completely and soon, as Foerster states. If the reader will refer back to the observations described in a previous lecture in this series he will gather that peripheral rigidity is only one, and that not necessarily the most important, of the factors producing limitation of range and power, and constituting "paresis," in respect of "voluntary" contraction. I have demonstrated the physiological normality of the mechanism of volitional innervation in regard to its muscular components, concomitant rigidity notwithstanding. We have had evidence to show that "voluntary" muscular contraction blends with existing tone and is rendered more tonic. Were the rigidity really to function as a constant and immediate brake on "volition" a difference might be expected between the curve of a rigid muscle under passive and active extension respectively, since in the latter the extension is part of a "volitional" action. By physiological (action-current) methods no such difference is discoverable. With cruder clinical technique the arm of a patient with severe paralysis agitans was fixed so as to prevent any subsidiary movement; the biceps brachii was in the first instance passively stretched, the time taken being roughly two seconds; another tracing gave active ("voluntary") extension of the same muscle, in the same time, and under the same conditions, and no distinction could be found. However, single instances must not be unduly stressed, and from this illustration, further, the inference is not to be drawn that hypertonia does not impede passive movement, for the reverse is the case. In analysis of the actual hindrance encountered by "volition" in the motor periphery due weight must be placed on the state of the antagonists, as we shall shortly see. This is of greater significance than hypertonia of the prime movers, though one might conceive so exaggerated a condition of agonist hypertonia that the incoming current of "volitional" innervation produces little or no evident result. No such case, as a fact, has as yet come under my notice.

FIG. 20.



Parkinsonism. Slow passive stretching of biceps brachii.

FIG. 21.



Same case as Fig. 20. Quick passive stretching of biceps brachii; "cog-wheel" phenomenon well seen.

A further word is necessary in this connexion as to the type of movement in which abnormal states of the musculature will produce its effect. From the observations made in the course of testing various kinds of movement, as described previously, the element of rigidity has been seen to contribute to the general imperfection in all; that is to say, it hampers movements of a "most automatic" kind no less than those that are "least automatic," as might, indeed, be expected. If there is a persisting background of agonist-antagonist rigidity, "volitional" innervation of a given muscular unit cannot differ from "automatic" innervation, since both use the final common path in a Sherringtonian sense. I have not found, therefore, in working on this class of case, that any support of a clinical kind is furnished to the contention of Kousnetzov, who says that in extrapyramidal hypertonia "it is above all the voluntary movements that are affected."

TREATMENT OF PHTHISIS WITH SANOCRYSIN.

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WHEN we began to use sanocrysin about six months ago in the University Clinic in Copenhagen for the treatment of some cases of chronic lung tuberculosis we were prepared to see serious consequences follow the sanocrysin injections in severe cases in view of the already published experiences. In the first few weeks we also had cases in which the reactions caused by the treatment could not be controlled, so that the patient succumbed before he otherwise would have done. We fairly quickly discovered, however, what the special dangers were and how they could be avoided, and in the last five months we have had no disasters of this kind. The treatment has thus been freed from the drawback which at first attended it, and we are now in a position to judge more soberly the therapeutic results we have attained during these months.

Dangers of the Treatment and How to Avoid Them.

Before giving an account of these results it is appropriate to discuss in rather more detail the dangers which may accompany the treatment. They are fully dealt with by Secher and Würtzen in the book, "Chemotherapy of Tuberculosis."[1] What is of special interest now is to realise that they can usually be avoided. It is the present purpose to discuss these from a purely clinical standpoint without entering into the still hypothetical explanations of how they arise. Indeed, the whole question of the mode of action of chemotherapeutic substances is still far from being cleared up, and the same undoubtedly applies also to this new chemotherapeutic specific drug.

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[1] THE LANCET, 1925, i., 239, 555.

The greatest risk is the occurrence of the acute state of collapse described by Mollgaard as shock. It is characterised by a marked fall in temperature, the patient becoming pale, sweating, and showing signs of heart weakness with a very rapid and small pulse, and the gradual onset of cyanosis and other signs of cardiac failure. This is the condition which is combated in a very striking manner by the intravenous injection of antitoxic serum.

Our experience is that signs of shock are most likely to occur when an injection of sanocrysin is given while the patient still shows a febrile reaction from a previous injection. As a rule, a long febrile reaction, lasting from one to two weeks, where the temperature rises and falls fairly steadily, ensues after one or two sanocrysin injections. This reaction must be allowed to pass away before a fresh injection is given, and one must watch when it begins. By giving an injection too early, just when the fever is starting, the patient is exposed to the danger of shock, and even if this does not occur the reaction is increased in strength, so that it is more protracted and violent in every respect than it would otherwise be.

The same thing may happen if the patient is febrile before the first sanocrysin injection is given. If the usual dose is administered in such a case there is a risk of shock. One must either wait until the fever has disappeared or begin with a much smaller dose. In a case of acute tuberculous lobar pneumonia that came in with a temperature of over 40° C., we observed the occurrence of shock after a dose of only 20 cg. If one recognises these facts, shock can presumably be prevented, or at any rate, one will only get incipient shock, which can easily be controlled by an intravenous injection of antitoxic serum.

In order to avoid interfering with the long febrile reaction it is essential to bear in mind that in some cases it does not start before two to four days after the second sanocrysin injection, while in other cases it may appear after a single injection of only ½ g. In both cases a too early injection of another dose may be dangerous.

The danger resulting from the first injections of sanocrysin following too rapidly upon one another may, however, show itself in another manner than by the occurrence of shock. The fever reaction may become too severe and rise to a fatal hyperpyrexia. When we were first trying sanocrysin, in one case where three injections were given with only one day's interval, the temperature began to rise and without intermission reached 42° C., after which violent heart attacks and intestinal hæmorrhage occurred and death supervened.

From these facts it appears that the danger chiefly consists in the injections following too rapidly upon one another, with consequent accumulation. The same conditions also seem to reinforce the third variety of intoxication phenomena which in the form of anorexia, nausea, vomiting, and kidney disease nearly always appears during the treatment. The renal lesion manifests itself by albuminuria and casts in the urine. It seems as if the albuminuria appears in two different manners. It very frequently coincides with the long febrile reaction and is then usually of short duration, but it may also occur at a later stage of the treatment and may then last longer—weeks or even months. It is particularly this albuminuria occurring late that seems to follow too rapid injections. The longest attack of albuminuria that we observed appeared after three injections at intervals of only four days, and, in general, we have much more frequently seen severe albuminuria when the intervals have been four days than when the interval is increased to six days. Latterly, therefore, as a general rule, we have only given sanocrysin injections once a week, and we have sometimes been able to guard the patient against albuminuria throughout the whole course of treatment. The first two injections only may be given at, say, an interval of two or three days, if no reaction has already appeared. In carrying out the scheme of treatment it is very important to avoid albuminuria as much as possible, because another injection ought not to be given so long as it exists. Moreover, albuminuria is often accompanied by the other intoxication phenomena alluded to, which bring on a state of inanition, with a consequent large decrease in weight. On the other hand, it must be pointed out that the kidney disease is very benign, being chiefly a tubular lesion of a toxic nature, and that in all our cases it disappeared without leaving permanent damage. In a single case, however, there was still a trace of albuminuria after two months.

Although the effect of antitoxic serum in cases of shock has seemed to us very striking, it is more uncertain as yet how much action it has in warding off or arresting the albuminuria, at all events when it is given intramuscularly. The serum injections appear to be particularly ineffective against the late albuminuria, but they probably have an effect upon the kidney disease when it occurs along with the fever reaction at the beginning of the treatment. We have more and more given up the use of antitoxic serum except in shock, and we have tried to avoid albuminuria by increasing the interval between the individual injections in the manner indicated.

The Rationale of Treatment.

When one pays attention to these different factors in the administration of sanocrysin, the treatment is much more simple than it appears on reading the first clinical reports. In the ordinary cases of subfebrile or afebrile phthisis we are satisfied with the dose of 1–2 cg. per kilo suggested by Mollgaard, or more generally 0·5 g. for the first dose, 1 g. for the second dose two to three days later if no reaction occurs, and then 1 g. about once a week. In febrile patients one can begin with a lower dose—for example, half the quantity, and gradually increase it to the full dose of 1 g. In small women 0·75 g. will be sufficient. In cases with high fever it is advisable to begin with a dose of 0·2 g., and increase it very slowly.

Immediately after the injection the patient often feels indisposed and vomits, but this is purely temporary and does not last long. After this, the patient does not notice anything until the reaction caused by the drug occurs. The time which elapses before the reaction appears may vary from a couple of hours to one or even two days, and the first sign of the reaction is a rising temperature.

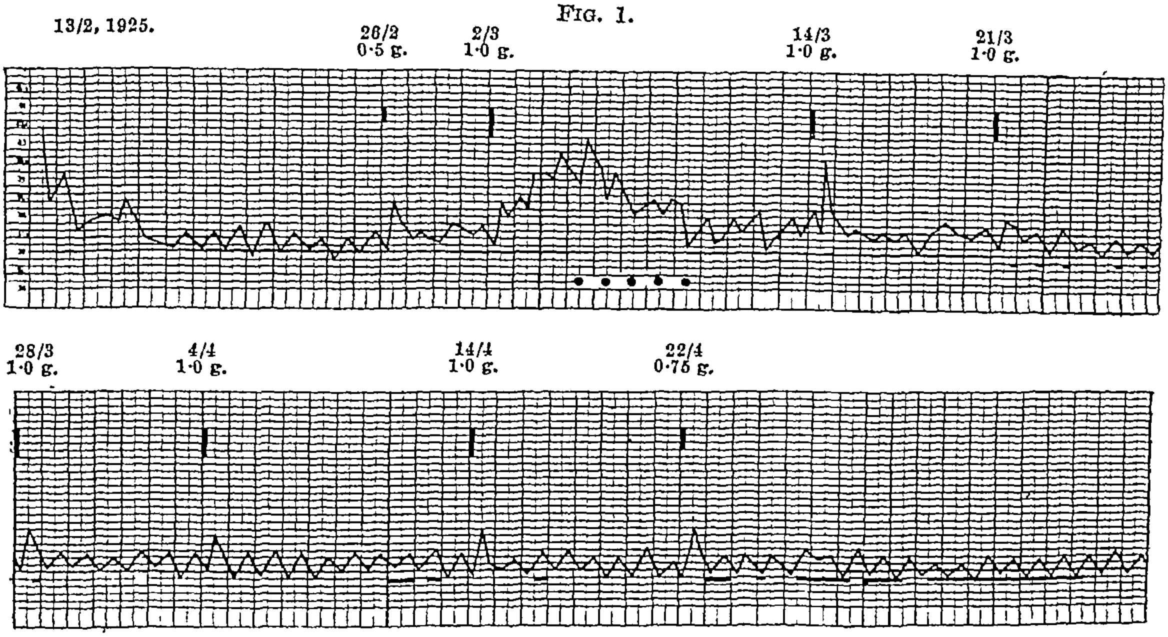
The rise of temperature, in the majority of my patients, has run a fairly typical course. After one or two sanocrysin doses a rise of temperature has occurred in the course of a few days, continuing for one to two weeks, exhibiting a more or less rapid rise and a steady fall to the normal again. This part of the temperature curve often shows a perfectly regular course in its rise and its lytic fall. The subsequent rises were, however, short ones, lasting as a rule only one day, the temperature falling to normal again the day after or in a few days' time, and they get smaller and smaller for each injection, and finally cease.

A rash usually appears during the first long temperature rise. It first takes the form of a morbilliform exanthema which, however, soon becomes general and confluent, so that in the course of a day or two it looks like a scarlatinal rash. The eruption persists for a few days to a week and then disappears without leaving any trace. There is commonly no exanthema or at any rate only a slight and evanescent one after the subsequent short reaction. During the long fever reaction there is frequently general malaise with nausea and anorexia, and sometimes vomiting. In other cases the general condition is very little affected. More or less pronounced pain and tenderness of the joints often occurs during the first fever reaction, passing from joint to joint just as in rheumatic fever.

The accompanying curve illustrates such a typical fever reaction in a case where no serum was given (Fig. 1).

In other cases, however, the fever reaction is less typical, and takes the form of a rapid rise in temperature which in the course of a few days drops to normal, and the long fever reaction referred to is not seen. In many cases the fever reaction is, on the whole, very slight and may even be entirely absent. This is seen especially in old cases of chronic fibroid phthisis. In fresh cases the reaction, on the contrary, may be much more severe, and in a few cases we have seen the long fever reaction recur once or twice, sometimes associated with swelling and tenderness of the lymphatic glands of the neck. In some cases, as mentioned, albuminuria and casts in the urine occur even during the long fever reaction, in others albuminuria does not appear until after the subsequent sanocrysin injections. While albuminuria is present the nausea and anorexia are more marked.

FIG. 1.



The thick horizontal line indicates albuminuria; the thick perpendicular line, injections of sanocrysin; and the black dots, exanthema.

From our experience up to the present, therefore, the treatment with sanocrysin resolves itself into a short series of injections whose effect on the patient's temperature normally diminishes with each injection. At latest after the seventh to eighth injection the patient, as a rule, does not react at all to the injections or at any rate does so only with a slight rise in temperature. The treatment is then at an end for the time being, but can be repeated after a longer or shorter pause. When we have repeated the injections of sanocrysin after an interval of one or more months we did not observe typical temperature rises as in the first treatment, but, at most, a small rise lasting one or two days or else no reaction at all.

As has been said, the patients are subject to unpleasant subsidiary effects in various ways during the treatment. Even in the absence of these the patient's general condition is often rather badly affected, as shown by the more or less marked loss in weight, which may be very considerable and reach 5–10 kg. or more. When the treatment is over the patient usually quickly recovers and there is a rapid increase in weight. In a few cases we saw very troublesome and extensive desquamating dermatitis during the treatment which, however, disappeared in all cases with suitable local applications. It appears to be quite distinct from the typical initial exanthemata. The cases are much like the dermatitis sometimes seen after treatment with salvarsan.

With the cautious treatment described we have only observed very mild local phenomena. The expectoration became rather more profuse at first, and sometimes more râles were heard in the affected parts; these local reactions may be entirely wanting. We have not witnessed any real lighting up of the tuberculous lesion in the lungs during the treatment. In two cases, however, an exudative pleurisy occurred. On another occasion otitis media developed, but a chance occurrence cannot in this case be absolutely excluded.

Results of the Treatment.

Passing now to the question of what effect we observed in the patients we treated, it must, first of all, be stated that the experiences recorded here refer exclusively to cases of ordinary chronic lung tuberculosis—the true lung phthisis. It seems to be here that sanocrysin has its useful field, while the disease, if localised in other parts, especially the so-called surgical tuberculosis, does not appear to be affected in the same way. In a certain number of the patients the favourable effect was very striking, in others it was more doubtful, and in some it could not be detected. We will, for the present, deal specially with the first group and indicate what morbid phenomena we found to be improved after a few months' treatment. We may first cite changes in the general condition, especially cessation of the febrile or subfebrile state and accompanying weakness and asthenia, from which practically all the patients suffered a little on admission. It is, however, obvious that a subjective element enters into the estimate of the condition to a marked degree here.

Of more importance are the objective changes as revealed by the stethoscope, particularly the disappearance of râles or an alteration in their character from the moist râles which are characteristic of fresh progressive processes to the scanty, dry, and sibilant sounds which often persist long after the processes have become quiescent. Finally we have observed as an important sign of improvement that the expectoration, which originally contained bacilli, continues to be free from them, or that all the expectoration has disappeared. On admission, the majority of our patients had an excessively large number of the bacilli in the sputum. After a few injections the numbers decreased very greatly in almost every case, and this was followed by a period when no bacilli could be found by ordinary examination while a few could be detected by the antiformin method. Lastly, the bacilli were constantly absent in a series of examinations, and in most cases did not appear again in the months following the treatment.

Of special importance in estimating the activity of sanocrysin, however, are the changes that can be followed in skiagrams, and I should think that this is a field where a thorough study would prove very profitable for the elucidation of the rationale of sanocrysin treatment and the indications for it. In his experiments on calves Möllgaard saw the acute, chiefly pneumonic, exudative changes in the lungs disappear under sanocrysin treatment, while the miliary tubercles underwent regressive changes much more slowly. Something very similar can be observed in the clinic when one attempts to bring to light by an X ray examination the anatomical changes which take place in the lungs during the treatment. Thus the extensive and rapid changes that can be seen to take place in fresh, largely exudative (pneumonic) processes are striking. Extensive and confluent shadows in the skiagrams can be seen to clear up and disappear while the stethoscopic signs diminish and die out. But also in the mainly productive forms we have seen very pronounced changes. It must be remembered that ordinary chronic phthisis exhibits anatomically a varied picture of exudative-alveolar, more cellular-productive, and purely fibrous lesions. More or less clearing up of the shadows is a frequent and striking phenomenon in all the forms when the skiagrams are compared as the treatment gradually progresses, but at the same time signs of fibrous and cirrhotic processes become more and more evident. The striped and meshed patterns become more pronounced, while the more diffuse soft shadows decrease or disappear.

Summarising the changes seen in the X ray pictures it may be said that they are the same as occur in chronic phthisis which, with appropriate treatment, becomes quiescent and is continuously transformed into typical fibroid phthisis. All the signs of fibroid processes which we are familiar with in skiagrams of phthisical lungs become more and more marked. The fibroid stripes and interlacings quite dominate the picture. But with sanocrysin treatment all this development takes place rapidly in a few months in favourable cases, while with our previous treatment it took years to obtain a similar result.

After the experiences described one would assume that the sanocrysin treatment would be specially effective in recent, not too extensive processes, particularly of an exudative, pneumonic character. This is undoubtedly correct. It is in cases similar to these (as will be seen) that in several instances we apparently obtained at least a temporary cure when the cases were not too acute with high fever. The same does not apply, as might be expected, to the very extensive processes found in phthisical patients who for some years have had a steadily progressing lesion in the lungs, nor to the absolutely chronic cases which must be classified as mainly fibroid phthisis.

We have had little experience of the progressive, continuously febrile cases of phthisis because we regard them as temporarily less suitable for treatment with sanocrysin, but in the severe cases which only have a very slight temperature rise we have in some cases seen remarkably good results even with very extensive lesions, while other cases were not much influenced, so that the processes could not be arrested.

When good results are seen in these one to two-year-old cases of extensive lung tuberculosis they are of the same nature as in the recent cases. The stethoscopic signs diminish, marked clearing-up of the X ray picture is observed, and the general condition is improved, although the sputum still contains bacilli. Usually, however, the number of bacilli in the sputum speedily decreases very considerably and they frequently disappear for a long period, but after one or two months they have appeared again, although in diminished numbers. In cases of cavernous phthisis it is not surprising that it is difficult to rid the sputum of bacilli.

In the old cases of fibroid phthisis of several years' standing one sometimes sees very striking improvement, and in these we have frequently seen the bacilli entirely disappear from the sputum during the treatment. At the same time, the general condition is very markedly improved, although the stethoscopic and X ray changes in these patients are less pronounced. In one of these old cases of fibroid phthisis we have seen the bacilli appear again in the sputum after some months complete freedom from symptoms. Other cases, in spite of freedom from bacilli, continued to have a cough and bring up sputum.

The cavities demonstrated by stethoscopy and X ray pictures deserve special mention. In some cases we saw very characteristic ring-shadows form during the treatment. As is recognised, it is difficult to decide whether this is due to the cavities showing up more distinctly on account of the clearing up of the surrounding tissue, which is seen to occur simultaneously, or whether it is a question of development of a local pneumothorax. At any rate, in one case the latter was definitely present. In other cases we observed a diminution and contraction of the cavity.

Summary of Results.

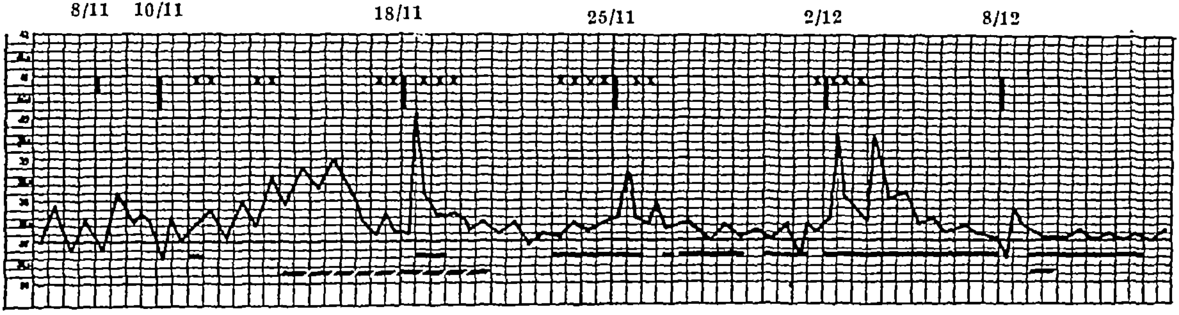
Our material of tested cases is too small and too heterogeneous to give statistics of the results obtained, and we are still far from arriving at a final result. The best impression of the value of the specific is obtained by carefully watching the individual patients during the treatment.

We will, however, give an account of the results of the treatment obtained in 42 patients where the disease was so far advanced that an estimate of its effect could be formed. Eight of these must be regarded as cured in that all subjective signs of the disease have vanished; the sputum, if still present, is always free from bacilli, the râles have entirely or almost entirely disappeared, and X ray examinations show considerable changes in the way described. Most of these patients have left the hospital for several months and feel absolutely well. Another group of 17 patients has shown signs of very considerable improvement subjectively and objectively. Some of them are free from bacilli (eight), four others show only very few bacilli with the anti-formin method. Stethoscopic examination, especially, shows a marked decrease in the extent and number of râles.

A third group comprises nine where the treatment cannot be said to have done any positive good, for after nearly six months' treatment the patients have still signs of active phthisis, which with some of them is practically unchanged and with the rest only shows signs of moderate improvement. Lastly, in six cases the disease has not been arrested by the treatment but has rather tended to spread as time went on. Two of the patients have got a pleurisy, another a tuberculous otitis media. We shall add that during the last five months we have had no deaths among the treated cases of phthisis.

As already emphasised, data such as these have, however, a limited value only. The chief point to us is whether it can be proved that the drug has a true specific action in certain cases in such a way that results can be arrived at, which it has not hitherto been possible to obtain by any other method of treatment. In many cases improvement or a relative cure can, of course, be obtained also by sanatorium treatment or by inducing pneumothorax, but with the sanocrysin treatment we have observed take place in a number of cases such rapid and distinctly favourable changes as could not, in our opinion, have been attained in any other way.

FIG. 2.

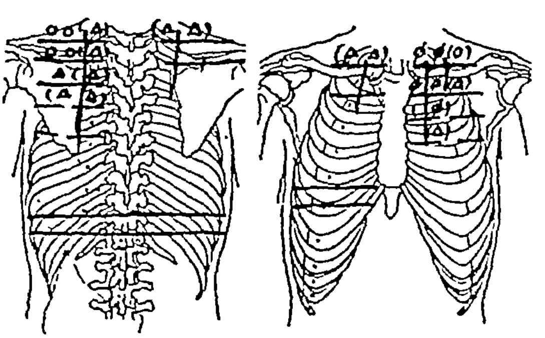


The thick horizontal line indicates albuminuria; the thick perpendicular line, injections of sanocrysin, 0·5 g. given on Nov. 8th and 1·0 g. on the subsequent occasions; the crosses, injections of 20 g. antitoxic serum; and the interrupted line, rash.

According to our experience the cases best suitable for treatment with sanocrysin are cases of phthisis where the infection of tuberculosis has appeared in the course of the last year. In reality we have in 65 per cent. of such cases been able to observe good results, and all the really cured cases belong to this group. Much more uncertain are the results in the very frequent cases of older and extensive disease, and especially when they are in a feverish and progressive phase of the disease.

Of course, one must be prepared to find that there are many cases where no benefit can be derived from the treatment, and also that the treatment will prove injurious in some cases when used without caution. In patients who have had marked signs of phthisis for some years it will often be questionable whether the disadvantages and length of the treatment do not outweigh the benefit which can be expected to ensue. As, however, we have seen quite astonishing improvement in some cases of this type the indications for sanocrysin treatment cannot as yet be laid down with any degree of certainty.

FIG. 3.



Radiological examination, Nov. 11th, 1924.

A Successful Case Narrated.

We add the history of a clinical case. Our intention is only to show that sanocrysin can really exercise a specific action. Not until later on can the final results and the indications for the treatment be determined. It is probable also that the method may be further developed so as to extend its sphere of usefulness and to avoid the inconveniences and dangers which are still attached to it.

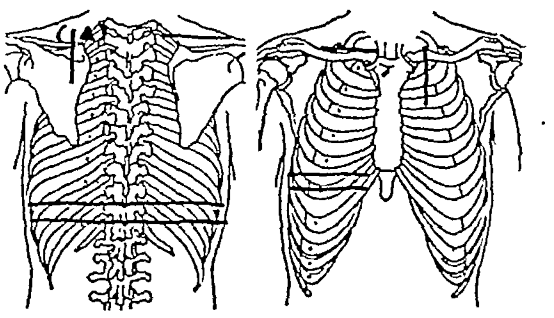
Line, K. Cl., 26 years old. Married to a farmer. Admitted on Nov. 4th, 1924; discharged on Dec. 21st, 1924. A sister died of tuberculosis of the lungs when the patient was 5 years old. Another sister had tuberculosis of the lungs 30 years ago but is now well. The patient was healthy until nine months ago, when she got cough, weakness, night sweats, and fever. Tubercle bacilli were demonstrated in the sputum. There was hoarseness now and again.

Condition on admission.—General condition good. Temperature on Nov. 5th, 37·0°–37° C.; on the 6th, 37·6°–37°; on the 7th, 37·0°–36·8°. Appetite good; slight cough; *sputum scanty; T.B. present. Urine*: no albumin; *hæmoglobin*, 82 per cent. Height, 150 cm. Weight, 50·5 kg. Stethoscopic examination on Nov. 4th:—Left lung: In almost all the upper half there were signs of active disease: dullness, bronchial breathing, and numerous fine and medium fine, mostly moist, râles. Right lung: In the supraclavicular and supraspinous regions there was a slight dullness, bronchial breathing, and fine, moist râles on coughing.

Treatment with sanocrysin. No serum injection until after the second dose. Six injections consisting of a total of *5·5 g.* Nov. 8th, 0·5 *g.*; 10th, 1 *g.*; 18th, 1 *g.*; 25th, 1 g.; Dec. 2nd, 1 g.; 8th, 1 g. The temperature is recorded in curve (Fig. 2).

Stethoscopic examination after termination of the treatment on *Dec. 21st, 1924. Left lung: Dullness unchanged* over almost all the upper half, but only bronchial breathing in the supraspinous region and in the front of the chest to the second rib. The râles had disappeared very considerably in numbers and in extent, and were now heard only in the supraspinous region and as far as the second rib in front. No moist râles, but only dry and partly dry ones were now heard only on coughing. Right lung: Slight dullness over apex as on admission, bronchial breathing over apex in front without râles, and bronchial breathing behind in supraspinous region accompanied by a few partly dry, medium-fine râles with the first cough.

FIG. 4.



Radiological examination, Jan. 16th, 1925.

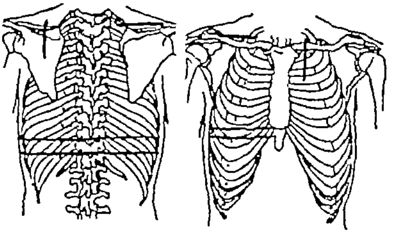
Weight: On Nov. 4th, 50·5 kg.; on 11th, 51·7 kg.; on 22nd, 50·5 kg.; on Dec. 7th, 48 kg.; on 10th, 47·7 kg. The urine contained up to 3 per cent. albumin periodically. Last trace on Dec. 13th (Fig. 2).

Only a few bits of sputum. Latterly only a single mucopurulent pellet every three or four days. On Nov. 8th, T.B.+; on 25th, T.B.+; on Dec. 9th, T.B.−; on 17th, T.B.—. Pirquet reaction: On Nov. 21st, +; and on Dec. 18th, +. General condition on discharge excellent. No more weakness. Temperature normal.

Twenty-five days later was again in hospital from Jan. 15th to 25th, 1925. General condition continued to be good. Temperature normal. No albuminuria. No cough or expectoration. On stethoscopic examination on Jan. 16th only a few dry râles were heard on coughing in the left supraspinous region, otherwise there were no râles. There was no longer bronchial breathing at left apex. Bronchial breathing at right apex over clavicle and spine of scapula. On Jan. 24th practically no râles could be heard.

The skiagrams (represented schematically in Figs. 3, 4, and 5) showed a shadow composed of patches partly arranged in groups in the upper two-thirds of the left lung, and some retraction of the apex of the lung. On the right side there was diffuse darkening of the apex. After the cure the skiagram showed that both apices had cleared up, and, on the whole, only indefinite and rather doubtful changes were present.

FIG. 5.



Radiological examination, Jan. 24th, 1925.

The patient came in with subfebrile phthisis which had produced symptoms for nine months. A stethoscopic examination showed signs of fresh tuberculosis in the upper half of the left lung with numerous fine, moist râles. In the right apex there were a few fine, moist râles. During the treatment the râles disappeared gradually and on discharge, seven weeks later, there were only some scanty, dry, and medium dry râles in the left apex and a few in the right. Twenty-five days after discharge only a few râles were heard in the *left apex* and a week later none at all. The bronchial breathing in the left apex had also disappeared, but there was still bronchial breathing over the right clavicle and spine of the scapula. General condition was excellent. The weight increased, and a month after the treatment was started bacilli could no longer be found in the *sputum*. The X ray examination showed a clearing up of the shadows at the apices in conformity with the stethoscopic investigation. The patient must be regarded provisionally as cured by the treatment.

Conclusions.

From our present knowledge I think we can formulate the *following preliminary* conclusions about the sanocrysin treatment: (1) Sanocrysin has a specific curative action on tuberculosis of the lungs. (2) It does *not seem* to have the same effect on extrathoracic localised tuberculosis (surgical tuberculosis, meningitis, &c.). (3) It is very effective on fresh tuberculosis of the lungs that has been manifest less than one year. (4) In older cases the effect of the treatment is uncertain. (5) It is *difficult to use it* in febrile cases, but some good results may be obtained in old cases of apyretic fibrous phthisis. So far it has not been able to cure acute lobar tuberculous pneumonia. (6) In ordinary cases a treatment lasts three to four months. (7) Generally the dangers may be *avoided when the treatment* is carried *out in the* right manner and with caution. (8) The antitoxic serum has a curative effect on acute shock. Its effect in preventing albuminuria is not clear, and further investigations are necessary.

CHOLECYSTOGRAPHY IN ITS APPLICATION TO THE DIAGNOSIS OF CHOLECYSTIC DISEASE.[*]

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DURING the last 15 months more than 1100 patients have been examined at the Mayo Clinic by cholecystography. The sodium salt of tetrabromphenolphthalein and that of tetraiodophenolphthalein were used, and each salt was administered orally and intravenously.

Sodium-tetrabromphenolphthalein: Intravenous Administration.

One hundred and seventy-eight patients were given sodium-tetrabromphenolphthalein intravenously. The patients were hospitalised and kept under strict dietetic regimen during the period of examination. The dye was given in a standard dose of 4·5 g., dissolved in 40 c.cm. of triple distilled water, sterilised for 15 minutes in a boiling water-bath and cooled for use. It was administered *in two equal portions one-half* hour apart, and injections were made slowly, from five to seven minutes being consumed. The median basilic vein was used when possible. Rontgenograms were made as a routine at the fifth, eighth, and twenty-fourth hour after giving the dye.

Notwithstanding the precautions mentioned, more than half the patients experienced systemic reactions in varying degree. In most cases the symptoms were trivial, but in 10 per cent. the reaction was marked and in 2 per cent. severe. The typical severe reaction began within five or ten minutes with a sense of uneasiness, followed by pain in the dorsal and lumbar region, flushing of the skin, and a rise of from 10 to 50 mm. in blood pressure, followed within three to five minutes by a sharp fall. With the fall of blood pressure, patients sometimes had intestinal *cramps, nausea*, vomiting, or incontinence of the bowel and bladder. Milder reactions were characterised by flushing of the skin, slight pain in the back, and transient nausea. Occasionally a delayed reaction developed four or five hours after injection.

Normally, with this test, as Graham first pointed out, the gall-bladder will retain sufficient dye to cast a shadow at the fourth or fifth hour after administration. This shadow attains its greatest intensity some time between the eighth and twenty-fourth hours, becomes progressively thinner thereafter, and usually disappears between the twenty-fourth and forty-eighth hours. The shadow is regular in contour and homogeneous. It varies in size and is commonly larger at earlier than at succeeding hours. Abnormal responses include failure of the gall-bladder to fill with the dye, persistent faintness of the shadow, delayed filling, marked delay of emptying, deformity of contour, unvarying size of the shadow, and mottling, or central defects.

Thirty-nine patients of this series were operated on. All proved to have disease of the gall-bladder, and 25 also had stones. In 19 of the 25 cases with gall-stones the gall-bladder failed to fill with the dye; shadows of the gall-stones themselves were visible in *only six cases of the 19*. Dye entered the gall-bladder *in six cases, but in two of these* the shadow was mottled with transparencies; in one the denser shadow of stones was seen within that of the gall-bladder; and in one the gall-bladder was faintly depicted at the eighth hour only. In only two cases of the 25 could the findings be construed as negative. A definite lesion of the gall-bladder without stones was found at operation in 14 cases. In eight of these the gall-bladder failed to fill with the dye. Its shadow was visible at the twenty-fourth hour only in one case, and at the fifth and eighth hours only in two others. No abnormalities were observed in the remaining three cases.

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[*] Abstract of a paper read at the Section of Radiology, Subsection Diagnostic Radiology, International Congress of Radiology, London, July 1st, 1925.

Sodium-tetrabromphenolphthalein: Oral Administration.

The bromine salt has been given orally to more than 800 patients. No preparation of the patient is required. The dose is proportioned to the body-weight and ranges from 4 to 7 g. It is given in ordinary gelatin capsules containing a gramme or a half gramme each. The patient is instructed to take the capsules at intervals during the evening meal, drinking water freely, and present himself without breakfast for the examination next morning at 8 o'clock. Rontgenograms are made at the twelfth, fifteenth, and twentieth hours after the dye is taken.

Reactions following oral administration of the bromine compound have been relatively few and never grave. Occasionally complaint has been made of nausea, a few patients have vomited, and in rare instances catharsis has occurred. Shadows of the gall-bladder obtained by the oral method are commonly less dense than those observed after intravenous administration. In about half the normal cases the shadow disappeared by the twentieth hour. Otherwise the principles of interpretation and the distinctions between normal and abnormal responses to the test are the same for both methods.

One hundred and forty patients of this series have been operated on. At operation 71 patients were found to have gall-stones. In 36 cases of this group no shadow of the gall-bladder had been seen; shadows of the stones were evident in seven of the 36. A faint shadow of the gall-bladder was noted in 15 cases. Mottling of the shadow by stones was observed in 15 cases. In five cases the response to the test was normal. Marked disease of the gall-bladder, without stones, was discovered at operation in 33 cases. In 16 of these the gall-bladder had failed to cast a visible shadow with the dye, and only a faint shadow was seen in 11. In five cases the rontgenological findings were considered to be normal. The third group comprised 17 cases in which the gall-bladder when removed revealed pathological changes of minor degree. At the rontgenological examination the gall-bladder had failed to cast a shadow in seven and responded normally in ten. In the fourth group of 19 cases the gall-bladder was explored in the course of operation for other lesions and adjudged to be normal. No abnormality had been discovered at the rontgenological examination in 16 of them. In three cases no shadow of the gall-bladder was visible.

Sodium-tetraiodophenolphthalein: Oral Administration.

Sodium-tetraiodophenolphthalein was given orally to a limited series of patients. The standard dose was 0·08 g. for each kilo of body-weight, but not in excess of 6·0 g. to a patient. Both enteric-coated pills and plain gelatin capsules were tried. Almost all the patients who received the pills experienced purgation, vomiting, or nausea. These disturbances occurred less often from the capsules, but more frequently than from the bromine salt. Rontgenograms were made at the same periods and under the same conditions with respect to fasting as in the oral method with the bromine salt, and the same criteria were applied in interpretation.

Up to the present 25 patients have been examined with the iodine salt by mouth. Three have been operated on. All three had given normal responses to the test. In two cases the gall-bladder was accounted to be normal on surgical exploration in the course of operation for other lesions. In the third case the gall-bladder was removed, but only minor pathological changes were found.

Sodium-tetraiodophenolphthalein: Intravenous Administration.

Patients to whom the iodine salt was given intravenously were not hospitalised, but were subjected to the same dietetic regimen as those who received the bromine salt intravenously, and rontgenograms were made at the same periods. A dose of from 3 to 3·5 g. was given, dissolved in 28 c.cm. of triple distilled water, and administered at one sitting. Preparation of the solution was identical with that of the bromine salt. No reactions occurred, and this was ascribed in part to exceptional purity of the drug. The shadows obtained were somewhat denser than those obtained with the bromine salt.

This series comprised 32 patients, of whom 11 have been operated on. Three of these patients had gall-stones; in two cases there had been no shadow of dye in the gall-bladder, and in the other the shadow was mottled. Five patients had marked *cholecystitis* without stones; in three the gall-bladder had not been depicted with the dye, while in two the shadows were normal. Slight disease of the gall-bladder was discovered in three cases; in two the rontgenological examination had been negative, and in the third case the shadow was faint.

Rationale and Weight of Signs.

Among the cholecystographic phenomena indicative of disease, failure of the gall-bladder to fill with the dye in sufficient quantity to cast a shadow seems to rank first in frequency and to be unexcelled in diagnostic value. Scarcely less reliable is constant faintness of the shadow. Potential causes of complete absence or persistent faintness of the shadow are of two types—namely, those which interfere with entrance of the dye-laden bile into the gall-bladder, and those which interfere with concentration of the bile. A stone obstructing the cystic duct or a large volume of stones, sand, or abnormally thickened bile in the gall-bladder should mechanically exclude or impede entrance of bile carrying the dye. Empirically, at least, this association has been found repeatedly. Swelling of the mucosa of the duct, spasm, or constricting adhesions would logically also have this effect.

Cirrhosis or other grave disease of the liver might hamper excretion of dye in the bile and thus lead to an error of interpretation, but I have encountered no such instance. It is difficult to appraise the effect of hepatitis alone because many other factors are involved and it is a common accompaniment of cholecystic disease. Rosenthal's experiments tend to show that the liver has a large "factor of safety" and that extensive damage is required to impair hepatic function. At all events, in some cases of this series, in which hepatitis and cholecystic disease were associated, the gall-bladder was normally visualised.

An increase of intensity followed by a diminution is the usual normal finding. This definite order is hardly to be expected always, as it may possibly be modified by the drug used, the method of administration, variation in the period of rontgenography, or failure of the patient to comply with directions as to taking food. Mottling of the shadow demands some caution in interpretation. When produced by stones which are denser than the dye there is little chance of error. Mottling due to transparent cholesterin stones is sometimes fairly characteristic in appearance. In many instances, however, the shadow-defects are not markedly different from those caused by gas in an overlying segment of bowel, and this source of error must be guarded against. Papillomas, if of sufficient size, should also produce mottling.

Unvarying size of the shadow at all periods may be construed as evidence that the gall-bladder lacks normal elasticity. If, however, the intensity of the shadow varies and is fairly pronounced at any time, unchanging size loses force as an index of disease, and one would hardly venture to base a diagnosis on this sign alone.

By all the methods described the normal gall-bladder seldom fails to cast a shadow on the first films made. After intravenous administration of the dye a shadow usually remains at the twenty-fourth hour. After oral administration the gall-bladder may or may not be empty of dye by the twentieth hour. Differences between the food regimen of the two methods probably account for the disagreement. Moderate delay of filling or emptying, or acceleration of either may have a significance which will be learned with experience. At present one is obliged to construe such minor abnormalities with reserve.

Local deformities of contour were rarely observed in this series. In one case a slight flattening of the fundus seemed unrelated to the pathological changes found at operation. In another the fundus was very pointed, but the gall-bladder was deemed to be normal on surgical exploration. Adhesions about the gall-bladder were present in several cases, but no deforming effects on the shadow were noted, although such a possibility is obvious.

Apparently least significant of all factors is the position of the gall-bladder. In persons of the slender habitus it is usually situated low and mesially, while in those of the broad habitus it is likely to be placed high and laterally.

Errors of Diagnosis.

The affirmative diagnoses of disease appear to be well sustained, and there were few disappointments in the series. Negative findings with the dye tend to be somewhat less reliable. Occasionally a definitely diseased gall-bladder will respond normally to the test. Even the shadow of a gall-bladder containing stones may sometimes have normal characteristics in general. The most serious obstacle to the accuracy of a negative diagnosis is the gall-bladder in which are only minute pathological changes, probably a residue from more pronounced disease in the past. Such a gall-bladder more often responds normally to cholecystography and may be apparently normal on surgical exploration. If the history warrants its removal, it will seldom fail to reveal at least microscopic evidence of disease.

Comparison of Methods.

Intravenous administration of the dye offers advantage in superior control of the patient, certainty that the specified dose of the drug has been given, and emphasis of the shadows obtained. Its disadvantages are the requirement of a punctilious technic and the hazard of local or systemic reactions. With identical technics the bromine salt given intravenously seems to be more provocative of systemic reactions than the iodine salt, if the latter is pure.

Simplicity and freedom from grave reactions are the principal advantages of oral administration. With either salt, nausea and purgation ensue occasionally. The iodine combination, even when pure, seems to produce these discomforts more often than the bromine. Vomiting after taking either drug, unless early, has apparently had no material effect on the shadow. Dye in the intestinal contents produces shadows which may be a little confusing and might possibly conceal the shadow of the gall-bladder, but such circumstances are infrequent. Lack of certainty that all of the drug has been taken as directed is another minor objection. The question may also arise as to whether defective absorption from the intestine may not be a cause of abnormal findings. However, all these objections and doubts seem to have little basis, for in this series the diagnostic results from all methods have been about equal.

From these considerations it will be apparent that my present preference is for the oral use of the bromine salt as a routine, and the iodine intravenously to check doubtful cases.

ANURIC DIABETIC COMA.

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THE exact cause of diabetic coma is still doubtful, but it is regarded as the end-result of acidosis and due, directly or indirectly, to the accumulation of acetone bodies in the blood. All the authorities take this view though they recognise various clinical varieties. For instance, Tidy[1] gives three types: (1) Dyspnœic; (2) alcoholic; (3) a type with collapse. Osler[2] gives a somewhat similar classification. Even Joslin[3] in his classical book regards acidosis as the essential factor in diabetic coma, although he speculates about two cases with anuria which obviously fall into the renal or anuric type which I am about to describe. Graham[4] goes a step further and describes two main types—viz., with well-marked hyperpnœa and without obvious hyperpnœa—but does not show the essential differences between the two types. MacLean[5] admits that it is possible to have diabetic coma in which the tests for acidosis give practically normal results, but he draws no distinction between the nature and course of the disease in these cases and in the ordinary acidosis cases.

Clinical Types of Coma.

Until the advent of insulin it did not much matter how one classified cases of diabetic coma—practically all were fatal. With the aid of insulin, however, the cases of ordinary, frank diabetic coma usually responded to treatment in a marvellous way, but very soon one was discouraged to find that certain patients died in spite of the new treatment. I noticed that the patients who died were those who had little or no acidosis, and as far back as December, 1923,[6] I recognised two distinct types: (1) ordinary type associated with acidosis, which, as a rule, recovered with insulin treatment; and (2) type with little or no acidosis ("post-operative type"), all of whom died in spite of the most energetic treatment. I recorded three cases at that time and since then I have had five others, four of whom died. Thus out of eight cases of this type seven have died. With the help of Dr. Milligan and Dr. Lindsay, my house physicians, to whom I am greatly indebted, the cases were observed very closely and we found that with insulin treatment any slight acidosis present was easily abolished, the urine was rendered sugar-free, and the blood-sugar was brought down to normal limits. Instead of corresponding clinical improvement, however, the patients became worse, and they secreted less and less urine until there was *complete anuria* before death.

In all these cases there was some albumin in the urine and usually a few casts. The concentration of urea in the urine was usually low and in the blood invariably high; in one case it reached 206 mg. per 100 c.cm. There was seldom noticeable thickening of arteries or high blood pressure. Most cases were of some standing, but one, a young man, gave a history of only two to three weeks' illness. The blood-sugar was always very high. Clinically, the most prominent symptoms were vomiting, restlessness, and feeble, quick pulse. The type of respiration varied, sometimes Cheyne-Stokes, never typical air-hunger. Little or no smell of acetone in the breath, but the tension of the eyeballs was lowered as in coma of the ordinary type. Sometimes there was quiet delirium, but never twitching of muscles or epileptiform convulsions. Usually some amount of consciousness was retained till very shortly before death.

Cause of Anuric Type of Coma.

What is the cause of the coma in such cases? It cannot be acidosis, neither can it be the mere excess of blood-sugar, for as great an excess may be present without coma; and, moreover, the blood-sugar may be reduced to normal with insulin and yet no improvement result. It is possible that the essential cause is the production of some unrecognised toxin resulting from the faulty metabolism in diabetes. Whatever the primary cause, it soon became clear that the immediate cause was some kind of defective action of the kidneys. Two constant features were very high blood-urea and diminished secretion of urine, ending in complete anuria. The natural suggestion then was that the coma was due to uræmia, but against this were the facts that beyond slight albuminuria many cases showed no evidence of inefficient kidneys up till the onset of coma, while the symptoms were different from those commonly found in uræmia. They resembled much more the symptoms of so-called urinæmia, found in obstructive suppression of urine, in which the severe and acute mental disturbances, the sudden amaurosis, and the epileptiform phenomena in general of uræmia are lacking.

We had opportunities of doing post-mortem examinations in several cases, and my thanks are due to Dr. A. F. S. Sladden and Dr. Milligan for their help in this connexion. Certain changes were found which suggest that the kidney is an all-important factor. Dr. Milligan is at present engaged in a research on this question which I am sure will be of great value.

Prognosis and Treatment.

Meanwhile, it is very desirable that these cases should be recognised clinically. First for prognosis. If a patient in diabetic coma shows abundant glycosuria with high blood-sugar and high blood-urea, absent or slight ketonuria, but with a trace of albumin in the urine, the prognosis is very grave. Up till a short time ago I would have said that it was hopeless, as my first seven cases all died, and this in spite of all kinds of treatment for the suppression of urine in addition to the ordinary treatment of diabetic coma. Recently, however, I have had one case which recovered. The only difference in the treatment of this case was that two pints of normal saline were given subcutaneously *at the outset*, and four pints more were introduced during the first 24 hours. Whether this was the determining factor in recovery is, of course, doubtful, but as it is the only case which has recovered, I would advise this treatment being carried out at once in any similar case. Of course, all the other cases had saline administered, but the rectal route was usually tried first before resorting to the subcutaneous or intravenous method, and possibly valuable time was thus lost. It is important, therefore, both for prognosis and treatment, that this variety of coma should be recognised as soon as possible and the most energetic treatment given without delay. This warning is the more necessary, as cases of this kind often appear to be of less severity than the ordinary cases associated with marked acidosis.

Summary.

To summarise, the points common to both varieties of coma are: (1) Drowsiness going on to coma; (2) vomiting (usually) and constipation; (3) lowered tension of eyeballs; (4) raised blood-sugar; (5) glycosuria; (6) tendency to heart failure.

The differences between the two types are:—

Ordinary Diabetic Coma with Acidosis.—(1) Blood: Blood-sugar moderately high: blood-urea about normal. (2) Urine: Good quantity and soon increases with treatment; much acetone and diacetic acid; no albumin (usually). (3) Clinical: Coma usually deep some time before death; air-hunger marked; odour of new-mown hay in breath. (4) Prognosis: Insulin treatment usually cures.

Diabetic Coma with Absent or Slight Acidosis.—(1) Blood: Blood-sugar very high; blood-urea very high. (2) Urine: Usually small quantity going on to complete anuria; little or no acetone or diacetic acid; some albumin. (3) Clinical: Coma often not deep till just before death; air-hunger absent or slight; no odour of new-mown hay in breath. (4) Prognosis: Usually fatal from anuria.

Whether this type of diabetic coma without acidosis is a distinct entity is doubtful, as some of the cases began with the typical signs of ordinary diabetic coma, and it was only when the acidosis had cleared up under treatment, without corresponding clinical improvement, that they showed themselves to be of the definite anuric type described above. Be that as it may, it is certain that as regards symptoms, physical signs, course and prognosis, it is a distinct clinical type and that the immediate cause of death is suppression of urine.

The condition might be called diabetic coma of the renal type, but until further knowledge is gained the most suitable name would appear to be "anuric diabetic coma." This has the advantage of emphasising the outstanding symptoms of the disease and the one for the relief of which all our energies have to be directed.

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THE TECHNIQUE OF SPLENIC PUNCTURE IN THE DIAGNOSIS OF KALA-AZAR.

BY PHILIP MANSON-BAHR, D.S.O., M.D. CAMB.: F.R.C.P. LOND.,
PHYSICIAN TO THE HOSPITAL FOR TROPICAL DISEASES.

SPLENIC puncture, as a means of clinching the diagnosis, is essential in kala-azar. By some this procedure is regarded with a certain measure of apprehension on account of the risk of lacerating the splenic capsule and thereby causing intraperitoneal hæmorrhage. I am convinced that, if the patient is partially anæsthetised and the exploration needle is sufficiently sharp and of correct calibre, little or no danger is to be apprehended. The patient should receive 1/100 gr. atropine about half an hour before the puncture is to be performed, and the skin over the costal margin should be infiltrated with 1 per cent. novocaine solution. The entry of the needle through the abdominal wall and the piercing of the peritoneum will thereby be rendered to a great extent painless, with the result that the patient will not flinch or suddenly retract the diaphragm, a movement which is liable to lacerate the splenic capsule. The needle employed should be of a bore sufficient to admit of a plug of splenic tissue, but should not be so stout as actually to lacerate the pulp. (Allen and Hanburys' No. 10 size I find to be the most suitable; this needle is also of the correct length—40 mm.)

Considerable difficulty may be experienced in obtaining microscopic preparations free from aspirated blood comprising mostly pulp cells containing the Leishman-Donovan body. For this purpose the plunger of the aspirating syringe should not be driven home to the extremity of the barrel, but an air space of 1 cm. at least should intervene. Traction on the piston must be steadily kept up directly the needle is ascertained to have entered the organ, and aspiration must cease directly blood can be seen entering the barrel of the syringe.

On retraction of the syringe the aspirated tissue and blood is blown out on to a clean microscopic slide and examined in a darkened room by means of an electric pocket torch (the "Ever Ready" being the most suitable for the purpose). The light being held underneath the drop, the portions of spleen pulp can be easily demonstrated like small grains of sago floating in the blood-stained fluid. These particles of tissue are then picked out by means of a fine platinum loop and spread upon clean slides. Preparations of splenic pulp cells are thereby obtained, in which the parasites can be demonstrated without difficulty by means of Leishman's stain.

In a splenic puncture recently undertaken the success of this measure was remarkable. The resulting films consisted of a mass of splenic endothelial cells, few red blood corpuscles being visible in the preparation.

Reviews and Notices of Books.

PATHOLOGY AND BACTERIOLOGY OF THE EYE.

Second edition. By E. TREACHER COLLINS, F.R.C.S., Consulting Surgeon to the Royal London Ophthalmic Hospital; and M. STEPHEN MAYOU, F.R.C.S., Surgeon to the Central London Ophthalmic Hospital. London: W. Heinemann. 1925. With 4 coloured plates and 300 figures. Pp. 731. 42*s*.

THE authors of this work have long been recognised as authorities on ocular pathology, and the present edition embodies chiefly the results of their own researches, excellently illustrated by figures, many of them reproduced from original papers in the Transactions of the Ophthalmological Society.

The first chapter on aberrations in development is divided into five sections in which the various abnormalities that are met with are traced to their respective periods of origin in embryological history. Incidentally, we find some interesting explanations of some not uncommon clinical appearances—e.g., the so-called shot-silk or watered-silk retina, pseudo-optic neuritis, and the congenital crescent that is sometimes found and which has nothing to do with myopia. On the subject of congenital colour-blindness the authors profess themselves on the side of those who attribute it to some, at present unascertained, aberration in the cones. Chapter II., on neoplasms, includes figures and descriptions of various uncommon forms of cysts. Chapter III., on disturbances in the circulation and constitution of the nutrient fluids of the eye, deals with arterial and venous obstructions, hæmorrhages, and serous effusions. It also explains the mechanism of normal intra-ocular tension, and deals with the problems connected both with glaucoma and with diminished intra-ocular tension or hypotony, to which subject Mr. Collins has given special attention. In Chapter IV., on injuries, special interest attaches to the explanation of the condition known as "commotio retinæ," following a contusion of the eyeball without rupture of its coats. The drawing of a microscopical section shows a subchoroidal hæmorrhage compressing the capillary layer of the choroid. If the blood is absorbed soon circulation in the choroidal vessels is re-established and the retinal functions are regained; if, on the other hand, it is long in being absorbed, the rods and cones atrophy, the pigment cells become visible, and sight is permanently impaired. Chapter V., which has been largely rewritten, deals with inflammation—in the first place the changes common to all inflammatory processes, and in the second the modification of the general processes of inflammation in the various structures of the eye. Chapter VI. deals with parasitic diseases affecting the eye, bacteria, fungi, and animal parasites, *Spirochæta pallida* being classed under the third heading. Under a fourth—diseases which are probably but not certainly due to micro-organisms—are included trachoma, vernal catarrh, and sympathetic ophthalmitis. In Chapter VII., dealing with degenerations, various forms of cataract are dealt with, and under the heading of neural epiblastic degenerations is included retinitis pigmentosa, in accordance with the theory held by Mr. Collins that it is actually caused by an abiotrophy of the retinal cells. An appendix on laboratory methods completes the book.

This work does not pretend to be encyclopædic or final. There is, for instance, no reference to those concussion injuries to the eye caused by bullet wounds of the orbit described by Lagrange, and the authors have not attempted to include all the findings of slit-lamp microscopy of the living eye, a study which is as yet in its infancy. Within its self-imposed limitations, however, the work is a thoroughly sound one, and we recommend all ophthalmic specialists to become familiar with it.

CHEMISTRY IN THE SERVICE OF MAN.

Third edition. By ALEXANDER FINDLAY, M.A., D.Sc., F.I.C., Professor of Chemistry, University of Aberdeen. London: Longmans, Green and Co. 1925. Pp. 300. 6*s*.

PROF. FINDLAY belongs to that small group of scientists who are able to write for both the advanced student and the lay reader. The work has been enlarged and three new chapters have been added. The first of these deals with radio-activity. Here the author traces the growth of the present-day theories with regard to the constitution of matter. Dalton, in 1803, taught that the atoms were solid, undividable bodies, but even so early as 1816 Prout was led to suggest that the atoms of different elements were all built up of some primordial substance which he called protyl. Prout put forward this theory on account of the atomic weights of the elements being, in most cases, whole numbers. This theory did not receive much support until Mendeléeff described the periodic law. The next line of approach came through the study of electrical discharges in vacuo, and from these two sources the present ideas of the structure of the atom is evolved. Confirmatory evidence was obtained by studying the properties of radium. The second new chapter is on the rare gases of the atmosphere. Here are described the experiments leading to the isolation and identification of argon, krypton, and allied gases. The third addition deals with metals and their alloys. Here the author considers the methods available for the preparation of these bodies from their ores, and their properties and alloys. Prof. Findlay describes the interesting condition known as "tin plague." He points out that under 18° C. ordinary lustrous tin is unstable and changes into a semi-porous state known as grey tin. If the temperature is very low these changes can take place fairly rapidly, resulting in marked disfigurement of any article made of the metal. A plate is included showing a seventeenth century medal suffering from "tin plague," which completely spoils the otherwise dignified appearance of one Balthasar-Bekker.

In the main, the rest of the work has been left unaltered. Certain sections have been revised and some rewritten. The style and choice of subjects are admirable, and Prof. Findlay is to be congratulated upon the appearance of this third edition of a charming book.

ELEMENTS OF COLLOIDAL CHEMISTRY.

By HERBERT FREUNDLICH, Fellow of the Kaiser Wilhelm Institute of Physical Chemistry. Translated by GEORGE BARGER, F.R.S., Professor of Medical Chemistry in the University of Edinburgh. London: Methuen and Co., Ltd. 1924. Pp. 210. 7*s*. 6*d*.

PROF. FREUNDLICH'S work upon adsorption and other colloidal problems is well known. It is mainly for his work on the mathematical aspect of adsorption that he is famous. Freundlich's adsorption equation has become an accepted scientific fact. It will therefore come as a cheering surprise to the general reader that not a single mathematical deduction is included in this little book. The main body of the work consists of a condensed form of the author's larger book, "*Kapillarchemie*," which has become a standard work on colloids. The volume is divided into two main sections, the first of which sets out the physico-chemical foundations of colloidal chemistry. After an interesting introduction the author deals with capillary chemistry—i.e., the changes occurring at interfaces. This method of attacking the problem of colloids is essentially Teutonic, and this volume is certainly one of the first to be published in the English language in which colloidal chemistry is presented in the form of capillary chemistry. The author considers the events taking place at the interface between liquids and gases, two liquids, a solid and a gas, and finally between a solid and a liquid. By this means the whole of the field is covered, and the first section concludes with two articles on capillary-electrical phenomena, and the problems of interfacial layers. In the second section the author deals with colloidal systems as a whole. Thus the properties of sols, gels, mists, and smokes, and the like are considered.

There are perhaps one or two points which might be criticised. Little or no reference is made to the work of J. Loeb on adsorption in relation to the iso-electric point of proteins. In the second place, it is possible that the author has been too drastic in eliminating all mathematical considerations. A simple mathematical treatment of adsorption would certainly have assisted some students in grappling with larger works.

In the translator's note Prof. Barger says: "I was so impressed by the manuscript of Prof. Freundlich's 'Grundzüge der Kolloidlehre,' that I at once undertook its translation." We have to compliment Prof. Barger, firstly, upon his judgment, and, secondly, upon his ability as a translator.

THE BACTERIOLOGY OF FOOD.

By CUTHBERT DUKES, M.D., M.Sc., D.P.H., Lecturer in Bacteriology, King's College for Women. London: H. K. Lewis and Co., Ltd. 1925. Pp. 180. *7s. 6d.*

DR. Dukes has produced a readable little book which contains much information not hitherto available in a collected form, although it may be found scattered through the pages of larger works. The volume is likely to be appreciated by the students for science degrees, for whom it is primarily written, and it may also be read with profit by both medical and D.P.H. students who are too often content with those aspects of bacteriology which are directly relevant to pathology. About a half of the book is devoted to milk and its products, and perhaps other foodstuffs suffer a little by contrast, but both water and alcoholic beverages receive adequate attention. We consider that the direct search for tubercle bacilli in milk is really a waste of time and energy, and that since Dr. Dukes evidently only teaches on the subject as a concession to ancient usage, he might omit the section. There is a mistake on p. 57 where the virulence test for *B. diphtheriæ* is described as being made by the injection of a "serum slope" into guinea-pigs. The correct practice is to use broth cultures.

AN INTRODUCTION TO SEXUAL PHYSIOLOGY.

By F. H. A. MARSHALL. London: Longmans, Green and Co. 1925. With 72 text figures (some coloured). Pp. 167. *7s. 6d.*

THE conventional text-books of physiology generally contain a most inadequate account of the working of the sexual apparatus, and the average student would probably be pained and surprised if he was asked some very simple questions about it. The truth is that the answers to some of these *simple questions*—why do the breasts hypertrophy during pregnancy, what brings pregnancy to an end, what determines the sex of a child and so forth—have been and in some directions still are quite obscure, and their discussion has been hampered by a mingling of fact and fancy which is unknown in those departments of physiology of less urgent human interest. Since the publication of Dr. Marshall's "Physiology of Reproduction" (with a second edition in 1922) it has been easy to learn what is known on the subject and, which is perhaps more important, to appreciate what is not known and how many ordinary things need investigation. In this country he has made the topic his own, and he now increases our indebtedness to him by publishing a short and simple version which should have a wide circulation. It is intended "for biological medical and agricultural students," is well illustrated (thanks, we suppose, to the existence of the larger book) and cheap, and gives an admirable account of the sexual cycle, pregnancy, lactation, and the influence of the sex-glands, fecundity and the related problems; determination of sex is also discussed. The writing is clear and straightforward. The tangled sentence on p. 131, "the fact that the free-martin and its partner are not derived from the same egg is definitely negatived by there being two corpora lutea," is an exceptional muddle which a new edition will correct, and the difficult task of abbreviating a systematic book seems to have been done very well. We cordially commend the book for itself and as an introduction to the fuller account.

BRONCHIECTASIS.

Traitement Chirurgical de la Dilatation Bronchique. By Dr. P. GUIBAL. Paris: Masson et Cie. 1924. Pp. 173. Fr.10.

THE surgery of the lungs and bronchi has not received in France the attention it has long enjoyed in the U.S.A. and Germany. It is to make good this defect that Dr. Guibal has written this little book which deals with such operations as artificial pneumothorax, thoracoplasty, pneumotomy, ligature of the branches of the pulmonary artery, lobectomy, and partial pneumectomy, as far as they concern bronchiectasis. It is disappointing, but not surprising, to find how ineffective many of these procedures are for this disease. An artificial pneumothorax may rid the patient of all his sputum as long as the injections of gas are continued, but soon after the lung is allowed to re-expand the bronchiectatic state returns. Extra-pleural thoracoplasty may be a good palliative remedy in cases of bronchiectasis which are mainly unilateral, but, according to the author, complete recovery can never be achieved in unilateral cases of diffuse bronchiectasis operated on according to Sauerbruch's technique. An interesting account is given of such daring operations as lobectomy, the mortality of which is from 40 to 50 per cent.—a high risk justified only by the desperate prognosis of many cases left in the hands of the physician. This book is a useful introduction to the subject and it does not claim to be more.

THE TEMPORAL BONE.

L'Os Temporal chez l'Homme Adulte: Iconographie et Description de l'Os et de ses Cavités. By PHILIPPE BELLOCQ. Paris: Masson et Cie. 1924. Pp. 128. Fr.18.

THIS monograph, written by Dr Bellocq, on the results of his personal investigations of a large material, is an excellent example of the clearness in description which is so frequently a marked characteristic in French anatomical works. Like most of these, it is written from the surgical or pathological standpoint more than from that of the morphologist, and deals first with the bone as a whole, subsequently treating of the connexions of its constituent parts, the details of each of these parts, and the various cavities contained in the structure. The descriptions are excellent, clear and reliable, and are aided by good figures in line, so that—to the anatomist at any rate—there is no break in the continuity of interest and description. It may be, however, that the purely descriptive standpoint is not the best possible one for the non-anatomical reader when he begins to study the details of the temporal. The bone is the most complex portion of the skeleton, built up by the fusion of parts derived from distinct and separate planes and regions, and it would seem better to give such a reader a mental picture or conception of the bone made up in this way as a preliminary to his detailed study, and a guide to his comprehension of the medley of facts into which he is plunged. This view may be prejudiced, it might perhaps be held to be fallacious.

but it does not, at any rate, keep us from the expression of sincere admiration for this descriptive account of the bone; any clinician who has to do with the temporal bone, and feels that he would like to improve his acquaintance with it, can be advised to procure this book and some sectional bones, when he should have little difficulty in attaining his object.

INTELLECTUAL DEVELOPMENT AND THE ERECT *POSTURE.*

By WM. COLIN MACKENZIE, M.D., F.R.C.S., F.R.S.E., Director of the National Museum of Australian Zoology, &c. Melbourne: Allan Grant. 1924. Pp. 41.

THIS little book has been written in support of Dr. Mackenzie's belief that the assumption of the upright position is the most important factor in the evolution of the human species, that this is inherently a question of muscular development, and that the degenerations and diseases to which the unfortunate human being is prone are mostly to be credited to his failure to keep his muscular system going in the proper way. We have been disappointed with the book. Whether Dr. Mackenzie's creed will stand examination or not could hardly be determined by study of such a small work, but it cannot be said that he has carried out the intentions expressed in his opening pages. The mere account of certain differences in the comparative anatomy of living mammals does not in itself constitute an evolutionary argument. In many respects the little work is an interesting one to read, and in many ways suggestive.

PRACTICAL CHEMISTRY BY MICRO METHODS.

By EGERTON C. GREY, D.Sc., F.I.C., M.R.C.S., Professor of Chemistry, Government Medical School, Cairo. Cambridge: Heffer and Sons. 1925. Pp. 124. *4s. 6d.*

THE author has written a text-book of analysis for medical students in which white tiles are substituted for test-tubes. Reactions are also performed on slides, and the results may be observed by means of a small microscope or by a pocket lens. It is thus possible to conduct a complete course of analysis with great economy. All teachers are aware of the liberality of medical and other elementary students with reagents. A whole set of reagent bottles may be emptied during the analysis of some simple solid. By means of the techniques outlined in this book it would be impossible for the student to waste his reagents. The idea of micro-analysis for elementary students is not a new one, since it has been employed extensively in technical schools and similar institutions in this country for some time. Teachers speak well of the method, and Prof. Grey's book should prove of great value to all engaged in teaching analysis to these students.

TUBERCULOSIS.

Les Processus Naturels de Guérison de la Tuberculose Pulmonaire. By Dr. JAQUEROD. Paris: Masson et Cie. 1924. Pp. 121.

A SOUND knowledge of the physiology and pathology of the lungs invaded by the tubercle bacillus is surely essential to any scientific attempt to cure pulmonary tuberculosis. It would not be necessary to repeat this platitude were it not for the ambitious tendency of human beings to try to run before they have learnt to walk, and to try to cure evils before their causes are known. Dr. Jaquerod's book is a painstaking protest against this tendency as it appears in the field of therapeutics, and throughout the pages of his book his main thesis is that we must penetrate into the secrets of cure by Nature if we expect, in common phrase, to "go one better than" Nature. With a background of 20 years of specialising in pulmonary tuberculosis, he teaches this among other lessons: Give Nature time. Translated into more definite terms, his opinion is that at least a year is required for the clinical recovery of a case of pulmonary tuberculosis. And, as life for the ordinary human being is "the maintenance of an equilibrium always threatened," it behoves the consumptive to regard his own particular equilibrium as very unstable. All of which is plain, but apt to be disregarded as too obvious to be constantly borne in mind.

Concealed Tuberculosis or "The Tired Sickness." A Clinical Study upon the Exhaustion Type of Hidden Tuberculous Infections. By GEORGE DOUGLAS HEAD, B.S., M.D. Philadelphia: P. Blakiston's Son and Co. Pp. 137. $2.00.

THE author of this book has made a discovery. It is that many persons who complain of symptoms commonly traced to neurasthenia are suffering from a tuberculous infection which is the cause of all their troubles. Now, this is a discovery which every intelligent physician makes, and one is inclined to ask: *Why write a book about it?* The gist of the author's thesis is summed up in two of his sentences. "This slow-burning fire of a low-grade tuberculous infection manifests itself in such an insidious manner as to escape detection by the usual clinical methods of diagnosis. . . . This type of tuberculosis fails of recognition *unless the specific tuberculin tests are used.*" There follows a plea for the subcutaneous tuberculin test which the author has never known in his own practice to disseminate tubercle. Yet he has been using Koch's old tuberculin subcutaneously since 1895. Such immunity to tuberculin disasters is extraordinary.

DISORDERS OF THE VENOUS SYSTEM.

Entzündung, Thrombose, Embolie und Metastase im Lichte neuerer Forschung. Von Prof. Dr. PAUL VON BAUMGARTEN, in Dresden. München: J. F. Lehmanns. 1925. Ss. 208. *7s. 7d.*

CONTAINING little in the way of original observations or new conceptions, this book is a compendium of most that has been thought or written on the subject. For such books there is a distinct place, but the usefulness of this particular one will, unfortunately, be somewhat limited for English readers by the author's peculiar style. It may appear presumptuous to criticise the literary construction of a foreign author, but Dr. Baumgarten's habit of including adjectival subclauses within each other surely passes the limits allowable even in the language in which he writes.

DISEASES OF THE EYE IN CHILDREN.

Die Augenerkrankungen des Kindesalters in ihrer Besonderheit. By Dr. L. HEINE, Professor and Director of the University Eye Clinic at Kiel. Berlin: S. Karger. 1925. With nine illustrations. Pp. 52. M.8.

THIS small volume is written for the benefit of those practitioners who, without being eye specialists, possess sufficient skill in the use of the ophthalmoscope to make its employment a routine measure in appropriate cases, and desire to be able to treat all ordinary cases of eye disease in children not requiring operation. Among the useful points that they will find here, and which they would not find in ordinary text-books of children's diseases, are that infants affected with blepharospasm at birth, when the cause has been removed and they can open their eyes, may appear to be completely blind for some weeks, especially in cases of malnutrition. The disease known as kerato-malacia, which is found in badly-nourished infants, is, we are told, extremely rare in Schleswig-Holstein, although in Hesse and Silesia it is not uncommon. With regard to optic atrophy and neuritis, the author tells us very truly that it is by no means easy to make a confident diagnosis in children from a single examination with the ophthalmoscope. In young children the disc may be very pale or grey without the presence of any degree of optic atrophy. On the other hand, cases of apparent or "pseudo-" neuritis are sometimes seen in children when the condition is purely physiological. The author cites a case in which he himself was inclined to diagnose a true neuritis until he discovered the same anomaly in other children of the same family. Most ophthalmic surgeons have had more or less similar experiences. The subject of refraction is only lightly touched on, but what is said is, broadly speaking, sufficient for the practitioner who does not specialise on the eye. We miss any instruction as to special precautions to be taken in the case of myopic children and as to the advice to be given to parents. With this exception the little book is as complete as it can be made in the small space that the author allows himself.

APPLIED ANATOMY.

Sixth edition. By GWILYM G. DAVIS, M.D. Revised by GEORGE P. MÜLLER, M.D. London and Philadelphia: J. B. Lippincott Company. 1925. Pp. 638. 42*s.*

Davis's "Applied Anatomy" has been a well-known and well-studied text-book for many years. The untimely death of Prof. Davis has led to the production of this edition by the present Professor of Clinical Surgery in the University of Pennsylvania. There has been a considerable amount of new matter introduced, and operative descriptions have been brought up to date where required. The illustrations remain a great feature of the book, and some can be termed beautiful. It may be pointed out that the surgeon who, in Fig. 254, is manipulating the right arm of a supine subject, does not seem to be interested in the fact that this limb carries at its extremity a left hand.

The book is beautifully got up, and there is no doubt that it will continue to be a favourite work of reference.

ANTHROPOLOGY.

Measurements, Weights, and Other Facts Relating to Man. By J. F. TOCHER. Edinburgh: Oliver and Boyd. 1924. Pp. 172.

THIS volume of anthropological statistics from Scotland contains the second and third reports of the William Ramsay Henderson Trust. The first, published in 1905, was an anthropometric survey of the inmates of lunatic asylums in Scotland; the object of the Trust in preparing the present volume was to ascertain whether or not the asylum populations could be regarded as fair samples of the general population in this respect. Observations have therefore been made on the population of the north-eastern region of the country and on soldiers drawn from all parts of Scotland. The results obtained show that the insane populations represented the total population very adequately. The volume is essentially one for the specialist; it manifests the elaborate patience and care that all such surveys demand, and will take its place with the similar records that modern biometric schools are steadily producing against the day when there shall be sufficient accumulation to provide a basis for really valuable statistical deductions on a large scale.

Human Constitution. A Consideration of its Relationship to Disease. By GEORGE DRAPER, M.D., Associate in Medicine at Columbia University, New York. London and Philadelphia: W. B. Saunders Company. Illustrated. Pp. 345. 37*s.* 6*d.*

THIS volume is a collection of comprehensive anthropometrical statistics showing the relation between human morphology and disease. Dr. Draper has for some years been collecting data at the Constitution Clinic in the Presbyterian Hospital of New York and has enlisted the help of anthropological and anatomical specialists. He claims that his method is more accurate and more inclusive than those hitherto employed, and that all victims of certain diseases show pronounced morphological features in common. The diseases considered here are gastric and duodenal ulcer, gall-bladder disease, nephritis, hypertension, pernicious anæmia, tuberculosis, and asthma. There is a definite tendency at the present time for workers in all parts of the world to attempt to correlate bodily structure with pathological diatheses. The practical application of such data, if further research confirms the presence of a recognisable correlation, is not yet apparent, but it is easy to speculate on further advances in preventive medicine if it becomes possible to tell from biometric investigation of the school-child or youth what mental or physical aberrations he is likely to develop. This volume must await confirmatory evidence before its value can be appraised.

A Short Course of Physical Anthropology. By M. R. DRENNAN, M.B., F.R.C.S.E., Professor of Anatomy in the University of Cape Town. Cape Town: The S.A. Electric Printing Co., Ltd. 1924. Pp. 43. 5*s.*

THIS little book was written primarily for the students of anatomy of the University of Cape Town, to relieve them from the tedium of note-taking, and its scope "coincides with the limited syllabus which is at present prescribed for the anthropological part of the anatomy course and examination." Prof. Drennan deserves congratulations on the excellent little compilation he has made, wherein a great number of facts and views are given shortly but clearly. The volume can be recommended as a guide or note-book in any department in which a course in physical anthropology is taken, and its modest price puts it well within the reach of students.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The thirty-fifth meeting of the Commission was held in Edinburgh on June 30th, Prof. Alexander Gray in the chair. Evidence as to the provision of dental treatment for insured persons was given by the East of Scotland Dentists Panel, represented by Mr. Ernest Miller and Mr. William Arbuckle. Mr. William Thomson, secretary of the Scottish Coöperative Friendly Society, gave evidence as to the desirability of extending the scope of medical benefit and providing dental and other treatment benefits for insured persons, and also as to various matters in connexion with the administration of benefits by approved societies. Mr. John Reid, representing the chartered accountants of Scotland, gave evidence as to the audit of accounts of approved societies, and urged that this work should be entrusted to chartered accountants in general practice rather than to a special Government audit department. Mr. Matthew Reynard, clerk to the Association of Parish Councils of Scotland and clerk to the Glasgow Parish Council, gave evidence as to the relations between health insurance benefits and Poor-law relief. Mr. T. J. Addley, secretary of the Scottish Professional Assistants' Society, and Mr. R. Williamson, secretary of the Independent United Order of Scottish Mechanics, gave evidence on behalf of the Edinburgh, Leith and District Friendly Societies' Council.—The thirty-sixth meeting was held at the Home Office, Whitehall, on July 2nd, Lord Lawrence of Kingsgate in the chair. Evidence as to the work of the British Social Hygiene Council was given by Mr. E. B. Turner, Dr. Otto May, Dr. P. A. Clements, and Mr. Leonard Bowden. The Cambridgeshire Tuberculosis After-care Association, represented by Dr. P. C. Varrier-Jones and Mr. F. Bunnett, submitted evidence on the need for special benefit arrangements under the Insurance Scheme for persons suffering from tuberculosis. Similar evidence was given on behalf of the London County Council by Mr. G. H. Walmisley. The National Council of Agriculture, represented by Mr. James Donaldson and Mr. Denton Woodhead, gave evidence as to the undesirability of pooling the Insurance funds of societies. Thereafter the Society of Apothecaries, represented by Dr. A. D. Brenchley and Dr. Reginald Wall, and the Association of Certificated Dispensers, represented by Mr. Graham Bott and Mr. A. Wager, gave evidence as to the qualifications of the holders of the Society's certificate for Insurance dispensing. Volume I. of the Minutes of Evidence covering the period from Oct. 10th, 1924, to Jan. 8th, 1925 (the first to twelfth days inclusive), is now on sale at H.M. Stationery Office, price 10*s.* 6*d.* Part II. of the appendix to the minutes, containing the statements submitted by certain approved societies, insurance committees, dental societies, representative bodies, &c., on which the oral examination was based, is also on sale, price 10*s.* 6*d.*

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The mistake in such reasoning, of course, is that it is based on the assumption that the protoplasm of all cells has the same constitution—an assumption which has been shown by Emil Fischer to be not only ill-founded, but wholly fallacious. That this is so, is fully borne out in the convincing clinical evidence of the use of Dimol in the treatment of putrefactive and other bacterial invasions of the intestinal tract, particulars of which will be sent to any practitioner on application to the sole distributing agents:—

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THE LANCET.

LONDON: SATURDAY, JULY 11, 1925.

THE STATE OF PUBLIC HEALTH.[1]

THE annual Report for the year 1924 of the Chief Medical Officer to the Ministry of Health, Sir GEORGE NEWMAN, appears this week, being the sixty-seventh of a series presented annually by his predecessors and himself as medical advisers to the Privy Council, the Local Government Board, and the Ministry of Health respectively. The Report follows the precedents of the previous official records, and enables us to get an all-round view of the state of public health in this country, not only for the period covered by the details and statistics, but also in regard to a continuous policy and a progressive planning. The information and advice which it proffers alike to the Ministry and to the local public health authorities include the classified figures required year by year to estimate the state of public health, special references to particular diseases where the circumstances during the year has made them of interest, and notes of investigations undertaken with the object of obtaining fuller knowledge of prevalent scourges. The Intelligence Service of the Ministry now collects and disseminates information from home and foreign sources, and the medical information bureau thus constituted continues to increase in usefulness with the growing accumulation of tested, sifted, and collated experiences. In view of the frequently expressed opinion by semi-scientific speakers and writers that cancer research makes no progress, or that the mystery of cancer lies wholly in some dietetic faults, we recommend our readers to note the nature of the inquiries made already, or now progressing, under the Cancer Committee of the Ministry of Health.

The fundamental data of the physical life and health of the people in England and Wales during 1924 show, as for many previous years, a declining birth-rate, and while this is not balanced by a declining death-rate it is compensated for by the infantile mortality-rate. The death-rate of infants under one year of age per 1000 born during 1924 was 75, a figure which is translated for us in the Report as signifying that during the year in question the country saved 39,000 babies' lives over and above the average annual saving recorded during the decade 1901–1910. The great movement typified by the promoters of Baby Week, the activities of which are noted elsewhere in this issue, is bearing very definite fruit, and the fact that the figures of 1924 do not compare favourably with those of 1923 is an incident accounted for by the attacks of measles. The influence of epidemic infections on the population during 1924 present the special feature that among the mortality-rates there are found exceptional declines under the heading of small-pox, scarlet fever, and enteric fever. But the returns of the notifiable infectious diseases show marked increase of the epidemic disorders of the nervous system, encephalitis lethargica being particularly to blame. Pneumonia also was more prevalent than at any time during the last five years, and many more cases of small-pox occurred, though the mortality-rate was low, as it was in the case of enteric fever. Of these two epidemic inflictions, Sir GEORGE NEWMAN says frankly that, as they are controllable directly or indirectly, "their occurrence in epidemic form is almost culpable." In the year 1924, 3850 cases of small-pox were notified in England and Wales under the Infectious Diseases Notification Acts, and 32 other cases were reported, most of them coming to notice when local outbreaks of the disease were under investigation. Of the notified cases, only 85 were subsequently withdrawn on a revision of diagnosis, showing that with prevalence of the condition ability to detect it becomes much wider spread. Eight of the cases in this large total were fatal, though in Derbyshire alone 1351 cases were notified, and there were 650 cases in Yorkshire, and over 500 and 400 in Nottinghamshire and Northumberland respectively. In the County of London only four cases of small-pox occurred throughout the year, notwithstanding the very large number of persons from all parts of the country who visited the metropolis to attend the British Empire Exhibition at Wembley. Indeed it is one of the most striking features of the disease that London should remain so immune. In connexion with the mildness of the type of small-pox that has been prevalent recently we obtain from Sir GEORGE NEWMAN a clear pronouncement on the policy of making no difference in nomenclature and procedure under the Infectious Diseases Notification Acts as between small-pox and "mild small-pox." He enunciates, as a sound principle, that any specific disease should be notified as that disease, whether the attack be severe or mild.

There is valuable advice to the public in one of the final conclusions of the Report, its gist being that the public should be urged to use existing facilities devised by the Ministry of Health and provided by the medical profession for the maintenance of proper standards of health. Opportunities should never be missed to put before the public the *pressing* need that exists for the coöperation of public action in the promotion of preventive medicine. The columns of the more influential lay papers give this message day by day to enormous constituencies, but that vast progress which might be secured by the employment of medical knowledge and facilities now available is not made sufficiently prominent, and the education of public opinion is not sufficiently orderly. All the figures for the last half century go to prove the success which has attended scientific intervention in overcoming insanitation. This is so far public information that no one is found to-day who would suggest that the money spent in providing a good water-supply or in protecting child-life is other than well spent; and yet in many directions similar opportunities for overcoming disease are neglected. The public does not as yet choose to exercise to the full powers for the prevention of disease which are provided, and criticism of these or scepticism as to their efficacy is not well dealt with. The reasoned arguments of medicine will always be regarded by a certain school of thinkers as the outcome of professional selfishness—that odium we can bear quite lightly; but the reasoned arguments of laymen who speak with justified authority are not sufficiently credited as outweighing inchoate, uninformed or sentimental views—that is a national loss.

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[1] Annual Report of the Chief Medical Officer to the Ministry of Health for the Year 1924. H.M. Stationery Office. 1925. 3s. 6d. net.

X RAY DOSAGE.

THE extensive use of X rays in the treatment of disease has brought about the necessity of measuring the dose administered in terms of a definite unit. A great amount of valuable work has been done at different institutions all over the world in the application of X rays to medicine, but hitherto, on account of the absence of a unit of measurement, it has been impossible to correlate the results and progress has greatly suffered in consequence. Undoubtedly the most urgent need of the radiologist at the present moment is a means of accurately measuring dosage. The first step towards this is the establishment of an X ray unit in terms of which he can compare the results of other investigators with his own. This was emphasised during an interesting discussion on International Units and Standards for X Ray Work, which took place at the International Congress of Radiology held last week at the Central Hall, Westminster—and reported in another part of this issue—when representatives from all parts of the world were present. The subject was considered from the physical as well as the biological aspect. The discussion was opened by Sir WILLIAM BRAGG, F.R.S., chairman of the British X Ray Unit Committee, who dealt with the physical nature of the problem, and he was followed by Dr. BÉCLÈRE, of Paris, who spoke from the standpoint of the radiologist.

Up to the present several units have been employed and confusion is likely to arise if the number of these units is allowed to increase. Already in this connexion the same letter "R" denotes two totally different quantities. Consequently the first step towards the settlement of the problem is to decide upon a definition of the unit which should be universally employed in all countries as a basis for the measurement of dosage. The unit which has found most favour is the electrostatic unit suggested as early as 1908 by the French physicist VILLARD. This unit may be expressed as the quantity of X ray energy which produces an amount of electricity equivalent to one electrostatic unit in passing through one cubic centimetre of air at 18° C. and 760 mm. Hg. Certain factors have to be considered when making this measurement, the chief of these being that all the energy dissipated in the volume of air considered is actually taken into account and that no extraneous effects interfere with the measurement. An absolute unit of this nature has an advantage over other units that have been suggested, in that the dose is independent of the apparatus employed for its measurement. Uniformity of measurement is therefore obtained apart from any particular experimental arrangement. Having fixed upon the unit, the next step is to calibrate in terms of this unit the different instruments employed for measuring dosage. In Germany the above unit has been employed for some time and instruments intended for medical practice have been calibrated at a number of centres situated in different parts of the country. The representatives reported that this scheme had proved quite satisfactory, an X ray dose being reproducible at any time in the various clinics. There are, however, certain precautions to be taken; for instance, it is essential to specify the quality of the radiation, as differences are observed when radiations of different penetrating powers are employed. In practice it has been found necessary to calibrate the instruments for a limited number of radiations of different quality. The establishment of the physical unit and the calibration of the dosimeters fall within the province of the physicist, and they can be carried out to a greater degree of accuracy than is required for practical purposes. Moderate accuracy will suffice, as the measurement of the dose under practical conditions cannot be made with a high degree of precision. The correlation of the indications of the dosimeter and the biological effect is the work of the radiologist. This presents some difficulty because only a fraction of the energy absorbed by the tissue will be biologically active. A good deal of research will have to be done on the biological side to determine this fraction. It is well known that the X rays which are scattered by tissue play an important part in the irradiation of deep-seated cancer. The intensity at a depth shows considerable variation according to the disposition of the apparatus and patient and the experimental conditions at the time of treatment. To obtain any degree of precision, the conditions of irradiation must be carefully stated. For instance, the size of the field irradiated, the voltage of the X ray tube, the distance from and the nature of the target. All these factors—and there may be others—should be noted when measuring dosage. Prof. WINTZ, of Erlangen, emphasised the importance of standardising these conditions so that results may be directly comparable.

To arrive at a complete solution of the problem the radiologist and the physicist must work in close coöperation. Already in this country and in Germany there exist X ray unit committees which have done valuable work in connexion with this all-important question of dosage. It is worthy of note that both these committees arrived quite independently at the same conclusion regarding the adoption of the electrostatic unit. It is likely that several methods will be employed to measure the unit, so that it will be necessary to check the calibration of an instrument in one country against that in another country. It is urged that an X ray unit committee be formed in each country and that these committees should keep in close touch with each other. It was resolved at the close of the discussion at the Congress that an international committee be formed to discuss the matter further, with a view to arriving at a scheme which will be universally adopted. Such an international committee, which will consist of both physicists and radiologists, will perform an important function and, as the result of its deliberations, it is hoped that research on the effect of radiation on human tissue will be greatly facilitated.

THE TASTE FACTOR IN DRINKING WATER.

THE British Waterworks Association held its annual meeting in London last week and discussed various aspects of the water-supply. Sir ALEXANDER HOUSTON, Director of Water Examination to the Metropolitan Water Board, submitted a paper on the Purification of London's Water-Supply. The greater part of his communication was devoted to the problem of taste, since it is insufficient to produce a water bacteriologically safe; consumers expect also to be supplied with a water free from objectionable taste. There are two kinds of taste liable to occur in town waters, chlorinous and iodoform. The former can always be avoided by correct dosage or by de-chlorination, the latter is unaffected by such de-chlorinating agents as sulphurous acid and sulphites. It has been known for a long time that phenol in extremely minute doses reacts with chlorine in water to produce this extremely unpleasant iodoform taste. ADAMS[1] has recently shown that 1 part of phenol in 1000 million parts of water is sufficient to produce taste and that there are sufficient phenol impurities in the atmosphere of towns to supply this proportion. Water authorities using chlorination must therefore protect their water from atmospheric air as well as from fog, mist, rain, and any liquid pollution liable to contain any trace of phenol. In spite of all prophylactic measures, taste troubles may still occur and must be combated. Race, Rideal, Harold, Adams, Houston, and others have devoted much study to this important question. The three chief substances that act as preventors of taste in water are organic matter, potassium permanganate, and ammonium compounds.

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[1] THE LANCET, May 23rd, 1925, p. 1093.

In the United States and Canada chlorination is nearly always practised after filtration, and it is possible that taste troubles would be avoided by using the chlorine before filtration. Slightly larger doses are required, but the extra expense is almost negligible. During the last eight years 70–80 million gallons of Thames water have been chlorinated daily before filtration, and no complaint of taste has been received from the two million consumers. Potassium permanganate was first used by Houston in 1913 to remove a taste due to *Tabellaria*, and later, with equal success, in connexion with the New River chlorination treatment. The usual dose is 1 in 5 millions, and with waters of surface origin the pink tinge disappears within a few minutes. Unfortunately, however, it persists even with a smaller dose in the case of deep well waters containing hardly any oxidisable matter, thus rendering such treatment practically inadmissible. Permanganate has the advantage that it may be added before, with, or after the chlorine with equally good results. Laboratory experiments seem to show, however, that it cannot be used before filtration if chlorination is to be practised after. Whether or not this is due to the reabsorption of phenol bodies during the filtration process is not known. Ammonia and ammonium compounds are now being used in many places as taste preventers; apparently the first worker to use ammonia on a practical scale was Race. The absence of colour is a great consideration, and although the cost, weight for weight, is higher than permanganate, it may be found on further study that the actual cost is less, since a smaller quantity is required and also it reduces the dose of chlorine necessary for sterilisation purposes. It seems as if ammonia, although it exercises a "*lagging*" effect, ultimately increases the sterilising action of chlorine. The dose of ammonia, expressed as nitrogen, required to prevent taste troubles varies in different cases, but 1 in 5 millions is an average figure. Sir Alexander Houston spoke of an experiment on a large scale, 45 million gallons a day, in which chlorine alone was first used in a dose of 1 in 3 millions. The percentage number of 10 c.cm. positive *B. coli* cultures was 26. When ammonia was added (1 in 5 millions) before the same dose of chlorine, the number of positives was reduced to 4.

The cost per pound of liquid chlorine, liquid sulphurous acid, permanganate, liquid ammonia, and ammonia compounds (expressed as nitrogen) is approximately as follows:—

	Pence.	
Chlorine	2·31	
Sulphurous acid	7·5	
Potassium permanganate	7·0	
Liquid ammon. (liquor ammon. fort.)	11·0	In terms of nitrogen.
Ammonium chloride	11·1	
Ammonium sulphate	9·2	

Thus chlorine is by far the cheapest chemical, and ammonia and its compounds the most expensive. At the same time, if very small doses of ammonia were found to be equally efficient as taste preventers, the balance might be economically in favour of ammonia. It is clear that great progress has been, and is being, made in our knowledge of the reasons why certain waters develop an iodoform taste in the presence of active chlorine, and the best and most economical ways of overcoming these difficulties. One gratifying health feature arises from these considerations. If taste troubles can be economically and certainly overcome, there will be less disposition to cut down the dose, with consequent risk of imperfect sterilisation, in order to avoid complaints from consumers as regards taste. There have been cases where the question of taste rather than of bacteriological result was the dominant factor in determining the dose of chlorine.

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CONVENTION OF ENGLISH-SPEAKING OPHTHALMOLOGICAL SOCIETIES.

The convention of ophthalmologists to be held next week in London is to be confined to English-speaking societies, but one of the subjects to be considered at a general meeting is the re-establishment of international ophthalmological gatherings on the pre-war basis. Science knows no frontiers, and it is to be hoped that the promoters of this discussion will be successful in their object. Meantime there is plenty of matter to engage the attention of the convention which is to be opened by a reception at the Royal College of Surgeons on the evening of July 13th. On the 14th, after the formal reception of delegates from the United States, Canada, and Australia, the President, Mr. E. Treacher Collins, will give the opening address on the Elimination of Eye Disease. This will be followed by the reading of papers by various members and in the afternoon by excursions to institutions of ophthalmic interest in London and its vicinity. In the evening a reception will be held at the Royal Institution of Great Britain, at which Sir William Bragg will give an address on Thomas Young and his Work. On the three succeeding days the programme is somewhat similar. Papers will be read during the day. A symposium will be held on the Evolution of Binocular Vision, in which Sir Charles Sherrington, Sir Arthur Keith, Sir Frederick Mott, Prof. G. Elliot Smith, and Prof. S. E. Whitnall will take part; Sir John Parsons will deliver the Bowman Lecture on the Foundations of Vision, and there will be a discussion on the Microscopy of the Living Eye. Sir William and Lady Lister's garden party and a reception at the Wellcome Historical Medical Museum will provide further opportunities for social intercourse, and the proceedings are to be wound up by a banquet at the Guildhall on July 17th, at which H.R.H. the Duke of Connaught is to be the guest of the convention. The organisers are to be congratulated on a programme so full of interest and variety. The meetings are to be held at University College, Gower-street, W.C. 1. On arrival in London every member of the convention is requested to attend as soon as possible at the Registration Bureau.

Bethlem Hospital Site.—*The Select Committee* of the House of Lords which has had before it the Bethlem Hospital Bill authorising the removal of the asylum to the Monks' Orchard Estate on the Kent and Surrey borders, has decided that the measure ought to proceed on the ground that there is general agreement as to the desirability of the scheme. Sir Lynden Macassey, K.C., opposed on behalf of the Southwark Borough Council, which desires to keep the site as an open space, but Mr. Thomas, K.C., for the promoters, pointed out that the charity would suffer if the value of the site could not be realised. The governors were, however, quite prepared to consult with the London County Council and to coöperate with the public authorities.

Annotations.

"Ne quid nimis."

MUSEUM OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

MEDICAL men who visit the Museum of the Royal College of Surgeons, Lincoln's Inn-fields, will meet with evidence of great activity. During the present month a special exhibition is being given in Room I. of the Museum of all the preparations and donations added to the collection during the past 12 months. At the end of the present month the additions are assigned to their permanent places in the Museum. Of the additions just made, over 300 in number, 170 represent pathological conditions, many of which were obtained by surgeons in the course of operations. Noteworthy are the preparations added to the series which illustrates disorders of the pancreas, for which the College is indebted to Mr. J. A. Cairns Forsyth, and those which exemplify tumours of the testicle, added by Mr. H. R. Dew. Particularly numerous are the preparations which illustrate diseases of bones and disorders of their growth. Visitors have an opportunity of examining the specimens which were prepared by the late Sir William Macewen during his classical researches into bone growth. Specimens presented by Mr. Alan H. Todd show an early stage in the onset of osteogenesis imperfecta. Dr. A. E. Pinniger adds to the collection a heart ruptured by indirect violence. A negro miner, who was within the radius of an accidental explosion, was picked up dead but with no external mark of injury. At the post-mortem examination a rupture was found of the left ventricle. Another remarkable heart was given by Dr. Robert Ellis, of Taunton. It is that of a boy who died from rupture of the ascending aorta, which was the site of an aneurysmal dilatation. Beyond the dilatation was a pronounced stenosis of the aorta of congenital origin. A specimen of identical nature was presented four years ago by Dr. G. A. Sutherland. Another interesting addition is that made by Mr. Arthur H. Crook, of Eastbourne. The preparation represents the viscera of a seventh month child which lived for seven days; it shows a malformation of the lower part of the œsophagus with complete stenosis of the middle part of the duodenum. A gift by Mr. Philip J. Franklin exemplifies a very uncommon malformation—a congenital union of the vocal cords of a child aged 2 years. Lieut.-Colonel R. H. Elliot has added very valuable sections of the eye to illustrate the pathology of glaucoma and of myopia. The same donor has also enriched the series which illustrates the craniology of anthropoid apes, by presenting skulls of the peculiar form of gorilla which inhabits the Kivu forests of East Africa. Through Dr. J. B. Christopherson the College has added to this exhibition specimens prepared by Dr. Fuzinami, of Kyoto, to illustrate experimental schistosomiasis.

The President of the College, Sir John Bland-Sutton, has made donations to all sections of the exhibition now on view. Particularly interesting is a series of models, carved in wood by the curator of the museum of the Historical Society, New Bedford, Mass., to show the external form of the larger kinds of whales. The value of this series is enhanced by an evolutionary tree of the whale family which has been mounted in the same case as the models.

Besides examining the special exhibition, which represents specimens which will be allotted to all departments of the Museum, visitors will have an opportunity of examining other additions and improvements which have been recently made in the Museum of the College. A special case designed by Mr. E. C. Frere, F.R.I.B.A., has been installed in Room I. to contain the surgical instruments and personal mementoes of Lord Lister. The Army Medical Collection is now exhibited in a spacious new room and is available for purposes of study. A special series is being brought together in Room III. to exemplify the various forms of disorder of growth to which the human body is subject. Sir Frank Colyer has set out a remarkable series of specimens to show how repair is carried out in the tusks of elephants after fracture and gunshot injury. Those interested in the portraiture of John Hunter may examine an extremely interesting portrait which, in the opinion of Sir Arthur Keith, is that of the celebrated surgeon, representing him when about his forty-fifth year. This portrait has recently been presented to the College by Mr. G. Buckston Browne. The Museum is open to all medical men and may be visited between 10 A.M. and 5 P.M., except Saturday afternoons, when it is reserved for ambulance and other classes.

THE CHALMERS MEMORIAL GOLD MEDAL.

THIS medal is awarded biennially to persons under 45 years of age for "researches of outstanding merit contributing to our knowledge of tropical medicine and hygiene." At the recent annual general meeting of the Royal Society of Tropical Medicine and Hygiene it was presented by the newly elected President, Dr. Andrew Balfour, C.B., C.M.G., to Prof. Warrington Yorke, of the Liverpool School of Tropical Medicine, in recognition of his work on trypanosomiasis, malaria, and many other subjects. Prof. Yorke read a paper on Further Observations on Malaria Made During Treatment of General Paralysis. The earlier work of Prof. Yorke and Dr. J. W. Scott Macfie on this subject was communicated a year ago and showed that induced malaria, whether as a result of direct inoculation of the blood of an infected patient or the bites of infected mosquitoes, was remarkably susceptible to the action of quinine in a dosage of 30 gr. on three consecutive days. It was further discovered that quinine has no true prophylactic action, for daily doses of 10 gr. of quinine administered for five days before, on the day of and for seven days after the infecting bite of the mosquito, did not prevent the onset of typical malaria. Similarly, 30 gr. given on the day of the bite and on each of the two succeeding days did not prevent malaria. From these results it was evident that quinine, though very efficacious for the primary attack of malaria when parasites appeared in the blood, had no action on the sporozoites injected by the mosquitoes.

Prof. Yorke's paper at this meeting dealt with the subsequent history of the cases reported on last year. The number of relapses has remained at 2 per cent. in more than 100 cases of malaria induced by inoculation of virulent blood and treated by the three-day course of quinine, from one and a half to two and a half years ago. The inoculation of the strain from man to man during three years, involving more than 40 passages, has not produced an increase in virulence or any morphological variation in the parasite itself. Where the infection had been induced by the bites of mosquitoes, with a similar course of treatment, 21 out of 37 patients relapsed, two in the first month, two in the second, one in the third, and the rest from the fourth to the eleventh months. The late development of these relapses is in marked contrast to the experience of the war, when the vast majority of relapses occurred within six weeks of cessation of treatment. Of the 21 relapses, fever disappeared in the majority of cases either spontaneously or as a result of a second short course of quinine. These results are very different from those obtained during the war, and it does not appear that the amount of quinine or the manner of its administration, the period of the year when an infection or treatment occurs, or the strain of parasite can explain this outstanding difference; the only factor which can reasonably account for it is the individuality of the patient. This factor appears to be the one which determines whether a relapse will occur and, if so, when. On the subject of the mechanism of the action of quinine, Prof. Yorke could see no reason to alter the opinions expressed in the communication made last year. Quinine destroys large numbers of the malarial parasites, the broken-down bodies of which act as an antigen to stimulate the production of antibodies which, if present in sufficient amount, bring about a sterilisation of the infection and the cure of the patient. Some evidence has been obtained that the drug acts indirectly in destroying parasites, certain body cells coöperating with the quinine in producing a substance directly toxic to the parasites. The use of large doses and prolonged courses of quinine is not advocated; the best method of treating malaria is to deal with the attack with a few moderate-sized doses and await developments; if relapses occur, repeat the treatment and maintain the general health by diet and avoidance of exhaustion, for relapse depends on the reaction of the patient himself and his capacity to develop immune body.

ANTHROPOLOGY AND PREVENTIVE MEDICINE.

THE fact that certain persons are more liable than others to contract or to succumb to certain diseases must have been known from the earliest days of observation, but the science of immunology is of recent birth and has not yet found an answer to the fundamental question as to why A is happy in immunity while B is not. The facts and experiments concerning racial and species immunity at present recorded form a tangled skein of unrelated and unexplained threads for the unravelling of which the help of the anthropologists is needed. For this reason Lieut.-Colonel J. Cunningham, I.M.S., himself the son of a distinguished anthropologist, chose as the subject of his paper before a recent meeting of the Royal Anthropological Institute "Some Factors in Racial Immunity." India is peculiarly suited for a study of the problems of race immunity since peoples of totally different genealogy, diet, habits, and sanitary standards are there encountered living side by side under identical environmental conditions. Among the observations on record are those of Dr. Agnes Scott on osteomalacia, the incidence of which she found to correspond with the *purdah* system or, in more general terms, with any area where the women live sedentary, secluded, and unhygienic lives. Colonel Cunningham himself has noted the limitation of kala-azar epidemics in Kayalpatnam, S. India, to the Mohammedan community. These, being traders, came in contact with infected towns, but never communicated the disease to the segregated Hindu agriculturists living in the same village. He has also investigated the relation between climatic conditions and dysentery in certain gaols of Southern India. The largest peak in the chart of dysentery incidence was found to correspond with the summer rains, while two lesser peaks indicated relapses occurring at the onset of the hot and cold weather respectively. In fact, the cases of acute attack could be correlated with the sudden changes of temperature accompanying thunderstorms. An example of species immunity is seen in the reaction of rodents to anthrax, the rat being almost immune, the guinea-pig and mouse extremely susceptible, while the rabbit is less so. The racial variation in susceptibility to tuberculosis is strikingly seen in the incidence of the disease in the French Army of occupation, the figures per 1000 being: French 9·5, Moroccans 11·7, Arabs 18·3, Annamites 15·3, and Senegalese 86·1. Modern tests, such as the Calmette and von Pirquet reactions, the Schick test for diphtheria, and the Dick test for scarlet fever, provide an accurate method for estimating natural immunity. On Thursday Island 90·8 *per cent.* of the population were found to be susceptible to diphtheria. Rose Carter has shown that the supposed immunity of the negro to yellow fever is really a case of susceptibility to toxin rather than to micro-organism, so that the death-rate is definitely less among negroes than among white men, although it is doubtful whether the incidence differs greatly.

It has been stated that the European in India is much more liable to intestinal disorders than the native, but 25 per cent. of the natives are infected with dysentery and the apparently greater liability of the white man may be accounted for by his unwitting contact with infected servants. The original claim that native races showed a relative immunity to cancer has been modified in recent years, and the latest statistics tend to show that it is only the particular variety of malignant growth that varies from race to race. The Chinese are especially liable to carcinoma of the stomach and to an epithelioma of the hip, due to sleeping on the hot *K'ang*, and Eastern races generally suffer from a primary carcinoma of the liver that takes the place of Western intestinal cancer. The Javanese show a high percentage of malignancy of liver and uterus. The importance of the factor of exposure to infection, personally or racially, has not yet been adequately assessed. Negro races that have only recently come into contact with civilisation manifest a very high tuberculosis mortality with low morbidity, while those that have been long associated with the white man show figures similar to Western statistics. In Colonel Cunningham's opinion there is no evidence of true racial immunity in man, comparable to that seen in animals, but the coöperation of anthropologists and immunologists is required in the further investigation and interpretation of the facts obtainable.

ICE-CREAM AND SCARLET FEVER.

Dr. A. Mearns Fraser has reported to the Portsmouth Health and Housing Committee on an outbreak of scarlet fever arising from infected ice-cream. Up to the last week in May there was no undue prevalence of scarlet fever in Portsmouth, but on May 29th 21 notifications were received, on May 30th 21, on May 31st 14, on June 1st 8, on June 2nd 9, on June 3rd 1, and on June 4th none. Altogether there were 83 notifications in five days. It was soon noted that the common feature was the consumption a day or two previous to the attack of ice-cream made by a firm of dairymen and sold at various branch shops. On May 30th a medical practitioner notified eight patients who had attended a whist drive and were at first thought to be suffering from food poisoning. They had partaken of ice-cream at the whist drive. Three assistants at the branch dairy shops were among those notified. Ultimately it was found that all the ice-cream was made by a man and a boy at one of the branch shops. The boy went home ill on the night of May 29th and was diagnosed as scarlet fever on May 30th. It was stated that the boy had a sore-throat, which he did not mention, for a week before going off work. Apparently the rash was not noticed until the night of May 29th. There were no cases of scarlet fever among the customers who only consumed milk supplied by the dairy, and after full consideration of the facts Dr. Fraser concludes that the ice-cream was infected by the boy and that none of the other three employees at the other branches was in any way implicated. The dairy firm gave every assistance in the investigation and were quite unaware of the fact that the boy was indisposed during the week previous to his definite attack. The outbreak fortunately was of a mild type. A feature, which has been observed before in the case of milk outbreaks, was the shortness of the incubation period in many of the cases. Another noteworthy feature was the early stage of the illness at which the boy was able to infect the milk. Again, it has been common to a number of other milk epidemics that the symptoms of the apparent infector have frequently been obscure. Dr. Fraser is not aware that scarlet fever outbreaks have ever been traced to ice-cream before, although enteric fever outbreaks from this source are on record. A noteworthy example of the latter occurred a few years ago in the South Shields rural district. The ice-cream in the Portsmouth case was made of cream custard and eggs in an electrically worked freezing machine. The boy's job was to pack the ice-cream into tins for distribution and then take it round to the various branch shops. The outbreak ceased abruptly on the stoppage of the sale of the ice-cream. It is difficult to see how such outbreaks can be entirely prevented. The present one cannot be attributed to negligence, and a daily medical examination of all persons employed in handling milk is hardly feasible.

TREATMENT AT MENTAL HOSPITALS.

RECENT reports of mental hospitals, of which some abstracts appear on another page, show the trend of modern mental treatment in public institutions. There is a steady movement towards treatment as opposed to bare maintenance. Committees and medical officers are realising that the difficulty of restoring the mens sana offers no reason for neglecting to furnish a corpus sanum. Dietaries are everywhere being overhauled to see where they can be improved and their caloric and vitamin content made adequate. Butter is taking the place of margarine and nourishing and palatable items are being added to the menus. Specialist services are being enlisted to remove any source of bodily disability or focus of sepsis, and nearly all mental hospitals now have a dental surgeon attached to the regular staff. The absence of a pathological laboratory is a stigma that every committee is anxious to remove and the research carried on by the expert pathologist should in the long run afford a sound basis for treatment. Perhaps the most important person connected with the mental patient is the nurse, who comes into intimate contact with him in all his moods; in the past the mental nurse has often been drawn from the least trained members of the profession. Now a steadily increasing number are being urged to obtain general training in addition to working for the nursing certificate of the Medico-Psychological Association. The nursing public is beginning to understand that mental nursing is the highest branch of service, demanding gifts which cannot be overestimated. The Commissioners of the Board of Control are urging on mental hospitals the importance of allowing to patients individuality of costume and providing useful occupation in some form of trade or handicraft. A few hospitals have appointed special instructors whose therapeutic as well as financial value is coming to be recognised. There is a growing disinclination to regard mental disorder from its legal aspect. Although at present it is essential for the public and for the doctor that there should be legal safeguards in certain cases, the profession, and the public after them, are beginning to realise that the care of the mentally sick is a purely medical and highly technical matter. The change of opinion is reflected in the fact that in some cases 50 per cent., in others 80 per cent., of the inmates of these institutions are "voluntary boarders," free to leave at 24 hours' notice at any time. It may not be long before 100 per cent. becomes a common record and the certified case is regarded as a slur on the early measures taken. It is realised that mental disease, apart from a small proportion of toxic cases, is a thing of slow development, which leaves time for preventive measures. One superintendent puts biological stress at the head of his list of causation, and such stress is to be recognised and dealt with before the adaptatory functions of the individual have broken down. Another report points out that half of the annual admissions had shown symptoms for more than a year; had competent advice been sought earlier probably few of these would have required certification at all. It is the general practitioner alone who can recognise these early signs and warn the patient or his relatives of the need for care at a time when treatment would be accepted without resistance and breakdown might be averted. Public interest is awakening to the problem of the early mental case, and practitioners must give some thought to the matter if they are not to be found wanting.

AN AMERICAN SMALL-POX EPIDEMIC.

THE Detroit Department of Health has just issued an instructive report on last year's epidemic of small-pox. The rapid growth of this industrial city has attracted a large migratory population which no doubt accounts for the rather high incidence of small-pox in the last ten years. In 1918 there were 893 cases with 6 deaths, in 1920 4 deaths in 1125 cases, but in 1924 a more serious outbreak with 1610 cases and 163 deaths. The high fatality as shown by the following table was largely due to the appearance of hæmorrhagic small-pox.

Case Fatality-rates.

	Cases.	Deaths.	Rate per cent.
Hæmorrhagic ..	124	123	99
Confluent	219	9	4·1
Discrete	441	7	1·6

The names and addresses of contacts being taken usually about midnight, when everyone was at home, provided an exceptionally complete list of those known to have been exposed to contagion. The vaccination history was obtained and the quarantine enforced at the same time. Those exposed to risk could thus be divided into classes according to their vaccination status, and as the subsequent incidence of small-pox is known we have an admirable index of the efficiency of the vaccination shown in the following table:—

—	Exposed to risk.	Number who developed small-pox.	Percentage incidence of small-pox.
Vaccinated within 5 years of exposure	928	0	0
Vaccinated more than 5 years previously ..	1296	27	2·1
Never successfully vaccinated	1350	180	13·3

One table in the report shows the result of exposure according to the type of case to which the contact was exposed and the time of vaccination within the incubation period. The numbers in these classes are small in any case, and as they are expressed merely as numbers and not as rates few conclusions can be drawn. It is worthy of note, however, that 38 persons who were successfully vaccinated within four to eight days from the time of exposure contracted the disease in one form or another. Clearly it is not safe to put off vaccination until one is known to have been in contact with a case. The conclusion which the Health Department of Detroit draws from this experience is that vaccination ought to be compulsory.

AN EAST COAST PORT.

THE annual report of Dr. B. C. Stevens to the Grimsby Port Sanitary Authority gives a good idea of the importance and variety of the medical service of a port. Although no scheduled cases of infectious disease were landed during the year 1924, 38 cases of other disease came under notice, amongst them 18 of influenza. Rats to the number of 1410 were killed in steamers, 1883 in trawlers, 5786 in warehouses and elsewhere about the port; 483 were killed in 12 ships fumigated with sulphur, averaging 41 in each, and 2795 in 91 ships by baits and traps, averaging 31 in each. Of the 9079 killed in ships and port, 543 individuals were black, 8536 brown. Most were killed in May, especially in the warehouses. No remarks are made by the port medical officer on venereal diseases as they affect shipping. Alien passengers, numbering 2219, entered at this port "invariably clean," as the medical officer remarks. Regular inspection of the water tanks of the port led to no complaints. Of 3166 foreign-going craft, 96 were reported to have sanitary defects, and of 238 coasters, 194; 34 sanitary defects were found during 103 inspections of canal boats. 3458 inspections were made of ships and fishing boats; the chief occasion of complaint being dirt: 374 had dirty food lockers, 49 beds were filthy and destroyed (227 others, not so bad, were ordered to be cleaned), 144 ships had dirty fo'c's'les, 70 had dirty or choked w.c.'s, 33 had dirty galleys or cooking utensils, and 3 had dirty forepeaks, being the compartments just below the crew's sleeping-place, which, if dirty, are a nuisance to them. Also 10 ships were verminous. There were some structural defects: 95 decks leaking, 37 defective drinking-water tanks, 69 defects in lighting, defective stoves 30, defective ventilation 27. Fish arriving unfit for food is made into manure; 400 tons of fish were condemned in the year under review along with much other food. The disposal of refuse from fishing boats still causes offence to the town-dwellers, but the gradual rebuilding of the fish market gives tardy hope of betterment. The number and variety of subjects mentioned in this and other reports of the medical officers of port sanitary authorities show clearly how important are their duties. The sailors in the ships are advantaged in comfort and health by criticism of their surroundings if uncleanly or otherwise unhealthy; any defects which may be found are now more readily corrected than they were, and free treatment for venereal disease is available. The public, too, is advantaged by the destruction of unsound imported foodstuffs, while the constant war on rats is but an incident in the unceasing watch against the entry of epidemic or infectious disease from overseas.

ATMOSPHERIC POLLUTION.

The tenth annual report[1] of the Advisory Committee on Atmospheric Pollution covers the period from April, 1923, to March, 1924, and is the largest and most interesting report yet issued. The report deals with various aspects of the central problem, and is divided into eight sections. In Section 1 are given the results of measurement of deposit from the air at different stations, classified according to the amount of deposit, the average monthly values being compared with the previous five years' average and a comparison of summer and winter deposits being made. Out of 28 stations the deposit of tar was lower than the five-year average in 21, higher in 3, and equal to it in 4. Tar is a good indicator of the amount of coal smoke. The insoluble sooty matter was below the average in 18 out of 20 stations, and above it in 11. Section 2 deals with suspended impurity. The results were obtained with the automatic filter, and curves are given for two new stations, Blackburn and Stoke-on-Trent. It is curious to observe the peculiarities of the curves compared, for example, with London, as shown in previous reports. Blackburn shows a double maximum on weekdays, the first about 9 A.M., the second about 11 A.M.; it is significant that the first maximum disappears on Sundays. Comparison between the automatic filter and jet-dust counter indicates a close agreement between these methods: about 10,000 particles per c.cm. correspond with about 0·8 mg. per cubic metre. In Section 3 is given a description of the remarkable darkness which overtook London on Jan. 23rd, 1924. The electric load diagrams reproduced give some idea of the cost to Londoners of a smoke effect of this description. Section 4 deals with the jet-dust counter devised by Dr. J. S. Owens, and a full account is given of the technique in using it. Illustrations show a similarity between mould cells obtained in dust records and cells from dead leaves, indicating a possible source of the cells found in the air. A new form of dust counter is described in Section 6. This is used for the examination of very coarse dust and operates by isolating a column of the air to be tested, allowing the dust to settle and examining the particles which fall upon a known area. Section 7 deals with the dust in the upper air, and sets out the results obtained by Dr. H. H. Kimball, of the U.S. Weather Bureau. The average diameter of dust particles collected at an altitude of 10,000 feet is only a quarter of those in the surface air. In Section 8 an estimate is made of the effect of atmospheric pollution upon visibility. Tests made with a specially designed instrument show a range of transmission through 50 feet of air varying from 99·66 per cent. of the light when the number of suspended particles amounted to 210 per c.cm., to 22·7 per cent. when the number of suspended particles was about 80,000 per c.cm. The report appears at a time when public attention is at last concentrated upon the need for purifying the air, and should be a great incentive to measures directed against atmospheric pollution.

British practitioners can again enjoy unrestricted freedom of practice in Italy. The difficulties of the last 18 months have been adjusted, and the General Medical Council has now been officially informed that the Italian Embassy in London has communicated to all the consular offices under its orders the regulations concerning the admissions of British registered practitioners to the privilege of practising medicine in Italy and its dependencies. The new agreement, which reinstates the reciprocity of 1910, comes into force from the date of its signature (May 21st, 1925) without the need for further ratification or approval.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. W. W. Keir to be Surg. Capt.

W. G. F. Murray, J. G. Maguire, and S. Morrow to be Surg.-Lts.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg.-Lt. Comdr. D. D. F. MacIntyre, T. B. Dixon, and L. S. Ashcroft to be Surg. Comdrs.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. C. G. Thomson retires on account of ill-health.

Capt. R. C. Aitchison retires, receiving a gratuity.

Capt. J. Stephenson, half-pay list, late R.A.M.C., retires on account of ill-health, and is granted the rank of Maj.

MILITIA.

Capt. F. L. Tulloch to be Maj.

TERRITORIAL ARMY.

Maj. C. S. Wink and Capt. W. D. Carruthers resign their commns. and retain their rank.

Capt. R. G. Addenbrooke (late Worcestershire Regt.) to be Lt. and relinquishes the rank of Capt.

Capt. G. M. Brown (late R.A.M.C.) to be Capt.

Capt. A. Angus (late Northumberland Fus.) to be Lt. and relinquishes the rank of Capt.

A. H. G. Down to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. A. L. Taylor, from Active List, to be Capt.

ROYAL AIR FORCE.

Air Commodore D. Munro to be Air Vice Marshal.

INDIAN MEDICAL SERVICE.

The King has approved the retirement of Lt.-Col. C. F. Marr.

The Paying Patient.—On July 7th the Queen opened at the Hospital for Women in Soho-square a new ward containing 12 cubicles for patients who will pay from five to seven guineas a week, in addition to fees to physician or surgeon. The Royal Free Hospital will shortly set aside small wards and private rooms for paying patients.

International Red Cross Nursing.—The Duchess of York last week opened the residence for international students which has been provided by the League of Red Cross Societies, at 15, Manchester-square, London, W. The house will provide a home for nurses from all parts of the world who come to take the League's courses, now in their fifth year, and those who have already obtained their certificates are teaching at home what they have learned in England. In addition to the English students the Duchess presented certificates to nurses from New Zealand, Holland, Greece, Norway, Czecho-Slovakia, Latvia, Belgium, Austria, Germany, Switzerland, and Siam.

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[1] Meteorological Office, Air Ministry. M.O. 270. H.M. Stationery Office. 4s.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXXX.

THE TREATMENT OF DISSEMINATED SCLEROSIS.

DISSEMINATED sclerosis is an infective disease of the central nervous system, which usually starts between the ages of 15 and 30. In its typical form the disease is characterised by relapses and remissions. This feature is of the utmost importance in diagnosis and can be explained by the invasion, from time to time, of an organism or its toxin into the brain and spinal cord producing an acute inflammatory lesion. This prevents the conduction of nervous impulses through the affected area. Depending on the situation of the "patch," various symptoms will be produced, such as paræsthesia in a hand, weakness of a leg, failure of vision, a "stroke," &c. After a short time the inflammatory process subsides, often without leaving any permanent damage behind it, and this clinically results in a remission. As the onslaughts on the nervous system become more frequent, or intense, irretrievable damage to important conducting pathways in the brain or spinal cord follows, and a permanent disability, such as a paraplegia, results.

The causative organism has not been definitely determined upon, but there is some evidence in favour of the view that the disease is due to a spirochæte, which, however, is not *Spirochæta pallida*. Spirochætes occur in the mouth and intestines of a large number of healthy persons; they are frequently present in diseased tonsils; they exist in the middle ear in many cases of otitis media, and therefore, presumably, may be present in infections involving any of the sinuses which communicate with the nasal passages.

Clinical Forms.

It must be remembered that the classical picture of disseminated sclerosis, as described by Charcot, consisting of intention tremor, scanning speech, and nystagmus, is present, in its entirety, in only about 14 per cent. of cases. The most important part in the investigation of a possible case of disseminated sclerosis is a close inquiry into the previous health of the patient. In a person between the ages of 15 and 30 the occurrence from time to time of symptoms referable to the central nervous system, which appear suddenly and are often accompanied by slight pyrexia, sometimes earning the name of "influenza," and which clear up as a rule within a few days or weeks, should strongly suggest a diagnosis of disseminated sclerosis, provided the Wassermann reaction is negative. These symptoms, which may occur singly, are: temporary diplopia, temporary blindness, paræsthesiæ in one or more limbs, weakness or stiffness in an arm or leg, precipitancy of micturition or actual incontinence, and attacks of vertigo, often with headache.

Further, the rarer manifestations of this disease should not be overlooked. (*a*) Cerebral form, ushered in by a "stroke," usually without loss of consciousness (sometimes a fit, indistinguishable from epilepsy, may complicate the picture), and attended by a hemiplegia, which clears up quite rapidly. Further "strokes" may occur, affecting the limbs on the same or opposite side. In a person under the age of 40, in whom a hemiplegia occurs, if syphilis, cardiovascular disease, and a cerebral tumour can be excluded, disseminated sclerosis should always be thought of as a possible cause. (*b*) A retro-bulbar neuritis, which is due to a patch somewhere in the optic nerve, producing varying degrees of temporary blindness, may be the first sign of the disease. A similar condition may result from an infection of the sphenoidal and posterior ethmoidal cells, and this must be excluded. (*c*) The spinal form of disseminated sclerosis, characterised by a paraplegia without nystagmus, intention tremor, speech defect, or affection of the arms. Such cases must be differentiated from spinal syphilis, spinal cord compression, and subacute combined degeneration of the cord.

On examining a suspected early case, attention should be paid to the presence or absence of the following signs: Nystagmus; pallor of the temporal half of one or both discs; weakness and ataxia of an upper or lower limb, often with some loss of postural sensibility; exaggeration of the deep reflexes on one side or in one limb; a unilateral Babinski, or even an indefinite plantar response; and diminution or absence of the abdominal reflexes, on one or both sides. If no definite physical signs can be elicited the case should not too rapidly be labelled hysterical, but the patient should be requested to report at once should any deviation from health be observed. It is only in this way that an early diagnosis can be made.

A case of disseminated sclerosis is always a long and protracted affair. The doctor should not be misled, as is often the patient, by the natural remissions of the disease, into believing that a particular form of treatment is proving curative. It is necessary to watch the patient closely, for, unfortunately, it may be assumed that a relapse will sooner or later ensue, and patiently to treat symptoms as they occur. Certain general measures can be laid down.

General Measures.

It is of importance to deal at the outset with all possible foci of sepsis. The mouth should be carefully overhauled, and all septic teeth or stumps removed, but this should not be done in an indiscriminate manner, as a relapse may follow, within a few hours, the too drastic clearance of septic stumps. The tonsils, if severely infected, should be removed. In cases which have shown blindness in the initial stages of the disease, an examination of the posterior ethmoidal and sphenoidal sinuses should be made to exclude infection. The optic nerve is separated from these sinuses only by a thin layer of bone, and therefore an infection may readily pass to the optic nerve, as occurs in cases of optic neuritis associated with suppuration in these sinuses. Any middle-ear infection should be dealt with. The general health should be carefully looked after and over-fatigue avoided. Alcohol and tobacco should be indulged in but sparingly. Special attention should be paid to constipation, which often becomes aggravated prior to a relapse.

During a relapse the patient should be confined to bed at least for a week, but preferably longer, and the diet should be light.

Medicinal Treatment.

Arsenic is the drug that has been used for many years past in the treatment of this disease. It can be administered orally in the form of liquor arsenicalis, commencing with 2 minims thrice daily, gradually increasing the dose so that at the end of three weeks the patient is taking 20–30 minims during the day. At the end of four to five weeks the treatment should be stopped, when mercury and iodides may be substituted. Further courses of arsenic should be given with monthly intervals for several years. Incontinence of urine can be helped by the administration of tincture of belladonna. Painful flexor spasms, which may be troublesome in the later stages of the disease, can be alleviated by the use of hot baths or radiant heat and by a single dose of sodium bromide, gr. 15–20, at night.

Special Forms of Treatment.

In practice such treatment, founded on the assumption that a spirochæte is the causal organism in disseminated sclerosis, is sometimes beneficial, and in a few cases seems to arrest the progress of the disease; but as this form of treatment has been under trial for a comparatively short time, it is too early to judge of its permanent effects. Such treatment is only of use in the early stages of the disease before extensive and irreparable destruction of nervous tissue has taken place. A course of six to eight injections of N.A.B. at weekly intervals may be given, the maximum dose not exceeding 0·6 g. Concurrently mercury should be administered either orally (1 drachm of the liq. hydr. perchlor. thrice daily), by inunction (1 drachm daily), or intramuscularly. Potassium iodide, commencing with gr. 15 and increasing to gr. 30, thrice daily, should also be administered. At the end of the course of N.A.B. the mercury and iodide should be stopped for two or three weeks, and during this time an iron mixture may be substituted. The mercury and iodide should then be resumed, and at the end of a further three or four weeks a further course of N.A.B. should be given. Further courses of treatment should follow with suitable intervals.

Various preparations of organic bismuth compounds have been recently investigated in France in the treatment of syphilis and have been found to possess spirillicidal properties only slightly inferior to those of arsenic. These preparations[1] are given intramuscularly into the buttock. In the treatment of disseminated sclerosis they may be used alternately with N.A.B., or may replace this drug should the individual prove hypersensitive to arsenic. A course consists of 10–12 injections, one or two injections being given each week.

Typhoid Vaccine Treatment.—This non-specific form of treatment, probably allied to protein shock, seems to have a favourable effect in some cases in bringing about a remission. A course of about ten intravenous injections of typhoid vaccine are given at an interval of two days. The first dose is 25 millions, and with each subsequent injection the dose is increased, an effort being made to bring about a moderate rise of temperature after each injection. N.A.B. in small doses may be given concurrently at weekly intervals.

Treatment in the Advanced Stages.—In an advanced case with severe paraplegia any treatment can only be palliative, and the special forms of treatment outlined above are, as a rule, contra-indicated. Arsenic should, however, be given by the mouth.

It is not uncommon to find an hysterical element grafted on to the organic paraplegia. This, if recognised, may be removed by means of persuasion, so enabling the patient to use the limbs more than seemed previously possible. The patient should be encouraged to use the affected limbs, and unless in the final stages every effort should be made to prevent him becoming bed-ridden. Massage is of considerable importance, but even more so are a series of active and passive movements. Electrical treatment is rarely called for and may be injurious. Spasticity may be lessened by passive movements and the application of hot baths or radiant heat. Frequently there is a tendency for contractures to develop in the tendo Achillis; a light aluminium shoe should be worn at night in order to prevent this deformity. Re-educative exercises will lessen incoördination and ataxia. A walking chair may be used in order to give the patient confidence.

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Special Articles.

SOME GENERAL REFLECTIONS ON PUBLIC HEALTH ADMINISTRATION.

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I.

DISTRIBUTION OF LEGAL RESPONSIBILITY BETWEEN CENTRAL AND LOCAL AUTHORITIES.

THE extension of civilisation in all communities and the increasing complexity in the relations between adjacent communities has rendered necessary in every country a review of the conditions of local government. The functions of community government are always found to be divisible into:—

(a) Those matters which affect only individual communities;
(b) those matters which affect several immediately adjacent communities;
(c) those matters which affect in common all communities belonging to one nation.

Of these, (a) and (c) are naturally fairly well defined, while (b) is liable to variations arising from topographical, social, or other conditions.

A brief review of the historical evolution will assist to a comprehension of the basic factors which have produced the present status.

England.

England is the original home of the people of each of the countries discussed, and from England each of these communities derived their traditional conceptions of community government. In the historic evolution of the English constitution, after the country had come definitely under one government, this government consisted of a centralised autocracy, which has become modified by increasing stages, until now each local authority has been granted, by concessions from the central authority, a considerable amount of local self-government. There still, however, persists an indication of the centralisation of power in the obligation (often nominal only) resting upon the local authority to secure the approval of the central authority to many executive acts. At first the subdivision of authority between the central government and the local authority was sufficient for all health purposes, and it remains sufficient still in the case of towns and cities which have a population and a revenue sufficient to maintain an adequate health organisation on modern lines. In the country districts however, with scattered populations and smal revenues, but with most of the public health difficulties in miniature, the maintenance of an adequate health organisation is forming a real administrative problem Moreover, the increasing inter-relationships between contiguous local authorities have introduced problems beyond the solution of any individual local authority Consequently, the county administration, embracing often many local authorities, is becoming invested with public health functions to an increasing degree Not only is this so, but the health authorities ar now considering the advisability of grouping togethe small local rural authorities into health districts within counties.

Virginia.

Virginia was colonised by persons holding tenur by royal favour and persons largely respectful o the established constitutional forms of governmen Necessities, however, of the early development o Virginia forced upon the colonists in the differen districts of the colony a larger measure of self-government than was customary at the time in England and in the development of Virginia local self-government has progressed vigorously until the presen condition is that the degree of authority possessed by the local authority is greater than that possessed by the central authority. Consequently, in the large towns the health organisations are as vigorous as, and possibly more vigorous than, the central authority —the State Health Department—but on the other hand the rural districts are very backward and the central authority is now concerning itself with the development of the backward rural communities.

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[1] Quinby, bismuthyl, and biquinyl are prepared in France: luatol, bismostab, and bismuth metal in England.

Massachusetts.

Massachusetts was founded by the Puritans in a state of fierce revolt against constituted authority, and in the form of government which they adopted for themselves the central authority of any kind was deliberately omitted, a highly individualised form of government being adopted. The same general basis of government exists to-day. Each local community has practically absolute powers of self-government—the central government (the State legislature) being granted further powers only as these are found to be essential to the common good. In health administration it is found that each community is practically a law unto itself, the central authority—the State Department of Health—being largely without power of supervision or direction, and being given power to deal only with functions of government which concern the State as a whole or a number of local authorities in common. It is, however, fully recognised that the modern conditions of social organisation render necessary the endowment of the State authority with greater constitutional powers than it now possesses, and the State Health Department is becoming invested with greater powers, without, however, as yet any recognition of controlling authority over the actions of local authorities. This gradual surrender of power to the central authority—the State Government—can be traced in the form of the existing Massachusetts health laws. The powers and duties of the State Department of Health are specified thus :—

> "The Department shall take cognisance of the interests of life and health among the citizens of the Commonwealth, make sanitary investigations and inquiries relative to the causes of disease, the sources of mortality, and the effects of localities, employments, conditions, and circumstances on the public health. It shall have oversight of inland waters, sources of water-supply, and vaccine institutions. It shall annually examine all main outlets of sewers and drainage of towns of the Commonwealth, and the effect of sewage disposal."

In contrast to this nebulous and indefinite statement of the status of the State Department, the powers of the local authority are thus concisely and comprehensively stated :—

> "Boards of health may make reasonable regulations which shall be published once in a newspaper published in the town. All regulations made hereunder which provide a penalty for violation thereof shall before taking effect be approved by the Attorney-General."

It may be noted that the approval is not to be given by the State Department of Health, but by the Attorney-General.

Notwithstanding this general position which apparently largely secures the independence of the local authority, it has been found necessary from time to time to recognise the domination of the State. This is indicated in two stages by the following related sections of the Health Act :—

> "If small-pox or any other contagious or infectious disease . . . . exists in any place within the Commonwealth the department shall make an investigation thereof, and *shall consult thereon with the local authorities*. It shall have coördinate powers as a board of health, in every town, with the board of health thereof."
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> "Towns may establish and maintain dental, medical, and health clinics, and in connexion therewith *may conduct* campaigns of general education relative to matters of public health."
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> "Every city and every town having a population of ten thousand or more *shall establish* and maintain within its limits a dispensary for the discovery, treatment, and supervision of persons afflicted with tuberculosis. Such dispensaries shall be subject to the regulations of the boards of health of the towns and shall be inspected by and be satisfactory to the department."

The complexities of administration thus produced have been one factor in the creation of the intermediate unit, and the law now reads :—

> "The Commissioner shall divide the State into not more than eight health districts."

Each such district has a district health officer who shall act as the representative of the Commissioner with all the powers possessed by the department itself.

It is apparent that Massachusetts from the most extreme form of local self-government has progressed to the creation of district groups for common needs and of State authority for general needs and for unity of authority. The special mention of supervision of water-supply and sewerage may be here indicated as noteworthy.

North Carolina.

In the State of North Carolina, similar in its history to Virginia, the legal public health code gives evidence of the retention of a constitutional form of centralised government, acting at first against a strong tendency to localisation but subsequently going rather to the other extreme and exhibiting an activity on the part of the central authority in matters of detail which are rightly the concern of the local authority. The powers of the central authority—the State Board of Health—are expressed only a little less vaguely than are those of the State Department of Health in Massachusetts, thus :—

> "The Board of Health shall take cognisance of the health interests of the people of the State, shall make sanitary investigations and inquiries, shall investigate the causes of diseases dangerous to the public health, the sources of mortality, the effect of location, employments, and conditions upon the public health . . . . In times of epidemics, the State Board of Health shall have sanitary jurisdiction in all cities and towns not having regularly organised boards of health and are empowered to make all such regulations as they deem necessary to protect the public health, and to enforce them by suitable penalties."

The powers of the local authority, on the other hand, are briefly but decisively and comprehensively expressed :—

> "The County Board of Health shall have the immediate care and responsibility of the health interests of their county. They shall make such rules and regulations as in their judgment may be necessary to protect and advance the public health."

Notwithstanding this central impotence and local autonomy in the basic legislation, it has been found necessary, as in Massachusetts, to give the central authority paramount jurisdiction in all matters relating to sewerage and water-supply, although the abatement of nuisances remains a function of the local authority. There is, however, seen in the North Carolina code a very curious anomaly—the central authority is entrusted with the supervision of all privies :—

> "The State Board of Health, through its officers and inspectors, shall exercise such supervision over the sanitary construction and maintenance of privies as may be necessary to enforce the provisions of this article . . . . the owner of each privy shall pay to the officer or inspector of the State Board of Health . . . . a license fee of forty cents."

The State of North Carolina provides an example of a statutory code in which the predominant power rests with the local authority and also of an administrative organisation in which it has been realised within recent years that the local authorities were not using these powers. In consequence, abrupt transfer of routine detail to the central authority has occurred, supervision of matters of "State-wide" importance, such as water-supply and sewage, has been placed in the hands of the central authority, and an enlightened State administration is now actively concerned in stimulating the local authority by various ingenious devices to a better realisation and a more efficient discharge of its responsibilities.

New York.

The State of New York, cosmopolitan in its history and cosmogenic in its development, provides an example of legal and administrative indefiniteness which conforms to no general rule. The powers of the central authority—the State Public Health Council—are specified as follows:—

"The Public Health Council shall have power to establish sanitary regulations called the Sanitary Code. The Sanitary Code may deal with any matters affecting the security of life or health or the preservation and improvement of public health in the State of New York. The provisions of the Sanitary Code shall have the force and effect of law. No provision of the Sanitary Code shall relate to the City of New York, and every provision of the Sanitary Code shall apply to and be effective in all portions of the State except the City of New York.

"The provisions of the Sanitary Code shall, in the territory prescribed therefor by the Public Health Council, supersede all local ordinances heretofore or hereafter enacted inconsistent therewith.

"Each city, town, or village may enact sanitary regulations not inconsistent with the Sanitary Code established by the Public Health Council.

"Under the public health law, all local health officers have the power, and it is their duty, to carry into effect the provisions of the public health law and the Sanitary Code.

"The State Commissioner of Health, under the same law, has the power, and it is his duty to exercise general supervision over the work of all local health authorities, except in the City of New York, and to see that the provisions of the public health law and the Sanitary Code are enforced."

The status of the local authority as defined in the Sanitary Code is this:—

"The term 'board of health' or 'local board of health' means the local board, department, or Commissioner of Health, or other body or official of a municipality having the usual powers and duties of the board of health of a municipality."

New York State is a striking instance of a State in which the central authority has paramount powers of wide scope. It is very interesting to find that a great deal of public health advancement is being achieved by this State Council without much resort to legal authority, but almost entirely by example, education, and exhortation.

New South Wales.

New South Wales, founded on a basis of necessary military autocracy in which the good of the community was paramount and the welfare of the individual of little account, has gradually throughout the century and a half of its existence evolved a form of government in which the centralisation of authority still persists to a high degree with a slow release of power into the hands of the local authorities. In the existing form of health administration there is still a greater degree of centralisation than exists in the other Australian States. The following paragraph, from the Health Act, 1915, breathes the old spirit of autocracy which is now rapidly disappearing all over the British Empire:—

"The Board (i.e., the State Central Health Authority) may require the council of a municipality or shire or its officers to do any specified acts in relation to any of the matters mentioned in Part I. of the schedule which might lawfully be done by such council or officers in virtue of any power (except the power to make ordinances or by-laws) conferred or of any duty imposed by any statute, regulations, ordinances, or by-laws, and may in such requirement specify the time within which and the manner in which such acts shall be done.

"If such Council or officers fail to carry out any such requirement as aforesaid, the board may do or cause to be done the said acts, and for that purpose shall have the powers of such council or officers; and thereupon the board may demand the payment to it by the council of any expenses incurred by the board in doing the said acts or causing them to be done. Any regulations, ordinances, or by-laws which relate to any of the matters mentioned in Part I. of the schedule shall, before being made, be submitted to the board. Such regulations, ordinances, or by-laws shall not be made unless the board gives its approval of such of the provisions thereof as relate to the matters aforesaid."

The "matters mentioned in Part I. of the schedule" are:—

"Keeping premises free from offensive or unwholesome matter and the suppression of nuisances arising therefrom. Regulating the storage, sale, conveyance, disposal, and delivery of meat, fish, oysters, and crustacea. Regulating cattle intended for slaughter and regulating abattoirs and slaughter-houses. Sewerage and drainage. The removal of nightsoil, filth, refuse, and garbage, and the destruction of garbage. The construction and situation of privies, the regulation of the degree of closet accommodation. Public urinals, closets, and lavatories. The sanitary requirements of public baths, dressing sheds, and dressing rooms. The regulation and control of common lodging-houses and seamen's boarding-houses. The establishment, control, maintenance, and regulation of infants' milk depôts. The regulation of the interment of the dead.

The central health authority, however, is not so entirely independent as the above quotation might suggest. In the Public Health Act of 1902 there occurs this paragraph:—

"The Board may at any time make a report to the Secretary for Public Works whenever, in its opinion, any danger to public health, or to the health of any persons, could be removed or diminished by the exercise by any water-supply and sewerage board of their powers under any Act . . . . and the Secretary for Public Works shall thereupon proceed as he may think fit."

Victoria.

Victoria, dominated in its earliest years by the influence of New South Wales, has undergone development in a different direction. At an early stage in its career certain local communities revolted against the arbitrary exercise of central authority, and there has consequently developed in Victoria a form of government in which the local authorities exercise in practice a considerable degree of self-government. It will be of interest to quote certain sections of the Health Act of the State of Victoria. The specifications of the powers of the central authority—(i.e., the Commission of Public Health) are as follow:—

"In addition to any other powers and duties of the Commission, the Commissioner may exercise all or any of the following duties: (*a*) To promote the prevention, limitation, and suppression of infectious and preventable diseases. (*b*) To report to the Minister upon matters affecting the public health and upon any amendments which it thinks advisable in the law relating thereto and upon matters referred to it by the Minister. (*c*) To promote or carry out researches and investigations and to make inquiries in relation to matters concerning the public health and the prevention of treatment of disease. (*d*) To publish reports, information, and advice concerning the public health, and in particular concerning the prevention and control of disease and the education of the public in the preservation of health. (*e*) To advise and assist councils in regard to matters affecting the public health. (*f*) To prepare regulations under this Act for submission to the Governor-in-Council. (*g*) To prepare model by-laws for adoption by councils pursuant to this Act."

In order to meet any urgent contingency the Commission is invested with special powers:—

"In any emergency or sudden necessity (of the existence of which emergency or necessity the Commission shall be sole and final judge) the Commission may for the purposes of this Act exercise and perform in any part of Victoria all or any of the powers and duties of a council."

To provide for decentralisation of the administrative functions of the Commission provision is made for the appointment of district health officers whose function are defined as follow:—

"Every district health officer shall: (*a*) Be subject to the directions of the chief health officer; (*b*) report quarterly and also annually to the chief health officer on the public health and sanitary circumstances of the health area; (*c*) make to the chief health officer as occasion requires such suggestions as the district health officer thinks desirable for more effectually promoting the objects of this Act; (*d*) advise and assist as he deems fit medical officers of health and inspectors of councils having jurisdiction in the health area and any part thereof; (*e*) exercise such powers and duties to the chief health officer as are assigned to him under this Act by the chief health officer and perform such duties as are required by the Commission or as are prescribed; (*f*) perform such duties in connexion with the medical inspection of and the promotion of the health of school-children as are prescribed."

Notwithstanding that the duties as here prescribed consist largely of supervision of a paternal nature there are definite powers of compulsory direction. For example, the Commissioner may enforce the appointment of a medical officer of health by any council; the Commission may make regulations "generally, carrying into effect the purposes of the Act"; and it has reserve powers of compulsion over any council which fails to discharge any of the duties statutorily prescribed.

While there is in Victoria very extensive local autonomy, there is also comprehensive central direction. This relationship is well-illustrated in the following clause:—

> "Every council (*a*) may, and when required by the Commission shall make or adopt by-laws for all or any of the purposes for or with respect to which such council is authorised or required to make by-laws under the Act; and (*b*) shall when so required by the Commission revoke, rescind, amend, or vary or suspend the operation of any by-law.
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> "All by-laws made or adopted by a council under this Act: (*a*) shall be submitted to the Commission; (*b*) shall be subject to the approval of the Governor-in-Council; (*c*) may be revoked by order of the Governor-in-Council.

New Zealand.

New Zealand was at first colonised at separate points by communities with little in common, each having a practically independent form of government. Effective central government has only gradually evolved. In 1900 was passed the Health Act, which to a very large degree centralised authority and rendered all health administration practically independent of local authorities; but this was found to be unsatisfactory, and in 1920 the legal health code was revised. Now responsibility in most matters of health administration is placed directly upon local authorities. This basis of local independence, which is at the root of the New Zealand system of government, has led each of the local communities to acknowledge its responsibilities to an extent unfamiliar in Australia, and is the largest factor in producing the advanced state of progress in public health in New Zealand due to this local independence of spirit. It is probably accurate to say that every town of more than 1000 population has a modern water-supply and a modern water-carried system of sewerage. This spirit of local self-reliance has also been an important element in the success of the Plunkett Society in New Zealand.

The Need for Modification of Existing Arrangements.

It is clear that all of these English-speaking countries, with English tradition as a foundation, have evolved towards an increasing local self-government; but the distribution of authority between the central authority and the local authority has taken different forms in different countries. In England there is the nearest approach to administrative regularity with wide powers of local autonomy and general powers of control and supervision by the central authority. But even in England the evolution of the public health system has produced anomalies—the distribution of health functions between the local authority and the county not being such as to satisfy many whose opinion is valuable. Moreover, the equipment and organisation of efficient public health administration to-day are beyond the resources of many of the 649 rural district councils, and the necessity for finding some more satisfactory system of organisation and for expressing such in the legal code is becoming increasingly apparent.

From these examples it is clear that whether health administration started from a centralised autocracy or from localised autonomy, all governmental systems are reaching, by different paths, a type of health administration more or less uniform. The routine local functions, principally control of the environment, are the concern of the local authority, however large or small. The general direction of health policy, a paternal supervision, and the control of matters of common application are the duty of the central authority. It is in relation to the intermediate unit that confusion exists, and an analytical contemplation of the whole field impresses one with the conviction that difficulty mainly arises from the increasing range of matters of individual hygiene constantly being brought within the scope of official public health administration.

A recent survey of many practical attempts to codify this whole problem in legal expression as well as in administrative experiment has confirmed my opinion that a general review of the administrative public health system, at least in English-speaking countries, is overdue. The excessive attention recently paid to matters of individual hygiene, to "campaigns," "demonstrations," and the like, has obscured the necessity for progressive order and good government marching in step with other progress—and legal and administrative confusion is imminent where it has not already occurred. A definition of functions, possibly a modification of both the legal code and the administrative systems, is required, and particularly it is necessary that the diffusion of functions among many authorities shall cease and a logical system of graded responsibility be introduced.

The State of Ohio, U.S.A., claims to have made a practical step towards the reduction of the confusion. Under the old system there were 1300 townships and 700 towns and cities (with a population of 5000 or over) with some sort of county organisation, but this county organisation did not have any health administrative functions. Under the present system there are 86 counties with good health organisation. All of these are doing what the law says they shall do, and many of these are doing in addition what the law says they may do.

The Commonwealth Government in Australia has just appointed a Royal Commission to suggest an organised scheme of rational progress with defined responsibility distributed amongst the different grades of governmental units, and it is expected that great advances will result from the work of this Commission.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(*Continued from p. 37.*)

FRIENDLY SOCIETIES' MEDICAL ALLIANCE.

(App. LIII. and Q. 16346–16513.) The Friendly Societies' Medical Alliance represents the majority of the medical institutions approved under the Insurance Act for giving treatment to insured persons as an alternative to the panel system. The Ministry of Health have always held that they had no power to approve any institution not existing at the date of the passing of the National Insurance Act, 1911.

The principal contention of the Alliance in the evidence given by Mr. S. A. Syddall and Mr. Samuel Pride was that facilities should be provided for the recognition of newly-formed institutions and the extension of the radius of existing institutions throughout industrial districts by the opening of branch surgeries. It was also claimed that as an insured person may change at any time from one doctor's list to another, a similar right of change between an approved institution and an insurance practitioner ought to exist instead of the present arrangement under which an insured person can only change over at half-yearly intervals.

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* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247–8); The Provision of Medical Benefit (Feb. 7th, pp. 301–3; Feb. 14th, pp. 355–6; Feb. 21st, pp. 403–5); Financial Provisions of the Act (Feb. 28th, pp. 454–7); Medical Certification and the Regional Medical Staff (March 7th, pp. 508–9); The Approved Societies and the Money Benefits (March 14th, pp. 564–5; March 21st, pp. 623–4); Evidence of the Hearts of Oak Society (March 28th, pp. 677–9); Evidence of the National Conference of Industrial Assurance Approved Societies and of the Manchester Unity Approved Society (April 4th, pp. 731–3); Evidence of Independent Order of Rechabites, of Rational Association Friendly Society, and of Miners' Societies (April 11th, pp. 784–6; April 18th, p. 839); Evidence of Mr. Alban Gordon (April 18th, pp. 839–40); Evidence of Joint Committee of Approved Societies, of Stock Exchange and Lloyds' Health Insurance Societies, and of Group of Catholic Approved Societies (April 25th, pp. 889–91); Evidence of the National Insurance Beneficent Society (May 2nd, pp. 943–4); Evidence of the British Medical Association (May 9th, pp. 993–5); Evidence of the British Dental Association and other Dental Organisations (May 16th, pp. 1044–6); Evidence of the Insurance Committees (May 23rd, pp. 1097–8); Evidence of Various Approved Societies (May 30th, pp. 1135–6); Evidence of the British Medical Association (June 6th, pp. 1184–6; June 13th, pp. 1248–50; June 20th, pp. 1316–6); Evidence of other Medical Bodies (June 20th, p. 1316; June 27th, p. 1348); Individual Evidence (June 27th, p. 1348); Medical Services in the Factory, Ministry of Health Inquiry Room, Evidence of National Sailors' and Firemen's Union and of Loyal Order of Ancient Shepherds (July 4th, p. 36).

The total adult membership of these institutions, including insured and uninsured, has declined from 238,000 in 1911 to 100,000 in 1924, and it was pointed out to the witnesses that this hardly appeared to suggest that the institution system was so popular or advantageous to the insured as to justify the case for their extension. The general burden of the evidence so far as this point is concerned seems to be that the institutions had not received fair treatment, and that as they were pioneers in putting something better in the place of the old discredited system of club doctoring and in providing efficient surgery and waiting-room accommodation, they were justified on merits in being more freely established for the treatment of the insured.

In reply to a question as to what an insured person would lose if a partnership or team of doctors were available for him as compared with an institution where three or four doctors were employed, Mr. Pride said that the insured person would lose control.

> (Q. 16163.) We think we have a capital arrangement in our institutions. They are controlled by what are called lay committees, but they are composed practically, to the extent of 60 or 80 per cent., of insured persons, and they have a voice immediately in the direction and policy of the institution. They certainly do not with regard to the panel doctor, and you do not find a great many insured persons on insurance committees.

In regard to the investigation of complaints, the witnesses said that the rules of institutions provided the necessary machinery, but that they were quite prepared to accept the same machinery as that applied to panel doctors.

SOUTH WALES AND MONMOUTHSHIRE ALLIANCE OF MEDICAL AID SOCIETIES.

(App. LV. and Q. 16707–926.) The general purport of this evidence, given by Mr. Walter Conway and Mr. Evan Pugh, was the same as that of the Friendly Societies' Medical Alliance—i.e., that the embargo on the approval of new medical institutions should be removed, and that the administrative and financial conditions under which they work should be revised in their favour. It was also asserted by these witnesses that the insurance committees by their requirements interfered with and hampered the institutions on their voluntary side.

The members of the South Wales institutions are, to a large extent, miners, and under a system of payment of a poundage rate on their wages they secure treatment for their families and put up sufficient funds to cover such things as operations, dentistry, and ophthalmic treatment. The witnesses contended that for systems under which such a comprehensive organised effort was possible there should be every encouragement rather than the hampering conditions which at present obtained. They denied that there was any canvassing for members, and as regards any complaints against a doctor, they said that—

> (Q. 16782.) Instead of the committee taking it up and dealing with it from what may be called the layman's point of view, we always approach the chief medical officer and let him deal with the matter and discuss it from the medical point of view. If there is anything to be said or done we leave it to him to do it.

With regard to the salaries paid, they said that they were willing to compare the amounts paid by the institutions to their doctors with the amounts paid by the doctors themselves to their assistants, and to stand or fall by the comparison.

FRIENDLY SOCIETIES' MEDICAL OFFICERS' UNION.

(App. LIV.; Q. 16514–16706.) This Union was formed to protect the interests of the medical officers of institutions who felt that they were unfairly treated by the Friendly Societies' Medical Alliance. Dr. D. Holmes, Dr. John Roberts, and Dr. A. Hamilton gave evidence. Amongst other recommendations, they asked that medical officers of institutions should be liable to answer personally in any case of complaint to the duly constituted tribunals for panel practitioners, and that the amount of remuneration paid to medical officers for the panel work should be subject to approval by the Ministry of Health.

Their severe criticism of the way in which these institutions were controlled, with two or three exceptions, led a member of the Commission to ask whether it was really consistent on their part to urge the continuance of this system. The reply was that the system needed reforming and that what they wanted especially to get rid of was the lay control. One of the institutions excepted from their strictures was the Coventry Provident Institution, where the doctors have always had a voice in the management.

ASSOCIATION OF APPROVED SOCIETIES.

(App. XLV. and Q. 14251–14500.) This Association represents 150 societies of various types, with a total membership of 1,500,000. Mr. J. E. Hilton, Mr. Robert Smith, and Mr. F. A. Goodwin gave evidence.

Their recommendations in regard to medical benefit included a suggestion that the capitation fee of insured persons who had not selected a doctor should be applied to the provision of specialist and consultant facilities; another proposal was that members incapable of work should be requested to attend morning surgeries and so relieve the evening congestion.

A good deal of the oral evidence was devoted to the suggested merits of the system of payment by attendance over the ordinary capitation system, and of the merits of the Spahlinger treatment for tuberculosis, which the witnesses appeared to consider that the Ministry of Health and the General Medical Council were cold shouldering. Sir Humphry Rolleston said that he was inclined to expostulate against the suggestion that a doctor would not use a remedy to save the life of a patient unless it was guaranteed or authorised by the General Medical Council.

With regard to maternity benefit, it was said that nearly the whole of the cost of maternity benefit has now to be paid to the doctors, leaving the mother with little or nothing to meet other necessary expenses. They therefore advocated that fees payable for attendance by doctor or midwife should be a statutory charge on the general medical fund, and that a fee of £1 1s. be paid, the member being entitled to choose service of midwife or doctor.

STANDING COMMITTEE OF SCOTTISH INSURED WOMEN.

(App. XLVI.; Q. 14501–14602.) The evidence given on behalf of this Committee by Miss Amy Cameron and Miss Margaret Hamilton included the following suggestions:—

1. That definite provision should be made for the payment of sickness benefit to insured women during the four weeks immediately prior to confinement on the production of a medical certificate.
2. That when an insured woman marries, the fact of her marriage should make no difference to her position in insurance, and that she should be entitled to a free year's insurance as in the case of the insured in general.
3. That attendance at a confinement should not be included in medical benefit. It was, in fact, a matter for consideration whether the whole question of provision for maternity should not be dealt with quite apart from the National Health Insurance Act.

The Committee is not in favour of extending medical benefit to the dependants of insured persons on account of the difficulty of proving dependency, and also on the ground that the necessary increase of contributions would be an unfair tax on a very large number of insured women who would never benefit by the extension.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

(App. LVI. and Q. 16927–17126.) Dr. R. A. Lyster, President of the Society, and Dr. J. J. Buchan, of Bradford, said that while the Society fully recognised that much of the improvement in the social and economic and health conditions of the people is the outcome, more or less indirect, of the National Health Insurance scheme, no real attempt has been made so far to attain many of the most important objects of the original scheme. It has become evident that the present system of National Health Insurance suffers great limitations in its possibility for promoting health, and that profound changes are required if the improvement in the health of the people is to continue to be aided and not impeded by it.

The relationship of the work under the National Health Insurance scheme to that done by local authorities should be of a most intimate nature, because (*a*) the work of local authorities in preventing sickness and physical incapacity and ameliorating disease reduces the demands on National Health Insurance; and (*b*) the material assistance and medical treatment provided promotes the general health of the community.

The witnesses suggested that the voluntary groupings of insured persons in approved societies for the purpose of controlling the funds at present available for health insurance is defective and requires regulation and amendment. In regard to insurance committees, the evidence recites:—

> (App. LVI., para 7.) That these committees have certain general public duties, but they have failed to be efficient instruments in the promotion of better health conditions on account of (*a*) the very indefinite character of their duties; (*b*) their very peculiar constitution which results in their being composed, to a considerable extent, of men and women without a sense of responsibility to the public at large; and (*c*) the disregard of a public for a body which has never been representative of them. Insurance committees are, as separate bodies corporate, no longer required. Their duties would be more efficiently carried out by the local health authority.

The present duties of insurance committees in relation to propaganda and education in matters affecting health have been very fitfully carried out, and these duties could with advantage be placed on local authorities. As to maternity benefit, the witnesses thought that the only practical method by which this can be administered in the interests of the mother and child is by requiring local authorities to administer it through their statutory maternity and child welfare committees.

It is the view of the Society that the scope of medical benefit should be greatly extended and its administration transferred to the local authorities; that the advantages of medical benefit as extended should, as far as possible, be made available to the dependants of insured persons, and should also be made available to the poor, the Poor-law medical system being abolished.

For the financing of such an extensive scheme they contemplate that the present Exchequer grant for all services under the Insurance Act should be made available as a nucleus for the enlarged medical service locally administered. The Society believe that medical practitioners should in the future have a direct interest in maintaining the patients' health. Varying payments should, therefore, be made to medical practitioners for work in this direction, the funds for such payments being drawn from any saving resulting from decreased sickness or disablement payments. Up to the present there has been no special inducement for preventive work.

ROYAL MEDICAL BENEVOLENT FUND OF IRELAND. At the recent annual meeting of the Fund, held at the Royal College of Physicians of Ireland, Sir William J. Thompson presided. The annual report showed that the amount disbursed in grants, of which there were 80 in the year, was £1755, as compared with £1540 in 1923–24. The increase of the general fund from all sources amounted to £2109 odd, including £142 15*s.* 10*d.* income-tax refunded for two years. Dividends and interest yielded an increased income of £18 19*s.* 2*d.* Subscriptions paid through branches, including those of the Dublin area, showed an increase of £21 9*s.* 6*d.*, while those paid through the central treasurer had increased by £20 5*s.* No legacies were received during the year, and no addition was made to the invested capital of the Fund.

SUMMER SCHOOL OF MATERNITY AND CHILD WELFARE.

THE National Baby Week Council is to be congratulated on the success of its summer school. The proceedings were opened on July 1st by Lord Astor, Chairman of the Council, who read a message from the Queen expressing her warm interest in the movement, and wishing success to the present effort. About 200 delegates from statutory bodies and voluntary societies were present. The method adopted was to have the subject expounded in the first place by various experts and to follow this by a discussion as to how far the views expressed could be utilised for the benefit of the mothers and babies of the country.

The Psychology of Mothers and Children.

Prof. William Brown, Wilde Reader in Mental Philosophy, Oxford, dealt with the foundations of character. He deprecated the tendency, in the present state of our knowledge, to attach exaggerated importance to the action and interaction of the endocrine glands, and explained the principles of psycho-analysis. He pleaded that truth, beauty, and goodness should be rendered attractive to children, that fear and jealousy should be kept out of their education, and that an effort should be made to promote union with the spirit of the universe from the cradle to the grave.

The psychology of the expectant mother was dealt with by Dr. M. D. Eder, of the infant by Dr. Eric Pritchard, of the toddler by Dr. J. A. Hadfield, and of the abnormal child by Dr. A. F. Tredgold. Some of the points made by the various lecturers were: The expectant mother is best helped by allowing her ample leisure for her occupations and work, but when she is in psychological distress an endeavour should be made to arrive at the source of the trouble, or in other words, to make the unconscious motives conscious. The baby has a soul and a personality as soon as it is born, and its mental state should be studied by its reaction to stimuli. For example, intractable crying should be dealt with by investigating the cause of the crying. At the age of 2 a child is full of impulses, for all of which a form of expression must be found; they should never be repressed. Rightly treated the self-willed child becomes the strong-willed man or woman. From 3 to 4 years of age the child begins to learn self-mastery and self-discipline from within by the desire for achievement and the possession of ideals. At first the ideals are acquired from the parents, later they become the child's own. Hence the importance of the behaviour of the parents in order to prevent the acquisition of wrong ideals. The child of weak impulses may be too amenable; the self-willed child who has been crushed may develop into one with a morbid desire to hurt or with a want of self-confidence. The criminal child is one which has acquired, not inherited, wrong ideals. It is better to train a child by giving it a choice than by giving it orders. Children show persistency at a very early age if given liberty and allowed to find something which interests them. A child's achievements should not be praised overmuch. Abnormality in children may be divided into four classes—viz., abnormality in instincts, feelings, intellect, and intelligence. Defects in instinct may interfere with sucking or self-preservation. Combative, acquisitive, and sexual instincts may be exaggerated and another outlet must be found for them; hence the need for more playing grounds. Feelings and the capacity for emotion may be so exaggerated as to swamp the judgment and the control of the consciousness. We have tests for moral perception but not for moral sense. Some people only have a verbal morality and never develop a moral sense. Dull and backward children are a distinct class. The dull, the feeble-minded, the imbeciles, and the idiots are grades of the abnormal. Some children develop functions early (precocious), others late (backward). Some children are backward as a result of illness. Intellect is to be distinguished from intelligence; many people have any amount of learning but are incapable of applying it. At the opening of the discussion Dr. Maria Montessori stressed the importance of *the early years of life, and of endeavouring to bring* the child into social life from the first and not to leave it isolated.

Maternal and Child Psychology at Clinics.

The two practical suggestions which emerged from the discussion were the value of periodical talks at the centres with groups of mothers on the treatment and upbringing of their children, and talks with individual expectant mothers about their moods and mental troubles. Dr. Alice Hutchison, of the Tavistock Clinic and Great Ormond-street Hospital, gave her experience of such monthly talks. When they had special evenings for the talks the attendance was poor; lately they had been more successful by adopting the practice of occasionally closing the clinic early so as to give time for a talk. Dr. Grace Calver related her encouraging experience of talks to expectant mothers. Lady Erleigh pointed out the importance of thoroughly investigating the cause when a child did not fit into its family environment. If a child was persistently naughty, the mother should say to herself, "What is wrong with me?" One speaker thought psychology was an unfortunate word. The general impression seemed to be, however, that it was a convenient word to retain for the use of the workers in the movement, as long as it was clearly understood that it implied "the proper handling of human beings as individuals and not as herds."

The Problem of Maternal Mortality.

The third and fourth days of the School were devoted to the consideration of maternal mortality and morbidity, under the chairmanship of Sir Arthur Newsholme. The subject was ably reviewed at the outset by Dame Janet Campbell, and various aspects of the subject were dealt with by other lecturers. Dr. A. E. Giles spoke on preventive medical measures and Dr. Mabel Brodie (welfare medical officer, Durham County) on the social aspect of preventive measures. Dr. R. A. Lyster dealt with the midwives' part, and the point of view of the medical officer of health was considered broadly in a paper by Prof. E. W. Hope.

In the discussion which followed it was made clearly evident that we have a very long journey to travel before we reach a satisfactory midwifery service for the country. Some of the points emphasised were the quite inadequate instruction in obstetrics received by the medical student, the need for better education of the midwives, and for a great extension of antenatal clinics conducted by medical practitioners with an expert knowledge of obstetrics. Dr. S. G. Moore claimed good results for the voluntary notification of pregnancy in force in Huddersfield. Since 1916 the maternal mortality in childbirth in Huddersfield had been 5·01 per 1000 births, but it had been only 2·50 among the "notified" as compared with 6·18 among the "unnotified." Dr. A. F. G. Spinks (Newcastle-upon-Tyne) was also in favour of the notification of pregnancy. Sir Arthur Newsholme deprecated pessimism and pointed to the improvement since the Midwives Act of 1902 came into operation. He also referred to the mistake made when the administration of maternity benefit was put into the hands of insurance committees instead of into the hands of the sanitary authorities. Dr. Harold Waller was very emphatic in his condemnation of the present haphazard ill-organised midwifery service. He said that there was lack of organisation among the London maternity hospitals. Every borough should have its lying-in hospital beds with a complete obstetrical staff for dealing with in-patients and patients treated at home. The women of this country had forced an unwilling medical profession to take measures to save the lives of infants; they must be prepared to do the same for the sake of the mothers. Dr. Elizabeth Macrory referred to the approaching transfer of the Poor-law hospitals, and suggested that each of these hospitals should have wards allotted to maternity work, staffed by skilled obstetricians, who would conduct antenatal clinics *and act as consultants both to general practitioners* and to midwives. Dr. Dunstan Brewer claimed good results in Swindon from the early investigation, with the coöperation of the practitioner, of puerperal rises of temperature. During the last five years they had had 5000 births in Swindon and no deaths from puerperal sepsis. As a rule, when a rise of temperature occurred during the puerperium doctors and midwives tried to "explain it away," not to explain it. Miss Rosalind Paget put forward suggestions on behalf of the Midwives' Institute: 1. Birth notifications to state the name of the person who actually delivered the patient. 2. A post-mortem to be held on every woman who dies at childbirth. 3. Internal examinations to be made only by medical practitioners or certified midwives. 4. All medical officers of health in dealing with childbirth mortality to be asked to differentiate between doctors' and midwives' cases. 5. Doctors to be asked to employ midwives as maternity nurses. Midwives were feeling the competition caused by the establishment of so many maternity hospitals. 6. The administration and staffing of many maternity homes needs drastic amendment. 7. There is a lack of good consultants for midwives.

CANADIAN PUBLIC HEALTH ASSOCIATION:

THE MILK SITUATION IN CANADA.

(FROM OUR OWN CORRESPONDENT).

AT the fourteenth annual conference of the Canadian Public Health Association, held in Montreal last month for two days, under the chairmanship of Dr. A. Lessard, Director of the Provincial Bureau of Health, Quebec, the subject of infant welfare was discussed in almost all its aspects, but the subject of perhaps the most general interest was the reading and discussion of the report on the milk situation in Canada by a committee of the Canadian Public Health Association. The committee was appointed on Dec. 1st, 1924, to make a study of "milk problems" and to report the findings and recommendations of the committee at the next annual meeting of the Association. The committee named was as follows: Dr. M. M. Seymour (chairman), Regina; Dr. T. A. Starkey, Montreal; Dr. J. A. Amyot, Ottawa; Dr. H. W. Hill, London; Dr. C. J. C. O. Hastings, Toronto; Dr. L. L. Demers, Montreal; Dr. A. J. G. Hood, Montreal; Dr. A. J. Douglas, Winnipeg; Dr. Arthur Wilson, Saskatoon; Dr. F. T. Underhill, Vancouver; and Dr. R. H. Murray (secretary), Regina. All the members of the committee are provincial and city health officers, with the exception of the secretary and Dr. Starkey, professor of hygiene, McGill University. Among the various points of interest in the report it may be noted that the average consumption of 21 Canadian towns which have reported on this feature of the supply showed a per capita consumption of 0·71 pint per day. The per capita consumption of the city of New York in 1923 was 0·54 pint per day. While statistics regarding the relationship of disease to milk in Canada are largely lacking, the report states that the fact remains that milk has been the means of causing more disease than any other single food, and consider it as much the duty of the local health authority to safeguard the milk-supply as it is their responsibility to provide a safe water-supply for the citizens.

Pasteurisation.

Perhaps the most instructive part of the report is that which refers to pasteurisation of milk. In

Canada, with the exception of Quebec, Vancouver, and Victoria, all the larger Canadian cities and towns are in favour of compulsory pasteurisation, and the Provincial Health Departments of Quebec, Ontario, and British Columbia have declared their belief in the efficacy of this mode of dealing with milk. However, it is pointed out that, while theoretically it is most desirable that all milk offered for sale to the public be pasteurised, it is difficult, and in fact practically impossible, to carry on pasteurisation as it should be done in communities with populations of less than 5000. The point is emphasised that any attempt at commercial or unscientific pasteurisation is worse than no pasteurisation, inasmuch as it tends to create a false sense of security on the part of the consumer. According to this report, the consensus of public opinion to-day is that the milk supplied to all urban centres should be pasteurised. But if a city or town is not sufficiently large to warrant the establishment of a modern pasteurising plant, other means must be found to protect the supply or to provide such a plant. It is the opinion of members of the committee that the public must be educated to appreciate the necessity for pasteurisation of milk-supplies, and the question is how the public is to be educated. Various suggestions are made.

Education of the Public.

It would appear, says the report, that the first step towards introducing successfully any sanitary reform in Canadian communities is not so much the education of the public as the education of the medical profession, by whom the public still seem to be guided in such matters, rather than by public health officials. Therefore the committee recommend intensive and continuous propaganda in this direction by every available agency. Testing of herds by tuberculin is recommended for rural districts, although the committee state that it must be clearly understood that tuberculin testing is not an efficient substitute for pasteurisation, and public health authorities must seek to correct the idea which is growing in the public mind in Canada that pasteurisation and tuberculin testing are alternative methods of protecting milk-supplies. The vexed question of certified milk is reported on by the committee, but the matter appears to be in so confused a state that no reliable data are forthcoming, and consequently no definite statements are made. The question, too, of inspection and laboratory control in Canada is unsatisfactory. The report says: "It is doubtful if there is any municipality in Canada with a population of less than 3000 which has a trained dairy inspector to protect the milk-supply."

Conclusions of the Committee.

The conclusions of the committee are that pasteurisation of milk should be encouraged by every practicable means. The following standardised definition for pasteurised milk is recommended by the committee for use throughout Canada: "Pasteurised milk is milk which has been heated to a temperature of not less than 142° F. and not more than 145° F., kept at such temperature for not less than 30 minutes, and then immediately cooled to a temperature of 50° F., and kept at or below this temperature until delivered to the consumer." The committee contend that safeguarding the milk-supply is as much the duty of a municipality as safeguarding the water-supply, and in view of the efficacy of pasteurisation, in their opinion, in preventing outbreaks of milk-borne disease in large centres of population, they hold that municipal authorities should provide and work pasteurisation plants for the benefit of the dwellers in municipalities. This milk report is a valuable and lengthy document, which is well worthy of a close consideration. Its salient feature is its whole-hearted advocacy of pasteurisation, when scientifically carried out, which seems to be regarded by the members of the committee as the only really reliable practicable means at present known of ensuring a fairly pure milk and of warding off disease by the agency of milk.

Among those who read papers at the conference and took part in the discussions on the various matters were Dr. Helen McMurchy, chief of the Division of Child Welfare, Department of Health of Canada; Dr. A. B. Chandler, Child Welfare Association, Montreal; Prof. Raoul Masson, University of Montreal; Hon. Dr. W. F. Roberts, Minister of Health for New Brunswick; Dr. Eugene Gagnon and Dr. A. Plante, Child Hygiene Division, City Health Department, Montreal; Dr. John W. S. McCullough, chief officer of health for Ontario; and Prof. J. G. Fitzgerald, University of Toronto.

Public Health Services.

SCHOOL MEDICAL SERVICE.

STATISTICS from two school medical reports for 1924 are given in the following table:—

Name of district.	No. on roll.	Av. elem. school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.*
Nottingham ..	41,349	37,690	12,204	37,600	13·5
Sheffield.. ..	81,197	72,416	23,485	107,494	17·5

* Excluding dental defects and uncleanliness.

Nottingham.

School medical officers generally will support Dr. E. M. Wyche in his plea for a quiet, well-lighted, warmed, and well-ventilated room in which to examine school-children. The conditions at present under which such examinations take place in nearly all areas are crude and often necessitate a further examination at some distant clinic, entailing a loss of time for the doctor, nurse, and parent as well as a loss of school attendance for the child. Dr. Wyche discusses practically all the scheduled defects and points the way to ameliorate or even eradicate much of the present morbidity. Hypermetropia being the normal condition in childhood will always be with us, but myopia can to a certain extent be checked by early recognition and treatment followed by sound and sensible school hygiene. Defective dentition often takes its origin in the malnutrition of the mother prior to the birth of the child, so prophylaxis starts with the maternity and child welfare scheme. Mr. H. B. Tawse, the aural surgeon, stresses the necessity of early recognition and treatment of morbid throat and nose conditions which can be done by fully coördinating the welfare services with the school work. The altered attitude of the parents towards remedial methods is all to the good. The Board of Education have shown their appreciation of the work already done in Nottingham by appointing it one of the centres for investigating the causes of enlarged tonsils and adenoids.

Statistical evidence of the progressive value of the school medical work is evidenced in comparative tables for the past few years. Uncleanliness has diminished from 15 per cent. in 1921 to 13·3 per cent. in 1924, tonsils and adenoids from 11·9 per cent. in 1918 to 3·5 per cent., ringworm from 725 cases in 1913 to 207 cases in 1924. Dental defects are now 55 per cent. as against 75·6 per cent. in 1918. Scabies and impetigo, the fellows of dirt and neglect, are rapidly diminishing coincident with an increase of self-respect and well-being which go with cleanly and healthy habits.

A new open-air school with accommodation for 140, and up to date in every respect, is now to be added to those already in existence; this will spread the gospel of fresh air and sunlight and bring happiness, health, and vigour to many ailing children. The education committee are now considering the question of supplying an ultra-violet rays machine to augment the work of the open-air schools. The success of a camping holiday during August, 1924, which enabled 209 boys to enjoy the "jolliest week of their lives," has prompted Dr. Wyche to submit to his committee that such a camp be organised every year for a period longer than a month with a proper educational curriculum and that girls should benefit equally with the boys. In an inquiry undertaken by Dr. Wyche and the senior assistant, Dr. A. A. Newth, they found that the average educational gain in one year for dull and backward children taught in special classes was 11·9 months—a very favourable result when we remember that the normal child may be expected to advance educationally 12 months in each year. Averaging results amongst small numbers scarcely gives conclusive proofs, nevertheless the increase in educational attainments amongst individually taught dull and backward children distinguished them from definite mental defectives with whom no such results are obtainable. Tribute is paid to the loyal and helpful coöperation of the teachers, attendance officers, and many voluntary bodies by whose aid much remedial work has been made possible.

Sheffield.

The report of Dr. T. Chetwood contains a large number of interesting points usually summarised in a few concise sentences. The general characteristics of the area seem to be expanding work well carried out with a barely adequate staff and a need for the further extension of institutions like the clinics. The percentage of defects found is only slightly below the average, while the percentage treated (95 per cent.) is strikingly above that of previous years (e.g., 67 per cent. in 1914) and is hardly to be improved upon. The only treatment where efficiency is open to any doubt is that of nose and ear conditions for which no clinic is provided by the authority. A line or two in the introduction gives the welcome information that a local medical committee which is studying epidemic encephalitis has the school medical officer as a member. On this subject the school medical service can contribute greatly to general medical knowledge.

A brief but authoritative account of some special observations shows that in nutrition and weight the Sheffield children are now below the pre-war standard. This is the case in some but not all other areas, and it may be related to the circumstance that Sheffield has more than its fair share of unemployment. Defective vision receives some significant comments, such as the reference to its much greater frequency in secondary schools and the influence of homework.

A special investigation was conducted on the incidence of squint following measles. This was found to have occurred in 53 out of 1978 cases, or roughly 2·7 per cent. The interest was not merely statistical, for the majority of cases received the early treatment that is so essential. Another matter which has not attracted as much attention as it deserves was the condition of spectacles. A sample of boys in a poor school who should have been wearing glasses were seen monthly by Dr. J. H. Campain for six months. It was found that only 48·6 per cent. were wearing satisfactory glasses at every monthly examination, and from our own experience we do not think that these results are very exceptional especially when there are included the instances of glasses bent so as to interfere seriously with the optical centring. Reluctant as we are to suggest fresh burdens for the teachers or nurses, we think that the results of a periodic roll call of spectacle-wearers would amply repay the loss of a few moments' time.

Among infectious diseases chicken-pox has called for more notice than usual owing to the prevalence of modified small-pox in areas bordering on the city. The dental work is unfortunately limited by the somewhat inadequate numbers of dentists, but within the limitations the subject seems to be energetically pursued, with some special attempts to enlighten ignorant parents. At the skin clinic there is noted a very marked diminution of ringworm of a generalised type, attributed to the early diagnosis by the school doctors, nurses, and still more important by the mothers of the children. Special schools are mentioned but seem to contain few children over 14; it will be a great advantage when the promised new school for mentally defective elder boys is set up. Elsewhere this has been found to be a valuable type of school giving the boys stability of character, increase of self-respect, and habits of industry. It is satisfactory to see that dull and backward children are regarded as within the province of the S.M.O.; not only is it his duty to separate them sharply from the mentally defective, but in many cases there are minor defects of the nervous system, sense organs, and the like, which need his special attention.

In conclusion, Dr. Chetwood modestly calls his report imperfect and incomplete. With this statement we are unable to agree. We might wish the report had been longer, but it is certainly not lacking in interest and real value.

MENTAL HOSPITALS SERVICE.

THE annual report of the *East Sussex* County Mental Hospital at *Hellingly* includes the reports of the visiting committee, resident physician, dental surgeon, resident engineer and surveyor, the commissioner of the Board of Control, and the various visiting committees of the guardians and other public bodies concerned with the institution. It concludes with statistical tables showing the movement of the asylum population, the recovery- and death-rate, ætiological factors, and the forms of mental disorder. A visiting ophthalmic surgeon has been appointed, an operating theatre is projected, and it is the intention of the committee to appoint a whole-time pathologist with a trained assistant. The latter is particularly needed for work in connexion with asylum dysentery, which is still a troublesome feature, although the number of cases has diminished during the past year. Apart from a small epidemic of mumps, the staff are able to congratulate themselves on an entire freedom from zymotic disease. The medical superintendent points out the large number of senile cases admitted. The attention of the guardians has already been drawn to the desirability of providing the custodial care, which is all that is required for such people, in the workhouses, thus rendering the patients much happier and leaving the mental hospital accommodation free for recoverable cases. Dr. F. R. P. Taylor gives an interesting table showing the desirability of placing mental patients under treatment as early as possible. This aspect of the work is represented by the attendance of Dr. Taylor at the clinic for nervous disorders at the Princess Alice Memorial Hospital in Eastbourne, although it is desirable that this valuable clinic should reach patients over a wider area of the county than at present. The asylum itself is able to show a satisfactory recovery-rate of 33 per cent. for the males and 42 per cent. for the females. The death-rate, also, reached a record of only 6·6 per cent. in the year. The dietary scale has been revised in a careful and ingenious way, so as to allow ample variety of food without increase in cost. It is satisfactory to note that an increasing proportion of the nursing staff are equipping themselves with the nursing certificate of the Medico-Psychological Association, and the committee has decided to appoint a sister-tutor to aid them in their studies.

The *Cumberland and Westmorland* Mental Hospital is unique in that the greater proportion of its 800 patients are male. This is partly accounted for by the conditions of population, but seems an interesting point that might repay further investigation. The number of admissions during the past year dropped to the lowest on record; most of those were hopeless cases and many of them senile. Nevertheless, a recovery-rate of 42·7 per cent. is recorded—a good figure under the circumstances. The hospital has been free from all epidemic diseases except influenza. The parole system is used with much success as a preliminary to discharge.

The *Cheshire* Mental Hospital at *Parkside* reports a successful year of work with a death-rate of only 6·2 per cent., in spite of epidemics of influenza and some sporadic cases of dysentery and tuberculosis. A particular feature of this hospital is the occupational therapy, which is under the charge of a special worker, and includes all kinds of healthful and useful activities, organised games, drill, raffia-work, rug-making, and so on. 77 patients have been instructed in some kind of handicraft during the year, and the value of such stimulus in the treatment of mental disease is indisputable. 136 male and 60 female patients have been allowed out on parole, and advance has been made in the employment of open-air and hydrotherapeutic methods. Since the publication of the report arc lamps for artificial sunlight treatment have been installed, and new verandahs provided to the wards. In the laboratory a routine investigation of the endocrine system is in progress, and also research on the superficial vascular system and its reactions in mental disease. Several of the nurses have been allowed leave in order to undergo two years' training in general nursing, an experience which must very considerably increase their efficiency as mental nurses. Female nurses have been successfully employed in the sick-wards on the male side. The report includes a note by the chaplain, who pays a tribute to the devotion and patience of the nursing staff. It is clear that Cheshire may congratulate itself on having one of the most progressive mental hospitals in the country.

The *County Borough of Middlesbrough* maintains some 450 patients in its mental hospital; 60 per cent. of these are usefully employed, and parole and day-leave are used as freely as possible before discharge. The institution has been free from dysentery and enteric fever, and has suffered only from the universal influenza. There is at present no dental surgeon, a defect that will, no doubt, be soon remedied. The recovery-rate reaches the figure of 41·7 per cent. and the death-rate 8·4 per cent. At present the work is somewhat handicapped by the need for a pathological laboratory and for an admission ward, in order that new cases may not have to associate with old and incurable patients.

The *City of Leicester* maintains an excellent mental hospital for 900 patients at *West Humberstone*. The year's work has been as successful as such work can ever be, with a recovery-rate of 44·5 per cent. and a death-rate of 6·7 per cent. There has been complete freedom from tuberculosis and zymotic disease. 77 per cent. of the patients are usefully employed, and every variety of entertainment is provided for them. They run a quarterly journal of their own without assistance; 20 per cent. of them wear their own clothes, and the garments provided by the institution show a refreshing individuality in cut and pattern. It has been found possible to allow 40 per cent. out on parole or leave, and only four cases have abused this privilege. A visiting dentist has been in attendance for two years, and is on a fair way to achieving his ideal of clean mouths in all patients. The malarial treatment of general paralysis has resulted in recovery and discharge in 21·7 per cent. and marked improvement in a further 13 per cent. The medical superintendent places biological stress first of all the causes of mental disease, followed by heredity, syphilis, and epilepsy. It is interesting to note that the ratio of insanity to the population of the town is now only 1 : 331, whereas ten years ago it was 1 : 320.

The *County and City of Worcester* Mental Hospital at *Powick* supports 1000 patients. The death-rate during the past year has been 7·58 per cent., partly owing to an epidemic of influenza. The nurses are encouraged to work for the certificate of the Medico-Psychological Association. Parole has been granted to some male patients. The report includes notes by the Anglican and Roman Catholic chaplains, and some interesting statistical tables showing the movement of the hospital populations, the discharges, recoveries and transfers, and causes of death.

The *Glasgow* Royal Asylum presents its 111th report for the year 1924. Its age has not debarred it from keeping abreast with all modern advances in the treatment of mental cases. Voluntary boarders are steadily on the increase and now constitute 50 per cent. of the inmates. Occupational therapy is being extended as rapidly as possible under a skilled instructress, the aim being to make the patients self-supporting. The patients are taking great interest in the work, which includes all kinds of handicrafts, such as chair-covering, basket-making, china-painting, rug-making, &c., and necessitates a sale twice yearly to dispose of the products. A nursing home for incipient cases has been established, and the physician-superintendent urges the need for further coöperation between the profession and public, and education of the latter in the problems of mental disease. Forty-four out of 118 cases admitted had had symptoms for over a year before seeking skilled treatment; the importance of out-patient work, social service, and home care is not yet adequately realised. In Dr. D. K. Henderson's opinion there should be wards for acute mental cases in all general hospitals. The pathological side of the work is looked after in the Western Asylums Laboratory, where research is being conducted on the influence of toxic factors in mental disease, and the effect of combined protein shock and arsenic in general paralysis.

The second report of the *Inspectors of Lunatics for Northern Ireland* is for the year 1923, and deals with 4000 patients in the various asylums of the country. The death-rate has fallen to 8·3 per cent., from the high figure of 12·3 per cent. recorded for 1922. At Antrim it has been found possible to employ an increasing number of inmates, but the staff are not yet adequately trained. Belfast, in common with several English mental hospitals, has tried the experiment of using female nurses in male wards, and is satisfied with their success. Londonderry is handicapped by old and inadequate buildings, and has a death-rate of 10 per cent. The voluntary boarder system does not yet seem to have been adopted in Ireland. The report contains valuable statistics of the causative factors, causes of death, cost of maintenance, &c.

The annual report of the *City of Cardiff* Mental Hospital contains statistical tables, the reports of the visiting committee, medical superintendent and commissioner, and a list of the original papers published by the officers of the institution. An interesting feature of the medical report is the inclusion of observations by the various research workers on the experiments they have conducted. A large series of blood-sugar estimations has been carried out in epileptics and paralytics, and a report has been made to the Medical Research Council on this subject. The effect of adrenalin and of adrenalin with thyroid or thyroxin on the blood-sugar of rabbits has also been studied. The therapeutic effects of tryparsamide were investigated in four cases of dementia paralytica. The examination of gastric digestion in early and recent cases has been continued, and a large number of routine tests have been performed. The estimation of phosphorus and calcium in blood and cerebro-spinal fluid has led to the evolution of a procedure which estimates phosphorus with an error of not more than 5 per cent. The Boltz test is being applied, and seems likely to prove a simple and satisfactory method of diagnosing neuro-syphilis. The treatment of epilepsy by luminal and dialacetin has proved satisfactory. A gynæcologist and rhinologist have been appointed to the staff, and the consulting dentist has made over 500 examinations. There are well-equipped radiographic and hydrotherapeutic departments. The out-patient clinic at the Royal Infirmary is continuing its work, but is handicapped by the lack of any in-patient accommodation. A sister-tutor has been appointed and the control of the male wards has been placed in the hands of the matron.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 27TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 68; scarlet fever 1315; diphtheria, 700; enteric fever, 50; pneumonia, 937; puerperal fever, 20; cerebro-spinal fever, 5; acute poliomyelitis, 1; acute polio-encephalitis, 1; encephalitis lethargica, 19; dysentery, 6; ophthalmia neonatorum, 116. There were no cases of cholera, plague, or typhus fever notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 3 deaths from enteric fever, 93 from measles, 9 from scarlet fever, 58 from whooping-cough, 21 from diphtheria, and 23 from influenza. In London itself the deaths from influenza numbered 2, from whooping-cough 12, and from diphtheria 5.

Obituary.

THOMAS MARK HOVELL, F.R.C.S. EDIN.,

CONSULTING AURAL SURGEON, THE LONDON HOSPITAL.

WE have already announced the death of Mr. Mark Hovell, the well-known laryngologist, which occurred on July 1st at the house of a relative in Ipswich after a somewhat protracted illness.

Thomas Mark Hovell was born in 1853, but until recently his youthful appearance and active manner belied his age. He was the son of Mr. Dennis de Berdt Hovell, a well-known practitioner in the north of London, and in his day President of the Clinical Society. His mother was Mary de Horne, who came of an old Flemish Quaker family, and on both sides he was able to trace an unusually long pedigree. He was the second child in a family of ten, and inherited the family property. He received his education at Guildford Grammar School and later at the medical school of the London Hospital, qualifying as M.R.C.S. in 1875 and taking later the F.R.C.S. of Edinburgh. He decided early in his career to take up the subject of diseases of the nose, throat, and ear, at that time fairly new as a definite specialty, and was elected surgeon to the Golden Square Hospital as quite a young man. At this hospital the leading spirit was Sir Morell Mackenzie, who, in 1887, took charge of the German Crown Prince, later the Emperor Frederick III. of Germany, whose throat symptoms were already causing great anxiety. This anxiety, in the political circumstances of the time, was shared by the whole world, and the circumstances imparted into the treatment of the Crown Prince a most unhappy element of fierce quarrelling. There is no need to recall the acrimonious differences of opinion which manifested themselves between the patient's medical attendants during the various stages of a disease which ultimately proved fatal. In those disputes Hovell was only implicated in a secondary position, when he accepted Mackenzie's invitation to take resident charge of the distinguished patient, whom he accompanied to San Remo and later to Berlin, where he was in daily and hourly attendance until the end came in the summer of 1888. His records of the progressive condition formed the clinical history of the case, but their evidence, as far as they proved the contentions one way or the other of those who disputed both the diagnosis and the treatment, he left for evaluation to the protagonists in the dispute. He took little or no part in the arguments, but the skill and sympathy with which he discharged his duties as resident surgeon were admitted on all sides, and were specially acknowledged by the patient who conferred upon Hovell the German Order of the Crown immediately upon his accession to the throne.

Upon his return to England Hovell was appointed lecturer on diseases of the throat at the London Hospital, was regularly attached to the staff of the hospital for many years as aural surgeon, and was appointed consulting surgeon at the expiration of his active functions. He was also consulting surgeon to the Golden Square Hospital, and wrote out of his wide personal experiences a treatise on diseases of the ear and naso-pharynx, which was a standard work for many years. He acquired a large consulting practice and his advice was much valued by practitioners, who saw in him a man of much and varied personal experience. In private life he was the kindest and most hospitable of men.

Outside his medical work he conducted for many years an intensive inquiry into the manners of rats. His book "Rats and How to Destroy Them," which was published last year, is a record of patient study extending over some 30 years, and reveals an intimate knowledge of the habits of rats in most conceivable circumstances, showing also how in each particular their persistent assaults can be defeated.

Mr. Mark Hovell married in 1905 the Hon. Margaret Bateman-Hanbury, a daughter of the second Lord Bateman, by whom he had one son.

CHARLES FORBES HARFORD, M.D. CAMB.

Dr. C. F. Harford, the founder and first Principal of Livingstone College, Leyton, died suddenly on July 4th at his residence in Harpenden, aged 60. The youngest son of the late Canon Harford-Battersby, Charles Harford was educated at Repton and Trinity College, Cambridge, and studied medicine at St. Thomas's Hospital, London. He obtained the M.R.C.S. and L.R.C.P. in 1889, and graduated M.B., Ch.B. Camb. in the same year, gaining the M.D. in 1892. On qualifying Dr. Harford went as a medical missionary of the Church Missionary Society to Lokoja, West Africa, returning in 1893 to found the College that offers a training in the elements of hygiene to missionaries before leaving the country. In medicine he devoted himself particularly to the specialty of ophthalmology, and at one time held the posts of ophthalmic assistant at St. Thomas's Hospital and at the Royal London Ophthalmic Hospital. During the war he acted as ophthalmic specialist, holding the rank of Captain in the Royal Army Medical Corps, and subsequently gave his services in that capacity to the Ministry of Pensions, Chelsea. At the time of his death he was refraction assistant at St. Bartholomew's Hospital and oculist to the school clinics of the London County Council and the county of Hertfordshire.

A colleague writes of him: "Dr. Harford's unexpected death will be a blow to many besides his intimate friends. The work which he did as honorary secretary of the Ophthalmic Benefit Committee was undertaken for the good not only of his profession, but, as he firmly believed, for that of the public. During the last six months he had become known to many of his fellow ophthalmic surgeons in this connexion, and it is pathetic that he should be taken just at this moment when his efforts appear likely to bear fruit."

Dr. Harford was an enthusiastic advocate of temperance, and for many years was honorary secretary of the Native Races and Liquor Traffic United Committee, and in 1910 was secretary to the Church of England Temperance Society. He also filled the office of joint secretary in the Society of Tropical Medicine and Hygiene. He is survived by his widow and one daughter.

NAVAL MEDICAL COMPASSIONATE FUND.—At the quarterly meeting of the directors of this Fund, held at 68, Victoria-street, London, S.W., on July 7th, Surgeon Vice-Admiral Joseph Chambers, Medical Director-General of the Navy, in the chair, the sum of £65 was distributed among the several applicants.

INTERNATIONAL CONGRESS OF RADIOLOGY.

THE first International Congress of Radiology was held on June 30th and July 1st, 2nd, 3rd, and 4th, at the Central Hall, Westminster, under the presidency of Dr. C. Thurstan Holland.

The Congress was attended by about 350 delegates, hailing from the Argentine, Belgium, Canada, Czecho-Slovakia, Denmark, France, Germany, Hungary, Holland, Iceland, the Irish Free State, Italy, Norway, Poland, Russia, Sweden, Switzerland, and the United States.

FORMAL OPENING BY H.R.H. THE DUKE OF CONNAUGHT.

H.R.H. the Duke of Connaught opened the proceedings and extended a welcome to the foreign delegates in the large hall. Prior to his speech, representatives from each country were introduced to him. The Duke reminded his hearers that it was now 30 years since Rontgen discovered X rays, and said it was a great tribute to the value of this discovery that in 1925 such a large body of medical men and scientists should have met to discuss further developments of it. The use of the rays to detect faults in steel was now an established procedure, and their application to coal was also making progress. In diagnostic and curative ways, too, the rays had given relief to countless thousands, but further research was needed before the value of the rays in the treatment of disease could be accurately assessed. The consuming question in the minds of medical men and scientists was the cause and treatment of cancer, and such meetings as this for the interchange of ideas and experiences could only be for the common good, besides their mission in fostering cordial international relationships. Not all smaller hospitals were able to have an X ray equipment, and he expressed admiration of the effort being made by the British Red Cross Society to provide the services of mobile X ray units, which could be taken to the bedside of patients. His Royal Highness also referred to the recently formed British Institute of Radiology, the aims of which were to promote friendly relations and the exchange of ideas with other radiological centres throughout the world, to look after the interests of all who were associated with radiology, and to organise teaching and research. In France very valuable work was being carried on, largely by the aid of Government grants for the purchase of large quantities of radium, and Belgium was very energetically prosecuting research into the properties and possibilities of these agents; while in Germany there had been established a definite technique for particular diseases. In this city, he said, we had the Radium Institute, which was employing a large quantity of radium; and the Government had placed at the disposal of the Medical Research Council a large quantity of the salt, which was distributed to a number of hospitals and research centres. The British Empire Cancer Campaign had also been interested in radium and X ray research, and had granted considerable sums of money for approved schemes of research and the supply of radium to centres. In addition the Ministry of Health was conducting inquiry into the results of the treatment of cancer, and it was hoped that as a consequence of this large quantities would be placed at the service of the medical profession. In declaring the Congress open, His Royal Highness said he prayed that every success would attend its labours.

Welcome by the Minister of Health.

The Right Hon. Neville Chamberlain, M.P. (Minister of Health), followed with a speech of welcome on behalf of the Government. He said it was not very surprising that this should have been the first international congress on the subject, seeing that radiology was still in its infancy. When Rontgen made his discovery 30 years ago, only those in close touch with scientific questions could have anticipated what that discovery would yield for the service and benefit of mankind. Very considerable progress had been made of recent years in regard to the application of X rays, radium, and sunlight in the diagnosis and treatment of disease; but each new discovery only seemed to raise the curtain a little higher and to reveal the possibility of even further discoveries. He did not believe that real advance could be made except by the interplay of minds which were continually being devoted to these problems. It was the duty and the policy of this country to do all it could to stimulate and encourage research. At the present time radium was both scarce and dear, and until someone showed how it could be made out of house refuse, or beetroot, he supposed there would always be a difficulty in securing a sufficient quantity of the precious substance.

The path of exploration, Mr. Chamberlain said, had always been strewn with wreckage, and often the explorers in the field of radiology had been no exception in that respect. Earlier in the inquiry regarding these substances and sources of power men had fallen victims to dangers which at the time were unsuspected. All honour to those martyrs who had so suffered, some of whom had lost their lives in the work. It was, however, a comfort to those who suffered in the acquisition of knowledge to feel that they had at any rate buoyed the rocks for others, and through them had prevented suffering by many thousands of fellow creatures. He believed that by the holding of such congresses further triumphs for the benefit of humanity would accrue.

Sir Humphry Rolleston expressed the thanks of the Congress to the Duke for his kindness in performing the opening ceremony, and referred to the close association of this Congress with the British Institute of Radiology, which carried on work in this sphere steadily from day to day. The Institute deserved all possible encouragement, as it was a kind of central bureau where all matters concerned with radiology could be stored, discussed, and provided for the use of any medical man desiring it. It was also a centre of instruction for the men who were taking up radiology as their life-work, as a preliminary to taking their diploma. In addition it was to be the home of the Mackenzie Davidson Library, and the site of a museum in memory of the late Sir Archibald Reid, who had done so much for radiology, particularly during the war, and was a moving spirit in the foundation of the Institute. The Institute would also be a meeting place for colleagues from foreign countries, the Dominions, and the Colonies.

The work of the Congress was carried out in three separate sections—Physics, Electrotherapy and Actinotherapy, and Radiology, of which the respective chairmen were Mr. C. E. S. Phillips, Sir Henry Gauvain, and Dr. A. E. Barclay.

INTERNATIONAL UNITS AND STANDARDS FOR X RAY WORK.

This important question was discussed very fully by a combined meeting of the Sections of Physics and Radiology.

Sir William Bragg, F.R.S., in opening the subject, said that in order that a science might progress it had always been necessary to render comparison of results easy. Lord Kelvin had well said that nothing really progressed until it had been put into terms of arithmetic. The subject of X ray standards was beset with real difficulties, perhaps more so than the choice of any other unit which science had had to devise. One of the greatest difficulties was that due to the difference between quantity and quality, the difference between the amount of energy and the wave-length which carried it. Nor was the subject simplified by the occurrence of scattering of the rays and the consequent formation of new beams. These difficulties made it all the more desirable that the workers in all countries should meet and arrive at an understanding as to the best method of comparing the results arrived at. Various countries had already been working at the problem, and he was a member of a standing committee appointed by the Rontgen Society and the Physical Society to study the question. To arrive at such an understanding no undue stress must be laid on any one part, for a standard must be largely a matter of compromise. Three grades could be set out: (1) The determination of a scientific unit; (2) a description of a standard apparatus for making comparisons; (3) a comparison of the results of treatment. The last of these was entirely a hospital matter. There seemed no reason why these three problems should not be attacked together.

Dr. Béclère (Paris) said the erythema dose was a biological unit, and took the place of all the physical units previously employed. But the sensitivity of the skin varied within quite wide limits. This, however, would not be so important in regard to dosage if all radiotherapists had adopted the same average value—i.e., the same "h. e. d." This was found to vary not only in the same university, but also in the same clinic according to the apparatus concerned. He regarded the skin erythema dose as an unfortunate standard; there should be a physical unit, common to all countries. A feature of weakness in the ionometric method was the difference in the various electrometers. The German Rontgen Society adopted a unit which was based on the electrostatic unit, as well as that chosen by Villar. The chief need at the moment was that radiologists in the different countries of the world should admit the necessity of standardisation of dosage, and proceed to elect an international committee to study the question and submit such a working standard, to embrace not only the quantity to be given, but also the quality of the rays.

An International Quantitometric Unit.

Dr. I. Solomon read a paper on this subject, in which he said the ionometric was the best method of measuring X rays. It was necessary to express the quantity of X rays in terms of a dosimetric notation of an objective character. The choice of a quantitometric unit instead of the electrostatic unit, with the definite conditions proposed by Behnken and adopted by the German Radiological Society, was in fact very satisfactory; but Behnken had shown that differences in technique would prevent its generalisation.

Dr. Behnken stated, in German, what were the points of value in his suggestion. A paper was also read which had been sent by Prof. H. Martius and Dr. Grebe, of Bonn, on the dosage of X rays in absolute units, and the quantity of radiation necessary for the production of skin erythema. Experiments with a Behnken chamber on one side, and one with air at atmospheric pressure on the other, and the difference in these two conditions was found to be very slight. Neither was there much difference when chambers of 10 and 25 cm. diameter were used. The difference between the values for the production of skin erythema, however, was one which needed to be cleared up.

Dr. Altschul (Prague) said a dosimetre was required which would indicate the dosage at each moment of the irradiation, and he described an instrument which would measure the work of a beam of rays.

Dr. N. S. Finzi seconded the resolution, calling for a standard unit of X ray dosage. The proposed committee, he said, would have to determine first a physical unit, then, if possible, a biological unit. The first of these could readily be settled if questions of priority and country of origin were left out. It was not the first unit which was required for adoption but the best. The question of a biological unit was a far more difficult one, because of the number of factors which must necessarily come in. The biological unit would probably vary with the wave-length of the radiation employed, and with the time during which it was applied. For example, if one gave half units on two successive days, the result would not be the same as that from one unit given on one day. If radium should be used as the standard, he suggested that all the beta radiations should be got rid of by a strong electromagnet. In some of the measurements which had been made the beta rays as well as the gamma were used. He also suggested that the committee might consider whether the question of kilovolts of the supply—i.e., the wave-length—should be taken into consideration in determining the unit.

The Chairman (Mr. E. S. Phillips) strongly supported the idea of an international committee to set up a standard unit of X ray dosage, and asked for a vote on the abstract principle. This was unanimously favourable.

Prof. Sidney Russ (Middlesex Hospital) said that now the need for a physical standard in X ray work had been established he did not think much delay would ensue in bringing it about. But one or two considerations needed to be cleared up before finality could be expected. Comparison of the general resolutions of the English physicists with those emanating from Germany showed some differences of opinion as to what was most urgently required. It seemed to be generally agreed that what should be measured was the ionisation in air, apart from any secondary phenomena which might take place in the walls of the vessel, or any electrode effect, or any other effect than that produced in the process of ionisation of the air. But if a beam of X rays was allowed to enter this air space and a certain ionisation resulted, it was difficult to know what was going to happen when a totally different beam entered that space. If those two beams gave the same ionisation it must not be concluded that they were of the same intensity. It was necessary to decide definitely upon some wave-length as that to which further intensive measurements must be referred. A very interesting question was that as to what was the best wave-length to take before making use of a general expression.

Prof. Wintz (Erlangen) said an international standard of dosage was necessary not only for exact work, but also for settling scientific controversies. It was better to take a definite and definable physical unit than an arbitrary quantity of radium as the standard. International agreement was necessary on two points: (*a*) the fixing of a physical standard unit for measuring primary radiation, (*b*) laying down principles of measurement for the biological dose. In his own clinic a standard had been in use based upon radium.

Dr. E. A. Owen (National Physical Laboratory) said that since the publication of the first results showing the depth and distribution of Rontgen rays in the human body more experiments had been carried out, and determinations made by the photographic method, as well as by ionisation. There was found to be less scattering of rays around the field in deep doses than for more superficial ones, and the character of the curve in the two was different.

Dr. Glasser (America) said that in his laboratory a large chamber had been used for measurement, and the unit had been measured and practically applied.

Prof. Friedrich (Freiburg) said attempts to measure the X ray energy absorbed within human tissue had not been a success; it was necessary to strive after an absolute physical unit.

Dr. Holfelder (Frankfurt) said he felt suspicious regarding the adoption of any one single ionisation measurement, on account of the number of errors which crept into ionisation measurement. Several must be taken at different times. There was no guarantee of uniformity of the rays used at different places.

Prof. Holthusen (Hamburg) said that in checking two instruments with gamma rays it was not certain that the same results would accrue as with X rays. And it was necessary to distinguish between the unit and the biological effect of a given wave-length.

Prof. Crowther remarked that if the energy of the rays and the wave-length could be measured, the radiation would be known absolutely, both as regards intensity and quality. He hoped to see the unit fixed in terms of radium, and for the reason that the gamma rays of the latter were so penetrating that the ionisation chamber could never be efficiently shielded from them. He trusted that the proposed international committee would adopt something on the lines of the electrostatic unit, as that was quite definite.

Dr. E. C. Ernst declared that the radiologists in America would be only too happy to help forward this work.

A group to work on this matter was decided upon, with Sir William Bragg as chairman.

PROTECTION OF THE WORKER.

Dr. G. W. C. Kaye (National Physical Laboratory, London) opened a discussion on *Protective and Manipulative Methods in Relation to X Rays and Radium* in the Section of Physics. He referred to the birth of a committee for coöperative action emanating from the Royal Society of Medicine and the Rontgen Society, and said the recommendations made by this committee had been widely adopted, and it resulted in a general raising of the standard. One most important result probably was to end the deplorable list of X ray martyrs, and the active support of the Home Office, the Ministry of Pensions, and Ministry of Health had resulted in the extension of the scope of the Workmen's Compensation Act to include lesions caused by exposure to the rays. In a very busy department protection should be much more elaborate than in a department which used the rays only occasionally. In some of their activities the X ray workers could not be completely shielded from irradiation, as some degree of scattered radiation was unavoidable. Various persons showed a different degree of sensibility to the rays, and indeed the same individual differed in his immunity from time to time. Foolhardiness could never be left entirely out of account in dealing with human beings, but the radiologist, realising the danger of dermatitis, possibly cancer, was not likely to tempt Providence in this matter. He did not, however, always appreciate the result of scattered radiation. Rays were given off from the body of a person who was subjected to X rays, and the scattering produced by the air in the room in the vicinity of the X ray tube was something like that of the primary radiation beam. The primary precaution was to surround the X ray bulb with adequate protective material except, just at the appropriate aperture, and in diagnostic work screening was necessary for the protection of the operator. If the scattering was excessive, the operator should be behind a screen or wall, and this scattering rendered inadvisable the use of the cubicle system. Each outfit should be protected by walls extending from floor to ceiling, the floor and ceiling themselves also being protected. The target of the tubes should not be pointed towards the controls. The protecting lead for a strength not exceeding 70,000 volts should be at least 1½ mm. thick, and for 100,000 volts 2 mm. thick, 3 mm. for anything beyond. Usually the manufacturer had risen to the occasion; it was all a matter of design. Dr. Kaye said there was a danger in using gamma rays to test the protection of materials, as these made the protection appear much better than the actual. Always wherever possible the bulb should be surrounded by protective material, and if the latter were lead, it must be adequate for the prevention of sparking. All protective boxes should be tested for leakage. He was surprised that the open bulb was still being used, as in many cases it afforded no protection at all, and where it was employed it was often possible to take a radiogram of the hand in any part of the room. He emphasised the need of providing ventilation of enclosed spaces used in X ray work. Where weight of protective material was a consideration, it was important to remember that lead was the lightest of the protective substances commonly employed. For fluorescent screens not less than 2 mm. of lead was indicated, or 1 mm. for portable screens.

Generous ventilation of the X ray rooms was of an importance only secondary to that of actual physical protection; failing this, workers suffered from depression, headache, nausea. Sometimes it was difficult to persuade even hospital authorities as to the necessity of this open ventilation. He also thought that by means of bright paint on the walls these rooms should be made as cheerful of aspect as possible. The floor space for the radiologist should be adequate, and should be of wood, cork, or rubber. The ceilings should be not less than 11 feet high, and the conductors at least 9 feet from the floor. Efficient earthing of all the metal parts was also important, and the main switches should be readily accessible, and there should be no possibility of their being accidentally cut off. Seven hours was a reasonable day for X ray workers, with Sundays and two half-days weekly off duty, and a month annual holiday. He proposed that steps be taken to secure X ray unification.

Dr. E. A. Owen said that barium plaster showed an absorption of the radiation which varied greatly with the thickness of the material; he illustrated by graphs that with an increased thickness the character of the curve altered. It was now necessary to use very large protective boxes for ships, so that in some cases they had to be moved about by means of tackle. In the Phillips tube the protective device formed part of the bulb itself, which was the ideal principle.

Mr. Hector Pilon (Paris) read a paper on Protection in Radiotherapy, in which he reminded the meeting that the X ray bulb radiated in all directions, and therefore enclosure in a box was necessary. But all the boxes were of large size. He illustrated and explained an oil-immersed tube, of the same size as the Coolidge universal tube, and which could withstand 200,000 volts on the direct current. Every part of the glass wall was cooled and had the same temperature, thus the life of the tube was lengthened as no part of it had a larger share of work than did other parts. If the box was earthed, the patient ran no risks of receiving an electric shock. Another device was shown by which the tubes could be placed in a lead cylinder, in which they were easily adjustable in any position. The oil itself was an insulating substance.

Dr. V. E. Pullin (London), who was, he said, looking after the question of protection from X rays in 15 service hospitals, also laid great stress on the need for efficient ventilation. Possibly the feelings of depression and the headaches were due to a physiological effect related to the ionisation of the atmosphere. Forced and efficient ventilation he placed second only to primary protection. He related an incident in which several patients in a ward above an X ray room had ulcers on the back after leaving the hospital, and these lesions were undoubtedly due to radiation having reached them through the ceiling. In this case the X ray tube was not boxed. He believed an X ray tube could be run in oil if the direct current was used, but it was difficult to do so with the alternating current.

Dr. H. Moore (Sweden) said that even with efficient mechanical protection one often thanked God for the law of inverse squares, as it was clear that the operator should always get as far away from the X ray tube as possible.

Dr. Pullin seconded the proposal of Dr. Kaye that some steps should be taken to secure X ray unification, and it was carried.

The Organisation of a Hospital Radium Service.

Prof. F. L. Hopwood, D.Sc. (St. Bartholomew's Hospital), read a paper on this subject, dividing it into three sections: the efficient use of the available radium; protection of patient, operators, and assistants against injurious radiation; and the safe custody of the radium itself. The radium of which he had charge was distributed among 220 containers, and he showed slides illustrating the holders for radium needles, threading devices, and magnifiers for reading identification marks on the needles, all conceived to avoid handling the radium, and, indeed, making this manipulation easier than handling Protection was afforded by having only a radiologist apply radium and preventing a patient discharging himself with radium on him. He also showed the ingenious drawers, lead-encased, in which the radium was kept. Track was kept of every needle and every piece of radium, and was accounted for at the end of each day He submitted a list of regulations operative in the hospital mentioned, and exhibited specimens of the appliances and boxes used

Mr F H. Glew, who has been handling radium for 20 years, pointed out that notwithstanding all the protective devices against radium emanations there were times when one had to face the enemy in full knowledge that he was the enemy There were moments when the radium would not shake out of the tube, it had become fixed, almost cemented in it and a small drill was needed to get it out. It would be delightful, he said, if radium burned at the time of touching, instead of the burn gradually revealing itself some time afterwards. After his long experience he was an advocate of the operator even looking at the radium at as long a distance away as possible There was great difficulty in removing the active radiation from tubes which had once been charged He deprecated the use of glass tubes in hospitals and busy centres which were ten years old or more, as their critical condition rendered them liable to explode at any time

Dr G Failla (New York) said that in his hospital colour was largely used for the purpose of identifying tubes at a distance. There they had no open wounds to contend with as a result of the manipulation of radium, though the fingers, especially around the nails, became red and scaly

Dr A. E Stein (Wiesbaden) described a medical *carbon arc lamp* in which the carbons were placed in parallel series. The arc light was thus formed between the two carbon points which lay one above the other This position of the carbons enabled the light rays to stream out without any shadowing of the light-crater, which occurred, more or less, in every other form of carbon lamp The Jupiter[1] lamp was fitted with carbons of a special chemical composition The result was that these lamps produce numerous ultra violet rays down to 217, as well as notable proportion of infra red and heat rays. The spectral values of the light produced by the arc, he held, approached more nearly that of the natural solar rays than those from any other lamp made

On Thursday afternoon a large party from the Physics Section paid a visit of inspection to the National Physical Laboratory at Teddington

RADIUM AND X RAY THERAPY

Dr S A. Heyerdahl (Oslo) contributed a paper on the use of radium for *actinomycosis* In his first case there had been two operations without permanent result, and radium was then tried, and for ten years (to the present date) there had been no relapse His usual procedure now was to give two or three applications of radium, with a six weeks interval The good results lasted for two to ten years

Dr F Tománek, of Prague, who represented the Czech Society of Radiology, related his experiences in treating *pernicious anæmia* with radium, and said that by massive irradiation of the spleen over long periods patients with this condition had been sustained for a long time, even when other treatments, such as blood transfusion, had failed Radium treatment seemed preferable to splenectomy for this disease. He also read a paper giving his results of prolonged irradiation for *leukæmia*. He used from 80 to 100 mg of radium over the whole spleen, taking it in 25 sections, giving 80 per cent. of the erythema dose There was a reduction in the number of leucocytes, the blood picture improved, and at the end of a year no relapse had occurred

Dr R H Stevens (Detroit, U S.A) gave an account of his treatment of four cases of *leukæmia* with intravenous injections of radium during the past year Three had not been successful, as two of the patients had died, but in the fourth 200 mg was injected last October with marked improvement and a further dose in January, after which the leucocyte count was normal

Cancer of the Breast

Prof Wintz (Erlangen) read a paper on the Irradiation of Breast Cancer He said that the position of X ray therapy in regard to the treatment of cancer of the breast was still very much disputed He had now at his disposal the results of fully 300 cases of cancer of the breast, which he had treated by the same method between 1918 and 1924 He urged all experienced X ray specialists to publish their statistics, and asked those who had had experience of a few cases only to send their results to him to be incorporated in the collected statistics which he was about to compile He advised those compiling statistics to adopt Steinthal's classification Group I.: Where the tumour was restricted to the breast and can be moved, no infection of axillary or supraclavicular glands. Group II Where the tumour had already infiltrated the surrounding region, axillary glands palpable Group III Where the glands in the supraclavicular region were palpable and, in some cases, metastases were also apparent. For the final result cases were arranged in two groups (1) Lost cases, i e : (a) All those who had died whether of carcinoma or of an intercurrent disease; (b) those who could not be followed up, and (c) patients who were at the point of death at the end of the three years whether from cachexia or from distant metastases. (2) Clinically cured cases—i.e , those cases in which after careful examination no trace of cancer could be found and whose general condition was sufficiently good to admit of their being regarded as clinical cures. The following statistics were drawn up on this principle —

	Treated	Cured	Lost	Percentage of clinical cures
Group I	21	20	1	95·2
Group II.	41	28	13	68·3
Group III.	44	8	36	18·1

An observation time of three years, he held, was sufficient, especially when those cases who had died from intercurrent diseases were included At the same time it was advisable to publish observations extending over longer periods since, in the case of carcinoma, it was correct to speak of a cure only after five years had elapsed For the purpose of comparison he gave first of all the figures for Groups I. and II for the three-year observation period

	Steinthal	Treated	Cured	Percentage
Three years after treatment	I and II.	62	48	77·0
„	III.	44	8	18·1
Four years	I and II	47	31	65·9
„	III	36	3	8·5
Five years	I. and II	35	17	48·6
„ „	III	11	2	18·8
Six years „	I and II.	23	9	39·1
„	III.	10	1	10·0
Seven years „	I. and II	15	3	20·0
	III	4	—	—

The statistics were similar to those of uterine carcinoma He said that the results shown by his statistics under Group II. were better than the average results shown by the surgical statistics. Group I offered ideal competition between the surgical and X ray treatment. If satisfactory results were to be obtained three years after the conclusion of treatment, X ray treatment of the tumour alone was not sufficient. It was essential (a) to apply the requisite dose for the destruction of the carcinoma cells to the axillary and supraclavicular regions as well; (b) to give a carefully planned scheme of after-treatment; and (c) to take special care when irradiating carcinoma of the breast to prevent lung fibrosis

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[1] Agent The Holborn Surgical Instrument Company, Ltd

Dr. Casman (Antwerp) gave a cinematograph demonstration of the actual burying of radium tubes in the breast in a case of cancer. In cancer in this region he preferred to employ the three processes of X rays, radium, and surgery. From the aspect of pure surgery there were two difficulties—the unsuspected extent of the disease, and the impossibility of surgically removing the whole of it. And it was not always possible to ensure that the needed amount of X ray energy was being absorbed by the new growth. The field for the employment of radium was a more limited one, but the action of this salt was more powerful than X rays. In a given case he began by applying X rays to the whole diseased area. Four or five weeks later he made a small incision and carefully buried radium tubes surrounded by gauze and fixed at a certain distance from the limits of the area dealt with.

Dr. B. J. Lee (New York) reported to the meeting eight cases of primary operable carcinoma of the breast from the special clinic of the New York Memorial Hospital, all of which had been treated solely by irradiation. At least four and a half years had intervened since the commencement of the treatment. Surgery was not employed in this series either because of the patient's age, or in consequence of her refusal of operation. Dr. Lee was somewhat sceptical as to the end-results in the surgery of this breast disease. The oldest patient in the series, aged 90, was made comfortable for three years by this treatment by means of buried radium. At the end of the three years she died from intercurrent disease. The average age of the series was 58. Nodules could be felt in the axillæ of two of the patients. Three women in the series had X ray treatment only. One of them still remained alive, one died two years, the other four years after the treatment. In two radium alone was used, and radium with X rays in the remaining three. One millicurie per c.cm. of radium was the dosage used, while the X rays were administered from a low-voltage tube, with a six-minute exposure, the focal skin distance being 10 inches and the filtration was through 3–4 mm. of aluminium. Of the eight cases dealt with in the paper, five were now alive and well, two had died from intercurrent disease, and one from metastases. The results, he considered, were very favourable as compared with those achieved by surgery in this disease.

Epithelioma of Tongue Treated by Radium.

Dr. C. Regaud (Director of the Pasteur Laboratory at the Radium Institute, Paris) read a paper on curietherapy of epitheliomata of the tongue and their following adenopathy. Of 174 cases so treated 42 were alive and without any symptoms of cancer at the end of 1924, an apparent cure-rate of 24·1 per cent. In 46·5 per cent. the treatment caused at least the disappearance of the cancer at the local site; in the operable cases alone this figure rose to 63·1 per cent. The paper entered into the therapeutic indications and the leading ideas as to technique. X rays appeared to have yielded bad results in cancer of the tongue. Dr. Regaud expressed his preference for radium puncture by means of platinum needles.

Radium Treatment of Cervical Cancer.

Mr. Malcolm Donaldson (London) gave an analysis of the results he had obtained by radium treatment in 85 cases of inoperable carcinoma of the cervix, as reported when he read his paper at the Royal Society of Medicine. He said he had not yet decided whether it would be better to increase the radium intensity or the period of application. He intended that in his next series the number of needles employed should be increased, while the application time should remain at 144 hours.

Dr. Zweifel, of Munich, said he had used in his hospital a combination of radium and X rays latterly, and among the operable cases there had been 43 per cent. of cures, and 7 per cent. among the inoperable.

Prof. Wintz (Erlangen) expressed the view that squamous-celled cervical carcinoma was much more sensitive to X rays than to radium.

ACTINOTHERAPY.

Sir Henry Gauvain initiated a discussion on actinotherapy. He said the chief point to look to was the clinical result of this form of treatment. He believed that the action of light on the patient was two-fold—on the mind and on the body. The experience at the Alton Hospital was that the light caused an improvement in the mental health. On the body the light had a double effect; first the direct one, including inflammatory response and the formation of pigment; secondly, the remote or indirect effects, which he did not enlarge upon. Pigmentation in this connexion he regarded as important, as patients who pigmented frequently did well in other respects. Light therapy was an intriguing form of treatment because of the unexpectedness of some of its results.

On Saturday, July 4th, the members of the Section of Actinotherapy paid a visit to Lord Mayor Treloar's Cripples' Hospital, at Alton, Hants.

X RAY DIAGNOSIS.

Dr. A. E. Barclay (Manchester) characterised *palpation* under the X ray screen as a complex art, requiring much patient practice, as it depended on a combination of touch and sight. The most important palpation of the stomach was that carried out while the first portions of food were entering it, as it would often reveal a filling defect. Radiographic plates were also necessary, however.

The Radiology of Bones.

Dr. A. Howard Pirie (Montreal) read a paper on *Normal Rarities of Bone Simulating Disease.* He showed on the screen an interesting series of cases, demonstrating ununited patella, simulating fracture, double sesamoid bones in the gastrocnemius, pseudo vesicles on each side of the knee-joint. He had met with five cases of rectus sesamoid, just about the acetabulum, which might be present on one side only. This condition, he considered, must be looked on as a normal abnormality, and appeared to have escaped the notice of anatomists. A separate epiphysis may remain on the second metacarpal bone; this, he held, was a reversion to type, as it was seen in the seal.

Dr. W. H. Stewart (New York) spoke on the time factor in the disappearance of rontgenographic evidence of *Fracture of the Skull.* He said experience had taught us that it was a mistake to be definite about the time required for union of the bones of the skull. In children simple fractures might heal in from six to eight months; in adults the fracture line remained for fully three years. Shelving fractures disappeared more rapidly. Fractures of the occipital bone could be recognised three to five years after the accident. The X ray evidence of comminuted or depressed fractures was usually permanent. He emphasised the medico-legal importance of the time factor.

Dr. A. W. George (Boston) described a method of diagnosing injuries of the atlas and axis by taking an X ray picture antero-posteriorly through the mouth and in the lateral position. Three parallel lines were then drawn passing through bony landmarks on the atlas, axis, and third cervical vertebra, and any divergence of these lines indicated pathological conditions. If, in the antero-posterior position, the patient lying on the table, the space between the atlas and axis were obliterated, that indicated disease of the retropharyngeal structures.

Dr. H. A. Harris (London) gave a demonstration on the screen of the developing centres of ossification of the fœtus from the age of 28 days onwards. He said that out of 100 cases of stillborn infants submitted to an anatomy department there was cervical rib present in 35 (in normal adults the percentage is 0·25).

If cervical rib is present in an adult it has not been acquired, but it means it has not been absorbed. The absorption of the cervical rib is the normal process of development.

Sir Frank Colyer (London) described various pathological conditions of the teeth and jaws. Where the pulp of a tooth died, the periodontal membrane might become infected and a granuloma might form. If this granuloma were surrounded by a layer of dense bone, he did not believe that such a tooth gave rise to systemic infection, but where the dense layer was absent, infection did take place. The presence of this dense layer could be determined radiologically, and the speaker urged that it was in questions such as these that the radiologist could be of the greatest help to the dentist.

X Rays and Pregnancy.

Dr. Carlos Heuser (Buenos Aires) demonstrated on the screen a method of injections of lipiodol into the cavity of the uterus for the diagnosis of early pregnancy, fibroids, and non-patency of the Fallopian tubes. By this method it was possible to determine the existence of pregnancy in the first or second month. Injections had been given in 48 cases, and in none had abortion occurred.

Dr. Lars Edling (Lund, Sweden) said that with the X rays he was able in about 200 cases to diagnose pregnancy at the end of the third month or the beginning of the fourth, but not earlier. He had never used lipiodol.

Prof. De Nobele (Ghent) read a paper on the action of Rontgen rays on the evolution of pregnancy and the development of the fœtus. His conclusions were that the erythema X ray dose had an indisputable effect on the evolution of pregnancy in the guinea-pig and the rat; in the majority of cases the embryo died, and the earlier the rays were applied the more certain was that result. If the embryo was not actually killed, it developed into a monster. He found also that irradiation in the guinea-pig produced a tendency to formation of ovarian cysts.

Dr. E. H. P. Cave (Harrow) described his method of examining radiologically the male urethra and the bladder, using lipiodol.

Cholecystography.

Dr. R. D. Carman (Mayo Clinic, Rochester, Minn.) and Dr. Sherwood Moore (St. Louis) each read a paper on the development of this branch of diagnostic radiology, and described Graham's method of the use of sodium-tetrabromphenolphthalein and sodium-tetraiodophenolphthalein. Dr. Carman's paper appears at some length elsewhere in this issue. Dr. Moore said that what was now wanted was more information about the physiology of the gall-bladder, and this was being rapidly worked out.

Dr. G. T. Haenisch (Hamburg) recommended the direct duodenal method, by means of a sound, of giving the dye for diagnostic purposes. In this way unpleasant symptoms were avoided.

Dr. Stewart (New York) said he preferred to put the tube into the jejunum, as thus there was no vomiting.

Dr. R. E. Roberts (Liverpool) said that he used the bromine salts intravenously, and no accidents had occurred when attention was concentrated on slow injection.

Dr. J. T. Case (Battle Creek, Michigan) said that the dye showed up inflammatory processes outside the gall-bladder. At Battle Creek tetra-iodol was used intravenously as a routine method in cases where the dye, given orally, did not enter the gall-bladder.

Dr. Moore, in replying, said that oral administration of the dye should be the routine method, and when the diagnostic result was doubtful the intravenous method should then be adopted.

Studies on the Alimentary Tract.

Dr. De Backer (Ghent) read a paper on the *alimentary canal in the normal infant.* In the discussion which followed, Dr. L. T. Le Wald (New York) said that any case of vomiting in a baby should be examined by X rays for the existence of hypertrophic pyloric stenosis. He considered that the colon in children needed more elucidation. It was held by some that the pelvic colon was unusually long in the first few years of life, and that this was subsequently outgrown; in the speaker's opinion, however, a long colon, if present in infancy, persisted throughout life.—Prof. Gosta Forssell (Stockholm) said that a contraction of the pyloric end of the stomach was often mistaken for contraction of the pylorus. Hypertrophic pylorus might also be present.

Prof. Forssell read a paper on some further observations on the *Motor Mechanism of the Mucous Membrane of the Digestive Tract.* By means of many excellent radiograms and photographs of fistulæ of the small intestine in man, he showed that the folds of the mucous membrane did not depend passively on contractions of the muscular wall of the gut. Other forces came into play, and attention was drawn to the muscularis mucosa. Already in 1913 Prof. Forssell had said that the muscularis mucosa was the independent factor in producing movements of the mucous membrane of the alimentary canal, and this contention had since been more fully demonstrated. The most convincing proof had been from histological studies, when it was shown by a number of observers that the overlapping of muscular cells in the muscularis mucosa occurred in the folds of the mucous membrane this was most distinct in the stomach cavity.

Dr. A. Frankel (Berlin) gave a demonstration of a new symptom of *gastric ulcer*—which he called the cross-bar symptom—within the folds of the membrane by means of Rontgen therapy, and Dr. N. Ratkoczi (Budapest) showed on the screen several cases of duodenal ulcer and adhesions of the duodenum.

Dr. H. H. Berg (Frankfort-on-Main) read a paper on the direct signs of duodenal ulcer, and showed on the screen the effects of various drugs on the motility of the gall-bladder, illustrated by the case of a patient who had a large number of gall-stones in the bladder.

In speaking of intermittent obstruction of the small intestines, Dr. H. M. Imboden (New York) said that if the duodenum were filled and could not empty itself, a hand pressed on the abdomen while the patient took a deep breath would bring about emptying.

Dr. M. I. Lifshitz (Karkow) presented Dr. Lemberg's paper on the rontgenological diagnosis of *chronic appendicitis* based on a study of 105 cases at the Ukranian Radiological Institute, Karkow.

Dr. R. Feissly (Lausanne) discussed the diagnosis of *ileocæcal tuberculosis* in relation to operation findings.

Dr. J. T. Case (Battle Creek, U.S.A.) showed skiagrams of 70 cases of *diverticula of the small intestine.* When diverticula were multiple, the larger ones were nearer the stomach, the smaller ones more remote from it. X rays had enabled him to distinguish false diverticula from true. Three out of four of the 70 patients had no symptoms referable to the diverticula.

Dr. Jacques Forestier (Aix-les-Bains) read a paper on radiodiagnosis by means of lipiodol of *tumours and other causes of compression in the spinal cord.* He emphasised two points (1) that the radiograph must not be taken in the lying position, and (2) that lipiodol must not be injected earlier than the tenth day after the first lumbar puncture had been performed. He also described the injection of the seminal vesicles with lipiodol.

Two most interesting items of the programme were the cinematographic films exhibited by Dr. Lewis Gregory Cole (New York), the one illustrating most graphically the mechanism of the stomach, and the other the spread of tuberculosis in the lungs.

During the Congress an exhibition of radiological studies was on view at the house of the British Institute of Radiology, 32, Welbeck-street, and in the basement of the Central Hall, Westminster, the following firms had assembled a remarkably fine collection of radiological apparatus and matter relating to that specialty:—

Acme International X-Ray Co., Chicago; Aimer, G. C., London; Andrews, Cuthbert, London; Dean, A. E. and

Co., London ;' Denver Chemical Manufacturing Co., London ; Gaiffe Gallot et Pilon, Paris ; General Radiological and Surgical Apparatus Co., Ltd., London ; Hanovia Quartz Lamp Co., Ltd., British, Slough ; Holborn Surgical Instrument Co., Ltd., London ; Kahlbaum Chemische Fabrik, Berlin ; Kodak Limited, London ; Muller, Hamburg ; Newton and Wright, Ltd., London ; Patterson Screen Company, U.S.A. ; Philips Lamps Ltd., London ; Radiguet and Massiot, Paris ; Radium Belge, Brussels ; Rothband, W. S. and Co., Manchester ; "Sanitas," Electricitätsgesellschaft, Berlin ; Schall and Son, Ltd., London ; Seeman, Dr. H., Freiburg i. Br. ; Solus Electrical Co., London ; Victor X-Ray Corporation, U.S.A. ; Watson and Sons, Ltd., London ; X-Rays Limited, London ; Zimmerman and Co. (Chemical), London ; Zimmerman and Co. (Photographic), London.

LECTURES.

Two formal lectures were delivered during the Congress, the first being the Silvanus Thompson Memorial Lecture, given on the evening of Wednesday, July 1st, by the Duc de Broglie, of Paris. He took as his subject the absorption of x and y radiations and the secondary radiations which accompany them. On Friday, July 3rd, Sir Berkeley Moynihan, of Leeds, as Mackenzie Davidson Memorial Lecturer, spoke on the *relationship of radiology and surgery.* He said that the radiologist had now given certainty to the surgeon's diagnosis—in kidney and gastric diseases errors of diagnosis had proved extremely lamentable until radiology put things right. No words could be too strong, he added, to denounce the action of the surgeon who operated on a stomach case merely because someone—not the radiologist—had made a diagnosis of gastric ulcer which an inspection of the stomach did not confirm. If a case were wrongly diagnosed and medical treatment alone given, then little harm was done—physicians and surgeons might both be at fault, but the fault of the surgeon was far graver. Why could they not arrange, he asked, that no diagnosis of gastric ulcer should be the warrant for medical or surgical treatment until that diagnosis was made by the radiologist or by the surgeon on the operating table? Radiology had also helped to explain why so many diseases mimicked the condition of gastric ulcer. By clinical means, he said, it was not possible to detect gastric carcinoma in the curable stage of the disease, but, given time, the radiologist could diagnose the condition at that stage. The gifts of radiology to medicine and surgery, he concluded, were things for which humanity at large could be profoundly thankful.

SOCIAL FUNCTIONS.

The Congress dinner was held in the Hotel Great Central, N.W., on July 2nd, the President, Dr. Thurstan Holland, in the chair. The company numbered over 400, many lady guests of members being present. The President, in expressing his gratification that the Congress was to be the first International Congress of Radiology, paid a tribute to the work of two pioneers who had recently died, Sir Archibald Reid and Prof. F. Bérgonié, of Bordeaux. The driving force behind this Congress, he said, had been Dr. Robert Knox, chairman of the organising committee, ably assisted in the entertainment of the lady visitors by Mrs. Knox and the ladies' committee. The delegates of the various countries represented then spoke in succession, the order of precedence being alphabetical. There spoke for the Argentine, Dr. C. Heuser ; Austria, Prof. A. Schuller ; Belgium, Prof. De Nobele ; Canada, Dr. Howard Pirie ; Denmark, Dr. C. O. Sonne ; France, Dr. A. Béclère ; Germany, Prof. A. Dietlin ; Holland, Dr. Heilbron ; Hungary, Dr. N. Ratkoczi ; Irish Free State, Mr. M. R. J. Hayes ; Italy, Prof. M. Ponzio ; Norway, Dr. S. A. Heyerdahl ; Poland, Count Debecki ; Russia, Prof. M. Nemenow ; Czecho-Slovakia, Dr. W. Altschul ; Sweden, Prof. G. Forssell ; Switzerland, Dr. R. Feissly ; and the United States of America, Dr. P. M. Hickey. The dinner was marked by pleasant cordiality, both international and individual, and concluded with a dance.

The League of Nations Union entertained the delegates to luncheon at the Hotel Cecil, Strand, on Friday, July 3rd, Lord Cecil of Chelwood in the chair. He said that the science of radiology owed much to international thought and action, and as the conference in London was an example of internationalism in science, the League of Nations Union was delighted to extend to the delegates the warmest welcome. Dr. John Muir, assistant secretary of the Congress, replied.

On Saturday afternoon, July 4th, at the conclusion of the Congress, a garden party was held at Imber Grove, Esher, by invitation of Dr. E. R. Morton, the chairman of the hospitality committee.

THE INTERNATIONAL COMMITTEE

At the final meeting of the delegates on July 4th an international committee was formally constituted, with Prof. Gorsta Forssell of Stockholm, Sweden, as chairman ; Dr. C. Thurstan Holland, of Liverpool, as vice-chairman ; and Dr. Stanley Melville, 9, Chandos-street, London, W. 1, as secretary. It was decided to hold the next international conference at Stockholm in 1928.

Correspondence.

"Audi alteram partem."

DISABLEMENT FROM CHRONIC RHEUMATISM:

THE NEED FOR A CONCERTED EFFORT.

To the Editor of THE LANCET.

SIR,—Official returns in two countries [1] have recently set forth the prevalence of disablement from rheumatic diseases. In Sweden, as no doubt elsewhere, *senility* and *cardiovascular degeneration* account for more than half the cases of permanent pensionable invalidity. Apart from these "incurable" causes, *articular rheumatism* comes first among the list of disabling maladies, accounting for 9·1 per cent. of the Swedish cases, as against 5·8 per cent. accounted for by pulmonary tuberculosis. The British Ministry of Health, in their classification of "rheumatic diseases," include almost equal numbers of articular and non-articular cases, such as lumbago. Adopting this wider use of the term, rheumatism causes (as we now know) nearly one-sixth of the total industrial disability in England, with an estimated expenditure of £2,000,000 for sick benefit and a loss of 3,000,000 weeks of work per annum. If non-articular cases were included in Sweden, the proportion would probably be much the same (one-fifth to one-sixth of the grand total).

Dr. Kahlmeter makes it clear that rheumatism and tuberculosis are by far the most important causes of disablement (from disease), and that rheumatism imposes a heavier economic burden than appears from the statistics, because the invalidity caused thereby is of long duration, entailing not only a great deal of mental and physical suffering, but a heavy expense to the community. He also points out that the other main disabling diseases are relatively well cared for, but that rheumatism receives little assistance. In Holland and Germany also, we understand that the disablement of workers from this cause is an equally serious problem. Dr. Kahlmeter may well ask whether the State cannot do something to mitigate the disability of such large numbers of workers.

It has been pointed out in the report of the Ministry of Health that treatment of chronic rheumatism is entering upon a more hopeful phase. It is all to the good that the dangers of chronic focal sepsis are now better recognised and provided against, but in our opinion this is only half the battle. In all likelihood there are ætiological factors apart from sepsis, as is evidenced in osteomalacia, which is probably a deficiency disease, by changes in the spine indistinguishable from spondylitis deformans. Chill, traumatism, tubercle, and endocrine disturbance are other probable factors in causation. The investigation of possible metabolic abnormalities is urgently required, and should be one of the chief functions of any clinic established to deal with chronic rheumatic diseases. At the same time the effects of physical remedies—heat and cold, radiant and electrical energy and movement, and the internal use of waters—should be studied and their efficacy compared. In the present state of our knowledge we can but advocate measures directed to improve the general health, to prevent the development of rheumatic tendencies, to increase the resistance of the body to infection, and to promote the absorption of exudations and deposits.

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[1] The Incidence of Rheumatic Diseases. Ministry of Health Reports, No. 23. London. 1924. Examen statistique des causes d'invalidité, fait d'après les demandes adressées à la "Direction des Pensions de Retraite" pendant l'année 1918, sur lesquelles les pensions supplémentaires furent accordées. Par G. Kahlmeter, Docteur en médecine, Médecin consultant de la "Direction des Pensions de Retraite," Stockholm. Acta Medica Scandinavica, vol. lix., Fasc. i.–vi.

A Committee on Rheumatism has now been appointed by the International Society of Medical Hydrology. It will take these official reports as the basis of its inquiries, which will have for their object some concerted action in the campaign against rheumatic disability in the countries most affected thereby. Practitioners at the health resorts with experience in the treatment of rheumatic diseases, who are disposed to assist the work of the Committee, are requested to communicate with Dr. Ray at 6, Bentinck-street, W. 1.

May we quote two examples of the treatment of chronic rheumatism, carried on for a long period of years, in order to indicate what might be done, with an ampler organisation and equipment?

(1) A charity was founded at Buxton more than 300 years ago for the treatment of the poor suffering from rheumatic disorders. It is unnecessary to quote the figures, but the Devonshire Hospital now accommodates large numbers of industrial workers, recommended by the approved societies, from all parts of the country, many of the more serious cases returning from year to year. It may be added that many observers have recorded strong reactions in rheumatic patients submitted to the Buxton waters. We have here, for many generations, a customary treatment of chronic rheumatism, presenting now a large field for the differentiation of cases and for the scientific use of certain physical methods.

(2) In Holland, where there are no spas, a clinic for physical treatment was opened at Amsterdam in 1905. Since that date about 10,000 rheumatic cases have been treated by baths, manipulation, and electricity. Articular and non-articular cases were in about equal numbers, with many mixed cases. One of us (J. v. B.) has had under his own care during the last 15 years nearly 5000 cases of chronic arthritis, many of which, after temporary improvement, return year by year. The following conclusions are drawn from the work of this clinic: (a) A sedentary life in cold, damp localities plays a great rôle in the development of chronic rheumatic affections. (b) Persons of an arthritic tendency are numerous in Holland, especially among the intellectual classes. When they are exposed to unfavourable external conditions or to accidental toxic invasion, rheumatic developments occur. (c) In these cases the connective tissues become a place of lowered resistance, favourable to inflammatory changes, to parasitic growth, and to atrophy. (d) The influence of mental depression, tuberculosis, and dental sepsis is unquestionable, and that of auto-toxæmia from the bowel probable. (e) Expert treatment at a suitable clinic may, even in unfavourable and progressive cases, maintain the function of the joints, so that invalidity is prevented, whilst treatment by drugs alone is insufficient for this purpose.

We are glad to note that the British Report emphasises the need for further development in the treatment of rheumatism at the spas and elsewhere. Certain natural waters and baths are of proved efficacy in chronic rheumatism, and, with selected methods of accessory treatment, in our opinion, ought to be made available under proper conditions for the greatest possible number of industrial cases. But the spas can only handle a fraction of the needful cases. Is it not possible to provide clinics for rheumatism in the towns? War-time experience with other forms of disability has shown the great value of clinics, where large numbers of cases can be investigated and treated.

We are, Sir, yours faithfully,
J. VAN BREEMEN.
R. FORTESCUE FOX.
L. J. LLEWELLYN.
E. P. POULTON.
M. B. RAY.

International Society of Medical Hydrology,
36, Devonshire-place, W. 1, July 1st, 1925.

OUTBREAK OF GONORRHŒA IN A CHILDREN'S HOME.

To the Editor of THE LANCET.

SIR,—On Jan. 26th, 1924, 17 girls between 6 and 10 years old, living in an exceptionally well-administered home, were notified as suffering from gonorrhœal vulvo-vaginitis, confirmed by bacterial examination. Careful inquiry as to the only two admissions in January revealed the fact that one of them (aged 11), admitted on the 11th, was found on the 25th to be suffering from a profuse gonorrhœal discharge. During her mother's absence in service she had been "running wild" and "had intimate relations with men and received money from them."

The home possessed a sufficiency of small slipper-baths, each child had her own towel, and one or more attendants were present during bathing. But as the number of children was large, the possibility of bathing in common could not be excluded, and I formed the definite opinion that the infection was thus spread. Efficient steps were at once taken to prevent further infection, and the management of the outbreak was entrusted to Dr. H. Gluckman, director of the Municipal Venereal Diseases Clinic, whose treatment was on the following lines:—

Bed for ten days; hot sitz-bath twice daily with ʒi. pot. permang. solution (4 per cent.) to each gallon water; then swabbing external genitals with $AgNO_3$ sol. (gr. v. to oz.), followed by hot vaginal douche with pot. permang. sol. (1 in 5000). As improvement resulted, bathing and douching gradually reduced to bi-weekly or weekly douche only. In the more resistant cases, small doses of detoxicated gonorrhœal vaccine were given every fifth day, commencing with 3 minims and gradually working up to 10 minims. In a few cases, complicated by secondary infection, a solution of oxycyanide of mercury (1 in 4000) was used now and again as a vaginal douche instead of the pot. permang.

The effects of treatment were gauged by bacterial examination of vaginal smears. In most cases it was possible to cease treatment in about ten weeks; in a few there was a short temporary relapse. By the end of nine months all were giving a negative result. This has persisted since then, in spite of provocative measures—e.g., silver nitrate instillations, injections of vaccine, and strenuous exercise.

It will thus be seen that most of the sufferers responded readily to treatment, but the eradication of gonorrhœal infection (especially in an institution) is a tedious matter, and nine months passed before a consistent succession of negative bacterial reports justified a clean bill of health.

I believe such an outbreak to be unique in public health records, and its lessons seem to be two-fold: 1. The careful examination in this respect of all new admissions. 2. That baths in barracks, boarding schools, and institutions should be mainly of the hot and cold shower type (both for individual safety and for water-waste prevention) with only such provision of "slipper" or "parallel" baths as may be necessary for medical and surgical reasons.

I am, Sir, yours faithfully,
CHARLES PORTER, M.D. R.U.I., D.P.H. Camb.,
Hon. LL.D. (Witwrd. Univ.), M.O.H. and Lecturer
on Public Health, Johannesburg.

*** The outbreak reported by Dr. Porter if not unique is sufficiently startling to require comment. The measures of prevention he suggests are sound and reasonable. Many little girls are carriers of gonorrhœa as a result of infection by towels, w.c.'s, and lavatories, and the youth of a child by no means precludes the possibility of her having gonorrhœa, though such sexual precocity as was found in Dr. Porter's case is rare. No towels, baths, or bedroom chambers should ever be shared by girl children in institutions. This should be a rule admitting of no exceptions. A similar outbreak observed this year at a convent home for older girls in a home county was traced to infection from one or more imperfectly cured cases of gonorrhœa by towels and baths. Facilities in this case were admittedly insufficient, as the institution, though well run in many ways, was short of funds.—ED. L.

THE HOSPITALISATION OF SEVERE TRAUMA ON THE SPOT.

To the Editor of THE LANCET.

SIR,—During the last few days the daily journals have described many a case in which an injured person, after an accident, has died on the way to hospital, or soon after admission. For long it has been my contention that movement, even for a short distance, is the worst possible treatment after any injury; shock is made greater; there is grave risk of injuring soft and vital parts; there is likelihood of re-starting loss of blood; there is serious danger of embolism; there are many possibilities of causing and increasing deformities.

An illustrative episode may serve to bring this home to those who have been schooled in the present regime. Last year I saw a severe injury—compound comminuted fracture of two limbs—nine days after the injury. During these days there had been a minimum of movement, the parts being left undisturbed; and at the end of that time the patient travelled a distance of about a mile from the scene of the injury, and came under my care at a cottage in the country. To my surprise I was able daily to manipulate the fragments into position without causing pain, and to get an ideal result. Not only so, but as the injury of one limb was adjoining the site of an old traumatic deformity, I was able to rectify that at the same time. The cost was trivial, and I did the nursing myself.

This incident confirmed my former conclusion of the wisdom of the advice: *Put a case of trauma into the nearest available bed.* The occupant of the house is not English—I had almost written British—if admission is refused. Some may argue that there is an absence of technical nursing in a rural house. But he is a poor over-schooled doctor who cannot quickly instruct a sister, or a neighbour, to nurse and manage everything well. The finest result that I ever saw after complete transverse fracture of the patella happened where a mother, unschooled but educable, tended her son in his home.

It may be urged that transport facilities are now such that there is no danger. That is just the sad fallacy of it all. Let a well person travel a distance of five miles in the most elaborately equipped ambulance, assuming the posture and position of a badly-injured patient, and he will quickly change his mental attitude towards the treatment of severe traumatism.

I am, Sir, yours faithfully,
R. CUNNINGHAM AFFLECK.

Edinburgh, June 30th, 1925.

A BELGIAN MEDICAL CRUISE.

To the Editor of THE LANCET.

SIR,—After all the causes for gratitude that the Belgian doctors, since the war, owe to the British doctors, the "Medical Days of Brussels," at which your Government was officially represented, have again drawn closer together the bonds which unite our two medical bodies. In these conditions, desirous of giving a tangible proof of our friendship, we have decided to invite our British colleagues to take part in a medical cruise to the Near East which we are organising. I shall be grateful if you will kindly insert the enclosed notice. Application may be made to me.—I am, Sir, yours faithfully,

Dr. R. BERNARD,
Secrétaire de la Rédaction, Bruxelles-Médical, 117, rue du Trône, Brussels.

July 1st, 1925.

Medical Cruise to the Near East: Itinerary.

Marseilles, Alexandria, Cairo, Port Said, Jaffa (Jerusalem), Beyrouth (Damascus–Liban), Smyrna, Constantinople, Le Pirée (Athens), Malta, Naples, Marseilles. Departure August 24th; return, Sept. 18th. Special conditions; 2700 French francs each for doctor and wife, 3600 French francs for each member of a doctor's family. The voyage is first-class by the large and luxurious packets *Cordillère* and *Lotus* Oriental mails. There will be an opportunity of visiting Cairo, Jerusalem, Damascus, and Athens, and of prolonging by 12 days the stay at Beyrouth in order to visit thoroughly Syria and Palestine. It will also be possible to visit Baghdad, three days by motor-car from Beyrouth.

A DISCLAIMER.

To the Editor of THE LANCET.

SIR,—My attention has been called to a report in the *Daily News* of my annual hospital tea party. Although I was aware that the occasion was to be used for giving publicity to the hospital building fund, I had no knowledge that personal allusions were to be made to myself. I much regret that in the report references were made for which I am in no way responsible, and which are both undesirable and unnecessary. I am, Sir, yours faithfully,

London, W., July 4th, 1925. H. J. PATERSON.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Spahlinger Treatment.

THE Parliamentary Medical Committee met on July 2nd, to consider a report from five of its members who recently visited the establishment of Mr. Spahlinger at Geneva. The report commented favourably on the visit, and suggested that an effort should be made to raise £100,000 in this country by means of a public campaign to enable Mr. Spahlinger to continue his work. The Committee passed the following resolution:—

"That the Parliamentary Medical Committee has received with much interest the account of the visit to the Spahlinger establishment which the five members of the Committee have drawn up, not as a delegation from the Committee, but as private individuals. The Committee are of opinion that a prima facie case has been made out for further investigation, but the Committee resolve that they cannot as a corporate body take any action in the matter."

HOUSE OF COMMONS.

WEDNESDAY, JULY 1ST.

Night-work in Bakeries.

Colonel WOODCOCK asked the Minister of Labour whether His Majesty's Government proposed to take any step to refer to the Permanent Court of International Justice the question whether the draft convention in regard to night-work in bakeries proposed by the recent International Labour Conference, which related to an industry which was not the subject of international industrial competition and which prohibited night-work by master bakers as well as by persons employed, was consistent with the purpose of Part XIII. of the Versailles Treaty of Peace, and also the question of the competence of the conference to pass such a draft convention.—Sir A. STEEL-MAITLAND replied: This convention, as finally presented to the recent International Labour Conference, was not acceptable to His Majesty's Government, and their representatives voted against it. It is not the intention of the Government to take any further steps with regard to the convention in the direction indicated.

Persons Excluded from Pensions Bill.

Mr. TREVELYAN THOMSON asked the Minister of Health the approximate number of persons who, on account of their not being insured under the National Health Insurance Acts, would be excluded from all benefits under the proposed Pensions Bill, and the proportion which would be wage-earners.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: So far as the first part of this question is concerned, I would refer the hon. Member to Tables F and G on pp. 41 and 42 of the Government Actuary's Report on the Bill. These tables show in some detail the total population of each sex and the corresponding insured population. In regard to the second part of the question, the compulsory provisions of the Bill apply to practically all wage-earners who are either engaged in manual labour or are employed at rates of remuneration not exceeding £250 a year, and provision is being made for the continuance, on a voluntary basis, of the insurance of wage-earners who cease, or have already ceased, to be included in these categories.

The Use of Artificial Light.

Mr. Kenyon asked the Minister of Health whether, before sanctioning the setting up of institutions for the use of artificial light by local authorities, he would satisfy himself that a doctor experienced in this work was available.—Sir Kingsley Wood replied: The answer is in the affirmative.

THURSDAY, JULY 2ND.

Water Shortage at Saltash Hospital.

Colonel Day asked the Minister of Pensions whether, seeing that there was a shortage of water at the Ministry of Pensions Hospital for neurasthenics at Saltash, and that 450 patients and a large staff had not the necessary supplies, he would allow the patients to return home and continue to draw full treatment allowances.—Major G. C. Tryon replied: The temporary shortage of water which prevailed for a few days at Saltash Hospital has now disappeared. The supply for the last fortnight has been normal and is adequate for all requirements. I do not anticipate any further difficulty.

Closing of Oulton Hall Hospital.

Mr. Lunn asked the Minister of Pensions whether it had been decided to close the hospital at Oulton Hall, near Leeds; if so, on what date he proposed to close it and for what reason; was he aware that Oulton Hall was the only neurasthenic hospital in the county of York; that the hall and grounds had been given free to the nation by the owner to be used for this purpose; that there were 120 patients there, and a large number of ex-Service men who had received considerable benefit from treatment at this establishment; and that there was no other way in which they could be treated so economically; and would he reconsider his decision so as to allow the good work to proceed uninterruptedly.—Major G. C. Tryon replied: In view of the continuous decline in the number of pensioners requiring the kind of treatment provided at Oulton Hall it has been decided, after a careful review of the position throughout the country, to close this hospital (where there are at present 84 patients, only 42 of whom are drawn from the county of York) at or about the end of this month. In arriving at this decision, the points mentioned by the hon. Member have not been overlooked, but I have had to keep in view the general requirements and the necessity for making the most efficient and advantageous use of the facilities for neurological treatment at my disposal, having regard to the reduced number of cases to be dealt with and their distribution over the country as a whole.

Night-work in Bakeries.

Mr. Trevelyan asked the Home Secretary what the figures were of the final vote in favour of the ratification of the convention for the abolition of night baking at the International Labour Conference; how many of the votes adverse to ratification represented governments and which governments; how many represented the employers; and how many the workers.—Sir W. Joynson-Hicks replied: The figures at the final vote showed 81 in favour of the draft convention and 20 against. Of the adverse votes, three were given by delegates representing the British and Indian Governments, and the remainder by employers' delegates. There were a considerable number of abstentions.

Medical Inspection of School-children.

Mr. Briant asked the President of the Board of Education whether the Board had taken any steps to enforce the provision of medical inspection for the detection and correction of visual defects in those schools under the 14 local education authorities which the chief medical officer of health, in his report of 1923, stated make no such provision.—Lord E. Percy replied: I am glad to say that of the 14 local authorities in question six have, since the report was issued, provided for visual treatment, and seven others have submitted proposals for such provision. In the remaining case I am advised that any treatment which may be required can be obtained without special provision being made by the authority.

Compensation for Mr. W. S. Harnett.

Lord Henry Cavendish-Bentinck asked the Minister of Health whether he would advise the Government to pay to Mr. William Smart Harnett an adequate sum in compensation for his wrongful detention in various mental hospitals, having regard to the fact that Mr. Harnett had been found by a jury to have been sane when detained by Dr. Bond and for the rest of his detention, that this opinion had not been upset by either the Court of Appeal or the House of Lords, by which tribunals Mr. Harnett's case had been heard, and having regard to the fact that, although having thus been found to be sane, Mr. Harnett was to-day practically a ruined man on account of the legal expenses of the three actions in which he was concerned and the heavy expenses of his confinement, in all a sum of over £25,000.—Mr. Neville Chamberlain replied: I do not think that any claim for compensation out of public funds can be substantiated in this case. In any event, no servant of the Crown was involved other than Dr. Bond, and, as my noble friend is no doubt aware, a new trial has been ordered against Dr. Bond, and the matter is therefore still sub judice. I must not, however, be taken as admitting that the question accurately states the facts, for I observe that the Lord Chancellor in his judgment dismissing Mr. Harnett's appeal expressly pointed out that it was not in fact proved at the trial, nor found by the jury, that the appellant was of sound mind between the date of his alleged detention by Dr. Bond and his subsequent escape from custody.

Ophthalmic Benefit.

Mr. Bennett asked the Minister of Health whether he was aware that, as a result of the new model scheme for the provision of ophthalmic benefit by approved societies, which stipulated that an applicant for the benefit must, at the cost of 1s., have obtained and furnished his society with a written recommendation from a panel doctor, the charge for the necessary ophthalmic examination of the applicant had increased from 5s., which was the fee paid to qualified opticians, to £1 1s., which was the fee charged by ophthalmic surgeons; and whether, in view of the satisfactory nature of the service heretofore rendered by qualified opticians, he would suspend the order until the Royal Commission on the disposal of the surplus funds of the various approved societies could investigate and report on the matter.—Mr. Neville Chamberlain replied: I am aware that the cost of ophthalmic benefit under the new scheme may, in certain cases, show an increase as stated by the hon. Member over the cost of optical benefit under the existing schemes, but there will be no charge for the insurance doctor's recommendation, and the new arrangements have been generally accepted by approved societies. It is impracticable to adopt the suggestion in the latter part of the question, inasmuch as the new schemes for societies and branches, valued as at Dec. 31st, 1922, are due to commence on Monday next.

High Infant Mortality at Market Drayton.

Mr. Griffith asked the Minister of Health whether he had seen a report of a recent meeting of the Market Drayton Nursing and the Maternity and Infant Welfare Associations, where Dr. Wheatley, the medical officer for Shropshire, alluded to the high infant mortality of Market Drayton, and said that the principal causes of the high rate of infant mortality were bad housing and ignorance, and that the remedies were education and better housing; and whether he would at once publish the report of his own medical woman inspector on Market Drayton, to show what was her view of the causes of, and remedies for, the high infant mortality.—Mr. Neville Chamberlain replied: The answer to the first part of the question is in the affirmative. As regards the second part, I would refer the hon. Member to the answer which I gave on this subject on May 11th.

Sewage Pollution of the River Lee.

Captain Garro-Jones asked the Minister of Health whether he was aware that the River Lee, which passed through thickly populated London districts, was at present badly polluted with crude sewage; that the pollution was now worse than it had ever been; that the state of the river was not only offensive to the many rowing clubs which used it but was detrimental to the health of the dense riparian population; that the powers under the Rivers Pollution Prevention Acts were, as respects this river, divided between the Middlesex County Council and the Lee Conservancy Board; and that most of the pollution originated from tributaries within the control of the Middlesex County Council; and whether he would consider the desirability of promoting a short Bill to make the Lee Conservancy Board the rivers pollution prevention authority for the whole length of the river and its tributaries, and immediately urging the urban districts in Middlesex and the Middlesex County Council, in the interests of public health, to cease discharging sewage into the River Lee and its tributaries.—Mr. Neville Chamberlain replied: I am aware of the unsatisfactory condition of this river. I am not satisfied that it would be desirable to promote a Bill as suggested. The right remedy is to obtain treatment and disposal of the sewage, and my efforts have been directed to that end. Two of the large local authorities are now spending large sums in improving their disposal works, and a Bill is now before Parliament for taking the sewage of two others into the London main drainage system. When these improvements have been effected, conditions should be very much better.

Birmingham Hospital Bill.

St. Mary's Church, Birmingham, and General Hospital Bill was read a third time.

FRIDAY, JULY 3RD.

Infant Death-rate in Bombay.

Colonel DAY asked the Under Secretary of State for India whether he was aware of the increasing practice in Bombay of women employed in cotton factories administering opium to their babies before proceeding to their work and that, as a result, the infant death-rate in Bombay was approximately two in three; and would he make representations to those concerned suggesting that opium be made less accessible.—Earl WINTERTON replied: I am aware of the practice, but not that it is increasing. The average annual figures of infant mortality from all causes for the three years from 1922 to 1924 was 411 per 1000, as compared with 624 in the previous three years. As regards the last part of the question, the Government of India have addressed inquiries to all local governments as to the extent of the practice referred to and the question of taking measures specially designed to check it; my noble friend proposes to await the results of these inquiries.

MONDAY, JULY 6TH.

Indian Medical Service.

Sir RICHARD LUCE asked the Under Secretary of State for India if the Government had yet arrived at conclusions as to the future of the Indian Medical Service; and whether it was their intention to carry out the proposals of the Lee Commission in this respect, especially in the matter of establishing provincial medical services the members of which would not be under the control of the Secretary of State.—Earl WINTERTON replied: The Government of India's proposals are now under the consideration of my noble friend the Secretary of State, who hopes to arrive at early decisions. Meanwhile I regret that I am unable to make any further statement.

Medical Services in Tanganyika.

Mr. BARCLAY-HARVEY asked the Secretary of State for the Colonies the amount spent on medical and sanitary services and research work by the Germans in Tanganyika in the year 1913; and what were the corresponding figures for the year 1923–24.—Mr. AMERY replied: Owing to the difference in the system on which the British and German estimates are presented, the comparison is by no means easy. The amount provided for the services referred to in the German estimates for 1913 is approximately £99,000, converting the mark at 20 to the £. But this does not include expenditure by certain local bodies to which grants were made for a variety of purposes, including expenses connected with hospitals and sanitation, which are not shown separately in the estimates. The amount provided for similar services in the estimates for 1923–24 was approximately £116,700, which included all expenditure on buildings.

Lieut.-Colonel JAMES asked if the right hon. gentleman was satisfied that the amount spent was sufficient to fight epidemic disease in Tanganyika.

Mr. AMERY: No, Sir; I should like to spend a great deal more.

New Tuberculosis Order.

Mr. ALBERT ALEXANDER asked the Minister of Agriculture whether he would have the draft of the Order he was proposing to make, directing the slaughter of cattle affected with tuberculosis on the lines of the Tuberculosis Order of 1914, placed in the Library of the House before the discussion takes place on the Diseases of Animals Financial Resolution.—Mr. WOOD replied: Yes, Sir; I hope to place a copy of the draft Order in the Library towards the end of the present week.

Food Preservative Regulations.

Sir ROBERT GOWER asked the Minister of Health whether he had received a communication from the Bakery Allied Traders' Association representing that the result of the proposed Public Health (Preservatives, &c., in Food) Regulations, 1925, would mean dearer food and an acute shortage of supplies, with actual starvation in sight should a national emergency arise; and whether he had any statement to make upon the matter.—Sir KINGSLEY WOOD replied: Yes, Sir, my right hon. friend has received the communication referred to, which has had very careful consideration. He cannot, however, admit that there is any substantial ground for the apprehension expressed in the latter part of my hon. friend's question.

Dirty Fruit from Turkey.

Dr. HADEN GUEST asked the Parliamentary Secretary to the Overseas Trade Department whether his attention had been called to the existence of dirty and insanitary conditions prevailing in the transport, handling, and packing of dried fruit at Smyrna, Anatolia, and to the rates of wages and conditions of labour of the workpeople employed; and whether he would make inquiry to determine what action, through the consular service or otherwise, was required to protect the consumer against dirt contamination and the Dominions fruit-grower against unfair competition.—Mr. A. M. SAMUEL replied: This matter has engaged the attention of the Ministry of Health and my department very fully for some considerable time, and I have been in frequent communication on the subject with both the Ministry of Health and H.M.'s Consul General at Smyrna. I will consider in conjunction with my right hon. friend what action it is possible to take after further reports, which I have called for, have been received from Smyrna.

Prohibition of Night Baking in Foreign Countries.

Mr. TREVELYAN asked the Minister of Labour how many European countries had already abolished night baking; and in how many of those countries there had been any resultant rise in the price of bread.—Mr. BETTERTON (Parliamentary Secretary to the Ministry of Labour) replied: The information available shows that legislation prohibiting night work in bakeries is in force in the following European countries: Austria, Belgium, Czecho-Slovakia, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Netherlands, Norway, Poland, Soviet Russia, Spain, Sweden, Switzerland (two cantons). This legislation does not necessarily follow the lines of the convention recently adopted by the International Labour Conference. I am unable to state from the official records of retail prices which are available how far any rise which may have taken place in the price of bread in the respective countries is attributable to the operation of such legislation.

TUESDAY, JULY 7TH.

Miners' Phthisis.

Mr. DAVID GRENFELL asked the Secretary for Mines whether he was in a position to report upon the inquiries of his department into the incidence of miners' phthisis among men engaged in rock-drilling by the use of compressed air machines.—Colonel LANE-FOX replied: I am not in a position to give any general conclusions, for the inquiry in question was confined to three mines. But its result was to support the apprehension that, in those mines, rock-drilling may be dangerous to health. I have arranged for a more extensive inquiry to be put in hand at once. Meantime the inspectors are taking up the question of precautionary measures at the three mines.

State Contributions to National Insurance.

Mr. RHYS DAVIES asked the Minister of Health if he would give the ratio of State contributions towards the national health and widows', orphans', and old age pensions insurance schemes, respectively, based on each £1 benefit payable or on any other unit of calculation.—Sir KINGSLEY WOOD replied: As the hon. Member is aware the State contribution towards the National Health Insurance system is two-ninths of the expenditure on benefits, exclusive of the cost of central administration; including this item the State contribution is just over one-quarter. It is estimated that the State contribution to the new pensions system will be equal, on the average, to one-quarter of the expenditure on benefits in the first ten years of the scheme and that after this period it will be approximately two-fifths of the expenditure.

Food Preservatives Regulations.

Mr. ALEXANDER asked the Minister of Health when the Public Health (Preservatives, &c., in Food) Regulations were to be laid before Parliament; whether any alterations in the published draft were proposed; and, if so, whether information as to the nature of these alterations could be supplied to Members before the regulations were finally made and laid before Parliament.—Sir KINGSLEY WOOD replied: My right hon. friend hopes that the regulations will be laid before Parliament adjourns. Considerable modifications have been made in the original draft as a result of full discussion between my right hon. friend's officers and the interests involved. The actual coming into force of the regulations will be postponed to enable necessary adjustments to be made by the trades concerned, and during that period my right hon. friend would hope that a discussion might be arranged in this House if there is a general desire for it.

THE TUBERCULOSIS CONFERENCE.

THE eleventh annual conference of the National Association for the Prevention of Tuberculosis, under the chairmanship of Sir Arthur Stanley and Sir Robert Philip, was held this week at the Robert Barnes Hall of the Royal Society of Medicine, when upward of 500 delegates attended. The international character of the gathering was indicated by papers written by scientists from Austria and Denmark. Dr. V. Vorobieff, professor of tuberculosis at Moscow University, brought the good wishes of his Russian colleagues.

The subjects under discussion were Tuberculosis in Childhood and the Treatment of Tuberculosis by Sanocrysin. The conference was opened by Sir Kingsley Wood. It had been intended that Prof. Pirquet should have delivered the introductory address, but being prevented Dr. Richard Wagner, his first assistant at the Vienna Children's Clinic, read his paper. Prof. Pirquet analysed with remarkable clarity the statistics of tuberculosis given in the Registrar-General's annual report for 1922. In his turn Dr. Wagner gave an illuminating account of the mode of treatment employed at the Vienna Clinic, the chief features of which were the complete disregard of tuberculin therapy and the attention paid to the feeding of the tuberculous child. Food-scales had been worked out in relation to the sitting height of the children who were given larger quantities of food than healthy children of the same age. Stress was laid on the desirability of dealing with tuberculous children in their own homes; hospital accommodation could not possibly be provided for all the cases existing. A slide illustrating a practical wooden balcony for open-air therapy, attached to the window of an ordinary house, was shown.

Dr. A. Stanley Griffith, of the Field Laboratories, Cambridge University, emphasised the importance of dealing with the menace of tuberculous cows' milk; he thought that the general public was not sufficiently informed of the fact that bovine tuberculosis was an important source of human tuberculosis. Sir Henry Gauvain stigmatised the argument that drinking slightly infected tuberculous milk would enable children to acquire immunity to infection as a dangerous and unnecessary doctrine; even if it was proved to be correct there would be more scientific methods of imparting such immunity. Medical men would hesitate to eat infected oysters knowingly to immunise themselves against typhoid fever. Prof. J. Fraser, of Edinburgh, pointed out the large proportion of cases of surgical tuberculosis coming from country districts to the Edinburgh Children's Hospital; this he attributed to the ignorance of the cow-keeper of the harm done by tuberculous milk. Sir Percival Hartley expressed his entire agreement with all that had been said on the dangers of tuberculous milk and finally, at the instance of the (medical) chairman of the St. Helens Public Health Committee, a resolution was sent by the conference to the Ministry of Health urging the Government to render effective the provisions of the Milk and Dairies Act dealing with tuberculous milk.

Instructive accounts of the treatment of surgical tuberculosis at Alton and Carshalton were given by Sir Henry Gauvain and Dr. W. T. Gordon Pugh. Slides were shown illustrating the successful treatment of marked kyphosis at Alton by hyperextension. Dr. Pugh showed carriages on which a child could be satisfactorily immobilised during attention to its natural functions and the toilet of the hair. Pushed on these carriages the children were able to go out and see the shops and pay a visit to the cinema. He emphasised the importance of parents allowing their children to be sent to hospital in an early stage of the disease. Prof. Louise McIlroy pointed out the lack of coördination existing at present between the obstetrician and the tuberculosis physician; she wanted a sanatorium equipped with an obstetrical staff instituted near the borders of London for pregnant tuberculous women.

The last session was devoted to papers by Profs. Mollgaard and Knud Faber, of Copenhagen, and Prof. S. Lyle Cummins on the sanocrysin treatment. Sir Robert Philip expressed a guarded opinion that the ultimate outlook of this method of treatment is encouraging, and praised the scientific attitude taken up by Prof. Mollgaard, who had placed his knowledge at the disposal of the Medical Research Council. Emphatic opinions were expressed by hospital workers and tuberculosis officers on the folly of allowing advanced cases to take their discharge from institutions and so return home to infect the young children of the family.

Medical News.

UNIVERSITY OF LONDON, KING'S COLLEGE FOR WOMEN.—At the third B.Sc. examination in Household and Social Science held recently the following candidates were *successful*:—

Edna G. Allen, Margaret F. Brownlee, Zille G. Bull, Bertha M. Grainger, Grace J. Helps, Hyacinth E. Kirman, Nancy H. Knowles, Elspeth M. Marshall, Helen E. Ross, Dorothea V. C. Story, Enid C. Strange, Annie Sutcliffe, and Mary M. G. Wright.

UNIVERSITY OF OXFORD.—The following candidates passed in the recent Final Examination for the degrees of B.M. and B.Ch.:—

Materia Medica and Pharmacology.—Howard W. Allen, Merton; Ormond A. Beadle and Denis H. Brinton, New; Conal Charleson, Queen's; Henry E. Cuthbert, St. John's; Johannes G. A. Davel, Trinity; Walter N. Dickenson, Pembroke; Hugh R. J. Donald and Cecil W. Flemming, Trinity; Kenneth A. Hamilton, Christ Church; Reginald A. Haythornthwaite, Keble; Otto Hooper, University; Charles W. Hope-Gill, Queen's; Stanford Howard, Christ Church; George L. M. Inkster, Balliol; Arthur J. Leslie-Spinks, Oriel; George E. Macdonald, New; Robert G. MacGregor, Worcester; Patrick C. Mallam, Queen's; Ripley Oddie, Oriel; Robert Okell, Christ Church; Malcolm G. Pearson, Keble; Jack W. Pugh, University; Hill G. Wells, Magdalen; and Edward M. B. West, New.

Pathology.—Ormond A. Beadle, New; Louis W. H. Bertie, St. John's; Denis H. Brinton, New; Wilbert H. Brown, Queen's; Noel Chilton, Brasenose; John H. Chitty, New; Alan W. Cubitt, Wadham; Eric L. Fothergill, Keble; Alan C. Gairdner, University; Arthur H. Gale, Trinity; Thomas B. Hodgson and Charles W. Hope-Gill, Queen's; Alfred Kendrew, Christ Church; James H. Kennedy, Magdalen; David Lurie, Lincoln; Clifford E. Roberts, Jesus; Richard W. A. Simmons, Oriel; Edward M. B. West, New; Arthur G. Wilson, Brasenose; Rosalind V. Carruthers and Margaret A. L. Herbertson, Society of Oxford Home Students; Margaret N. Jackson, Somerville; Kathleen G. Norton, St. Hugh's; and Irene M. Titcomb, Society of Oxford Home Students.

Forensic Medicine and Public Health.—Douglas A. Abernethy and Eric N. Allott, Balliol; Frank J. Bach, New; Robert B. Bourdillon, University; Hugh N. Bradbrooke and Clarence S. Broadbent, Queen's; Albert V. Clemmey, Christ Church; Charles R. Croft, Trinity; John N. C. Ford, Hertford; Samuel Harris, Jesus; Thomas B. Hodgson, Queen's; Alfred Kendrew, Christ Church; Raymond Lewthwaite, Magdalen; Thomas M. Ling, New; Gerald L. M. McElligott, Hertford; William D. B. Read, Magdalen; Clifford E. Roberts, Jesus; Richard W. A. Simmons, Oriel; John W. de W. G. Thornton, Magdalen; George P. Thorold, Trinity; Oliver R. Tisdall, Hertford; Arthur L. Wilkinson, Trinity; William R. Wood, Pembroke; Hon. Olive B. Buckley, Somerville; Kathleen G. Norton, St. Hugh's; Janet M. Vaughan, Somerville; and Rosa S. Wordsworth, Lady Margaret Hall.

Medicine, Surgery, and Midwifery.—Douglas A. Abernethy and Eric N. Allott, Balliol; Robert B. Bourdillon, University; Hugh N. Bradbrooke, Queen's; John S. Jerome and Alfred Kendrew, Christ Church; Eric L. Newell and Clifford E. Roberts, Jesus; Victor P. Robinson, St. John's; John G. S. Thomas, Hertford; Robert A. Walsh, Magdalen; Evelyn C. Whitehall-Cooke, Queen's; Hon. Olive B. Buckley, Somerville; Ella J. Cockram, Society of Oxford Home Students; and Janet M. Vaughan, Somerville.

The following Theodore Williams Scholarships have been awarded: In Physiology, F. Hawking (University Coll.); in Human Anatomy, J. M. Gibson (University Coll.); in Pathology, O. A. Beadle (New Coll.). The Welsh Memorial Prize for Anatomical Drawing was awarded to J. H. B. Beal (scholar of University Coll.). The Radcliffe Scholarship in Pharmacology was awarded to K. A. Hamilton (Christ Church). Recent elections by external bodies:—To a Commonwealth Fund Fellowship: B. G. Scholefield (Christ Church and Guy's Hospital); to Rockefeller Medical *Fellowships*: W. S. Dawson (Trinity Coll.), H. W. Florey (Magdalen Coll.), and G. P. Wright (Exeter Coll.).

Royal College of Surgeons of England: Election of Council.—The annual meeting of Fellows of the Royal College of Surgeons to elect three members of the Council was held on July 2nd, the President, Sir John Bland-Sutton, Bart., in the chair. There were seven candidates for three vacancies. The President declared the following three Fellows to be elected :—

	Votes.	Plumpers.
Arthur Henry Burgess	462	48
James Sherren	441	14
Sir John Lynn-Thomas	406	7

The other candidates were :—

Victor Bonney	361	19
Vincent Warren Low	332	12
John Percy Lockhart-Mummery	243	11
Herbert John Paterson	232	18

The President further declared that 964 Fellows had voted, 961 sending ballot-papers through the post, and 3 voted in person. Three invalid ballot-papers were received. Mr. H. J. Price (of Maldon) and Mr. Wilmott Evans (of Harley-street) were the scrutineers.

Liverpool's New Hospital for Women.—At a well-attended meeting held at Liverpool on June 29th approval was given to the scheme for the amalgamation of the Hospital for Women (Shaw-street) and the Samaritan Hospital, and authority was given for the issue of a public appeal for £80,000, which, with the £40,000 already in hand, will make up the £120,000 estimated for the new building and its equipment. Both of these hospitals have a large record of usefulness, but the present buildings—with 85 beds—are out of date. The new scheme will provide 120 beds. At the meeting promises of subscriptions to the amount of £10,000 were announced, including £5000 from the sons of the late Alderman Cohen, £1000 each from Sir Charles Nall-Cain and Lieut.-Colonel Campbell N. Watson, D.S.O., £600 from Mrs. J. R. Hughes, and £500 each from Sir William Forwood and Sir Richard Caton, £250 each from Messrs. Balfour, Williamson and Co. and Mr. Frank Minoprio, and £200 each from Dr. Gemmell, Mr. Archibald Crawford, and Messrs. Wm. Crawford and Sons, Ltd.

Fellowship of Medicine and Post-Graduate Medical Association.—A late afternoon course in the Diagnosis and Treatment of Common Diseases of the Nervous System has been arranged by the West End Hospital from July 27th to August 14th. The lectures and clinical demonstrations will be given in the out-patient department at 73, Welbeck-street.—A vacation course will be held at the Prince of Wales's General Hospital (North-East London Post-Graduate College, Tottenham) from August 4th to 15th. The daily sessions from 10.30 A.M. to 5.30 P.M. will include lectures and demonstrations in all branches of Medicine and Surgery and in the Special Subjects, including Mental Diseases and Fevers, the first of which will be by Mr. Lockhart-Mummery. The formal lecture, at 4.30 P.M., will be free to members of the Fellowship of Medicine.—From August 24th to Sept. 5th the Queen Mary's Hospital, Stratford, will give an intensive course, when lectures, demonstrations, ward rounds, operations, &c., will be demonstrated in the various departments of medicine, surgery, and the specialties.—The following special courses will take place in September: Diseases of the Chest, Infants, Dermatology, Electrotherapy, Ophthalmology, and an intensive course at the Westminster Hospital.—Copies of the syllabus of each of the above-mentioned special courses and the programme of the Fellowship of Medicine will be sent on application to the Secretary at 1, Wimpole-street, London, W. 1.

Irish Medical Association: Annual Meeting.—The annual meeting of this Association was held on June 25th at the Royal College of Surgeons in Ireland, Senator W. O'Sullivan, M.D., President, in the chair. There was only a fair attendance of the 456 members on the books of the Association on Dec. 31st, 1924. Prof. F. C. Purser, of Dublin, and Dr. H. T. Warnock, of Donegal, were unanimously elected President and Vice-President. Prof. Purser, in his presidential address, pointed out that an overwhelming body of medical opinion in Ireland was in favour of the continuance of the present system of medical registration. It was not inconsistent with their national aspirations, because no pressure was put on them to continue as they were, and they could end their coöperation with the General Medical Council at the termination of any agreement come to between the Irish and English Governments. Economically, it was true, they were training many able men and women who could not hope to earn a living in Ireland, but the solution of this did not lie in setting up an Irish Medical Council. These young men and women intended to join the profession anyhow, and if they could not get trained in Ireland they would get trained elsewhere, to the great loss of Dublin, Cork, and Galway.

Royal Institution.—A general meeting of the members of the Royal Institution was held on July 6th, Sir James Crichton-Browne, Treasurer and Vice-President, in the chair. The special thanks of the members were returned to the Delegacy of the City and Guilds (Engineering) College for their valuable gift of micro-photographic apparatus. Mrs. Romanes and Dr. R. A. Young were elected members.

Nursing and Public Health.—At the annual meeting of the Manchester and Salford District Nursing Institution held on June 30th Dr. R. Veitch Clark, medical officer of health for Manchester, spoke of the way in which the associations and the public health authorities might be most usefully developed. It was in dealing with diseases of young children—measles, whooping-cough, bronchitis, and bronchial pneumonia—that the practice of curative and that of preventive medicine were closely interlinked. Nursing associations were primarily established for the care of those who could not themselves afford to pay for nursing, and indeed a large part of the work of their association was confined to such cases. Between the very poor and the rich there were two classes, represented by the wage-earners under the National Health Insurance Act and by the group immediately above this class who were not wealthy, but reasonably comfortable. Dr. Clark outlined a scheme whereby the families of the "reasonably comfortable" group could obtain cheap nursing benefits. Employees at private firms would contribute 1*d*., 2*d*., or 3*d* a week to the Nursing Institution and receive in return any nursing that from time to time they might require. The contributions could be paid weekly or monthly, according to the amount of nursing desired, or a definite charge could be paid for the daily visits of the nurse as required. The scheme, he said, was a practical one; before he came to Manchester he had established one elsewhere on similar lines and it was running successfully.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, July 13th, to Saturday, July 18th.—Queen's Hospital for Children, Hackney-road, E. Special Course in Diseases of Children daily from 10 A.M., morning and afternoon sessions covering demonstrations, ward round, out-patient departments, and operations (second week).—St. Peter's Hospital, Henrietta-street, W.C. Special Course in Urology. Clinical work every afternoon throughout the week. Lectures: Monday, Mr. J. Swift Joly: Tumours of the Urinary Tract; Tuesday, Mr. Swift Joly: Urinary Calculi; Wednesday, Mr. Clifford Morson: The Relationship of Urology to Group Medicine; Thursday, Mr. F. J. F. Barrington: Non-tuberculous Infections of the Urinary Tract; Friday, Sir John Thomson-Walker: Urinary Obstruction.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, July 13th.—11 A.M., Surgical Registrar: Surgical Wards. 12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Donald Armour: Operations.

Tuesday.—11 A.M., Dr. McDougal: Electrical Dept. 2 P.M., Mr. Banks-Davis: Throat, Nose, and Ear Dept. 3 P.M., Dr. Pritchard: Medical Wards.

Wednesday.—11 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Burnford: Medical Wards. 2 P.M., Dr. Dowling: Skin Dept.

Thursday.—11 A.M., Sir Henry Simson: Gynæcological Wards. 12 noon, Dr. Pritchard: Modern Methods of Medicine. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.

Friday.—10 A.M., Sir Henry Simson: Gynæcological Operations. 12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.

Saturday.—10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Tuesday, July 14th.—4.30 P.M., Mr. N. B. Fleming: Fundus Changes as an Index of General Diseases.

Friday.—4.30 P.M., Mr. W. E. Tanner: Surgical Aspects of Tuberculous Mesenteric Glands.

Daily: In- and Out-patient Cliniques, Operations, Cliniques in Special Departments, &c.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone-road, N.W.

Thursday, July 16th.—5 P.M., Mr. Leslie Williams: Toxæmia of Pregnancy.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

Thursday, July 16th.—4 P.M., Dr. Thursfield: The Treatment of the Asthmatic Child.

Appointments.

FAULKNER, H A, M R.C.S., L.R C P Lond, B V Sc, has been appointed a Member of the Honorary Medical Staff of the Willesden General Hospital

GILMOUR, J., M.S Durh., F R.C.S Eng, Hon. Assistant Surgeon, Royal Victoria Infirmary, Newcastle-on Tyne

Royal Northern Hospital, Holloway CALVERT, I E. G B, M.D, M R.C.P, Physician with charge of Out patients; *LANE ROBERTS, I C. S, F R C.S, Obstetric Surgeon with* charge of Out patients

Vacancies.

For further information refer to the advertisement columns

Aberdeen County—Asst M O H £600

Bath, Royal Mineral Water Hospital.—Res. M O £130

Birkenhead Union Infirmary—Res. Asst M O. £300

Birmingham University—Lecturer in Physiological Dept £300 Also Demonstrator of Anatomy £300

Bournemouth, Royal Victoria and West Hants Hospital.—Res H.S £150

Cairo School of Dental Surgery—Supt and Lecturer in Metallurgy, &c. £E.900 Lecturer in Surg £E.480 Asst Lecturer in Surgery £E.360 Lecturer in Mechanics £E.480

Cardiff City Mental Hospital, Whitchurch—Res Clin Asst 50 guineas.

Colombia, South America—Hosp Asst. M.O £600–£650

Eastbourne, Royal Eye Hospital—Hon. Ophth S

Edinburgh University—Chair of Public Health £1000

Evelina Hospital for Children Southwark, S.E.—H.S. £120

Exeter, Royal Devon and Exeter Hospital—Reg and Clin Asst.

Hampstead General and N W London Hospital, Haverstock-hill, N W—Radiologist. £100

Hertford County Hospital.—H S £150

Hong Kong University—Reader in Biology £600

Lanark County—Bacteriologist and Pathologist £750.

Liverpool Royal Infirmary—Hon Asst Surg

Liverpool Royal Southern Hospital.—Hon P

Manchester, Ancoats Hospital.—Hon Radiologist. H.S at rate of £100 Also Anæsth 10s 6d. per attendance

Margate, Royal Sea Bathing Hospital—H.S £200

Metropolitan Ear, Nose, and Throat Hospital, Fitzroy square, W—H.S. £150

New Zealand Government, Mental Hospitals Dept.—Two Asst M O 's. £615

Northampton General Hospital—Hon Asst S

Norwich, Norfolk and Norwich Hospital—Res. Anæsth. £150

Oldham County Borough.—Asst School M.O £600

Royal Northern Hospital, Holloway, N—M O in charge of Electro-Therapeutic and Massage Dept 100 guineas. Also S.

St Mark's Hospital for Cancer &c, City-road, E C—Hon S Also Hon Asst S

St Paul's Hospital for Skin, &c, Diseases.—Hon Anæsth.

Salisbury General Hospital—Hon S £150

Samaritan Free Hospital for Women.—H S £100

Southampton, Royal South Hants Hospital—Jun H S. £150

Staffordshire Education Committee—Asst Sch Med Inspect £600

Staffordshire General Infirmary—H.S £200

Sudan Govt., Wellcome Tropical Research Laboratories—Asst Bacteriologist £E 720

West Derby, Liverpool Alder Hey Children's Hospital—Male and Female Res. Asst M O Each £200

Whittingham, Preston, County Mental Hospital.—Temp M.O £7 per week

The Chief Inspector of Factories, Home Office, London, S.W announces a vacancy for a Certifying Factory Surgeon at Torpoint, Cornwall

Births, Marriages, and Deaths.

BIRTHS.

BROWN—On June 29th, at "Kingslea," Sutton, Surrey, the wife of Dr C. Carron Brown of a son

LODGE.—On July 2nd, at Heath Hall, Halifax, Yorkshire, the wife of W O Lodge, M D, F R.C.S. Edin, of a daughter

MARRIAGES

NICHOLLS—SCHUSTER.—On July 2nd, Marriott Fawckner Nicholls, B.A., M.R.C.S, L.R.C P, son of the late Marriott Nicholls, Esq, to Norah Henriette Schuster M.B, Ch.B., daughter of Sir Arthur Schuster, Kt., F R.S

THOMAS—RICKS.—On July 1st, at the Parish Church, Cockington, Torquay, by the Rev H Studdy, M A. Clement Price Thomas, F R.C.S., to Ethel Doris, daughter of Mr and Mrs Mortimer Ricks, Paignton, S Devon

DEATHS

FRASER.—On June 30th, Evan J H Fraser, M.D, F R C.S. Edin., of Hull.

HARFORD—On July 4th suddenly, at Shirky, Harpenden, Charles Forbes Harford, M.D, First Principal of Livingstone College, aged 60

HOVELL.—On June 30th, Thomas Mark Hovell, F R.C.S., of Harley-street and Hatfield, Herts, aged 72

N B—A fee of 7s. 6d is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE ARTIFICIAL SUNLIGHT CLINIC AT KINGSTON-UPON-HULL

THE first municipal clinic to be established in this country for the treatment of rachitic children by artificial sunshine was opened last year at 60, Collman-street, Hull. A few months later the city of Liverpool after sending a deputation to Denmark, set up at their Fazakerley Sanatorium an installation for the treatment of tuberculosis of the bones and joints. The first municipal clinic in London for the provision of treatment by artificial sunlight was opened in St Pancras during March, and several other clinics are now running in the metropolis.

Procedure at the Hull Clinic.

A report of the Hull clinic has just been published by Dr W. Allen Daley, medical officer of health, and Dr. Kathleen Gamgee, assistant medical officer for maternity and child welfare The infants are weighed and measured, their history taken, and their blood tested for hæmoglobin content in rooms on the ground floor The sunlight treatment is given in a small room (15 feet by 12 feet) on the first floor Two or three mothers can wait in a small dressing room adjoining the treatment room The period of exposure of each patient to the ultra-violet rays varies from 3 to 15 minutes One child only is treated at a time, and is held, without clothing, in front of the arc lamp by a nurse Another nurse controls the arc lamp, and a third nurse is engaged downstairs. Dr Gamgee is responsible for the ordering of the time of exposure required for each child, and attends the clinic whenever it is open. The lamp, had it not been presented to the corporation, would have cost about £35; renewal of electrodes has cost £9 16s 10d., and electricity 18s 9d

During the year 110 patients have been treated at the clinic. The children for treatment were selected by the health visitors who, in the course of their home visits, discovered rickety children who had not in most cases attended a maternity and child welfare centre These children were examined by the assistant medical officer, and if she considered them suitable for treatment they were put upon the waiting list for the artificial sunlight clinic. In the meantime they were given advice with regard to diet and general hygienic treatment, the routine being to prescribe pure cod liver oil and one pint of milk per day for each child, and, in severe cases daily tepid sponging and gentle massage by the mothers until the child can be transferred from the waiting list to the artificial sunlight clinic. This treatment has improved the health of the child in cases where the mother is persevering and intelligent, *but improvement effected in this way is far more gradual and altogether a slower process than the dramatic changes seen at the artificial sunlight clinic*

Each child is subjected on its first attendance to a careful and prolonged physical examination It is weighed and measured and its blood tested The dosage for each child *is small at first and increased very* gradually It is remarkable how little skin reaction some of these babies give to doses that quickly cause the skin on an adult to peel The browning produced by the tungsten arc is not great *Many of these babies become browner after* the treatment. They lose their transparent anæmic look, become livelier, and at the same time more peaceful. The first improvement is usually registered by the mother who states, of her own accord, that her baby is more active, but at the same time sleeps more and is far less trouble at home One of the cardinal symptoms of rickets is the nervousness and irritability of the small patient. It is one of the first symptoms to yield to the artificial sunlight cure properly administered Another point to note is the rapidity with which the marked anæmia yields to the ultra violet radiations. Out of 88 cases only 10 cases (four of them cases of grave organic disease) showed no increase in the percentage of the hæmoglobin (red *colouring* matter) of the blood In one case, that of a delicate and very anæmic little girl of 4½, who had been under prolonged treatment by private doctors and had been under treatment for some time at the Owen Hall centre, the Hb percentage *increased by 100* per cent at the end of *her six weeks' course*

The estimation of the hæmoglobin percentage is most conveniently done by Tallquist's method Although not a scientifically reliable method, it is a good working scale if done by the same person each time, and it has the advantage of simplicity and quickness and of not alarming the baby more than is absolutely necessary

Classification and Results

Up to the time of reporting 110 patients have been treated at the clinic; 24 are still under treatment, and of the remaining 86, 18 were discharged: because of irregular attendance, 7; development of infectious illness, measles, &c., 10; extreme fretfulness of child, 1.

The remaining 68 cases are divided into the following classes:—

(1) *Severe Rickets:* These cases include some with marked deformity, others with less marked although still obvious deformity, but with severe impairment of general health.

(2) *Slight Rickets:* Including cases of rickets with slight bony deformity.

(3) *Wasting Babies:* No definite rickets.

(4) *Other Conditions.*

(5) *Infantile Paralysis* (anterior poliomyelitis).

The following table sets out the results of treatment:—

—	Number treated.	Much improved.	Improved.	No. change.	Worse.
Severe rickets ..	31	19	10	2	0
Slight rickets ..	22	15	5	2	0
Wasting babies.	6	5	1	0	0
Other conditions	8	0	4	4	0
Old anterior poliomyelitis ..	1	0	0	1	0
—	68	—	—	—	—

Eight cases admitted as suffering from malnutrition or rickets and found to be suffering from grave organic disease (such as kidney disease, tuberculosis, heart disease) were transferred to the children's hospital or to their private doctor. There was a satisfactory attendance, even from those who had to come on two trams, and this indicates that the parents at all events are convinced that their children are improved by treatment at the clinic. The keenness and interest of the mothers is remarkable, and the percentage of cases that have had to be cancelled owing to irregular attendance is very small and is decreasing with each batch of cases treated.

Repeat Courses.

In every case where it is felt that the condition of the child demands it, a repeat course, or even two or three repeat courses (of six weeks' duration each) are given. Experience has taught that it is better to allow an interval of six weeks to elapse before the second repeat course is given. It is very noteworthy how much the child continues to improve in the weeks immediately following the first course of treatment. Re-examination of old cases showed that not only had the good condition of the child been maintained throughout several months, but that it had gone on improving, and the hæmoglobin percentage had not gone down, but had maintained the high level reached at the end of the course of treatment.

Requirements of a Sunlight Clinic.

The treatment is now well beyond the stage of trial; arrangements should be made for making it more readily available for all who require it, including not only rachitic and wasted infants, but also cases of tuberculosis of the bones and joints.

The accommodation which would be necessary in a fully equipped artificial sunlight treatment centre would be two rooms for carbon arc treatment—one for males and one for females—and either two large rooms or a number of smaller rooms in which treatment could be given by the tungsten arc and by mercury-vapour lamps. A waiting room would be necessary; also a recovery room, in which the patients could remain after treatment; a medical examination room; a record room; a nurses' room; and an X ray room with developing room and film room attached. Sanitary accommodation for patients and staff would also be required. The staff which would be necessary for a fully developed centre would be a whole-time medical officer, four or five nurses, a clerk, and a porter.

The cost of the electrical apparatus and wiring of the fully developed clinic would be approximately £1000 and an additional £1000 would be required for furnishing. Further cost, of course, would be entailed by the purchase or rent of the building and its adaptation. At first the medical staff need consist only of the services of a part-time medical officer who might train a junior member of the profession, who would eventually be able to take full charge. The other staff, which would be required at first, need not consist of more than two or three nurses, with the necessary clerical assistance.

THE ASFURIYEH MENTAL HOSPITAL.

BEFORE the opening of the Lebanon Mental Hospital at Asfuriyeh the treatment of mental disease in Syria was entirely in the hands of native priests and exorcists whose cruel and ignorant methods usually aggravated greatly the sufferings of their unfortunate victims. Theophilus Waldmeier, the founder and first superintendent of the above hospital, had a remarkable career. Born in Switzerland, he passed from Roman Catholicism, through ecclesiastical Protestantism to Quakerism. He was a missionary to Abyssinia in the days of King Theodore, whose friend he became. He suffered imprisonment at the hands of the king and for a time his life and that of other prisoners was in grave danger. From Abyssinia he passed to Syria, where, on Mount Lebanon, he eventually founded the Friends' Syrian Mission, turning from that, after some 25 years, to the founding of the mental hospital.

The twenty-sixth annual report of this institution records considerable financial difficulty in carrying on the work, many old supporters having been lost by death. During the year 141 patients were admitted, making a total of 228 under care, and there has been a gratifying freedom from accident and infection. Every effort is made to keep the patients occupied and an electro-therapeutic plant has been installed. The dementia præcox and manic-depressive groups of psychoses account for the vast majority of admissions, and in Syria, as in this country, the principal causes assigned for the mental breakdown are mental stress, syphilis, and heredity. The recovery-rate is 21 per cent., with a further 15 per cent. discharged relieved.

THE TRAINING OF HEALTH VISITORS: CENTRAL EXAMINING BODY.

ON April 1st last the administration of Exchequer grants for the training of health visitors was transferred from the Board of Education to the Ministry of Health. The conditions on which grants are now made by the Minister of Health were set out in THE LANCET of Feb. 21st (p. 420). Students will be required to enter for an examination to be conducted by a central examining body, and the Minister has now approved the Royal Sanitary Institute as this examining body. The Institute will conduct the examinations for health visitors in accordance with the conditions prescribed in Memo. M.C.W. 101, and will issue certificates to candidates who pass the examination and who satisfy the other conditions specified in the memorandum. The diploma issued to students who, before April 1st, 1925, began a course of training approved by the Board of Education, will be regarded as equivalent to the health visitor's certificate. Communications should be addressed to the Secretary, The Royal Sanitary Institute, 90, Buckingham Palace-road, London, S.W. 1.

THE MISSION TO LEPERS.

FOUNDED in 1874, the Mission to Lepers has now published its fiftieth annual report. Nearly 8000 lepers are being supported wholly or partly by the funds of this mission, and over 700 untainted children are being kept and educated in separate homes. The nature of the work has wholly changed since its inauguration owing to the curative treatment now possible. The new treatment is being given at an increasing number of the homes and many lepers have been discharged cured. Dr. R. M. Wilson reports from Korea that chaulmoogra oil and camphor have been found to give better results than the esters. The importance of treating predisposing causes such as hookworm, typhoid, syphilis, and kala-azar is being increasingly realised. The chief need is to find some way of attracting the early cases; a small patch of anæsthesia is liable to be concealed because of the ostracism that must follow its discovery. The Mission has appointed a special secretary for medical work, Dr. Robert G. Cochrane. During the last year Dr. Thomas Cochrane has conducted a world survey of leprosy, which has emphasised the urgent need for new work in Africa.

THE GROWTH OF A HOSPITAL.

IN support of the appeal for the extension of the nurses' home of the Manchester Royal Infirmary an interesting illustrated booklet has been issued setting forth the various stages in the growth of the infirmary. There is a picture of "The Publick Infirmary" in Manchester, opening on the 24th day of June, 1752, and this is followed by a view of the "Daub Hole Fields Infirmary" as it appeared in July, 1755. Then follow pictures of the "Old Infirmary" and its successor. A comparison between the staffs and patients in July, 1752, and in 1924 is shown in the following table:—

	1752.	*1924.*
Beds	12	750
Medical staff non-resident ..	—	23
Nurses	1	233
Porters	1	21
Domestic staff	1	141
In-patients	75	12,386
Out-patients	249	42,318

DONATIONS AND BEQUESTS.—Mr. Solomon Whitta, Bowes-park, N., who left estate valued at nearly £11,000, bequeathed the bulk of the estate for equal division between the London Hospital, St. George's Hospital, the Royal Northern Hospital, Holloway-road, N., and the Hospital for Women, Soho-square, W.C.

New Research
INTO THE
ORIGIN OF CANCER.

[The two communications which follow mark an event in the history of medicine. They form a detailed description of a prolonged and intensive research into the origin of malignant new growths, and they may present a solution of the central problem of cancer.]

THE ÆTIOLOGY OF MALIGNANT NEW GROWTHS.

By W. E. Gye, M.D. Edin.

(From the Medical Research Council's Field Laboratories, Mill Hill, N.W.)

Introduction.

In 1911 Peyton Rous[1] described a sarcoma of the fowl which differs from mammalian tumours in one very important way—namely, that it can be transferred from chicken to chicken by inoculating dead cells, killed by drying or with 50 per cent. glycerol, or by means of a cell-free Berkefeld filtrate. The mammalian tumours, with the possible exception of a lymphosarcoma of dogs,* have so far been transferred only by inoculating living cells. This chicken tumour —No. I. in the series examined by Rous—is a spindle-celled sarcoma which metastasises freely and generally kills the host within 28 days. The malignancy of the tumour has increased with passage. It cannot be transferred to mammals or to any other species of birds than the hen, either by inoculating living cells or filtrates. Its specificity at first was exceptionally strict; successful transplantations of the tumour could be obtained only in blood relations of the bird—a Plymouth Rock—in which the original tumour occurred. The tumour now grows freely in other varieties of fowls, but the Plymouth Rock is still by far the most suitable variety of bird for experimental study.

A second filterable tumour of the hen was described by Rous[2] in 1912 (Tumour VII.). This tumour is an osteochondrosarcoma. The primary growth was benign, but it proved to be transplantable and with repeated passage became malignant. It differs from tumour No. I. not only in its histology, but also in its general behaviour, rate of growth, site of metastatic deposits, &c. It can be transferred with dead cells or with filtrates.

The third of these filterable tumours—No. XVIII.—was described by *Rous in 1914.*[3] *It* is a spindle-celled sarcoma with blood sinuses into which growth occurs. The tumour may be propagated with living cells, or with Berkefeld filtrates, but not by means of the dried tumour.[4]

There are, then, three well-described filterable tumours—all sarcomata and all growths of hens—among many thousands of animal tumours which have been transplanted and studied. It is very improbable that every neoplasm which has been described has been tested thoroughly as to its filterability, and it is therefore possible that one or more filterable tumours have been overlooked. But the general statement may be made: First, that no mammalian tumour has been propagated by cell-free filtrates; secondly, that a large number have been tested with entirely negative results; and thirdly, that if filterable mammalian tumours occur they are exceptions to the general rule. Thus the filterable chicken sarcomata differ, apparently, fundamentally from other tumours. This difference has led to expressions of doubt as to their being true new growths. It is unnecessary to discuss this point, as the work to be described will show, but it must nevertheless be pointed out that Rous studied the filterable tumours most carefully and showed clearly that they answer every valid test which has been put forward as a criterion of new growths. Indeed, no set of tumours has been more thoroughly studied from this point of view. In my judgment the classical papers published by Rous between 1911 and 1916 settled this point conclusively.

The problem which remained when Rous concluded his work on these tumours was the determination of the nature of the filterable agent. Rous and his collaborators brought forward strong evidence in favour of its being a filterable virus—a living but extremely small microbe. Thus the agent is destroyed by exposure to a temperature of 55° C. for 15 minutes; by chloroform and toluene; by phenol in concentrations as low as 0·5 per cent., and by other antiseptics; and the tumour may be kept immersed in glycerine and it still retains its infectivity. In spite of this evidence Rous used the term "agent" rather than "virus," since the final proof that the agent is animate its cultivation outside the body was missing.

The work which is to be described in this paper began with the study of chicken sarcoma No. I. Before plunging into details of this work a few words on the parasitic hypothesis of the origin of tumours may not be out of place.

The "parasitic hypothesis" of cancer may be stated briefly as follows: Malignant new growths constitute a specific disease and have as their essential cause a specific parasite. To some advocates the parasite is a microbe—e.g., the *Micrococcus neoformans* of Doyen; to others a protozoon; to others again, it is a new form of organism which is capable of existing as "unorganised plasm," as a filterable virus, in coccal or bacillary forms or as a fungus.

The opponents of the parasitic hypothesis—and they are chiefly those who have devoted themselves to cancer research—have no difficulty in refuting the theory in the form in which it has been presented. In the first place there has been no agreement amongst the advocates as to which of the many organisms brought forward as the "cause" of cancer is the true one; and in the second place it has never been possible to reproduce a tumour with a culture of any one of the organisms. Further, when all the definite knowledge we possess on malignant disease is arranged in due order an impressive case can be made out against the general conception that malignant disease has an extrinsic specific cause. The evidence, however, is largely negative, and is really only destructive of the view that tumours are the pathological consequence of the simple conjunction of host and parasite.

The Rous group of filterable tumours has been an embarrassment to both sides. Those who oppose the parasitic hypothesis have been content either to regard these tumours as entirely exceptional—a view that by implication rejects the concept of new growths as a homogeneous, specific disease and places them as a consequence amongst the inflammations—or to deny that the tumours are true new growths. Those who favour the parasitic hypothesis have inclined to ignore the Rous tumours for different reasons; these tumours make the theory too complicated altogether.

One of the outstanding features of new growths is their specificity. A tumour of the mouse, transplanted in fragments of living cells, will not grow in the rat or vice versa. The species specificity is very strict.

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* During the year 1924 I collaborated with the late Dr. B. R. G. Russell in the study of this tumour. The work has been continued in conjunction with Dr. A. M. Begg, and the results will be given in another paper.

It may be argued that this is probably an example of general cellular specificity and is therefore not a particular property of tumour cells. And the argument is probably sound. But cell-free filtrates of the chicken sarcomata are just as strictly specific; they are incapable of producing a tumour in any bird save the hen, and much less in a mammal. Moreover, the filtrate from each tumour reproduces only a tumour of the same structure and general behaviour as that from which it is derived. The specificity, in other words, applies not only to the species but even to tissues. If we accept the conclusion that these tumours are caused by living viruses and argue—justifiably—therefrom that other tumours have similar causes, we are inevitably driven, in the present state of knowledge, to the conclusion that for every species of animal there is at least one group of viruses and for every tissue a particular virus. We are thus led by the logical application of undisputed facts to an apparently absurd position. It does not require a penetrating insight into pathological problems to see that an essential fact is missing and that its discovery may be the key to the general problem of tumours.

This strict specificity, to which is probably related the conspicuous and unique cellular phenomena which are so attractive to pathologists, forms the chief obstacle to all attempts to connect ætiologically the great variety of tumours of so many species of animals with one external agent or class of agent. The complete failure to provide a unifying conception of the disease has led cancer specialists to look upon the malignant transformation of a cell as a physiological reaction—or a perversion of a physiological reaction—to long-continued irritation. In other words, the disease is regarded as a particular problem in cell physiology, and however clearly external agents may be demonstrated as factors in the chain of causation of tumours their influence is considered to be entirely subsidiary to internal cellular capacities, and particularly to those which relate to cell division. In the final analysis of the pathology of tumours all this may turn out to be true, but as relatively little is known in this branch of physiology it is premature to indulge in speculation.

I have no desire in the present preliminary publication to discuss the very numerous theories, some of which are merely fantastic, which have been advanced to explain the origin of tumours. It is sufficient to draw attention to this conflict of opinion on the parasitic hypothesis. The work which I now report, and which has been carried on during the last two years, provides, I think, the reconciliation of the two views.

TECHNICAL NOTES.

1. *Filtration.*—An exaggerated importance has been attached to the filterability of a virus. This is reflected in the common use of the term "filterable virus" as a description of the whole class of very small organisms. The objections to the term come from two sides: first, the relatively gross spirochætes pass through bacterial filters readily, and cannot on any grounds be classed with the very small organisms which are invisible, or which, at least, cannot be resolved with the best microscopes in common use; and, secondly, for various reasons, some undoubted viruses are not filterable under the conditions in which they occur. The virus of vaccinia, for example, as it occurs in calf lymph is not filterable; also, the virus of herpetic encephalitis as it occurs in the brain tissue of rabbits is held back by filter candles. Filterability is determined by a number of factors, one of the most important being the properties of the fluid in which the virus is suspended. This is shown very easily with the Rous chicken sarcoma No. 1. If the disintegrated tumour be insufficiently diluted, or if the diluent employed be distilled water, the filtration is difficult and the filtrate is generally non-infective.

The best method of obtaining an infective filtrate is as follows. Healthy tumour tissue is selected and is minced with sharp scissors; the mince is then rubbed with sterile sand in a Wedgewood mortar in order to break up the cells. This is done very thoroughly. Saline or Ringer's fluid is then added to the mass in the proportion of 100 c.cm. to about 1 g. of tumour. After mixing thoroughly the muddy suspension is filtered under gravity through layers of paper pulp and sand, arranged in a long tube-filter, in order to remove sand and remnants of tissue. The filtrate thus obtained—the "sand filtrate"—is usually a faintly yellow transparent fluid, which passes, under moderate pressure, through a Chamberland L_2 or a Mandler candle with ease. The final "candle filtrate" when inoculated into a chicken in a dose of 1 c.cm. causes the formation of a tumour which is palpable in 14 days and almost always kills the chicken within 28 days. Rous showed that the addition of kieselguhr promotes the development of the new growth. In all the experiments described later a trace of silica has been added to the inocula.

2. *Media.*—In the course of this work a large variety of media has been prepared and tested. The formula of one only, that which has proved most satisfactory, will be given. The basis of the medium is Hartley's broth[5] to which is added 0·2 per cent. KCl. The broth is tubed in 5 c.cm. lots and is sterilised by steaming—never in the autoclave. To each tube of 5 c.cm. is added 1 c.cm. of fresh rabbit serum, after which the tubes are incubated at 37° C. for two days in order to test sterility. When sugars are required the sugar is added to the broth in bulk to give a concentration of 0·5 to 1 per cent.

3. *Aseptic Excision of Tumours.*—Bacteriological technique which involves the use of fresh animal tissue is complicated by the occurrence, especially after prolonged incubation, of contaminations. With chicken tumours the common contaminant is a white staphylococcus; with mouse tumours a Gram-negative bacillus; with rat material a Gram-negative bacillus sometimes occurs and about as often a streptococcus which under anaerobic conditions is very small, but which on solid media, incubated aerobically, assumes a larger size. When contaminations occur attempts to produce a tumour fail; in mice and in rats abscesses often follow the inoculation of material which is slightly infected.

When tubes have been incubated anaerobically it is not always immediately evident that a tube is contaminated; turbidity is not by any means constant. A state of affairs is attained which might be called "concealed contamination," the contamination being revealed only by means of subcultures, aerobic and *anaerobic*, in broth and on agar.

The following technique has been followed in order to reduce these contaminations to a minimum. The tumour-bearing animal is killed with chloroform or coal-gas and the carcass is then soaked in warm 2 per cent. lysol for five minutes. The subsequent procedures are carried out in a sterile room. The animal is pinned out on a sterile cork slab and the skin reflected so as to expose the tumour, the cutting of the skin and necessary dissection being performed by means of a cautery. After searing the surface, pieces of tumour are excised by means of a dry sterile knife and are dropped into tubes of medium. Unless such strict precautions are taken contaminations occur with disheartening regularity.

EXPERIMENTAL STUDY OF ROUS CHICKEN SARCOMA NO. 1.

It has already been remarked that the injection of 1 c.cm. of a Chamberland L_2 candle filtrate is followed by the formation of a tumour which appears in a fortnight and kills within a month. When the infectivity of such a filtrate is tested with doses of varying size it is shown that a proportionality between size of dose and time of appearance of tumour exists. This is well shown in the following protocol.

Experiment June 20th, 1923.—Chickens were inoculated with L_2 filtrate, all into the pectoral muscle, in quantities indicated in Chart 1. This experiment, modified in various ways, has been repeated over and over again and the result is constant with filtrates through close candles. The interpretation of the result is not possible without a count of the number of organisms per c.cm. in the infective fluid. Superficially it appears to support the view that the infective "agent" is a chemical substance, since proportionality, in such narrow limits, between dose and effect is not characteristic of living microbes.

CHART 1.

[illegible] CHICK	INOCULUM	DAY 7TH	14TH	21ST	28TH	35TH
5	1cc L_2 FILTRATE.	—	○	●	†22ND DAY	
6	0·5cc L_2 FILTRATE + 0·5cc SALINE.	—	:	○	○	● †30TH DAY
7	0·25cc L_2 FILTRATE + 0·75cc SALINE.	—	—	•	●	○
8	0·1cc L_2 FILTRATE + 0·95cc SALINE.	—	—	—	—	—
9	0·01cc L_2 FILTRATE + 0·99cc SALINE.	—	—	—	—	—

In the second column of this chart, Chick 8, for 0·95 read 0·90.

INFECTIVITY OF "PRIMARY CULTURES."

A primary culture—a term of convenience—is obtained by placing a fragment of tumour in a tube of medium. The infectivity of the supernatant fluid is retained for a variable length of time depending upon the medium employed and the method of incubation. Retention of infectivity is favoured by anaerobiosis; the more completely oxygen is removed the longer the fluid remains infective. Similarly, the addition of rabbit serum to the broth helps to preserve infectivity. The findings may be summarised as follows:—

(1) When a piece of tumour—roughly 0·5 g. in weight—is dropped into 5 c.cm. of broth and the tube is incubated aerobically at 37° C., the supernatant fluid may remain infective in doses of 1 c.cm. for as long as two days. If the tube is incubated anaerobically the infectivity remains as long as four days, particularly if, before incubation, the air dissolved in the medium or "entangled" in the piece of tumour be removed by means of a Geryk pump.

(2) When the medium contains rabbit serum—5 c.cm. of KOI broth to which has been added 1 c.cm. of sterile serum—infectivity is retained after three days' incubation aerobically. If the aerobiosis be increased by using an Erlenmeyer flask instead of a test-tube infectivity is lost sooner. If a piece of tumour is placed in serum broth and the culture incubated anaerobically the supernatant fluid remains infective often for as long as seven days.

(3) When glucose, maltose, or lævulose are added to the medium an acid reaction occurs, the pH rising often as high as 4·0 to 4·5. With mannite, sucrose, galactose, lactose, dulcite, and salicin fermentation does not occur. The addition of a fermentable sugar tends to increase the time during which infectivity is retained, provided the acidity produced is not too great.

This summary of results of experiments with primary cultures is illustrated by the protocols below, but it must be noted that the size of the piece of tumour added to the medium is of primary importance. If a large mass of tumour—e.g., 2 g.—be added and the culture be incubated aerobically, then it is often possible to produce a tumour with the clear supernatant fluid after as long as seven days' incubation at 37° C. The general impression derived from a long experience of such cultures is that an "agent" diffuses from the tumour tissue and that it disappears slowly in the presence of rabbit serum and under anaerobic conditions, and more rapidly in the presence of oxygen and absence of serum. The larger the piece of tumour the greater the quantity of "agent" to diffuse, and consequently the longer the infectivity is retained.

Experiment Nov. 6th, 1923.—Chicken 44 was inoculated in the right pectoral muscle with 1 c.cm. of a culture made by adding a fragment of tumour (about 0·5 g.) to 5 c.cm. of glucose broth, the tube being incubated aerobically for three days at 30° C.; in the left breast with 1 c.cm. of an aerobic culture in rabbit serum glucose broth, incubated three days at 30° C. (Chart 2). Post mortem, there was no tumour in the right breast; in the left a large tumour.

CHART. 2

9.11.23. CHICKEN 44	DAY 7TH	14TH	21ST	28TH	35TH
RIGHT BREAST	—	—	—	—	—
LEFT BREAST	—	—	•	●	○ †40TH DAY

This experiment shows that serum tends to preserve infectivity.

Experiment Dec. 27th, 1923.—Two sterile Erlenmeyer flasks were taken; into each 5 c.cm. of rabbit serum glucose broth were placed. A piece of tumour tissue was now placed in the medium in each flask. One flask was incubated aerobically for three days at 30° C., the flask being covered with a rubber cap to prevent evaporation; the second flask was incubated anaerobically for three days at 30° C. Chicken 47 was then inoculated in the right breast with 1 c.cm. of the aerobic culture and in the left breast with the anaerobic culture (Chart 3). Post mortem, there was no tumour in the right breast; in the left a large tumour.

CHART 3

[illegible] CHICKEN 47	DAY 7TH	14TH	21ST	28TH
RIGHT BREAST	—	—	—	—
LEFT BREAST	—	•	●	†22ND DAY

This experiment shows the advantages of anaerobiosis.

DESTRUCTION OF THE AGENT WITH CHLOROFORM.

Rous[4] showed that carbolic acid, toluene, and chloroform all destroy the agent in a relatively short space of time. I have confirmed all his statements, but here I wish particularly to describe the method of rendering "sand filtrate"—which will produce a tumour in doses of 0·05 c.cm.—innocuous by treatment with chloroform.

Healthy tumour tissue is taken and is disintegrated with sand. The mass is then mixed with Ringer's fluid, the volume of fluid used being 100 c.cm. to about 5 g. of tumour. The mixture is filtered through well-packed paper pulp and sand and the filtrate should be quite transparent. Ten c.cm. of the clear sand filtrate is placed in a boiling tube by means of a pipette. The fluid is delivered neatly to the bottom of the tube without wetting the sides. A few drops of chloroform are then run down the sides of the tube, which is held in a slanting position. In this way, although some of the chloroform sinks to the bottom of the tube to form globules, a portion remains for a time as a thin film on the surface. The tube is then placed in a beaker of water, the temperature of which is 37° C., and is kept in the incubator. After half an hour has elapsed the chloroform globules are taken up in a Pasteur pipette and mixed repeatedly with the bulk of the filtrate. The object of this manœuvre is to facilitate the saturation of the fluid with chloroform. The tube is again incubated in water kept at 37° C., and is left until three hours' incubation has been completed. The chloroform is then removed completely by means of a Geryk pump. "Sand filtrate" which has been treated in the above fashion now fails to infect in doses of 2 c.cm., whereas a control tube treated similarly, but with saline instead of chloroform, is still infective in doses of 0·2 to 0·25 c.cm.

The following experiment shows the importance of temperature and of complete saturation of the filtrate with chloroform in the destruction of the virus.

Experiment Dec. 12th, 1923.—Chicken 49 was inoculated with 1 c.cm. sand filtrate which had been saturated with chloroform and kept at a temperature of 37° C.; Chicken 50 with 1 c.cm. of the same filtrate which had been saturated with chloroform and kept at room temperature; Chicken 51 with 1 c.cm. of the same filtrate incompletely saturated with chloroform and kept at 37° C. for three hours (Chart 4).

CHART 4.

12.12.23. CHICKEN	DAY				
	7TH	14TH	21ST	28TH	35TH
49	—	—	—	—	—
50	—	—	•	▨	† 35TH DAY.
51	—	—	•	▨	† 38TH DAY.

For the rapid destruction of the virus the filtrate must be saturated with chloroform and the temperature be kept in the neighbourhood of 37° C. It is to be noted that it is insufficient merely to place the tube in the incubator and expect the contents to attain the temperature in a short time; the tube must be placed in water at the required temperature.

EXPERIMENTS TO SHOW THAT TWO FACTORS EXIST IN INFECTIVE FLUID.

Experiments have already been described in which it is shown that "primary cultures" in broth and in rabbit serum broth become non-infective in two to seven days, the time depending upon the amount of tumour tissue, the composition of the medium, and the conditions of incubation. From the beginning of this work on the Rous sarcoma I suspected that this loss of infectivity does not depend upon the death of a virus, but upon the disappearance of an accessory chemical factor which governs infection of cells. The following experiment shows that this is true. The accessory factor, a product of tumour cells, is obtained by killing the virus in a "sand filtrate" with chloroform in the manner already described. The suspension of the virus consists of a non-infective primary culture.

Experiment Jan. 14th, 1924.—A culture was made by placing a fragment of healthy tumour tissue in 5 c.cm. of rabbit serum glucose broth, contained in a small Erlenmeyer flask, and incubating aerobically at 37° C. for three days. Clear "sand filtrate" was treated with chloroform in the manner already described and the chloroform removed completely under the pump. Chickens were now inoculated as shown in Chart 5.

CHART 5

14.1.24 CHICK	INOCULUM	DAY					
		7TH	14TH	21ST	28TH	35TH	42ND
66	1 cc CULTURE.	—	—	—	—	—	—
67	1 cc TREATED FILTRATE.	—	—	—	—	—	—
68	0·5 cc CULTURE +0·5 cc FILTRATE	—	—	○	▨	◯	† 38TH DAY.

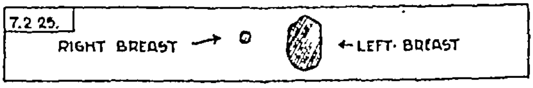
It is clear from this experiment, one of many, that a tumour extract—the "sand filtrate"—treated with chloroform and thereby rendered innocuous has a property which, when aided by a property of an inert primary culture, can bring about the formation of a neoplasm. The interpretation of these results, which were first obtained in a rather different form in November, 1923, is as follows. The chloroform-treated "sand filtrate" contains a labile chemical substance which in some way, as yet unknown, renders the cells susceptible to infection by the virus contained in the primary culture. The proof that this is an accurate conception of the process will be made clear later. The existence of two factors in primary cultures can be shown by means of the centrifuge.

SPINNING EXPERIMENTS.

The interpretation of the results obtained with infective fluids which are spun at high speed depends in a large measure, but not entirely, upon the fact that a proportionality exists between size of dose and effect. This is illustrated by the following experiment.

A "primary culture" in rabbit serum glucose broth, incubated at 39° C. anaerobically in a McIntosh and Fildes tin for five days, was taken and the clear supernatant fluid pipetted off without disturbing the tumour tissue at the bottom of the tube. The acidity of the fluid was between pH 5·0 and 5·5. The fluid was spun in a conical tube for two hours at a speed of 9000 revolutions per minute. Rather more than 1 c.cm. of the top layer of the spun culture was then taken off with a Pasteur pipette, the greatest care being taken to avoid disturbing the small amount of deposit at the bottom of the tube. Next, 1 c.cm. was taken from the lowest layers, the deposit being included. A chicken was then inoculated in the right breast with 1 c.cm. of the fluid from the top layer, and in the left breast with 1 c.cm. from the lowest layer. The chicken died in 20 days and when examined post mortem the tumours in the breasts were relatively as indicated in the chart here given (Chart 6).

CHART 6



Such an experiment has been taken to indicate a "shift" of the particulate agents, whether purely under centrifugal force or whether as part of a general shift of large colloid protein masses which form in medium containing tissue. In an ordinary infective disease, the clinical signs of which are elevation of temperature, appearance of a rash or vesicles, and so on, a delay in the appearance of signs would be more difficult to interpret. But with a tumour which always occurs locally at the site of injection and which manifests itself as a swelling, the hazards are less.

With candle filtrates and with five-day cultures in media which do not contain fermentable sugars—i.e., when the pH is 7·8 to 7·9—the shift of virus is so small as to be open to doubt. The effect of acidity in aiding spinning is thus very great; all attempts to spin out the virus completely, even with acid cultures, in this way have failed. An additional advantage is obtained by lining the centrifuge tubes with a thin film of nutrient agar. The agar becomes detached during spinning and, when the machine is stopped, it is found at the bottom of the tube. The exact part which agar plays has not been determined, but it was first employed to provide a material upon which it was imagined the virus would stick firmly. This, however, may be passed over for the present; the fact is that by using agar films acid infective fluid can, by a short period of spinning, be rendered inert in doses double and often treble the usual infective dose, as the following experiment indicates.

Experiment Feb. 7th, 1925.—A portion of a five-day culture of a tumour in rabbit serum maltose broth was spun for 35 minutes in a tube lined with agar. The pH of the culture had increased from 7·8 to 5·0 during incubation. After spinning, Chicken 144 was inoculated in the right breast with 1 c.cm. of the supernatant fluid; in the left breast with 0·5 c.cm. of the portion of the culture which had not been spun. Chart 7 shows the result. Post mortem, there was no tumour in the right breast.

CHART 7.

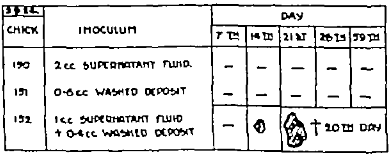
7.2.25 CHICKEN 144	DAY			
	7TH	14TH	21ST	28TH
RIGHT BREAST	—	—	—	—
LEFT BREAST	—	•	○	◯ † 32ND DAY.

When the deposit which is obtained by spinning a five-day anaerobic primary culture in rabbit serum glucose broth is washed twice with saline, it is found that the final emulsion of deposit is inert. This might readily be supposed to be because the virus has been washed away. It is not so, however, as can be proved by inoculating a chicken with a mixture of washed deposit and innocuous supernatant fluid, when a tumour forms in the usual time. This is well shown by the following experiment:—

Experiment Sept. 2nd, 1924.—Five-day anaerobic cultures in rabbit serum glucose broth were taken and spun in four conical centrifuge tubes, two of which were lined with agar and two were not. The first spinning was for 40 minutes at 9000 revolutions; the topmost layers were pipetted off from the two agar-lined tubes—in all 4 c.cm. were taken—and put aside. The fluid in the two remaining tubes was pipetted off with care, leaving only the small amount of deposit which had formed. The deposit in each tube was mixed thoroughly with 5 c.cm. of saline and the two tubes again spun at 9000 r.p.m. for 40 minutes. Again the fluid was removed and the deposit mixed with saline and the mixture spun. In this way the deposit was washed twice. It was finally emulsified in 1 c.cm. of Ringer's fluid and the following experiment performed.

Chicken 150 was inoculated with 2 c.cm. of the fluid taken from the agar-lined tubes; Chicken 151 with 0·6 c.cm. of washed deposit plus 0·8 c.cm. Ringer; Chicken 152 with 1 c.cm. of fluid from the agar-lined tubes to which was added 0·4 c.cm. of washed deposit. Chart 8 shows the result of the experiment.

CHART 8.



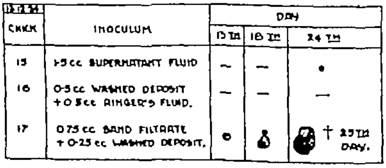
[illegible] CHICK	INOCULUM	DAY				
		7TH	14TH	21ST	28TH	59TH
150	2 cc SUPERNATANT FLUID.	—	—	—	—	—
151	0·6 cc WASHED DEPOSIT	—	—	—	—	—
152	1 cc SUPERNATANT FLUID + 0·4 cc WASHED DEPOSIT	—	●	● † 20TH DAY		

Chickens 150 and 151 were killed on Oct. 31st, 1925—the fifty-fourth day—and there were no signs of a tumour.

It is not easy to obtain such a perfectly clean result. A more frequent result is indicated in the next experiment.

Experiment Dec. 13th, 1924.—Spinning and washing were carried out as before. Chicken 15 received 1·5 c.cm. of supernatant fluid from agar-lined tubes; Chicken 16 received 0·5 c.cm. of washed deposit plus 0·5 c.cm. Ringer; and Chicken 17 received a mixture of 0·75 c.cm. supernatant fluid and 0·25 c.cm. washed deposit. The result was as shown in Chart 9.

CHART 9



13.12.24 CHICK	INOCULUM	DAY		
		13TH	18TH	24TH
15	1·5 cc SUPERNATANT FLUID	—	—	•
16	0·5 cc WASHED DEPOSIT + 0·5 cc RINGER'S FLUID.	—	—	—
17	0·75 cc SAND FILTRATE + 0·25 cc WASHED DEPOSIT.	•	●	● † 25TH DAY.

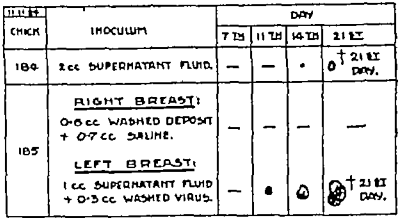
Chicken 15 eventually died on Feb. 2nd, 1925, 51 days after being inoculated; Chicken 16 was killed three months later and there was no sign of a tumour.

These experiments have been carried out 15 times; in two instances the cultures proved to be non-infective—in each case there was a "concealed contamination"; in two experiments tumours have developed in the chicken inoculated with washed virus, once after 30 days and once after 28 days. The remainder of the experiments are fairly represented by the protocols given.

When candle filtrates of a tumour are taken, made acid with NaH_2PO_4, and spun in the same way the results obtained are of the same kind, but it is more difficult to render the fluid in the agar-lined tubes non-infective.

Experiment Nov. 11th, 1924.—A tumour filtrate (Mandler candle) was acidified with NaH_2PO_4, the pH being brought to 5·5. The acidified filtrate was then spun, the deposit in the two tubes being washed, as in the protocols already given (Chart 10). Post mortem, it was found that the tumour in Chicken 184 had penetrated the peritoneal cavity into which hæmorrhage had occurred, causing death. The tumour in Chicken 185 was confined to the pectoral region and was much larger than that in Chicken 184.

CHART 10



11.11.24 CHICK	INOCULUM	DAY			
		7TH	11TH	14TH	21ST
184	2 cc SUPERNATANT FLUID.	—	—	•	0 † 21ST DAY.
185	RIGHT BREAST: 0·6 cc WASHED DEPOSIT + 0·7 cc SALINE.	—	—	—	—
	LEFT BREAST: 1 cc SUPERNATANT FLUID + 0·3 cc WASHED VIRUS.	—	•	●	● † 21ST DAY.

It will be noted that my practice has been to give double doses of supernatant fluid and washed virus when these are inoculated separately. This, of course, is the recognised safe method of control. If, however, the first and third chickens of an experiment be inoculated with the same volume—usually 0·75 c.cm.—of supernatant fluid diluted with Ringer's fluid for the first chicken and washed virus for the third; then the results are similar to those shown in the first protocol (Experiment Sept. 2nd, 1924).

The experiments show that both in primary cultures and in candle-filtrates of the tumour there are two factors which are necessary to the production of a tumour; the one is particulate and is therefore probably a virus; the other, being uninfluenced by spinning, is probably a chemical substance. Neither of these factors operating alone will cause the formation of a sarcoma.

The bearing which these findings have upon the pathology of the Rous tumour and, as will be shown, upon tumours generally, is most important. To return to the central difficulty of tumour ætiology, specificity. It seems to me obvious that, since the virus alone is not infective, the specificity of the Rous tumour must be carried by the second—the chemical—factor derived from cells. (That it is not a toxin or other product of culture is evident from the results of spinning candle filtrates of tumours and from the fact—shown later—that subcultures alone are not infective.) It is very probable that the virus of the Rous tumours VII. and VIII. is the same as that of No. 1†; the chemical factor in each case would, I presume, be different. In this way the specificity is again related to the cells, but in the case of the filterable tumours, to a cell derivative which can be separated from the cells. I propose to call this chemical substance the "specific factor."

At this point it is convenient to refer to attempts to stain and see the virus. Most of the stains recommended for the study of small organisms have been employed in this research. Giemsa's fluid in particular has been thoroughly tried. In order to obviate repetition in the later parts of this paper it is as well to state at the outset that all attempts to stain and see the virus, using for the purpose a 2 mm. apochromatic lens with eye-pieces ranging from 6 to 20, have failed. The "granules" which can be stained in films made from a medium containing tissue have been seen but that they are not the virus is shown by the following observation. A film was made from a five-day primary culture of the Rous tumour in rabbit serum glucose broth; a chicken was then inoculated with 1 c.cm. of the culture. Next the culture was spun at 9000 revolutions per minute for

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† This cannot now be tested as the tumours VII. and VIII. have been lost. Dr. Rous very courteously sent me dried powder of the tumours, but they proved to be inert.

40 minutes in an agar-lined tube. The upper part of the fluid was removed with a pipette and a film made; 1 c.cm. of the fluid was then injected into a chicken which did not develop a tumour; the chicken inoculated with the unspun fluid died of a large tumour three weeks later. The films were passed through fixative together and then stained together with Giemsa's long method; both showed innumerable pink granules on the border-line of resolution. Such experiences as these have led me to the opinion that such granules are not the virus. The visual discovery of such small organisms is obviously a special problem in optics. Fortunately, my colleague, Mr. J. E. Barnard, F.R.S., has undertaken this work. His report upon it follows this paper.

THE CULTIVATION OF THE VIRUS IN VITRO.

Whilst the results of spinning experiments show that one factor in the tumour-producing filtrate is particulate and is therefore probably a virus, the proof of multiplication in vitro is essential for the final justification of this conclusion. To describe completely the attempts, successful and unsuccessful, to cultivate the virus would expand this paper unreasonably; details will be left to the technical journals. Here it is sufficient to say that the most useful medium employed is that which has been described already. To 6 c.cm. of rabbit serum KCl broth a fragment of chick embryo is added. The age of the embryo used has generally been 12–16 days. The tube is then inoculated with a loopful of primary culture and is now called the first subculture. It is incubated in an anaerobic tin at 35°–36° C. for four days, when the second subculture is made into similar medium containing freshly removed embryo. The maximum growth as judged by the results of experiments on chickens is obtained on the fourth to fifth day of incubation.

The dilution with each subculture is at least a thousand times; in a fifth subculture, therefore, the original inoculum has been diluted 10^{15}, or a thousand billion times. If tumours are produced with subcultures beyond the fifth we may be certain that growth has taken place. The following protocols show results obtained with such subcultures.

Experiment Sept. 18th, 1924.—Chicken 157 was inoculated with 1 c.cm. of sand filtrate which had been treated with chloroform; Chicken 158 with 1 c.cm. of a fifth subculture of the tumour virus; Chicken 159 with 0·5 c.cm. of the sand filtrate plus 0·5 c.cm. of the fifth subculture. The results are seen from Chart 11.

CHART 11

18.9.24 CHICKEN	DAY			
	8TH	14TH	21ST	42ND
157	—	—	—	—
158	—	—	—	—
159	—	8		† 25TH DAY.

Experiment Dec. 4th, 1924.—On Dec. 2nd, 1924, fragments of tumour were placed in tubes of glucose broth and the tubes incubated anaerobically in a McIntosh and Fildes tin for two days at 39° C. On Dec. 4th supernatant fluid was taken from the tubes without disturbing the tumour tissue. The fluid was spun in agar-lined tubes for an hour and three quarters at 9000 revolutions, and the supernatant fluid pipetted off. Chickens were then inoculated as shown in Chart 12.

CHART 12

4.12.24 CHICK	INOCULUM	DAY			
		14TH	21ST	28TH	52ND
206	1cc SUPERNATANT FLUID.	—	—	—	—
210	0·5cc SUPERNATANT FLUID + 0·5cc OF A FIFTH SUBCULTURE OF VIRUS.	—	o	8	†31ST DAY.
211	2cc OF THE SAME FIFTH SUBCULTURE OF VIRUS.	—	—	—	—

Experiment April 27th, 1925.—In this experiment an eighth subculture of virus was used. Chloroformed sand filtrate was prepared as before and chickens inoculated as shown in Chart 13.

CHART 13

27.4.25 CHICK	INOCULUM	DAY			
		7TH	14TH	21ST	28TH
168	1cc SAND FILTRATE.	—	—	—	—
169	1cc 8TH SUBCULTURE.	—	—	—	—
170	0·5cc SAND FILTRATE + 0·5cc 8TH SUBCULT.	•	o		†28TH DAY.

MAMMALIAN TUMOURS.

Four standard tumours of rats and mice have been studied. These are: (1) A spindle-celled sarcoma of the mouse, strain 37/S of the Imperial Cancer Research Fund; (2) the Jensen rat sarcoma; (3) a carcinoma of the mouse, strain 63; and (4) a rat carcinoma, strain 9, both of the Imperial Cancer Research Fund. The mouse tumours 37/S and 63 give 100 per cent. of takes in mice, metastasise, and always kill the host. The rat tumours often retrogress. All four tumours are accepted as genuine neoplasms by competent pathologists in this country and abroad.

The first part of the investigation was a re-examination of the filterability of the sarcomata. In this work, during the early months of 1924, I enjoyed the assistance of my colleague Dr. W. J. Purdy. The mouse tumour 37/S, especially, was thoroughly tested. The method of preparing extracts was similar to that described for the chicken tumour. The candle used was a Chamberland L_1, which permits *B. prodigiosus* to pass when a rich broth culture is filtered; cells, however, are invariably kept back. In different experiments the tumour tissue was ground with sand at freezing-point, at room temperature, and at 37° C. The diluent was varied from time to time; the pH was varied from extreme acidity to extreme alkalinity. But under no conditions were we able to produce a tumour with a cell-free filtrate. It may be taken as certain that the mouse sarcoma 37/S is not a filterable tumour in the sense that the Rous chicken sarcoma is. The same may be said of the Jensen rat sarcoma, though fewer experiments were made with this tumour. The carcinomata were not reinvestigated.

Mouse Sarcoma 37/S.

The survival of the tumour cells in vitro was first tested. This was repetition of unpublished work which I had first carried out in 1918–19 whilst on the staff of the Imperial Cancer Research Fund. The general result of these studies is that the tumour cells die relatively rapidly when incubated at 37° C. in Ringer's fluid or broth. This is illustrated by a typical experiment.

Several tumours were excised aseptically and minced with sharp scissors; 1 c.cm. of the mince was then delivered by means of a syringe into 5 c.cm. of Ringer contained in a test-tube. Another portion of the mince, contained in a sterile capsule, was kept in the cold. The tube of Ringer containing tumour cells was now placed in a beaker of water the temperature of which was 37° C. and kept at this temperature for 18 hours. Two series of 12 mice were now inoculated, one with the incubated tumour cells which had been separated from the Ringer by spinning; the second set with the tumour emulsion which had been kept in a sterile capsule in the cold. The second set of mice developed tumours in the usual way, whilst those injected with incubated cells remained exempt and were eventually killed.

The explanation of the early death of cells is certainly not simple. The addition of serum tends to preserve the viability of cells, as does also an abundant supply of oxygen. Absence of oxygen—for incubation in Ringer is partial anaerobiosis—plays an important part in the lethal process. When a piece—about a gramme—of healthy tumour is dropped into a tube of rabbit serum KCl broth and the tube is incubated 24 hours in an anaerobic tin and the clear supernatant fluid then injected into mice, about 50 per cent. of the animals develop tumours which appear usually on the fourteenth to eighteenth day and attain a large size—2–3 g.—in four to five weeks. The tumours thus produced have the structure characteristic of 37/S, and behave identically when transplanted in other mice. Are they produced by inoculation of an occasional cell which survives anaerobic incubation? Or are they genuine new growths produced by infecting the host's own cells with a virus derived from the incubated tumour tissue? It is probable from what has already been said that the second explanation of their origin is the correct one. The following experiments prove this.

A number of healthy tumours were removed and placed—about 2 g. per tube—in tubes of rabbit serum KCl broth. The tubes were now put into a McIntosh and Fildes anaerobic jar which was evacuated with a Geryk pump. As the pressure in the jar fell gases bubbled out of the tubes and especially from the surface of the tumour tissue. Pumping was continued till no more gas was given off. Hydrogen was then run into the jar and the coil of platinised asbestos warmed with an electric current in order to achieve complete anaerobiosis. The jar was incubated at 37° C. for three hours and was then again evacuated. This time the medium in the tubes, being warm, boiled under the reduced pressure. In this way the air entangled on the tumour was completely removed. The jar was made anaerobic and then incubated for 24 hours at 37° C. The jar was now opened, the fluid in the tubes pipetted off, spun in the centrifuge, and the topmost layers of fluid taken off and inoculated into mice. The mice had well-developed tumours in 14 days, which were removed in 21 days and the experiment repeated with them. The same result was again obtained. Thus by incubating under perfectly anaerobic conditions the percentage of tumours obtained *may* reach 100. The following is the protocol and chart of the second experiment.

Experiment April 30th, 1925.—About 1 g. of healthy tumour tissue was placed in a tube of rabbit serum KCl broth; incubated 26 hours anaerobically in a jar. On May 1st four mice were inoculated, each with 1 c.cm. of supernatant fluid (Chart 14). Lest doubt remain that cells have survived anaerobic incubation and originated tumours, the following experiment was performed.

CHART 14

30 4 25 MOUSE	DAY		
	7 TH	14 TH	21 ST
1 BLACK & WHITE ♀	—	○	●
2 YELLOW ♀	—	●	●
3 WHITE ♀	—	●	●
4 CHOC & WHITE ♂	—	—	•

Experiment May 22nd, 1925.—Cultures were made as before by adding healthy tumour tissue to medium and incubating 24 hours at 35° C. The cultures were now mixed in a boiling tube and one half inoculated into mice (A); the liquid remaining was filtered through a Chamberland L₁ candle. Chart 15 shows the result of the experiment. Primary cultures of 37/S, incubated for three days in this way fail to produce tumours. Proof that this is not due to death of the virus will be given in another paper. Charts 14 and 15 are the best results obtained. When dry necrotic tumours are used the results of inoculation may be quite negative.

It is now certain that a typical mammalian sarcoma (37/S) can be transferred with a cell-free filtrate, under the special conditions described. The Rous chicken tumour is thus, in reality, not exceptional; it differs from the mammalian sarcoma 37/S merely in the fact that its accessory chemical factor is either more abundant or more stable. All the evidence points to the oxygen lability of the chemical factor and it is possible that the explanation of the uniform failure to transfer 37/S with tumour filtrates is due partly to the oxidation of the specific factor in grinding with sand, and partly to the excessive dilution necessary to form a filterable mixture.

CHART 15

MOUSE	7 TH DAY	14 TH DAY	21 ST DAY
A. MICE INOCULATED WITH UNFILTERED CULTURE.			
1 YELLOW ♀	—	•	●
2 FAWN ♀	—	•	●
3 DARK FAWN ♀	—	•	•
4 BLACK & WHITE ♀	—	•	○
B. MICE INOCULATED WITH FILTERED CULTURE			
1 BROWN ♀	—	•	○
2 BROWN ♀	—	•	○
3 BLACK ♀	—	•	●
4 BLACK & WHITE ♀	—	•	●
5 BLACK & WHITE ♀	—	•	•
6 BROWN & WHITE ♀	—	•	●

Jensen's Rat Sarcoma, Rat Carcinoma 9, and Mouse Carcinoma 63.

It will be observed that proof of the existence of an extrinsic cause of 37/S sarcoma proved to be a lengthy and laborious research. For the remaining three tumours an indirect method has been adopted to obtain the same information. The method consists in substituting the virus of one of these tumours for that of the Rous sarcoma in the manner indicated in the following experiments:—

Experiment April 17th, 1925.—Sand filtrate of Rous chicken sarcoma was prepared from healthy tumour tissue. The filtrate was perfectly clear, faint yellow in colour, and viscid. 10 c.cm. were saturated with chloroform and then incubated in a beaker of water kept at 30° C. The chloroform was completely removed by means of a Geryk pump and the following experiment was made:—

Chicken 251 was inoculated with 1 c.cm. of the filtrate; Chicken 252 with 0·5 c.cm. of the filtrate to which was added 0·5 c.cm. of a culture made by adding a fragment of 63 carcinoma to rabbit serum KCl broth and incubating anaerobically for three days at a temperature of 30° C.; and Chicken 253 was inoculated with 1 c.cm. of the culture of 63 carcinoma. The result is shown in Chart 16.

CHART 16

17 4 25 CHICKEN	DAY				
	7 TH	14 TH	21 ST	42 ND	70 TH
251	—	—	—	—	—
252	—	•	●	† 21 ST DAY.	
253	—	—	—	—	—

It is evident from this experiment, which has been repeated many times, that the culture of 63 carcinoma can replace the virus of the tumour. The tumours thus produced distinguished histologically or biologically Rous tumour.

The next protocol is included to show is the preparation of the specific

Experiment May 9th, 1925.—Clear sand filtrate was prepared from a Rous tumour and two lots, each of 10 c.cm., were taken. To one a few drops of chloroform, insufficient to saturate the mass, were added and the mixture incubated for three hours; to the second lot of 10 c.cm. rather more than 1 c.cm. of chloroform was added and saturation facilitated by repeated mixing. The second tube was incubated for 5 hours. Chickens were inoculated as follows:—

(*a*) Chicken 284 was injected with 1 c.cm. sand filtrate insufficiently treated with chloroform; Chicken 285 with 0·5 c.cm. to which was added 0·5 c.cm. of a three-day primary culture of carcinoma 63; and finally, Chicken 286 was inoculated with 0·5 c.cm. of filtrate diluted to 1 c.cm. with 0·5 c.cm. saline. The result is indicated on Chart 17.

CHART 17.

9.5.25 CHICK	DAY 7TH	 14TH	 21ST	POST MORTEM
284	—	—	●	KILLED 23RD DAY. SMALL TUMOUR. NO METASTASES.
285	—	●	▨	DIED 22ND DAY. LARGE TUMOUR. DEPOSITS IN LUNGS AND LIVER.
286	—	—	—	KILLED 42ND DAY. NO TUMOUR.

(*b*) Experiment with sand filtrate treated with excess of chloroform and incubated five hours. Details are shown on Chart 18.

CHART 18

9.5.25 CHICK	INOCULUM	DAY 7TH	 21ST	 42ND
287	1 cc FILTRATE.	—	—	—
288	0·5 cc FILTRATE + 0·5 cc CULTURE OF MOUSE CARCINOMA 63.	—	—	—
289	0·5 cc FILTRATE + 0·5 cc CULTURE OF RAT CARCINOMA 9.	—	—	—

Rat Carcinoma 9 and Jensen's Rat Sarcoma.

These tumours will be taken together in order to save space. Cultures of them are made in the usual manner by adding a fragment of healthy tumour to a tube of rabbit serum KCl broth. Carcinoma 9 usually becomes very hæmorrhagic and a young tumour must therefore be taken. In the case of the Jensen rat sarcoma retrogression is so common that it is advisable to chart the tumour frequently in order to be certain that it is taken in the growing phase. Such cultures may now be substituted for the Rous cultures, as in the experiments already taken from protocols for tumour 63.

Experiment May 15th, 1925.—10 c.cm. of water-clear sand filtrate of a Rous tumour was taken and treated with chloroform. The following chickens were inoculated: Chicken 291 with 1·5 c.cm. treated sand filtrate (specific factor), Chicken 292 with 0·5 c.cm. filtrate plus 0·5 c.cm. saline, Chicken 293 with 0·5 c.cm. filtrate plus 0·5 c.cm. of a twelfth subculture of the Rous tumour, Chicken 294 with 0·5 c.cm. filtrate plus 0·5 c.cm. of a culture of rat carcinoma 9, and Chicken 295 with 0·5 c.cm. filtrate plus 0·5 c.cm. of a culture of the Jensen rat sarcoma (Chart 19).

Again, the tumours produced with the specific factor of the chicken sarcoma, together with cultures from the rat tumours, do not differ in structure from the ordinary Rous No. 1.

It has now been shown that the non-specific factor can be obtained from three mammalian tumours. Experiments with subcultures of these tumours are not yet complete, but there is no reason to doubt that the element provided is a virus.

HUMAN TUMOURS.

Tests with three tumours only have been completed. One of these, for which I am indebted to Dr. A. G. L. Reade, was a scirrhous carcinoma of the breast. Cultures were made, but proved to be contaminated. Nevertheless, chickens were inoculated with the culture and specific factor but results were negative. The second was a sarcoma of the thigh, pieces of which were kindly given to me by Sir Cuthbert Wallace. The cultures which were made from this tumour were uncontaminated, but experiments on chickens failed completely. The third was an adeno-carcinoma of the breast; I am indebted to Prof. G. E. Gask for the opportunity to test it. Cultures were made both from the tumour itself and from an axillary gland which was enormously enlarged. There was no contamination in the cultures. The experiment was made on May 23rd, 1925. Chart 20 shows the result.

CHART 19

15.5.25 CHICK	INOCULUM	DAY 7TH	 11TH	 14TH	 21ST	P.M.
291	1·5 cc SPECIFIC FACTOR.	—	—	—	—	†K 35TH DAY. NO TUMOUR.
292	0·5 cc SPECIFIC F. + 0·5 cc SALINE.	—	—	—	—	†K 35TH DAY. NO TUMOUR.
293	0·5 cc S.F. + 0·5 cc 12TH SUBCULTURE OF ROUS TUMOUR VIRUS.	—	●	▨	▨	†K 24TH DAY.
294	0·5 cc S.F. + 0·5 cc 3RD DAY CULT. OF RAT TUMOUR 9.	—	●	▨	† 18TH DAY	
295	0·5 cc S.F. + 0·5 cc CULTURE OF JENSEN RAT SARCOMA.	—	?	▨	† 18TH DAY	

CHART 20

23.5.25 CHICK	INOCULUM	DAY 7TH	 14TH	 21ST	 28TH
296	1 cc SPECIFIC FACTOR OF CHICKEN SARCOMA.	—	—	—	—
297	0·5 cc S.F. + 0·5 cc CULTURE OF HUMAN TUMOUR IN R.S.KCl BROTH, 4 DAYS AT 36° C.	?●	▨	▨	†
298	0·5 cc S.F. + 0·5 cc CULTURE OF GLAND IN R.S.KCl BROTH, 4 DAYS AT 36° C.	—	○	▨	†

Chick 297 died on the twenty-third day; and Chick 298 on the twenty-eighth day.

The tumours produced were again indistinguishable from the Rous tumour.

One human tumour then behaves like the rat and mouse tumours. The negative result with the human sarcoma may mean that a group of viruses—not interchangeable—exist which cause tumours, but obviously more experiments must be done before an opinion can be formed. The failure with the scirrhous tumour can be ignored owing to the contamination of the culture.

DISCUSSION.

It has now been shown that the Rous tumour No. 1 is caused by a virus which has been cultivated; that the mouse sarcoma 37/S can be transmitted with cell-free filtrate; that the rat tumours 9 and J.R.S. and the mouse carcinoma 63 and a human breast carcinoma all provide a factor which can replace the virus of the Rous tumour in the genesis of a chicken sarcoma.

The common factor of the last four tumours is almost certainly a virus. The production of tumours with remote subcultures remains to be done. Further, it has now been shown that the virus alone is unable to bring about the malignant transformation of a cell. An adjuvant, fortunately provided in abundance by the chicken sarcoma, is necessary; this adjuvant

I have called the specific factor. Superficially, it might be thought that Ball's term "aggressin" would appear satisfactory, but a casual analysis of the facts relating to an aggressin shows that this is not so. As an example of an aggressin the toxin of *B. welchii* will be taken. The toxin is separated from the bacilli by filtration and the minimal lethal dose for mice determined. Bacilli, conveniently grown on solid medium are washed free of toxin, and are then found to be perfectly harmless to mice. If, now, mice are inoculated with a sublethal dose of toxin to which has been added washed *B. welchii*, an infection is set up, more toxin is produced in vivo, and the mouse eventually dies of a spreading gangrene with toxæmia. When the bacilli added to the toxin are *B. welchii* the infection produced is characteristic of *B. welchii* infections; when *Vibrion septique* is added the disease produced is characteristic of *Vibrion septique*;[7] and similarly, toxin-free harmless tetanus spores mixed with sublethal doses of *B. welchii* toxin produce tetanus.[8] Thus, the specificity in these cases depends upon the microbes; the aggressin, acting equally well for all three, produces a microscopic lesion which in some way, not yet fully understood, enables these anaerobic organisms, which alone are harmless saprophytes, to proliferate in the tissues and there to make their characteristic poisons. These facts have been established by experiments similar to, but much easier to perform than, those which have been employed in the work described in this paper. The differences between an aggressin and the specific factor of a tumour are evident.

These researches have led me to look upon cancer—using the term in its widest sense—as a specific disease caused by a virus (or group of viruses). Under experimental conditions the virus alone is ineffective; a second specific factor, obtained from tumour extracts, ruptures the cell defences and enables the virus to infect. Under natural conditions continued "irritation" of tissues sets up a state under which infection can occur. The connexion between the specific factor of a tumour and an irritant remains to be investigated. Some of the relatively unimportant "irritants" are known, such as coal-tar, paraffin oils, &c. The virus probably lives and multiplies in the cell and provokes the cell to continued multiplication.

The methods of experiment now described, and the obvious extensions of them, give the means of classifying the viruses, of investigating the nature of the specific factor, and of testing suspected "irritants," such as preservatives in foods, which may play a rôle in the genesis of a tumour.

I am indebted to the Executive Committee of the Imperial Cancer Research Fund for placing at my disposal their unrivalled series of animal tumours. My thanks are due to my former chief, Dr. J. A. Murray, F.R.S., for his continued critical interest in the work. To my colleague, Dr. W. J. Purdy, I am indebted for assistance in many experiments, for help in the routine inoculation of tumours, and for the preparation of charts; over and above this direct help, I desire to acknowledge the advantages I have derived from his criticisms both of experiments and the interpretations placed upon results. Finally, I wish to state that I owe much to my laboratory servant, Mr. W. Hall, for his willing service.

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THE MICROSCOPICAL EXAMINATION OF FILTERABLE VIRUSES

ASSOCIATED WITH MALIGNANT NEW GROWTHS.

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(*With Illustrative Plates.*)

Introduction.

THE search for filterable viruses by microscopical methods presents problems of great difficulty, due for the most part to the optical limitations of the microscope. The evidence that such organisms exist is based upon numerous experiments in which infective material has retained its infectivity after passing through a filter that will not pass the smallest known visible organism. There is at present no method in general use by which such filters can be standardised, and it is therefore not certain that filterable viruses can be regarded as organisms of any definite order of size. Other factors than size of the organism influence the result of filtration experiments, not the least being variability of the filters themselves and the viscosity of the filterable material. If filtration did give more exact information as to the size of any given organism it would then perhaps be advisable to adopt some other standard of reference than permeability. Such a standard might be the limits of microscopical resolution, by which all bodies of less than 0·25 μ in their greatest diameter should be regarded as filter-passers, although in that case some other more suitable name might well be found.

It is necessary to consider the main factors limiting both visibility and resolution in the microscope as these limits operate so definitely in any attempts to see or to photograph small bodies. It is also of interest to realise the probable size of filterable viruses in relation to the smallest micro-organism on one hand, and a large molecule on the other. The latter limits are shown diagrammatically in Figs. 1 and 2. The inner circle A in Fig. 1 may be regarded as a hæmoglobin molecule, molecular weight 16,000 approximately. The circles B, C, D, represent the orders of microscopical resolution obtainable if certain ultra-violet radiations are used of wave-lengths 232 μμ, 257 μμ, and 275 μμ respectively; they do not indicate the magnitude of relative wave-lengths. The circle E represents the relative position of the green line in mercury wave-length 546 μμ, with which the visual observations have been made. Between the positions A and B, therefore, no method at present exists by which microscopical resolution can be obtained. (The millimicron μμ = one-thousandth of a micron, 10^{-7} cm.) It is convenient to use the micron for microscopic dimensions and the millimicron for wave-length estimations. To enable a comparison to be made with an organism of known size, reference must be made to Fig. 2, which is on one-tenth the scale of Fig. 1. In this the relative wave-lengths are represented by the small inner circles B, C, D, and E, and the outer circle F represents a body of 1·0 μ in diameter, the average size of a small micrococcus. On reference again to Fig. 1 it will be seen that to obtain the necessary microscopical resolution, a term which will be explained later, and which is proportional to the wave frequency of the light used, it is necessary to use light of wave-length 275 μμ if a body of 0·1 μ in diameter is to be represented, whereas wave-length 257 μμ would resolve down to approximately 0·075 μ, a dimension that is of importance in the present investigation. Fig. 2 gives some idea of the possible sizes of filter-passers. It is certain that they are made up of a considerable number of complex molecules, but no exact limit is assignable in either direction. There are, however, two physical considerations that do suggest a limit of smallness. One is the difficulty there would be for a small body to overcome its relatively great surface tension and to divide and reproduce itself by binary fission as larger organisms do; the other is the mean free path, or Brownian motion, which it would acquire if it exists as a separate particle. There are reasons to think that these conditions are provided against in the life processes of small organisms, and the evidence that this is so will be detailed later; at the same time these factors must and do operate at times, and they may therefore be regarded as limiting factors in any estimation of size. There are other circumstances that cannot be detailed here suggesting that filterable viruses are of sizes represented by the distance between B and D, and can therefore be photographed by ultra-violet light of the wave-lengths indicated. No objective has yet been constructed which works to or near the theoretical limit that the shortest of these wave-lengths should give, but experimental efforts indicate that such will be evolved in due course.

Fig. 1.

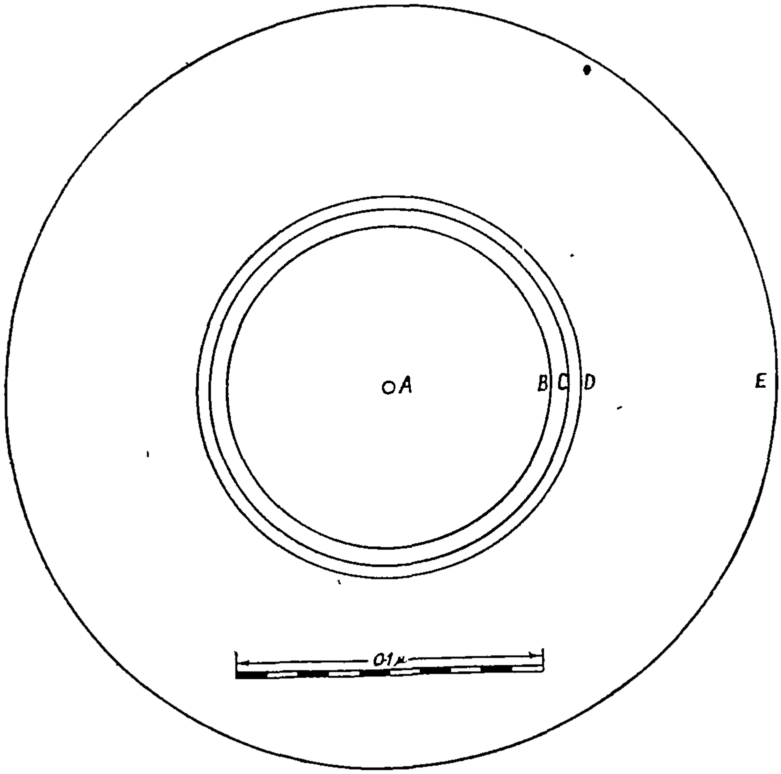
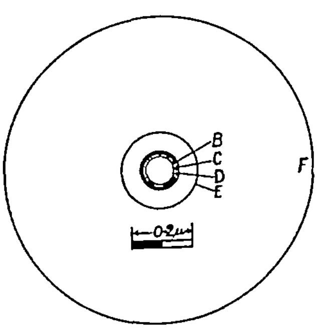


Fig. 2.



Diagrams to show relative magnitudes.

The Microscopical Limits of Observation.

Microscopic objects may be divided into two classes, those that are seen by transmitted light and those that can be made self-luminous. The former are seen as the result of partial or of selective light absorption, that is, they may be semi-opaque, the elements of structure absorbing more or less light, or they may be seen in colour as the result of selective absorption as in a stained preparation. For an object to be self-luminous, it must be illuminated in such a manner that no direct light reaches the micro-objective but only that which is refracted, diffracted, or scattered by the object itself. Under these conditions an object is seen as a bright image on a dark background and the method is known as dark-ground illumination. The main purpose in all microscopical observations is to obtain the greatest resolution, and the term, "limits of resolution," is applied to that state of affairs in which no further separation of elements of structure is obtainable. Only late in the last century was it definitely recognised that there are theoretical limits beyond which the microscope as ordinarily employed cannot go, and these theoretical limits are now all but reached under proper conditions of use. If two points in an object are within a certain limiting distance of one another they cannot be separated by any known means. Further, if an isolated element of structure is smaller than a certain limit the image seen does not represent its exact form or size. Magnification as such does not help, as, however much the image may be enlarged, there is no resulting increase of resolution. The main factors governing resolution are the numerical aperture of the objective used and the wave-length of the light employed. The best results are therefore to be expected when numerical aperture (N.A.) is large and the light used of the shortest wave-length practicable. While this power of delineating fine detail is of primary importance in all observation, another factor comes in with self-luminous objects which is hardly less important, and that is visibility. The term "ultra-microscope" is often inaccurately applied to all illuminating appliances that render an object self-luminous, but it should in fact only be used to describe apparatus which renders particles visible that are smaller in all dimensions than the resolution limits. In actual practice this limit is reached with isolated objects or elements of structure that are less than 0·25 micron in diameter. When objects larger in any dimension than this limit are being so observed the method may be described as "dark-ground" illumination, whereas, when the objects are smaller, "ultra-microscopy" is the correct term. Neither dark-ground illumination nor the ultra-microscope can be regarded as a means of increasing resolution, their main purpose being to obtain greater visibility, although the full resolving power of any given lens may be secured by this means. In the light of recent experiments it is, in fact, clear that full resolving power is obtained more certainly by an efficient dark-ground illumination method than by any other means. In theory there is no limit to the smallness of an object that can be made visible if a sufficiently powerful illuminant is used. In practice, however, the dark-ground illumination limits are governed by the following conditions:—

(1) That the particles under observation can themselves scatter enough light to enable them to be seen.

(2) That the particles are separated from one another by intervals that are within the limits of resolution of the microscope objective used.

(3) That there is sufficient difference of refractive index between the particles and the medium in which

they are immersed. Only under certain very limited conditions can the full resolving power of the best oil-immersion objectives available for visual work (those in which N.A. = 1·4) be secured by this means. The limits in biological work are less than this, and are imposed by the refractive index of the medium in which the objects to be examined are immersed. As these are rarely widely different from water (with a refractive index of 1·33) it follows that the N.A. of any objective used could not exceed about 1·27. In practice the use of even this N.A. introduces difficulties when there is but a small difference of refractive index between object and medium. The method that appears to be most satisfactory, therefore, is to use an *illuminator with such an illuminating angle that it* admits of the use of an objective of 1·20 N.A. for all preliminary and routine observations. The highest practicable N.A. 1·27 is reserved for use in cases where circumstances are favourable, a point that can only be *determined by experience. The highest practicable* resolution, therefore, by dark-ground methods is that which enables an object of the order of 0·35μ to be seen and perfectly resolved, although much smaller bodies may be rendered visible and some of their physical properties determined. The limits of dark-ground methods in the search for filterable viruses are therefore obvious, but it has been found in practice that much preliminary work can be done. The only other method likely to be of service is, therefore, to use light of a short wave-length as indicated already. Approximately a body may be photographed of one-half the size of the wave-length used. The simple formula governing resolution is given by the relation, $a = \frac{1}{2}\lambda/\sin a$, where λ is the wave-length of the light employed when passing through the medium used, and a is the angle emitted by half the diameter of the back lens of the objective. Thus the value of d, which is the limiting distance between two particles, or the size of a single particle if a correct image is to be seen, can be reduced by increasing aperture or decreasing the wave-length of light used as an illuminant. The former factor is determined by the objective and for visual work cannot be increased. The latter can in theory be altered to any extent, and the usual expression for attainable resolution $\frac{\lambda n}{2\mu \sin a}$ can be diminished so that a filterable virus of any probable size should be resolvable. This is at least what theory indicates, and the direction of experimental work in the department of applied optics is to make such radiations available as are needed for any particular purpose. The present position is not discouraging, but it is admitted that many practical difficulties have yet to be overcome.

It follows, therefore, that there are at present only two methods of attack if a microscopical image of a filterable virus is to be obtained :—

1. The observation of the living material by dark-ground illumination methods in which visibility would be secured in terms of the size of the particular virus.

2. The use of light of short wave-length (that is by means of invisible radiations) resulting in higher resolution, proportionate to the wave frequency.

Both of these methods exclude any process such as staining, in which changes will certainly occur owing to the preparation or fixing of the material. Gye has already referred to the difficulties he experienced in endeavouring to demonstrate organisms in infective material. It is evident that in cases where the body to be observed is below the limits of microscopical resolution, any staining method would be useless. Even more, such processes would destroy the only recognisable characteristic that such bodies possess, the difference that there might be in physical, and particularly in optical qualities, between them and inert particulate matter. In the dark-ground arrangement this would be evident mainly in terms of visibility, but by the use of ultra-violet light it is possible to obtain a real image of a small body providing a short enough wave-length is used.

Dark-ground Illumination Methods.

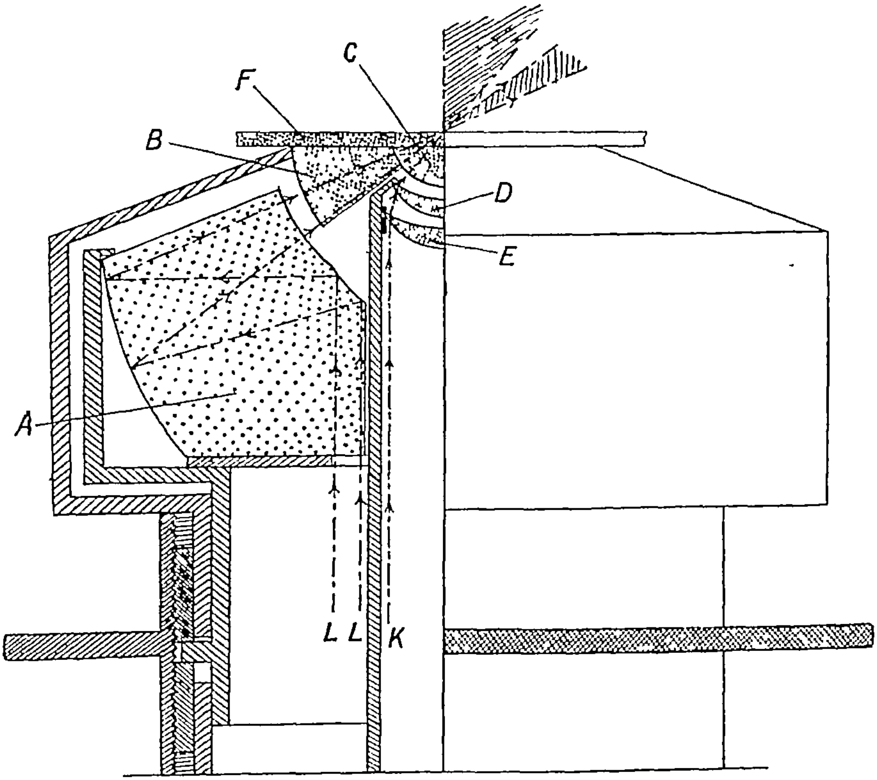
The apparatus used for this method may now be briefly described. The source of light is a quartz mercury-vapour lamp of the non-vacuum type as designed for microscopy. Colour screens are used to give either monochromatic blue, green, or yellow. The green line in mercury is peculiarly suitable as it is a narrow one and so approaches closely to a true monochromatic light source. Further, as this line is in that part of the spectrum to which the eye is most sensitive it is possible to work with light of low intensity, a point of the utmost importance in dark-ground work.

It is commonly stated, even in text-books, that a powerful light source is necessary, but this only results in such irradiation from larger particles that all fine detail is lost. A stable, well-made microscope is essential as all adjustments must be made with the utmost care. Thus, perfect centration of every part must be secured and the slide and cover-glass must be truly normal to the optical axis of the microscope. Full instructions for setting up a dark-ground illuminator will be found in the Special Report Series No. 19 issued by the Medical Research Council. The illuminators used have been designed to work with 2 mm. apochromatic objectives of 1·2 N.A. and 1·27 N.A., and the whole outfit is made by Messrs. R. and J. Beck, Ltd. Both these condensers work at their best with slides of the thickness of a No. 2 cover-glass. The material to be examined is therefore mounted between two cover-glasses and these are held in a chamber designed for the purpose. Provision is made to ensure that the layer under examination is as thin as possible, regard being paid to the necessity of preventing undue compression. A semi-darkened room is essential for this work, and the illuminant must be so shielded that no direct light reaches the eye at any time. Another essential is to provide means for reducing the light intensity without altering its quality. This is best secured by using semi-platinised glass screens prepared by the method described in the writer's book on photomicrography. A high-power compensating ocular × 18 to × 25 is necessary for final observations and the objectives mentioned will tolerate these perfectly.

The Microscope for Ultra-violet Photography.

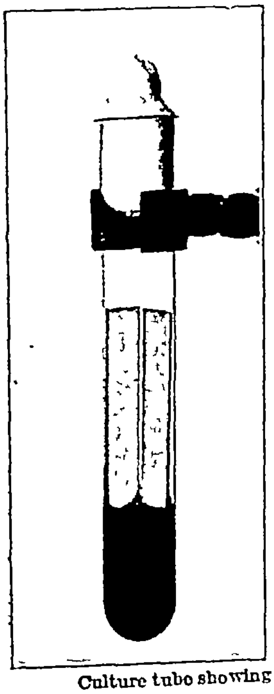
The mechanical part of the microscope used is of special construction, as no ordinary one would fulfil the required conditions. Its essential features are great stability and high accuracy of all movements, and its general design is seen in Plate I., Fig. 1. Both the coarse and fine adjustment A_1 and A_2 are actuated through a large accurately-cut screw of the type usually employed on an interferometer, the bed being a heavy casting of girder type supporting the whole. The objective and ocular are carried on separate carriers O_1 and O_2, with no body-tube between them as in an ordinary microscope. This ensures that the adjustment of either optical part does not disturb the other. The mechanical stage is strongly supported so that it is truly at right angles to the optical axis. The two milled heads A_4 control the movements of the object on the stage within certain limits, but the quartz slide is held in a novel manner to give some freedom of movement by hand, while ensuring that the slide is always kept in close contact with the stage, a matter of moment in ultra-violet work. The combined dark-ground and ultra-violet light illuminator O_3, described later, is supported on a strong centreing sub-stage, which is moved by an accurate screw controlled by the large graduated head A_5. This is, in fact, a divided circle enabling the dark-ground or the ultra-violet light illuminating apparatus to be accurately focussed in any wave-length. The mercury-vapour lamp M_1 is mounted on a subsidiary optical bench which is arranged at right angles to the axis of the microscope. At M_2 a reflecting prism is mounted which can be swung into line, thus enabling the beam of light from the mercury-vapour lamp to be projected into the microscope. When the prism is swung out of line ultra-violet light from the spark-gap S_1 is projected by the quartz lens S_2 through the quartz prism S_3, and so into the central part of the microscope condenser. The arrangement therefore admits of either illuminant being brought into use by simply deflecting the prism M_3. This description is of necessity superficial, and assumes some knowledge of the orthodox methods of ultra-violet light microscopy, a full description of which by the writer can be found in the "Dictionary of Applied Physics." One of the main differences in principle here introduced is that focussing in any wave-length desired is performed in reference to the dark-ground image seen in the green line in mercury wave-length 546 μμ. Focussing by means of the fluorescent image is both difficult and dangerous owing to the action of ultra-violet light on living organism. Changes can be set up which might be regarded as normal appearances in the organism. The actual exposure, therefore, of any material to ultra-violet must be the shortest possible. There is no reason to regard the action on living organisms as a trigger action, a certain time factor is involved, but precautions must be observed to ensure that no change due to the light itself is set up. A long series of investigations on the action of ultra-violet on bacteria has been carried out so that this part of the subject is understood; an account of these experiments will be published in due course. There is no reason to regard the filterable viruses that have been under observation as more sensitive to ultra-violet light than ordinary bacteria; there is, in fact, some evidence that they are less sensitive, but this point again requires further investigation. The actual microscopical method employed has therefore been the composite one indicated, and consists of the use of a high aperture dark-ground illuminator already described, mounted concentrically with and encircling a quartz condenser. The former secures visibility and is used for purposes of search and location; the latter is available for use with any suitable ultra-violet radiation and enables a transmitted light image to be secured on the photographic plate. The problem of the best quartz objective to use is still only partly solved; much remains to be done to ensure that the best result should be obtained in any given wave-length. In collaboration with my colleague, Mr. John Smiles, this part of the work is being attacked with every evidence that success will follow. One photograph is shown in which light of 257 μμ wave-length is used, and this is certainly the shortest wave-length recorded as having been so applied to microscopy.

FIG. 5.



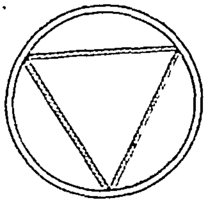
Combined illuminator in section.

FIG. 3.



Culture tube showing the disposition of glass slips.

FIG. 4.



Methods of Cultivation.

Cultural methods have been devised and carried out by Gye and are described by him in the foregoing paper. It was, however, found necessary to design some arrangement by which it could be determined whether colonies were developing, and to examine these colonies in situ. From the nature of the growth obtained in fluid there was some reason to doubt whether it would be possible to obtain growth on solid media. Further, as the quantity of growth in fluid, in relation to the volume of medium, is not so prolific as with ordinary organisms, it was regarded as probable that any colonies obtained would be few in number and small in size. A means of examining the surface of serum-agar was therefore desirable in which a 2 mm. oil-immersion objective could be used. Thus it was really necessary to apply to the medium for the detection of colonies a means that would ordinarily be used for the detection of organisms. Briefly, the arrangement that has been found successful is seen in Figs. 3 and 4. An ordinary test-tube is taken, preferably of rather large size, and into it three thin glass slips are introduced in the configuration seen in Fig. 3.

These three slips form a triangle in plan, Fig. 4, and are of such a width that they are free to move in the direction of the length of the tube but cannot

MR. J. E. BARNARD: THE MICROSCOPICAL EXAMINATION OF FILTERABLE VIRUSES.

PLATE I.

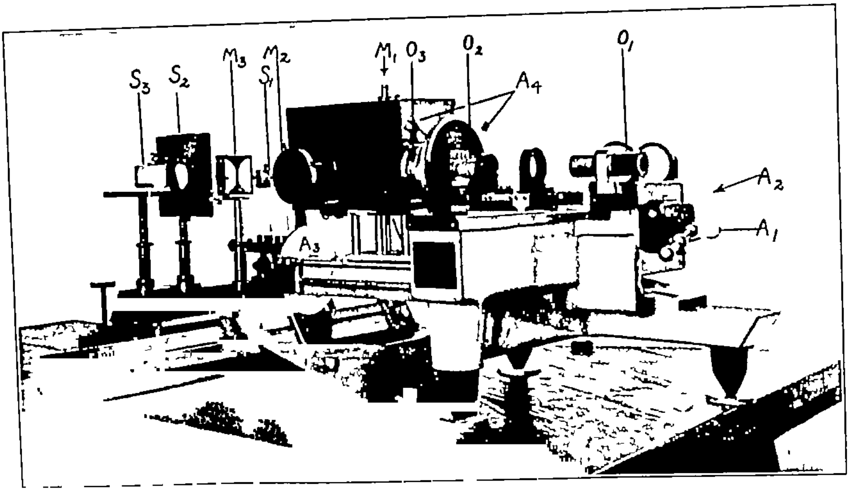


FIG. 1.

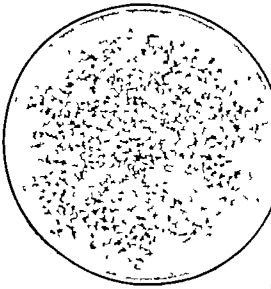


FIG. 2.

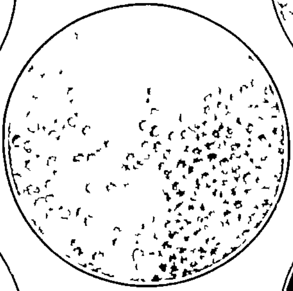


FIG. 6.

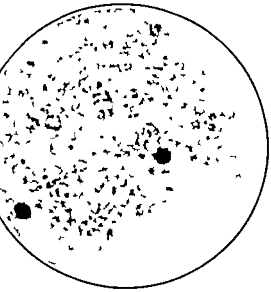


FIG. 3.

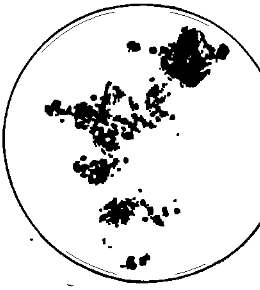


FIG. 4.

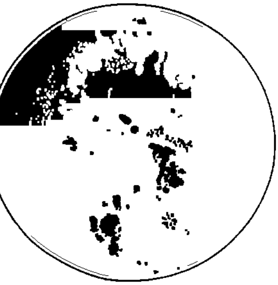


FIG. 5.

MR. J. E. BARNARD: THE MICROSCOPICAL EXAMINATION OF FILTERABLE VIRUSES.

PLATE II.

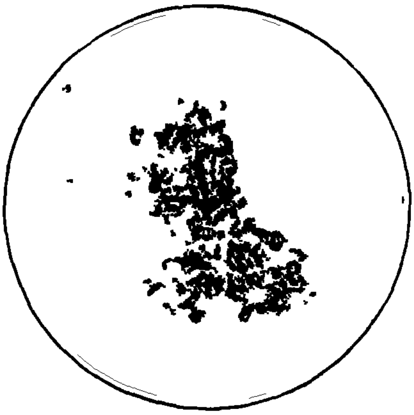


FIG 1.

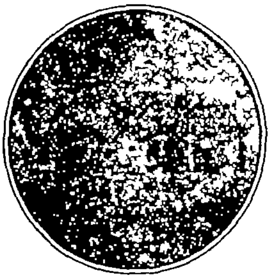


FIG 2.

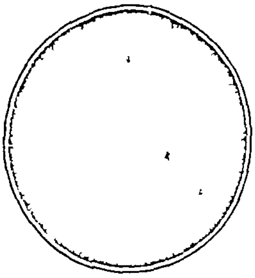


FIG. 3.

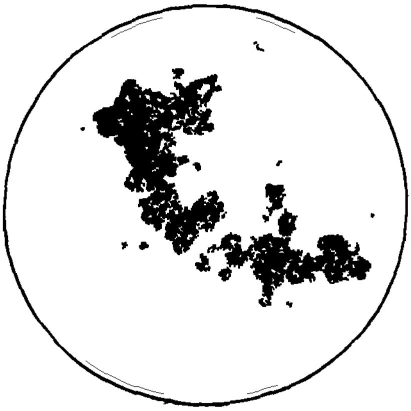


FIG. 4

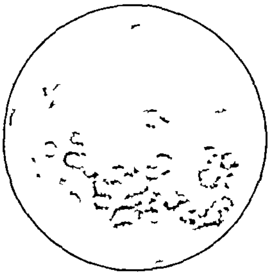


FIG. 5.

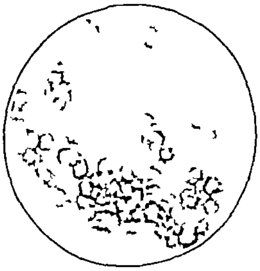


FIG 6.

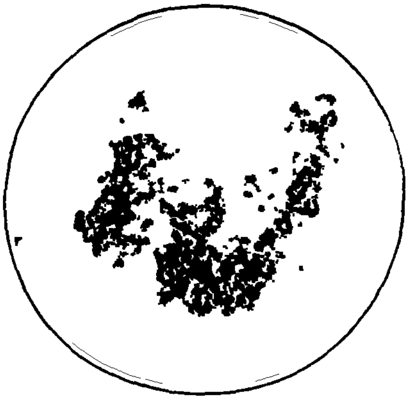


FIG. 7.

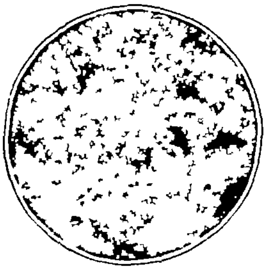


FIG. 8

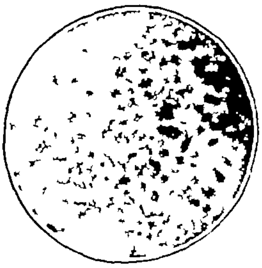


FIG. 9.

move in any other way. They dip into the agar medium seen at the bottom of the tube, and when the agar solidifies are quite stable. The agar is melted, the serum added in the ordinary way and inoculated with the infective material. After inoculation and before solidification the tube is tilted so that the agar runs along the tube and touches the external face of each slip of glass in turn. The amount of agar left on the glass is determined by the temperature, but it is always possible to repeat the tilting process, several times if necessary, until enough medium remains. The tube containing the three slips is incubated and at any suitable period one slip is removed for examination, the remainder going on for a longer period if desired. Either glass or quartz slips may be used so that examination is possible by the dark-ground method or photographs can be taken in ultra-violet light.

In either case a cover-slip of glass or of quartz is placed on the slide so that cedar-wood oil or glycerine may be used as an immersion medium. The serum-agar usually has sufficient surface moisture to secure optical contact between cover-glass and agar layer. It is doubtful whether colonies would have been detected without this method, and a fuller description will be published later by Mr. F. Welch, who has taken so large a part in working out the details.

Description of Combined Illuminator.

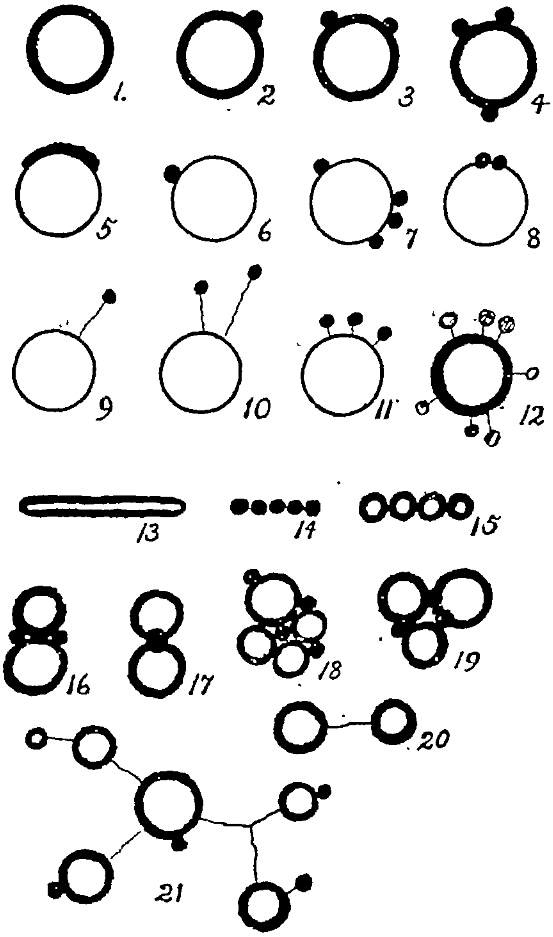
The design of this double purpose illuminator is seen in Fig. 5. The front lens of the central quartz condenser is seen at C, the other two lenses of this combination are D and E. The front lens is in glycerine immersion contact with the quartz slide F, on which the object is supported. The outer quartz ring B is part of the dark-ground illumination appliance and is mounted as shown to transmit the dark-ground beam without alteration of direction on striking the quartz lens C. It will be appreciated that this lens C is an essential part of both systems (in the drawing the closely dotted parts are of quartz, while the wider dotting indicates glass). The ultra-violet light therefore passes through the quartz system in the direction K, as shown, and is focused at the point of observation. The dark-ground illumination, portion A, is an annular glass reflector substantially as shown, which transmits its illuminating beam of visible light also on to the point of observation. By sliding a central stop into the apparatus the quartz system is obscured, while the outer dark-ground portion is covered at will by an annular stop. It follows, therefore, that either part may be used by simply inserting the suitable stop. The light energy required for ultra-violet work is supplied by a high-tension alternating spark between suitable metallic electrodes. The electrodes are selected to give any required wave-length, and a fuller description of this will be found in the author's book on Photo-micrography, now in the press. The method of focussing the image in ultra-violet work has hitherto been by means of a fluorescent screen. The image formed by the quartz ocular is thrown on to such a screen, and is then observed by a short-focus telescope. Focussing by this means is always difficult and sometimes impossible, if the object is a translucent one; further, it entails considerable exposure of the object to ultra-violet light. To minimise the difficulty small mercury droplets may be deposited by sublimation on the quartz slide before the material under observation is mounted. Such droplets can be deposited in almost any order of size by variation of temperature of the mercury and time taken for its deposition. Some droplets are seen as dark discs in Plate I., Fig. 8, and this method has proved of value. The combined illuminator has in most cases, however, rendered their use unnecessary, as visibility can usually be secured sufficiently to focus an image in monochromatic green light, and with the accurate microscope described the focussing in ultra-violet becomes a purely mechanical process.

Observations.

The microscopical search for any filterable virus had been prepared for in part by a continual effort to improve the mechanical and optical parts of the microscope, and some definite advances had been made before any material was available. During the war some experimental work on trench fever suggested that something might be done by studying the optical characteristics of infective material. Further, a considerable amount of work had been done with bovine pleuro-pneumonia, as this appears to be the smallest organism known to grow under ordinary bacteriological methods of cultivation. There was, however, no cultural material available of an undoubted filter-passer until the successful cultivation of the Rous fowl sarcoma by Gye. The earliest efforts to observe this organism were of the simplest character, and consisted of the careful observation of uninoculated culture-media side by side with observation of inoculated tubes of subsequently proved infectivity. Dark-ground illumination as described already was employed, and to ensure that the comparison should be exact two microscopes of similar design and with the same optical equipment were set up. Thus infective and non-infective material could be examined and compared under identical conditions, an arrangement that has proved of great value. All the conditions described herein as being essential for accurate observation were carefully observed. Further, as a control, cultures of pleuro-pneumonia were kept going similarly, and observations were made on this organism in the same way. Any tube of infective material that contained bodies not to be seen in a similar uninoculated tube was then examined under the combined microscope, and if practicable an ultra-violet photograph obtained. Thus a dark-ground visual image was observed and ultra-violet photograph obtained that under favourable conditions would give an image of an isolated element of structure down to an order of size of 0·075 μ. The observations on pleuro-pneumonia were all carried out on living material, and not in reference to stained preparations. These are still being carried on by my colleague Mr. John Smiles at this institute, and will be described fully by him in due course. Briefly, however, these observations lead to some tentative conclusions. Thus the pleuro-pneumonia organism is a small particulate body about 0·2 μ diameter which can only grow and reproduce itself under certain conditions. The particulate form is accompanied by and is dependent for its reproduction on a larger spheroidal body which develops from the particulate form and which then forms the host on which the particulate form can develop further.

Fig. 6 shows diagrammatically the sequence of events as we understand them at present. After about 20 hours a tube that has been inoculated from an agar surface colony will show a number of spheroids that may be represented as No. 1. A few hours later a small refractile dot is seen on one part of the spheroid as No. 2, subsequently developing further bodies as in 3–4. Some spheroids appear to have a thickened wall, while others are thin and of low visibility, but recent observations suggest that this apparent thickening is due to a number of particulate bodies below the limits of size that can be visually resolved. The attached particle then tends to move away from the spheroid, but is still attached to it. This attachment is rarely observed visually, but ultra-violet photographs show it to be a fine filament which is derived from the spheroid and gives to the latter an amoeboid appearance. Some particles soon develop into small spheroids and form groups, as in 16, 17, 18, 19, each of them developing attached particles substantially as shown. In most cases, however, the spheroid tends to disintegrate, or at least become less visible, and finally gets into an unstable physical state, somewhat as shown in 12 and 21, where the central spheroid is still evident but is surrounded by a number of smaller spheroidal bodies. This formation is quite characteristic, but can only be appreciated when actually seen under the microscope. The grouping and movement in fluid is an interesting physical phenomenon in which a rotating spheroidal body unevenly loaded with particles appears to assume a form suggesting a spiral disposition. That the particles can and do develop into spheroids has been proved by careful filtration experiments. Thus a fluid culture has been filtered by us through a Bechhold collodion membrane of such porosity that it passes the particulate forms but keeps back all visible spheroids. The filtrate was incubated for 12 hours at 37° C. without any evident change, but a fresh tube of serum broth inoculated from it and incubated during the same period show that all the particulate forms had developed into spheroids, and the full life-cycle ensued. The explanation of the life-cycle may, therefore, be that the spheroids take the place of the living cell in providing conditions suitable for reproduction. In very young colonies of pleuro-pneumonia (see Plate I., Fig. 2) the particulate forms do apparently divide for the first few hours only, and are then immersed in some excretory material which reduces their surface-tension. Soon, however, the spheroids develop on the outer edge of the colony, and further reproduction takes place on these in the manner described. The argument is too long for full extension here, but it does appear to be the means by which the difficulty of subdivision by a small body is overcome. It is certain that this organism does not divide in the same way as do ordinary bacteria. The difficulty of growing them artificially, particularly on solid media, suggests that some special conditions are necessary, but speculation is futile until the exact physical conditions are better understood. A long series of comparative observations on cultures, all of which have ultimately been proved by animal experiments to be infective, has led to the conclusion that the same type of phenomenon, but on a smaller scale, is to be observed in the Rous fowl sarcoma, mouse sarcoma 37/S and latterly in human carcinoma, as can be seen in cultures of pleuro-pneumonia. In no essential point is there any difference, except that the cultures from malignant growths are slower in developing and do not produce such rich cultures. Probably no single factor has hindered the cultivation of filterable viruses so much as the assumption that a culture in broth, for instance, must become opalescent, or that a growth on solid media must develop colonies easily visible to the naked eye. If as we think probable the spheroids are an essential part of the life-history of these organisms then, owing to their low refractive index, they would require to be present in impossibly great numbers to produce evident cloudiness. The fluid cultures from malignant growths always remain clear; on solid media the colonies are so small that they require the use of a high-power objective to see them. The incubation period has not usually exceeded seven days, and examination of the cultures and similarly incubated uninoculated tubes has been made from three days onwards. During that period the same life-cycle has been observed in all cases as that seen in pleuro-pneumonia. Observation is more difficult than with pleuro-pneumonia owing to the small size and lower visibility of the malignant growth viruses. The microscopical technique has, therefore, to be carefully adapted to these more exacting conditions. Unless considerable care is exercised the spheroids may easily be confused with other spherical bodies occurring in most organic fluids. This can only be obviated by a careful preliminary study of uninoculated culture-media.

FIG. 6.



Diagrammatic representation of bodies seen in cultures of bovine pleuro-pneumonia.

Description of Plates.

PLATE I.

FIG. 1.—Microscope described in text.

FIG. 2.—Young colony of bovine pleuro-pneumonia photographed in ultra-violet light. × 1200.

FIG 3.—Edge of an older colony showing spheroids. × 1800.

FIG. 4.—Young colony showing particulate form. Dark-ground illumination. × 1850.

FIG. 5.—Older colony showing development of spheroids. × 1850.

FIG. 6.—The edge of a young colony of *M. pyogenes aureus*, photographed in ultra-violet light to show normal development of an organism. In this case the line of subdivision is seen before the organism changes its external form.

Figs. 2 to 6 are colonies grown on slips by the method described.

PLATE II.

FIG. 1.—Rous fowl sarcoma colony on agar slip. Dark-ground illumination. × *1850*. *The particulate* bodies are seen centrally in small bright masses, the spheroids developing on or near the edge.

FIG. 2.—Rous fowl sarcoma. An isolated spheroid with attached particle. Dark-ground illumination. × 1850.

FIG. 3.—Same as Fig. 2, but photographed in ultra-violet light. The attached particle is seen to be a small spheroid. × *2000*.

FIG. 4.—Mouse sarcoma. 37/S. Colony on agar slip. Dark-ground illumination. × *1850*. Considerable development of spheroids.

FIG. 5.—A small portion of the colony photographed in ultra-violet light. Wave-length 275 μμ showing that the spheroids may depart rather considerably from a spherical form at some stages of growth. × 2200.

FIG 6.—Same as Fig. 5, but photographed in ultra-violet light. Wave-length 257 *μμ*. × 2200. Showing the ultimate particulate character of the spheroids. From this and other photographs in the same wave-length it is estimated that the particulate form of the virus is of the order of size of 0·075 μ. It is *certainly appreciably* less than 0·1 μ, as resolution cannot be obtained with any greater wave-length.

FIG 7.—Human carcinoma. Colony on agar slip. Dark-ground illumination. × *1850*. *The same general characteristics* are to be seen as in Figs. 1 and 4.

FIG 8.—A small portion of the edge of a larger colony showing spheroids interspersed with particulate bodies. × 1850.

FIG. 9.—A portion of the edge of the same colony as seen in Fig. 8 photographed in ultra-violet, light wave-length 275 μμ.

The general conclusions to be drawn from the photo-micrographs are that the developmental stages in each of the above are similar. It is feared that the reproduction will not show so well as the original negatives, particularly in those done in ultra-violet light. The difficulties are greatly increased owing to the relative opacity of serum-agar to ultra-violet light, the possibility of obtaining photographs at all being due to the thinness of the layer of culture medium. In addition, the negatives are very thin and *lacking in contrast, although they do in the originals* show much delicate detail.

NOTE ON THE PRECEDING PAPERS.

By J. E. BARNARD AND W. E. GYE.

The separate parts of this investigation have now been described, and it remains to indicate how far the results obtained fit together. Our belief that the small bodies seen and photographed are the actual virus depends partly upon the fact that control uninoculated tubes of medium have been invariably blank, and partly upon the correspondence between the microscopical findings and the results of experiments upon animals. *This correspondence—allowing* for the real difficulties in both parts of the common task—has been so close that, although final proof has not been attained, we are convinced that our conclusions are sound. By *final* proof we mean the *cultivation of the virus from a single* colony, or if possible from a single spheroid, and the production of a tumour with the culture thus obtained. This work has been under consideration for a long time, and will be attempted when circumstances permit.

THE

Bowman Lecture

[ABRIDGED]

ON

THE FOUNDATIONS OF VISION.

Delivered before the Convention of English-Speaking Ophthalmological Societies on July 16th, 1925,

BY SIR JOHN HERBERT PARSONS, C.B.E.,
HON. D.SC. (BRISTOL), F.R.C.S. ENG., F.R.S.

[AFTER making introductory reference to Sir William Bowman and his work, the lecturer went on:—]

I propose to delve into the very foundations of the physiology of vision in the hope that a survey of the facts brought to light may elicit some general principles which will clarify our knowledge and point the way to further research.

In so far as the quest is successful its utility will not be limited to vision and to ophthalmology; its repercussions must inevitably be felt in the whole domain of the physiology of the *senses* and in the psychology which is the conscious expression of that physiology. For our waking life is a continuous cinematographic exhibition, in which varying perceptual patterns succeed each other upon the screen of each individual's experience. *Each* pattern is, in psychological language, a "*presentation*," a living picture, in which one feature occupies the focus of attention, surrounded by other more faintly apprehended features which form a relatively indifferent field. It *must not* be *supposed that any* such picture is a purely visual presentation, such as we see in a picture gallery. It is a composite picture made up of elements derived from all the so-called senses, and perhaps the object of consciousness is simply to combine and synthesise these diverse *factors*, in a way which is incomprehensible when viewed simply from the standpoint of the summation of physical quantities. Yet in man the prepotent factor is generally the visual factor, just as in many lower animals the prepotent factor is that derived from the sense of smell.

INTEGRATION OF PHYSIOLOGICAL IMPULSES.

The integration of these diverse physiological impulses is an active—kinetic—process, and it manifests itself in kinetic consciousness. But there are hierarchies of integration, and when a lower level integration has proved sufficiently serviceable to any given species it becomes part and parcel of the make-up of the individuals of the species. It then generally assumes the characters of potential consciousness, or in common terms *is relegated to the "unconscious."*

Further, there are many such integrations at every level—and there are many levels, only great groups of levels being collected within the confines of such terms as reflexes, instincts, and so on. Physiologically, the lower levels are, in vertebrates, associated with the activities of the spinal cord and medulla; higher levels with the mid-brain and thalamus; higher still with the palæo- and neo-pallium.

There are comparatively simple integrations and there are integrations of simpler integrations, forming different "patterns" *in* each level and *at* each level. And the most important point is that *all these patterns are of biological significance*—they are adaptations in the service of the individual or the species. Hence the most significant features of any pattern are themselves extremely complex. What I mean can be best shown by an example from ontogenesis. In very early days of life a child's attention is attracted by a bright light, and the eyes are moved so that the image of the light is formed on the macula of each eye. *A child is soon most attracted towards its* mother, and its behaviour towards her differs according to the tone of the mother's voice, her facial expression, and so on. Now, facial expression is a very complex visual presentation, and it is scarcely conceivable that at this very early age the child has succeeded in accurately correlating the innumerable visual impulses into which a facial expression can be analysed. We must *rather regard the child's impression* as a psychological pattern made up of the integration of a number of relatively undifferentiated auditory, visual, and other complexes, of which the still relatively undifferentiated visual complex forms the *focus*. It *responds to this complex* by appropriate behaviour simply because through countless preceding *generations its ancestors have* responded *to similar* and even less differentiated complexes.[1] The lower down the animal scale the less differentiated are the *complexes to which the individual responds*—and his responses are *biologically* determined—i.e., they are strictly utilitarian. Hence we conclude that the behaviour response is dominated by the psychological pattern, and that higher patterns dominate lower patterns. *But*, since the lower patterns are more primitive they are the least vulnerable—teleologically because they are concerned with vital processes upon which the survival of individual and species depends. The higher patterns are more highly differentiated and therefore more vulnerable. So that even these complex psychological patterns can be divided into two great groups—one, protopathic and of vital import, and another epicritic and of gnostic import.

PROTOPATHIC AND EPICRITIC SENSIBILITY.

I have adopted the terms protopathic and epicritic from the work of Head and Rivers on the tactile sensibility, feeling assured that the fundamental conception is justified, though I do not agree with all the detailed conclusions arrived at by Head.

Using the terms in the wider sense, we may say that the cognitive element of the crude protopathic response is diffuse, vague, and ill-defined. There is reason to think that the adequate stimulus produces the maximum response at the threshold—the reaction is of the all-or-none variety. The higher differentiation of the cognitive element introduces differentiation of another nature. The response, while retaining many of the characteristics of the protopathic response, especially as regards its quality, is better defined, susceptible to finer gradation, endowed with more accurate local signature and discrimination, less charged with affective tone, and of greater gnostic significance. This higher differentiation of sensory responses may be termed epicritic in contradistinction to protopathic. It should be noted that it is to be regarded as differentiated and evolved from the protopathic; and just as a highly differentiated cell in the multicellular organism still retains the fundamental characteristics of a living cell in spite of its special differentiation, so each epicritic sense retains the fundamental quality of the protopathic.

The crude protopathic sensibility was essentially utilitarian in the most fundamental sense; upon it depended the survival of the individual and the species. So important is it that it cannot be wholly replaced by the more delicate epicritic mechanism. Hence it is found to persist alongside the epicritic in most of the senses even in the highest animals, though generally modified from its primitive character.

Moreover, the crude primitive protopathic sensibility had to possess that *potential plasticity* which permits of differentiation along many lines. The more highly differentiated epicritic sensibility lost perforce this type of plasticity. Endowed, however, with richer and more sharply defined cognition it was eminently suited to provide a more active, *dynamic plasticity* within a narrower field.

The protopathic phase is seen in its most characteristic form in the lowest vertebrates; the epicritic in the highest. Between the two are many gradations of each which are difficult to unravel; but both anatomical observations and physiological experiments support the view that there is a dual mechanism at work.

[The differentiation of tactile sensibility into protopathic and epicritic was then discussed, and described in various animals.]

THE MOTOR FUNCTIONS OF VISION.

Visual organs of an extremely primitive type occur very low down in the animal scale. At first they consist of a single receptor cell, which like nearly all receptor cells, is generally provided with hair-like processes. Like other receptor sensory cells they are provided with diplosomes, and often fibrils can be shown passing from the diplosomes into a nerve-fibre attached to the proximal end of the cell. Even at this lowly stage the visual cells are almost always situated in direct relationship with one or more pigmented cells, though this is not absolutely essential to the functioning of such cells as visual cells.

It may be considered definitely proved that these cells respond to luminous radiation, and give rise to appropriate motor responses in the organisms in which they occur. Thus the one primitive and indubitable response to the visual impulse is *motor*. What, if any, are the other responses is a matter of conjecture.

The motor response in the lowest forms is a tropism—a movement either towards or away from the light. The organisms certainly respond to wave-lengths which to us are luminous, but we are not justified in concluding that the range of spectrum which is adequate to their visual organs is the same as that adequate to ours. It may be less or more; and further research is needed on this point. Thus, it may well prove that the organs respond not only to wave-lengths which are luminous to us, but also to infra-red and ultra-violet radiations. It is only what might be expected if the crude protopathic sensation of these organisms should prove to be an undifferentiated temperature-luminous response.

The essential feature of these tropisms, whether positive or negative, is that they are directional responses, and as such are the germ of that projicience which reaches its highest development in the visual sense of man.

[After referring to the visual organs in primitive vertebrates, such as the amphioxus, the lecturer proceeded:—]

VISION IN RELATION TO EQUILIBRATION AND ORIENTATION.

"It is clear that in the visual functions of this animal we have to do only with very *primitive*, essentially *vital visual* functions. The organs do not apprehend objects, but serve merely to regulate the posture of the body in relation to the light (photostasis)" (Kappers).[2] In other words, the sensation is purely protopathic; and the fundamental protopathic response to light is motor—i.e., postural.

It is noteworthy here that in certain invertebrates—e.g., hydromedusæ—some possess simple pigmented ocelli, whilst others have static organs with statoliths, similar to the otoliths in the ear. The function of the static organs in the orientation of the animal is undoubted, and it would appear that at this lowly stage ocelli are capable of fulfilling the same purpose (Hesse).[3]

The immense importance of vision for equilibration and orientation is liable to be lost sight of, or at least underestimated, when dealing with the visual functions of man; for there the static functions are overshadowed by the more patent dynamic functions, and both are overwhelmed by the highly developed sensory and cognitive functions. A study of the anatomy of the central nervous systems and of the behaviour of vertebrates, however, demonstrates the supreme importance of photostasis in the life-histories of these animals from the lowest to the highest. Throughout, in the mid-brain, we find an elaborate coördination centre for gravistatic and photostatic reflexes, of which the afferent impulses are predominantly protopathic. This region is the great meeting-place of primitive protopathic sensory impulses—optic, static, tactile, olfactory and gustatory,—the median longitudinal bundle playing an important rôle as a collecting tract. In fishes the gravistatic system is enormously reinforced by impulses from the lateral lines, impulses which convey impressions of pressure and mechanical vibrations, controlling the movements of the animal with regard to depth below the surface of the water, and propinquity to solid obstructions.

[The lecturer then adverted to the nervous levels and paths concerned in vital reflexes in various animals.]

Clinical observations, and especially Brown-Séquard lesions, show that all the protopathic fibres—mediating pain, temperature, and undifferentiated touch—have a cell-station immediately after entering the cord, and are then relayed into Edinger fibres which decussate in the anterior commissure and pass up in the lateral columns of the opposite side to the medulla, mid-brain, and thalamus. The epicritic fibres—mediating finer tactile discrimination, muscle and joint sensibility, and deep sensation—pass up the cord in the posterior columns to the nuclei cuneatus and gracilis, and are thence relayed to the median fillet, decussating only when they reach the medulla (Petrèn, Fabritius, Brouwer). The epicritic system in the cord is therefore a collection of fibres carrying impulses specially concerned in *stereognostic* perception. It cannot, however, be admitted, with Head, that a perception such as the discrimination of the distance between two compass points placed upon the skin is directly transmitted by any fibres in the cord. Such a perception involves higher syntheses than the spinal cord is capable of, and it is, indeed, inconceivable how it could be conducted by any single tract. Epicritic tactile sensibility mediates finer discrimination by finer differentiation of the crude protopathic sensation, and the psychological manifestations of this differentiation are more minutely accurate local signature and qualitative differences of greater cognitive (as opposed to affective) import. Thus, the protopathic sensations are of more immediately vital, the epicritic of gnostic import.

The *foundation of equilibrium* is posture, and the key to the solution of the problem of posture was the discovery of decerebrate rigidity by Sherrington.

Magnus and de Kleijn divide postural reflexes into two great groups—static and stato-kinetic. The *former deal with changes in posture of the otherwise* stationary animal; the latter with movements of the animal. The stato-kinetic reflexes are the more complicated, and in them the semicircular canals play a large part, whereas only the otolith organs are involved in static labyrinthine reflexes.

Static reflexes are further divided into two groups—postural reflexes proper (*Haltung*) or standing reflexes (*Stehreflexe*), and righting reflexes (*Stellreflexe*).

Standing reflexes are accompanied by *compensatory eye movements*. The tonic labyrinthine ocular reflexes are exhibited when the position of the head in space is altered, and consist of vertical and rotatory deviations. If the head is rotated to the right (right eye down, left eye up) the right eye moves upwards *and the left eye downwards. If the head is rotated* upwards around the bitemporal axis (as in affirmation), the eye undergoes torsion such that the top of the vertical meridian of the cornea moves forwards towards the nose. It will be seen that the labyrinthine reflexes are of such a character as to retain the visual field so far as possible in its normal orientation; but *in no case is this effect fully accomplished.* The effectors of the labyrinthine ocular reflexes are the superior and inferior recti and the obliques. The lateral recti play no part.

The tonic ocular reflexes initiated in the neck muscles are demonstrated in lateral flexions (negation) of the head. When the head is turned to the right the right eye turns forwards (towards the nose), the left eye backwards. Here, too, the eye movements are compensatory, and the lateral recti are involved.

The combined effects of the neck and labyrinthine reflexes are almost completely compensatory, so that the orientation of the field of vision is maintained in spite of the (passive) movements of the animal. When active movements of the animal occur stato-kinetic labyrinthine reflexes are set in action by changes in velocity owing to stimulation of the semicircular canals. These also lead to vertical, horizontal, and rotatory deviations. "These reactions are such that with a given movement of the head of an animal which is in the normal posture the eyes are moved into the position in which they will later be maintained by the static reflexes, so that they are deviated into the necessary direction at the very beginning of the movement, and there is, therefore, an extraordinarily well-developed correlation of ocular labyrinthine and neck reflexes, by means of which, both in movement and at rest, and in the various physiologically possible positions of the head with respect to the body and in space the correct visual attitude and the suitable correlation of the two eyes are ensured" (Walshe).[4]

Of the righting reflexes certain visual reflexes occur only in those animals which have some degree of binocular vision, and then only in the intact animal. They differ, therefore, fundamentally from all the other reflexes, in that they are subserved by the cerebral cortex (probably the visual cortex).

In active movements the coördinations between eyes and labyrinths are equally important, as are also the compensatory effects of each upon the other. In the primates and in man, with the development of binocular vision, vision comes more and more to dominate the labyrinth, acting vicariously for the labyrinth in case of need. The distance-receptor, smell, was the foundation upon which the neopallium was begun, and upon the distance-receptor, vision, it attained its highest perfection in man. Upon the labyrinth was built the "ganglion of the proprioceptive system," the cerebellum. Just as the cerebrum is the highest—apocritic—differentiation and integration of exteroceptive impulses, so the cerebellum is the highest—apocritic—differentiation and integration of proprioceptive impulses, itself under the domination of the cerebrum for the unification of the animal's "self."

The Sensory Functions of Vision.

The universality of the dual mechanism in the exteroceptive sensations would naturally lead one to seek for evidence of the same duality in vision. It must, however, be remembered that the superposition of an epicritic upon a protopathic mechanism not only leads to the subordination of the latter, but also to alterations in its characters. Protopathic touch is characterised by the intensity of the reaction, though accompanied by vagueness and crudity, absence of exact localisation and discrimination, radiation to distant parts, and pronounced affective tone, usually unpleasant. The response is of the all-or-none variety—i.e., any stimulus which surpasses the threshold produces the maximum effect—there is no gradation. Any reflex motor response is of the same ungraded nature—i.e., it is a "mass-reflex" (Head and Riddoch). When, *after division of a sensory nerve,* epicritic sensibility returns, protopathic sensibility undergoes definite modifications. "Some of its elements persist and combine with elements of the epicritic stage to form features of normal cutaneous sensibility. Certain characters are *suppressed* or inhibited, especially radiation and distant reference. Similarly, *the mass reflex* occurring in complete transverse lesions of the spinal cord is suppressed in the normal subject. In these suppressions "*Such elements as are serviceable are utilised when the later and higher forms of sensibility came into existence. . . . It is only those of early sensibility which are incompatible with later developments which are suppressed*" (Rivers).[5]

The Duplicity Theory.

One of the best supported hypotheses relating to vision is the so-called duplicity theory.[6] According to it, scotopic vision, or vision under low intensities of illumination by the dark-adapted eye, is carried *out by means of the rods,* and photopic vision, or vision under higher intensities of illumination by the light-adapted eye, is mediated by the cones. It would seem at first sight that we have here ready to hand the duality which is demanded by the protopathic and epicritic theory. And, indeed, there are many facts which strongly support this view.[7] Scotopic vision shows many of the characteristics of protopathic sensibility, especially in its vagueness and crudity, its undifferentiated character, and lack of exact localisation and discrimination. Photopic vision shows many of the characteristics of epicritic sensibility, especially in its meticulous exactitude of localisation and discrimination—the highest indeed which has been acquired by any form of sensibility[8]—and in its greater *differentiation qualitatively in the perception of colours.*

On the other hand, special features of protopathic sensation are its "all-or-none" reaction and its tendency to initiate a "mass reflex." The protopathic light-sense, so far as it has been investigated *at present, does not* exhibit either of these characteristics. But if we regard it in its primitive manifestations it is more than probable that it then exhibited both. In higher animals it has become differentiated into the epicritic phases, but still persists in modified form underlying the epicritic manifestations. The primitive protopathic light-sense we must regard as vague, diffuse, and not accurately localised. If it persisted in this form unmodified, when the light-sense became more definitely projicient it would interfere with exact discrimination. The suppression of these features, however, has become complete only in the macula, the area of distinct vision. Further, the projicient senses are concerned with the initiation of anticipatory or precurrent reactions. It is the contact exteroceptors which are specially concerned in consummatory reactions.[9] *Anything in the nature* of a mass reflex action to projicient sense stimulation would frustrate the object of this adaptive mechanism;

hence the modification of such a response from the protopathic light-sense.

But if protopathic vision has lost some of the characteristics of primitive protopathic sensibility it appears to have gained some epicritic characters in its manifestations in normal man. Thus, it shows gradation, as exemplified in the luminosity curve of scotopic vision. Moreover, it is not improbable that in certain conditions it can show some of the qualitative differentiations of epicritic vision under strong intensities of excitation. There is practically no evidence as to what happens to the scotopic mechanism when the intensities of stimulation are such as to educe photopic vision. If the stimulus is increased above the chromatic threshold, what happens with regard to the scotopic mechanism? Is it inhibited, as the protopathic optic thalamus is inhibited by the cortex, which is predominantly epicritic in function? Is it short-circuited—perhaps owing to the complete bleaching of the visual purple—or does it contribute to the brightness element of photopic vision, or does it acquire all the characteristics of photopic vision, contributing not only to the brightness, but also to the other qualitative—chromatic—effects? Now, one of the greatest difficulties, hitherto unsurmounted, of the duplicity theory is the behaviour of the periphery of the field of vision. There is overwhelming proof, derived from peripheral luminosity curves, minimal field and minimal time luminosity curves,[10] that peripheral vision behaves in exactly the same manner as central vision, but with diminished sensitivity. Greater stimuli are required to produce equivalent responses, but if the stimuli are sufficiently great, the differences disappear, including even the qualitative differences, so that the fields of vision for colours extend to the extreme periphery.[11] Anatomically, the peripheral retinal neuro-epithelium consists almost entirely of rods—the scotopic or protopathic mechanism. It seems probable, therefore, that under high intensities of excitation in normal man the protopathic mechanism is capable of giving the same chromatic responses as the cones, or essentially epicritic mechanism.

THE APPRECIATION OF MOVEMENT IN THE LOWER VERTEBRATES.

One outstanding feature of vision in the lower vertebrates is the appreciation of movement. This is an adaptation of the highest biological significance, since upon a rapid apprehension of movement in enemy or prey may depend the preservation of life. It is therefore to be expected that this characteristic will be bound up with the most primitive type of visual sensibility. There is no doubt that great acuity in the perception of moving objects is a prominent characteristic of the panoramic vision of lower animals, both herbivora and carnivora—probably more in the former than in the latter. There can also be little doubt that in these animals, although vision has already undergone some differentiation and has acquired some epicritic characters, it is essentially protopathic, even if not of the most primitive type. If in man the rods are the organs of protopathic vision we should expect them to exhibit those physiological attributes which, when synthesised with other attributes, permit of the perception of movement. And it is, indeed, found that perception of movement is most acute when the image falls upon peripheral parts of the retina. This is very strikingly demonstrated by the persistence of flicker in the periphery when it has already ceased for the same rate of alternation of stimuli at the centre.[12] We might also expect that in recovery from lesions which abolish peripheral parts of the field of vision the appreciation of movements of objects would be restored before the appreciation of shape or colour. Wilfred Harris,[13] in 1897, pointed out that this was so in cases of transient hemianopia following epileptic attacks, and Riddoch[14] has brought forward still more conclusive evidence derived from war injuries of the occipital lobes. The conclusion which Riddoch draws, which is comparable with Head's tracts of tactile discrimination—viz., that a sensation of movement should be regarded as a primitive function of the peripheral retina, cannot be admitted. Like tactile discrimination, the appreciation of movement is a perception, dependent upon change of local sign, and therefore involves a synthesis of such a nature that the peripheral mechanism alone cannot effect. Striking evidence of the part played by the cortex in the perception of movement is afforded by a case of bilateral lesions of the occipital lobes reported by Pötzl.[15] If a strong source of light was moved slowly or rapidly before the eyes the patient did not seem to apperceive the movement of the object, but interpreted it as several separate lights.

The extreme sensitivity to movement is due to the low stimulus threshold of the scotopic mechanism and its capacity for summation whereby subliminal stimuli surpass the threshold if they are reinforced numerically, either by increase in the area excited or by successive excitation of neighbouring points. In addition to these factors, it is necessary that the response should be of short duration, dying away rapidly under continued excitation. This is indeed a very well-marked feature of stimulation of the peripheral parts of the retina. It is usually attributed to rapid fatigue, but it is very doubtful in my mind whether fatigue, properly so-called, occurs in the retina at all. The rapid fading is much more likely to be due to a form of induction, which produces a refractory period.[16]

The all-or-none reaction of the most primitive form of protopathic sensibility negatives not only gradation, except in so far as this can be accounted for by recruitment, but also adaptation in the sense in which this term is used in physiological optics. Yet in man it has become endowed with both. It shows, however, scarcely any trace of gradation in what is commonly described as "form vision."

PHOTOPIC VISION EPICRITIC.

The photopic mechanism, mediated by the cones of the retina, shows all the characteristics of epicritic sensibility. It is minutely graded, following, like other sensations and most perceptions, the well-nigh universal Weber-Fechner law over all ranges of intensity except the very high and the very low. It is not only thus graded in intensity, but also in extensity, displaying minute discrimination as regards local sign. This is the basis of visual acuity, which in the case of contour displacements may reach the extraordinarily high value that s involved in the discrimination of so low a visual angle as 2″ (Andersen and Weymouth).[17]

Photopic vision also shows the richest qualitative differentiations of any sense, its only competitor being hearing. Whereas scotopic vision is under normal conditions capable only of an undifferentiated "vision brute," photopic vision manifests itself in all the colours of the rainbow and a few more.

But, while photopic vision is pre-eminently epicritic in these higher differentiæ, it also resembles epicritic sensibility in general in retaining the fundamental quality of protopathic vision. The mere untoned brightness or luminosity of scotopic vision pervades every photopic response as a brightness which everyone recognises but which is so difficult to define. Thus, Helmholtz says, "I have the impression that in heterochromatic luminosity equations it is not a question of the comparison of one magnitude, but the combination of two, brightness and colour glow, for which I do not know how to form any simple sum and which I cannot further define in scientific terms." The perceptual pattern is still relatively undifferentiated, and at the lowest intensities it becomes indistinguishable from the protopathic pattern.

For if we study the threshold of vision in the rod-free area of the retina we find that the total quantity of light—i.e., the product of the area stimulated and the illumination—must attain a certain value, and it makes no difference how the quantity and the area are varied so long as the product is the same (Riccò).[18]

Here we have a precise mathematical law, which holds for these most differentiated structures, but does not hold for peripheral retina.[19] Asher found that for the range of light intensities used by him, *the apparent size up to a visual angle of 2′–3′ depends* entirely upon the quantity of the light. By varying the area and the intensity of the light smaller areas may be made to appear larger than really larger areas. The so-called "magnitudes" of the stars depend upon this fact. Similarly, with regard to colours, Charpentier showed that the chromatic threshold also depends upon the area stimulated. As might be expected, for the more highly differentiated colour-sense, the law associating area stimulated with intensity is not so simple as for white light. Further, as Abney[20] has pointed out, as the intensity of the light is diminished gradually to extinction of the sensation, a coloured square or disc becomes first an ill-defined fuzzy patch of grey and appears finally *to depart almost as a point. It appears to me that* these liminal stimuli reproduce the characteristics of primitive chaotic sensations, in which size, colour, and other qualities are but little differentiated—in other words, the protopathic sensation.

If Head and his colleagues are correct in saying that the temperature sensations are common to both protopathic and epicritic systems, but differ from the two systems in range, &c., these are comparable to luminosity in protopathic and epicritic vision.

So far as affective tone is concerned it is undoubtedly enhanced in epicritic vision in man, owing to the appreciation of colours. It is, however, probable that the affective tone of protopathic vision in lower animals is much greater than in man; and the *affective tone in man is largely the result of higher*—conceptual—syntheses, mediated by the complex association system of the cortex.

It has already been pointed out that movement is more readily discerned when the images fall upon the periphery of the retina—i.e., in the eminently protopathic area. It is, however, also mediated by the epicritic system in the macular area. There is, indeed, evidence to show that the physiological factors which have already been described as subserving the perception of movement at the periphery also obtain in less evident degree at the macula. Andersen and Weymouth attribute an important function to movement in the binocular discrimination of depth. As already mentioned, they find the threshold extremely low, corresponding to retinal displacements far less than one cone-diameter. They think that this can be explained by visual stimuli giving rise to a complex percept of position, which they call the retinal mean local sign. At least three factors contribute to this: (1) The mutual effect of adjacent retinal elements in either retina; (2) the averaging of the successive stimulus patterns on each retinal mosaic caused by the constant slight eye-movements; (3) the combining of the two simultaneous stimulus patterns presented to the two eyes. They do not, I think, take sufficient account of induction, whereby the irregularities produced by the irregularly distributed cones are smoothed down by inhibition of the unstimulated or relatively unstimulated neighbouring cones, a function comparable to reciprocal innervation. Moreover, as Sherrington has pointed out, this facilitation of visual acuity is an example of immediate induction. He has found that osmic-stained nerve-fibres of 4 μ diameter are visible to the naked eye. Similarly, just as a moving point in the peripheral field is more visible than a line of similar length, direction, and duration, so a row of dots individually below the minimum visible and too far apart for their retinal images to overlap by diffusion becomes visible. Hartridge also says,[21] "Contours of all kinds are met with to a very great extent in ordinary visual observation, and it would appear that the important phenomenon of simultaneous contrast has been specially developed in order that the appreciation of contours should be facilitated. The narrowness of a contour of which the eye can perceive the existence is therefore a matter of far greater importance in vision than the fineness of a grating or the closeness of two double stars that can just be resolved."

EPICRITIC DIFFERENTIATION THE BASIS OF COLOUR APPRECIATION.

Epicritic differentiation reaches its highest development in vision among all the senses, for upon it depends the appreciation of colours. The study of colour vision, however, shows that, complex as it is, it is by no means as elaborate as the vast range of hues which we can discriminate would lead us to suspect. *The late Lord Rayleigh claimed to be able* to discriminate between the hues of the two sodium lines, a difference of less than 1 μμ wave-length, and under favourable conditions 150 or more hues can be detected in the spectrum.[22] Newton, however, proved that all these hues and others outside the range of the spectrum (the purples)—in fact, with very few exceptions[23] every perceptible hue—can be reproduced by the mixture of radiations of three wave-lengths suitably chosen. This is a fact of such profound theoretical importance that in my opinion no theory of colour vision is adequate in which it does not play a fundamental and preponderant rôle. Thomas Young first recognised that the totality of physiological activities comprises far fewer elements than the objective stimuli, *and that a triplex physiological* mechanism, each part of which responds appropriately to spectral radiations, would suffice to explain a vast number of the facts of colour vision, thus reducing the independent variables from an indefinitely large number to three.

It is not my intention here to discuss theories of colour vision. The data in favour of the trichromatic theory are well known, and the arguments against it have been even better advertised. It is clear that if the trichromatic theory is true the explanation of the evolution of epicritic vision from the primitive protopathic form is very much simplified. The theory was founded upon the responses of the eye to mixtures of various light stimuli, and for many years rested upon these facts. Of recent years much confirmatory evidence has been derived from the study of the time relations of the responses. The antagonistic facts were derived chiefly from observations upon simultaneous and successive contrast, and Helmholtz did scant service in attributing these to psychological causes. *Recent work has shown that* many, if not all, of these facts are elucidated by a better knowledge *of induction, and are as* much "physiological" as the facts of colour mixture.

One of the most striking and least explicable facts of colour vision is the eliciting of chromatic responses by pure black and white stimuli. The best known method of producing them is by means of Benham's top, though Fechner had already drawn attention to them in 1838.[24] There can be little doubt that the true explanation in its main outline has been adduced by Piéron.[25] It has long been known that the response to a light stimulus is in the form of a wave of sensation, which, with strong stimuli, rises very rapidly to a maximum and then falls at first rapidly, and then more slowly. With weaker stimuli the curve is flattened out:[26] the stronger the stimulus the more rapid both the rise and the *fall of* the response—according to Piéron both are proportional to the fourth root of the intensity when the cones are stimulated. It has further been shown that the response to red rays * is most rapid, that of violet rays least, and that of green intermediate. When we take into consideration the so-called "hypermaximal phase," the peak of the curve which is the *first stage of the* response, and the time relations as determined by Broca and Sulzer,[27] the colours observed with Benham's top are completely explained, as shown by Piéron's observations and diagrams. What, however, is not so readily explained is that the colours are only observed in juxtaposition with the black lines, and not over the white surface. Piéron's explanation of this fact is obscure and unsatisfactory.† It is probable that the true explanation depends upon reciprocal induction.

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* This inaccurate terminology is used for the sake of brevity.

By means of a rotating sector or episcotister Charpentier and others have studied the duration of the visual response to a flash of light. The criterion of duration is the critical frequency of alternation of light and dark—i.e., the point at which flicker disappears. When the durations for individual wave-lengths of a spectrum are plotted as ordinates against the wave-lengths as abscissæ, a curve is obtained which is called a "persistency curve." Since the duration varies inversely with a function of the brightness—as proved for a very wide range of intensities by Porter, and confirmed by innumerable observers since[28]—the lowest part of the persistency curve corresponds to the brightest wave-lengths—i.e., lower points mean greater brightness. Obviously, too, if the reciprocals of the durations are plotted against the wave-lengths we obtain the luminosity curve of the spectrum. In fact, flicker photometry is now recognised as the most accurate method of heterochromatic photometry.

ALLEN'S RESEARCHES ON "FATIGUE."

By investigating the effect of so-called "fatigue," with spectral colours upon the persistency curve, Frank Allen,[29] professor of physics at Winnipeg, has discovered a number of facts which are of great importance to the theory of vision.

[The lecturer here entered into the subject of Allen's researches in considerable detail, and finally summarised them as follows:—]

(1) Stimulation of one area of a retina with light causes—

(*a*) *Direct effects* upon that area.

(*b*) *Induced effects* in all other areas—i.e., both in the same eye and in the other eye.

(2) *Direct Effects.*—With both eyes in a condition of moderate photopia:—

(*a*) Stimulation with white light depresses the sensitivity throughout the spectrum.

(*b*) Shading the eye also depresses the sensitivity throughout the spectrum.

(*c*) Stimulation with any given wave-length depresses the sensitivity to this region of the spectrum and enhances it for the complementary colour.

(*d*) With any given wave-length the depressions and enhancements show three curves affecting respectively the red, green, and violet.

(*e*) Stimulation with the equilibrium colours—660 μμ, 570 μμ, 520 μμ, 505 μμ, 480 μμ, 425 μμ—has no apparent effect upon the sensitivity of the visual apparatus.

(3) *Induced Effects.*—With both eyes in a condition of moderate photopia the effects on the unexcited areas of the same and the opposite retina are:—

(*a*) Stimulation with white light enhances the sensitivity throughout the spectrum.

(*b*) Shading an area or an eye depresses the sensitivity throughout the spectrum.

(*c*) Stimulation with any given wave-length enhances the sensitivity throughout the spectrum, the enhancement being most marked in every case in the red, green, and violet.

(*d*) Stimulation with any given wave-length enhances the sensitivity most for the complementary colour.

(*e*) Stimulation with the equilibrium colours has no apparent effect.

As the result of Allen's researches we are able to envisage more accurately the phenomenon of induction. As he has pointed out, they serve to prove most conclusively the physiological—as opposed to transcendental psychological—foundations of contrast. They explain on purely physiological grounds many of the greatest difficulties associated with contrast, such as the divergence from the precise complementary in induced colours (p. 932),[30] changes in hue and saturation after prolonged fixation (p. 933),[30] coloured shadows (p. 936),[30] the "memory colours" of Hering (p. 938),[30] the Ragona Scina experiments (p. 375),[31] some of Abney's experiments (p. 379),[31] binocular contrast (p. 381),[31] Fechner's paradox (p. 609),[32] Bidwell's experiment (p. 618),[32] and some of Edridge-Green's observations (p. 620).[33]

The facts at our disposal do not render an exhaustive discussion of the elementary physiological processes occurring in the receptors, conductors, and synapses very profitable. The only firmly established fact is that visual purple is the physico-chemical substratum of scotopic vision, and hence it is natural to have some predilection for thinking in photo-chemical terms.

CONDUCTION OF VISUAL IMPULSES.

When one comes to conduction of the visual impulses, there is no good ground for imagining that it is different from the conduction of nervous impulses in other nerves. If that be so, the all-or-none character of the response discovered by Adrian and Keith Lucas holds good. The theory of recruitment for the explanation of the graded muscular response to different intensities of stimulation in motor nerves, whereby increased intensity increases the number of nerve fibres stimulated and of muscle fibres responding, meets with difficulties in the case of tactile and visual responses. As already mentioned, it may suffice to explain some of the effects in the scotopic mechanism, but it is not easy to apply it to the single cone bipolar mechanism of the epicritic system.

[Instances of inhibition in visual phenomena were alluded to, especially those of binocular and monocular struggle elucidated by McDougall's work.]

Turning now to the anatomical basis of the lower visual impulses, have we any knowledge or can we reasonably conjecture the structures which mediate the conduction and central connexions of the protopathic and epicritic systems? As is well known, the afferent visual paths from the retina in the optic nerve and tract pass to three so-called primary visual centres—the lateral geniculate body, the pulvinar of the optic thalamus, and the superior colliculus. Of them, those passing to the colliculus are undoubtedly the most primitive phylogenetically, since they are a residuum representing the survivors of practically the whole of the afferent visual fibres in lower animals, which pass to the tectum. Here they form the superficial layer of fibres, and are brought into relation with the bulbo- and spino-tectal fibres. There is no doubt, therefore, that in these animals, going down as low as the cyclostomes, the function of these optic fibres is almost entirely photostatic, and that they are protopathic. The tectum shows histological differences in mammals from the condition in lower vertebrates. The optic fibres are reduced in number and are situated below a layer of nerve cells, and therefore less superficially. Moreover, the efferent cells are raised and somewhat approximated to the optic fibres. These efferent cells send axons to the retina (tect-optic fibres of Ramon y Cajal and v. Monakow) and to the tecto-bulbar tracts. Kappers attributes this approximation to neurobiotaxis, and sees in it an expression of the predominantly reflex function of the optic fibres. "Optic reflexes in mammals are certainly not fewer, but in the primates are much finer than in lower animals."[33] The tectum receives no macular fibres, and has no cortical projection. We may conclude, therefore, that the optic fibres to the superior colliculus in man are protopathic.

There is good reason to think that the great majority of retino-geniculate fibres carry the impulses of the epicritic system, but that those which pass to the ventral nucleus are protopathic.

In primates, and especially in man, some of the optic nerve fibres, both crossed and uncrossed, pass to the pulvinar of the optic thalamus. This increase in the dorso-lateral part of the thalamus is associated with the adoption of the erect posture. It is a correlation area, receiving besides the visual fibres also fibres from the anterior peduncle of the cerebellum (Horsley and Clarke) and the red nucleus (Sachs). It is in near relation with the thalamo-cortical fibres to the arm region of the pre-central convolution, and its development is probably related to the increased importance of the hand and fingers as organs of exploration (Kappers). It may therefore be regarded as a "centre" for the correlation of eye and hand, and therefore of the utmost importance in stereognosis. This view is strongly supported by the fact that the pulvinar has an extremely rich cortical projection to the angular gyrus. There can be no doubt, therefore, that the retino-pulvinar fibres belong to the epicritic system.

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† Lorsqu'une petite surface rétinienne n'est pas, ou n'est que faiblement excitée au voisinage d'une region qui est le siège d'un processus lumineux et chromatique, l'excitation de cette surface par diffusion comporte une prédominance des processus chromatiques, qui se propagent avec une intensité plus grande que le processus lumineux."

It is easy to correlate these anatomical deductions with the vital import of the reflexes which are chiefly dependent upon protopathic vision, and with the gnostic import of visual sensations which are chiefly dependent upon epicritic vision. It is more difficult, and perhaps in our present state of knowledge impossible, to correlate them with the relatively feeble, but still very appreciable, gnostic import of scotopic vision.

I have built up the argument in this thesis chiefly on the known facts of visual sensations in man, in whom alone we have immediate knowledge of them. The visual organs of lower animals might be expected to afford a vast amount of evidence for or against the theory. It must be freely admitted that the evidence from this source, in the present state of our knowledge, is very ambiguous. Nor should this, indeed, be unexpected. Light-responsive organs are found in nearly all moving animals, including many of the lowest invertebrates. There is, it is true, a remarkable uniformity in the general plan of the structure of the receptor cells; but it is a uniformity which characterises all sensory receptor cells. The mosaic eyes of insects show that it is possible to have a visual organ built on so different a plan from the mammalian eye that scarcely any analogy can be drawn between them.

Confining ourselves to vertebrates we find great diversities within a common type. Speaking teleologically, this was inevitable. Adaptation to terrestial life necessarily involved changes in the visual apparatus, life in the air yet other changes. But, apart from these gross adaptations, each species has become specially adapted to a particular environment and mode of life. In these adaptations vision, whilst nearly always retaining an important rôle, has not necessarily been the predominant sense. It cannot be too forcibly insisted that all the facts of perception are biologically determined. An exhaustive investigation of the correlation of the various senses in different animals could not fail to elicit facts of profound physiological and psychological importance. The most cursory observation of their habits and anatomical structures reveals striking differences, such as the lateral line system in fishes, the colossal lobus visceralis associated with taste in certain fishes, the great development of the trigeminal in cyclostomes, some birds (ducks and geese), the crocodile, &c., the high development of smell in monotremes, dogs, and so on. As is well known, the cortex cerebri was built up upon the basis of the sense of smell, to be replaced only later by a neopallium built up upon the basis of vision, to which man owes his supremacy. Hence the position of the primates is peculiar, and analogies which might well be expected to obtain among them are scarcely to be looked for between them and species of a totally different mode of life.

Moreover, investigations of the vision of lower animals are extremely difficult and have led to very untrustworthy results. We have no certain knowledge of the range of spectral radiations to which lower animals respond, nor the modes of their reactions. The experiments of Hess and others,[3] elaborate and interesting as they are, have led only to tentative conclusions.

The most promising field of investigation from the present point of view is the structure of the retina in vertebrates. The duplicity theory originated in the observations of Max Schultze and Parinaud on the neuroepithelium of diurnal and nocturnal animals. Greeff[4] found that there are rods and cones in the retina of most mammals, amphibia, and fishes, the number of the rods much exceeding that of the cones. In birds cones are much in excess of rods. In most reptiles (lizards, snakes, tortoises) only cones are found; diurnal saurians have no rods, nocturnal no cones (Rochon-Duvigneaud). There are vertebrates possessing only rods—e.g., amongst fishes, rays and dog-fish; amongst mammals, hedgehog, bat, mole, and night-ape (*Nyctipithecus felinus*). There are also animals of nocturnal habits possessing only rods. Owls, mice, and roll-mice have only a few rudimentary cones; rats also possess a few cones. Hess found rods in fowls and pigeons, though they are scanty in the posterior and superior parts of the retina, which are most used in pecking.

So far then the observations seem to confirm the thesis set forth above. But if one investigates the subject more closely doubts arise. It is by no means easy—indeed, it seems to be impossible—to find any definite criterion as to what is a rod and what a cone. The foveal cones in man, for example, are in no sense conical, but resemble elongated rods—and these are the organs of "cone" vision par excellence! The extreme ambiguity is shown by Putter's[5] morphological classification:—

I. Outer limb cylindrical.

(a) Inner limb cylindrical. (1) Foot-piece knobbed—e.g., "rods" of rat and selachian fishes. (2) Foot-piece branched—e.g., "rods" of sparrow, "cones" of macula of man.

(b) Inner limb swollen: (3) Foot-piece knobbed—e.g., "rods" of man. (4) Foot-piece branched—e.g., "cones" of pigeon.

(c) Inner limb filamentous: (5) Foot-piece knobbed—e.g., "rods" of perch, esox, chondrostoma. (6) Foot-piece branched—e.g., green "rods" of frog.

II. Outer limb conical.

(a) Inner limb cylindrical: (7) Foot-piece branched—e.g., "cones" of fovea of sparrow, "rods" of siredon.

(b) Inner limb swollen: (8) Foot-piece branched—e.g., peripheral "cones" of man and birds, "cones" of many fishes, &c.

III. Outer limb filamentous.

(a) Inner limb cylindrical: (9) Foot-piece branched (?)—e.g., "cones" of esox.

(b) Inner limb swollen: (10) Foot-piece swollen—e.g., "cones" of siredon.

An examination of our present knowledge of the comparative histology of the retina is disappointing, and we must await further information before much help can be derived from this source.

In conclusion, though there is much in this thesis which is speculative, the speculation is of that type for which the term hypothesis should be reserved—i.e., it is that form of speculation which is submissible to experimental verification and elaboration—the only form of speculation which is of scientific value. What I wish specially to emphasise is the view that increased knowledge of the psychology of perception, in which in man vision plays a predominant part, must depend upon increased knowledge of the physiology of the special senses. And further, that the advance of ophthalmology also depends upon increased knowledge of the physiology of the eye and of vision. Ophthalmology, in my opinion, has too long been content merely to apply past knowledge. The future advance in the treatment of cataract, for example, will not, as heretofore, consist in new refinements of technique, but will be revolutionised by the biochemistry of the lens. Let us take to heart this great lesson, perhaps the most important lesson taught by the life and work of Sir William Bowman, the master whom we venerate to-day.

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3. Das Sehen der niederen Tiere, Jena, 1908.
4. Brain, August, 1921.

(*Continued at foot of next page.*)

THE NASAL SINUSES AS A ROUTE OF INFECTION IN ENCEPHALITIS LETHARGICA.

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I. BY MR. LOWNDES YATES.

IN inflammatory conditions of the nasal mucous membrane we are able to recognise four main types of inflammation—namely, Type 1, where the secretion consists of clear mucus, and the cilia are either active or are fatigued by the additional work necessary to remove the mucus, if this is more viscid than normal. Type 2, where the condition is similar to the above, but the inflammation is of a higher degree, with the result that serum and leucocytes are mixed with the mucus, which is then known as muco-pus. Type 3, in which the mucus is altered by fermentation as a result of the number of micro-organisms present within it, so that it is thin and partially toxin-permeable, as a result of which bacterial toxins reach the mucous membrane, causing congestion of this, particularly in the regions of the ciliary tracks. Type 4, in which the mucous membrane is pale, the ciliary action is paralysed, the mucous secretion absent or represented by a thin whitish coagulum or by fluid material, and in which the heightened absorption in cases in which the physical conditions favour the retention of fluid for a period of 20 minutes or so, may be demonstrated by the use of indigo-carmine solution.

Heightened Absorptive Power of the Damaged Mucous Membrane.

In an examination of 23 cases of encephalitis lethargica this type of inflammation has been found in or around the opening of the sphenoidal sinus in all. The significance of this fact had escaped my attention until it was pointed out by Dr. Stanley Barnes, who suggested that the heightened absorptive power of the mucous membrane in these cases afforded an explanation of the manner in which the filter-passing virus reached the tissues. It follows from this, if the above hypothesis is correct, that only such members of the community as suffer from this type of rhinitis or sinusitis in this region of the nose are potential subjects of this disease, and that it is necessary for the passage of the disease from one individual to another that the air-borne and filter-passing virus of encephalitis lethargica should fall on soil previously prepared by inflammation which has resulted in the alteration of the normal mucous membrane to that of sinusitis or rhinitis, with total or subtotal paralysis of the cilia and of the mucous secretion; such alteration having been produced either as a result of a chronic rhinitis or as a result of a single heavy infection of the nasal mucous membrane of the type known colloquially as influenza. In patients who have developed encephalitis lethargica after suffering from a chronic and intense rhinitis for some years, bacteriological examination in almost all cases has demonstrated the presence of either the bacillus of Friedländer or of the pneumococcus, and the well-recognised chronicity of the nasal infection when these organisms are present affords an explanation of the occurrence of type 4 sinusitis in these cases, while in a few cases other organisms were found. In those cases in which a history of an acute or influenzal rhinitis was present, cultivation of the contents of the sphenoidal sinus revealed the presence of the *Staphylococcus aureus* together with the pneumococcus, while in one case hæmolytic streptococcus was found; and it is thought that the well-known proteolytic power of these micro-organisms explains, by the assumption that they have a similar proteolytic power on mucus, the rapidity of the change in the mucous membrane, the inflammation in which is of such intensity that it passes from that of the mucous membrane with normal reaction to that of a type 4 rhinitis within the space of a few days or even hours.

With regard to the finding of the *Staphylococcus aureus* in a high percentage of cases of encephalitis lethargica occurring after rhinitis of the influenzal type, it should be noted that we have only lately found the cultural methods which we have employed slightly favour the growth of this organism, and the observations will therefore have to be repeated. The normal nose by similar bacteriological methods is sterile. If scales of mucus are dry sterilised, dissolved under sterile conditions, and kept at room temperature, the solution retains its colloid character almost indefinitely, but if mixed with a large quantity of living staphylococci it is rapidly autolysed. Small quantities of staphylococci mixed with the mucus appear to die. If the mucus is inadequately sterilised rapid autolysis occurs, which suggests that other organisms besides the staphylococcus can destroy the mucus.

The heightened absorptive power of the mucous membrane can be demonstrated in type 4 sinusitis by injection of either solutions of indigo-carmine or of phenol-sulphone-phthalein into the sinuses, when it will appear in the urine, taking about twice as long to do so as if it were injected into a muscle, but not appearing in the urine in cases of sinuses lined by relatively normal mucous membrane.

Of the 23 cases of encephalitis lethargica examined, seven gave a history of acute rhinitis following sinus pain, generally associated with some degree of ill-health.

From the above considerations it would appear that in the cases of encephalitis lethargica examined, the mucous membrane in and around the region of the sphenoidal sinus had undergone alterations of such a nature as to diminish the secretion and greatly increase the power of absorption from it. Such a condition would facilitate the passage of a filter-passing organism,

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(Continued from previous page.)

5. Instinct and the Unconscious, pp. 31–32, Cambridge, 1920.
6. See Parsons: Introduction to the Study of Colour Vision, p. 215, 1924.
7. See Parsons: Trans. Ophthalm. Soc., xli., 97, 1921.
8. Cf. Parsons: Nature, cx., 824, 1922.
9. Sherrington: Loc. cit., p. 329.
10. See Parsons: Colour Vision, pp. 76–78.
11. Loc. cit., p. 73.
12. See Parsons: P. 108.
13. Brain, xx., 307, 1897.
14. Brain: xl., 15, 1917.
15. Wiener klin. Wochenschr., 1911, xxiv., 518, cited by Wert-
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16. p. 161.
17. Amer. Jour. of Physiol., lxiv., 561, 1923.
18. Parsons: Loc. cit., p. 130.
19. Parsons: Loc. cit., pp. 56, 136.
20. Researches in Colour Vision, p. 177, London, 1923.
21. Jour. of Physiol., lvii., 59, 1922; see also Phil. Mag., xlvi., 49, 1923.
22. Parsons: Loc. cit., p. 33.
23. Loc. cit., pp. 28, 39.
24. Parsons: Loc. cit., p. 101.
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26. Parsons: Loc. cit., pp. 94, sqq.
27. Jour. de Physiol., iv., 632, 1902; Comptes rendus de l'Acad. des Sci., cxxxvii., 944, 977, 1046, 1903.
28. Parsons: P. 102.
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30. Jour. of Optical Soc. of Amer., vii., 1923.
31. Ibid., ix., 1924.
32. Ibid: vii., 1923.
33. Kappers: Loc. cit., p. 902.
34. See Parsons: Loc. cit., p. 144.
35. Ibid., p. 14.
36. In Graefe-Saemisch, Hdb. d. ges. Augenheilkunde, ii., 1, chap. x.

and it appears probable that the virus of encephalitis lethargica can enter the tissues with greater readiness when such a condition is present, and therefore this may be a necessary precursor of the disease. It is, however, not possible to speak definitely on this point until this hypothesis has undergone the test of time.

In cases where disease is no longer active but is slowly progressing, the washing out of the sphenoidal sinuses and filling them with eucalyptol paraffin appears at times to effect a marked improvement, but has no effect whatever upon such symptoms as are due to brain lesions. It does appear, however, in practically all cases to prevent recurrences, while in more acute cases the use of eucalyptol paraffin within the nose is well worth a trial alone or combined with washing out the sphenoid.

I am indebted to Dr. G. Eden, of the Queen's Hospital and Hospital for Nervous Diseases, Birmingham, for the provision of much clinical material on which this report is based, and to Dr. R. B. H. Wyatt, bacteriologist to the University of Birmingham, for the bacteriological examination and cultivation of material removed from the sinuses.

II. Note by Dr. Stanley Barnes.

The research which Mr. Yates has carried through so successfully and recorded above is of vast interest to those of us who are concerned with the paths of infection to the central nervous system. More particularly it has been puzzling to determine how the various facts which are known with regard to encephalitis lethargica can be assimilated into a reasonable theory which will explain the path of infection in this disease. It will be remembered that Levaditi found that the mucous secretions from the mouth in cases of encephalitis were often pathogenic, whilst, as a rule, the salivary duct secretions were not so; again, it has been pointed out many times that certain individuals are carriers of the filter-passing organism, but have themselves shown no sign of the disease. Another fact which must be coördinated with the theory in order that the latter may be accepted is the close association with the epidemic of influenza which started in 1917.

Post-Influenzal Rhinitis as a Precursor of Encephalitis.

Now, it has to be remembered that the latter has been associated throughout its course with several types of the catarrhal group of micro-organisms, and that many cases of encephalitis whose nasal secretions have been examined have been found to be carriers of one or other of this group of bacteria. It is thus probable that after an attack of the severe type of influenza which has occurred within recent years, a certain number of people have suffered from chronic nasal disease of the type which Mr. Yates has been describing; and if these cases of post-influenzal rhinitis had been thoroughly examined, it would be found that one or more of their accessory sinuses were inflamed in accordance with type 4 as described by Mr. Yates. It is clear from his researches that certain toxins and chemical substances, such as indigo-carmine, can pass through the mucous membrane in this condition, whereas the normal mucous membrane of the sinuses is capable of preventing the access of any organism or toxin. It is thus probable that the filter-passing organism of encephalitis when absorbed into the nasal cavity of a normal individual gives rise to no symptom, but when it gains lodgment in the nose of a sufferer from type 4 sinusitis it may pass through the mucous membrane and be absorbed into the deeper tissues. This theory would thus account for the absence of nervous symptoms in those who show the presence of the organism in their naso-pharyngeal secretions, and for the great difficulty which has been experienced in tracing the infection from individual to individual; for it is clear that the rule would be that there should be far more carriers than sufferers, seeing that the organism would be spread by coughing or sneezing and be air-borne, and would only give rise to signs of encephalitis in those who also suffered from the most severe or fourth degree of sinusitis.

Path of Infection.

As to the path by which the organism reaches the central nervous system from the sinuses, it is more than likely that it does not pass by the blood-stream, but does pass by the peri-neural lymphatics along the branches of the first division of the fifth nerve and so reaches the brain. If this is correct it would also explain why so many of the cases have shown evidence of damage to the mesencephalon and pons Varolii, seeing that the ascending root of the fifth nerve is likely to carry the infection close to the ocular nuclei and the mesencephalic structures.

It has been impossible locally to confirm this theory of the mode of infectivity in encephalitis, but it fits in with so many of the observed facts that I feel certain that this is the mode of infection. I would suggest that those who have an opportunity should not only investigate the condition of the various sinuses in cases of death from encephalitis, but should also attempt to trace the organism in the first division of the fifth nerve and the corresponding portion of the Gasserian ganglion on the same side as any sinus lesion. It is possible that the olfactory nerves also act as channels for the absorption of the virus in some instances, and the olfactory bulbs might with advantage be investigated in the same way as the Gasserian ganglion.

It should be remembered in this connexion that the toxin of tetanus has been proved to be carried to the central nervous system from the peripheral focus along the nerve sheaths, so that there is every reason to believe that other organisms may give rise to infection in the same way.

Arguments on similar lines may be applied to the absorption of micro-organisms from the nasal sinuses in cerebro-spinal fever. The work of Orr and Rows showed experimentally that cocci tended to track along the spinal roots centripetally to the cord and give rise to meningitis or to myelitis. Given the original damage to the nasal mucous membrane, which is characteristic of type 4 sinusitis, such a process is likely to occur in cases where nasal infection by the meningococcus is superadded; and a tracking along nerve sheaths (twigs of the first division of the trigeminal, or branches of the olfactory) is theoretically more likely to be the path of infection than an emissory vein.

In a recent communication Behr has shown that it is likely that the infection in certain cases of disseminated sclerosis commences in the posterior ethmoidal sinuses and passes from them to the optic nerves. Here is another instance in which it is possible that a preliminary damage of the type described by Mr. Yates as type 4 sinusitis is necessary before the infective agent can pass through into the nervous system. It is realised that at this stage no decision can be reached as to the exact pathology of disseminated sclerosis beyond the fact, which is fairly established, that there is an invasion of the nervous system by some parasite; nevertheless, the large number of cases in which preliminary histories of nasal catarrh are almost the only predisposing factor in otherwise healthy young adults who develop disseminated sclerosis is of itself a strong reason for believing that there must be some causal connexion between the two.

Summary.

It is thus suggested that the infection in encephalitis (and possibly other central nervous infections) is a symbiotic process; that in the first place the nasal mucous membrane is damaged by one of the catarrhal group of organisms, and that subsequently the virus of encephalitis is inhaled, passes through the damaged mucous membrane, and is absorbed into the brain via the peri-neural lymphatics.

A CASE OF
BILATERAL PREPATELLAR BURSÆ.

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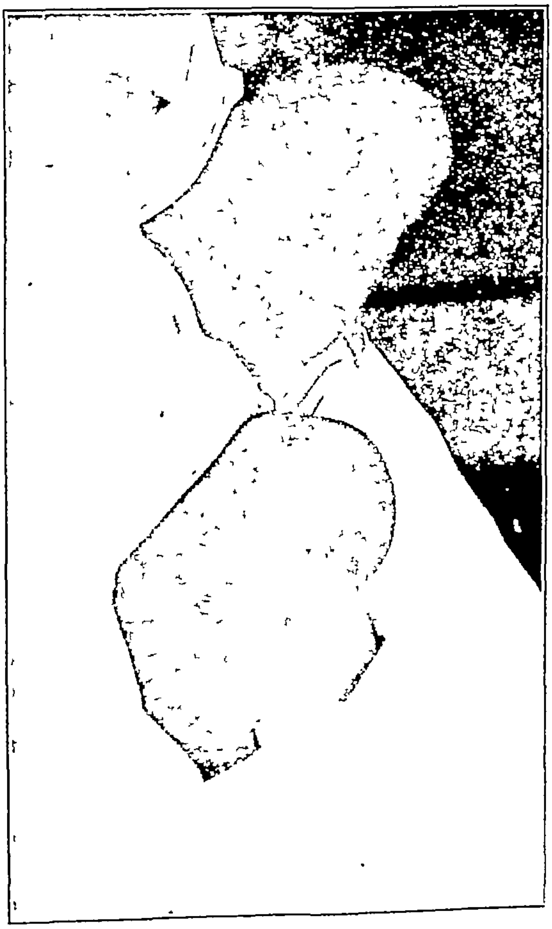
The following case of bilateral prepatellar bursæ presents some unusual and interesting features.

The patient, aged 54 years, was a charwoman who had done a considerable amount of work on her knees for the last 35 years, sometimes doing five hours' continuous work in that position. The right bursal swelling had been present for ten years and the left for six, increasing in size very gradually. They had never caused her much inconvenience, and she only had pain for about ten minutes after starting to kneel; when this had passed away she could kneel for hours without discomfort. When the bursæ were small she used to kneel on them with the anterior surface touching the floor, but latterly they projected so that the inferior surface came into contact with the floor. The skin covering this surface became abraded and septic, and she sought medical attention on this account. There was no limitation of movement at the knee-joints and the patient could move quite briskly. She had some difficulty in stooping and bending from the waist. The right bursa projected about 3–4 inches. It was hard and no fluctuation could be obtained. It was intimately connected with the patella and could only be moved from side to side with that bone. The left projected 3 inches; it was softer than the right, and fluctuant. It also could only be moved with the patella. The skin was abraded over the inferior surface. An idea of the shape and size of the bursæ may be obtained from the accompanying photograph.



Bilateral prepatellar bursæ.

The bursæ were removed by transverse incisions across the joints, the flaps of skin in the left being so arranged that the septic portion was removed. The bursæ were intimately connected with the underlying fascia, with which the fibrous tissue of their walls was continuous. This had to be divided. The wounds healed by first intention.

After removal the size of the right was 7 cm. long, 7·5 cm. deep, and 9 cm. across. The left was 7·5 cm. long, 7 cm. deep, and 6·5 cm. across. On section the cavity in the right was found to be 4 cm. in diameter, the rest of the swelling consisting of extremely hard and avascular fibrous tissue. The cavity contained some blood-tinged serous fluid and was intersected by thin fibrous trabeculæ. Its walls were ragged and breaking down, and there was no sign of serous membrane to be seen. The cavity in the left was larger than that in the right (5·5 cm. across), and occupied a deeper position. The walls were also ragged in places and similar trabeculæ intersected the cavity. The fibrous tissue was not so thick nor so dense. The skin over the summits of the bursæ was fairly thick, varying from about 0·25 to 0·5 cm. A microscopical section showed that the walls consisted entirely of closely-packed fibrous tissue with very few blood-vessels.

It is noteworthy that the older and larger of the two bursæ was the right. The cavity was smaller, the fibrous tissue thicker and denser on that side. The patient was right-handed and stated she always realised putting more strain on the right knee when scrubbing.

I am indebted to Mr. C. D'Oyly Grange for permission to publish the case.

Reviews and Notices of Books.

Psychology of the Pre-School Child.
By Bird T. Baldwin, Ph.D., Research Professor in Educational Psychology and Director of the Child Welfare Research Station in the State University of Iowa; and Lorle I. Stecher, Ph.D., Research Assistant Professor in the same station. London and New York: D. Appleton and Co. 1924. Pp. 305. 8s. 6d.

This book describes a systematic attempt to do for the mentality of the child of pre-school age what the child welfare movement is doing for his physical development. It necessarily contains accounts of investigations rather than practical educational suggestions, which can only follow upon further inquiries on these or similar lines. The results of a series of day-to-day observations and measurements from a large and varied selection of tests extending over a period of one to three years on a group of 105 children are recorded in detail. The children ranged from 2 to 6 years of age and were in attendance at the Child Welfare Research Station, Iowa. Certain physical measurements of growth were made, including roentgenograms of the carpal bones and the teeth, but the work was predominantly psychological. The tests employed included, besides scales of general intelligence, numerous measures of motor control and coordination, and certain practical perceptual and associational tests, such as the Knox cubes, Goddard's adaptation test, and Healy's picture-completion Many are already well known, but results of trials on so young children have not been often recorded; other new tests were also applied, some of which showed considerable originality. The experiments to record the development of the senses of number, time, rhythm, and design are particularly valuable, both as tests and as means of education. The authors have throughout endeavoured to combine educational value with their investigations, and they maintain that it is a mistake to allow a child's mind to grow naturally. To deprive a little child of the instruction it craves is, they believe, to withhold the conditions of normal mental development. Definite conclusions regarding early mental development are not justified from observation of so small a number of cases, and in any case results of the application of tests made under artificial conditions require to be supplemented by the daily study of children under natural conditions by a trained observer, on the lines set out by Sully.

The book, while primarily of interest to teachers of nursery schools, deserves the attention of child welfare medical officers who wish to study the mentality as well as the physique of their subjects.

LECTURES ON DYSPEPSIA.

By ROBERT HUTCHISON, M.D., F.R.C.P., Physician to the London Hospital and to the Hospital for Sick Children, Great Ormond-street. London: Edward Arnold and Co. 1925. Pp. 176. 5s.

THE writings of Dr. Robert Hutchison always possess a charm which makes them especially welcome; moreover, the author's long experience and critical outlook equip him for the difficult task which he has undertaken in the present volume. The lectures are not all equally informative. The essay on the Diagnostic Significance of Abdominal Pain and on the Chronic Abdomen, and the sections dealing with Organic Diseases, such as peptic ulcer and carcinoma of the stomach, are excellent, but, when Dr. Hutchison reaches the crux of the problem of "dyspepsia"—namely, what, in Lecture VII., he terms the functional dyspepsias—his conclusions are so vague that we doubt whether new light is shed on the indefinite and numerous group of sufferers there dealt with. Can any writer do more at the present day? We doubt it, but Dr. Hutchison has specifically set out to lecture to students on "dyspepsia" and, if this symptom is to be retained in a prominent position in medical nomenclature, it seems desirable to obtain more justification for its use than is here given.

Any disappointment which we may feel on this score is enhanced by our admiration for Dr. Hutchison's concluding lecture on the Chronic Abdomen. This address deserves recognition as a classic, but the tragic pictures described so brilliantly will only disappear when the profession has more insight into the obscure beginnings which are dealt with in earlier chapters.

INFECTION, IMMUNITY, AND INFLAMMATION.

By FRASER B. GURD, B.A., M.D., C.M., Lecturer in Applied Immunology and in Surgery, McGill University. London: Henry Kimpton. 1924. Pp. 329. 25s.

THE author believes that sufficient data regarding the phenomenon of tissue hypersensitiveness and its companion state, tolerance, have been accumulated to justify their application in medicine and surgery. He gives a clear and readable account of the phenomena of immunology which should appeal to the practising physician and surgeon for whom the book is written. If at times his explanation of certain of the tissue reactions to infection seems unduly simple and dogmatic, this is probably a fault on the right side. It may be doubted whether our knowledge of immunology is so advanced that treatment on these lines can be said to have left the experimental stage. But this book is at least a worthy attempt to introduce scientific conceptions into therapeutics, and so deserves attention.

HISTO-BIOLOGY OF THE SKIN.

Lectures on the Histo-Biology of the Skin, and Its Diseases. By Dr. JOSEPH KYRLE, a.o. Professor of Dermatology and Syphilology at the University of Vienna. Vol. I. Vienna and Berlin: Julius Springer. 1925. With 222 mostly coloured illustrations. Pp. 345.

THOSE who have had an opportunity of attending Prof. Kyrle's histological lectures will rejoice at the incorporation of 35 of them in a readable volume, admirably and profusely illustrated by a well-known artist. In the preface it is modestly suggested that these lectures may be helpful to such students as may require a general knowledge of cutaneous histology, but dermatologists will agree that the work should be placed in a much higher category than that claimed for it by the author. In his lectures on normal histology Prof. Kyrle has a happy knack of combining a detailed description of form, with an interesting, if somewhat dogmatic, dissertation on the associated physiological functions of the various structures in the skin. This is a new and agreeable departure which should do much to obviate the lack of enthusiasm generally felt for the study of a rather prosaic subject. The volume is divided into six unequal parts. They include: (1) A description of the histology of the normal skin, (2) pigment anomalies, (3) atrophic and (4) hypertrophic disturbances, (5) mycelial infections, (6) effects of parasitic invasion. There is a short index of authors' names, and a good subject-index. The illustrations are among the best and most accurate that have ever appeared in a work on cutaneous histology, and in virtue of their faithful reproduction of important features, the number and variety of stains employed, and the careful selection of the material for biopsy, may long defy the emulation of other histologists in this field.

Dermatologists will welcome this fresh proof of Prof. Kyrle's ability and will look forward to the appearance of subsequent volumes.

HEALTH AND PSYCHOLOGY OF THE CHILD.

Edited by E. SLOAN CHESSER, M.D. London: Wm. Heinemann. 1925. Pp. 302. 7s. 6d.

DR. Sloan Chesser may be congratulated on having provided a book of real and big interest. Uniformity of outlook is not to be expected in a work of this kind, and it must be admitted that the majority of readers will hardly synthesise the material presented to them into a working scheme of child management, while some may be rather bewildered by the diversity of the factors which are represented as conditioning the development of the child. But as a collection of essays written from widely different points of view by authors who are well qualified to represent them, it should achieve considerable success, and will stimulate the interest of almost every reader in some aspect of the subject which will be new to him. The variety of the subject-matter may be indicated by mentioning a few chapters: Dr. E. Pritchard deals with the psychology of infancy and Dr. H. C. Cameron with want of appetite in children; the development of self-consciousness is discussed by Dr. J. A. Hadfield, the influence of endocrines and vitamins by Dr. Leonard Williams, and delinquency in children by Dr. A. F. Tredgold.

The book is clearly and attractively written, and may be recommended to all who are interested in problems of childhood.

ORGANIC CHEMICAL ANALYSIS.

A Student's Manual of Organic Chemical Analysis, Qualitative and Quantitative. By JOCELYN FIELD THORPE, C.B.E., F.R.S.; and MARTHA ANNIE WHITELEY, O.B.E., D.Sc. London: Longmans, Green and Co. 1925. With diagrams. Pp. 250. 9s.

THIS book is divided into eight sections, the first two of which are devoted to the detection of elements in organic compounds and the methods of purification of organic compounds before analysis. Then follows a section on the ultimate analysis of organic compounds in which the historical development of the subject is traced by a description of the original methods devised by the earlier workers in this field of organic chemistry. Full particulars are given for carrying out the experiments and references are quoted, so that the student is encouraged to look up original papers for himself. The fifth section, which is the longest, will also be found to be the most generally useful, containing as it does the methods of detection and estimation of all the commoner radicles met with in organic compounds, together with a number of practical applications of these methods to the estimation of some compounds of technical importance such as methyl alcohol and formaldehyde. The sixth section contains some practical hints for the systematic examination of complex organic compounds, and there is also an appendix dealing with the methods of micro-analysis. The book forms a useful addition to the literature of the subject.

JOURNALS.

JOURNAL OF INDUSTRIAL HYGIENE. May, 1925.—The principal article is by E. L. Collis, and deals with the coal-miner, his health, diseases, and general welfare. It is of some interest at the present moment when the mining industry is engaging much attention. The habits of the miner with regard to food, drink, and baths are considered; his methods at work; his occupational diseases, nystagmus, beat-knee, beat-hand, and beat-elbow; his tendency to accidents; his exposure to dust—are all summarised; his social environment in regard to welfare schemes and fertility is discussed, and the relation of unrest on the different coal-fields to the prevailing mortality is pointed out. The conclusion is arrived at that the mind of the miner is affected by such things as those dealt with and expresses itself in a tendency to strike.——June, 1925. The results of two years' ophthalmology in an American manufacturing plant are set forth by H. P. Davidson, who, after 4000 consecutive examinations, found 28·5 per cent. of the men with normal vision in both eyes and 38·9 per cent. with normal vision with lenses; but among the rest there was an appalling number of amblyopias, maldevelopments, and old injuries. The findings are carefully tabulated. The writer is emphatic on the need of education to induce men to wear goggles to prevent injuries and to seek advice for their children.—The health hazards of garages are pointed out by G. M. Burnham to be considerable. Acute and subacute poisoning from carbon monoxide in exhaust gases is an ever-lurking danger. The tendency to enrich fuels with cracked petroleum, coal distillate, and even lead compounds is adding further danger. Heavy vapour from spilt gasoline may drift into a pit where a man is working or poison him if the garage be closed. The writer calls for thorough investigation to establish the damage to health resulting and to determine the best preventive measures.—An interesting description is given by P. Drinker and R. M. Thomson of a portable alternating current precipitator for determining dust, fumes, and smokes present in air. The apparatus, which is illustrated, weighs 13 lb., and samples for microscopic study can be obtained.—The need for determining the zinc content of various foods, animal tissues and bone, and excreta, in cases of both normal and abnormal contact with zinc has led R. E. Lutz to develop a method for detecting accurately amounts varying from 0·01 mg. to 0·5 mg. by the action of zinc salts on urobilin. The method is described and discussed critically, with reference to previous work done on the subject.

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.

FURTHER SITTINGS.

(Continued from p. 1367, June 27th.)

EVIDENCE OF L.C.C. MENTAL HOSPITALS COMMITTEE.

AT the resumed meeting of the Commission on July 10th, the Hon. W. Sidney, J.P., and Mrs. Dunn Gardner, J.P. (chairman and vice-chairman of the L.C.C. Mental Hospitals Committee), gave evidence and stated that their view—supported by the Council—was that provision for temporary treatment without certification should fall on the same authority as that responsible for the established mental hospitals. Also, they thought that any legislation for early treatment of mental cases should allow patients who did not possess volition to be treated, as well as really voluntary patients. The Council considered that for compulsory detention two medical certificates—one from a specially approved general practitioner—should be required. The number of medical officers treating mental cases under the Council had of recent years been considerably increased. Hospitals with 2000 patients or over were allowed eight assistant medical officers. The Council did all they could to induce young medical officers to obtain the diploma in psychological medicine, and had arranged courses of lectures at the Maudsley Hospital for post-graduate students in this regard. The eighth course was now being delivered. Leave was also granted to attend a three-months course at the same hospital. Here was the chief pathological laboratory in connexion with the London County mental hospitals. The director of this laboratory was Dr. F. L. Golla, who followed Sir Frederick Mott, the latter now occupying the chair of mental pathology at Birmingham University. A properly equipped laboratory was provided at each mental hospital under the Council, and Dr. Golla conducted a periodic inspection of these laboratories, and reported on the work being done in them.

With regard to the nurses in the Council's mental hospitals, every inducement was held out to them to gain the mental nursing diploma. Recognising the onerous and somewhat distasteful work these nurses were sometimes called upon to do, and in order to make the staff as contented with their conditions as possible, the Council had shortened the hours and increased the rate of remuneration paid. It was difficult to secure a sufficient number of suitable women for this nursing work.

ASSOCIATION OF MUNICIPAL CORPORATIONS.

On the following day, July 11th, evidence on behalf of the Association of Municipal Corporations was given by Sir Lewis Beard, the town clerk of Blackburn. He said the average yearly increase in the number of patients who needed treatment in mental hospitals in England and Wales for the years 1920 to 1923 was 3565, and his Association's suggestion—until building was a less burdensome matter—was that use should be made of vacant institutions under the control of the Poor-law guardians. These, he thought, could be used for the more chronic type of case, and this would release space in the usual mental hospitals for acute cases in which treatment was likely to bring results. He had in mind the ordinary residential wards of the Poor-law institutions. His Association, he said, supported the Mental Treatment Bill, and their view was that it ought to be made possible to treat incipient cases without first having them certified. His individual opinion, also, was that it would be well if local authorities were to undertake the instruction of the public as to the general nature of mental disorder and the need for it to be treated at quite an early stage. A further advantage of this would be the dissipation of much of the unfounded prejudice in regard to insanity and the methods of treating it.

He had had a good deal of experience as a visitor to asylums, and suggested that committees appointed to do the visiting should be named "mental hospital committee" as he thought the usual name of "visiting committee" conveyed the impression that the inspection was of a perfunctory character, instead of the careful and interested inspection which was needed. He was against the Board of Control being given mandatory powers in place of the present advisory functions, as he wished to preserve to local authorities a good deal of freedom concerning details.

GIFT TO THE NATIONAL ORTHOPÆDIC HOSPITAL.—Mr. Dudley Docker has promised to contribute £5000 towards the £87,500 required by the Royal National Orthopædic Hospital on condition that four others will give a similar amount.

MEMORIAL TO THE LATE DR. WALLACE BEATTY, OF DUBLIN.—*On July 9th a tablet to the memory of the late* Dr. Wallace Beatty was unveiled in the hall of the Adelaide Hospital, with which he was so long connected. In addition to erecting the tablet the committee in charge of the memorial has in its hands a fund from which it is hoped to help nurses and students of the hospital financially embarrassed. The ceremony of unveiling was performed by Dr. Walter Smith, Dr. Beatty's predecessor at the Adelaide Hospital. He referred briefly to Dr. Beatty's fame and skill as a dermatologist, and more especially to his kindness, charity, and character as a man.

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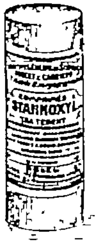

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[See also p. 27

THE LANCET.

LONDON: SATURDAY, JULY 18, 1925.

TOWARDS THE SOLUTION OF THE CANCER PROBLEM.

The publication in The Lancet to-day of the paper by Dr. W. E. Gye on "The Ætiology of Malignant New Growths," marks an event in the history of medicine For these observations may, we believe, represent a solution of the central problem of cancer. His carefully controlled experimental evidence leads to certain fundamental conclusions which may be briefly summarised as follows:—

1. All malignant new growths contain an ultramicroscopic virus—or group of viruses—which can be cultivated. This applies to the carcinomata and sarcomata of fowl, mice, rats, dogs, and man. The virus resides probably within the cells of the neoplasms.

2. The virus alone, washed free from all adherent material, does not produce a tumour when injected, and does not even produce a visible lesion.

3. But when injected together with virus-free extracts of tumours the virus produces a malignant new growth. The extracts contain, therefore, a substance called by Dr. Gye the "specific factor," which enables the virus to attack the cells of the injected animal so as to transform them into cancer cells.

4. There is no species specificity so far as the virus is concerned, for tumours can be obtained in one species of animals with the virus obtained from the tumour of another species.

5. The "specific factor" shows a very strict specificity of species. Thus in order to produce a malignant new growth in a mouse it is necessary to use the specific factor from a mouse tumour, while the specific factor of a chicken tumour is ineffective.

6. There is probably also a strict specificity of tissue for the specific factor. So far only sarcomata have been obtained, and these only with a mixture of virus and the specific factor from sarcomata, not from carcinomata.

The existence of a virus is not merely postulated from the effects of a culture supposed to contain it, as has hitherto been the case. The paper by Mr. J. E. Barnard on "The Microscopical Examination of Filterable Viruses" follows Dr. Gye's communication, and in this he has applied the optical methods elaborated by him for the study of the organisms of bovine pleuro-pneumonia, the largest of the known filter-passing viruses, to the study of the cancer viruses cultured by Dr. Gye, and shows that he has succeeded in rendering the cancer virus visible and even in photographing it. This is in itself a great achievement. The results of Mr. Barnard's observation so closely correspond with the experimental results obtained by Dr. Gye that the existence of a living cancer virus would appear to be established. The reasons for this broad opinion follow.

In order to make clearer the relationship existing between the virus and the specific factor, definite examples may be given. We will call the virus obtained from a mouse tumour "mouse virus," from a human tumour "human virus," and so on. Similarly we will call the "specific substance" obtained from a mouse carcinoma "mouse carcinoma specific," from a human carcinoma "human carcinoma specific," from a fowl sarcoma "fowl sarcoma specific," and so on. Then the following relationships have been established experimentally after injection:—

(*a*) Any virus alone from any neoplasm into any animal: no effect.

(*b*) Any specific from any neoplasm into any animal: no effect.

(*c*) Mouse carcinoma virus + fowl sarcoma specific: (1) Injected into mice—no effect; (2) injected into fowls—sarcoma.

(*d*) Human carcinoma virus + fowl sarcoma specific injected: Into mice—nothing; into fowls—sarcoma.

It follows, therefore, that the type of malignant new growth that is produced depends not upon the virus, but upon the specific substance. There are, therefore, two factors concerned in the ætiology of cancer: (1) A living virus—the extrinsic factor; and (2) a chemical substance produced by the cells—the intrinsic factor.

The "germ theory" of cancer is, of course, not a new one. It has often been advanced and has as often been rejected. It has been pointed out in the past, and quite truly, that it does not explain cancer. Recently an American authority on cancer has gone so far as to make the categorical statement: "There are many things which we do not know about cancer to-day, but there is one thing that we do know and that is that it is not of germ origin." That is not merely the opinion of a single individual, but it represents the view of almost every pathologist of repute. That view is not merely justified by the consideration that in the past no one has ever isolated an organism which when injected would produce with certainty a typical malignant new growth. As we shall see it is true even to-day in the light of Dr. Gye's work to say that the presence of an organism *by itself* cannot account for the fundamental features of cancer, and if the statement quoted above had been formulated in this way no exception could be taken to it. The position may be stated more generally by saying that cancer cannot be explained by postulating an entirely extrinsic origin.

Why, then, do we accept Dr. Gye's observations as a solution of the cancer problem? In order to appreciate the full significance of this work it is necessary to review briefly the present state of the cancer problem. A brief historical summary of the development of cancer research shows both the peculiar dilemma with which every attempt at explaining cancer was faced and the brilliant way in which Dr. Gye has dealt with it. Up to the beginning of this century the investigation of cancer was entirely in the hands of morbid anatomists and morbid histologists. They described the morphological appearances of the different tumours found in man and classified them; they made the fundamental distinction between neoplasms derived from epithelial cells and from connective tissue cells; they showed that each individual tumour had individual morphological features, and that these features were retained by the metastatic deposits; they correlated different degrees of malignancy with morphological differences. From the point of view of treatment the most important contribution was the work of Ribbert and of Butlin.

The former from a study of early carcinomata showed that cancer in its inception was a local disease. BUTLIN, applying this conclusion to surgical treatment, emphasised the importance of operative removal at the very earliest stage of cancer and demonstrated in this way that cancer, if attacked sufficiently early, was a curable disease.

There was also a considerable output of theories concerning cancer. Every possible—and impossible—explanation that human ingenuity could devise was put forward. Fortunately it is not necessary to review these various theories. It is sufficient to say that they have not assisted in the investigation of cancer; it may be said that these guesses at the truth have been of as little value to cancer research as racing tips are to the breeding of horses.

The exclusive occupation with cancer as it occurs in man led, however, to one curious result: it gave rise to the belief that cancer was essentially a disease of man. When in 1888 HANAU described a tumour in a rat and successfully transplanted it into other rats, this important observation was allowed to pass unnoticed. The same fate befell the similar observations which MORAU made soon afterwards. If we consult the standard work of the time, BORST's big volume, published in 1902 and entitled "Die Lehre von den Geschwülsten," no reference at all is to be found to the tumours of animals, although the occurrence of such tumours was well known to veterinary pathologists who had published descriptions in the literature. When, therefore, in 1902 Prof. JENSEN, of Copenhagen, recorded the successful transplantation of a mouse carcinoma into other mice after previous attempts with three other carcinomata had failed, his work did not attract much attention and would probably have shared the fate of HANAU'S and MORAU'S but for a fortunate coincidence. In 1902 the Imperial Cancer Research Fund had come into existence. The late Dr. E. F. BASHFORD, who had been placed in charge of the work of the Fund and who in his preliminary scheme of investigation had emphasised the importance of placing cancer research on an experimental basis, recognised the value of JENSEN'S work and devoted all the resources of the new institution to make the study of cancer one of experimental and comparative pathology. Together with Dr. J. A. MURRAY, he showed that the phenomenon of cancer was common to the whole vertebrate kingdom. By studying the pathology of JENSEN'S tumour and other tumours in mice, these two workers showed that these tumours corresponded in every respect to cancer in man. They confirmed JENSEN'S conclusion that in the process of transplantation the transplanted tumour grew from the cells of the minute piece of tumour that had been introduced by the needle and not by a transformation of the cells of the new host, who only provided the stroma necessary to nourish the cancer cells. This meant that the experimental transmission of a tumour from one animal to another was not a process of infection but one of true transplantation. Every spontaneous tumour in mice that was investigated was shown to possess a definite biological individuality which manifested itself not only by its morphological appearance, but also by such features as its rate of growth, its tendency to necrosis or spontaneous absorption, its power to elicit a specific stroma reaction. What is more, every tumour retained this biological individuality through many years of transplantation, and there was no evidence of convergence to a common type. Although a successful transplantation, of a mouse tumour into other mice was comparatively easy, it was found impossible to transplant a mouse tumour into animals of a different species. This strict species specificity explained the negative results which had attended previous attempts, such as those of SHATTOCK and BALLANCE, to transplant a human cancer into animals. The transplantation of a cancer from one mouse to another was found to be dependent upon the life of the transplanted cancer cells. Inoculation of extracts of tumours or dried tumour material failed to produce new growths, and similarly negative results were obtained when the tumour cells had been kept in an incubator sufficiently long to impair their vitality.

Another important conclusion which followed from these observations was that when a cancer arises in an organism it arises there *de novo* as a result of a change in the cells of that animal and not by the introduction of a cell already cancerous from another animal; each case of cancer was, so to speak, an individual disease. Results such as these could not be accounted for readily on the basis of a germ theory pure and simple. We should have to assume a highly specific virus not only for each species of animal but even for each individual case of cancer. As if to emphasise this conclusion there was on record a tumour of the dog which, though indistinguishable from a typical sarcoma in its morphological appearance and its property to metastasise freely, clearly showed from its clinical history that it did not arise *de novo* but was transmitted during coitus from the vagina to the penis and vice versa. This venereal tumour had been the subject of careful experimental study by BELLINGHAM SMITH and J. W. WASHBOURN in 1897. They clearly recognised the infective nature of the disease—a conclusion which was confirmed by BASHFORD and MURRAY, who contrasted it with the tumours of mice, and by most subsequent observers. It was accordingly called either an infective granuloma or an infective sarcoma, even though no infective agent could be isolated. It has never been clearly established whether the tumour was transmitted during coitus by a process of infection or by the rubbing in of living cells from a tumour on the penis into the vagina, and conversely from a tumour in the vagina into the penis. But whatever the process was by which it was transmitted, it was clear that it did not arise *de novo* in each animal in the same way as most neoplasms arise. Here, then, was the first clear evidence that tumours existed which could not be distinguished morphologically from a typical sarcoma but which had apparently quite a different ætiology.

Other evidence soon followed, but the attempt to place cancer research on an experimental basis by studying it in animals met at first with violent opposition by many pathologists. They maintained that cancer in mice was a disease quite different from cancer in man. But by the persistent accumulation of facts, BASHFORD and his collaborators carried the day. Cancer research institutes were established all over the world where the various aspects of the cancer problem were being studied experimentally in animals.

Then a really extraordinary observation was made in 1911 by Dr. PEYTON ROUS, of the Rockefeller Institute. In a fowl he found a sarcoma which could be transmitted to other chickens not merely by the introduction of the living tumour cells, but also by an extract which had been rendered cell-free by filtration through a Berkefeld filter. The same successful result could be obtained with the dead tumour material which had been dried and kept for some time. Pursuing this line of investigation he found two other sarcomata in fowls showing the same properties. But not all tumours of fowls behaved in this way:

many of them, like the tumours of mice, failed to yield tumours with the cell free filtrate or the desiccated tumour. Here, then, was convincing experimental evidence that in certain cases a tumour could be produced *de novo* either by a living virus or by a chemical agent. And the most perplexing feature of these extraordinary observations was this. Each of the three sarcomata showed a very distinctive biological individuality in their morphological appearance—one of them, for instance, being an osteo-chondrosarcoma. Tumours which were produced by the cell free filtrate or by the dead dried tumour material retained this biological individuality in the same way as did the mouse tumours which depended for their propagation on the living tumour cell! The most obvious explanation appeared to be that these tumours were due to a virus. But if that was so, why did the virus reproduce the biological individuality of each tumour? There seemed to be no answer to that question, and PEYTON ROUS, after having contributed one of the most important and disturbing observations, retired, baffled, from cancer research, as EHRLICH had done before him.

The next advance in cancer research was made by FIBIGER. He produced cancer of the stomach in rats by allowing a nematode to develop in the wall of the stomach. Once the carcinoma had developed it could be propagated in other rats in the usual way by the transplantation of the living tumour cells so that the presence of the nematode was not an essential factor in the growth of the tumour once it had been induced. Similarly BULLOCK and CURTIS, in the Crocker Institute in New York, produced sarcomata in the liver of rats by infecting the rats with the eggs of *Tænia crassicollis*. The sarcomata then developed in the walls of the cysticercus cysts. YAMAGIWA and ISHIKAWA, interpreting these results as being due to chronic irritation, produced epitheliomata in rabbits and mice by the prolonged painting of the skin with tar.

This line of investigation on the experimental production of cancer again offered no evidence in favour of the germ theory of cancer. On the contrary, the multiplicity of agents capable of inducing cancer, the long latent period in tar cancer, the cellular hyperplasia preceding the cancerous change had to be interpreted as arguments against an extrinsic origin and in favour of an intrinsic origin of cancer. Now that we know the solution, it is fascinating to retrace the history of experimental cancer research and to see how the objective, unbiassed collection of observations bearing on cancer in animals had led up to this dilemma: there was a large body of observations which could not be accounted for satisfactorily by postulating an organism as the cause of cancer. They indicated rather that the cancerous change was associated with a change in the metabolism of the cells, perhaps the production of a substance stimulating growth as indicated by the studies of CARREL, BURROWS, DREW, and others on the cultivating of cells in vitro. On the other hand, there were the tumours described by ROUS and the venereal dog tumour which, though morphologically typical malignant new growths, seemed to have an entirely different ætiology and could be explained most readily by postulating an infective agent. Most workers tried to escape from this maze by setting aside tumours such as those *described by* ROUS as being infective granulomata and by making a sharp distinction between such tumours and true neoplasms. But such a conclusion was merely an attempt to evade the difficulty. As has been stated, the fowl tumours were morphologically and clinically indistinguishable from true neoplasms, and apparently arose *de novo* in each animal, and their infective nature could only be established by experimental methods. How was it possible, then, to decide whether a tumour in man was an infective granuloma of this type or a true neoplasm? It has also been stated that the fowl tumours retained their biological individuality, when they were induced by infection with the cell free filtrate. If it is admitted that a virus can produce a cell proliferation of as definite a biological individuality as a true neoplasm, this feature of true neoplasms ceases to be an argument against the parasitic origin of cancer. CARREL has recently tried to get over this difficulty by denying that the chicken tumours are due to a virus. But the cultivation of a virus by Dr GYE and the success of Mr BARNARD in rendering the virus visible under the microscope renders this view untenable.

Dr GYE's work has solved this dilemma in a manner which is as unexpected as it is convincing. He shows that there is both an extrinsic and an intrinsic factor concerned in the ætiology of cancer. The extrinsic factor is a virus common to all neoplasms. By itself it is incapable of producing a neoplasm. To do that it requires the intrinsic factor—a substance produced by the cells which enables the virus to attack the cells. The virus can be cultivated. The intrinsic factor which so far has been demonstrated only in different tumours is presumably produced by the cells in the course of chronic irritation. The intrinsic factor varies from tissue to tissue and from tumour to tumour. In such tumours as those observed by ROUS it is abundant and very resistant, so that it persists even in an extract made without special precautions; in most other tumours it is present in small amounts and very labile, so that special anaerobic conditions are necessary to preserve it and to demonstrate its existence. This apparently fundamental difference between the ROUS tumours and other tumours is, therefore, merely the manifestation of different degrees of lability of this specific substance. Experimental cancer research has brought to light a number of other facts, the explanation of which has hitherto presented great difficulties. As an instance we may mention the development of sarcomata in the course of the experimental propagation of certain carcinomata as described by EHRLICH, by HAALAND, and by RUSSELL. For all these difficulties Dr GYE's work offers a satisfying solution—a good test of the value of the conception which he has formulated of the ætiology of cancer. As already stated, Dr GYE has succeeded in producing a sarcoma with the virus obtained from a carcinoma. The reverse result has not yet been attained—nor has it ever been observed to occur spontaneously in the course of the experimental propagation of sarcomata.

The work of Dr GYE is the outcome of an investigation on ultramicroscopic viruses instituted by the Medical Research Council. A group of men were appointed to work in different special directions, a member of which, Dr P. P. LAIDLAW, gave invaluable help towards finding the direction in which new researches might most profitably proceed. The Medical Research Council is to be congratulated on having secured the services of Dr GYE and Mr BARNARD, whose successful work has opened up a new chapter in the investigation of disease. We have stated at the outset that we hold Dr GYE's work to be a solution of the central problem of cancer. But it is more than that. Dr GYE has also evolved a technique for cultivating ultramicroscopic viruses and a method of testing for their presence. The observation that a virus by itself is non pathogenic, and requires an accessory substance to produce a specific disease may prove to be of the greatest importance in the further study of the diseases due to these viruses. As Dr. GYE points out, the fact that an organism can be non-pathogenic by itself and manifests its specific pathogenicity only in the presence of some accessory factor is not peculiar to the virus of cancer. A few years ago Dr. CRAMER and Dr. GYE showed that such a phenomenon plays a part in many well-known bacterial infections. Thus the bacteria of gas gangrene by themselves are non-pathogenic. But when certain simple chemical substances are also injected, such as calcium chloride or colloidal silicic acid, a slight but specific lesion is produced in the tissues, and then the specific infection is elicited. and kills the animal. They called this phenomenon "defence rupture" or "kataphylaxis," and pointed out that it applied to other bacterial infections. For instance it holds good for tetanus, and even the course of streptococcal infections may be profoundly altered by the presence of such kataphylactic substances. GYE and KETTLE found this phenomenon to apply also to tuberculous infections. The phenomenon is obviously of considerable importance in determining both the onset and what is vaguely called the virulence of bacterial infections, and it is curious that the importance of these observations was not generally recognised by bacteriologists. But a few months ago Dr. COLEY—the New York surgeon—referred to these observations of CRAMER and GYE in a symposium on cancer, in which he presented the evidence in favour of the parasitic theory of cancer. COLEY suggested that the cancer parasite postulated by him required kataphylaxis to attack the cells so as to produce the cancer lesion—probably the only correct guess that has been made in the voluminous literature of cancer theories.

All this work has cleared the way for a rapid advance in the investigation of cancer along entirely new but clearly defined lines. A host of new questions has arisen, and we have no doubt that by answering them the attack on the cancer problem, which has hitherto baffled medical science, will be brought to a successful conclusion. But there is a far wider outlook than this. The new technical methods now made available will be applicable to research along a whole enormous front. Diseases like measles, small-pox and encephalitis, foot-and-mouth disease and dogs' distemper, may yield their secrets to workers armed with these new weapons.

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[1] International Clinics, Series xxxv., vol. i., p. 67.

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[1] THE LANCET, 1904, i., 1722.
[2] THE LANCET, 1924, ii., 124.

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[2] London: John Bale, Sons and Danielsson, Ltd. 1925.

THE BATEMAN APPEAL.

It has been decided to close this Fund, and we thank those of our readers who supported the appeal. The money subscribed has been of the greatest possible service to Dr. Bateman, though the total was less than we had anticipated. The fact that Dr. Bateman had joined no society for coöperative defence influenced many, as we know by their letters, to withhold support, so that it is evident from the outcome of this appeal that the medical profession at large is not prepared to sympathise with those of its members who neglect the obvious precaution of insurance.

SHIPS DISABLED BY DENGUE.

When the sloop, *Antarès*, of the French Navy, was lying at Bahia[1] on Oct. 21st, 1923, 52 of her ship's company of 99 were on the sick-list with dengue. She had in all 71 cases, of whom 43 were sent to hospital. Though only one died the epidemic very seriously impaired the efficiency of the ship, since she was immobilised for two months and 25 men had to be invalided home. She had lain at Dakar, in Senegal, the westmost port of Africa, from Sept. 29th to Oct. 7th, three of the days in dry dock. There was at that time no report of dengue in the colony, only of influenza; mosquitoes were reported "numerous," as is usual at that port. The *Ango*, which had preceded her in the dry dock, had, on arrival at Havre, 40 out of a crew of 56 sick, and in all 55 were received into hospital. The malady was never officially given a name at Havre, but people spoke of paludism, bilious fever, and even of scarlatina, owing to the eruption. *Antarès* left Dakar on Oct. 7th for Bahia, crossed the line on the 11th with the usual celebrations, the ship's company alert and well, though some were bothered with headaches. On the 13th dengue began to show itself quite clearly in 11 cases with frontal headache, suffused eyes, pains in joints without redness or swelling, vomiting, pyrexia, and a fleeting rash; no coryza or sore-throat. Many recovered in two or three days, but there were 25 sick when the ship arrived at Bahia on the 15th. Here the numbers rose rapidly; on the 23rd 35 cases were sent to hospital and others later, where they improved so rapidly that 38 convalescents were returned in the next ten days. The characteristic polymorph leucopenia of dengue was noted in hospital. On Nov. 5th, however, all the five still in hospital, and most of those sent back, relapsed. There were no new men attacked, and those relapsing were far more ill than in the first period, the complications being jaundice, with tenderness and enlargement of the liver, and obstinate constipation. Convalescence was painfully prolonged with great muscular weakness and pyrexia on exertion. No treatment was specially successful, though antipyrin eased pain. Milk caused vomiting, but diluents were readily taken. The disease is ascribed by Dr. Bideau, medical officer of the ship, to a culex, but since he wrote *Aedes argenteus* (*Stegomyia fasciata* in old terminology) is generally incriminated. The insect is called *A. egypti* by Siler and his fellow workers, who give the incubation periods as 11 days in the mosquito and four to ten days in the men attacked. No mosquitoes were seen in the ship after the 10th, but cases appeared between the 13th and 28th, so it is difficult to understand how the infection spread, if there is no infection from man to man, which Dr. Bideau suggests as concurrently possible. In any case this history emphasises the need for mosquito protection of ships' companies in tropical harbours and especially when in dry docks, particularly in ports, like Dakar, known to be specially plagued with mosquitoes. The recent United States investigators of dengue, Siler and his fellow workers[2] insist on the epidemiological relation of dengue and yellow fever, their distribution by a common carrier, and suggest that each is caused by a filterable virus. Dr. I. J. Bideau, Médecin de 1re classe (Surgeon Lieutenant-Comdr.), the medical officer of the ship, had an anxious experience, but his careful report on the outbreak, with its detailed account of cases, have at least won for him the Prix de Médecine Navale for 1925.

PROFESSIONAL X RAY DERMATOSES.

Dr. H. N. Cole, of Cleveland, believes[3] that there are many more cases of radio-dermatitis in professional men, nurses, technicians, and orderlies than is commonly suspected, and it is doubtless with a view to their recognition and treatment before the symptoms have progressed too far that the author has given himself the trouble of collecting the bibliography since 1896 (the X rays were discovered in 1895), describing the symptoms and detailing the pathology and course of Rontgen ray injury as it is seen on the skin. The results are cumulative, but may be postponed for many months or years. In the main they are degenerative, especially in the corium, where sweat and pilosebaceous glands soon tend to disappear. Later the fibrous tissue becomes hyaline, and stains badly with Mallory's phospho-tungstic acid connective tissue stain. Vacuolation and distension of plain muscle-cells may eventually lead to their complete destruction. The most important and far-reaching changes are those noted in the blood-vessels, both arteries and veins. The smaller vessels are obliterated by swelling of the endothelial cells, and thickening of the intima. Elastic fibrils are broken up and absorbed, and may be replaced by fibrous tissue, while the middle coats of arteries become thickened and aid in the general sclerosis of the vascular supply. The newly formed capillaries (telangiectases), so often a striking clinical feature of an old-time X ray injury, are regarded by Dr. Cole as the fruitless attempt of a reparative process to supply a new circulation to avascular tissues, in which as a secondary effect focal necroses are so commonly seen. In the epidermis of an advanced case there are the usual evidences of chronic inflammation, with hyperkeratosis and exfoliation, hyperplasia with acanthosis of the prickle-cell layers, and in serious cases, changes in the basal cell layer (stratum germinativum) with occasional gaps in its continuity. "Perles" of epidermal cells in the upper corium may herald commencing malignant changes. Further study on these lines would certainly be of value in view of the great present-day vogue in radio-diagnosis and therapy.

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[1] Arch. de Médecine Navales, April, 1925.

[2] Jour. Amer. Med. Assoc., May 18th, 1925.

[3] Journal American Medical Association, 1925, lxxxiv., 865.

JUVENILE MORTALITY IN SWINDON.

Dr. Dunstan Brewer, in his latest annual report, states that the real causes of death can only be ascertained by comparing the life-histories of those who die with the life-histories of the survivors, and thus discovering the manner in which adverse factors operate. He is, therefore, compiling the life-histories of Swindon residents who die before reaching adolescence. He gives, however, with the information already at his disposal, an interesting analysis of the deaths of children during 1924.

Neonatal Deaths.—Of the 29 neonatal deaths six were from congenital malformations and theoretically unpreventable, and 17 could not be satisfactorily explained, so that we cannot say whether they were theoretically saveable or not. Of the remaining six, which were satisfactorily explained, four at least were theoretically preventable, three being from congenital syphilis and one from ill-feeding.

Deaths from End of First Month to End of First Year.—These may be divided into those who attended the clinics and whose life-history is known and those about whom information was only obtained after death. It should be explained that the social position of Swindonians is remarkably level, there being few citizens at the top or bottom of the social scale. The so-called residential class is very small and is not fertile. It therefore comes about that 90 per cent. of the children attend the clinics. Among the babies who attended the clinic 12 died, three being breast-fed, nine artificially fed. Of the three breast-fed, one died from an operation for intussusception, one from a congenital blood disease, and one from pneumonia following measles. Of the nine artificially fed four died from ill-feeding, and from respiratory disease following measles or whooping-cough, ill-feeding being a contributory cause of death. Of the 17 children whose life-history was not known five were said to have been breast-fed and 12 artificially fed. Of these breast-fed infants one died from injury, one from syphilis, one from pneumonia, one from bronchitis, and one from pyæmia. Of the artificially-fed "non-clinic" infants, seven apparently died from ill-feeding alone, four from pneumonia following whooping-cough, and one from congenital heart disease. All the clinic children who died were legitimate. Of the others, two were illegitimate and the rest legitimate. The fact that the 90 per cent. of infants who attended the clinics furnished 12 deaths while the 10 per cent. who did not attend furnished 17 deaths indicates that the section of the population for whom attendance at the clinics is most necessary do not use them.

Deaths between 1 and 2 Years of Age.—Fourteen such deaths were registered, 10 being among clinic children. Of the ten clinic children whose history was known five had been breast-fed. Of these, one died from scalds, one from sarcoma of the kidney, and three from pneumonia or bronchitis. Of the five artificially-fed clinic children one died from acute nephritis, one from tuberculous meningitis, three from pneumonia following measles or whooping-cough. Of the four non-clinic children whose history is not properly known, one died from tuberculous meningitis, one from ill-feeding, and two from pneumonia following whooping-cough.

Deaths between the Second and Fifth Year.—Fourteen such deaths occurred, seven among clinic children. Of these latter five were breast and two artificially-fed. Of the breast-fed, one died from scarlet fever, three from pneumonia following measles, and one from tuberculous meningitis. Of the two artificially-fed clinic children one died from appendicitis and one from rickets. Of the seven non-clinic children one died from scalds, one from rheumatic heart disease, one from epilepsy, and four from pneumonia following measles or whooping-cough.

Deaths of Children Aged 5 to 10.—Five such occurred, three being among clinic children. Of the latter, who were all artificially fed in infancy, one died from cerebral tumour, one from rheumatic fever, and one from primary pneumonia. Of the two non-clinic children, one died from epilepsy and one from influenza.

Deaths of Children Aged 10 to 17.—Twelve such children died, but their life-history is not perfectly known. Four died from tuberculosis of the lung, one from tuberculous meningitis, and one from tuberculosis of the spine; one from heart disease, one from pneumonia, one from actinomycosis, one from Bright's disease, one from epilepsy, and one was run over.

It is perfectly obvious from Dr. Brewer's figures that the 10 per cent. of children who do not attend the clinic furnish an undue proportion of deaths up to the age of 10. Dr. Brewer does not think that the severity of the attack furnishes the explanation why one child dies from a disease and another does not, but he thinks the life-history will furnish a sufficient explanation in the case of many diseases such as whooping-cough, pneumonia, and appendicitis. Dr. Brewer goes on to consider the causation of the 26 stillbirths which occurred in Swindon during 1924. No adequate reason is forthcoming for 14. In 12 cases there was some evidence available, but a real explanation only in the case of five which occurred in the maternity home. In the case of one of these five, the fœtus was dead before admission owing to contracted pelvis; in the case of two death was due to asphyxia caused by the impaction of the head in breech presentations; another was due to placenta prævia, and the fifth was a premature puny infant, *theoretically unsaveable. Of the seven other* stillbirths in the case of which some evidence was available, two could be put down to congenital syphilis, one to a toxæmia of pregnancy, one to pneumonia in the mother, and one to an obscure disease of the mother. The two remaining cases were due to complications of delivery, which might have been foreseen and prevented. Of the 26 stillbirths five only had received any kind of antenatal care and all were legitimate. It will be noted that a very large proportion of the 12 stillbirths, about which there was any real evidence as to cause, were theoretically preventable by antenatal work. Swindon has a population of 56,000, about 1000 births annually, and an infant mortality of under 60 for the last three years, but Dr. Brewer's investigations suggest that a more complete scheme (which he outlines in his report) is capable of effecting very great reductions both in the infant mortality-rate and in the death-rates during the year immediately succeeding infancy.

BIRTH NOTIFICATION.

THE early working of the Notification of Births Act of 1907 was intimately bound up with the life of Mr. Benjamin Broadbent, of Huddersfield, whose death was recorded in our columns a fortnight ago. Some interest attaches to the origin of this Act which was the beginning of a general infant welfare campaign. In December, 1904, the medical officer of health for Huddersfield, Dr. S. G. Moore, submitted to his sanitary authority a preliminary report on the measures employed in France and Germany for the protection of infants. In the course of Dr. Moore's inquiries he learned of a small commune in the Midi, Villiers-le-Duc, where for ten years not a single baby had died during its first year of life. To apply similar methods in Huddersfield required a foreknowledge of the existence of the infants to be saved. At that time the books of the Registrar of Births and Deaths afforded the only means of learning this essential fact, and that indirectly after a delay it might be of six weeks. Not infrequently the medical officer saw the names of newly born infants in the death returns of the same date as the birth returns. With the support of the Health Committee, of which Mr. Broadbent was then chairman, Dr. Moore obtained from the sanitary authority sanction for the payment of one shilling to any person who notified to him within 24 hours the birth of an infant. In the following year authority was obtained in a local Act to require the father of a child, if in residence at the house where the birth took place, to make the notification within 36 hours. Failing the father, any person who was in attendance on the mother at the time of birth or within six hours thereafter was required to notify.

A year later Mr. John Burns, President of the Local Government Board, lent powerful support to the Huddersfield clause, and the Notification of Births Act was passed; at first adoptive, in 1915 it was made compulsory. In the work leading up to this conclusion Mr. Broadbent played an active and enthusiastic part, against opposition which was not always good-humoured. An account of the *Huddersfield scheme* is set out in a small brochure which is signed jointly by

B. Broadbent and S. G. Moore. Immediately upon receipt of the notification of birth, upon the same day in all cases, a visit is made by a medical woman, whose responsibility is to ensure that no infant shall perish as the result of ignorance on the part of the mother. After her visit or visits the case is handed over to a voluntary association of ladies who have simply to call from time to time in a friendly way. If they find that the baby is not flourishing they send a post-card to the medical officer of health, whereupon the assistant medical officer revisits and if necessary calls in the family doctor. In no case is medical treatment provided by a member of the staff of the public health department.

There can be little doubt that the movement has preserved thousands of human lives during the last 20 years, as well as greatly reducing crippling, blindness, and ill-health. The Huddersfield records are typical of what the Notification of Births Act has made possible throughout the country. The mean infant mortality figure for that borough prior to 1907, the year when the Huddersfield scheme came into full operation, was 155. For the last few years it has averaged about one-half of that figure, and in some single years it has approached one-third. Coincidently the maternal mortality among those whose pregnancies have been made known to the medical officer of health has fallen from 5–6 per 1000 to 2·5, while the neonatal mortality—deaths under one month—has also been materially reduced. In Huddersfield at the present time there is not a single child of school age blind as the result of ophthalmia neonatorum. There will still remain a doubt in the minds of a section of the medical profession as to the exact part played by "direct measures," such as have been here described, in reducing infant mortality as contrasted with the indirect effects of better general education and the improving of a generation of mothers who had the benefit of the Act of 1870. Bristol has been cited as an example of a city where the decline in the infant mortality-rate was as striking as that of Huddersfield in the absence of direct measures. No doubt the latter were both more necessary and more potent in a town like Huddersfield, where many mothers work in factories. However that may be, Benjamin Broadbent will go down to posterity as a pioneer of the child welfare movement, which marked the first quarter of the twentieth century, and as a friend of humanity at its most helpless age.

The Services.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. P. H. Henderson to be Bt.-Col.

ARMY DENTAL CORPS.

Temp. Capt. J. L. Garrard, from Gen. List., to be Capt.

REGULAR ARMY RESERVE OF OFFICERS.

Maj.-Gen. Sir Alfred P. Blenkinsop, late R.A.M.C., having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

Capt. J. A. Charles, from R.A.M.C., to be Capt.

SUPPLEMENTARY RESERVE OF OFFICERS.

Lt. W. S. Dawson to be Capt.

MILITIA.

Maj. R. M. Beath relinquishes his commn. and retains the rank of Maj.

Capt. A. F. L. Shields resigns his commn.

TERRITORIAL ARMY.

Surg.-Lt. W. S. O'Loughlin (late Royal Navy) to be Capt.

Capt. H. Pinto-Leite to be Maj. (Prov.).

Capt. A. F. L. Shields (late R.A.M.C. Militia) to be Capt.

2nd Lt. H. W. M. Williams (late South Wales Borderers) to be Lt.

INDIAN MEDICAL SERVICE.

Lt. G. H. Fitzgerald to be Capt (Prov.).

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXXXI.

TREATMENT OF EXTERNAL OTITIS AND FURUNCULOSIS OF THE EXTERNAL AUDITORY MEATUS.

INFLAMMATORY implications of the pinna and fibro-cartilaginous external ear are accompanied by symptoms and local manifestations, sometimes almost indistinguishable from those which arise from extensions of primary middle-ear suppurative infection to the cutaneous tissues behind the auricle. Since a mistake may have distressing consequences where the diagnosis is not obvious after careful examination the surgeon should act as if the more serious condition were present, provided always that he feels assured of his skill in the necessary surgical technique; no harm could come from doing a simple mastoidotomy when only the external ear is inflamed, but most severe complications may follow the treatment of mastoid disease on the lines of an external otitis. In practice, however, it is rare for a surgeon in daily contact with these affections to have much difficulty in making the differential diagnosis. The swelling and tenderness has been superficial throughout in external otitis, and has only recently become so in suppurative mastoiditis. In the last-named condition the shape of the external meatus is similar to that of the sound ear, whilst in external otitis it is narrowed, slit-like, red, and very sensitive to touch with the speculum or a probe. In mastoiditis the drum and middle ear show evidence of inflammation, perforation of the membrane, or discharge of pus, whilst in external otitis the drum may be absolutely normal, except in patients who give a history of old middle-ear suppuration. The discharge from the ear in mastoiditis is stringy and sticky, owing to the presence of mucus from the inflamed middle ear, this property being absent from the pus of furuncular origin. Tenderness to touch is localised to movement of the pinna and external meatal tube when they alone are inflamed, and to the tissues over the surface of the mastoid when the bone beneath is involved. Deafness and tinnitus may be common to both conditions, but pain, which is often the dominant symptom, may be even more pronounced in the less grave of the two affections, because the close attachment of the skin to the cartilaginous tube affords little accommodation for inflammatory œdema; moreover, the pressure is rendered still more intense by the unyielding bony walls if the furuncle is deep in the meatus.

Furunculosis is by far the commonest type of external otitis; the differential diagnosis of the other forms met with—diffuse otitis and acute recurring eczema—is much easier.

Diffuse otitis does not tend to point like a furuncle; the inflammatory induration is not definitely circumscribed, but resembles a cellulitis. It may result from a skin abrasion, infection by staphylococci or streptococci, but is occasionally due to the *Bacillus pyocyaneus*, the latter form being much commoner in parts of the continent than in this country.

Acute recurring eczema is not usually included under the heading of otitis externa in text-books, but the acuteness of its onset, the distress it causes, and the frequency with which unresolved patches of eczema in the region of the external meatal orifice act as the starting-point of furuncular and diffuse inflammation, entitles it, in my opinion, to be so included.

Furunculosis.

The treatment of external otitis of furuncular origin must necessarily vary with the stage of the affection. In all cases, to begin with, 3 gr. of calomel should be given at night followed by a saline in the morning. If the patient is seen very early, before inflammatory infiltration is pronounced, touching the point of infection with pure carbolic may cause the furuncle to abort, but care must be taken to prevent the carbolic flowing beyond the exact spot, otherwise an area of skin may be denuded of epithelium and a further infection result. If the exact point cannot be discovered, carbolic oil should be applied with a piece of wool to the entire meatus twice daily. It serves two purposes, the first being to render practically inactive any organism present in the meatus at the time, and the second to act similarly on any fresh organisms entering from without or from pus escaping when the furuncle matures. In mild cases it is ample treatment and prevents the tendency to recurrences. Excessive moisture in the meatus leads to maceration of the epithelium, and as this facilitates reinfection the amount of liquid left behind should be reduced to a minimum, whether it be oil, lotion, or drops. When there is much inflammatory induration present, accompanied by pain, fomentations give considerable relief, and if persisted in for 24 hours will often suffice to bring the furuncle to maturity and spontaneous rupture. It is a moot point whether fomentations favour the occurrence of furuncular crops or not. If too moist they may do so by macerating the epithelium, but probably not otherwise. If carbolic oil has been previously used it should be cleaned off the skin as *carefully as possible or the application of heat over* it may result in a blister. The fomentation by itself will produce a blister if too hot, and is then probably responsible for reinfection and some discredit to an excellent method of treatment. Dry sterile wool in the meatus, concha, and around the pinna, over which a rubber hot water bottle is applied, is very comforting.

Advanced Cases.—When, however, the induration is considerable with some surrounding œdema, the progress of the case is slow, and the pain persists, free incision through the furuncle offers the best prospect of early success. An attempt should be made to render the meatus as sterile as possible by using hydrogen peroxide and syringing with warm boric lotion; under a short general anæsthesia, a short, straight tenotomy knife is then passed into the passage, deep to the furuncle, and carried outwards through its centre and down to the base. It is most important to cut deeply, otherwise the inflammatory tension and pain will persist. Syringe again with the warm lotion, dry out, and dress with a strip of sterile ribbon gauze partially soaked in bipp. The first dressing may remain for 48 hours, but should be changed daily afterwards. In cases where the furuncle has opened spontaneously a daily dressing of gauze or bipp is satisfactory. As lotions are frequently used in treating meatal inflammatory infections it is well to emphasise the risk that maceration of the epithelium may give rise to reinfection. All excessive moisture tends to macerate the skin, but mercurial or carbolic lotions are particularly liable to do so, especially the former.

Recurrences of furunculosis, in my opinion, are often due to the reinfection of denuded areas of skin, resulting either from the inflammatory process or the maceration of epithelium by some fault of the medicament or technique, which with care may be guarded against. However, despite every known precaution, recurrences will take place, when vaccine therapy promises the most effective line of attack. Autogenous vaccines, if obtainable, are the best, but if they are not available stock vaccines are worth a trial. I have seen excellent results from their use in some cases and from such small dosage as 50, 100, and 200 million staphylococci (*pyogenes aureus*) in successive weekly doses.

Diffuse Otitis.

Diffuse otitis is much less common than the furuncular form and is usually an accompaniment of an existing middle-ear suppuration. The treatment follows the same lines as that indicated already in the inflammatory indurations of furunculosis—namely, a sterile drainage-wick in the ear, fomentations, and, if suppuration occurs, surgical incision under general anæsthesia. In the form due to *Bacillus pyocyaneus* a perichondritis is present, but it never suppurates. It may last five or six weeks and tends to recur through reinfection, probably by the patient scratching the meatal orifice with the finger-nail. The organisms usually have their habitat in the axillæ and groins of persons of indifferent hygienic habits and surroundings. Frequent bathing and the application of a weak biniodide of mercury lotion to the groins and axillæ with the daily use of 3 per cent. silver nitrate drops in the ear is the best treatment. As hydrogen peroxide is now so commonly prescribed in the treatment of ear affections, it is interesting to note that if this is used in external otitis of pyocyaneus origin these organisms will flourish luxuriantly.

Acute Recurring Eczema.

Acute recurring eczema responds well to treatment. During the acute stage Lassar's paste (zinc oxide, pulv. amyl, lanolin and vaseline, each 2 dr.) should be applied on strips of muslin or lint (smooth side) over the pinna and in its folds and on a few inches of half-inch ribbon gauze lightly packed into the external meatus, night and morning. Gauze wick will prove useful as a drain from a middle-ear suppression, should such be present, until the condition of the external skin permits of the local use of lotions and drops. When the eczema has passed into the dry and scaly stage, 10 gr. of salicylic acid should be added to the ounce of Lassar's paste and applied direct to the affected area which may be otherwise left uncovered. As eczema of the pinna is invariably accompanied by seborrhœa of the scalp, which in the opinion of some dermatologists is the starting-point of the infective ear process, the scalp should be shampooed about twice a week, taking care to protect the ear from the water or shampoo liquid used. Soap spirit (sapo-mollis and spirit. vini rect. 2 oz. each) acts well, but much care must be taken to remove all traces of it by repeated rinsings of water. In less acute cases of deep meatal eczema (so often the starting-point of external otitis, diffuse and furuncular) the following method gives excellent results. If there is any loose skin débris about, remove it by gentle syringing or wiping out with wool with a solution of sodium bicarbonate, 2 dr. to the pint of warm water. Dry meatus and fill with a rolled pledget of wool soaked in the following preparation.

℞	Ung hydrarg. nitr. dil.	1 dr.
	Liq. carbon. deterg...	10 ♏.
	Paraff. liq.	ad 1 oz.

This oily preparation should be brought into intimate contact with the meatal lining by pressing the tragus on to the wool several times. This wool should be removed and a small dry portion placed in the external orifice only.

JOHN F. O'MALLEY, F.R.C.S. Eng.,
Surgeon, Ear, Nose, and Throat Department,
University College Hospital.

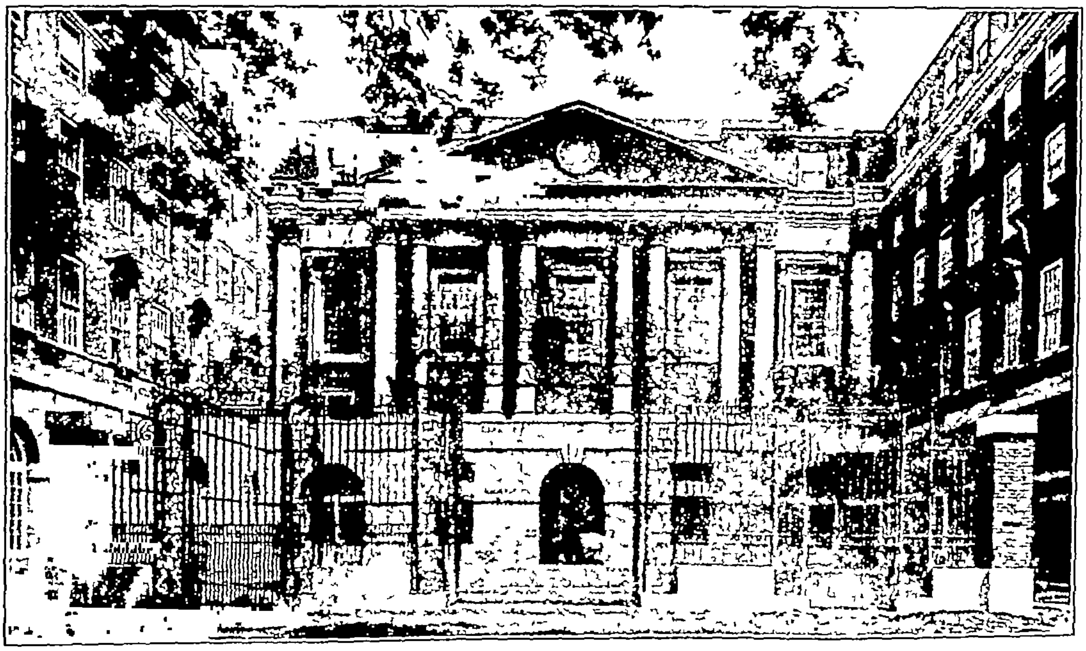
ST. MARYLEBONE HOSPITALS LEAGUE.—Mr. Walter Kewley, house governor of the Middlesex Hospital, calls attention to the work of the St. Marylebone Hospitals League, founded in 1923, and urges its imitation elsewhere. The fundamental principles of the League are the recognition of the obligation upon all people to support the hospitals and "appreciation of the fact that medical education, research work, and the training of nurses are primarily their most important functions"—that is to say, if there were no poor the hospitals would still be essential. To the preaching of this doctrine he ascribes the success of the League.

Special Articles.

THE OPENING OF THE NEW BRITISH MEDICAL ASSOCIATION HOUSE.

On Monday last, July 13th, His Majesty the King opened the new home of the British Medical Association at Tavistock-square, London.

A full hour before the ceremony nearly all the delegates had taken their places in the Great Hall, and the square between the new memorial gates and the magnificent buildings was thronged with the representatives of the medical colleges and the nursing associations, along with visitors whose connexion with medicine entitled them to the honour of welcoming the King with his medical hosts. The band of the Grenadier Guards was already playing on the circular lawn, and alternated with a hidden string orchestra, also from the Grenadiers, whose music was relayed to the courtyard and the Great Hall by electrical amplifiers. Many visitors occupied a covered stand just outside the gates on the south side. At a quarter to three a guard of honour marched up—the Artists' Rifles—headed by a fife band in silver-grey, and took post along the short approach from Tavistock-square, which was brilliantly decorated with ornamental columns wound with flowers. At five minutes to three His Grace the Archbishop of Canterbury, escorted by the President, Mr. J. Basil Hall, the architect, Sir Edwin Lutyens, and seven of the leaders of the profession in Great Britain, offered prayer and solemnly dedicated the gates to the memory of the 574 members of the Association who gave their lives in the war. His Grace then took the key from the architect and opened the gates. The Guards played the hymn, "O God, our Help" before the dedication and "Abide with Me" as the gates swung open. The ceremony was impressive in its sincerity and restraint.



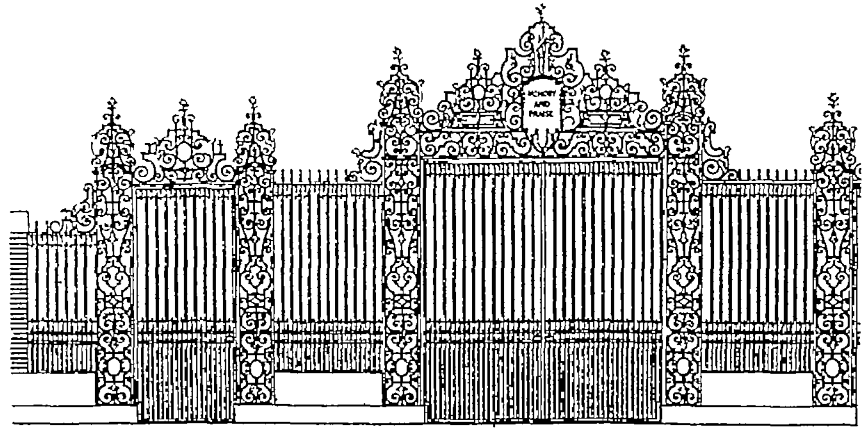
Courtyard of the British Medical Association House. [*Topical Press Photo.*

At ten minutes past three the King and Queen arrived with their attendants, accompanied by Mr. Neville Chamberlain, the Minister of Health. The Royal Standard broke from the flagstaff above the central pediment, and the Artists' band played the National Anthem. His Majesty then inspected the guard of honour, commanded by Captain W. Campbell Smith, M.C. The Minister of Health then presented the President of the Association, Mr. J. Basil Hall, of Bradford, and the Chairman of Council, Dr. R. A. Bolam, of Newcastle-on-Tyne; and the Chairman of the Council presented Dr. H. B. Brackenbury (Chairman of the Representative Body of the Association); Mr. N. Bishop Harman (Treasurer of the Association); Sir Donald MacAlister, Bart. (President of the General Medical Council); Sir Humphry Rolleston, Bart. (President of the Royal College of Physicians); Sir John Bland-Sutton, Bart. (President of the Royal College of Surgeons); Lord Dawson of Penn; Sir George Newman (Chief Medical Officer to the Ministry of Health); Sir Edwin Lutyens (the architect of the building); and Mr. F. J. Walton (the contractor). Those who had been presented then formed a procession and escorted the King and Queen through the courtyard and the main entrance to the Members' Reception Room. There the Royal visitors met the Reception Committee, and the Chairman of the Council presented Sir Dawson Williams, the Editor of the *British Medical Journal*, and other distinguished medical men and women, as well as the representatives of the workmen who had made the building, and the organising staff who had directed their work.

Meanwhile the Great Hall, with its cheerful white walls and friezes and its peacock-blue columns, held a crowded audience of delegates, who filled floor and gallery, their scarlet gowns and coloured hoods making a brilliant show. The procession mounted the dais to the enthusiastic singing of the National Anthem, and the Chairman of the Council welcomed His Majesty in an address in which he traced the history of the B.M.A. since it was founded by Sir Charles Hastings in 1832, set out its aims and scope, and mentioned its debt of gratitude to the King, who had succeeded his father King Edward as Patron.

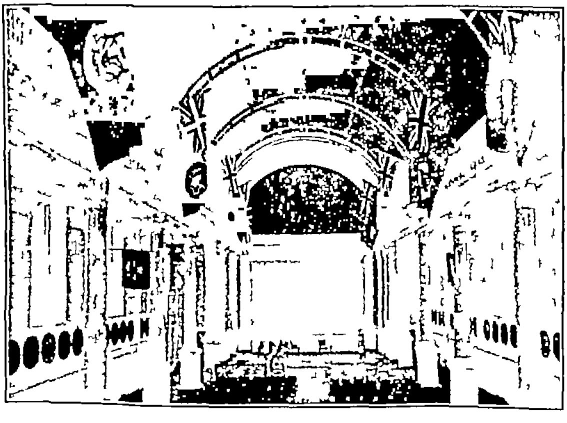
His Majesty replied most sympathetically. He said he felt great pride at succeeding his Royal father as the patron of such a noble society, and paid tribute to the splendid work of the B.M.A. in selecting and training recruits to the professon, in criticising and

assisting research, in uniting the medical activities of the country, and in maintaining the very high standards that now governed the practice of medicine. Noble traditions were a priceless possession that must be not only maintained but constantly increased



The Memorial Gates

He admired especially the promotion of post-graduate study He warned the profession of their deep responsibility for the general health of the country, and indicated the value of administration in maintaining sanitation in factories and public buildings and places and in preventing epidemic disease, and also of the informal education that the general practitioner can give the lay public in personal health and general hygiene.



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Special Articles.

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Courtyard of the British Medical Association House. [*Topical Press Photo.*

At ten minutes past three the King and Queen arrived with their attendants, accompanied by Mr. Neville Chamberlain, the Minister of Health. The Royal Standard broke from the flagstaff above the central pediment, and the Artists' band played the National Anthem. His Majesty then inspected the guard of honour, commanded by Captain W. Campbell Smith, M.C. The Minister of Health then presented the President of the Association, Mr. J. Basil Hall, of Bradford, and the Chairman of Council, Dr. R. A. Bolam, of Newcastle-on-Tyne; and the Chairman of the Council presented Dr. H. B. Brackenbury (Chairman of the Representative Body of the Association); Mr. N. Bishop Harman (Treasurer of the Association); Sir Donald MacAlister, Bart. (President of the General Medical Council); Sir Humphry Rolleston, Bart. (President of the Royal College of Physicians); Sir John Bland-Sutton, Bart. (President of the Royal College of Surgeons); Lord Dawson of Penn; Sir George Newman (Chief Medical Officer to the Ministry of Health); Sir Edwin Lutyens (the architect of the building); and Mr. F. J. Walton (the contractor). Those who had been presented then formed a procession and escorted the King and Queen through the courtyard and the main entrance to the Members' Reception Room. There the Royal visitors met the Reception Committee, and the Chairman of the Council presented Sir Dawson Williams, the Editor of the *British Medical Journal*, and other distinguished medical men and women, as well as the representatives of the workmen who had made the building, and the organising staff who had directed their work.

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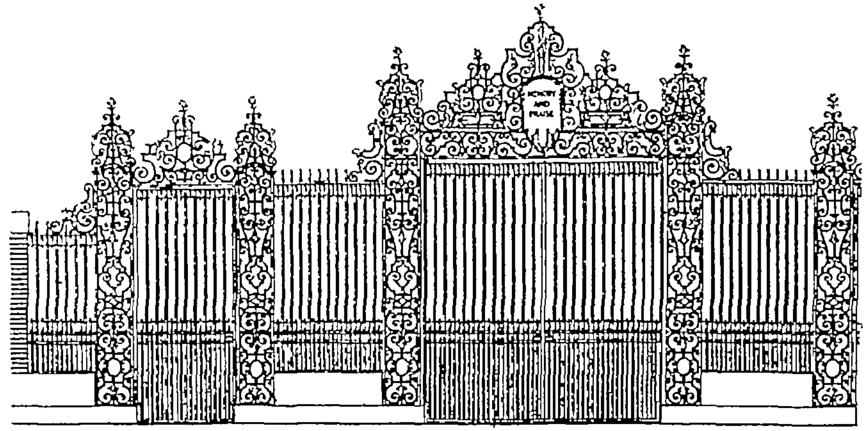

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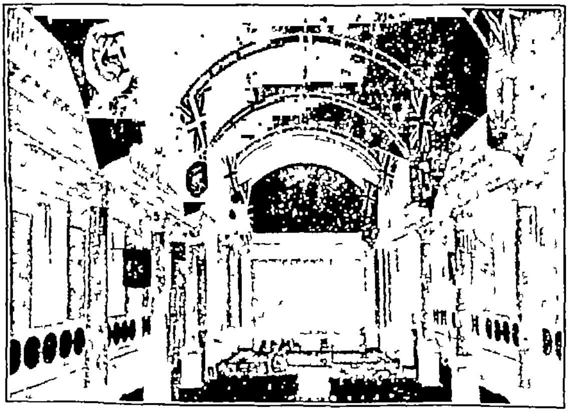

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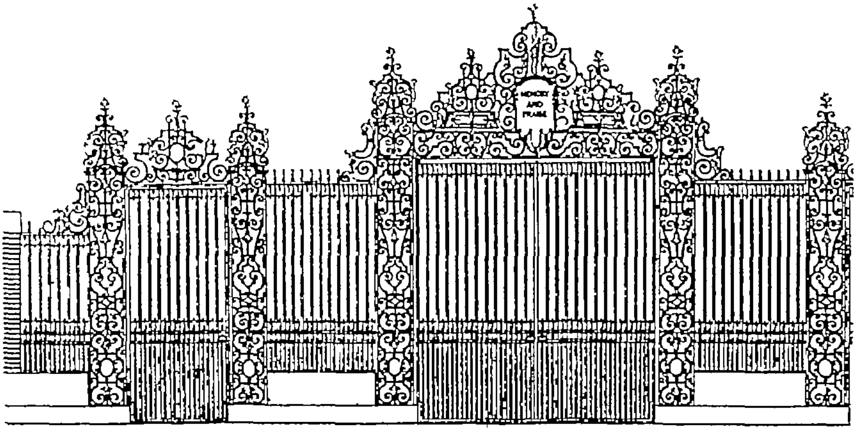

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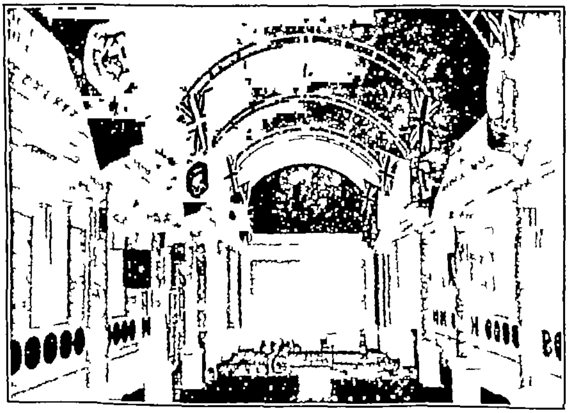

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On either side of the passage-way lie beneath the Great Hall the members' lounge and library, the latter panelled with the rare Spanish mahogany familiar to members in the library at the old building. The former is finished in white and a delicate grey, with narrow black skirting. Beneath these rooms are large basements containing staff dining-rooms and storage offices. In the basement of the north wing is the Hastings Hall, capable of seating 150 persons, decorated in white and pale yellow and lighted by inverted bowls resting on gilt pedestals. Similar in design is the Council room in the basement of the south wing, fitted with tiered seats of green morocco, and lined with oak panelling bearing the names of past holders of the high offices of the Association. On the higher floors are committee rooms, office accommodation for the editorial, finance, and intelligence departments, and the printing offices.

If this ceremony is an omen of the future of the Association, no one need fear for British medicine. In its dignified brevity and order it splendidly expressed the unity and purpose of the B.M.A. They have set themselves a high standard, but no one can doubt that they will fulfil it.

BRITISH MEDICAL ASSOCIATION: ANNUAL MEETING AT BATH.

PROGRAMME OF THE SCIENTIFIC SECTIONS.

THESE sections will meet from 10 A.M. to 1 P.M. on Wednesday, Thursday, and Friday, July 22nd, 23rd, and 24th, for papers and discussions, and it is hoped that laboratory and clinical demonstrations will be arranged for the afternoons. The following sections will meet on each of the three days:—

Medicine.

President: Lord Dawson. Vice-Presidents: Dr. E. J. Cave, Dr. T. R. Elliott, Prof. J. A. Nixon, Prof. Adam Patrick, Dr. W. N. West Watson. Hon. Secretaries: Dr. James Lindsay, 1, The Circus, Bath; Dr. F. G. Chandler, 1, Park-square West, Portland-place, London, N.W. 1.

Provisional Programme.—July 22nd.—Discussion: Rheumatoid Arthritis, its Causation and Treatment. To be opened by Sir Humphry Rolleston, followed by Dr. Rupert Waterhouse (Treatment), Sir Robert Jones (Surgical), Dr. J. M. H. Monro (Bacteriology), Mr. A. G. Timbrell Fisher (Pathological), Mr. W. R. Ackland (Dental), and Sir William H. Willcox.

July 23rd.—Discussion: Hyperpiesis. To be opened by Lord Dawson; followed by Prof. E. H. Starling, Dr. H. Batty Shaw, Dr. Otto May, and Dr. Geoffrey Evans.

July 24th.—Discussion: The Uses and Abuses of Endocrine Therapy. To be opened by Dr. W. Langdon Brown and Prof. Swale Vincent; followed by Dr. H. Gardiner-Hill, Mr. Kenneth M. Walker, Dr. H. W. C. Vines, and Prof. F. S. Langmead.

Surgery.

President: Sir Berkeley Moynihan. Vice-Presidents: Mr. A. H. Burgess, Mr. Frederick Lace, Mr. H. S. Souttar, Mr. C. F. Walters. Hon. Secretaries: Mr. A. de V. Blathwayt, 6, Brock-street, Bath; Mr. A. L. Fuller, 9, Gay-street, Bath; Mr. R. M. Vick, 152, Harley-street, London, W. 1.

Provisional Programme.—July 22nd.—Discussion: Carcinoma of the Stomach. To be opened by Sir W. I. de Courcy Wheeler; followed by Dr. E. I. Spriggs (Clinical Manifestations and Early Diagnosis), Dr. A. F. Hurst (Auxiliary Methods of Diagnosis, Radiological and Chemical), Prof. M. J. Stewart (Pathology: General Relation of Carcinoma to Ulcer; Mode of Spread and Frequency of Secondary Deposits in Liver), Mr. J. Sherren, Mr. John Morley, Dr. J. A. Nixon, and Mr. A. H. Burgess.

July 23rd.—Discussion: Acute Intestinal Obstruction. To be opened by Sir William Taylor; followed by Mr. W. Sampson Handley and Mr. D. P. D. Wilkie. A general report and statistics from various hospitals for the past five years will be presented by Mr. H. S. Souttar (London Hosp.), Mr. R. P. Rowlands (Guy's), Mr. C. Max Page (St. Thomas's), Mr. R. M. Vick (St. Bartholomew's), Mr. L. R. Braithwaite (Leeds), Mr. G. Grey Turner (Newcastle), Mr. A. H. Burgess (Manchester), Mr. A. Rendle Short (Bristol), and Mr. A. B. Mitchell (Belfast).

July 24th.—Combined discussion with Orthopædic Section: Treatment of Fractures, with special reference to its Organisation and Teaching. To be opened on the Surgical side by Mr. G. E. Gask; followed by Mr. S. W. Daw, Mr. H. Wade, Mr. H. H. Sampson, and Mr. A. W. Sheen; and on the Orthopædic side by Sir Robert Jones; followed by Dr. R. Osgood (Boston, U.S.A.), Mr. H. Platt, Mr. H. A. T. Fairbank, Mr. C. Max Page, and Mr. Gwynne E. O. Williams.

Obstetrics and Gynæcology.

President: Lady Barrett. Vice-Presidents: Mr. H. S. Davidson, Mr. Eardley L. Holland, Mr. W. F. Rawson, Mr. D. C. Rayner. Hon. Secretaries: Mr. W. H. Duncan, 13, Gay-street, Bath; Dr. J. Bright Banister, 19, Harley-street, London, W. 1.

Provisional Programme.—July 22nd.—Discussions: (*a*) The Problems of Uterine Cancer. To be opened by Prof. B. P. Watson. (*b*) The Surgical Treatment of Malignant Disease of the Pelvic Organs. To be opened by Mr. Victor Bonney and Mr. S. J. Cameron. The following will take part in the discussions: Prof. C. Oldfield, Mr. H. J. D. Smythe, Dr. R. S. S. Statham, and Prof. W. C. Swayne.

July 23rd.—Discussion: The Treatment of Inoperable Cancer of the Pelvic Organs. To be opened by Dr. James Heyman (Stockholm); followed by Mr. Percival P. Cole and Mr. Malcolm Donaldson. Paper: Dr. D. C. Hare: Preliminary Investigation into the Circulatory Changes in Normal Pregnancies.

July 24th.—Discussion: The Rôle of Surgery in the Treatment of Backward Displacement of the Uterus. To be opened by Miss M. H. Frances Ivens; followed by Dr. H. Russell Andrews, Prof. J. M. Munro Kerr, Mr. R. H. Paramore, Mr. D. C. Rayner, Mr. D. Shannon, and Sir Henry J. F. Simson.

Pathology and Bacteriology.

President: Prof. J. C. G. Ledingham. Vice-Presidents: Dr. J. A. Braxton Hicks, Prof. E. H. Kettle, Dr. Rupert Waterhouse. Hon. Secretaries: Lieut.-Colonel James Cowan, 44, Combe-park, Bath; Dr. C. C. Okell, Wellcome Physiological Research Laboratories, Langley Court, Beckenham, Kent.

Provisional Programme.—July 22nd.—Discussion: Filter-passing Viruses. To be opened by Dr. W. E. Gye; followed by Mr. J. E. Barnard, Dr. Mervyn H. Gordon, Dr. S. P. Bedson, and Dr. J. E. McCartney.

July 23rd.—Discussion: The Pathological Basis of Treatment by Radiation. To be opened by Prof. S. Russ; followed by Dr. T. S. P. Strangeways, Miss M. E. Hume, and Dr. A. Piney.

July 24th.—Discussion: The Present Position of Pathology and Bacteriology in this Country, with special reference to Research. To be opened by the President of the section.

Neurology and Psychological Medicine.

President: Sir Maurice Craig. Vice-Presidents: Prof. Edwin Bramwell, Dr. Arthur F. Hurst, Dr. Norman Lavers, Dr. S. A. K. Wilson. Hon. Secretaries: Dr. Ray Edridge, 29, Gay-street, Bath; Dr. Edward Mapother, Maudsley Hospital, Denmark Hill, London, S.E. 5.

Provisional Programme.—July 22nd.—Discussion: Causation and Symptomatology of Multiple Neuritis. To be opened by Dr. T. Grainger Stewart; followed by Dr. James S. Collier, Dr. Wilfred J. Harris, Dr. W. Johnson, and Dr. F. J. Nattrass.

July 23rd.—Discussion: Treatment of Insomnia. To be opened by Dr. Robert Hutchison; followed by Dr. Harry Campbell, Dr. Henry Devine, and Dr. C. P. Symonds.

July 24th.—Discussion: Prophylaxis of Mental Disorder. To be opened by Sir Humphry Rolleston; followed by Dr. A. Helen A. Boyle, Dr. Bernard Hart, Dr. Edward Mapother, and Dr. T. A. Ross.

Therapeutics (including Balneology and Radiotherapy).

President: Prof. R. B. Wild. Vice-Presidents: Dr. Preston King, Dr. W. Mitchell, Dr. Nathan Mutch. Hon. Secretaries: Dr. Cecil H. Terry, 15, The Circus, Bath; Dr. Dorothy C. Hare, 1, Bickenhall Mansions, London, W. 1.

Provisional Programme.—July 22nd.—Discussion: Treatment of Asthma. To be opened by Dr. W. Langdon Brown, followed by Dr. E. P. Poulton, and Dr. P. Hamill.

July 23rd.—Discussion: Treatment of Chronic Arthritis. To be opened by Sir Thomas Horder; followed by Dr. C. B. Heald, Dr. Preston King (Balneology), Dr. N. Mutch, and Dr. C. B. Heald.

July 24th.—Discussion: Therapeutic Value of Light. To be opened by Prof. W. E. Dixon; followed by Dr. C. E. M. Jones (Clinical) and Dr. G. H. Lancashire. Paper: Dr. Newman Neild: The Uses of Posture for Bronchial Drainage.

Laryngology, Otology, and Rhinology.

President: Mr. Arthur H. Cheatle. Vice-Presidents: Mr. Neil Maclay, Dr. Irwin Moore, Mr. Sydney R. Scott. Hon. *Secretaries: Mr. H. N. Barnett, 27, The Circus, Bath;* Dr. R. Scott Stevenson, 30, New Cavendish-street, London, W. 1.

Programme.—July 22nd.—Discussion: Overlooked Cases of Foreign Body in the Air and Food Passages. To be opened by Prof. Chevalier Jackson (Philadelphia); followed by Dr. Thomas McCrae (Philadelphia), Sir StClair Thomson, and others. Prof. Chevalier Jackson: (a) Demonstration on the Extraction of Foreign Bodies from the Air and Food Passages; (b) Cinematographic demonstration of Bronchoscopic Aspiration for Suppurative Diseases of the Lung of *other than Foreign Body Origin. Dr. T. McCrae:* Bronchoscopy for Disease. Mr. V. E. Negus: Evolutionary Factors in Causation of Pharyngeal Diverticula. Dr. Irwin Moore: An Outline of the History of Endoscopy.

July 23rd.—Discussions: (1) Operative Treatment of Chronic Middle-ear Suppuration. To be opened by Mr. G. J. Jenkins; followed by Mr. Sydney R. Scott, Mr. J. S. Fraser, and Mr. J. Bowring Horgan. (2) Treatment of Chronic Non-suppurative Middle-ear Deafness (excluding *Oto-sclerosis*). To be opened by Sir William Milligan; followed by Dr. J. Kerr Love, Sir Robert Woods, Mr. Neil Maclay, and Mr. H. Norman Barnett.

July 24th.—Discussion: Occupational Diseases of Ear, Nose, and Throat, and their Prevention. To be opened by Mr. F. H. Westmacott; followed by Surgeon-Commander S. W. Grimwade, Wing-Commander D. Rankon, Mr. T. Jefferson Faulder, Mr. C. A. Scott Ridout, and Mr. T. Ritchie Rodger.

The following Sections will each meet on two days:—

Diseases of Children.

President: Dr. Robert Hutchison. Vice-Presidents: Dr. Carey F. Coombs, Mr. P. T. Crymble, Dr. Charles McNeil, Dr. Reginald H. Miller. *Hon. Secretaries: Dr.* Vincent Coates, M.C., 10, The Circus, Bath; Mr. R. A. Ramsay, 123, Gloucester-terrace, Hyde Park, London, W. 2.

Provisional Programme.—July 22nd.—Joint discussion with the Section of Public Medicine: Rheumatic Infection in Childhood—*Early Diagnosis and Preventive* Treatment. To be opened by Dr. F. J. Poynton and Dr. R. A. Askins (M.O.H. Bristol); followed by Dr. Carey F. Coombs, Dr. Reginald Miller, Dr. J. A. Glover (Ministry of Health), and Dr. *Vincent Coates.*

July 23rd.—Discussion: Treatment of Empyema. To be opened by Dr. H. C. Cameron and Mr. H. S. *Souttar*; followed by Dr. F. G. Chandler, Mr. H. W. C. Romanis, and Mr. T. Twistington Higgins.

Ophthalmology.

President: Dr. W. Marlon Beaumont. Vice-Presidents: Dr. R. Wallace Henry, Mr. A. W. Ormond, Mr. C. H. Walker. *Hon. Secretaries:* Dr. R. *Colley*, 30, The Circus, Bath; Mr. P. G. Doyne, 8, Harley-street, London, W. 1.

Provisional Programme.—July 22nd.—Discussion: Eye Injuries and Interstitial Keratitis. To be opened by Mr. W. T. Holmes Spicer.

Papers: Mr. A. W. Ormond, Visual Hallucinations of Sane People. Mr. N. Bishop Harman: Phlyctenular Conjunctivitis and Keratitis—Causes and Prevention. Dr. R. Wallace Henry: Instrument for Recording Light Minimum and Light Difference. *Dr. R. Colley: Case of* Perforating Wound of Eye with Retention of Piece of Glass.

July 23rd.—Discussion: Ocular Pain. To be opened by Mr. A. Freeland Fergus.

Papers: Mr. C. H. Walker: Amaurosis. Mr. Lindsay Rea: Treatment of Ocular Syphilis. Mr. J. Burdon-Cooper: Conservative Treatment of Glaucoma.

Orthopædics.

President: *Prof. E. W. Hey Groves.* Vice-Presidents: Dr. Naughton Dunn, Mr. G. R. Girdlestone, Mr. E. Muirhead Little. Hon. Secretaries: Dr. J. S. *Levis, M.C., 20, Gay-*street, Bath; Mr. T. Twistington *Higgins*, 37, Harley-street, London, W. 1.

Provisional Programme.—July 23rd.—Discussion: Tuberculous Disease of the Spine. To be opened by Prof. Calvé (Paris); *followed* by Mr. G. R. Girdlestone, Mr. W. T. G. Pugh, and Mr. James Russell.

July 24th.—Joint discussion with Section of Surgery on the Treatment of Fractures, with special reference to Organisation and Teaching. (See above.)

Public Medicine.

President: Dr. T. Eustace Hill. Vice-Presidents: Dr. T. W. Naylor Barlow, Dr. J. F. Blackett, Dr. W. A. Brend, Dr. S. Noy Scott. *Hon. Secretaries:* Dr. R. E. Thomas, 11, Darlington-place, Bath; Dr. A. Neville Cox, 21, Cornwall-gardens, *Preston Park*, Brighton.

Provisional Programme.—July 22nd.—Joint discussion *with the Section of Diseases of Children: Rheumatic Infection* in Childhood—Early Diagnosis and Preventive Treatment. *To be opened by Dr. F. J. Poynton* (Children's Section) and Dr. R. A. Askins, School Medical Officer and M.O.H. Bristol (Public Medicine Section).

July 23rd.—Discussions: (1) Food Manipulation in Relation to Health. To be opened by Dr. W. G. Savage. *Dr. C. E. Goddard will speak with special reference to* Accidental Contamination. (2) Influence of Sunlight and Artificial Lights on Health, including Smoke Pollution. To be opened by Dr. Leonard Hill; followed by Dr. G. B. *Dixon, who will speak particularly on the Influence of* Light on Tuberculosis, and Dr. Dora C. Colebrook.

The following Section will meet on one day:—

Medical Sociology.

President: Dr. Charles E. S. Flemming. Vice-Presidents: Dr. J. W. Bone, Mr. Wilfred Buckley, Mr. G. P. Male, Dr. E. A. Starling. Hon. Secretaries: Dr. C. A. Marsh, The Roseries, Englishcombe, Bath; Dr. C. J. Buchan, 326, Brownhill-road, Catford, London, S.E. 6.

Provisional Programme.—July 24th.—Morning.—Discussion: What should be the Standard of Purity of Milk? To be opened by Dr. R. Stenhouse Williams, from the point of view of the bacteriologist; Dr. W. G. Savage, from the *point of view of the medical officer of health; and Dr. Eric* Pritchard, from the point of view of the dietist. Afternoon.—*Discussion: By What Means can Pure Milk be Obtained,* and the Cost? To be opened by Mr. Wilfred Buckley (National Clean Milk Society), *as a producer; Mr. G. P.* Male, as a veterinary surgeon; and Mr. J. H. Maggs (chairman, United Dairies), as a distributor. Two films will be *shown with the following titles: Production of Certified* Milk on an English Farm, and Handling and Distribution of Milk in New York City.

THE BRITISH SOCIAL HYGIENE COUNCIL

(LATE NATIONAL COUNCIL FOR COMBATING VENEREAL DISEASES).

THE British Social Hygiene Council held their *tenth annual meeting* on July 6th in the Robert Barnes Hall of the Royal Society of Medicine. *Sir* Auckland Geddes delivered the presidential address.

Annual Meeting.

The President, in his opening *remarks*, paid a tribute to his predecessor, Lord Trevethin, who had done so much to combat venereal disease. He went on to point out the unusual interest of the occasion; the Council was now looking back over 11 years of activity and difficulty during which great progress had been made. Between the years 1920 and 1924 the *numbers of new cases of syphilis* at the treatment centres had fallen from 48,000 *to 22,000*, while the number of attendances had risen from under 1,500,000 to 1,645,000. It was clear from *these figures and* others that venereal disease had been combated in this country with increasing *success, though the end was not yet in sight.* The British Social Hygiene Council, coöperating with the Ministry *of* Health and the local authorities, had done a great deal towards this result. In order to *determine* the *aims* of the Council for the future it was necessary to consider what the reduction of venereal disease would mean not only for the present generation but for posterity. The figures quoted showed that the number of new infections had definitely diminished, so that every unborn child had a proportionately greater chance of escaping infection. The Council looked forward over a vast field of effort, and while they saw clearly that medical work against venereal disease was profoundly important and was progressing rapidly, yet the problem had many other aspects. There was no group of diseases in which medical, social, and moral problems were so inextricably interwoven, and medicine could not achieve victory over venereal disease by itself. The change in their inscriptions on either side of the shield are "Memory and Praise" and "Faithful hath been your warfare."

On either side of the passage-way lie beneath the Great Hall the members' lounge and library, the latter panelled with the rare Spanish mahogany familiar to members in the library at the old building. The former is finished in white and a delicate grey, with narrow black skirting. Beneath these rooms are large basements containing staff dining-rooms and storage offices. In the basement of the north wing is the Hastings Hall, capable of seating 150 persons, decorated in white and pale yellow and lighted by inverted bowls resting on gilt pedestals. Similar in design is the Council room in the basement of the south wing, fitted with tiered seats of green morocco, and lined with oak panelling bearing the names of past holders of the high offices of the Association. On the higher floors are committee rooms, office accommodation for the editorial, finance, and intelligence departments, and the printing offices.

If this ceremony is an omen of the future of the Association, no one need fear for British medicine. In its dignified brevity and order it splendidly expressed the unity and purpose of the B.M.A. They have set themselves a high standard, but no one can doubt that they will fulfil it.

BRITISH MEDICAL ASSOCIATION:
ANNUAL MEETING AT BATH.

PROGRAMME OF THE SCIENTIFIC SECTIONS.

THESE sections will meet from 10 A.M. to 1 P.M. on Wednesday, Thursday, and Friday, July 22nd, 23rd, and 24th, for papers and discussions, and it is hoped that laboratory and clinical demonstrations will be arranged for the afternoons. The following sections will meet on each of the three days:—

Medicine.

President: Lord Dawson. Vice-Presidents: Dr. E. J. Cave, Dr. T. R. Elliott, Prof. J. A. Nixon, Prof. Adam Patrick, Dr. W. N. West Watson. Hon. Secretaries: Dr. James Lindsay, 1, The Circus, Bath; Dr. F. G. Chandler, 1, Park-square West, Portland-place, London, N.W. 1.

Provisional Programme.—July 22nd.—Discussion: Rheumatoid Arthritis, its Causation and Treatment. To be opened by Sir Humphry Rolleston, followed by Dr. Rupert Waterhouse (Treatment), Sir Robert Jones (Surgical), Dr. J. M. H. Monro (Bacteriology), Mr. A. G. Timbrell Fisher (Pathological), Mr. W. R. Ackland (Dental), and Sir William H. Willcox.

July 23rd.—Discussion: Hyperpiesia. To be opened by Lord Dawson; followed by Prof. E. H. Starling, Dr. H. Batty Shaw, Dr. Otto May, and Dr. Geoffrey Evans.

July 24th.—Discussion: The Uses and Abuses of Endocrine Therapy. To be opened by Dr. W. Langdon Brown and Prof. Swale Vincent; followed by Dr. H. Gardiner-Hill, Mr. Kenneth M. Walker, Dr. H. W. C. Vines, and Prof. F. S. Langmead.

Surgery.

President: Sir Berkeley Moynihan. Vice-Presidents: Mr. A. H. Burgess, Mr. Frederick Lace, Mr. H. S. Souttar, Mr. C. F. Walters. Hon. Secretaries: Mr. A. de V. Blathwayt, 6, Brock-street, Bath; Mr. A. L. Fuller, 9, Gay-street, Bath; Mr. R. M. Vick, 152, Harley-street, London, W. 1.

Provisional Programme.—July 22nd.—Discussion: Carcinoma of the Stomach. To be opened by Sir W. I. de Courcy Wheeler; followed by Dr. E. I. Spriggs (Clinical Manifestations and Early Diagnosis), Dr. A. F. Hurst (Auxiliary Methods of Diagnosis, Radiological and Chemical), Prof. M. J. Stewart (Pathology: General Relation of Carcinoma to Ulcer; Mode of Spread and Frequency of Secondary Deposits in Liver), Mr. J. Sherren, Mr. John Morley, Dr. J. A. Nixon, and Mr. A. H. Burgess.

July 23rd.—Discussion: Acute Intestinal Obstruction. To be opened by Sir William Taylor; followed by Mr. W. Sampson Handley and Mr. D. P. D. Wilkie. A general report and statistics from various hospitals for the past five years will be presented by Mr. H. S. Souttar (London Hosp.), Mr. R. P. Rowlands (Guy's), Mr. C. Max Page (St. Thomas's), Mr. R. M. Vick (St. Bartholomew's), Mr. L. R. Braithwaite (Leeds), Mr. G. Grey Turner (Newcastle), Mr. A. H. Burgess (Manchester), Mr. A. Rendle Short (Bristol), and Mr. A. B. Mitchell (Belfast).

July 24th.—Combined discussion with Orthopædic Section: Treatment of Fractures, with special reference to its Organisation and Teaching. To be opened on the Surgical side by Mr. G. E. Gask; followed by Mr. S. W. Daw, Mr. H. Wade, Mr. H. H. Sampson, and Mr. A. W. Sheen; and on the Orthopædic side by Sir Robert Jones; followed by Dr. R. Osgood (Boston, U.S.A.), Mr. H. Platt, Mr. H. A. T. Fairbank, Mr. C. Max Page, and Mr. Gwynne E. O. Williams.

Obstetrics and Gynæcology.

President: Lady Barrett. Vice-Presidents: Mr. H. S. Davidson, Mr. Eardley L. Holland, Mr. W. F. Rawson, Mr. D. C. Rayner. Hon. Secretaries: Mr. W. H. Duncan, 13, Gay-street, Bath; Dr. J. Bright Banister, 19, Harley-street, London, W. 1.

Provisional Programme.—July 22nd.—Discussions: (*a*) The Problems of Uterine Cancer. To be opened by Prof. B. P. Watson. (*b*) The Surgical Treatment of Malignant Disease of the Pelvic Organs. To be opened by Mr. Victor Bonney and Mr. S. J. Cameron. The following will take part in the discussions: Prof. C. Oldfield, Mr. H. J. D. Smythe, Dr. R. S. S. Statham, and Prof. W. C. Swayne.

July 23rd.—Discussion: The Treatment of Inoperable Cancer of the Pelvic Organs. To be opened by Dr. James Heyman (Stockholm); followed by Mr. Percival P. Cole and Mr. Malcolm Donaldson. Paper: Dr. D. C. Hare: Preliminary Investigation into the Circulatory Changes in Normal Pregnancies.

July 24th.—Discussion: The Rôle of Surgery in the Treatment of Backward Displacement of the Uterus. To be opened by Miss M. H. Frances Ivens; followed by Dr. H. Russell Andrews, Prof. J. M. Munro Kerr, Mr. R. H. Paramore, Mr. D. C. Rayner, Mr. D. Shannon, and Sir Henry J. F. Simson.

Pathology and Bacteriology.

President: Prof. J. C. G. Ledingham. Vice-Presidents: Dr. J. A. Braxton Hicks, Prof. E. H. Kettle, Dr. Rupert Waterhouse. Hon. Secretaries: Lieut.-Colonel James Cowan, 44, Combe-park, Bath; Dr. C. C. Okell, Wellcome Physiological Research Laboratories, Langley Court, Beckenham, Kent.

Provisional Programme.—July 22nd.—Discussion: Filter-passing Viruses. To be opened by Dr. W. E. Gye; followed by Mr. J. E. Barnard, Dr. Mervyn H. Gordon, Dr. S. P. Bedson, and Dr. J. E. McCartney.

July 23rd.—Discussion: The Pathological Basis of Treatment by Radiation. To be opened by Prof. S. Russ; followed by Dr. T. S. P. Strangeways, Miss M. E. Hume, and Dr. A. Piney.

July 24th.—Discussion: The Present Position of Pathology and Bacteriology in this Country, with special reference to Research. To be opened by the President of the section.

Neurology and Psychological Medicine.

President: Sir Maurice Craig. Vice-Presidents: Prof. Edwin Bramwell, Dr. Arthur F. Hurst, Dr. Norman Lavers, Dr. S. A. K. Wilson. Hon. Secretaries: Dr. Ray Edridge, 29, Gay-street, Bath; Dr. Edward Mapother, Maudsley Hospital, Denmark Hill, London, S.E. 5.

Provisional Programme.—July 22nd.—Discussion: Causation and Symptomatology of Multiple Neuritis. To be opened by Dr. T. Grainger Stewart; followed by Dr. James S. Collier, Dr. Wilfred J. Harris, Dr. W. Johnson, and Dr. F. J. Nattrass.

July 23rd.—Discussion: Treatment of Insomnia. To be opened by Dr. Robert Hutchison; followed by Dr. Harry Campbell, Dr. Henry Devine, and Dr. C. P. Symonds.

July 24th.—Discussion: Prophylaxis of Mental Disorder. To be opened by Sir Humphry Rolleston; followed by Dr. A. Helen A. Boyle, Dr. Bernard Hart, Dr. Edward Mapother, and Dr. T. A. Ross.

Therapeutics (including Balneology and Radiotherapy).

President: Prof. R. B. Wild. Vice-Presidents: Dr. Preston King, Dr. W. Mitchell, Dr. Nathan Mutch. Hon. Secretaries: Dr. Cecil H. Terry, 15, The Circus, Bath; Dr. Dorothy C. Hare, 1, Bickenhall Mansions, London, W. 1.

Provisional Programme.—July 22nd.—Discussion: Treatment of Asthma. To be opened by Dr. W. Langdon Brown, followed by Dr. E. P. Poulton, and Dr. P. Hamill.

July 23rd.—Discussion: Treatment of Chronic Arthritis. To be opened by Sir Thomas Horder; followed by Dr. Preston King (Balneology), Dr. N. Mutch, and Dr. C. B. Heald.

July 24th.—Discussion: Therapeutic Value of Light. To be opened by Prof. W. E. Dixon; followed by Dr. C. E. M. Jones (Clinical) and Dr. G. H. Lancashire. Paper: Dr. Newman Neild: The Uses of Posture for Bronchial Drainage,

Laryngology, Otology, and Rhinology.

President: Mr. Arthur H. Cheatle. Vice-Presidents: Mr. Neil Maclay, Dr. Irwin Moore, Mr. Sydney R. Scott. Hon. Secretaries: Mr. H. N. Barnett, 27, The Circus, Bath; Dr. R. Scott Stevenson, 30, New Cavendish-street, London, W. 1.

Programme.—July 22nd.—Discussion: Overlooked Cases of Foreign Body in the Air and Food Passages. To be opened by Prof. Chevalier Jackson (Philadelphia); followed by Dr. Thomas McCrae (Philadelphia), Sir StClair Thomson, and others. Prof. Chevalier Jackson: (*a*) Demonstration on the Extraction of Foreign Bodies from the Air and Food Passages; (*b*) Cinematographic demonstration of Bronchoscopic Aspiration for Suppurative Diseases of the Lung of other than Foreign Body Origin. Dr. T. McCrae: Bronchoscopy for Disease. Mr. V. E. Negus: Evolutionary Factors in Causation of Pharyngeal Diverticula. Dr. Irwin Moore: An Outline of the History of Endoscopy.

July 23rd.—Discussions: (1) Operative Treatment of Chronic Middle-ear Suppuration. To be opened by Mr. G. J. Jenkins; followed by Mr. Sydney R. Scott, Mr. J. S. Fraser, and Mr. J. Bowring Horgan. (2) Treatment of Chronic Non-suppurative Middle-ear Deafness (excluding Oto-sclerosis). To be opened by Sir William Milligan; followed by Dr. J. Kerr Love, Sir Robert Woods, Mr. Neil Maclay, and Mr. H. Norman Barnett.

July 24th.—Discussion: Occupational Diseases of Ear, Nose, and Throat, and their Prevention. To be opened by Mr. F. H. Westmacott; followed by Surgeon-Commander S. W. Grimwade, Wing-Commander D. Ranken, Mr. T. Jefferson Faulder, Mr. C. A. Scott Ridout, and Mr. T. Ritchie Rodger.

The following Sections will each meet on two days:—

Diseases of Children.

President: Dr. Robert Hutchison. Vice-Presidents: Dr. Carey F. Coombs, Mr. P. T. Crymble, Dr. Charles McNeil, Dr. Reginald H. Miller. Hon. Secretaries: Dr. Vincent Coates, M.C., 10, The Circus, Bath; Mr. R. A. Ramsay, 123, Gloucester-terrace, Hyde Park, London, W. 2.

Provisional Programme.—July 22nd.—Joint discussion with the Section of Public Medicine: Rheumatic Infection in Childhood—Early Diagnosis and Preventive Treatment. To be opened by Dr. F. J. Poynton and Dr. R. A. Askins (M.O.H. Bristol); followed by Dr. Carey F. Coombs, Dr. Reginald Miller, Dr. J. A. Glover (Ministry of Health), and Dr. Vincent Coates.

July 23rd.—Discussion: Treatment of Empyema. To be opened by Dr. H. C. Cameron and Mr. H. S. Souttar; followed by Dr. F. G. Chandler, Mr. H. W. C. Romanis, and Mr. T. Twistington Higgins.

Ophthalmology.

President: Dr. W. Marlon Beaumont. Vice-Presidents: Dr. R. Wallace Henry, Mr. A. W. Ormond, Mr. C. H. Walker. Hon. Secretaries: Dr. R. Colley, 30, The Circus, Bath; Mr. P. G. Doyne, 8, Harley-street, London, W. 1.

Provisional Programme.—July 22nd.—Discussion: Eye Injuries and Interstitial Keratitis. To be opened by Mr. W. T. Holmes Spicer.

Papers: Mr. A. W. Ormond, Visual Hallucinations of Sane People. Mr. N. Bishop Harman: Phlyctenular Conjunctivitis and Keratitis—Causes and Prevention. Dr. R. Wallace Henry: Instrument for Recording Light Minimum and Light Difference. Dr. R. Colley: Case of Perforating Wound of Eye with Retention of Piece of Glass.

July 23rd.—Discussion: Ocular Pain. To be opened by Mr. A. Freeland Fergus.

Papers: Mr. C. H. Walker: Amaurosis. Mr. Lindsay Rea: Treatment of Ocular Syphilis. Mr. J. Burdon-Cooper: Conservative Treatment of Glaucoma.

Orthopædics.

President: Prof. E. W. Hey Groves. Vice-Presidents: Dr. Naughton Dunn, Mr. G. R. Girdlestone, Mr. E. Muirhead Little. Hon. Secretaries: Dr. J. S. Levis, M.C., 20, Gay-street, Bath; Mr. T. Twistington Higgins, 27, Harley-street, London, W. 1.

Provisional Programme.—July 23rd.—Discussion: Tuberculous Disease of the Spine. To be opened by Prof. Calvé (Paris); followed by Mr. G. R. Girdlestone, Mr. W. T. G. Pugh, and Mr. James Russell.

July 24th.—Joint discussion with Section of Surgery on the Treatment of Fractures, with special reference to Organisation and Teaching. (See above.)

Public Medicine.

President: Dr. T. Eustace Hill. Vice-Presidents: Dr. T. W. Naylor Barlow, Dr. J. F. Blackett, Dr. W. A. Brend, Dr. S. Noy Scott. Hon. Secretaries: Dr. R. E. Thomas, 11, Darlington-place, Bath; Dr. A. Neville Cox, 21, Cornwall-gardens, Preston Park, Brighton.

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THE BRITISH SOCIAL HYGIENE COUNCIL

(LATE NATIONAL COUNCIL FOR COMBATING VENEREAL DISEASES).

THE British Social Hygiene Council held their tenth annual meeting on July 9th in the Robert Barnes Hall of the Royal Society of Medicine. Sir Auckland Geddes delivered the presidential address.

Annual Meeting.

The President, in his opening remarks, paid a tribute to his predecessor, Lord Trevethin, who had done so much to combat venereal disease. He went on to point out the unusual interest of the occasion; the Council was now looking back over 11 years of activity and difficulty during which great progress had been made. Between the years 1920 and 1924 the numbers of new cases of syphilis at the treatment centres had fallen from 48,000 to 22,000, while the number of attendances had risen from under 1,500,000 to 1,645,000. It was clear from these figures and others that venereal disease had been combated in this country with increasing success, though the end was not yet in sight. The British Social Hygiene Council, coöperating with the Ministry of Health and the local authorities, had done a great deal towards this result. In order to determine the aims of the Council for the future it was necessary to consider what the reduction of venereal disease would mean not only for the present generation but for posterity. The figures quoted showed that the number of new infections had definitely diminished, so that every unborn child had a proportionately *greater chance of escaping infection.* The Council looked forward over a vast field of effort, and while *they saw clearly that medical work against venereal* disease was profoundly important and was progressing rapidly, yet the *problem* had many other aspects. There was no group of diseases in which medical, social, and moral problems were *so inextricably* interwoven, and medicine could not achieve victory over venereal disease *by itself.* The change in their title showed that the Council had greatly enlarged their scope and they now aimed to preserve and strengthen the family. It was very necessary in these days to impress upon the conscience of the people that the family was the basic social unit. No one who took thought for the future of the country could fail to realise that the foundation of its greatness was the health of its stock, and so the British Social Hygiene Council appealed to all the citizens of the Empire and of other countries to secure that future generations should be uncontaminated by a preventable and curable disease.

The Council aimed at promoting a high standard of sex conduct. Sexual morality was closely connected with housing, and the horrible conditions under which human beings were herded together went far to explain the present low standard of morality. The Council joined hands with all who worked to improve the conditions of life, housing, recreation, and the whole environment of those who were compelled from poverty to live under conditions sometimes too dreadful to describe. The medical attack must be strong, thorough, and frank, but they would have to make every effort to improve the lives of the people.

The Viscount Illingdon, a Vice-President of the Council, and Chairman of the Indian Council, pleaded for an extension of their work in the British Empire and particularly in India, which contained three-quarters of the Empire's population and where the high incidence of venereal disease was very serious. He thanked the Indian Medical Services for the work they had done in fighting venereal disease in India and hoped that the Government departments would assist in every possible way to eliminate it, though he realised that they had to contend with great difficulties.

Mrs. Garlin Spencer, a Director of the Board of the American Social Hygiene Association, described the evolution of similar social work in America.

Official Banquet.

In the evening a dinner was held at the Hotel Cecil to celebrate the successful results of 11 years' work and to initiate the broader policy. After the loyal toasts had been honoured the health of the British Social Hygiene Council was proposed by Lord Merrivale, President of the Divorce Court, who spoke of the "conspiracy of silence" which had surrounded the "social evil" in his youth and of the courage with which the present generation was breaking that silence and attacking that evil. He saw in this new attitude, reflected in the new name of the Council, a possibility of success that had not existed in the old days.

Sir Auckland Geddes, responding to the toast, recalled the national stocktaking in the days of the war and the realisation of the heavy toll venereal disease was then taking of the country's health, strength, and vitality.

The health of the guests was proposed by Mr. Greaves Lord, K.C., M.P., in the absence of Mr. J. Wheatley, M.P. He said that the greatness of England depended on the performance by each generation in turn of its duty to posterity, and no greater work for the future could be found than that of the Council of Social Hygiene.

Surgeon Vice-Admiral J. Chambers, Medical Director-General of the Navy, in responding, gave a brief account of the very successful results of instruction in the home water fleet and the great fall in the incidence of venereal disease in the mercantile marine. The reports from foreign waters, especially the Far East, were less satisfactory.

The toast of the "Associated Organisations" was proposed by Mrs. Scharlieb, M.D., who described the correlation of the work in England, America, Canada, Australia, and South Africa. Mrs. Scandrett (South Africa), Mrs. Anna Garlin Spencer (America), and Dr. Kendal Bates (Canada) replied, and the proceedings concluded with the health of the President, proposed by Mr. E. B. Turner.

SOCIETY FOR THE PREVENTION OF VENEREAL DISEASE.

The sixth annual general meeting of the Society for the Prevention of Venereal Disease was held at 12, Stratford-place on July 8th. The President of the Society, Sir Auckland Geddes, occupied the chair, and said there had been a very great reduction in venereal disease, amounting to nearly 50 per cent., within the last five years. He did not think any one organisation could claim that this reduction was the result of their labours alone, for all who had taken part in attempting to educate the people as to the importance and dangers of venereal disease and in teaching the public how to prevent the disease might say they had contributed to this great improvement. He said that he believed that fusion between the British Social Hygiene Council and the Society for the Prevention of Venereal Disease was undesirable because, although both the societies had accepted the Trevethin report, they had accepted it with quite different emphasis laid upon the different recommendations. He thought that when dealing with such a subject as venereal disease it was inevitable that those at the one extreme of thought would find it impossible to understand the point of view of those at the other extreme of thought, although both extremes and those between them were working for the same end. He considered that the Society for the Prevention of Venereal Disease had got hold of a very important part of the work which has to be done. What they desired to see was that the causal organisms of the different diseases should be destroyed whenever and wherever they might be found, and that this matter should be dealt with unsentimentally, and though there was a wide field for coöperation with those who laid the emphasis on the moral and emotional side, an attempt to get all who are working for the prevention of venereal disease into one society would result in a great loss. In the belief that the continuance of the two organisations is good and that it is really better than fusion, he had, after careful consideration, accepted the position of President not only of this Society but of the other society, believing that in that way, although the societies continued as separate and independent bodies, it would be possible to present a united front to the Government or the Department of State concerned. He thought that it would be wise for the Society to concentrate upon getting a definite reply from the Ministry of Health in the coming months, and he proposed that the resolution before the meeting should be laid before the Government in the autumn in the following terms:—

> "That this meeting with great respect urges the Government to give effect without further delay to the recommendations contained in the Trevethin Report, which the Minister of Health has stated have been accepted in principle, and further begs to call the attention of the Minister of Health to the resolution submitted to the Ministry of Health at the annual general meeting of the Society in July, 1924, requesting the allocation to the Society for the Prevention of Venereal Disease of an equitable proportion of any sum set aside for the education of the public regarding venereal disease and its prevention, to which no reply has yet been received."

Mr. Wansey Bayly, honorary secretary of the Society, reported the work of the Society during the past year, and said that a new situation had arisen owing to Sir Auckland Geddes having accepted also the presidency of the British Social Hygiene Council, but their Society would do their best to help him in this new situation. Important progress had been gained during the last year by Sir Auckland Geddes's double appointment and by the acceptance of the principle of immediate self-disinfection by the British Social Hygiene Council. He added that the Ministry of Health had acknowledged that the evidence of witnesses before the Trevethin Committee was available for reference or publication.

Mr. Harry Machin presented the financial report and annual audit.

Lady Askwith, in seconding the resolution, said she thought many of the members of the Society would agree that Sir Auckland Geddes was right in maintaining that fusion between the two societies was not possible or desirable, and she was also sure that there would be nobody who did not feel perfectly safe in the hands of Sir Auckland Geddes as President of both organisations.

Mr. Basil Peto, M.P., in supporting the resolution, expressed his pleasure in hearing that the President had also taken the position of President of the other society, and he entirely agreed with the conclusion reached that fusion would not have been a source of strength, but the best possible liaison between the two societies was to have one head for both. It was, he reminded the audience, two years since the committee presided over by Lord Trevethin reported, but no steps had been taken to carry out what their Society regarded as the most important part of the report, that dealing with the sale of the necessarily simple preventive disinfectants at chemists' shops.

Mr. A. J. Bennett, M.P., said that the Society could not expect to obtain all their revenue from a very limited number of persons, and that it was only right they should try to get funds from the public.

The resolution was put to the meeting and carried unanimously.

CONVENTION OF ENGLISH-SPEAKING OPHTHALMOLOGICAL SOCIETIES,

LONDON, JULY 14TH–17TH.

OPENING SESSION.

THE formal opening of the Convention took place in the Memorial Hall, University College, on Tuesday morning, when speeches were delivered by Mr. Neville Chamberlain, Minister of Health, and Mr. Houghton, the American Ambassador.

Addresses of Welcome.

The Minister of Health first referred to the hiatus produced in the holding of large, and especially international, congresses by the Great War, and said that though the members of this Congress would regret the absence of the wider scope and the more varied treatment which would be derived from the attendance of delegates from all over the world, there was some compensation in the fact that the language which would be used would be understood by all. He alluded with satisfaction to the striking advances which had been made in ophthalmology in the last 70 years, particularising the discoveries relating to the powers of accommodation and the accuracy of the instruments now available. He also referred to the great attention being given to the eyesight of children, and the energy with which ophthalmic clinics, 482 in number, were being conducted. Such attention was increasingly necessary with the ever augmented stress and hustle of the life of cities. He warmly commended the spirit which had resulted in the organisation of this Congress, and which would bring about improved knowledge in regard to the preservation of the function of the most precious of all the special senses.

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Mr. Treacher Collins then delivered his presidential address. His purpose, he said, was simply to present a few historic facts which, aided by imagination, would enable a peep to be taken through a hole in the curtain of the present and gaze at some wonders that might come to pass. For the elimination of disease it was essential to know everything concerning the working mechanism of the organism and the varying conditions of its environment; and owing to recent work it had now become possible to contemplate the elimination of some eye diseases in the human organism. In *leprosy* the eyes were frequently affected and the sight destroyed. Probably many cases of the disease were brought there by the returning Knights Templar and their retinue, among whom lack of cleanliness was regarded as a virtue. To the segregation of the affected was probably due the absence of more serious spread. But there were still 300,000 cases of leprosy in the British Empire.

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title showed that the Council had greatly enlarged their scope and they now aimed to preserve and strengthen the family. It was very necessary in these days to impress upon the conscience of the people that the family was the basic social unit. No one who took thought for the future of the country could fail to realise that the foundation of its greatness was the health of its stock, and so the British Social Hygiene Council appealed to all the citizens of the Empire and of other countries to secure that future generations should be uncontaminated by a preventable and curable disease.

The Council aimed at promoting a high standard of sex conduct. Sexual morality was closely connected with housing, and the horrible conditions under which human beings were herded together went far to explain the present low standard of morality. The Council joined hands with all who worked to improve the conditions of life, housing, recreation, and the whole environment of those who were compelled from poverty to live under conditions sometimes too dreadful to describe. The medical attack must be strong, thorough, and frank, but they would have to make every effort to improve the lives of the people.

The Viscount Illingdon, a Vice-President of the Council, and Chairman of the Indian Council, pleaded for an extension of their work in the British Empire and particularly in India, which contained three-quarters of the Empire's population and where the high incidence of venereal disease was very serious. He thanked the Indian Medical Services for the work they had done in fighting venereal disease in India and hoped that the Government departments would assist in every possible way to eliminate it, though he realised that they had to contend with great difficulties.

Mrs. Garlin Spencer, a Director of the Board of the American Social Hygiene Association, described the evolution of similar social work in America.

Official Banquet.

In the evening a dinner was held at the Hotel Cecil to celebrate the successful results of 11 years' work and to initiate the broader policy. After the loyal toasts had been honoured the health of the British Social Hygiene Council was proposed by Lord Merrivale, President of the Divorce Court, who spoke of the "conspiracy of silence" which had surrounded the "social evil" in his youth and of the courage with which the present generation was breaking that silence and attacking that evil. He saw in this new attitude, reflected in the new name of the Council, a possibility of success that had not existed in the old days.

Sir Auckland Geddes, responding to the toast, recalled the national stocktaking in the days of the war and the realisation of the heavy toll venereal disease was then taking of the country's health, strength, and vitality.

The health of the guests was proposed by Mr. Greaves Lord, K.C., M.P., in the absence of Mr. J. Wheatley, M.P. He said that the greatness of England depended on the performance by each generation in turn of its duty to posterity, and no greater work for the future could be found than that of the Council of Social Hygiene.

Surgeon Vice-Admiral J. Chambers, Medical Director-General of the Navy, in responding, gave a brief account of the very successful results of instruction in the home water fleet and the great fall in the incidence of venereal disease in the mercantile marine. The reports from foreign waters, especially the Far East, were less satisfactory.

The toast of the "Associated Organisations" was proposed by Mrs. Scharlieb, M.D., who described the correlation of the work in England, America, Canada, Australia, and South Africa. Mrs. Scandrett (South Africa), Mrs. Anna Garlin Spencer (America), and Dr. Kendal Bates (Canada) replied, and the proceedings concluded with the health of the President, proposed by Mr. E. B. Turner.

SOCIETY FOR THE PREVENTION OF VENEREAL DISEASE.

THE sixth annual general meeting of the Society for the Prevention of Venereal Disease was held at 12, Stratford-place on July 8th. The President of the Society, Sir Auckland Geddes, occupied the chair, and said there had been a very great reduction in venereal disease, amounting to nearly 50 per cent., within the last five years. He did not think any one organisation could claim that this reduction was the result of their labours alone, for all who had taken part in attempting to educate the people as to the importance and dangers of venereal disease and in teaching the public how to prevent the disease might say they had contributed to this great improvement. He said that he believed that fusion between the British Social Hygiene Council and the Society for the Prevention of Venereal Disease was undesirable because, although both the societies had accepted the Trevethin report, they had accepted it with quite different emphasis laid upon the different recommendations. He thought that when dealing with such a subject as venereal disease it was inevitable that those at the one extreme of thought would find it impossible to understand the point of view of those at the other extreme of thought, although both extremes and those between them were working for the same end. He considered that the Society for the Prevention of Venereal Disease had got hold of a very important part of the work which has to be done. What they desired to see was that the causal organisms of the different diseases should be destroyed whenever and wherever they might be found, and that this matter should be dealt with unsentimentally, and though there was a wide field for coöperation with those who laid the emphasis on the moral and emotional side, an attempt to get all who are working for the prevention of venereal disease into one society would result in a great loss. In the belief that the continuance of the two organisations is good and that it is really better than fusion, he had, after careful consideration, accepted the position of President not only of this Society but of the other society, believing that in that way, although the societies continued as separate and independent bodies, it would be possible to present a united front to the Government or the Department of State concerned. He thought that it would be wise for the Society to concentrate upon getting a definite reply from the Ministry of Health in the coming months, and he proposed that the resolution before the meeting should be laid before the Government in the autumn in the following terms:—

> "That this meeting with great respect urges the Government to give effect without further delay to the recommendations contained in the Trevethin Report, which the Minister of Health has stated have been accepted in principle, and further begs to call the attention of the Minister of Health to the resolution submitted to the Ministry of Health at the annual general meeting of the Society in July, 1924, requesting the allocation to the Society for the Prevention of Venereal Disease of an equitable proportion of any sum set aside for the education of the public regarding venereal disease and its prevention, to which no reply has yet been received."

Mr. Wansey Bayly, honorary secretary of the Society, reported the work of the Society during the past year, and said that a new situation had arisen owing to Sir Auckland Geddes having accepted also the presidency of the British Social Hygiene Council, but their Society would do their best to help him in this new situation. Important progress had been gained during the last year by Sir Auckland Geddes's double appointment and by the acceptance of the principle of immediate self-disinfection by the British Social Hygiene Council. He added that the Ministry of Health had acknowledged that the evidence of witnesses before the Trevethin Committee was available for reference or publication.

Mr. Harry Machin presented the financial report and annual audit.

Lady Askwith, in seconding the resolution, said she thought many of the members of the Society would agree that Sir Auckland Geddes was right in maintaining that fusion between the two societies was not possible or desirable, and she was also sure that there would be nobody who did not feel perfectly safe in the hands of Sir Auckland Geddes as President of both organisations.

Mr. Basil Peto, M.P., in supporting the resolution, expressed his pleasure in hearing that the President had also taken the position of President of the other society, and he entirely agreed with the conclusion reached that fusion would not have been a source of strength, but the best possible liaison between the two societies was to have one head for both. It was, he reminded the audience, two years since the committee presided over by Lord Trevethin reported, but no steps had been taken to carry out what their Society regarded as the most important part of the report, that dealing with the sale of the necessarily simple preventive disinfectants at chemists' shops.

Mr. A. J. Bennett, M.P., said that the Society could not expect to obtain all their revenue from a very limited number of persons, and that it was only right they should try to get funds from the public.

The resolution was put to the meeting and carried unanimously.

CONVENTION OF ENGLISH-SPEAKING OPHTHALMOLOGICAL SOCIETIES,

LONDON, JULY 14TH–17TH.

OPENING SESSION.

THE formal opening of the Convention took place in the Memorial Hall, University College, on Tuesday morning, when speeches were delivered by Mr. Neville Chamberlain, Minister of Health, and Mr. Houghton, the American Ambassador.

Addresses of Welcome.

The Minister of Health first referred to the hiatus produced in the holding of large, and especially international, congresses by the Great War, and said that though the members of this Congress would regret the absence of the wider scope and the more varied treatment which would be derived from the attendance of delegates from all over the world, there was some compensation in the fact that the language which would be used would be understood by all. He alluded with satisfaction to the striking advances which had been made in ophthalmology in the last 70 years, particularising the discoveries relating to the powers of accommodation and the accuracy of the instruments now available. He also referred to the great attention being given to the eyesight of children, and the energy with which ophthalmic clinics, 482 in number, were being conducted. Such attention was increasingly necessary with the ever augmented stress and hustle of the life of cities. He warmly commended the spirit which had resulted in the organisation of this Congress, and which would bring about improved knowledge in regard to the preservation of the function of the most precious of all the special senses.

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With regard to *small-pox* three-fourths to one-half of the indigent blind applying for relief in the last century in this country lost their sight through this disease, but in 1922 the Departmental Committee on the causes and prevention of blindness could only discover six cases due to it in asylums for the blind.

Much of this improvement was due to the greater care now paid to the eyes in critical pyrexial diseases, as well as to the reduction in the number of cases of small-pox.

Speaking of *ophthalmia*, Mr. Collins mentioned the work done on the modes of transference of the disease. The causal organisms did not produce spores, and drying killed them, hence infection was only likely to occur while the eyes were in a moist state. No specific microbe had been identified with the worst form of ophthalmia—namely, trachoma—but it was probable that this virus also was killed by drying; and general measures based on this had largely eliminated this disease from the British Army and from the Poor-law schools of London, where at one time it was rife. A tribute to the cleanliness of the modern British soldier was that the Egyptian Expeditionary Force fought its way along the same route as did the trachoma-infested Napoleonic troops without contracting it, but when large numbers of Turks were taken prisoner they were found to be severe sufferers from trachoma with corneal complications. At an inspection made by Nettleship of the Poor-law schools of London in 1874, 42 per cent. were found to have granular lids or trachoma, but in 1896 Sydney Stephenson found the figure reduced to 4·91 per cent. The disease was virulently contagious, and liable to rapid spread in favouring conditions.

The protean manifestations of *syphilis* were one of the commonest causes of eye disease in this country; the departmental committee already referred to considered that from 10 per cent. to 15 per cent. of the blindness of the country was due to this disease. Mr. Collins did not share a hopeless view as to the elimination of syphilis among the community; in this contest between man and the spirochæte the odds were undoubtedly on man. An encouraging stage was reached when the appointment of the Royal Commission on the subject broke down the conspiracy of silence which until then had surrounded it. In 1920 105,185 infected people presented themselves at the official treatment centres, and in 1923 the number had declined to 73,013; and a similar fall had occurred in other countries where similar facilities were provided. He thought that in respect of the wilful transfer of these diseases to others the punishment should be made to fit the crime—namely, incarceration and treatment until the convicted person could be declared free from the infection.

Concerning *iritis* in the last 25 years a great change of view as to the ætiology had taken place. What had been described as "rheumatic iritis" was very rarely associated with acute articular rheumatism; the commonest form of joint affection found in association with iritis was gonorrhœal, a disease which was present in 15 per cent. of the cases.

The recognition of *metastatic septic infection* as a cause of iritis was largely due to the work of Mr. William Lang, who found that in 37 per cent. of his cases of iritis pyorrhœa was the sole ascertainable cause; certainly rapid recovery of the iritis followed removal of the affected foci, no other treatment but heat and atropine having been used. If more mouths were kept clean and if it was realised that a gold-crowned tooth could harbour bad septic foci, the total amount of intra-ocular inflammation would be materially reduced.

It was not possible to say as a result of statistics whether *tuberculous* eye disease was diminishing, but both here and in America there had been noted a steady reduction in the amount of respiratory tuberculosis, and the death-rate from it showed a bigger drop than in any other period of which there were authentic records. He alluded to the great improvement in the condition of cases of tuberculous eye disease when they were removed from their homes to Swanley Ophthalmia Schools, and this he attributed to the sunshine and out-of-door life, and the good food and ample playing spaces.

The elimination of *phlyctenular* ophthalmia and keratitis was a social problem, being bound up with over-population and living in congested conditions. He referred to the importance of the diet including fat-soluble A vitamin, especially in the obviation of xerophthalmia and keratomalacia, the latter, however, being but a rare disease in this country.

Certain *hereditary diseases of the eye* seemed to be chiefly due to a tissue degeneration; such was retinitis pigmentosa, a condition which was very resistant to every known treatment. And it was regrettable that the parents suffering from this disease were the reverse of sterile. It would be a proper course to advise sufferers who had married to refrain from bearing progeny.

Myopia Mr. Collins considered to be largely the outcome of our present system of education. It seemed altogether unnatural that the young growing (human) animal should be compelled to spend hours daily poring over books, often in artificial light, and educational authorities were remarkably slow in taking advantage of other educative means, such as the epidiascope, oral teaching to a greater extent, broadcasting, and the use of the lantern. Lessons in geography, for instance, could be converted into a veritable voyage of discovery for the young mind.

In conclusion the President referred to the work which had been done in the seven years of its existence by the Council of British Ophthalmologists, which was formed to assist Government Departments and other persons in regard to its special subject. The United States now had a parallel body with very similar aims. He also referred to the work of the new International League of Red Cross Societies, and to that done by the Health Department of the League of Nations, the latter having conducted investigations likely to have far-reaching results. Disease, he said, was the common foe of all nations, and active coöperation on the part of all of them was required in order to build up a more moral, more intellectual specimen of *Homo sapiens* than that now striding the earth, pluming himself on being the lord of creation.

BRITISH EMPIRE CANCER CAMPAIGN.

ANNUAL MEETING.

The second annual report of the Grand Council of the British Empire Cancer Campaign was presented by the chairman, Viscount Cave, at a meeting held at the House of Lords on Monday, July 13th, when a message was read from the Duke of York, President of the Campaign, wishing success to its labours. The campaign, which came into existence in the spring of 1923, has had at its disposal a sum of just over £100,000, which has enabled the Council to assist existing cancer research institutions to maintain their work at maximum efficiency as well as to initiate and devise fresh lines of research. A concerted effort is being made to obtain trustworthy statistics of cancer from outlying parts of the Empire. Help is being freely given to expensive and difficult research in connexion with the causation and treatment of cancer by means of radium, X and other rays, carried on jointly with the Radiology Committee of the Medical Research Council. Radium to the value of £5000 has been purchased and put at the disposal of this joint committee, while the Radon Centre at the Middlesex Hospital has undertaken the production and supply of radium emanation. Lord Cave concluded his review of the year's activities with the warning that only by continuous and patient effort can knowledge be increased and results achieved. At the Council meeting which followed Dr. J. A. Murray, of the Imperial Cancer Research Fund, and Lieut.-Colonel A. B. Smallman, secretary to the Departmental Committee on Cancer, were invited to join the Intelligence Committee of the Campaign.

The report contains a summary of the work of the various committees of the Campaign. During the year the Financial Committee announces an income from donations and collections of £31,168, plus £2600 bank interest, out of which £2380 have been used up in administration and £3361 in appeals, a percentage—

be it noted—of only 9·2 of the total funds raised during the period. £280 have gone to travelling and incidental expenses of committees and lecturers, while grants for research work have totalled £10,170. Grants are made on the recommendation of a Scientific Advisory Committee appointed jointly by the Royal Society, the Medical Research Council, and the Cancer Campaign. Institutions have benefited as follows: £3725 to the Medical Research Council (Radon Centre at Middlesex Hospital), £6900 to the Middlesex Hospital (Cancer Research Department), £5000 to the Cancer Hospital Research Institute, £1095 to St. Bartholomew's Hospital (Radiological Cancer Research Department), £1000 to Christie Hospital, Manchester, £600 to St. Mark's Hospital, London, £200 to Coombe Lying-in Hospital, Dublin, £1500 to the Tropical Disease Prevention Association, and £5000 to the purchase of 800 mg. of radium for cancer research divided between St. Bartholomew's Hospital, St. Peter's Hospital, and the Medical Women's Federation. Individual grants have been made to Dr. Thomas Lumsden (Lister Institute), Dr. Malcolm Donaldson, Dr. Louis Sambon, Dr. J. C. Mottram (Radium Institute), and Mr. I. Hieger, B.Sc. (Cancer Hospital Research Department).

A notable change has been effected in the organisation of cancer research at the Middlesex Hospital, where the scientific departments have been invited to initiate cancer research along their own special lines under the supervision of Prof. J. McIntosh (pathology), Prof. S. Russ (physics), and Prof. E. C. Dodds (biochemistry). At the Cancer Hospital a scheme of work has been initiated under the five headings of: (1) experimental production, (2) clinical and surgical pathology, (3) immunity experiments, (4) experiments in chemotherapy, (5) statistical inquiries. An interesting research has been in progress to test the effect of prolonged administration of food preservatives on animals; so far small amounts of boron, tin, and copper oft repeated have had no appreciable ill effect on mice and rats. At St. Bartholomew's Hospital a special X ray research department has been set apart for investigating malignant disease of the breast, the upper air passages and pharynx, and the uterus. At Manchester a local cancer committee will shortly take over the general management of research in the various institutions; a questionnaire has been issued in order to trace the history of all cancer patients in the city. At St. Mark's Hospital the outcome of some recent work suggests the important part played by lymphoid follicles of the intestine in the protection of the body against cancer. Dr. Lumsden's work at the Lister Institute on an antiserum, selective for particular cancer cells, is familiar to our readers and is being continued. The grant to the Tropical Disease Prevention Association for investigation of cancer in relation to parasites carries the proviso that cancer material, both animal and human, and specimens of parasites shall be brought back to this country for investigation.

The report, which contains much else of interest, bears striking testimony to the wide range of inquiry instituted by the British Empire Cancer Campaign, the address of which is 19, Berkeley-street, London, W. 1.

THE BATEMAN APPEAL.

As already explained in THE LANCET, it has been felt that material assistance ought to be offered to Dr. Bateman to meet the legal expenses of his successful appeal and to make good the deficiency in his professional income. Accordingly the Bateman Fund has been opened and lists of contributions have appeared in recent issues. We have received additional contributions as follows:—

	£	s.	d.
Already received and acknowledged ..	493	3	0
Drs. Gerrard, Bickford, and Cloake ..	3	3	0
Dr. E. W. Dewey	1	1	0
Dr. Mary Kidd	0	10	0
Dr. Mohammed Eid.	0	10	0
	£498	7	0

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Heart Cinematography.

PHYSICIANS are finding that disorder of rhythm is an increasingly valuable guide in the diagnosis and treatment of heart trouble, and its value is proportioned to the accuracy with which it can be observed. Auscultation is useful, but some method of recording the movements is essential for precise observation. The thoracic cage hides a living heart from sight, and few practitioners have time to study artificial contractions in the laboratory. Mr. Lutembacher's method of filming the isolated and perfused heart therefore fills a pressing need. He has already used his device to show his students the more common rhythmic disorders and to help them to understand the electro-cardiographic curves taken at the same time as the moving photograph. The next step is to use this method to examine the direct action of cardiac remedies. Marey has already used it to observe the contraction of voluntary muscles.

Narcotic Poisoning.

Dr. Ch. Achard recently reported to the Academy of Medicine five cases of suicidal narcotic poisoning of which two were fatal. Four were due to dial and one, which recovered, to veronal. A clinical phenomenon worthy of note was the very marked muscular hypotonus observed in these cases, contrasting with the brisk reflexes, Babinski's sign even being obtained. In one case catatonic attitudes appeared; in another a syndrome recalling that of disseminated sclerosis, slurring speech, ataxia, fine intention tremor, and nystagmus; in a third case the pupils were fixed. The growing frequency of these cases of poisoning proves the necessity for regulating the sale of narcotic drugs.

The Efficacy of Vaccination and the Virulence of Small-pox.

Dr. Alcay, of Nimes, has just published some important statistics of the epidemic of small-pox in Switzerland in 1921. The form of the infection was mild and vaccination was completely protective. The German cantons, where vaccination is voluntary, were all swept by the disease, those where it is obligatory escaped altogether. Emergency vaccination measures were successful in stamping out the epidemic wherever they were applied. Such evidence of the value of compulsory vaccination ought to have persuaded the Federal Council to impose it on the whole country, but the Government, remembering the difficulties encountered in a similar attempt in 1882, and also considering the mildness of the infection, only ordered vaccination for certain groups of the population. These half measures cost Switzerland several thousands of sick people and a few deaths, but the results would have been very grave if the epidemic had had the usual severity of small-pox.

Dr. A. Netter has recently drawn the attention of the Academy of Medicine to the frequency of small-pox and the tendency of the disease to take a benign form. The condition seemed about to disappear from civilised countries, but during the last few years has shown an unexpected recrudescence, particularly in Switzerland and England. In the former country only 14 cases were registered between 1915 and 1920, but the numbers rose abruptly to 596 in 1921, 1150 in 1922, and 2145 in 1923. They fell again in 1924 to 1245, and in the first five months of 1925 to 150. In England and Wales 7 cases were recorded in 1917 and 63 in 1918. In 1919, 1920, and 1921 there were 311, 280, and 330 cases respectively; in 1922 there were 973, in 1923 2054, and in 1924 3395. Already 3008 notifications have been received for 1925. In both these countries anti-vaccination influence has been at work. In Switzerland it has succeeded in removing the regulation of vaccination from the hands of the Federal Government to the cantonal authorities.

Since 1888 there has been no compulsory vaccination in most of the German cantons, and these cantons showed (from 1921–23) a small-pox incidence of 1910 per 1000, while the incidence in the French cantons was 24. Although the number of cases has increased so greatly the number of deaths, always less than 1 per cent., has dropped sometimes to less than 1 per 1000. Small-pox has lost its virulence; even among the non-vaccinated it is milder than it used to be among the vaccinated.

The American Medical Week in Paris.

Nearly 500 physicians and surgeons from the United States and Canada, many of them accompanied by their wives, are now visiting the hospitals and laboratories of Paris. The week was inaugurated in the great amphitheatre of the Faculty of Medicine, under the presidency of Mr. Herriot, President of the Chamber of Deputies, supported by Dr. Charles Mayo, of Rochester, and Mr. Peck, of Chicago. Among those present on the platform were the Minister of Public Instruction and of Hygiene, the Director of Higher Education, the Rector of the University of Paris, the Dean of the Faculty, and Mr. Tuffier, President of the organisation committee. Many congratulatory speeches were made. On leaving the building the members of the congress proceeded to the Arc de Triomphe to pay homage at the tomb of the unknown warrior. In the afternoon there was a reception at the Hôtel de Ville, when Mr. Guillaumin, President of the Municipal Council, conveyed a welcome from the City of Paris.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Prof. Bier on Homœopathy.

Prof. Bier, the celebrated surgeon of Berlin, has caused a considerable sensation in medical circles by an article to the *Münchener Medicinische Wochenschrift*, in which he recommended the study of homœopathy. He said that the homœopathic doctrine had in some respects proved true; the treatment of inflammation by artificial congestion instead of the application of cold devised by himself and counter-irritation, therapy were based on the theory of *similia similibus*. He had himself lately found that bronchitis caused by the administration of ether could be successfully treated by subcutaneous injections of ether; the application of hot air to a burn produced a rapid development of new epithelium. With regard to homœopathic dosage of certain substances, he had found from personal experience that one drop of iodine dissolved in a glass of water would abort the colds to which he himself was liable. In his hospital furunculi were treated with very small doses of sulphur, whereas it was known that large doses produced furunculi. Hahnemann's advice to ascertain the reaction of a healthy person to a certain remedy before deciding on the dosage in any disease he thought quite reasonable. Prof. Bier's manifesto was received enthusiastically by the medical and lay adherents of homœopathy. The homœopathic journals reproduced it with sensational headings such as "celebrated professor converted to homœopathy" or "Hahnemann's works recommended by University Professor," &c. Copies of the article were distributed in meetings of the homœopathic societies and the homœopaths renewed their old demand that chairs of homœopathy be instituted at the universities. The medical press, commenting on the whole affair, stated that by reopening a discussion which had apparently been closed many years ago Prof. Bier had done great damage, especially to the younger generation, whose therapeutical views were not quite settled. To combat that damage the *Münchener Medicinische Wochenschrift* published a reply to Prof. Bier by Prof. Henbuer, the well-known Professor of Pharmacology at Göttingen University; the *Deuts* *edizinische Wochenschrift* reprinted articles w ppeared in former issues by the late Prof alin with that question. The Berlin Society for Internal Medicine convoked a medical meeting in the Langenbeck-Virchow House, Prof. His being in the chair. The great assembly hall was crowded as never before, more than 1200 medical men and women being present. Strict control was carried out at the entrance to prevent laymen from entering, the daily papers having drawn the attention of the public to the meeting. Before the meeting Prof. Müller, of Marburg, gave a report of the history of homœopathy, Prof. Heubner, of Göttingen, spoke on the differences between the dogma of homœopathy and experimental natural science. In the discussion Prof. Bier said that medicine was more than a natural science; it ought to be regarded as an art where intuition is essential. Medicine had often been advanced by the intuition of men of genius, even if their views had not been in accordance with natural science. According to him, Hahnemann was such a genius, although his works must be regarded as a mixture of the highest wisdom and the greatest folly. He had expected to be severely attacked by his professional brethren. He was far from being converted to homœopathy, as had been suggested both in the press and in letters received by him, but he only wished to draw attention to the fact that there was some truth in homœopathy. It was useless to treat its adherents with contempt, rather should harmony be brought about between homœopathy and allopathy. With the exception of some homœopaths, all the speakers combated Prof. Bier's views. The meeting lasted about four hours and ended late in the night.

Lawsuits between Medical Men and Locum Tenents.

The great medical union known as the Hartmann-Bund, formerly Leipziger Verband, provides its members with locum tenents in cases of absence or illness, a work done in England by private medical agencies. Candidates to such posts had to subscribe a declaration that they would abstain for a couple of years from settling in the town or district of their employer. This declaration led in many instances eventually to lawsuits where it was not observed by the locum tenens, who settled down in his former employer's neighbourhood and did him grave damage. Law courts had given different verdicts in the matter, some stating that such declarations were not in accordance with the law, whilst others had found for the plaintiffs. By a recent judgment of the High Court of Justice the matter is now definitely settled. It is decided that the declaration must be regarded as illegal; as the medical profession is a scientific institution controlled and protected by the State for the welfare of the population, members of that profession cannot be denied the exercise of their calling through private agreements on merely economical grounds. This judgment is obviously not in accordance with the present economical condition of the profession. Doctors must have recourse to such private agreements in order to protect their economical interests, although they were blamed in so doing by the High Court. Medical men do not see the meaning of "State protection" in a country where anybody is allowed to give medical advice and charge fees for it without being medically qualified provided he does not make use of a recognised medical title.

Doctors' Income-tax.

In a recent leading article in THE LANCET, entitled "Penalising Medical Efficiency,"[1] it is stated that according to a decision of the High Court a county medical officer is not entitled to deduct the amount of his subscriptions to medical societies from his income-tax assessment. It may be of interest to English readers to learn what the law and the regulations are in Germany concerning the items to be deducted by a medical man. The German High Court has lately decided that every expense which served to keep a medical man abreast with new scientific research and to increase his knowledge in order to apply new methods of treatment may be deducted. Those expenses include subscriptions to medical journals, membership of medical societies, travels to medical congresses, and post-graduate courses. A certain amount may be deducted annually for the amortisation of the cost of a medical library. According to a later decision the subscriptions, but curiously not the entrance fees, to professional societies having no scientific but only economical aims are deductible. Like other professional men a medical man is entitled to deduct from his net income that part of his house rent which covers the rooms used solely for the conduct of his practice—viz., the consulting and the waiting-room and the expenses for heating and lighting them, the depreciation of furniture, of instruments, and the telephone. If a servant is employed exclusively for the conduct of practice, the total salary may be deducted; if the servant does other housework also, a part of it only. The expenses entailed in keeping a carriage, a motor, or a bicycle together with the salary of the driver or chauffeur are also exempt, and it does not matter if the medical man uses those vehicles occasionally for non-professional purposes, it being supposed that he would not have bought them except as a help in his practice. During the time of the depreciation of the currency, when it was impossible to fix those expenses, medical men had to deduct 25 per cent. of their net income for "professional expenses."

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[1] THE LANCET, June 6th, p. 1191.

Syphilis of the Stomach.

At a recent meeting of the Berlin Surgical Society Dr. Rumpel reported cases of gummata in the stomach lately operated on by him. He stated that such cases were very rare. Several forms of syphilitic affections of the stomach must be distinguished: (*a*) Gastritis with thickening of the wall of the stomach, caused by a proliferation of the submucosa; (*b*) gummata, multiple or single, which might become ulcerous and, like other ulcers, might lead to hæmorrhage and to perforation. The syphilitic ulcers, he said, had a smooth base covered with lardaceous matter. A reliable diagnosis was very difficult, but when symptoms of gastric ulcer were present without increase of gastric acid, syphilitic ulcer might be suggested. The administration of salvarsan was of no value for the diagnosis. In one instance the diagnosis had been made previous to the operation. Dr. Rumpel had operated upon two cases where, when the stomach had been opened a growth like cancer was found which on microscopical examination proved to be gumma. In the discussion Dr. Nordmann reported that he had operated upon three cases; a phlegmonous infiltration of the surroundings of the ulcers seemed to be characteristic. Two of his cases died, the other recovered, but afterwards died from aneurysm.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 4TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 66; scarlet fever, 1563; diphtheria, 830; enteric fever, 43; pneumonia, 690; puerperal fever, 39; cerebro-spinal fever, 5; acute poliomyelitis, 6; encephalitis lethargica, 57; continued fever, 3; dysentery, 4; ophthalmia neonatorum, 119. There were no cases of cholera, plague, or typhus fever notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 6 deaths from enteric fever, 51 from measles, 10 from scarlet fever, 65 from whooping-cough, 21 from diphtheria, and 30 from influenza. In London itself there were no deaths from influenza; deaths from whooping-cough numbered 12, and from diphtheria 5.

BOTANIC LABORATORY FOR BEDFORD COLLEGE.—The new Sargant Laboratory of Plant Physiology at Bedford College for Women, the only one of its kind in London, was opened on July 9th by Lord Justice Sargant. The money for the laboratory was bequeathed by his sister, the late Miss Alice Sargant, who was formerly a student and ardent admirer of Bedford College. The laboratory has a botanic garden attached to it.

Correspondence.

"Audi alteram partem."

THE RIVER AMAZON FOR TOURISTS.

To the Editor of THE LANCET.

SIR,—In the last few years the attractions of the Amazon have begun to interest a considerable number of tourists, and to those who have never visited this section of Brazil the trip from Pará to Manáos cannot fail to be of interest.

It has come to my notice that some British practitioners, on being consulted by their patients as to the advisability of making this trip, give warnings of the Amazon being a region of yellow fever, malaria, and swamps. In all justice to the Federal and State authorities such statements should be contradicted. Yellow fever became extinct in Pará after the anti-yellow fever campaign of Oswaldo Cruz in 1911, and the State of Amazonas has been recorded clean since the end of 1913.

When I arrived in Manáos in 1905 the situation was vastly different; then it was the case that most of the newly-arrived foreigners sooner or later suffered from "yellow jack"—I was an early victim—and malaria was rife all over the town. To-day all is changed and the tourist no longer excites the wonder of the Manauense, nor is the commercial traveller considered to be a brave man for venturing so far up the Amazon. It is a difficult matter, however, to eradicate the old idea of the Amazon being a death's hole; but the health of the foreigner is excellent, and I have only a couple of cases of malaria a year to deal with. Malarial fevers are common, certainly, but they are contracted in regions which the tourists never visit.

Manáos is only about 3·40 metres above sea-level and lies in lat. 3° 08′ 30″, and long. 59° 59′ 27″ west of Greenwich. The temperature, while not high for the tropics, is very constant and ranges between 75° and 95° F. in the hot season and 68° and 86° F. in the cooler months; the relative humidity is 63 per cent. to 70 per cent. The temperature in Pará is rather lower and there is more breeze. Both cities were provided with all modern advantages when the "black gold" of the Amazon (rubber) commanded high prices and favourable exchange, and, consequently, the drainage and water systems are good; there are excellent tramways and all the comforts of electric lighting and ventilating. Pará possesses a modern and cool hotel.

It is a matter of regret that more medical men do not visit this country of Wallace, Bates, and Spruce, for it is full of interest. I believe Sir John Bland-Sutton enjoyed his visit, although he did far more sightseeing and observing than the ordinary tourist. I think it would be wise to advise patients to wear clothing suitable for the warmer climate of the tropics—sun helmets are not required—and to keep to a hot weather dietary. This advice is necessary when they leave Pará for the trip up the Amazon to Manáos and encounter a greater humidity as well as leading a sedentary life for the four days on board ship until they arrive at Manáos and can step ashore at a miniature Liverpool landing stage for exercise and sightseeing. I do not recommend pulmonary tuberculosis cases making the tour, and patients with very high blood pressure should be warned not to exert themselves unduly during the hotter part of the early afternoon.

I am, Sir, yours faithfully,

H. WOLFERSTAN THOMAS,

Manáos Research Laboratory, Liverpool School of Tropical Medicine.

June 8th, 1925.

*** We may remind intending tourists of the promising field offered by the Amazon Valley for finding new drugs, *videlicet* annotation in our issue for July 4th.—ED. L.

THE PURSUIT OF PURE MILK.

To the Editor of THE LANCET.

SIR,—No one who has any knowledge of the conditions under which milk is produced, distributed, and consumed in this country can dispute the general conclusions of your article on "The Pursuit of Pure Milk." May I be allowed, however, as chief chemist and bacteriologist of the distributing firm responsible for the large portion of London's milk-supply, to controvert a suggestion contained in your remarks on pasteurisation, which may prove misleading. "The basal fact," says your article, "is that at the present time the bulk of the milk consumed in the large towns is pasteurised by processes which are uncontrolled as regards the temperatures reached or the time the milk is held at a high temperature." The implication here and in succeeding sentences is that pasteurisation is a purely casual process of heating, and the phrase "controlled pasteurisation," a few lines lower down in the article, is used seemingly as a synonym for "scientific pasteurisation," as distinct from the commercial significance of the term.

I should like to state categorically that the suggestion, so far as concerns the plants controlled by the United Dairies, Ltd., is entirely unjustified. The milk distributed by the firm's associated companies is pasteurised under a system of control which ensures its being submitted to an even temperature of 145° F. for half an hour. In their plants the holding tanks are provided with an automatic temperature recorder, which affords incontestable proof of the constancy of the heat to which the milk is subjected. An automatic device provides for the release of the milk from the tank at the end of half an hour.

Moreover, our inspectors conduct frequent examinations of the plants to ensure the cleanliness of the apparatus, and samples are taken at every stage of the process.

Milk can be made clean and safe by means of filtration, clarification, and pasteurisation, but milk producers in this or any other country have not yet reached that state of idealistic perfection when clean production will obviate the necessity for these dairy processes.

Until we reach this Utopian state of affairs, pasteurisation is the only method of maintaining a milk-supply which can be truthfully described as "safe." In fact, in such advanced dairying countries as Denmark, Sweden, and many of the United States of America, pasteurisation is compulsory.

It may remain questionable whether in the process of pasteurisation something is lost of the nutritive qualities of the milk, though my own researches have led me to the conclusion that the loss is negligible. What is beyond question is that safety—i.e., freedom from pathogenic organisms—must be our first consideration. In this connexion, with the coöperation of Prof. R. T. Hewlett, of London University, who is consulting bacteriologist to United Dairies, Ltd., I have conducted a series of tests over a period of many months with the most encouraging results. In every case where milk samples (taken from herds in all parts of the country and not from cows especially inoculated for our purposes) have been found tuberculous before pasteurisation, no trace of infection remained after the process.

United Dairies are doing their utmost in all ways to encourage healthy herds and clean production on the farms, but, of necessity, the bulk of this important work must fall to the Ministries of Agriculture and Health.

I may add that Prof. Hewlett desires me to say that he associates himself with all I have said in this letter.

I am, Sir, yours faithfully,
J. D. ROBERTS.

Analytical and Bacteriological Laboratories,
35, Little Russell-street, London, W.C.,
July 7th, 1925.

*** Our remarks referred to milk consumed in the large towns, not specifically to London, and we have yet to learn that the holder system of pasteurisation is applied throughout the country. The essential point is that, apart from control by Government regulation, it is open to anyone who supplies milk to alter the temperature to be employed or the length of time during which it is maintained, or to use or not to use a holder type of pasteuriser. The milk is not sold as "pasteurised" milk and therefore is not subject to inspection by the Ministry or the local authority. Such pasteurisation can properly be spoken of as uncontrolled. The effect of pasteurisation in retarding efforts to obtain a clean milk-supply is adequately dealt with by Dr. Savage in his special article.—ED. L.

THE ATTRACTIONS OF THE ROYAL NAVAL VOLUNTEER RESERVE.

To the Editor of THE LANCET.

SIR,—May I ask your assistance in calling the attention of the younger members of the medical profession to the attractions offered by service in the Royal Naval Volunteer Reserve?

The R.N.V.R. consists of seven divisions: London, Scottish, Tyne, Mersey, Bristol, Sussex, and Ulster. The establishment provides for 205 medical officers; of whom 50 are on List I. and the remainder on List II., and in addition 28 dental surgeons. Each category has to serve 28 days at sea during their first year of service and subsequently 14 days biennially either afloat in one of H.M. ships or in a naval hospital or depôt. Those on List I. have in addition to attend periodically at the headquarters of the division to which they are attached for the examination of recruits and other medical duties. The age of entry is from 21 to 32 years. Provision is also made for the entry as surgeon sub-lieutenants of students from 19 to 26 years who have passed their intermediate examination in anatomy and physiology. Promotion is on the same basis as in the Royal Navy except that no examinations are held. During training medical officers receive the naval pay of their rank, and £50 is provided for the expenses of uniform on joining, or, in the case of probationary officers, on confirmation in rank.

The service affords a unique opportunity for seeing the life of the Royal Navy, as well as providing every two years a most interesting experience free of all expense and well paid for the duties required, whether afloat or ashore. Applications for commissions should be addressed to the commanding officer at the headquarters of the nearest division, from whom full particulars can be obtained.

I am, Sir, yours faithfully,
J. BRUCE RONALDSON,
Surgeon-Commander, R.N.V.R.

H.M.S. *President*, Victoria Embankment, E.C. 4,
July 13th, 1925.

PRELIMINARY TRAINING IN DOMESTIC ARTS, KING'S COLLEGE HOSPITAL.

To the Editor of THE LANCET.

SIR,—Twelve months ago THE LANCET kindly expressed an interest in the establishment of a course of domestic arts in connexion with the preliminary training school which was opened at the beginning of September. Perhaps you will allow me to report upon the points upon which some doubt was expressed. It has been proved quite clearly that the two sets of pupils have been, in the American phrase, which you quoted, "good mixers." Those who have taken the course without any idea of becoming nurses have taken a keen interest in the scientific, practical, and domestic sides of the course, and their influence has been distinctly helpful.

The suggestion that the pupils would be taking the place of paid domestic help in the pupil nurses' home is one which is not supported in fact. All pupils, whether nurse pupils or not, have certain duties to perform under supervision as part of their training; that is part of the curriculum and without it the course could hardly be said to fulfil its function. Paid domestic help is made use of for those parts of the work which it is neither desirable nor helpful for the pupils to carry out, and the amount and expense of such assistance employed are increased by every additional pupil, whether she be in training for the nursing school or not.

THE LANCET made a somewhat cruel insinuation against the girl of the present day in suggesting that the opportunity to appreciate some of the joy of service would have no attraction for her. The opportunity to see something of the work of the hospital and the privilege, which also THE LANCET doubted, of taking some part in its work, have, in fact, been greatly appreciated by the pupils, and have, it is believed, exerted a beneficial influence on those who have undertaken the course.

I am, Sir, yours faithfully,

C. E. A. BEDWELL,
House Governor.

July 13th, 1925.

*** We are happy to publish Mr. Bedwell's letter. The annotation will be found in THE LANCET of 1924, ii., 504, under the title "Housewifery in a Hospital Milieu" and Mr. Bedwell does not reproduce the words we used.—ED. L.

Obituary.

ALEXANDER JOSEPH McAULEY BLAYNEY, F.R.C.S.IREL.,

SURGEON TO THE MATER MISERICORDIÆ HOSPITAL, DUBLIN.

THE tragically sudden death of Mr. Alexander Blayney on Sunday last, July 12th, has caused deep grief in the medical profession of Dublin and Ireland. He had recently had an attack of influenza, and while walking with his wife and children across the Portmarnock golf links, he suddenly fell to the ground. Medical aid was to hand at once, but death had apparently been instantaneous. He was 56 years of age.

Alexander Blayney was born in Co. Antrim and educated in Belfast and in the Catholic University, Dublin. He had a distinguished career in the Royal University, winning, among other honours, the studentship in biology. He took his medical degrees in 1893, and became a Fellow of the Royal College of Surgeons in Ireland in 1898. He held for a time the chair of Biology in University College, Dublin, but his bent was toward surgery, and early in his career he became one of the surgical staff of the Mater Misericordiæ Hospital. Since the foundation of the National University in 1908 he was assistant to the professor of surgery in the Dublin College. He was a Member of Council of the Royal College of Surgeons in Ireland for many years past and could easily have reached higher honours in the College had he sought them. He held, from time to time, examinerships both in the Royal College of Surgeons and in Trinity College, Dublin. During the war he served in the 83rd (Dublin) General Hospital, with the rank of major.

For many years past Mr. Blayney had one of the largest operating and consulting practices in Ireland. He had a wide and accurate knowledge of his subject, and was endowed with a judicious mind and even temper, with the result that his diagnosis was careful and sound, and very rarely was he led into error. In operation he was cool and resourceful. Any practitioner who once sought his help in a difficult case rarely thought of looking for another surgeon ever after. Though his ability as a surgeon was recognised by both the profession and the public, Mr. Blayney never took the prominent position in the profession to which his talents entitled him. He sought retirement and avoided publicity. He never sought the chair of his College in spite of the pressure of his friends, but it was understood that he would in the near future have allowed his name to go forward. Apart from his profession he was a man of wide reading and much culture, loving literature, music, golf, bridge, and conversation. Reserved with strangers, and always modest and retiring, something more than a casual acquaintance was required to discover the fund of humanity, humour, and wisdom that lay behind his quiet manner. His death was so sudden and unexpected that in the sense of the loss of a loved friend his colleagues cannot yet realise how much Irish surgery has suffered.

JOSEPH BOWER SIDDALL, M.D. ABERD.

Dr. Joseph Bower Siddall, who died at Great Malvern on July 4th, at the age of 85, was in the real sense of the word a pioneer of medicine, for in 1868 he went to Japan as medical officer to H.B.M.'s Legation. There, in association with the late Dr. Willis, he had charge of the Japanese hospitals in Yokohama, and later in Yedo (now Tokio) during the War of the Restorature in 1868–69. He established the first hospital, called the Dai Biyoin (or the Great Hospital) in Yedo in 1868, where he accomplished his cherished aim of introducing hygienic methods into the Japanese military service. He put his experience on record in an article published in Vol. V. of St. Thomas's Hospital Reports. He so forcibly advocated the value of vaccination in Japan that the Mikado issued an order that the whole of the population was to be vaccinated, with the result that in 15 years small-pox was virtually stamped out. Previously no measures had been adopted to combat this disease, which was very rife. For his services to Japan he was awarded the Order of the Rising Sun by the Mikado, but it was not until 1900 that he received the permission of the British Foreign Office to wear the Order. He had the distinction of being the first foreigner to receive it. Dr. Siddall was a fine cricketer in his day, and his golf-handicap was four. He played cricket for the Gentlemen of England, and as he stood 6 ft. 2 in., and was broad in proportion, he was naturally a hard hitter. He was proud of the fact that he had smashed the clock at the Oval; he occasionally played in the same eleven as the "Three Graces." At the Royal North Devon Golf Club, of which he was one of the founders, he used to tell how Mr. J. H. Taylor as a boy acted as his caddy. Dr. Siddall qualified from St. Thomas's Hospital in 1864 as M.R.C.S. Eng. and L.S.A. He afterwards went to Aberdeen, where he took the M.D. with highest honours.

On his return from Japan he practised for a time at Ross-on-Wye, retiring about 35 years ago to reside in Devonshire and latterly in Malvern. Dr. Siddall married Mary Elizabeth, second daughter of Charles Binns, J.P., of Claycross Hall, Chesterfield, who predeceased him some years ago.

HAROLD CLIFFORD, M.B. LOND., F.R.C.S. EDIN.

Dr. Clifford, whose death took place at his residence, St. John-street, Manchester, on July 8th, was well known as a gynæcologist. Son of the late Dr. John Clifford, the veteran Baptist preacher, Dr. Clifford settled in Manchester 25 years ago after taking a medical course at University College, London, where he was house physician at the hospital. Qualifying in 1897, he took the M.B. Lond. in 1899 and the F.R.C.S. Edin. in 1905. He was connected with the staff of St. Mary's Hospital for many years, and since 1913 was honorary surgeon and gynæcologist at the Royal Salford Hospital. He lectured on clinical obstetrics at the Victoria University of Manchester, and was an external examiner in midwifery at Queen's University, Belfast. Dr. Clifford had been in indifferent health for some months, but his death was sudden and took his many friends by surprise.

Parliamentary Intelligence.

HOUSE OF LORDS.

THURSDAY, JULY 9TH.

Mental Deficiency Bill.

THE Mental Deficiency Bill was read a second time. This Bill has already passed through the House of Commons.

HOUSE OF COMMONS.

WEDNESDAY, JULY 8TH.

Vaccination and Chicken-pox.

Mr. **BROMFIELD** asked the Minister of Health whether, in view of the difficulties which existed in regard to the diagnosis of mild small-pox and chicken-pox, he would give instructions, in cases where chicken-pox was made a notifiable disease, for the condition of the patients as regards vaccination to be stated on the form of notification, with a view to statistical records being inserted in the annual reports of the medical officers of health showing the total number of vaccinated and unvaccinated chicken-pox cases notified in each year.—Sir **KINGSLEY WOOD** (Parliamentary Secretary to the Ministry of Health) replied: The answer is in the negative. My right hon. friend is advised that a mere statement on the notification form as to the vaccinal condition of such patients would not be of any material assistance in arriving at an accurate diagnosis, and as it has never been suggested that vaccination affords any protection against chicken-pox, he does not consider that statistical records as to the vaccinal condition of patients suffering from that disease would be of value.

THURSDAY, JULY 9TH.

Provision of Massage for Disabled Men.

Captain **BOWYER** asked the Minister of Pensions whether in future he would utilise the services locally in rural areas of qualified masseurs and masseuses for the treatment of disabled men, and thus save the time of the men and unnecessary suffering to the disabled.—Major **TRYON** replied: It is the experience of the Ministry that massage is most effectively administered in the interests of patients when carried on at a clinic under proper medical supervision. Where, however, this treatment can be efficiently administered otherwise, and attendance at a clinic would involve serious inconvenience and hardship to the patient, alternative arrangements are allowed.

Distribution of Health Insurance Surpluses.

Sir **HENRY CAUTLEY** asked the Minister of Health under what authority and for what reason he prohibited approved societies from distributing the surpluses, over and above the requisite reserves, disclosed by the recent valuations in extra cash benefits in excess of 5s. for sickness benefit; and whether, considering the difficulty in devising schemes for other benefits in the case of the small societies such as those in the Sussex County Association, he would allow all the surpluses, except requisite reserves, to be distributed in extra cash benefits.—Mr. **NEVILLE CHAMBERLAIN** replied: In accordance with a decision of the National Health Insurance Joint Committee, approved societies have been recommended in the interests of their members not to adopt extra cash benefits in excess of 5s. a week for sickness benefit unless they are also making reasonably adequate provision for treatment benefits. Schemes complying with the latter condition, and providing for an increase of over 5s. in sickness benefit, have already been sanctioned for several societies, including three that are constituent societies of the Sussex County Association. It will be seen, therefore, that there has not been a general prohibition of the kind suggested in the question.

Extension of Health Insurance Membership.

Mr. **DENNISON** asked the Minister of Health the number of insured persons who were unable to claim the extension of National Health Insurance membership under The Prolongation of Insurance Act, 1921, owing to the fact that they had not paid the necessary contributions in the two contribution years ending July, 1920, or in any other respects had not complied with the statutory conditions of the Act; and if such persons would be disqualified from claiming the benefits in accordance with the provisions of the Widows', Orphans', and Old Age Contributory Pensions Bill.—Mr. **NEVILLE CHAMBERLAIN** replied: Cessation of insurance, otherwise than by death, may be due to a variety of causes, and particulars are not available at headquarters to show, with regard to the members of between 8000 and 9000 approved societies and registered branches, how far cessation may have been due to a particular cause such as that to which the hon. Member refers. With regard to the second part [illegible]ion, it will not be possible under the Widows', Orphans', and Old Age Contributory Pensions Bill for a claim to benefits in respect of his own insurance to be made by a person who is out of insurance at the time of the claim.

Pollution of the River Lee.

Captain **GARRO-JONES** asked the Minister of Health how long he anticipated it would be before the measure he contemplated for improving the condition of the River Lee would take effect; whether these measures, when completed, would entirely remove the nuisance of crude sewage; and whether, in order to relieve the anxiety of those to whom this nuisance caused risk to health, he could undertake to press forward the measure with the utmost expedition.—Mr. **NEVILLE CHAMBERLAIN** replied: The two places which most affect the state of the river at Hackney are Enfield and Edmonton. The new works at the former are expected to come into operation in a few weeks. The first instalment of the new measures at the latter place should come into operation in about six months time; I am informed that the work is being pushed forward. I am advised that when these works and those at Walthamstow and Leyton come into full effect, the present state of the river should be remedied.

Deaths from Measles.

Mr. **FORREST** asked the Minister of Health the total number of cases of measles for the last half-year and the total of deaths resulting therefrom; and whether his department could express any reason for the prevalence of this malady in the British Isles.—Mr. **NEVILLE CHAMBERLAIN** replied: Measles is not generally notifiable in England and Wales and I am, therefore, unable to give the total number of cases of this disease which occurred during the last half-year. The number of deaths from measles in England and Wales during the first quarter of the present year was 1020, but this is a provisional figure and the number of deaths during the second quarter is not yet available. I am advised that no specific reason can be given for the prevalence of this disease, but that there is no evidence of exceptional incidence in the country as a whole.

Administration of Maternity Benefit.

Colonel **ENGLAND** asked the Minister of Health whether his attention had been called to the statement of the late principal medical officer of the Ministry of Health attacking the administration of the maternity benefit by the approved societies; and whether the preference expressed for its administration by local public health authorities was entertained by his present advisers.—Mr. **NEVILLE CHAMBERLAIN** replied: The statement to which I assume that my hon. friend refers was made, not by a late officer of the Ministry of Health, but by the former medical officer of the Local Government Board. The matter in question is within the purview of the Royal Commission on National Health Insurance, and I propose to await their report before expressing any opinion upon it.

High Mortality in Market Drayton.

Mr. **GRIFFITHS** asked the Minister of Health whether he had received a reply from the Shropshire county council with regard to certain suggestions arising out of the report of his inspector as to the high mortality of Market Drayton, which was communicated to that council; and, if so, whether he would now publish the report, in order to assist in a movement to save the infants in the district in question.—Mr. **NEVILLE CHAMBERLAIN** replied: The answer to the first part of the question is in the affirmative. As regards the second part, I would refer the hon. Member to the answer which I gave on July 2nd.

The Spahlinger Treatment of Tuberculosis.

Mr. **CHARLES EDWARDS** asked the Minister of Health whether he had seen the report of the medical men who were Members of this House who had been investigating the Spahlinger treatment and its effects; and whether, seeing that it was so favourable to that treatment, he would take steps to ensure that it should be made available for sufferers in this country.—Mr. **NEVILLE CHAMBERLAIN** replied: I have not yet seen this report, but I understand that the conclusion reached is that a *prima facie* case has been made out for the Spahlinger treatment, and that the report recommends that an exhaustive trial of the remedy should be made. As regards the second part of the question, I may point out that I have repeatedly stated that I am anxious to arrange for a scientif[illegible]gation of this method of treatment in this count[illegible] the materials are made available. I have bee[illegible] three years for these materials, but I am [illegible]formation as to when they are likely to be [illegible]stand that the report referred to [illegible] the treatment is or can soon [illegible]ry. Some [illegible] medical [illegible] Geneva [illegible] de[illegible] this and of con[illegible]

MONDAY, JULY 13TH.

Tubercle Bacilli in Milk.

Mr. VERNON DAVIES asked the Minister of Health if he had received a copy of the resolution passed at the eleventh annual conference of the National Association for the Prevention of Tuberculosis to the effect that a considerable proportion of tuberculosis in childhood is due to infection through the presence of tubercle bacilli in milk offered for human food, and urging His Majesty's Government to render effective the provisions of the Milk and Dairies Act; and whether he was prepared to act upon this suggestion.—Sir KINGSLEY WOOD replied: My right hon. friend has seen the resolution referred to. The Milk and Dairies Act of 1915, which deals with this subject, will be brought into operation on Sept. 1st next.

Unregistered Midwives.

Mr. BENNETT asked the Minister of Health whether representations had been made to him, and if so, by whom, in favour of the elimination of unregistered practising midwives; and whether, in that case, he could state the views of the department on the matter and the likelihood of obtaining an adequate number of registered midwives.—Mr. NEVILLE CHAMBERLAIN replied: Yes, Sir, I have received many such representations from local supervising authorities and other bodies. I am in favour of the elimination of unregistered midwives, and I do not anticipate difficulty in obtaining an adequate number of registered midwives. I have it in mind to deal with the matter in a Bill to amend the Midwives Act which I propose to introduce as soon as other commitments allow.

TUESDAY, JULY 14TH.

Midwives for Insured Persons.

Colonel DAY asked the Minister of Health whether he was prepared to provide contributions from the funds available under the National Health Insurance Act towards district nursing associations employing qualified midwives to attend insured persons, in view of the importance of these associations among health services.—Mr. NEVILLE CHAMBERLAIN replied: An approved society is entitled to devote part of its disposable surplus on valuation to making payments towards the cost of providing nursing for its members, and may also make subscriptions or donations from its benefit fund for the support of district nurses. There is not, however, any provision in the National Health Insurance Act for the making of payments for the specific purpose of securing the attendance of midwives on insured women at confinement, and before considering the desirability of amending legislation in this direction I must await the report of the Royal Commission on National Health Insurance.

Sale of Tainted Food.

Colonel DAY asked the Minister of Health whether he was aware that recently in the borough of Lambeth it was found that a local meat retailer boiled pork and beef in a portable copper situated in a yard full of flies and other insects attracted by neighbouring dustbins, and that the medical officer of health traced 24 cases of food poisoning to this tainted source; and would he consider introducing legislation to give local authorities increased power in order to deal with such practices which were dangerous to public health.—Sir KINGSLEY WOOD replied: My right hon. friend has received a copy of the report of the medical officer of health on the case to which the hon. and gallant Member refers. He is considering what steps may be practicable and desirable with a view to regulating the conditions under which food is prepared.

IRISH FREE STATE: MEDICAL MEN AS CANDIDATES FOR THE SENATE.—Our Dublin correspondent writes: The names of a few medical men are included in the panel of candidates from whom 19 vacancies in the Senate are to be filled in September. Among them are Mr. H. L. Barniville, F.R.C.S.I., an outgoing senator who seeks re-election; Sir Arthur Chance, a past President of the Royal College of Surgeons in Ireland; Mr. Denis Kennedy, F.R.C.S.I.; Mr. P. McCarten, F.R.C.S.I., formerly a member of the Dail; and Dr. Anthony McBride, of Castlebar.

NORTH PERSIAN FORCES MEMORIAL MEDAL.—Captain W. H. Dye, R.A.M.C., has been awarded this medal for the year 1924 for his paper *Schistosomiasis and Splenomegaly in Central Africa*, published in the *Journal of the R.A.M.C.* of September, 1924. At the time this work was done Captain Dye was seconded from the Royal Army Medical Corps and was doing duty under the Colonial Office in Nyasaland. This is the second award of a medal to be given annually for the best paper (reaching a certain standard) on tropical medicine or hygiene published during the preceding 12 months by any medical officer in the Services of under 12 years' seniority.

Medical News.

UNIVERSITY OF DURHAM.—At Convocations held on June 30th and July 1st the following medical degrees were conferred:—

Doctor of Medicine.—John F. C. Braine, Jabez E. Dainty, Thomas Ruddock-West, Eleanor H. Russell, Harold Williamson (*in absentia*), George Hurrell, Mona Kirkhouse and Eric H. Shaw.

Doctor of Medicine for Practitioners of 15 Years' Standing.—James Ross, Albert Turner, Henry S. Brown, and Philip T. Harper.

Bachelor of Medicine and Bachelor of Surgery.—Drummond R. F. Bertram, Frank H. Blackburn, Nora E. Coltman, Eric V. Griffiths, John T. Holliday, Marjory G. T. Jacks, Ethel G. Potts, Francis E. Stabler, Stuart C. Stonier, Reginald Wear, Charles W. Arnot, Abraham Brodie, John Brown, Alfred Charlton, John R. Carson, Austen H. Holmes, Sinclair Hughson, Hirsch Levy, James D. W. McCracken, Donald W. MacLaren, William C. Pinkney, Arthur de Redder, Walter Toward, and Charles C. Ungley.

The following received the Diploma in Public Health (D.P.H.):—

Siegfried Annecke and Harold C. Simpson.

The following received the Licence in Dental Surgery (L.D.S.):—

Thomas E. Coulson, Wilfred A. Gale, Donald Gibson, Elsie L. Peet, and Norman Wilkinson.

At the Third Examination for the degrees of Bachelor of Medicine and Bachelor of Surgery the undermentioned candidates satisfied the examiners in the following subjects:—

Materia Medica, Pharmacology, and Pharmacy; Public Health; Medical Jurisprudence; Pathology and Elementary Bacteriology.—Oswald C. Dobson and William Irving (with second-class honours), Ronald E. Alderson, Max Davison, Joseph Furman, William R. S. Good, David Gamsu, Rebecca Harbit, Douglas E. Hearn, William B. Hicks, Gerald Holmes, Dennis S. Jackson, Thomas F. Jarman, Maurice Levi, Cyril Mason, Gilbert McLaren, George N. Myers, Harry P. Nelson, Leslie D. Nelson, Eleanor Patterson, Hugh C. S. Pimblett, Edward Porteus, Victor B. Purvis, Cyril F. Richardson, Francis H. Robson, Gibson Salisbury, and Stanley W. Smith.

UNIVERSITY OF LIVERPOOL.—At examinations held recently the following candidates were successful in the undermentioned subjects:—

DEGREE OF M.D.

S. B. Herd, Elizabeth Hunt, G. W. Phillips, and D. Riding.

DEGREES OF M.B. AND CH.B. (HONOURS).

Class I.—*†Gwyneth Griffith and †‡G. McNichol.

Class II.—‡L. J. A. Loewenthal, ‡J. C. Ross, and *C. E. Unsworth

* Distinction in Surgery. † Distinction in Obstetrics. ‡ Distinction in Medicine.

FINAL EXAMINATION FOR DEGREES OF M.B. AND CH.B.

Part III.—C. P. Allen, A. T. Ashcroft, H. M. Boston, C. L. Copeland, N. L. Corkill, J. L. Donnelly, L. Earlam, Sybil C. Edwards, W. Emdin, M. Fisher, C. J. S. Garton, M. Goldberg, L. Gordon, J. Graham, Frances M. Greenhalgh, Dorothy M. Hanson, C. A. Harris, Beryl M. Hawthorn, J. C. Heal, F. C. S. Hinsbcock, R. E. Horsfall, S. Howard, J. E. Howie, E. Hughes, F. Hughes, F. P. Irvine, Elvy I. Johnstone, R. C. Jones, D. Katz, S. M. Katz, B. Krikler, J. E. S. Lloyd, W. J. Lloyd, T. R. E. Longton, H. McGrath, Isabel McKee, D. J. T. Magowan, K. N. Mawson, E. Miles, D. H. Mills, E. L. Murphy, Irene M. Neal, Winifred A. Nicholson, J. R. Oddy, H. Peaston, J. W. Reid, Miriam Roskin, Margaret E. Thomas, J. J. du Toit, J. Unsworth, Rosalind Vacher, B. J. van de S. de Villiers, and F. W. Yates.

Part II.—J. H. Boultbee, *J. L. Clegg, G. S. Clouston, K. McL. *Cobban, K. Edmundson, R. W. Eldridge, A. B. Follows, J. F. Galloway, Elinor M. Gelling, *E. E. Glenton, L. S. Goldman, *I. Gurland, Elizabeth M. Harding, D. G. Henry, Mary Hope-Simpson, *H. E. Hughes-Davies, E. Hulme, B. S. Jarvis, T. A. Jermy, A. N. Jones, *J. B. Logan, M. A. Lombard, D. B. Macaulay, J. C. McFarland, G. McLoughlin, S. G. Massey-Lynch, A. D. Polonsky, D. E. Pritchard, Muriel S. Roberts, A. V. Russell, N. R. Sheridan, Alfreda H. Slater, †G. D. Thompson, D. P. de Villiers, J. E. Wallace, R. G. Walmsley, †Kathleen M. Ward, A. K. Wilson, and Nora M. Wilson.

* With distinction in Public Health. † With distinction in Forensic Medicine and Toxicology.

Part I.—W. G. Brookes, K. M. Cobban, N. J. Crawford, W. A. Davies, W. E. Hargreaves, S. P. Meadows (distinction in Pathology), J. N. Parrington, Ivy H. Rowlands, N. P. Slade, E. S. Smith, and G. D. Thompson.

DEGREE OF M.H.

First (Part I.) Examination.—B. L. Davis.

DIPLOMA IN PUBLIC HEALTH.

J. G. L. Jones, Dorothy G. E. Potter, Frances Weightman, and D. A. Woodeson

UNIVERSITY OF MANCHESTER.—The Council of the University and the board of management of the Manchester Royal Infirmary have instituted a new laboratory for clinical investigations. The laboratory, which is located in the Royal Infirmary, will be placed in charge of a Director, who will have the status of a lecturer in the University. Mr. W. M. Roberts, M.Sc., M.B., Ch.B. Manch., who has been appointed as Director, at present holds the position of assistant lecturer in chemical pathology. The following appointments have been made: Lecturer in Anatomy: Mr. David Stewart. Lecturer in Applied Anatomy: Mr. R. S. Paterson. Lecturer in Systematic Medicine: Dr. T. H. Oliver. Lecturer in medicine for Dental Students: Dr. C. H. Melland. The following awards have been made: Gold Medal for M.D. Thesis: W. M. Roberts; commendation for M.D. Thesis: A. M. Jones, Donald Ramage, and J. G. Woolham. Harling Fellowship: J. West; Prof. Tom Jones Memorial Surgical Fellowship: Leslie Morris; Platt Physiological Scholarship: W. H. Newton; Tom Jones Exhibition in Anatomy: F. N. Marshall.

At examinations held recently the following candidates were successful in the subjects indicated:—

FINAL M.B. AND CH.B. EXAMINATION.

*F. H. Smirk (first-class honours), N. W. Bolton and G. H. H. Booth (second-class honours), A. R. Addey-Redfern, Solomon Bernstein, Lilian Bond, Geoffrey Coope, T. A. Danby, A. A. Davis, †N. E. Delaney, †Kathleen Dickinson, Madge E. Edwards, Mary Evans, C. R. Fielding, Miriam Florentin, E. A. Gerrard, Mary Harburn, James Haslam, †May Johnson, Walter Johnson, Barbara M. Knight, G. F. Langford, G. H. March, C. T. Marshall, E. A. Marson, Ethel Morris, William Mottershead, †S. L. Mucklow, Archer Pearson, Henry Penman, †Joan Robinson, T. W. Rothwell, M. R. Sagar, N. F. Seed, W. H. Shepley, Joseph Shlosberg, Lois Stent, Jane B. Stubbs, Samuel Whalley, K. K. Wood, P. B. Wood, Reginald Wood, N. A. J. Young.

* Distinction in Medicine. † Distinction in Forensic Medicine.

Forensic Medicine and Hygiene and Preventive Medicine.—C. H. Bamford, Frances H. Bowden, John Crook, L. F. Evans (distinction in Forensic Medicine), Agnes G. Smiley, and J. C. Wilson.

Medicine.—Frances H. Bowden.

Hygiene and Preventive Medicine.—H. H. Bullough, I. H. Freedlander, R. M. Pearce, and A. D. Shubsachs.

Obstetrics and Surgery.—Louise Aronovich, Marion L. Bainbridge, A. R. Barber, J. R. Beal, Peter Bester, R. H. Blackburn, Florence M. Blades, Agnes Bodoano, Lillie M. Burton, S. J. Firth, T. S. Hanlin, F. S. Hawkins, Barnett Hirsh, ‡R. L. Holt, John Hunt, T. J. Kay, H. B. Kilroe, W. D. Mitton, R. J. Owen, Raphael Shaffer, W. S. Slater, Graham Stenhouse, Olive de la W. Turner, and E. J. Warburton.

Obstetrics.—‡H. K. Ashworth, Zaky Hanna, and Harry Pigott.

‡ Distinction in Obstetrics.

THIRD M.B. AND CH.B. EXAMINATION.

Pathology.—R. S. Abraham, Doris Bernard, J. W. Brooks, Louie J. Burton, Margaret Egan, Arthur Hancock, Ernest Heard, G. L. Normington, I. M. Preston, Nora Ridehalgh, C. D. Roff, R. F. Sheppard, and Donald Starr.

Pharmacology.—S. K. Appleton, Dorothy Arning, Harold Arstall, A. H. Baker, Dorothy M. Bradley, H. J. Brennan, Agnes N. Buckley, M. A. Chamberlain, E. B. Davies, Ralph Edmondson, Muriel M. Edwards, Amy H. Herbert, I. M. Hughes, J. H. Jones, Morris Levine, J. A. Longworth, Jean M. Marshall, H. E. Martin, J. S. Miller, Robert Newton (with distinction), Stanley Nowell, R. P. Osborne, G. H. Racklyeft, Norah Regan, Marshall Robinon, S. L. Rowley, Eleanor H. Schill, Lucy Stokoe, Alfred Thomas, F. F. Waddy, and Josephine Walmsley.

DEGREE OF CH.M.

J. A. Panton.

DIPLOMA IN BACTERIOLOGY.

Marion H. Black and G. E. Shaw.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.

W. G. Thomson and C. B. V. Walker.

UNIVERSITY OF BRISTOL.—At examinations recently held the following candidates were successful:—

FINAL EXAMINATION FOR DEGREES OF M.B., CH.B.

Part I. (including Forensic Medicine and Toxicology).—Helen M. Aldwinckle, Cecily Franco-Hayhurst, Frederic W. T. Hughes, Ernest May, Richard E. Satchwell, and Stanley P. Taylor.

Part II. (completing examination).—David H. Beatson, Harry W. Brassington, Bessie V. F. Dawkins, Charles H. Durnford, William S. Ormiston, Maurice E. J. Packer, Yolande de la Pasture, Cecil P. Porter, and Thomas W. Ware.

Group II. (completing examination).—Elizabeth E. Benson, Margaret P. Posthuma, and Kathleen M. Willmore.

Group I. (completing examination).—Charles F. R. Killick.

EXAMINATION FOR DIPLOMA IN PUBLIC HEALTH.

Part II. (completing examination).—Frederic P. Mackie and Norah A. M. Rodger.

FINAL EXAMINATION FOR DIPLOMA IN DENTAL SURGERY.

Christopher S. Cossham and Sydney Phillips.

UNIVERSITY OF LEEDS.—At the Summer Graduation ceremony on July 4th the following degrees were conferred in the Faculty of Medicine:—

M.D.—Arthur Massey and Harry A. Sinson.

Ch.M.—John T. Blackburn (with distinction).

M.B., Ch.B.—With second-class honours: David R. Allison, Albert Hemingway, Matthew Masser, James L. Moorhouse, James H. O'Donnell, Michael Rabinovich, Rosamond E. Roper, and Geoffrey W. Taylor. Ordinary degree: Maurice Backwell, Leslie V. Broadhead, Isaac Cainer, Francis R. Curtis, John Duncan, John Ewing, Wilfred S. Flowers, Glen Gorstige, John R. S. Greenwood, Philip V. Hardwick, John L. Hartley, Fannie Hirst, James C. Lamont, Sam Leviten, and Edith V. Olver.

UNIVERSITY OF ABERDEEN.—At the Graduation ceremony held on July 9th the honorary degree of Doctor of Laws (LL.D.) was conferred on Dr. John J. R. Macleod, F.R.S., Nobel Prizeman in Medicine, 1923; Professor of Physiology at the University of Toronto. The following degrees were also conferred:—

DOCTOR OF MEDICINE.

*Robert Cruickshank, *John B. Duguid, †Cecil B. Hogg, Arthur A. Hearne (in absentia), and Archibald C. Irvine (in absentia).

* Awarded highest honours for thesis. † Awarded commendation for thesis.

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Douglas Archibald, Horace A. Barker, Catherine H. Baxter, Alexander Brooks, William B. B. Brown, William Bruce, Hew M. N. Calder, Hugh M. Crombie, Alexander Cruickshank, Williamina Cruickshank, Marjorie J. M. Dow, Mary M. Farquhar, William Ferguson, Samuel H. Fine, William Gavin, Henderson Gow, *Walter Graham, *Dorothy M. Harris, Douglas C. Henderson, William F. Ingram, Donald B. C. Lawson, James H. McDonald, John C. MacFarlane, George R. Mackay, John B. Mackay, George N. McLaren, Charles E. Mathieson, Graeme M. M. Menzies, William Menzies, James Murray, Alexander D. Rankin, Archibald C. Reid, Hugh L. Rettie, John M. Ritchie, Grace M. Robinson, Ephraim Sacks, Lyndesay R. D. Smith, *Williamina Stephen, *Gordon Thow, Adam N. S. Watt, Enid M. O. Will, Douglas Wilson, *Edith B. Wilson, and James Wright.

* Completed Final Examination with distinction.

UNIVERSITY OF DUBLIN, SCHOOL OF PHYSIC, TRINITY COLLEGE.—At examinations held recently the following candidates were successful:—

FINAL MEDICAL EXAMINATION.

Part I., Materia Medica and Therapeutics; Jurisprudence and Hygiene; Pathology and Bacteriology.—Edmund P. N. M. Early (passed on high marks), Shirley D. K. Roberts, Menzies L. M'Cauley, Gerald S. Smyth, Robert S. F. Hennessey, Albert Sachs, Robert A. J. Holmes-Ievers, Martinus G. J. Booysen, George S. Gardner, Edward W. Bingham, Arthur N. B. Odbert, John O. Bennett, Norman J. U. Mather, John H. Stephens, Christiaan de W. Meintjes, Daniel A. O'C. Quinlan, Herbert Nelson, Hubert C. Weir, John C. Collins, and John B. Patrick.

Part II., Medicine (M.B.).—James E. M'Cauley, Roy K. Carson, Gladys M. A. Lowry, James W. Wallace, Alexander D. M'Lean, Hope Trant, James J. Cusack, Edward C. Dudgeon, Harry Waters, William H. Coen, Joseph V. Pincus, Kathleen M. Ball, Johan N. S. Gouws, Carol R. J. Boland, Harris Tomkin, George R. L. Jordan, John E. Stokes, Edwin S. A. Crawford, John St. Clair, Philip B. Robinson, Charles L. Taylor, David N. Power, Norah M. Smith, Gerard A. A. Powell, and William O. Warrington.

Surgery (B.Ch.).—Charles F. D. M'Caldin, O'Donel T. D. Browne, Joseph R. Gregory, William C. Somerville-Large, Thomas C. Foster, Robert L. Forsyth, Thomas W. MacDowell, Oliver Chance, James W. Wallace, Ralph A. Webner, William Gallaugher, James Dick, John F. Wilde, William P. E. M'Intyre, Hope Trant, Mary Galvin, Augusta M. Young, Mary C. Livingston, Launcelot W. R. Haskins, Kathleen D. Murison, Agnes L. Kelly, Noel G. M'Auliffe, Norman M. Greeves, Harry Waters, Annie T. Deane, and Gideon J. Joubert.

Midwifery (B.A.O.).—Seymour F. Heatley, Richard G. Keays, Ransome M. Allardyce, and John H. M'Lean (passed on high marks), William B. Roantree, Edward M'Alpine, James W. Bowden, Jack M. Selkon, Nancie N. Lowther, Robert Kahn, William Russell, Stella C. Ross, Jane D. Fulton, Henry J. Roche, William Magowan, Daniel J. Roux, Frances E. O'Connor, Philip F. Palmer, Gladys L. Craig, George A. Walmsley, George R. L. Jordan, Aileen Fair, and Rachel E. Porter.

DIPLOMA IN PUBLIC HEALTH.

Part I., Chemistry, Bacteriology, Physics, and Meteorology.—William F. Shell.

FINAL DENTAL EXAMINATION (B.DENT.SC.).

Dental Surgery and Pathology; Dental Mechanics and Metallurgy; Orthodontics.—Thomas M. Joyce.

Honorary Degrees.—On June 26th the honorary degree of Master in Surgery was conferred on Drs. George W. Crile and Charles H. Mayo, the public orator, Sir Robert Tate, presented the candidates to the University.—The degree of Doctor in Science was conferred on Prof. James P. Hill, F.R.S., and Sir Frederick G. Hopkins.

UNIVERSITY OF LONDON.—In the Faculty of Science the Senate awarded on June 24th the degree of Ph.D. to Annie D. Hoffert, a student of the Lister Institute of Preventive Medicine.

UNIVERSITY OF GLASGOW.—At the graduation ceremony on July 3rd Dr. Archibald J. Cronin received the degree of M.D. with high commendation.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—There will be a late afternoon course in the diagnosis and treatment of the more common diseases of the nervous system. The course will take place in the out-patient department (73, Welbeck-street) of the West End Hospital, and the lectures and demonstrations will be illustrated by cases. There will be a vacation course at the Prince of Wales's General Hospital (N.E. London Post-Graduate College, Tottenham N.) from August 3rd to 15th. During the two weeks, a ticket for either of which may be taken separately, there will be morning and afternoon sessions from 10.30 A.M. to 5.30 P.M. Each day will include clinical demonstrations, clinics, and clinical lectures, and the whole of the hospital practice will be available for study. The Queen Mary's Hospital, Stratford, will also give an intensive course on similar lines to that at the Prince of Wales's Hospital, from August 24th to Sept. 5th. Special facilities will be given at the latter hospital for the study of gynæcology and obstetrics. Throughout the month a special course will be given at the All Saints' Hospital for Urology. There will be clinical demonstrations daily and a special lecture every Wednesday dealing with the various phases of the disease. Copies of each of the above-mentioned syllabuses, as also the general programme of work, may be obtained from the Secretary, 1, Wimpole-street, W.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a quarterly meeting of the Council of the College, held on July 9th, Sir John Bland-Sutton in the chair, Mr. James Sherren and Sir John Lynn-Thomas, having been duly re-elected and having made the declaration prescribed by the Charter of 1800, took their seats as members of the Council. Mr. Arthur Burgess having been elected and having made the declaration took his seat as member of Council. Mr. Graham S. Simpson having been introduced and made the necessary declaration was admitted a member of the Court of Examiners. Mr. Cecil F. Beadles was appointed Pathological Curator of the Museum for the ensuing year. Mr. R. H. Burne was re-elected Physiological Curator and Sir Frank Colyer was re-elected Curator of the Odontological Collection. Sir John Bland-Sutton was re-elected President of the College. Mr. Walter G. Spencer was re-elected Vice-President, and Mr. James Sherren was elected Vice-President for the ensuing year. The diploma of Fellow was conferred upon Harry Roy Pomroy, Adelaide University and London Hospital, and the diploma of Member upon Edith Grace Peacock, Charing Cross Hospital.

Licences to practise dentistry were conferred upon 57 candidates who have passed the requisite examinations and have complied with the by-laws. The following are the names and schools of the successful candidates:—

F. M. Ackroyd, Guy's; H. S. Alexander and M. N. Anklesaria, Royal Dental; L. Barclay, Guy's; Marjorie K. M. Barnes, Univ. Coll.; W. L. Benson, H. F. Boosey, T. Brimmer, and G. L. N. Burden, Guy's; E. H. Butler, Royal Dental; S. Casper, Guy's; A. H. Chidley, Birmingham; T. O'R. Clancy and E. B. Corry, Guy's; H. A. Crooke, Royal Dental; W. Eddings, Univ. Coll.; C. H. Elphick, Royal Dental; A. C. Evans and G. Evans, Guy's; A. E. Foley and L. Foster, Royal Dental; G. E. Graham, Guy's; Annie H. Halperin, Univ. Coll.; N. Harris, Guy's; Katia Hranova, Royal Dental; O. S. Israilstam, Middlesex; W. R. Jenkins, Guy's; S. M. Jones, London; G. J. T. José and D. Kelvin-Davies, Guy's; C. H. B. Laughton, Royal Dental; Nesta G. Lewis, Univ. Coll.; G. B. Longhurst and A. S. Lowe, Guy's; E. C. Loxton and D. W. MacBean, Royal Dental; A. E. MacLagan, Guy's; J. G. Macvie, Manchester; R. H. Mallett, Durham; C. Malthouse, Manchester; B. S. Mead, Guy's; B. A. Morrisroe, Royal Dental; J. Partridge, Bristol; V. G. Podley, London; H. R. Peek, Birmingham; J. M. Foot, Liverpool; T. G. Phillips, Royal Dental; H. H. Revill, Guy's; T. I. Richards, Birmingham; M. Smalka, H. E. Slade, E. M. Smith, and R. Thorburn, Royal Dental; D. M. Timpson and C. M. Veysey, Guy's; and H. K. Wallace and A. A. Wilkinson, London.

The undermentioned diplomas were conferred (jointly with the Royal College of Physicians of London):—

Diploma in Psychological Medicine.—G. T. Baker, G. L. Cutts, H. T. Jones, J. J. Laws, J. B. S. Lewis, H. C. McManus, A. H. Pearce, G. F. Peters, R. G. Riches, G. R. A. de M. Rudolf, and J. Russell.

Diploma in Laryngology and Otology.—S. N. Chau, E. D. D. Dickson, R. McM. Glynn, H. E. Jowett, J. P. Kies, N. W. MacKeith, and J. H. Shaw.

THE Dickinson Travelling Research Scholarship in Medicine has been awarded by the trustees of the Manchester Royal Infirmary to Raymond Williamson, M.D. Manch., and Leslie J. Witts, M.B., Ch.B. Manch.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee 24 cases were considered and £380 10s. voted to 23 applicants. The following is a summary of the new cases relieved:—

M.D. Edin., 1890, aged 71, practised in S. Africa and held several travelling appointments. Applicant asks for a grant to enable him to get massage. He is bedridden and also has chronic bronchitis. Two brothers meet the nursing home fees of 4 guineas a week, but cannot do any more for him. Voted £5.

Daughter, aged 48, of L.R.C.P. Edin. who practised in Wales and died in 1924. Applicant is not mentally able to support herself, and her only income from investments amounts to £48 per annum. A brother in Canada gave £20. Rent is £31 per annum. Voted £15 in 12 monthly instalments.

Daughter, aged 58, of M.R.C.S., 1843, who practised in Warwickshire and died in 1877. Applicant lost most of her money by lending large sums to so-called friends who did not repay. She is now left with capital which brings in 15s. a week, but she has had to draw upon this capital at the rate of 32s. 6d. a week to meet expenses. She lives with an adopted sister. A cousin gave the applicant £6 last year. Rent and rates amount to £24 per annum. Voted £18 in 12 instalments and referred to our Guild for clothing.

Subscriptions may be sent to the honorary treasurer, Sir Charters Symonds, at 11, Chandos-street, Cavendish-square, W. 1.

MENTAL HOSPITALS ASSOCIATION.—The seventh annual meeting of this Association was held on July 8th, when the report of the Executive Committee was received. The committee gave evidence before the Royal Commission on Lunacy Reform, and continues to take every opportunity of urging on the Government the necessity for so altering the existing system as to bring it into line with modern ideas on treatment of mental disorder. Representatives have met members of the National Asylum Workers Union to discuss hours of duty and rates of pay, and recommendations were agreed to with a view to removing certain anomalies. There have also been conferences with the Medico-Psychological Association, the Association of Clerks and Stewards of Mental Hospitals, and the National Union to discuss proposed amendments of the Asylum Officers Superannuation Act, 1909. The committee was unable to advise support of the draft Bill until more definite actuarial investigations had been made. The meeting then discussed the question of adopting a flat rate of sick-pay in all districts for prolonged periods of illness. A motion instructing the Executive Committee to take steps to secure the flat rate was carried. It was also proposed that steps be taken to secure a larger contribution from Imperial funds for local maintenance of mental cases.

ROYAL SOCIETY OF MEDICINE: ELECTION OF OFFICERS.—At the annual general meeting, held on July 1st, the following officers were elected for the session 1925-26:—

President: Sir StClair Thomson. Past President: Sir William Hale-White. Hon. Treasurers: C. H. Fagge, M.S., and E. Farquhar Buzzard, M.D. Hon. Librarians: Walter G. Spencer, M.S., and W. Bulloch, M.D., F.R.S. Hon. Secretaries: W. Girling Ball, F.R.C.S., and H. Letheby Tidy, M.D. Other Members of Council: Sir James Berry, F.R.C.S.; Sir George Blacker, M.D.; Sir Charlton Briscoe, M.D.; Sir George Buchanan, M.D.; H. W. Carson, F.R.C.S.; Maurice A. Cassidy, M.D.; V. Zachary Cope, M.S.; T. Watts Eden, M.D.; R. C. Elmslie, M.S.; A. M. H. Gray, M.D.; Robert Hutchison, M.D.; Cyril A. R. Nitch, M.S.; Herbert J. Paterson, M.C.; Herbert Tilley, F.R.C.S.; G. de Bec Turtle, M.D.; A. E. Webb-Johnson, F.R.C.S.; and E. F. White, F.R.C.S.

The Presidents of the Sections are ex-officio Vice-Presidents of the Society and Members of the Council. The following have been elected:—

Anæsthetics: F. E. Shipway, M.D. Balneology and Climatology: R. Llewellyn Jones Llewellyn, M.B. Study of Disease in Children: Philip Turner, M.S. Clinical: G. Newton Pitt, M.D. Comparative Medicine: Frederick T. G. Hobday, F.R.C.V.S. Dermatology: J. H. Sequeira, M.D. Electro-Therapeutics: Alastair MacGregor, M.D. Epidemiology and State Medicine: J. C. McVail, M.D. History of Medicine: J. D. Rolleston, M.D. Laryngology: W. H. Kelson, M.D. Medicine: Hugh Thursfield, M.D. Neurology: H. Campbell Thomson, M.D. Obstetrics and Gynæcology: T. G. Stevens, F.R.C.S. Odontology: J. Lewin Payne. Ophthalmology: Sir Arnold Lawson, F.R.C.S. Orthopædics: A. S. Blundell Bankart, M.Ch. Otology: G. J. Jenkins, F.R.C.S. Pathology: J. A. Murray, M.D., F.R.S. Psychiatry: R. H. Cole, M.D. Surgery: Sir Lenthal Cheatle, F.R.C.S. Therapeutics and Pharmacology: George Graham, M.D. Tropical Diseases and Parasitology: Sir William Prout, M.B. Urology: R. H. Jocelyn Swan, M.S. War: Sir William Leishman, M.B., F.R.S.

The new Council takes up office on Oct. 1st.

A Guy's Hospital "Record."—Last year Guy's dealt with 10,017 in-patients—the largest number ever recorded. Their average stay was 21¼ days. There were 124,000 out-patients, of whom only 179 were unable to pay for their medicines.

Hospital Needs of South Wales.—At a recent meeting of the Cardiff Medical Society it was stated that although the population of the Cardiff end of Glamorganshire numbers 800,000, only 850 hospital beds are available. On the basis of 2 beds per 1000 people, 1600 beds are needed.

The Plymouth Hospitals.—The exhibition opened at Plymouth by Prince Henry, reinforced by a fête and fair, on behalf of the Plymouth hospitals, has been successful beyond expectation. It was hoped to raise £10,000; more than £20,000 was actually obtained.

An Institute of Otology.—The Right Hon. T. R. Ferens, of Hull, has given £20,000 to the Medical School of Middlesex Hospital for the foundation of an Institute of Otology. It is intended to establish a laboratory, museum, and library entirely devoted to research in diseases of the ear, nose, and throat, and it is hoped that it may eventually be possible to create studentships.

A Miners' Rest Home.—At Rudyard Lake, about 12 miles from Stoke-on-Trent,.a rest home for the miners of North Staffordshire was opened on July 4th. The site for the home, the building, and its equipment cost £61,000, raised by the 1*d.* a ton levy for the Miners' Welfare Fund. It contains 42 beds for miners recovering from accident or illness, with billiard and other recreation rooms, and facilities are provided for outdoor amusements and exercise.

New Sanatorium for Oldham.—At a cost of £10,000 the Oldham Health Committee have built a new sanatorium at Strinesdale, to replace the wooden hospital erected about 30 years ago. Situated on an eminence adjoining the Yorkshire moors, about 1050 feet above sea-level, the new building is so constructed as to get the sunlight and to protect the patients as much as possible from the wind. The building provides accommodation on two floors for 48 patients, 24 in the three end wards, and the remainder in separate cubicles. The official opening took place on June 29th.

Carter Hospital, Middlesbrough. — Nearly 20 years ago the late Alderman Carter, of Middlesbrough, bequeathed £40,000 for the provision of a hospital. This sum has accumulated to about £100,000, and the Alderman Carter Bequest Hospital is now approaching completion. By restricting the number of beds to 52 a complete endowment will be provided. Eight of the beds are for patients whose payments will just clear the cost of maintenance. The hospital, which covers four acres, is divided into three two-storey blocks and is being supplied with the most modern equipment and appliances.

Society of M.O.H.'s: Complimentary Dinner to Sir John Robertson.—A complimentary dinner to Sir John and Lady Robertson was given by the Midland branch of the Society of Medical Officers of Health at the Queen's Hotel, Birmingham, on July 10th. The President of the branch, Dr. R. Woolsey Stocks, was in the chair. Dr. G. F. Buchan, in proposing the toast of the evening, referred to Dr. Robertson's passion for research in every branch of public health which had been the mainspring of his life, and had rendered his judgment sound on housing and the food-supply, and in the foundation of the first municipal sanatorium at Cheltenham. In cancer research his work had been silent and steadfast. His willingness to befriend all with whom he came in contact was reaffirmed by Miss Bartlett, chairman of the Birmingham Health Committee. Sir John Robertson, in reply, described the honour as a recognition of the merit of the public health service. Public health work was, he said, happy work, though results were not accomplished rapidly. Reduction of mortality in towns to nearly one-half, and infant mortality to less than half, was no doubt due to a number of causes, but medical officers of health had at all events set the pace by educational effort. The war had put back the clock 30 years for public health, but the town-planning legislation recently passed was of first-rate importance. A country breeding, and a taste for agriculture and geology he had ound of great value in his work at St. Helens, Sheffield, and years at Birmingham. Mr. Furneaux Jordan proposed, . R. A. Lyster responded, to the toast of the Society .H.'s. A well-chosen musical programme added to tivity of the evening.

The Census Report.—The final volume presenting tabulated statistics derived from the 1921 Census of England and Wales is now published (H.M. Stationery Office. 13*s.*). It contains 200 folio pages of closely printed figures, and presents for the country as a whole, and for certain subdivisions of it also, statistics of the same nature as those published in the earlier volumes for each country. It also includes certain hitherto unpublished figures dealing with populations of county court circuits and districts, seamen and fishermen not enumerated on Census night, and persons under service discipline outside Great Britain.

Guy's Hospital Medical School.—The following scholarships have been awarded: Entrance Scholarship in Arts, £100, Herbert Aidan Constable, Wimbledon College; Entrance Scholarship in Science, £100, divided between Walter Horace Allen, Guy's Hospital Medical School, and Frederick Harwood Stevenson, St. Paul's School; Confined Scholarship in Science, £100, William John Ferguson, Crampton County School and Guy's Hospital Medical School. Guy's Hospital Dental School: War Memorial Scholarship in Arts, £40 for four years, Joseph Cuthbert McNeill, Wadham College, Oxford; Entrance Scholarship in Science, £40 for four years, Geoffrey Blake Palmer, Emanuel School.

Medical Tour to the Spas of Italy.—A second study tour for medical men to the spas and climatic health resorts of Italy, organised by the Italian State Tourist Department, will leave Milan on Sept. 5th, visiting among other places, San Pellegrino, Fonte Bracca, Acqui, Leghorn, Montecatini, Monsummano, Chianciano, Fiuggi, Alassio, and Viareggio, the tour ending at Rome on Sept. 21st. The journey is under the guidance of Prof. Guido Ruata, M.D., and medical men speaking English, French, Italian, and German will act as interpreters. The party is limited to 200 and the charge for the complete tour is 1600 lire. This includes first-class accommodation. There are still a few vacancies. Further particulars can be obtained from the Italian State Railways Tourist Office, 12, Waterloo-place, Regent-street, S.W. 1.

Donations and Bequests.—Mrs. Emily Louisa Acret, Rosslyn Hill, Hampstead, bequeathed £2000 to Mabel Acret, of Ontario, lately a nursing sister of Queen Alexandra's Nursing Sisters Reserve "in recognition of her services to the Old Country in the Great War," and £2000 to the Hampstead General Hospital for the endowment of an "Acret Bed"; £200 to the Soldiers' Daughters' Home, N.W.; £100 to the Royal Sailors' Daughters' Home, N.W.; and her freehold property at Belvedere, Kent, to the Blind School, Swiss Cottage, for an "Acret" annuity.—A gift of £1000 has been made by the Mercers' Company to the Fulham, Chelsea, and Kensington General Hospital for building funds.—Mr. George Henderson, an East India merchant, of Palace Court, W., left £1000 to the London Hospital.—Mr. John Alexander Kennedy, draper, of Sunderland, left £500 each to the Sunderland Royal Infirmary, the Children's Hospital associated with the Royal Infirmary, £100 each to the Heatherdene Home, Harrogate, the Sunderland Orphan Asylum, the Northern Counties Orphan Institution for Boys, Newcastle-upon-Tyne, and £50 to the Royal Institution for the Blind, Newcastle. On the decease of his wife he left £1000 each to the Sutherland Royal Infirmary for a Jean Ross Kennedy bed and to the Children's Hospital in connexion with the Royal Infirmary for a similar bed.—The late Mrs. Harriett Sturges, of Birmingham, who left property of the value of over £30,000, bequeathed the residue after certain small bequests equally between the Birmingham General Hospital; the Queen's Hospital, Birmingham; the Birmingham Children's Hospital; the Birmingham and Midland Hospital for Women; the Birmingham Deaf and Dumb Institution; the Royal Institution for the Blind, Birmingham; and Dr. Barnardo's Homes.—The late Mr. James Taylor, M.R.C.S., of Alma-road, Clifton, Bristol, who left estate of the gross value of £22,002, among other bequests gave to Bristol University for the Medical Library all his medical books; £1000 to Epsom College for the endowment of a scholarship in memory of the Rev. W. A. Thomas, to be known as the "Thomas Scholarship"; £1000 in trust for Elizabeth Arabella Taylor for life and then to the Bristol Royal Infirmary.

THE LANCET: SUBSCRIPTION RATES.

Inland	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
Abroad	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, July 21st.

GENERAL MEETING OF FELLOWS: at 5.30 P.M. Ballot for election to the Fellowship.

BIOCHEMICAL SOCIETY.

SATURDAY, July 18th.—5 P.M., Joint Meeting with the Agricultural Education Association at University College, Reading).

Communications: R. H. A. Plimmer: The Action of Nitrous Acid upon Amides and some Amino Compounds. W. J. N. Burch: Some Esters of Phosphoric Acid. — Mattick and — Wright: The Influence of Administration of Certain Salts on the Inorganic Constituents of Milk. E. Ponder and W. W. Taylor: The Conductivity of Cell-suspensions. G. D. Thacker and J. R. Marrack: The State of Calcium in Body Fluids.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, July 20th.—12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Donald Armour: Operations. 2 P.M., Mr. Bishop Harman: Eye Dept.

TUESDAY.—10 A.M., Medical Registrar: Clinical Methods. 12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Addison: Operations.

WEDNESDAY.—2 P.M., Dr. Burnford: Medical Wards. 2 P.M., Dr. Owen: Medical Out-patients. 2 P.M., Mr. Tyrrell Gray: Operations.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.

FRIDAY.—10.30 A.M., Dr. Dowling: Skin Dept. 11 A.M., Dr. McDougal: Electrical Dept. 2 P.M., Mr. Sinclair: Surgical Out-patients.

SATURDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations of the Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C. THURSDAY, July 23rd.—4 P.M., Dr. Nabarro: The Cerebro-Spinal Fluid in Health and Disease.

Appointments.

Royal Northern Hospital, Holloway: CALVERT, EDWIN G. B., M.D., M.R.C.P., Physician with charge of Out-patients; LANE-ROBERTS, C. S., F.R.C.S., Obstetric Surgeon with charge of Out-patients.

University of Manchester: STEWART, D., M.R.C.S., L.R.C.P. Lond., Lecturer in Anatomy; PATERSON, R. S., M.B., Ch.B. Manch., Lecturer in Applied Anatomy; OLIVER, T. H., M.D. Manch., Lecturer in Systematic Medicine; MELLAND, C. H., M.D. Lond., B.Sc. Manch., Lecturer in Medicine for Dental Students; KELLY, A. C., M.B., Ch.B. Manch., Demonstrator in Anatomy.

Vacancies.

For further information refer to the advertisement columns.

Aylesbury, Royal Buckinghamshire Hospital.—Res. M.O. £150.

Barbados General Hospital.—Sen. Res. Surg. £330. Jun. Res. Surg. £300.

Bath, Royal Mineral Water Hospital.—Res. M.O. £130.

Birkenhead Union Infirmary.—Res. Asst. M.O. £300.

Birmingham Cripples' Union and Royal Orthopædic and Spinal Hospital.—Jun. H.S. £150.

Birmingham, Queen's Hospital.—Asst. Obstet. O. £50.

Birmingham University.—Lecturer in Physiological Dept. £300. Demonstrator of Anatomy. £300. Also Walter Myers Travelling Studentship. £300.

Cairo, School of Dental Surgery.—Supt. and Lecturer in Metallurgy, &c. £E.600. Lecturer in Surg. £E.480. Asst. Lecturer in Surgery. £E.360. Lecturer in Mechanics. £E.480.

Cardiff City Mental Hospital, Whitchurch.—Res. Clin. Asst. 30 guineas.

Cumberland and Westmorland Mental Hospital, Jun. Asst. M.O. £350.

Deptford Metropolitan Borough.—Asst. M.O.H. and Tuberc. O. £750.

Durham County Mental Hospital.—Asst. M.O. £400.

Eastbourne, Royal Eye Hospital.—Hon. Ophth. S.

East London, South Africa Frere Hospital.—Res. M.O. £300.

Evelina Hospital for Children, Southwark, S.E.—H.S. £120.

Gloucestershire Royal Infirmary, &c., Gloucester.—Asst. H.S. £150.

Grosvenor Hospital for Women, Vincent-square.—Anæsth.

Hampstead General and N.W. London Hospital, Haverstock-hill, N.W.—Radiologist. £100.

Hertford County Hospital.—H.S. £150.

Hong Kong University.—Reader in Biology. £600.

Liverpool University.—Professor of Entomology. £800.

Manchester, Ancoats Hospital.—Asst. H.P. £100. Also Anæsth. 10s. 6d. per attendance.

Margate, Royal Sea Bathing Hospital.—H.S. £200.

Northampton General Hospital.—Hon. Asst. S.

Pietermaritzburg, Grey's Hospital.—Male H.S. £500.

Queen's Hospital for Children.—Asst. Cas. M.O. £100.

St. Mark's Hospital for Cancer, &c., City-road, E.C.—Hon. S. Also Hon. Asst. S.

St. Mary's Hospital for Women and Children, Plaistow.—Clin. Asst.

St. Marylebone General Dispensary.—Gynæcologist.

St. Paul's Hospital for Skin, &c., Diseases.—Hon. Anæsth.

Samaritan Free Hospital for Women.—H.S. £100.

Southampton, Royal South Hants Hospital.—Jun. H.S. £150.

Whittingham, Preston, County Mental Hospital.—Temp. M.O. £7 per week.

Willesden General Hospital.—Hon. Anæsth.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments for Certifying Factory Surgeons: Snaith, Yorks; and Hoddesdon, Hertford.

The Secretary of State for the Home Department gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act for the Districts of the Camelford, Holsworthy, and Launceston, &c., County Courts. Applications should reach the Private Secretary, Home Office, not later than August 5th.

Births, Marriages, and Deaths.

BIRTHS.

BATTERHAM.—On July 5th, at the Military Families Hospital, Cologne, the wife of Captain D. J. Batterham, R.A.M.C., of *a son.*

CLOUSTON.—On July 6th, at Lavenham, Suffolk, Olive Gwendolen *Clouston, M.R.C.S., L.R.C.P., wife of Eric C. T.* Clouston, M.R.C.S., L.R.C.P., of a son.

KERRIGAN.—On July 2nd, at Devonport, the wife of Surgeon-Lieut.-Commander C. J. M. Kerrigan, R.N., H.M. Dockyard, of a son and daughter.

RIVETT.—On July 12th, at a nursing home, to Mary, wife of Louis Carnac Rivett, of 118, Harley-street and 3, *Hanover*-terrace—a daughter.

SOUPER.—On July 11th, at Victoria-street, Aberdeen, the wife of Dr. H. Ross Souper, of a daughter.

MARRIAGES.

CLAXTON—ERVINE.—On June 30th, at Saint Saviour's Church, Denmark Hill, Dr. E. Claxton, of Bath, to Muriel Ervine, of Denmark Hill.

COLWILL—WORRINGHAM.—On July 11th, at St. Mary Abbot's, Kensington, W., Charles Kingsley Colwill, M.R.C.S., L.R.C.P., to Muriel, daughter of Mr. and Mrs. *Charles* Worringham, of Inverna-gardens, Kensington, W.

DEATHS.

CAMPBELL.—On July 3rd, at a nursing home, after an operation, George Maclean Campbell, M.C., M.B. Lond., M.R.C.S. Eng., L.R.C.P. Lond., late Captain, R.A.M.C., aged 37.

CLIFFORD.—On July 8th, at his residence, 15, St. John-street, Manchester, Harold Clifford, M.B., F.R.C.S. Edin., Hon. Gynæcological Surgeon to St. Mary's Hospitals, Manchester, and the Salford Royal Hospital.

GUBBINS.—On July 8th, at Westgate, from the effects of a cycling accident, Lieut.-General Sir Launcelotte Gubbins, K.C.B., M.V.O., J.P., late Director-General A.M.S., in his 76th year.

REW.—On July 6th, died suddenly, G. R. Rew, M.R.C.S., L.R.C.P., of Bedfont, Feltham, late of King's College, London.

STEWART.—On June 26th, at Stonebridge Park, William James Johnstone Stewart, M.D. Edin., D.P.H. Camb., for 22 years Medical Superintendent of the Willesden Municipal Hospital, aged 57.

WICKHAM.—On June 30th, at Lenworth, Southbourne-on-Sea, Hants, Charles A. Wickham, M.R.C.S., L.R.C.P., late of Willesborough, Ashford, Kent.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

COLONIAL HEALTH REPORTS.

CAYMAN ISLANDS (DEPENDENCY OF JAMAICA).

Mr. H. H. Hutchings (Commissioner) has forwarded to the Colonial Office a report for 1923 on these three small islands in the Caribbean Sea, lying north-west of Jamaica, and approximately mid-way between that island and the south-west coast of Cuba. He states that the general health of the Dependency is good. Digestive disorders of a mild nature are prevalent, induced by the sameness of a diet of starchy foods. There is an occasional case of typhoid. Care with respect to arrivals from Jamaica have prevented the introduction of alastrim. There were 179 births in 1923 (34 per 1000) and 55 deaths (10 per 1000). The population is estimated at approximately 5253. The rainfall amounted to 54·76 inches in the Georgetown or western district of the Grand Cayman. The air temperature ranges between 70° and 80° F. in the cooler winter months, and 10° higher in summer. The nightly calms and the excessive dampness accentuate the heat of summer.

LEEWARD ISLANDS.

In the report for 1923-24 the following particulars are given respecting the five Presidencies constituting the Federation or Colony. In Antigua the estimated population on Dec. 31st, 1923, was 29,420. The births during the year were equal to a birth-rate of 38·68 per 1000, of which 78·03 were illegitimate. The death-rate was 27·56 per 1000. In the Presidency of St. Kitts-Nevis, the birth-rate was 41·7 per 1000 in St. Kitts, 30·8 in Nevis, and 28·6 in Anguilla. In Dominica the population was estimated at 38,632, the birth-rate 37·22 per 1000, and the death-rate 26·66. Illegitimate births exceeded the legitimate by 202. Montserrat had a population of 11,890. The legitimate births were 110 and the illegitimate 315, the percentages being 25·8 and 74·1 respectively. The death-rate was 15·5 per 1000. The general health of the colony during the year was satisfactory. No epidemic disease occurred. The appearance of small-pox in Antigua led to the introduction, for a period of five months, of compulsory revaccination in St. Kitts-Nevis. The campaign met with ready acceptance on the part of the public. The revaccinations performed, added to the number of those persons immunised by recent revaccination or primary vaccination, may be regarded as having effected for the present the satisfactory protection of the whole Presidency. The vigilance and precautions of the Quarantine Board and Harbour Authorities, however, have been in no way relaxed. The campaign against yaws and syphilis, which had been in abeyance for a time, was recommenced on improved lines in November, 1923. The moogrol treatment of the inmates of the Leper Asylum was continued and extended during the year with gratifying results. The epidemic of alastrim, which had been present in the island since July, 1922, and which had done considerable harm to trade owing to the quarantine restrictions imposed by other places, came to an end in September, 1923. No further cases have occurred.

MAURITIUS.

The report for 1923 is signed by Mr. H. Lalonette, Acting Assistant Colonial Secretary. The section relating to vital statistics and public health states that the estimated popu- lation on Dec. 31st was 381,678, an increase of 5193 on the last census figures. The birth-rate in the general population was 40·9 and in the Indian population 34·9 per mille, whilst the death-rates per 1000 in the two populations were 29·0 and 28·1. The mortality was remarkably low, the death-rate being the lowest since 1891. The number of deaths due to malaria and malaria cachexia (the highest death-producing factors in Mauritius) was 1979, as against 3526 the year before. The next high causes of death were pneumonia and broncho-pneumonia (1393) and diseases of early infancy (1026). There were 139 cases of plague during the year, of which 118 were fatal; the largest number of cases was, as usual, in Port Louis (117). There were 150 cases of enteric fever, as against 224 in the previous year. The infantile mortality (deaths of children under one year) gave a ratio of 139·4 per 1000 live births, as against 147·9 in 1922. There were 1557 still-births registered during the year, corresponding to a rate of 112·2 per 1000 live births. The number of cases treated in the public hospitals and at the dispensaries was 82,326, this total being much below that for 1922 and for the five-year period 1919-23. The total number of persons certified insane on Dec. 31st was 798, or 34 less than the year before. Admissions to the lunatic asylum numbered 194. At the Leper Asylum there were 37 patients (males 25, females 12) at the beginning of the year. Admissions during the year numbered 19, deaths 2, and discharges 14. The construction of the new leper asylum has been completed, and the transfer of the lepers effected. The law relative to compulsory segregation of lepers will be brought into operation at an early date. The climate is tropical, but, owing to the high elevation of the central plateau, a large part of the island enjoys a temperate and even bracing climate. The average temperature of this highland region is about 69° F., and the maximum about 80°. The low-lying coastal region has naturally a higher average temperature ranging from 90° to 70°. Mauritius lies in the track of cyclones, which are liable to occur during the months of December to April. There has been no very severe cyclone since 1892. The rainfall is irregular, and varies according to the locality and elevation. In the central portion of the island an average yearly rainfall of 175 inches is recorded. That of the coastal districts varies between 25 and 80 inches.

SEYCHELLES.

Brigadier-General Sir Joseph A. Byrne, K.B.E., C.B., the Governor of this colony, in his report for 1923, states that the population is estimated at 25,700, being an increase of 1177 since the Census of 1921. The births in 1923 numbered 771, corresponding to a rate of 30·02 per 1000. The deaths were 297, or 11·79 per 1000. This low death-rate constitutes a record, and is partly due to the fact that no epidemics of an infectious or contagious disease occurred during the year. Although almost on the equator, the climate of Seychelles is quite healthy, and owing to the absence of the anopheline mosquito malaria does not occur. The maximum shade temperature rarely exceeds 86° F., but even at night the temperature seldom falls below 74°. The hottest weather occurs during the months of March and April. The rainfall averages about 90 inches, although in some years it has reached 115 inches. The estimated total number of square miles comprised in the Seychelles Islands and their dependencies is 156¼.

TONGAN ISLANDS PROTECTORATE.

Mr. J. McOwan, the British Agent and Consul at Tonga, writes in a report for 1923-24 that the estimated population on Dec. 31st was 24,973. The birth-rate for the year was 33·21 per 1000, and the death-rate 22·98. The population includes 571 Europeans and 235 half-castes. The islands are situated 390 miles to the E.S.E. of Fiji, and have an area of 385 square miles. Queen Salote Tubou, the present queen, succeeded to the throne on the death of her father, King George Tubou II., in 1918. A Protectorate was proclaimed over the kingdom of Tonga in 1900, under which Great Britain assumed the exercise of civil and criminal jurisdiction over all subjects and foreign powers in Tonga, and an agent and consul was appointed to advise the Queen and Government, and to supervise the financial administration. The seat of government is at Nukualofa, on the island of Tongatabu. Although the Tongan group lies between latitudes 16 and 22 degrees south, and is therefore within the tropics, the climate is probably the best of any of the islands in the Western Pacific. For eight months of the year (May to November inclusive) the thermometer rarely registers higher than 83° F., and as the humidity is comparatively low during these months, Europeans do not feel the heat to the same extent as in the groups to the north. During the wet season (December to March inclusive) the temperature ranges from 65° to 94°, with a higher humidity. Malaria and tropical fevers are unknown.

THE WHISPER AS A MEASURE OF DEAFNESS.

A WHISPER, uttered at the end of expiration, is more likely than the normal voice to have a similar loudness from day to day, and that is why a whisper is used for the assessment of deafness in the French Army, no recruit who cannot hear a whisper at 18 inches being accepted for the ranks, though he may be accepted for the auxiliary services if he can hear it at anything over 9 inches. Méd. Maj. P. E. H. F. Bertein, from whose paper on "The Measurement of Deafness," in the *Archives de Médecine Militaires* for April we quote, adds that the figures 1, 3, 9 are more easily heard by men with nerve deafness; 5, 6, 8 by those with middle-ear disease. Before men are sent to the ear specialist, with whom in every doubtful case lies the ultimate decision, each should have his deafness estimated quantitatively, and more than once, by his regimental officer, to allow the honesty of the patient to be appreciated, and also possible variations in his deafness.

An Address

ON THE

EVOLUTION OF A HEALTH RESORT.

Being the Presidential Address delivered at the Annual Meeting of the British Medical Association in Bath on July 21st, 1925,

BY F. G. THOMSON, M.A. CAMB., M.D.,
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THE history of a town that has been closely associated with the treatment of disease for nearly 2000 years, and probably longer, naturally possesses many features of medical interest, and it may not be out of place to-night, at the commencement of this meeting, to refer to certain phases of the evolution of Bath as a health resort, and to certain of the characters, medical and otherwise, who have played their part in its medical history.

EARLY DAYS.

Though the hot springs have been used in the treatment of disease ever since the Roman occupation, it was not till the middle of the sixteenth century that their therapeutic properties engaged the serious attention of the medical profession, and our knowledge of the actual practice of medicine in Bath remains very fragmentary till about the time of Queen Elizabeth, when its reputation as a resort for visiting patients first became established.

The primitive conditions, however, which obtained in the time of the late Tudors and early Stuarts were such that one imagines nothing but dire necessity would have caused anyone to visit Bath at that time. The town itself was one of the meanest in England, and the streets are said to have been a succession of dunghills, pigsties, and slaughter-houses. The baths themselves consisted of dilapidated, ill-kept, dirty pools, open to the air, and surrounded only by a low parapet, over which the more idle and inquisitive of the inhabitants were accustomed to view the proceedings at their ease and leisure. Men and women bathed together, naked, at nearly all times of the day and night, and disorder of all kinds was rampant. The baths are said to have resembled a veritable bear-garden, and cats, dogs, and even human bodies to have been hurled into the bath while people were bathing in it.

In spite of all the discomforts and positive dangers, Queen Anne of Denmark, the wife of James I., decided to take a course of baths in the bath known as the King's Bath. Unfortunately, Her Majesty had a somewhat alarming experience, as a ball of fire is said to have risen from her feet and spread out all over the surface of the bath. This remarkable phenomenon, which one can only suppose was an ebullition of marsh-gas rising from the mud, which was disturbed by the lady's feet, so alarmed the Queen that she refused to bathe there any more, and was with difficulty persuaded to finish her course of treatment in an adjoining bath, since known as the Queen's Bath, where she was assured such cataclysmic disturbances were never known to occur.

THE STUART COURT.

The reign of Charles II., however, marked the commencement of an entirely new phase in the history of the town. Whereas people had hitherto come solely for reasons of health, they now began to come for pleasure. In 1663 Charles II. formally removed his Court to Bath, and the concourse of people was so great that not only the town, but the surrounding villages also, were crowded with visitors. Though certain improvements had been effected in the conduct of the baths, and though quite a number of Bath physicians had by this time written more or less learned books on the action of the waters, the scene depicted in the print of the King's Bath in 1667 hardly suggests that balneological treatment was as yet regarded by the public with that respect which it deserved.

The proceedings appear to have been looked upon more as a popular entertainment than as a remedy for disease, and the antics of children diving for pennies, and of their elders indulging in fancy forms of swimming, appear to have afforded more amusement to the onlookers than to the unfortunate patients. The number of the latter, however, was steadily increasing, and included more particularly cases of rheumatism, gout, diseases of the skin, diabetes, dropsy, and paralysis. The reputation the waters had acquired for the treatment of sterility induced the Queen, Catherine of Braganza, to take a course of baths in the hope of providing an heir to the throne, and thereby regaining the waning affections of the errant and profligate Charles.

Besides the King and Queen, the Duke of York, and Prince Rupert, we learn that King Charles's somewhat Oriental *ménage* included Lady Castlemaine, the Duchess of Cleveland, and the Duchess of Portland, two others of Charles's acknowledged mistresses, and last but not least, the beautiful Miss Stewart. This pleasant little coterie, together with the rest of the Court, lodged, and apparently lived a somewhat hectic life, at a house known as Abbey House, adjoining the King's Bath.

DR. PIERCE AND DR. GUIDOTT.

Abbey House, known also as the Royal Lodgings, was owned by a Dr. Robert Pierce, the most successful practitioner in Bath of his day, and used by him as a sort of clinic to accommodate many of his more important patients.

Dr. Pierce, whose list of "Cures wrought by God's Blessing on the Directions of Robert Pierce, M.D.," shows him to have been a practical, painstaking, and careful physician, was evidently a firm believer in the proper selection of suitable cases for treatment at Bath. This is shown by his account of a certain Mrs. Frisby, sent to him from Northamptonshire, suffering from palsy and loss of speech, of whom he says:—

> "On bathing she apparently grew worse, especially in her speech, which very much discouraged her in proceeding farther. And indeed I was not very importunate with her for her longer stay, lest the Great Bell should have rung out for her here; for then inquiry would have been made, Whose Patient she was? Not what Distemper she had? or whether a due method had been used for her recovery; but with the Vulgar (who measure all things by the Success) the Physician that does not cure shall be sure to have the Reputation of killing the Patient that dies, be the disease or the patient never so much incurable. I return'd her back, therefore, to him that sent her hither, with advice to use Antiscorbuticks and Cephalicks, and never since heard anything of her."

The subject of after-treatment also received his most serious attention; one of his favourite prescriptions being a "sacculus," or in other words a muslin bag, containing various herbs, to be suspended in a barrel of beer.

Dr. Pierce's great rival was a Dr. Thomas Guidott, a distinguished graduate of Oxford, whose scientific bent induced him to carry out elaborate and painstaking researches on the chemical composition of the waters. Among his other activities he found time to write biographical accounts of all the doctors in Bath between the year 1600 and 1680. His biographies of some of the better known doctors of his time, such as Dr. Jorden, Dr. Bave, and Dr. Venner, show them to have been men of the highest integrity and professional attainments.

A GENERAL CASINO.

Though Queen Catherine of Braganza's hopes were not realised, her successor, Queen Mary of Modena, wife of James II., who bathed in the Cross Bath for a similar reason, was more fortunate, a son being born to her in the ensuing year. This was regarded as a most remarkable and convincing proof of the efficacy of the waters, and was suitably commemorated by placing an ornamental cross in the centre of the bath, with an appropriate inscription recording the circumstances.

Long before these events took place, however, the city had reached the acme of its fame, not only as the resort of the sick and ailing, but as the periodical visiting place of all who aspired to take any position whatever in the world of fashion. During the reign of Queen Anne, Bath became a sort of general casino for the whole kingdom. The Queen herself, who is said to have been such a martyr to gout that she was unable to stand during her coronation service, paid several visits, and for the next 120 years or more there is hardly a single person of distinction, from Royalty downwards, whose name is not in some way or another connected with visits to Bath, either for health or pleasure.

Thanks to the numerous authors and dramatists, such as Steele, Defoe, Goldsmith, Sheridan, Anstey, and others, who habitually visited Bath in the eighteenth century, the social habits and customs of this picturesque period are peculiarly well known to us. Whatever their other predilections may have been, we learn that the first and chief preoccupation of the majority of the company was the daily visit to the bath.

BATHS FOR DIVERSION.

In addition to those who took their baths under medical orders, many others bathed for diversion. The bath became a sort of fashionable parade which few cared to miss. The simple bathing dresses in vogue at the end of the seventeenth century were gradually replaced by more elaborate costumes, till eventually both men and women took to the water arrayed in the height of fashion. Ladies of distinction bathed in state, and were attended by the daughters of prominent citizens. Those who desired them were supplied with small floating trays, on which they placed nosegays, sweetmeats, snuff, and such trifles as face-powder and patches, to replace those dislodged by the moisture. The rule that the gentlemen should remain at one side of the bath and the ladies at the other seems to have been honoured more in the breach than in the observance. The patients were conveyed to and from the bath in sedan chairs, which in the case of the ladies were, to use the words of a contemporary French writer, "hermetically sealed when the occupants were old, ugly, or prudish, but artistically penetrable when they were finely formed."

Water-drinking, which by this time had become an established part of the treatment, took place later in the morning at the old Pump Room, which was replaced at the end of the century by the present structure. It was here that, to the accompaniment of a prodigious amount of gossip, scandal, and general disturbance, the prototypes of Lady Teazle, Lady Candour, and Mrs. Malaprop were to be found daily, drinking their quantum of water, and at the same time unsuspectingly providing Sheridan with the material for his plays.

The general régime and amusements of the patients, which after all constitute an important factor in their "cure," need only very brief reference. Fortunately we are able to get some idea of them, even if it is somewhat distorted, from the caricatures of Rowlandson and other cartoonists of the period. Following the parade in the Pump Room, public breakfasts formed an important feature. Later on in the day, after promenading in the parades, or adjourning to the various coffee-houses to hear the latest news, gambling, which in the time of the Georges was an almost universal passion, occupied the attention of the majority. Music, the drama, and art occupied the attention of the more intellectual of the company. Concerts were held daily, and it was while singing at one of those that the beautiful Miss Linley engaged the affection of the youthful and impetuous Sheridan.

CRITICS, FRIENDLY AND OTHERWISE.

The presence of such a large number of invalids from all parts of the country naturally attracted a great many doctors, many of whom practised in Bath during the season, and in London or elsewhere during the rest of the year. Amongst these there were probably a good many whose professional reputation and standard of ethics left something to be desired, and it is not surprising that in an age when wit, satire, and caricature were the predominant features in the literary world, they came in for their full share of ridicule and criticism. Thus Steele, writing in the *Guardian*, relates what he alleges to have been his own experience of the methods adopted for soliciting practice, saying:—

> "The physicians here are very numerous, but very good-natured. To these charitable gentlemen I owe that I was cured in a week's time of more distemper than I ever had in my life; they had almost killed me with their humanity. A learned fellow lodger presented me a little something on my first coming, to keep up my spirits; and the next morning I was so much enlivened by another, as to have an order to bleed me for my fever. I was proffered a cure for the scurvy by a third, and had a recipe for the dropsy gratis before night. In vain did I modestly decline these favours, for I was awakened early in the morning by an apothecary, who brought me a dose from one of my well-wishers. I paid him, but withal told him severely that I never took physic. My landlord hereupon took me for an Italian merchant that suspected poison; but the apothecary, with more sagacity, guessed that I was certainly a physician myself."

The most bitter criticism of the local doctors comes from Smollett, the author of "Peregrine Pickle" and "Roderick Random," both of which deal largely with the social life of Bath. Smollett himself was a doctor of medicine, and at one time essayed to practise in the town, and actually wrote a book on the external use of Bath waters. His lack of success appears to have roused feelings of intense bitterness against his more fortunate rivals, whom he describes as "a class of animals who live in the place, like so many ravens hovering round a carcass, and even ply for employment like scullers at Hungerford Stairs." In the circumstances, however, Smollett's virulent attacks on his own profession need hardly be taken too seriously, more especially as he shows a sordid tendency to paint all his characters in the most unfavourable light.

A more humorous parody on the ways of some at least of the Bath physicians of the eighteenth century is contained in Anstey's "New Bath Guide," which, in a series of letters, relates the adventures of a somewhat unsophisticated family during a visit to Bath for the sake of their health. In a letter to his mother, written on his arrival, Mr. Simpkin Blunderhead writes of his doctor:—

> "He determined our cases at length (God preserve us);
> I'm bilious, I find, and the women are nervous;
> Their systems relax'd, and all turned topsy turvy,
> With hypochondriacs, obstructions, and scurvy;
> And these are distempers he must know the whole on,
> For he talked of the peritoneum and colon."

According to Anstey, none of the doctors indulged in the baths they so freely prescribed for the patients, thus:—

> "Though many a skilful and learned physician,
> With candour, good sense, and profound erudition,
> Obliges the world with the fruits of his brain,
> Their nature and hidden effects to explain,
> Not one of the faculty ever has try'd
> These excellent waters to cure his own hide."

Though the criticisms of Steele, Smollett, and Anstey were probably throughly well deserved by those to whom they were directed, it must not be supposed that all the physicians in Bath were tarred with the same brush. On the contrary, many of them were men of the highest standing and repute, hardly to be distinguished, as Barbeau says, from the best of their colleagues in London. Among them may be specially mentioned Dr. Hartley, ranked by Coleridge with Milton, Newton, and Priestley; Dr. Cheyne, of whom Pope said there was no honester man or truer philosopher; Dr. William Oliver, a founder, and the first physician to the Mineral Water Hospital; Henry Harrington, renowned for his literary ability as well as for his knowledge of medicine; William Falconer, the physician to Pitt, who shares with Priestley the distinction of being the discoverer of oxygen. Last, but not least, of the eighteenth century physicians, we have Caleb Hillier Parry, who practised in Bath from 1780 to 1816, and whose contributions to medical literature, no less than his skill in practice, entitle him to rank as one of the most eminent physicians of his day.

LATER DEVELOPMENTS.

Though time will not allow of any references to the many distinguished Bath patients in the eighteenth century, one may specially mention John Hunter, who paid visits in 1777 and 1778 for the relief of pain associated with the aortic aneurysm which eventually caused his death. His condition being much worse in 1785, he hastened back to Bath, but became progressively worse, and died in London some months later. Though the vogue of Bath remained undiminished during the earlier years of the nineteenth century, important changes were gradually taking place in its fortunes, both from a social and medical point of view. Increasing facilities for travel and the wider diffusion of wealth began to lead people further afield, and Bath gradually lost its unique position as the chief, and in fact the only, resort of fashion in this country. On the medical side changes no less striking were also in progress. Balneological treatment began to be carried out on much more serious and rational lines. The promiscuous treatment of all types of patient in a common bathing pool, open to the gaze of an idle and inquisitive public, ceased with the erection, in 1798, of private suites of baths, which were the forerunners of the present installation, and in which various forms of treatment could be given to suit individual cases. The study of hydrology was being actively taken up, both in this country and on the continent of Europe.

The work of Dr. Currie of Liverpool, and later of Priessnitz in Silesia, called attention, in the first place, to the possibilities of effective treatment by the hot and cold application of ordinary water. Side by side with this development of hydrotherapy the study of the specific therapeutic properties of the various natural waters steadily advanced, till eventually that branch of therapeutics now known as medical hydrology may be said to have gradually emerged from a form of empiricism, based largely on tradition and superstitious belief, to a recognised branch of scientific medicine.

Fifty Years
OF
PROGRESS IN PUBLIC HEALTH.

Being the Presidential Address delivered to the Sanitary Science Section of the Congress of the Royal Sanitary Institute at Edinburgh on July 21st, 1925,

BY SIR GEORGE NEWMAN, K.C.B., M.D. EDIN., F.R.C.P. LOND.

[Sir George Newman introduced an eloquent address on the progress of public health during the past half century by detailing the various factors which culminated in the Public Health Act of 1875, considering these also in the light of future developments. He showed how enfranchisement of the town labourer in 1867, reform in the civil and military services, and the Education Acts were followed by further extensions of the franchise, which culminated in 1918, when the number of Parliamentary voters, now of both sexes, was trebled. He indicated the aspirations produced, as well as the *disappointments* which accompanied the liberal reforms, and referred particularly to the disease and despair which came in the train of the great industrial revolution. He showed how Chadwick's monumental "Survey" led to the Royal Commission on the Health of Towns and the Public Health Act of 1848, and how the influence of Bentham's utilitarian philosophy, of Owen, Cobbett and the Chartists, combined with the effects of the splendid reports of Simon to the Privy Council, and the work of Arnott, Kay, Southwood Smith and Greenhow to prepare the public for the developments to follow the Public Health Act of 1875.

Sir George Newman then sketched vividly the new influences after 1875, showing how two years after the passing of the Act the discovery of bacterial causes of disease revolutionised medical views and practice so that the centre of gravity turned from environment to infection "not only to the agents of infection but to the conditions of persons and environment, the lack of resistance which favoured those agents." There was a rapidly growing knowledge and sense of physiology which has continued to exert, during the last fifty years, an effect on the whole outlook of Preventive Medicine, while social emancipation has accompanied a rising standard of education and material comfort. It is now known that the chief defence against disease is not changed environment but the body of man, and secondly that obedience to the laws of physiology is necessary both for the maintenance of the body in health and for its full capacity and effective use.

The first section of the address closed with the statement that utilitarianism, environment, infection, physiology, and social emancipation have exerted an active influence in the past and are likely to achieve even more in the immediate future. Sir George Newman continued:—]

THE RESULTS OF THESE REFORMS.

Looking back from 1925, we may well ask, What has been the result? Well, first there has been a decline in the death-rate. In 1871–80 it was 21, and in 1924 it was 12; in the same period the infant mortality-rate, a most sensitive index of national health, was brought down from 149 per thousand born to 75. Expressed in another way, the expectation of life for every child born in Britain to-day is approximately 12 years longer than that of its grandfather.

The life-table published by Sir William Hamer in 1923 *gives the actual figures for London*:—

*London Life Table, 1841–1922.**

Period.	Expectation of life (years).		Period.	Expectation of life (years).	
	Males.	Females.		Males.	Females.
1841–50 ..	34·0	38·2	1891–1900 ..	41·2	45·4
1851–60 ..	36·4	40·4	1901–10 ..	47·2	51·9
1861–70 ..	35·7	39·0	1911–12† ..	49·5	54·5
1871–80 ..	38·0	42·4	1920–22 ..	53·8	59·1
1881–90 ..	40·1	44·5			

* Annual Report of London County Council, 1923, Ch. xxiii. and xxiv., Report of the County Medical Officer of Health, p. 13.

† The last pre-war years for which comparable figures are available.

Mr. W. Jones, the secretary of the Public Health Department of Glasgow, has recently shown that in 1870–72 the male infant born in that city had an "expectation" of 31 years, which in 1920–22 had been raised to 48 years, and the female infant had risen from 33 to 52 in the same period. It is significant that the "expectation" of life was better in Glasgow in 1821–27 than in 1870–72.

Then, in the second place, there has been a reduction in sickness and invalidity from certain diseases. In 1875 *enteric fever* accounted for 370 deaths in each million, last year the 370 had fallen to 12. Its incidence in the South African war was 28·5 per cent. of troops, in the European war 1 per cent. In 1875 there were 1500 deaths attributed to *typhus* in England and Wales (which had been differentiated from enteric in 1850); in 1924 there were only 5. But 100 years ago, in London and Edinburgh, typhus was endemic, with periodic epidemic outbursts. "The disappearance of typhus and relapsing fevers from the observation of all but a few medical practitioners in England, Scotland and Ireland," says Creighton, "is one of the most certain and most striking facts in our epidemiology," and he attributes their disappearance to better housing, cheap food, and increased wages. The *tuberculosis* death-rate is declining rapidly and with increasing velocity. In 1847 the death-rate per million from consumption was 3189, in 1875 it was 2313; and in 1924 it had fallen to 801. It is hardly too much to say that if this decline should continue more or less along the line it has followed, tuberculosis will have become a rare disease before the end of the present century.

Small-pox was a national scourge a century ago; to-day it is the perquisite of those who elect to have it. Last year Sir Clifford Allbutt declared that the almost complete abolition of *chlorotic anæmia* of young women is one of the most remarkable issues of a single generation of modern preventive medicine. All this has meant an immense saving of human life, an increase of human capacity and national wealth, an incalculable extension and enlargement of happiness and contentment.

But there is another epoch-making effect. The preventive medicine of 50 years has, in the words of Rudyard Kipling,

> "Smote for us a pathway
> To the ends of all the earth."

In some ways the most wonderful medical triumph of the past half century has been the discovery of the means of *the control of the tropics.* It is true that we are yet a long way off complete control, but the causes of disease have been found and the means of stamping them out demonstrated. *Famine* stands in the front line of the captains of the men of death—and the advance in methods of irrigation and transport of food have greatly reduced it and played a prominent part in the establishment of public health. Close behind famine follows disease. The discovery of the causes of malaria, of yellow fever, of plague, of cholera, and of sleeping sickness is common knowledge. Yet all these discoveries belong to the period since the Public Health Act of 1875.

Malcolm Watson demonstrated the possibility of preventing *malaria* in the Federated Malay States by banishing the anopheles' breeding places by the clearance of the coastal forest and subsoil and surface drainage. In India and elsewhere this technique may prove inexpedient or insufficient, unless supplemented by a direct attack on the mosquito in its larval or adult stage, or screening habitations or persons from its invasion, or treating cases or carriers. Indeed, the recent Malaria Commission of the League of Nations in Italy, Russia, and Eastern Europe has recommended for countries with incomplete public health services and limited funds the urgent necessity of abstaining from "radical" engineering measures and adopting "primary" public health measures of ascertainment of infection. treatment and after-treatment of patients and carriers, and dealing directly with infected houses and mosquitoes—in a word, quinine, the attack on the mosquito, the protection of the individual, and general sanitation.

The work of Gorgas in stamping out *yellow fever* in Havannah and on the Panama Isthmus is well known. By a strict discipline of quarantine, hospital isolation, drainage, sanitation, and mosquito screening and destruction, he was able to eliminate this disease, even though an immigration of non-immune population was continually occurring.

Practical measures against *sleeping sickness* (trypanosomiasis) have been taken effectually in the Cameroons, the Congo, Tanganyika, Kenya, and Uganda. They consist of the systematic surveys (clinical and bacteriological) of the infected population, followed by curative and prophylactic use of atoxyl in large doses; the separation of the healthy from the infected, with the isolation, if necessary, of whole villages or the migration of sections of the population from areas or streams affected with the tsetse-fly; sanitation of villages and improvement of diet; the clearance of banks of water-courses, paths, roads and settlements of all brushwood, and their proper drainage; and lastly, fly destruction by means of bird-lime or otherwise. These methods have completely suppressed sleeping sickness in the Portuguese Island of Principe, off the west coast of Africa, and proved effective in terminating recent disastrous epidemics on Lake Victoria Nyanza, and elsewhere in equatorial Africa. In this way hundreds of thousands of lives have been saved, and the way in which the tropics can be brought under control has been demonstrated. This problem of tsetse-fly is, in the opinion of the East African Commission (1925), "probably the most serious threat to the population in our East African territories. . . . We regard the tsetse domination as constituting a menace not merely to East Africa, but to all those countries which look to East Africa as the source of supply of food and raw materials."

All this can mean only one thing. The last half century has proved beyond doubt that nationally and imperially preventive medicine has now become practical politics. The trail has been blazed. It remains for this country to use it, apply it, and extend it—and all of it—with courage and wisdom, to its national and imperial problems as the sound and economic policy. A stunt here and a stunt there will not suffice—it should be organised as a whole, as an integral factor in state-craft.

The Future.

Let us turn to the future. Much remains to be done. For whilst progress has overcome many diseases, others remain prevalent and destructive. In 1924, in England and Wales, respiratory diseases caused 82,000 deaths, diseases of the heart and circulation 79,000, cancer 50,000, nervous diseases 47,000, tuberculosis 41,000, and influenza 19,000. These are very formidable enemies, responsible for 65 per cent. of our mortality, and we cannot yet defeat them. We still lose nearly 3000 mothers in childbirth, and more than 50,000 infants before they have completed their first year, and in both categories the maimed far outnumber the dead. We still have 40 per cent. of the deaths occurring under 50 years of age. In 1924 the sickness among insured persons only entailed more than 23 million weeks of lost work, equivalent to 447,000 years, or to 447,000 persons off work for a year. It is a very serious, and largely a preventable, drain upon national resources, costly and wasteful in many ways. In a word, national ill-health loses time and reduces production, as well as resulting in suffering, discontent, and premature death.

The history of the evolution of our system of public health since 1875, and its effects reveals, as we have seen, some of the chief influences which have played a predominant part. We must continue to be utilitarian in the best sense of the term. We must also be more economical. Our financial resources must be husbanded and our revenue not mis-spent or frittered away. I am convinced that the ratepayer is reasonable when he asks for equally good results at less total cost. In fact, it is now a national necessity that money must be saved and not wasted; production must be increased and not diminished; personal responsibility stimulated and not weakened.

But the *past teaches us we must still build upon a* sanitary foundation; we must, like Harvey, "search and study out the secrets of Nature by way of experiment," *and by research learn more of the hidden* paths of infective processes; we must teach and practise physiology; and above all, we must understand *the social habits, aspirations, and psychology* of the people. Yet for public practitioners of the science and art of preventive medicine all this is *not enough; it is not close enough down to the* business we have in hand. These high things must be harnessed in the statesmanship and technique of *health administration, and there seem to me to be* three main lines along which there is urgent need to advance.

1. A NEW LOCAL UNIT OF SANITARY GOVERNMENT.

The present system of local health government in England is like an Egyptian palimpsest, composed of several layers of design lying one upon the *other*. At the bottom there are the Poor-law unions, next above them and three times more numerous are the local sanitary authorities, superimposed upon which come the local education authorities (318), then the insurance committees numbering 145. Thus the whole country is mapped out four times over, but the charting has been done by different hands, at different times and for different purposes, and hence arises duplication, overlapping, and confusion. There is confusion in areas and authorities, but there is no less confusion in the family. There are four local authorities concerned with maternity and infancy; three with children of school age; five authorities deal with persons of unsound mind or mental deficiency; four authorities are concerned with "sick persons"; three with the aged poor; and four with the able-bodied poor. It is all anomalous, extravagant, and redundant, with a result which is ineffective and financially wasteful.

What we seem to need is, first, *a single unit of health government* with necessary subcommittees for particular purposes. The principles which should guide us in devising such a local authority are (*a*) the concentration, as far as practicable, in one authority in each area, of the responsibility for all administration of health services from local rates, with or without Exchequer grant in aid; (*b*) the association of the work of the Poor-law and insurance with the public health service, and the use by that service for the whole community of coördinated medical institutions both voluntary and municipal; and (*c*) the unification in appropriate committees of the local authority of all public medical provision for the sick and infirm of all ages. Clearly, there would be advantage in thus having one authority for all health purposes—and towards unification of this nature many are looking. But the question is large and complex, and there are many considerations to which regard must be paid in prescribing a unit of sanitary government, including its history, size, population, urbanisation, character of industry and society, intercommunication, rating, relation to local and central government, and so forth. *If a large local* unit be contemplated it would be necessary to provide for the encouragement of a consciousness of community of interest and aim in the *smaller* contributory or constituent divisions, with appropriate delegation of powers or functions in accordance with service to be rendered. The large *autonomous body* might in that way delegate some of the actual detail work to the more local bodies. There is a second, somewhat similar, common-sense requirement—*namely, uniformity of administration*—in all comparable areas. All through the country, and in all departments of State medicine, there is need for introduction *of accepted* standards and a larger measure of equalisation and uniformity of central and local action, yet with ample opportunity for variety dependent on local needs and circumstances. There remains a third principle which the profession must not allow itself to forget—namely, that the local unit of health government must be *representative* of the will of the people as a whole. It cannot be wholly medical in personnel or in purpose. It must be comprehensive and disinterested. "Our trade our politics" is never sound state-craft.

Now, in devising this reform the medical profession must, in the interest of the State not less than the profession, take their share, exchanging with the layman their views on many *points—the nature of the* authority, its membership, the question of the coöption of experts, finance, medical participation, *the respective functioning of the different* local committees, the use and adaptation of existing institutions and their economical arrangement, and the *place and character of the domiciliary* medical services.

The present scheme of local sanitary authorities was conceived *as far back as the Royal Sanitary* Commission of 1843, was actually recommended by the Commission of 1869 and legislated for in the Public *Health Act of 1872, which* established as many as 1590 local sanitary authorities in England and Wales, which now number 1857 (excluding the 63 counties). *Experience in health administration* and other forms of governance have proved the grave disadvantages of small units of local government, and the trend has *been to enlarge them.* The *Poor-law* Amendment Act of 1834 reduced the units of Poor-law administration from 10,500 to 600; the Education Act of 1902 reduced *the unit of education* administration from 2469 school boards to 318 local education authorities; the new Rating and Valuation Bill would reduce the *units of local rating* from 12,882 to 648. These reductions unquestionably make for efficiency and economy. The next step, and of its urgency there is *general agreement, is* to reduce the 1900 local health authorities in a similar drastic way, coördinating the duties of the smaller ones with those of the larger ones. *We must not forget* that the present scheme of local sanitary authorities (now 50 years old) has rendered great pioneer service and has given sanitation an *invaluable local setting*. But under modern conditions the disadvantages are overwhelming. In the smaller bodies there is all too often incompetency both of personnel and officers, combined with inadequacy of remuneration of the officers; there is duplication of officers and institutions leading to extravagances, *waste, and confusion;* local and personal considerations predominate, with the result that self-interest is cultivated, vested interest created, and public interest *neglected;* and there is lack of uniformity and equality in the administration of sanitary law common to the whole State. Yet epidemic disease spreads *through large communities* rather than small, and is not confined by parochial boundaries—e.g., it is impossible to grapple with small-pox or typhoid fever *if one small area differs from* another in the practice or neglect of essential methods. Water-supply, sewerage, river pollution, and hospital provision must also be dealt with on a general and not a particular scale. It is true, of course, that these features are characteristic of some of the smaller authorities only, but these *smaller* authorities are upwards of 1000 in number, and their disabilities are injuriously affecting the entire public health service of the nation. There are 1455 *posts of medical officer* of health, but only 350 of them are whole-time, so that 1100 medical officers of health are medical practitioners who, with all their goodwill, can *only* devote part of their time and energy to the public health service. Efficiency which is dependent upon the effect of divided loyalties or personal good nature can never be efficiency. In fact, it can only be, as Sir Lyon Playfair told the House of Commons in 1888, "desperately inefficient." "Wise men," said Sir John Simon long ago, "will not expect that a great national reform shall be achieved by casualties of good nature."

2. EFFECTIVE COÖRDINATION OF MEDICAL SERVICES.

I suggest that the second step in the future reform is the effective bringing together in each sanitary area of the various branches or forms of public medical service in such a way as to make them work as one connected and coöperative scheme. In science, as in war or in football, team-work is the condition of success. We must not only build on the foundations of others, but join hands with our own contemporaries. We have seen that historically the existing public medical services are the hospital, the Poor-law, factory supervision, the public health service (sanitary environment, infectious diseases, food-supply, and maternity), the school medical service and national health insurance.' The problem of the complete physical supervision of a people is thus met or nearly met. Maternity, infancy, the school-child, the worker, the insured person; poverty, sickness, and old age; and all through life the essentials of a healthy environment—these things are now all separately provided for. But there are three outstanding defects. First, the provision made is as yet incomplete and inadequate; secondly, no provision is organised by law for children between infancy and school age, or for adolescents from 14 to 16 years of age (between the end of school life and the beginning of insurance); and thirdly, though we have six public medical services, there is not a sanitary area in the country in which we are at present getting full inter-coördination or even unification of administration. There is far too much of the water-tight compartment, and too many different authorities working the services. Yet until there is linking up and concentration of all forces on the focal point, it is idle to expect full effect. Though we have in England and Wales upwards of 3400 hospital institutions with 350,000 beds, there is but little correlation between Poor-law, isolation, voluntary, or special diseases hospitals. Yet in each district there should be close association under one authority between voluntary and State institutions. Though the Poor-law is now so largely medical, it is still administered on a relief basis and by bodies which are not health authorities. The factory service and the school medical service are still insufficiently connected with the local work of the sanitary authority; and above all, there is much to be done to give health insurance its rightful place as an integral factor in preventive medicine.

The great triumphs of public health work in the last century were for the most part won in the field of environmental hygiene and it must always remain our foundation. With the new century, however, there came a remarkable development. A direct frontal attack was made upon tuberculosis, a comprehensive system of school hygiene was introduced and rapidly developed, maternity and child welfare work was widely undertaken, the new knowledge of the diagnosis and treatment of venereal disease was applied gratuitously for the alleviation of sufferers all over the country, and by the establishment of the insurance medical service the State made the family doctor an integral part of our system of public health administration. It may well be that from a public health point of view it would have been more convenient if Poor-law reform had preceded the establishment of national health insurance, and if the latter had been anchored in a reorganised sanitary authority closely associated with clinics and hospital institutions. But there it is: in Britain we are not deductive philosophers, and we proceed, from precedent to precedent, "to take occasion by the hand." The fundamental fact and common ground is this, that we have in Great Britain 15,000 insurance practitioners who have entered the service of the State to care for the health of upwards of 14,000,000 insured persons in the interest of preventive medicine in its broadest meaning. The reform which our forerunners desired has come to pass, the workers have ready access to the doctor at the earliest stage of disease, with the result that the medical supervision of them is actually threefold greater than before the Insurance Act was passed. There is more careful diagnosis; there is earlier treatment; there is better knowledge of the incidence and distribution of disease, and at a stage when it can be cured or prevented; there is, for the first time, a measurement of the relation between sickness and capacity to work. No doubt there are still many defects and inequalities in the administration of so novel a scheme. But the scheme is here; and it is for us all to make it work by integrating it with the other public medical services. If in every district medical practitioners and the medical officer of health will coöperate cordially an immeasurable advance will be made forthwith.

3. PUBLIC EDUCATION IN HEALTH.

The third reform which is needed seems to be proceeding apace—namely, the education of the people in hygiene. One thing is quite certain. We have reached a stage in the evolution of the public health when it is a necessity of further progress that we should create an enlightened public opinion and carry it with us. This is necessary, first, because there is need of an "impulse" behind sanitary legislation and effective administration of it, and secondly, because the public health is dependent upon personal hygiene and the day by day individual practice of the principles of preventive medicine. We must do more for ourselves.

All local authorities are indirectly engaged in educational health work in so far as they discharge effectually their statutory duties under the Public Health Acts, and this aspect of their work is exerting, as a study of the history of the past 50 years will show, a paramount influence on the community. It is, on the whole, the most effective and far-reaching form of health education. Some local authorities and many voluntary societies are undertaking supplementary educational work of a more direct nature, and under the new Public Health Bill of this year all authorities outside London are to be given definite and wide powers to develop this service. Section 67 is as follows:—

> "Any local authority or county council may arrange for the publication within their area of information on questions relating to health or disease, and for the delivery of lectures and the display of pictures in which such questions are dealt with, and may defray the whole or a portion of expenses incurred for any of the purposes of this section."

It will no doubt be necessary before long to consider whether this work should be included in the grant-earning services, and if so whether, and on what terms, voluntary societies engaged in health propaganda should be similarly assisted. As we are evidently on the brink of a widening system of popular health instruction, I may express the considered opinion that it is the local authorities who should be mainly responsible for undertaking systematic educational health work, direct as well as indirect, suitable to their own district circumstances, and needs, with such supplementary assistance as the voluntary societies concerned may find themselves able to furnish.

It is important that information thus afforded should be appropriate, correct, and timely. Some medical knowledge should be imparted, some knowledge of the ways and means of sanitary government, and much advice as to personal hygiene—but not one of these three should be overloaded. Exceptional facilities now exist, and the people should be encouraged to use them. Instruction should be given as to the effect of social habits and conditions on health, and *that it is won by a way of life* rather than a bottle of medicine. Above all, we must all learn to think of public health, not only in terms of the individual, the home or the parish, but nationally, Imperially, and even Internationally. The world is both larger and smaller than in 1875, and the capacities and opportunities of human life and endeavour have been greatly and hopefully expanded.

THE

Croonian Lectures

ON SOME

DISORDERS OF MOTILITY AND OF MUSCLE TONE,

WITH SPECIAL REFERENCE TO THE CORPUS STRIATUM.

Delivered before the Royal College of Physicians of London

BY S. A. KINNIER WILSON, M.D., B.SC. EDIN., F.R.C.P. LOND.,

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LECTURE III.*

PLASTICITY: "LENGTHENING AND SHORTENING" REACTION.

MR. PRESIDENT AND GENTLEMEN,—The proof of the existence of the property of plasticity in muscle tone we owe to the investigations of Sherrington, who in his work on experimental decerebrate rigidity discovered that the limb of the animal, when passively flexed, say at the knee, would retain that posture, the stretched quadriceps adapting itself to the new position of the limb and holding it so ("lengthening" reaction); conversely, if the latter was again extended, the quadriceps naturally shortened, yet again contributed its quota to maintenance of the fresh attitude ("shortening" reaction). We note that in Sherrington's view this quality belongs to tone as derived entirely from somatic proprioceptive arcs, and that it is demonstrated only in pathological (decerebrate) states, in which one need scarcely say various efferent paths *both* from the cortex *and* the basal ganglia are completely out of action.

In the course of my study of striatal cases much attention has been directed to the question of plasticity, and *the general conclusion is, that this quality of muscle tone is not specially in evidence in these diseases.* Parkinsonian limbs, passively compelled to assume a certain posture, reveal no particular tendency to maintenance of the new position. On the contrary, when left to themselves they tend to return forthwith to the Parkinsonian attitude from which they have been disturbed, that is, if the case is of average severity. A patient told me spontaneously of his frequent observation when in bed that on his extending his arms outside the bedclothes they always came back insensibly to a position near the upper part of his chest. This return to previous attitude is easily observable in the case of the hand and fingers; passive extension of the fingers is not succeeded by maintenance of the extended posture, even for as short a time as a second or two, whereas in decerebrate preparations the fresh posture is held almost indefinitely.

The feature of maintenance of different postures passively imposed on a limb is characteristic of the clinical state known as catatonia, and is not in itself dependent on the presence of extremes of rigidity. Catatonia is seen in a considerable number of morbid clinical conditions, diverse in nature but alike in that cortical function is disordered. For example, it is often noticed in the acute stages of epidemic encephalitis, it is a pronounced feature of various psychoses, of certain cases of hysteria, and so on. In respect of outward character, the "lengthening and shortening" reaction of a decerebrate limb does not differ from that seen in any of the above-mentioned morbid states, in which, precisely, the limb muscles, in virtue of plasticity, hold it in any posture passively impressed on it. The argument is not vitiated by any claim that in these cortical and "psychical" conditions the action of "volition" is not excluded, for investigation will prove the claim to be unfounded. Now in my experience no clinical state resembling catatonia, even if merely in *external* characters, occurs in ordinary *cases belonging to the striatal group.* Applying the usual clinical tests, the observer finds little evidence of the occurrence of any reaction to be appropriately described as a "lengthening and shortening" reaction, such as Walshe, for instance, has had occasion to note in a case of decerebrate rigidity in man, and Royle, in spastic paraplegia of cortical origin (gunshot wound). I cannot therefore give any support to the view of Hunter, as expressed in his latest articles, that "a tendency for fixation of the muscle at any length passively imposed upon it" is a special characteristic of Parkinsonian rigidity. On the contrary, the cases in which it has come under my notice have been definitely extrastriatal. In view of its interest, allusion may be made to a case of my own.

The patient was an elderly man who was admitted to hospital in a semi-conscious state, with a history of having had a "stroke" 24 hours previously. On examination the right arm was seen to be in a state of "early rigidity" and in moderate flexion; the right leg was similarly rigid and extended. Aphasia was prominently in the foreground of the clinical picture. The man frequently passed his left arm over his head or moved it spontaneously about the bed, whereas the right limbs exhibited no such movements. The deep reflexes were more active on the right than on the left; the plantars were both in reduced flexion, and a crossed plantar in flexion was constantly obtained *from the right* sole, but never vice versâ.

It was remarked at once on testing that the right limbs (arm and leg) exhibited the "lengthening and shortening" reaction in a pronounced form; as a single illustration, when the patient was put on his left side, the right lower extremity was passively abducted at the hip and flexed to a right angle at the knee, and this new (and awkward) posture was *maintained for three minutes* by the watch. The leg was then extended at the knee, and the quadriceps group at once maintained the extension again. The left limbs showed a similar reaction in a less noticeable degree; it was usually and more or less immediately interrupted by the "spontaneous" movements already alluded to.

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A case of this kind confirms the general statement made above, to the effect that the type of clinical case most likely to furnish proof of the existence of plasticity as a quality or property of muscle tone is one in which pyramidal function is disordered from the cortical side.

Passing reference may at this point be allowed to the experimental evidence on which Hunter partly relies for support of his views. In the domestic fowl and the seagull he removed the corpus striatum on one side and obtained a diffuse muscular rigidity, which he says "is remarkably similar to Parkinsonian rigidity in man. Its diffuseness, resistance to stretching, and the tendency for fixation of the muscle at any length passively imposed on it, are common to the two conditions." Now it may be fairly argued that the bird is not a suitable animal for experiments on the corpus striatum from which deductions are to be drawn as to striatal function *in man*, for the plain reason that it has practically no cerebral hemisphere beyond the corpus striatum; its pallium is electrically inexcitable; it has no pyramidal tracts in the ordinary sense; in its tractus striomesencephalicus (spared by the operator) mingle fibres both of striate origin and from the minute extrastriate pallium. The differences between it and

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The patient was an elderly man who was admitted to hospital in a semi-conscious state, with a history of having had a "stroke" 21 hours previously. On examination the right arm was seen to be in a state of "early rigidity" and in moderate flexion; the right leg was similarly rigid and extended. Aphasia was prominently in the foreground of the clinical picture. The man frequently passed his left arm over his head or moved it spontaneously about the bed, whereas the right limbs exhibited no such movements. The deep reflexes were more active on the right than on the left; the plantars were both in reduced flexion, and a crossed plantar in flexion was constantly obtained from the right sole, but never vice versâ.

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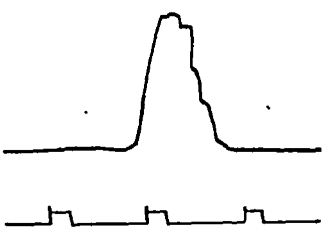
* Lectures I. and II. appeared in THE LANCET of July 4th and 11th respectively.

Since in the sense employed by Sherrington the reaction of plastic tone is a property of ordinary somatic proprioceptive tone, and since hypertonia characterises paralysis agitans and the other diseases at present under discussion, we might expect to be able to demonstrate at least minor degrees of the "lengthening and shortening" reaction in these affections. The well-recognised distinctions, however, between pyramidal and extrapyramidal cases must be borne in mind; prominent here is the fact that nothing like the same diminution of "voluntary" innervation obtains in the latter as in the former. Speaking generally, the subject of paralysis agitans is capable of innervating his musculature to an extent impossible in the patient whose corticospinal tract or tracts are anatomically or physiologically interrupted, and for this reason, as I consider, the lesions in his case cannot produce the pathological conditions essential for the visible demonstration of the phenomena of plasticity in any marked degree. In other words, the more serious the interruption of the pyramidal system, the more easily is this particular tone reaction excited; and it is seen at its maximum when that system is completely in abeyance, as in decerebration.

THE "COGWHEEL" PHENOMENON.

We may now consider whether the "cogwheel" symptom of Camillo Negro (1901) is connected with the reaction in question, and whether it may be regarded as a minor degree of the "lengthening and shortening" sign. When a hypertonic muscle is passively stretched it resists; and this resistance often takes the form of an irregular jerkiness, as though the muscle were being pulled out over a ratchet arrangement; it is momentarily checked and extended in a little alternating series of two, three, or more phases, hence the expression imagined by Negro. If the passive stretching is quick the phenomenon is usually more readily appreciated by the examiner. (Cf. Figs. 21 and 22.) It is not found in the opposite muscle that is being simultaneously shortened; on active ("voluntary") movement it may be remarked both in the contracting and the relaxing muscles, but, I find, to a less extent than in the case of passive movement.

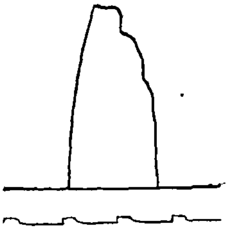
FIG. 22.



Passive stretching of triceps in a case of paralysis agitans. "Cogwheel" sign.

Various and very different explanations have been forthcoming. Santos, for instance, an exponent of the dual theory of muscle tone, ascribes it to a clonus of the parasympathetically innervated part of muscle, but if Hunter's opinion that this part is compact of non-contractile fibres be adopted it is at once obvious these cannot of themselves be the seat of any such movement, for *ex hypothesi* they are only passively moved with the contracting fibres. Bing, who remarks that this view does not account for the occurrence of a degree of the "cogwheel" sign in active movement, seeks to explain it as a disturbance of reciprocal innervation, a release-phenomenon "produced by failure of a subcortical mechanism which ensures continuity of decontraction." It is simpler, I consider, to regard it as one of the expressions of hyperactivity on the part of somatic proprioceptive arcs. When a muscle already in contraction (hypertonia) is abruptly stretched its end-organs are stimulated and the reflex contraction promptly reinforced, thus offering a momentary increase of resistance, felt as a sort of "catch" in the passive extension; the moment this "catch" takes place there is an immediate tendency for fixation at that point, for the muscle, being in a condition of postural overtone, will exhibit this tendency whenever it is momentarily "pulled up" (movement being the process of changing from one posture to another). In its turn the "catch" is overcome by the examiner's effort and the stretching causes a second excitation of the arc, hence again the process is gone through. If a muscle, however hypertonic, is slowly pulled out the phenomenon is so faint as to be negligible. In a sense, therefore, the "cogwheel" phenomenon may be regarded as a minor form of the "lengthening and shortening" reaction. It is not, however, confined to Parkinsonian and similar cases, though naturally more readily there demonstrable because the muscle can in fact be stretched; in severe hemiplegic cases the rigidity may not be overcome by stretching, but when it can be the observer is sometimes conscious of a mild "cogwheel" movement. Its appearance in the course of active or "voluntary" movement of a rigid motor unit (in protagonists and antagonists) is less noticeable than during passive movement; I have not been able to satisfy myself that it is much in evidence in "voluntary" shortening, but it may be occasionally felt in "voluntary" lengthening in Parkinsonian cases (Fig. 23), where the explanation cannot be essentially dissimilar. If denervation or decontraction is not prompt enough the transient check brings about the same result because of the hypertonia.

FIG. 23.



"Voluntary" lengthening of biceps in a case of post-encephalitic Parkinsonism. Slight "cogwheel" phenomenon.

STRIATAL ATTITUDE.

So familiar and definite are the attitudes adopted in average cases of Parkinsonism (of whatever origin) and of progressive lenticular degeneration that no detailed account is required. Parkinsonian patients, young or old, all look like each other, mainly if not solely because of the "involuntary" assumption of more or less identical postures, which are at least as specific as those of hemiplegia. The attitude is one of generalised flexion, as a rule; the lower extremities are as it were folded in moderate flexion at ankle, knee, and hip; the trunk is flexed in a concave anterior curve; the head is commonly flexed; the upper limbs are semiflexed at the elbows. At the wrists, however, extension ordinarily occurs, with flexion at the metacarpo-phalangeal and usually also at the interphalangeal joints. Very occasionally, as is not well enough known, a type of Parkinsonism with extension of head and trunk is met with.

Posture or attitude cannot be considered apart from tone-effecting mechanisms. Tone is posture; that is to say, in toneless limbs no particular posture can develop, except as caused by extrinsic agencies —e.g., gravity. Limbs whose musculature is in tone (reflex contraction) assume postures capable in the normal person of being modified instanter at the bidding of "volition," whereas in disease (pyramidal and extrapyramidal) tone-postures are a sequel to release from the control of superior, tone-controlling centres. The postural scheme of the hemiplegic is no haphazard thing; a predilection type or pattern exists, possible explanations of which have been examined in my paper on "The Old Motor System and the New." In decerebration, analogously, a selective incidence of tone on the antigravity muscles takes place. These specific postures can only be assumed if at the same time the inflow of tone to antagonistic groups is relatively lessened by reflex inhibition. In the case of hemiplegia, tone influx is divided; in the arm, the flexor groups are hypertonic, in the leg the extensors. It is interesting and no less important to note that in each instance the groups with lessened tone are the weak muscles (e.g., the flexors, in the leg). From what has already been said of the blending of tone with muscular contractions otherwise evoked this can be readily appreciated.

Now in the case of Parkinsonian posture the circumstances differ somewhat; there is not the same "schizotonia" (to borrow a useful term recently coined by Dusser de Barenne) as in pyramidal and decerebrate conditions. The feature of paralysis agitans and kindred morbid states, from this standpoint, is the apparently indifferent or diffuse distribution of the hypertonia, as has been made the subject of allusion already. But if the increase of tone were strictly equal in each and every skeletal group of prime *movers and antagonists, I do not see why resumption of postures as definite and specific as the Parkinsonian* should take place after they are passively or actively disturbed. We are forced to the conclusion that, *general hypertonia notwithstanding, it preponderates* in flexor as opposed to extensor muscles; more precisely, in those groups (already specified) whose contraction underlies the maintenance of Parkinsonian attitudes.

On examination these muscles are seen to be firm, to have shape, and to be outlined in contraction with a distinctness as manifest as in hemiplegic groups associated with posture, and I cannot therefore agree with Hunter that in Parkinsonian rigidity there is no selective incidence, or with his corollary that only contractile tone (in his sense) is thus selective. Nor can I confirm his view that "the posture assumed in Parkinsonian rigidity is due to plastic tone *only* [italics mine], exhibited in agonists and antagonists." On his own hypothesis plastic tone is due to *non-contractile* fibres moved passively by contracting fibres and subsequently held thus in posture, hence the latter must first be in activity, and plastic tone of *itself can do no more than* support a tone-scheme previously and otherwise brought about. To exclude contractile tone, therefore, in so plain an attitude as the Parkinsonian seems impossible as well as unnecessary; finally, if plastic tone is exhibited *indifferently* in agonists and antagonists, the adoption of a specific posture is *unexplained*.

Of the specificity of Parkinsonian attitude there can be, in my opinion, no question whatever, but I can offer at present no satisfactory explanation of its type. No merely mechanical preponderance, as it were, of flexor over extensor contraction suffices. Hughlings Jackson drew contrasts between Parkinsonian and cerebellar attitudes, and I have myself endeavoured in other communications to seek a solution. Possibly weight should be laid *on the* contrast between the relative incidence of tone in decerebrate cases on the extensor or antigravity musculature ("reflex standing"), and in paralysis agitans on the flexor musculature. But the "meaning" of the latter posture is obscure. In any case, as I have argued elsewhere, the tone-picture of Parkinsonism is absolutely distinct from that of double hemiplegia; yet in decerebrate cases that of the latter is more closely approached than the tone-picture of the *former, although* the corpus striatum is just as completely out of action. The inferences to be drawn from these data are discussed at some length in my paper on "The Old Motor System and the New."

"FIXATION-CONTRACTION."

Much attention has been devoted, more especially by continental workers, to the question of the occurrence of what is called "fixation-contraction" in cases of striatal *disease*. The term is not familiar to English neurologists, but the condition has long been known under the name of "Westphal's paradoxical contraction," and consists typically of an involuntary (reflex) contraction of a muscle, *of a slow and tonic character, when its ends are passively* approximated as closely as is practicable. In suitable instances it can be demonstrated in the tibialis anticus muscle by firm passive dorsiflexion of the foot, and this "tibialis phenomenon" was obtained years ago by Oppenheim in cases of paralysis agitans. In 1900 Foerster stated that "fixation-contraction" can be seen in *all* the muscles in that disease, as well as in cases of arterio-sclerotic muscular rigidity. It has been called "fixation-rigidity" by Strümpell. Jakob, also, attributes considerable importance to the phenomenon.

In routine examination of numerous examples of the various morbid affections that at present concern us special attention has been given to "fixation-contraction," following the technique of Foerster, who says the passive movement (of shortening) has to be made with a certain jerk and the limb segment pressed firmly to the end-position, the head of the bone concerned being pushed well into its socket, and the new position held passively for an appreciable moment. When this technique is prosecuted the muscle passively shortened exhibits a tonic contraction *analogous to the "shortening reaction"* already investigated as a property of somatic proprioceptive tone.

As a result of tests directed to this matter I have come to the conclusion that *while "fixation-contraction" can be demonstrated in a fair number of cases it is neither universal in the musculature nor by any means so pronounced* as Foerster would have it. In various typical cases of Parkinsonism I have failed to satisfy myself of its presence except in *minor* degree, and not seldom, indeed, is it negligible. A further conclusion is, that *it is no more than a manifestation of increased somatic proprioceptive tone and as such is not deserving of a special terminology.*

To investigate its occurrence a number of cases of well-marked *unilateral Parkinsonism* were selected and the condition on one side compared minutely with that of the other. The tibialis phenomenon was made the subject of special examination; another *convenient test* is to approximate the origin and insertion of the deltoid by passive lifting and supporting of the arm in the vertical position. Many other muscles, however, were also utilised. To convince oneself of the presence or absence of "fixation-contraction" the muscle in question was examined with the eye, was palpated with the finger (an assistant performing the passive movement), and, if it so happened that the action of gravity came into play when *the limb segment* was deprived of this passive support, the time taken to fall was estimated on the two sides respectively. Speaking generally, *no* pronounced or *persistent tonic* contraction in the approximated state was observed in any particular muscle—at the most, as already stated, only moderate or minor degrees of the *condition could be found.*

In no case have I or my assistants been convinced of the development by this method of a muscular state that can fairly be represented *as belonging* to the category of *catatonia (or* catalepsy, as both Jakob and Foerster term it, though use of the word in this connexion should be avoided). If the *foot* takes longer to drop through gravity on the affected than on the *normal side, if* as the arm falls from the vertical an evident "catch" is demonstrable just as the movement begins, this is no more than what is to be expected in a hypertonic muscle or muscle group, *and cannot* be thought to constitute *per se* a pathognomonic sign of extrapyramidal rigidity. There is truth in the argument of Mayer, that in some instances at least "fixation-contraction" is *nothing else than a stretching* contraction, such as has been already illustrated in the previous section. Even in well-marked examples of Parkinsonian rigidity, when passive *shortening of a* given muscle (as when the *flexed lower* extremity is extended to an angle, say, of 135° at the knee, the quadriceps being thereby shortened) is made, but the extreme position not attained, it is not my experience that the limb is thus held immobile by the development of a "fixation-contraction," or, even so, I cannot assent to the interpretation put on this by the observers mentioned. At the most, it is identical with a phase of the "lengthening and shortening reaction," a property of proprioceptive tone, and merits neither separate description nor explanation.

When, therefore, Jakob maintains that the phenomenon of "fixation-contraction" is responsible for "cataleptic" (catatonic) symptoms in Parkinsonism, for the development of contractures, for adiadochokinesis and the various "pulsions," the impeding of voluntary movement, the slowing of movement at its commencement, and the interruption of movements in series, all this in my view is tantamount merely to the fact that hypertonia (exaggerated reflex contraction) of the musculature interferes with the prosecution of normal muscular action.

THE LORE OF THE ANTAGONISTS, AND THEIR RÔLE IN DISEASE OF THE CORPUS STRIATUM.

I have left to the end of my necessarily somewhat long analysis of movement and tone the *quæstio vexata* of the nature of the part played by the antagonists in normal "voluntary" motion, and the correlative problem, whether in the motor symptoms of striatal affections any, and if so, which, are to be ascribed to disordered function of this component of movement.

In his Croonian lectures before this College (1903) the late Dr. Charles Beevor summarised the two divergent theories then in vogue as to antagonistic function: (1) According to Winslow (1750) and Duchenne (1867) the antagonists take part in all "voluntary" movements, their function being to moderate (check, control) the contraction of the prime movers or protagonists, for the sake of precision of movement. Demeny (1890) drew a distinction between resisted and non-resisted "voluntary" movements; in the case of the former, the antagonists relax; in the case of the latter, they are in action during the primary movement. (2) According to Sherrington, when contraction of the principal muscles taking part in a given movement is effected by cortical (electrical) stimulation there is both relaxation and inhibition of the tone of the antagonists of this movement. Even with minimal excitation of the motor cortex relaxation of the antagonists is still obtained. From his own clinical observations Beevor concluded that in strong movements against resistance the antagonists are always relaxed, and that in unopposed movements (gravity being excluded) relaxation is the rule. In support of this second conclusion my old chief instanced the fact of the absence of demonstrable contraction in the left (say) sternomastoid when the right sternomastoid is the prime mover, as in rotation of the head to the left. Repeating this test a number of times, I am able to confirm its accuracy, but we must remember that the left posterior rotators come into action in head rotation to the left *before* the right sternomastoid does—the latter not contracting till the head is well past the mid-line—that they therefore are prime movers in the act, and, accordingly, the antagonists to the movement are constituted by the right posterior rotators. If these are examined it will, I think, be found that they do not absolutely relax, but decontract in moderating the desired movement. It is doubtful, therefore, whether the sternomastoid illustration really justifies the deduction drawn by Beevor from it.

Needless confusion has arisen from failure to appreciate the exact meaning of "relaxation" of an antagonistic group when protagonists contract. This has been taken erroneously to imply constant, complete, and immediate relaxation, whereas the words of Sherrington are that the contraction of the one muscle rises as that of the other falls, and the rise of the one keeps sufficiently close step with the fall of the other. No primary conflict between the two theories exists, nor any insurmountable difference. Amplification, however, is desirable.

To get a clear idea of antagonistic function we must bear in mind the *essential variability of antagonistic rôles*. Any stereotyped notion of antagonists being somehow "opponents" is fatal to clear thinking. We may speak of the antagonists *in* a movement, but never *to* a movement. "Opposite" muscles are not *ipso facto* "opposing" muscles. Their function ranges from (1) active coöperation in a movement, so that it is indistinguishable from that of prime movers, (2) through harmonious decontraction, as in ordinary displacements of a joint, to (3) a relaxation as quick and complete as possible, when the prime movers are acting powerfully against resistance. In illustration of this latter function, let the observer extend his arm laterally to a point well above the horizontal level at the shoulder, the deltoid being in full protagonistic action. In this position let him place his hand on a convenient shelf or ledge and make strong downward movement of the extended arm against this resistance. No displacement is possible, but the deltoid, now the antagonist in the required movement, immediately and with remarkable completeness can be felt under the fingers to soften and relax. There is here no moderating function, since no displacement as a fact occurs. In illustration of the first-mentioned function, I may cite the "straight left" of the boxer, when, accurately speaking, protagonists and antagonists as usually understood are in active cooperation, there being again no joint displacement. Beevor's illustration of the conversion of the leg similarly into a rigid muscular pillar, as when skating on the "outside edge," is equally apposite.

As I conceive it, recognition of this variability in antagonistic action will explain what might otherwise appear mutually discordant phenomena. At any moment in the course of a voluntary movement the character of antagonistic coöperation may alter according to requirements; it may change from decontraction to synergic coöperation, or again to relaxation, as the prime movers pass from kinetic to static action, or encounter resistance, and so forth. Differing modalities of function in the antagonists correspond to variations in protagonistic action. No haphazard or indiscriminate correlation, however, exists between the two; on the contrary, all is in strict physiological harmony.

As is known, the relationship of agonist contraction with simultaneous antagonist decontraction in ordinary joint displacements was described by Sherrington as "reciprocal innervation," and this "law" has received unqualified acceptance ever since its enunciation. That any conflict of the "pull-devil-pull-baker" kind should exist as between, say, flexor and extensor groups during displacement at the elbow in the direction, say, of flexion, is, in fact, both clinically and physiologically, unthinkable. He also, however, has demonstrated the occurrence and explained the nature of what he calls "double reciprocal innervation," a physiological state in which the centres for both prime movers and antagonists may discharge together, though unequally. In this way Sherrington covers the cases both of increase of protagonistic contraction with diminution of antagonistic contraction, and of simultaneous contraction (or, of reversion into rest) of the two groups.

These lectures were nearly completed when a communication by Prof. Frederick Tilney and Dr. Frank H. Pike was published in America. These investigators, experimenting on cats and monkeys, say, in so many words, that "under normal conditions we have not observed the contraction-relaxation phenomenon which is generally known as Sherrington's 'reciprocal innervation.' This phenomenon, although also observed by Beaunis in rare instances, was deemed by him both exceptional and inexplicable." Their view is that in all voluntary movements synchronous "co-contraction" takes place in the antagonists; they speak of "synergic units" composed of both flexors and extensors, and so on, and in each "synergic unit" there is a "dominant" element (the prime movers) and a "check" element (the antagonists). During action each exhibits "a proportional mutual increment of tension," which in the case of the former is "uniformly greater" than in the case of the latter. There are also differences in the "times" when this increment of tension comes into action in the two respectively. I cannot in this place attempt any examination of their researches as these may bear on the problem before us, but I may allow myself one comment. These workers do not appear, on the clinical side, to have envisaged all the possibilities of antagonistic action, since no investigation, seemingly, either of "voluntary" movement against strong resistance, or of antagonistic coöperation, has been made. The experimental side of their research undoubtedly seems to conflict on the face of it with Sherringtonian conceptions based also on experimental methods, but all that need now be said is that I do not think there is so complete a disparity as might at first appear between some (at least) of their findings, and the usual clinical interpretation of the rôles played by muscular components in individual "voluntary" movements. With the strictures passed by Tilney and Pike, Golla and Hettwer, and others, on the imperfections of ordinary clinical methods, I am in partial agreement, but I do not admit that comparisons between cases all of which are submitted to the *same* technique of examination are illegitimate or uninformative, or that clinical investigation is to be renounced in favour of electromyographic technique. Indeed, Tilney and Pike enter a word of caution against basing conclusions solely on records obtained in this way.

Relying, then, on well-tried clinical procedures and their application in the clinical study of striatal disease, *my conclusion is that in these affections the general laws of antagonistic action, as above illustrated, hold good.* From the records of Parkinsonian cases reproduced in Figs. 15, 16, and 18, contraction and decontraction can be demonstrated just as in normal individuals. No departure from normal states of diagnostic significance has been discovered. No "defective inhibition of antagonists," that is, no marked retardation, or failure, in making a particular movement on request through inability to relax the existing tension in an antagonistic muscle, has been noted, still less any instance of the antagonists coming into action *before* the prime movers, as we shall see occurs in other pathological conditions to receive attention. The Parkinsonian can employ his antagonists in coöperation, and, conversely, they can be shown to slacken when the occasion demands it, according to normal physiological precedent.

I find, of course, as has been already outlined, an impediment to quick alternating movements of a limb-segment in the existing hypertonia of both of two opposite groups. It must be obvious even to superficial observation that the fingers cannot be separated ("spread") with facility or quickness by *one* set of interossei if the reflex tonic contraction (hypertonia) of the opposite set cannot be inhibited with facility either. For while "volition" *adds* a contractile element to a muscle already in "involuntary" contraction, in the sense that the two blend, its action in the antagonistic component, also in "involuntary" contraction, should be to allow the latter to elongate and yet to maintain in elongation a moderating influence requisite for the particular end to be served. Admitting antagonistic activity in joint displacement, and not a mere passive or mechanical stretching of a relaxed muscle, the truth remains that this activity of innervation, this "increment of tension," is occurring in a muscle that is in fact *lengthening* itself, and the question is to explain the simultaneous activity of contracting and elongating elements. Only by inhibition, as I conceive it, of a *shortening* contractile process (such as takes place in the prime movers) can a muscle actually elongate while maintaining contractile tension; that is to say, the process in the antagonists cannot be physiologically *identical* with that in the protagonists. When a muscle is hypertonic its fibres are in a condition of greater (reflex) contraction, more tension, than in a normal muscle. If it happens to be *pro tem* an antagonist, then decontraction starts as it were behind scratch, and is adversely handicapped from the outset. Avoiding the language of metaphor, I say that more decontraction has to be effected in the antagonist (by a process of what I can only regard as inhibition) before the muscle begins to elongate, than is requisite in a normal antagonist. Hence the hindrance already alluded to, an impediment traceable through all Parkinsonian action in greater or lesser degree, and one to which many of the clinical phenomena here illustrated are in part at least attributable. Hence, in part, also, the "effort" of which the Parkinsonian patient is for ever complaining. The amount of innervation required for everyday movements, familiar to him by years of experience, turns out to be insufficient for the desired purpose; and he utters the simple confession, "it is easier not to make the movements."

An important and significant corollary arises from the conclusion to which this clinical study of striatal cases has led. Having found no abrogation of agonist-antagonist activities, no material departure from normal physiological laws except in so far as existing hypertonia causes a drag on rapidity and a reduction of facility, I am led to the decision that *the normal combining of protagonist, synergic, and antagonist muscular units in a single "voluntary" movement cannot be regarded as a function of the corpus striatum.* I need not at this point enter on a discussion as to the physiological level at which this combination takes place, since it will be dealt with subsequently. Suffice it to say that since the lesions of the cases under review are in all probability destructive or degenerative processes in the corpus striatum and its efferent systems, and since, as I have just pointed out, muscular components are in normal (if sometimes hampered) action as required, the mechanisms underlying their action are definitely non-striatal. Statements such as that of Lewy, therefore, that "the slackening of the antagonists during contraction of the agonists is dependent on the corpus striatum," are without either clinical or physiological foundation.

INVOLUNTARY MOVEMENTS.

Hitherto we have been concerned with an examination of two symptom-groups in the striatal triad—viz., those relating to the "voluntary" motor system, and those of muscle tone. Attention must now be directed to the question of so-called "involuntary movements."

In order to keep our study within appropriate limits I shall deal mainly with chorea, athetosis, and tremor. At the outset the caution must be repeated, that discussion of these symptoms in the present setting is not to be taken inferentially as implying for them a striatal origin. Further, the reader may with advantage recall the general comments made in my first lecture on the subject of "voluntary" movements and on the lack of precision in the meaning of the term.

The difficulties surrounding the problem may be set out as follows: (1) the classification and differentiation of the various kinds of "involuntary" movement have not been satisfactorily determined; (2) in a given case more than one type may make its appearance; (3) the movements are in many instances complicated by alterations in muscle tone, and their dissociation, however desirable for the purpose of study, is often far from easy; (4) lesions in different parts of the nervous system have at one or other time apparently been responsible for similar types of pathological movement; (5) conversely, lesions approximately in the same area have seemingly given rise to different varieties of movement; (6) the pathological findings in a particular case may be open to diversity of interpretation; (7) the evidence furnished by experimental methods has unquestionably been in some cases negative, in others conflicting.

Preliminary Considerations.

Before proceeding to clinical analysis, we must clear the ground by one or two preliminary considerations of basal significance, neglect of which still continues to be a source of confusion.

(1) It seems almost a platitude to point out that the phenomena to be dealt with are "positive" symptoms; they are over-mobile conditions; being movements, they cannot possibly be *caused* by impairment or destruction of movement-producing mechanisms—only paralysis, or absence of movement can thus result. Involuntary movements must be set down to *activity*, not to paralysis, of some or other motor mechanism, which must be in a physiological, not a pathological state. In every case of involuntary movement the phenomena occur during the action of *healthy* nervous arrangements, and constitute, as Hughlings Jackson insisted, a problem in physiology; they represent "physiology in difficulties." It is the more imperative to make this cardinal principle clear because it has been persistently ignored or minimised by many workers, especially in continental schools. To assign tremor and choreo-athetosis to destructive lesions of the corpus striatum is not only impossible, but ridiculous; a "hole" in the corpus striatum—for that is what outfall of parenchymatous cell-fibre systems means—cannot cause any movement whatsoever. Involuntary movements are the derivative of living mechanisms, and *our problem, therefore, is not what mechanisms are paralysed, but what mechanisms are active.*

(2) As an obvious corollary, if after the development of tremor, chorea, or athetosis a destructive lesion leads to cessation of the involuntary movement, then that lesion must be so situated as to interrupt the neural mechanism that has been producing the movement. Hence the special significance of all cases in which this class of movement has permanently ceased after a destructive lesion of one kind or another. Cases of this sort, it so happens, are rare, a fact which renders their careful investigation and recording the more desirable.

(3) A third consideration bears on the question whether the symptoms are produced by irritation, or are of the nature of release-phenomena. English neurology, following the lead of Hughlings Jackson, sees many objections to the idea of the production of year-long involuntary motor activity by irritation; yet the doctrine that excessive movement is thus caused still has adherents (Bing, for instance, still describes chorea and athetosis as "Reizsymptome," arising "when a capsular hæmorrhage implicates the neighbouring basal ganglia"). To determine the exact part played by irritation in the mechanics of symptom-production is no doubt difficult; of the precise nature of the process whereby cell activity passes from a static to a kinetic stage, we are still in complete ignorance. With some show of reason, therefore, it might be held we cannot prove that the liberation of stored-up energy is *not* due to some form of stimulation or "irritation"; even with withdrawal of inhibition some stimulus might still be postulated to initiate the discharge. The argument must be based accordingly on larger grounds.

(*a*) The duration of some of the cases of involuntary movement we meet with clinically puts "irritating lesions" out of court. That "irritation" should last practically a lifetime, as in some instances of Huntington's chorea, is scarcely conceivable, aside from the fact that we are equally at a loss to figure to the mind what sort of "irritation" might thus exist and continue indefinitely. It is equally difficult to imagine "irritation" of nerve-cells giving rise to the chronic tremor of paralysis agitans, or to the athetosis of an infantile cerebral hemiplegic, which may continue without ceasing for a quarter of a century or more.

(*b*) As long ago as 1876 Jackson said, "in some cases it seems to me to be evident that contemporaneously with the loss of function of a centre there is a rise in activity of the next lower centre." This is true not merely of diseased but also of healthy states. The activities of lower centres exhibit themselves freely in the absence of control from higher centres; conversely, the latter may compel the former to suspend their duties temporarily, as is readily exemplified by the action of "volition" on the respiratory mechanism. A sentence of Hughlings Jackson's, of which so far as I am aware no particular notice has hitherto been taken, seems to me to contain a truth of much significance (to which further allusion may be made); the centres of the lower physiological levels "are considerably independent of the directive influence of the higher levels, although much under their negative (inhibitory) influence." By reference to a physiological hierarchy of this kind the phenomena of involuntary movement can be more satisfactorily explained than by any process of "irritation."

(4) An integral part of the problem before us bears on the clinical distinctions between the different kinds of movement. If, as we shall see is the case, fundamental clinical differences can be established between the types—for example, between tremor and choreo-athetosis—then the probability of their being mediated by equally different physiological mechanisms becomes a practical certainty. That the same mechanism should be at one time responsible for athetosis, at another for tremor, is unthinkable. The import of this contention will become more obvious as we proceed.

CHOREA.

In reality a symptom, chorea is the name given to more than one disease. Sydenham's chorea is ætiologically distinct from Huntington's chorea; symptomatological chorea, on the other hand, is an episodic syndrome arising in the course of or as a sequel to encephalitis, cerebral vascular disease, tumours, and so on. In the two former, and indeed, unless they are exceptional, in the latter group also, the lesions underlying the clinical symptoms are characterised by diffuseness and are *ipso facto* valueless for the drawing of exact (localising) deductions therefrom; only in the case of quite small and circumscribed vascular lesions or tumours is it at all practicable to associate the choreic symptom with the pathological finding. Again, in the choreas that bear the names of Sydenham and Huntington, symptoms of a different class are frequently in evidence. Instead, then, of endeavouring to localise choreic movements by resort to an uncertain and, for the above reasons, quite unsuitable pathology, I urge the importance of the reverse procedure; we shall learn more of the nature and localisation of chorea by a precise investigation of its clinical phenomena than in any other way.

Clinical Characters of Chorea.

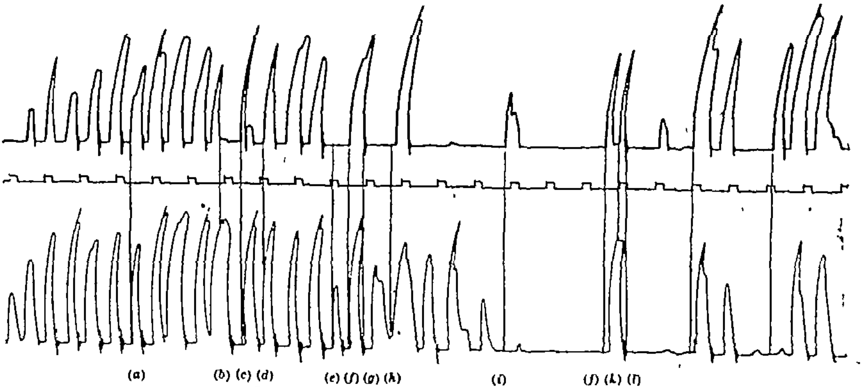
All of us can recognise a case of ordinarily well-marked chorea when we see it, difficult though the finding of an entirely satisfying definition of choreic movement may be. The following are some of the characters of this hyperkinesis :—

(1) The spontaneous movements of chorea offer an intimate resemblance to those executed at the bidding of volition. I mean thereby that they appear to be as complex (on occasion), as coördinated, and as purposeful as those of a frankly "voluntary" kind. Of their occasional or frequent elaborateness no doubt can be entertained; as a general rule, the muscular components of the movements take their specific physiological shares in synergia and sequence (to this rule there are important exceptions, as we shall shortly see); and each fresh movement appears to be directed to an end—which is never attained. Choreic motility may be described with sufficient accuracy as subjectively purposeful but objectively purposeless (cf. the difference between the German "zweckgemäss" and "zweckmässig"); in appearance only are the movements purposive, but to

describe them as purposeless without the qualification just given would be rather misleading.

Many previous writers have emphasised this general resemblance to "voluntary" movements. Hughlings Jackson *(1873) said*, "*they are not mere spasms and cramps*; they are an aimless [i.e., objectively aimless] profusion of movements of considerable complexity, much nearer the purposive movements of health." Again (1875), "the nature of the movements in chorea (a profusion of real movements—smiles, frowns, and gesticulations) is strong evidence that the back into the mouth at the signal for release, is an example in point. The child shoots his arms out in front when asked to extend them; told to stand up, he rises from his chair with an almost *amusing smartness and promptness. Walking down* the ward and asked to turn round, he performs the *movement with an abruptness that almost unbalances* him. That one and the same clinical feature should characterise *both* "voluntary" and "involuntary" actions has an important bearing on localisation and pathogenesis, as we shall duly see.

FIG. 24.



Case of senile chorea. Upper tracing gives contractions of quadriceps and lower tracing of external group of hamstrings (R. leg). Simultaneous record.

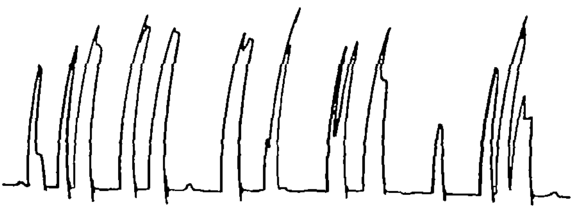
part diseased serves in highly special and complex coördinations, and thus that it is a part very high up in the nervous system." Cecil Wall, to whose excellent Bradshaw lecture on Chorea, delivered before this College in 1920, I wish to draw attention, also says: "I prefer the term 'spontaneous' to 'involuntary,' not because the latter is incorrect, but because the movements, though occurring independently of the will, are of the same type as movements executed *as the result of volition*."

(2) A further feature is their brevity and unsustained character, their abruptness, almost explosiveness. They rise and fall, wax and wane, with a peculiar rapidity. Occasionally, and by comparison rarely, a lingering decontraction obtains; the movement comes to an end as if with reluctance. Corroboration of the correctness of clinical observation in this respect is furnished by the electromyographic researches of Stanley Cobb, who has shown the essential similarity of the action-current curves for "voluntary" and for choreic movement, the difference residing in the shortness of the choreic contractions, as a rule, and in their lack of sustainment.

Now it is of especial significance that this feature of the spontaneous movements is *equally characteristic* of much of the patient's "voluntary" actions. As a fact, too, long after the "involuntary" gesticulations, as such, have vanished, the choreic child will often still exhibit noteworthy abruptness of "volitional" movement. The "choreic tongue," which flies

(3) A third point in respect of choreic movements is their separateness. However rapidly they follow each other, they do not, as a rule, blend into a continuum of motor activity, as is the case with athetosis. They remain discrete, and as long as they so remain, their coördination is comparatively undisturbed. To this rule, however, there are exceptions. *On occasion, one "involuntary" movement has not ceased before* its successor develops, and when coalescence of this kind occurs the clinical result is a medley of "spontaneous" muscular activity not to be distinguished in any essential particular from that of athetosis. I have had for long under my care an aggravated case of senile chorea (largely right-sided) in an old lady of over 80, from whom the records reproduced in Figs. 24, 25, and 26 have been obtained. With the slow-motion camera the *apparently* purposeful and coördinated nature of the never-ceasing large

FIG. 25.



Same case as Fig. 24. Contractions of R. biceps.

and irregular movements is seen; if, however, the arm or the leg is so fixed as to minimise displacement, it is easy to convince oneself that movement follows movement in a confused, blended, and erratic fashion, and that the physiological laws governing the action and timing of the ordinary muscular components of coördinated movement are in complete abeyance. In a word, *Sherrington's law of reciprocal innervation no longer holds, disease having led to its negation.* For instance, attention is directed to Fig. 24, which gives a simultaneous tracing of the quadriceps (above) and the external group of hamstrings (below) of the right leg. Between (*a*) and (*b*) are five contractions of the extensors to four and a half contractions of the flexors, the opposite muscles contracting with practical simultaneity; the extensor contraction immediately after (*c*) is about twice as rapid as the flexor contraction after (*c*), though of practically the same extent; between (*f*) and (*g*) are simultaneous flexor and extensor innervations; between (*g*) and (*h*) the flexors alone contract, then at (*h*) both groups contract together, but flexor activity continues while extensor ceases; between (*j*) and (*l*) are two extensor innervations to one flexor, while at (*k*) the former commences at the very summit of existing contraction of the antagonists, yet the two end their decontraction together. Thus all sorts of pathological combinations of agonist-antagonist activity are exemplified in the record. Fig. 25 is from a tracing of the right biceps of the same case, and shows not only the complete irregularity in time and extent of the individual contractions of the muscle, but also (at (*a*)) how a second contraction supervenes on a first, before the latter has ceased. At (*b*), again, three contractions of the muscle follow on each other without a single break. In Fig. 26 are seen the contractions of the right biceps and triceps of the same case, and by comparing these as they occur between the various ordinates drawn on the record the dissolution of physiological "give-and-take" can at once be recognised. No clearer demonstration than that furnished by these and similar records of mine, of the *complete interruption of normal physiological reciprocal innervation during confluent choreic activity*, could be found.

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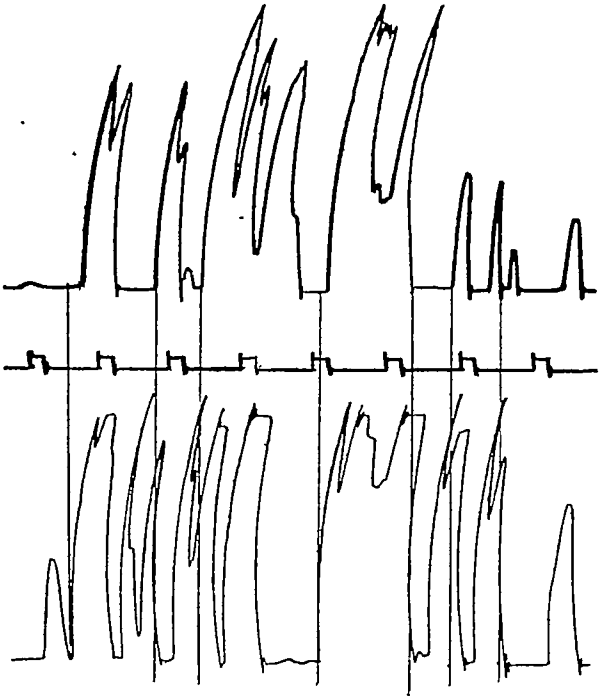

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I have studied several cases of Huntington's chorea from the standpoint of normal muscular action, using for the purpose the scheme previously described. Interruption of the normal interplay of constituent muscles is but rarely found, though when it occurs it is definite enough. For example, I have seen dissociation of the normal elevation of the eyebrows with upward deviation of the eyes, also of head extension in depression of the lower jaw against resistance. With the patient recumbent, I have seen disturbance of the normal sequence of sternomastoid, recti abdominis, and rectus femoris action in the movement of rising to a sitting position.

Both in "involuntary" and in "voluntary" movement, therefore, in the case of chorea, proof of the not infrequent interruption of physiological law in the performance of movements requiring harmonious coördination of prime movers, synergists, and antagonists, as well as in those which I have called movements of sequence, has been obtained.

The "Choreic Hand" and its Relation to "Physiological Shift."

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Now, while the posture of the choreic hand may be adopted momentarily in the course of a "spontaneous" choreic movement, this is undoubtedly somewhat rare; to demonstrate it most easily the patient is asked to extend his arms in front of him. The hands then assume the posture of wrist flexion and metacarpo-phalangeal extension, often in a strikingly exaggerated form. When a normal individual is requested to hold out his hands a difference is usually noticeable according as the movement is made energetically or gently; in the latter case *they are seen to fall into a posture of moderate* extension at the wrist with probably slight flexion of the fingers; in the former the fingers will be rather more extended, though the wrists will probably be extended, as before. The adoption of the choreic hand by the patient, however, is by no means merely an expression of the energetic abruptness of the "voluntary" movement, for it is readily obtained in numerous instances where the movement is not so characterised.

The choreic postural hand, as a moment's consideration shows, *is the exact reverse, the "corresponding opposite,"* of that posture of the hand which *is seen in everyone as the arms depend in rest by* the side, or, for that matter, in any easy resting position—viz., extension of the wrist and flexion of the fingers—the expression of activity of the normal synergic muscles for grasping. The extensors of the wrist are the normal synergists to the protagonistic long flexors of the fingers and their physiological association is intimate, constant, and incessant. Now, as anyone can at once discover for himself, it actually *requires a conscious effort to assume the choreic* attitude "voluntarily," and the more pronounced the attitude the more is he aware of strain and effort in making and maintaining it. One reason, doubtless, for this feeling resides in the infrequency, indeed, the rarity, of any "voluntary" movement or posture of this particular sort. Yet this is the precise posture effected by a disordered condition of the neural centres and mechanisms concerned. *That is to say, in the case of the choreic hand there is an* "involuntary" (for though occurring in the course of a "voluntary" movement it is certainly not assumed consciously by the patient) adoption of a posture the exact opposite of that constantly seen in normal persons in a resting state, and of that ordinarily found in the hand when the arm is held out; in other words, *a "physiological shift" occurs from one posture to its corresponding opposite.* When the sole of the foot is stimulated in the normal individual a movement of plantar flexion takes place; in states of pathological function of the pyramidal system a similar cutaneous stimulus, applied in a similar place, gives rise to a movement of plantar extension—there is a physiological "shift" from one movement to its opposite. This provides us with an indirect but none the less valuable analogy by which to endeavour to explain the choreic phenomenon, and one of wide applicability, though I cannot enlarge on it further at present. The demonstration of this physiological "shift" in the case of chorea can fairly be taken to argue a condition of abnormal function of the corticospinal system, though with the immediate proviso that this abnormal state need neither be of a structural sort nor have its ultimate origin on the motor or effector side.

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As further evidence of the point at present under consideration, reference may be made to cases of chorea signalised rather by weakness and inactivity of a limb or limbs than by "spontaneous" movements of the same. The complaint in these cases is always one of "losing the use" of the limb. Objects are dropped from the hand; the arm hangs practically motionless; weakness of grasp is often pronounced. *Such cases are by no means rare, and were described* originally as "paralytic chorea" by Sir William Gowers in 1880, and as chorea mollis by Samuel West. In any ordinary case, too, some muscular weakness can usually be discovered. In my experience of flaccid chorea, the greater the weakness the fewer are the spontaneous movements; with return of power the latter may for a time increase; hence the apparent paradox that the child *seems to the parents to be "getting worse" when* as a fact improvement has set in.

The significance of such cases will be better understood if we bear in mind the important principle that "weakness" or hypokinesis and "involuntary movements" or hyperkinesis are but different aspects of activity of the same mechanisms; in one case there is underaction, in the other, overaction, of motor function. Hypokinetic chorea is as it were the obverse of hyperkinetic chorea; and we should not, therefore, seek a quite *different mechanism for each,* but rather expect to find that in the case of the latter the efferent corticospinal system is less disordered than in the former.

(7) The general state of muscle tone in chorea is of significance in relation to problems of localisation and pathogenesis. Commonly speaking, choreic musculature is definitely hypotonic, both as regards the usual and the "paralytic" type, and allows of greater extent of passive movement than in normal persons of the choreic age, say 7 to 15. Further, in numerous instances of *Sydenham's chorea* the knee-jerk exhibits that pendular character which is found in hypotonic cases of cerebellar origin. Though the *hamstrings are passively stretched* by the shortening reaction of the quadriceps their tone is relatively so low that a "stretching-contraction" does not take place; the leg, therefore, swings like a pendulum. The knee-jerk differs not in kind but in degree from the cerebellar knee-jerk, which exhibits the phenomenon often in a more striking fashion. (A cinematographic film of the pendular knee-jerk in chorea was shown.)

(8) One other clinical consideration remains before we seek to draw conclusions as to pathogenesis from our clinical data. Among the *spontaneous* movements of chorea are to be found many involving the muscles of facial expression; across the choreic's face flits an exaggerated smile, to be followed in a moment by an expression of preternatural gravity. Frowns, smiles, sighs, chase each other unendingly; *when the choreic* tongue flies back at a word into the mouth the face is often liable just then to be disturbed by a series of expressional activities. These transient emotional or mimic displays, however, are essentially *movements; one does not, as a rule,* observe individual muscular twitches, myoclonic contractions of individual muscles, never any localised muscular caricaturing as in facial spasm. If unilateral grimacing occurs, it offers the same features as facial tic. Almost invariably those

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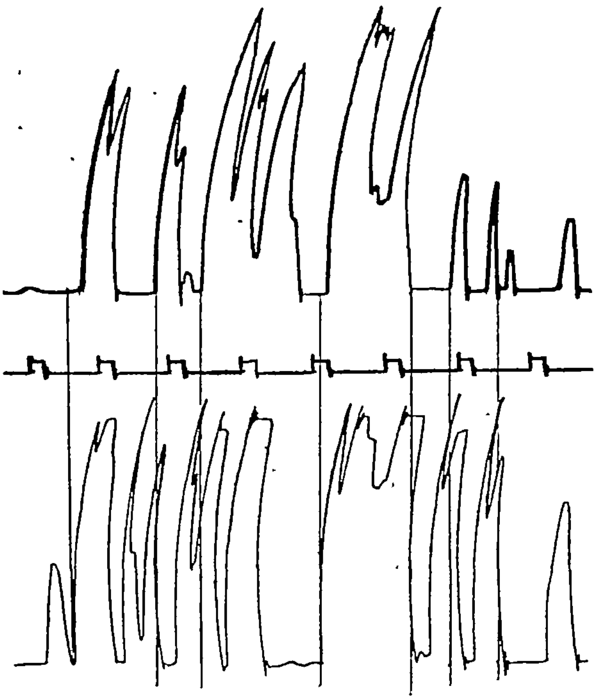

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The significance of such cases will be better understood if we bear in mind the important principle that "weakness" or hypokinesis and "*involuntary movements*" or hyperkinesis are but different aspects of activity of the same mechanisms; in one case there is underaction, in the other, overaction, of motor function. *Hypokinetic chorea* is as it were the obverse of hyperkinetic chorea; and we should *not*, therefore, seek a quite *different* mechanism for each, but rather expect to find that in the case of the latter *the efferent corticospinal system* is less disordered than in the former.

(7) The general state of muscle tone in chorea is of significance in relation to problems of localisation and pathogenesis. Commonly speaking, choreic musculature is definitely hypotonic, *both as* regards the usual and the "paralytic" type, and allows of greater extent of passive movement than in normal persons of the choreic age, say 7 to 15. Further, in numerous instances of Sydenham's chorea the knee-jerk exhibits that pendular character which is *found* in hypotonic cases of cerebellar origin. Though the hamstrings are passively stretched by the shortening reaction of the *quadriceps their* tone is relatively so low that a "stretching-contraction" does not take place; the leg, therefore, swings like a pendulum. The knee-jerk differs not in kind but in degree from the cerebellar knee-jerk, which exhibits the phenomenon often in a more *striking fashion.* (A cinematographic film of the pendular knee-jerk in chorea was shown.)

(8) One other clinical consideration remains before we seek to *draw* conclusi*ons as* to pathogenesis from our clinical data. Among the spontaneous movements of chorea are to be found many involving the muscles of facial expression; across the choreic's face flits an exaggerated smile, *to be followed in a moment by an* expression of preternatural gravity. Frowns, smiles, sighs, chase each other unendingly; when the choreic tongue flies *back at a* word into the mouth the face is often liable just then to be disturbed by a series of expressional activities. These transient emotional or mimic displays, however, are essentially *movements*; one does not, as a rule, observe individual muscular twitches, myoclonic contractions of individual muscles, never any localised muscular caricaturing as in facial spasm. If unilateral grimacing occurs, it offers the same *features as facial tic. Almost invariably those*

movements are bilateral which in health are bilateral; dissociation occurs in lower facial movements but not in upper, consonant with normal physiological law. I have not observed unilateral contractures of the frontalis, for example. We must not imagine the fragments of emotional facial expression exhibited haphazardly by the choreic to correspond to any existing emotional state of the moment; rather are they to be regarded as a release of the efferent side of the mechanism for the expression of the emotions. In a previous communication evidence has been adduced suggesting a cortical (non-rolandic) site for the central representation of mimic expression, and if this hypothesis is worthy of credence we may suppose in chorea a double condition of release: (1) the "voluntary" motor system (corticospinal system) is usurped by "involuntary" movements; (2) a normally "involuntary" efferent motor system (that for the expression of the emotions) is the seat of movements not occasioned by normal sensory (emotional) stimuli, but by abnormal (choreic) stimuli. Previous allusion has been made to the possibility of such a double release.

Summary of Clinical Analysis of Choreic Symptoms.

Summarising this analysis of choreiform phenomena, we have noted the close resemblance of choreic movements to "voluntary" movements, the existence of "little signs" pointing to disturbance of corticospinal function, the occurrence both in "voluntary" and in "involuntary" choreic action of identical clinical characteristics; we have seen the connexion between "paralytic" and hyperkinetic chorea, and realised how these are but differing aspects of derangement of the same efferent mechanism; while the occurrence in confluent chorea (as I call it) of motor incoördination which clearly demonstrates the abrogation of the law of reciprocal innervation by disease has also been exemplified.

Now the argument from these clinical data which is here offered may be stated as follows: Complete paralysis, as in, say, anterior poliomyelitis, is never under any circumstances associated with the appearance of involuntary movements in the affected limbs; similarly, in the case of a recent, complete, flaccid hemiplegia no involuntary movement (post-hemiplegic chorea or athetosis) makes its appearance until there is clinical evidence of some return of power in the paralysed limb or limbs. Even in cases of severe chorea the corticospinal system is never "paralysed"; but where "paralytic chorea," so-called, is noted the spontaneous movements are at a minimum. It is difficult to resist the conclusion that *for the appearance of choreiform disorder relative integrity of the pyramidal or corticospinal tracts is essential.* The corollary is, that this integrity is not absolute, in view of (1) the presence of the choreic phenomena themselves, and (2) the above-mentioned signs or indications of slight concomitant corticospinal dysfunction. I repeat, however, with due emphasis, that *the derangement constituting chorea need not have its actual origin on the motor (effector) side of cerebral (cortical) mechanisms*

Further argument may conveniently be postponed till the clinical phenomena of athetosis have been subjected to analysis.

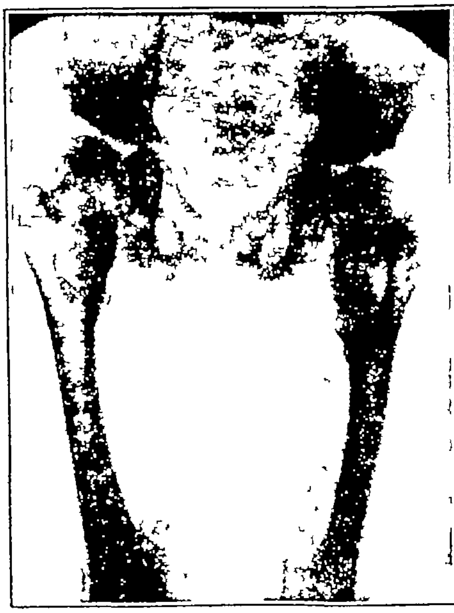
A CASE OF
HEREDITARY DEFORMING DYSCHONDROPLASIA.

BY A. G. ORD, F.R.C.S. EDIN.,
HON. ASSISTANT SURGEON, ROYAL PORTSMOUTH HOSPITAL.

THE following case of hereditary deforming dyschondroplasia seems worth recording, especially as there is available a genealogical tree of considerable interest.

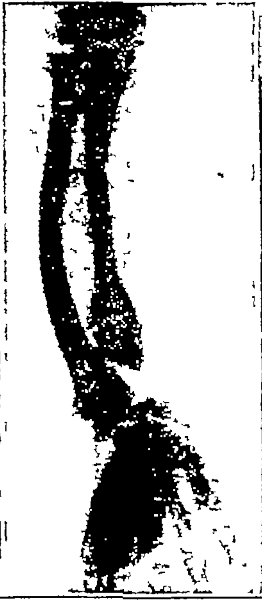
The patient, a boy of 14 years, was brought to my clinic by his mother with the story that "neighbours say that the boy has broken his arm." The boy was well developed for his age, but distinctly shorter than normal. He had a markedly sallow complexion, and was inclined to be "flabby." He was said to be "dull" intellectually. On examination his right forearm, when flexed on the elbow in the fully supinated position, with his arm at the side, was found to go across his body until his right hand rested on his left shoulder. No olecranon could be felt, and on further examination the distal end of the ulna was found to terminate in a bulbous extremity some 1 inch proximal to the wrist-joint. There was marked ulnar deflexion of the hand, but no fixed deformity in any

FIG. 1.



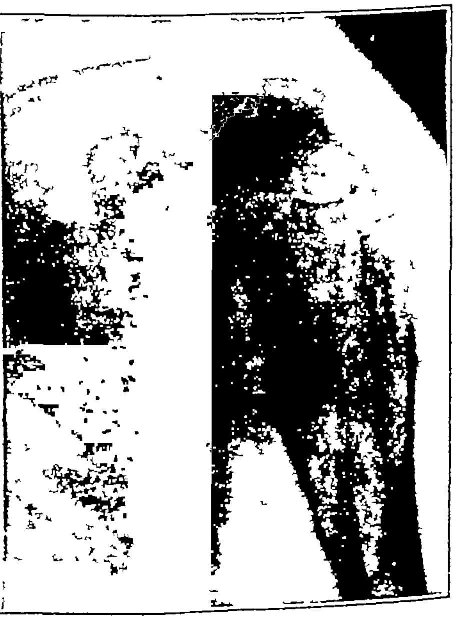
Hip joints and femora

FIG. 2



Right forearm.

FIG. 3.

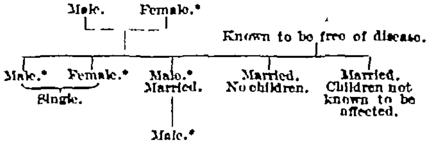


Left shoulder.

way. Both humeri at their proximal extremities appeared to be expanded, and although the left arm was less affected than the right, yet many irregular bosses could be felt. Both trochanters felt larger than normal, but were not raised above Nelaton's line. Around the knees and ankles many large and irregular bony prominences could be felt. The head, spine, and scapula appeared to be free of any abnormality. The accompanying X ray pictures show the outstanding features of the case. The only complaint was that stated above. But on carefully questioning the patient —originally a left-handed boy—he volunteered the information that he had difficulty in writing with his right hand which he had been made to use at school. Again, he stated that he could not play football very well because he could not run for long, presumably due to the accompanying coxa valga. The father also submitted himself to X ray examination, although he had no complaints excepting that he noticed his hips hurt him when he put his legs wide apart. The lesions found were of precisely similar nature, but their distribution was different, the chief bones affected being ilium—a boss on the ilium being almost contiguous with the greater trochanter on the left side—femora, tibiæ, and fibulæ and, to a lesser extent, the bones of the upper extremities. In every instance, however, the child's deformities were far greater, as demonstrated by X rays. This may be due to a worse affection or possibly to the fact that as adult life approaches some of the cartilage gets absorbed.

The family history is of interest, and although it is not quite complete yet the genealogical tree appended suggests strongly that the disease or abnormality is directly transmitted from a previously affected subject.

Genealogical Tree.



* = Known to be affected.

No satisfactory explanation has been offered for this remarkable condition, the most favoured theories being cartilaginous rests and thyroid or, at any rate, endocrine inefficiency. The latter is lent a little weight perhaps by these cases.

The boy was definitely a little below average in intelligence and had a peculiarly earthy complexion. The father also might possibly be indicted on the count of having said, with reference to the condition of his knees, that he thought "everyone was like this." These are, however, very slight indications and may easily be overstressed.

Medical Societies.

PATHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND.

A meeting was held in the School of Pathology, Trinity College, Dublin, on July 10th, Prof. J. T. Wigham in the chair.

W. M. Crofton (Dublin) urged that definite evidence of the ætiological relationship of microbes to disease could be obtained by the protective and curative results obtained with small doses of the organism. The fact, for example, that minute doses of "influenza" vaccine had a favourable effect on cases of lethargic encephalitis could not be neglected in considering the cause of that disease.—J. W. McLeod, G. M. Duthie, and H. V. Phelon (Leeds) discussed the significance of the production of alkali in cultures of the meningococcus and gonococcus.—J. W. Bigger (Dublin) had studied the hæmolysin of *Staphylococcus aureus* and found two bodies with a hæmolytic action, one heat-labile and acting on human and horse corpuscles, the other, relatively heat-resistant and produced much more slowly, acting on sheep and ox cells.—T. Dalling (London) showed that sheep could be satisfactorily protected in the field against braxy with a mixed vaccine of culture filtrates of *B. chauvei* with *Vibrion septique* toxin and antitoxin; laboratory experiments indicated that protection against blackleg could be obtained in the same way.—A. E. Boycott and C. Price-Jones (London) found that violent exercise determined illness and death in rats fed with cultures of Gaertner's bacillus though it had no obvious ill-effect on inoculated animals.—C. Price-Jones and N. D. Ball (London) described a chronic epidemic of Gaertner infection in a laboratory stock of rats; in about 15 months 19 deaths occurred in some 600 animals, and when the surviving animals were killed and examined signs of infection were found in 28 of 142. The organism was of low virulence and there was little parallelism between the occurrence of the bacilli in the spleen and of specific agglutinins in the blood.—S. C. Dyke (Wolverhampton) traced the rise and subsequent fall in the number of blood platelets after splenectomy in a case of acholuric jaundice; there was some eosinophilia, but the changes in the platelets had no apparent relation to the changes in the red corpuscles or leucocytes.—W. J. Wilson (Belfast) described a method of counting blood cells without a hæmocytometer by the use of a standard suspension of stained red corpuscles.—J. S. Dunn and Nora A. Lovett (Manchester) had studied the later stages of experimental oxalate nephritis in rabbits. Anatomically, there was atrophy of the convoluted tubules with condensation of the connective tissue in slight cases and some fibrosis in more severe examples; the glomeruli seemed hardly affected. The functional capacity of these kidneys was tested by putting the animals on a dry diet. This normally leads to a considerable decrease in volume of urine with a rise in the urea percentage and a concentration of urea from blood to urine of about 250 times. In the nephritic animals the kidneys were almost or quite unable to effect this concentration and the blood-urea rose to a dangerous extent when water was withheld.—J. S. Dunn (Manchester) described a case of unexpected death in an infant associated with multiple hæmorrhages in the parathyroids.—A. E. Boycott and C. Diver (London) drew attention to the occurrence of monsters and very high embryonic mortalities in certain strains of snails obtained in their breeding experiments, fatality being associated with uncertainty as to the direction of the spiral twist of the shell.—J. T. Wigham and E. C. Smith (Dublin) demonstrated a series of kidney tumours, W. J. Wilson (Belfast) a simple apparatus for plate cultures of anaerobes, B. W. Longhurst (Bath) a series of microphotographs taken with the Davon supermicroscope, E. E. Glynn (Liverpool) a gonorrhœal stricture of rectum and two large cutaneous horns, M. J. and C. Stewart (Leeds) a renal hypernephroma and a chondrosarcoma of tibia which had permeated veins, A. L. Taylor (Leeds) a primary actinomycosis of muscle and a very early anthrax pustule, W. G. Barnard (London) a series of human parathyroids showing the two types of cells, an angeioma of the parathyroid, and specimens showing squamous epithelium in the stalk of a normal pituitary and in a pituitary tumour.—G. S. Williamson and Innes H. Pearse (London) reviewed the functional changes in the thyroid in the light of Aschoff's conception of the reticulo-endothelial system.—T. Houston (Belfast) described experiments on the amœboid and phagocyte activity of leucocytes in blood and pus, and a new method of doing Arneth counts.

Reviews and Notices of Books.

THE MINISTRY OF HEALTH.

By Sir ARTHUR NEWSHOLME, K.C.B., M.D., F.R.C.P. The Whitehall Series. London: G. P. Putnam's Sons, Ltd. 1925. Pp. 265. 5*s*.

Sir Arthur Newsholme, who was Principal Medical Officer to the Local Government Board from 1908 to 1919, provides an interesting survey of public health work. Like the other volumes in the series, it is designed to meet the needs especially of Members of Parliament and civil servants. The first chapters deal with the early institution of public health work in connexion with the Poor-law and the formation and development of the Local Government Board, culminating in the creation of the Ministry of Health. Subsequent chapters describe the gradual growth of local public health work, and the author points out as an obstacle to efficient sanitary organisation the existence of the smaller units of administration. He believes that the formation of larger units with more comprehensive duties would help to remove a certain lack of local patriotism evidenced by the failure of rate-payers to vote at local elections. Responsible local authorities for health work are not always secured, and this, the author considers, makes it hard to balance central and local control, while he holds that a preliminary training or experience in local administration would increase the efficiency of the members of public services. In a chapter on the scope of public health work it is suggested that each medical practitioner might become a medical officer of health in the range of his own practice, acting, no doubt, under the principal officer, envisaged by the creation of large areas. We gather that, in the author's view, coördination locally is more important than coördination centrally, and that the greatest need is devolution on a large scale to county councils and county borough councils and a higher measure of trust in these bodies. The existence of the majority and minority reports of the Poor-law Commission issued in 1909 did not excuse, in Sir Arthur Newsholme's opinion, the inauguration of a national insurance against sickness which ignored existing official conditions and arrangements. Both of these reports at any rate agreed that the boards of guardians should be abolished and their duties transferred to county councils and county borough councils, and as a similar recommendation was made by the Maclean Committee in 1917, it is difficult to find reasons for further delay.

Large sections of public health work, including vital statistics and quarantine questions, are not dealt with in any detail, and from the author's preface it may be gathered that he found the story which had to be told too long and elaborate for the conditions of its telling. Much, however, may be learned from its pages.

THORACIC SURGERY.

Die Chirurgie der Brustorgane. Vol. II. By FERDINAND SAUERBRUCH. Berlin: Julius Springer. 1925. 258 gold marks (=£12 18*s*.).

THE second volume of Sauerbruch's monumental work on the surgery of the chest contains 1075 pages, 715 illustrations, many of them in colour, and weighs 6 lb. 12 oz. The first volume, which appeared five years ago, dealt with the anatomy and physiology of respiration, the general pathology of disease of the thoracic viscera, diagnosis by means of radiology and clinical methods, anæsthesia, pressure chambers, and the general technique of thoracic surgery and special forms of operations on the lung. The present volume shows the same breadth of outlook and attention to detail. It deals in succession with the surgery of the mediastinum, the heart and pericardium, the large blood-vessels, the thymus, the œsophagus, the diaphragm, and the pleura; and included in it is the second edition of the "Technik der Thoraxchirurgie," by Sauerbruch and Schumacher, which was issued by the same publisher in 1911. The two volumes embody painstaking pioneering work of the first order, and form the most important publication on thoracic surgery that has yet been made. The interest is not confined to the surgeon, for many aspects of thoracic disease have been considered, from secondary carcinoma of the breast involving the parietes, to tuberculosis and tumours of the lungs, animal parasites of the pleural cavity, and gunshot wounds. On each and every subject important help is given in diagnosis as well as operative technique. The bibliography extends to 110 pages. The book excels alike in composition, material, and production.

PRACTICAL CHIROPODY.

By E. G. V. RUNTING, a Founder and the first President of the Incorporated Society of Chiropodists. London: The Scientific Press. 1925. Pp. 164. 5*s*.

IT is many years since a treatise on chiropody has been published in England, and this book is a great advance on its predecessors. A full account is given of the treatment of corns, plantar warts, and affections of the nails, and a useful chapter follows on the pads and plasters which the skilful chiropodist applies after he has laid down his knife. The book is a clear indication that the modern chiropodist is taking his calling seriously, and is using scientific knowledge to improve his work. The pupil is warned not to go outside his sphere and always to order the client to consult a doctor in cases where there is any suspicion that the trouble arises from a constitutional rather than a local cause. In place of the word "corn" the author employs "heloma," a pseudo-classic word recently coined by American chiropodists to enhance the dignity of their calling.

LISTER AND HIS ACHIEVEMENT.

By Sir WM. WATSON CHEYNE, Bt., K.C.M.G., C.B., F.R.C.S., F.R.S., &c. London: Longmans, Green and Co. 1925. Pp. 136. 7*s*. 6*d*.

THE first Lister Memorial Lecture, delivered at the Royal College of Surgeons of England on May 14th, 1925, was reported in our issue of May 16th and is here issued in book form. Sir Watson Cheyne tells us in his preface that it was his wish to give a short history of Lister's work, but that he found it impossible to do so within his compass. The lecture illustrates Lister's character and the general plan of his work, while the details of Lister's researches and investigations appear in the form of an appendix to the book. Among the army of those who have tried to minimise human suffering, and have seen success crown their endeavour—an army in whose ranks stand John Howard, Elizabeth Fry, Florence Nightingale, Samuel Romilly, Henri Dunant, and Louis Pasteur—the name of Lister is by no means the least, and it is fitting that one who was one of his earliest pupils and most devoted follower should be the first to proclaim his master's praise in a memorial lecture. The story of Lister's struggles and success is, as Sir Watson Cheyne says, a "most fascinating tale, and its influence on the life and health and usefulness of mankind surpasses all imagination; and it is a true story." There is no reader of our pages but knows what surgery was before Lister's time, and how after his discoveries an operation was in general terms no longer the gate of the grave, but that to life and freedom from pain and suffering. No great discovery has ever been made without much toil, much anxiety, many falls and risings again, and bitter disappointments before success was achieved, and Lister in his work was no exception. The story of his life's work is now old, but it bears re-telling, and no one has told it better than Sir Watson Cheyne. Everyone, whether medical man or layman, should read this lecture, for it is a record of a struggle for the benefit of humanity crowned by success which has rarely been equalled.

PATHOLOGY.

Surgical Pathology. By WILLIAM BOYD, M.D., Professor of Pathology, University of Manitoba; Pathologist to the Winnipeg General Hospital. London and Philadelphia: W. B. Saunders Company. Pp. 837. 45*s.*

THIS book is an attempt to present those aspects of pathology which are of immediate importance to the surgeon. Though much that is necessarily included in works on general and special pathology is omitted, enough remains to make a volume of considerable size. It is difficult to see how it could have been shortened without cramping the author's scheme. The book is divided into two parts dealing respectively with general and special pathology. The chapters on general pathology are short and concise, and we think the author has exercised sound judgment in deciding what to include and what to leave out. Special pathology is treated more fully. The book is copiously illustrated and most of the figures are excellent.

Prof. Boyd is to be congratulated on a work which will assuredly find a place in pathological and surgical libraries. Our only regret is that the price of the volume makes it unlikely that the average student will be able to include it in his personal collection.

A Text-book of Pathology. Third edition. By J. MARTIN BEATTIE, M.A., M.D., Professor of Bacteriology, University of Liverpool; and W. E. CARNEGIE DICKSON, M.D., B.Sc., Director of the Pathological Department, Royal Hospital for Chest Diseases, London. London: William Heinemann. 1925. Pp. 1103. 42*s.*

EXCEPT for a few minor alterations this is a reprint of the second edition of this text-book, reviewed in THE LANCET, 1921, ii., 232 and 904. The only change of any importance is one of format, for the original two volumes are now bound together as one. It is perhaps a convenience to have the whole book in one cover, though it makes a massive volume to hold; the student will probably appreciate a change which reduces the cost of a popular text-book from three to two guineas.

Pathogenic Micro-organisms. Eighth edition. By WILLIAM HALLOCK PARK, M.D., Professor of Bacteriology and Hygiene, University and Bellevue Hospital Medical School; ANNA WESSELS WILLIAMS, M.D., Assistant Director of the Bureau of Laboratories, Department of Health; and CHARLES KRUMWIEDE, M.D., Assistant Director of the Bureau of Laboratories. Philadelphia and New York: Lea and Febiger. 1924. Pp. 811. $0.50.

THE eighth edition of this well-known text-book has been thoroughly revised and in part rewritten, and new matter, dealing with immunity, scarlet fever, measles, typhus, and tularæmia, has been added. The classification and nomenclature of the Society of American Bacteriologists have been adopted, so that the book has an authoritative flavour. A large and comprehensive summary table has been added, giving the essential characters of the pathological conditions caused by the commoner organisms. It is a useful table, but the only way to prevent its rapid disintegration by wear and tear would be to mount it as a wall diagram, and it is, unfortunately, printed on both sides of the paper.

ALLEN'S COMMERCIAL ORGANIC ANALYSIS.

Fifth edition. Vol. III. Edited by S. S. SADLER, E. C. LATHROP, and C. A. MITCHELL. London: J. and A. Churchill. 1925. Pp. 782. 30*s.* net.

Volume III. of this well-known work deals more particularly with the analysis of hydrocarbons, bitumen, aromatic acids, and explosives. The section on phenols, contributed by Dr. J. B. Hill, will specially interest medical readers. A considerable amount of new work and modifications in existing analytical methods are described, and the methods for determining the phenol-coefficient of antiseptics are given in full. The cresylic acid group of disinfectants now so widely used, either in the emulsified form or in the soluble state, are dealt with in an adequate manner. The chapter on salicylic acid and the analysis of salicylates and salicylic esters is contributed by Mr. E. Horton, who has written briefly and lucidly. The volume is well and clearly printed, and the illustrations of apparatus form a useful feature of the present edition. No laboratory, whether it be concerned with subjects so wide apart as the analysis of explosives or the examination of food and drugs, can afford to be without the volumes of "Allen" as a work of reference.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 88.)

THE VOLUNTARY HOSPITALS' EVIDENCE.

The British Hospitals Association.

(App. LVII. and Q. 17127–17285.)

EVIDENCE was given on behalf of this Association by Mr. H. Wade Deacon, the Right Hon. Viscount Hambleden, and Mr. J. Courtney Buchanan. They said that the treatment of insured persons by panel practitioners was incomplete because no satisfactory provision for hospital treatment was made in the National Health Insurance Act, 1911. Since the inception of the Act hospitals have always examined and, where necessary, treated, without discrimination between insured and uninsured, cases coming to the hospitals either on reference from their medical attendants or upon their own initiative.

The number of hospitals represented by the Association is 387, of which 117 are in London. The voluntary hospitals have felt very severely the general financial stress since the war, the expenses of most hospitals having increased at least 75 per cent., and many over 100 per cent. The hospitals warmly acknowledge the support that they have received from approved societies, but suggest that much more might be done, in particular with regard to out-patient treatment, for which approved societies make no contributions. The witnesses pointed out that the out-patient special departments of the voluntary hospitals—i.e., the dental, throat, nose and ear, massage, electro-therapy departments, and special clinics—are utilised for special cases, not only in the general diagnosis of the patients' complaints, but also in their subsequent treatment and relief. All of these special departments are extremely expensive to the hospitals.

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* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247–8); The Provision of Medical Benefit (Feb. 7th, pp. 301–3; Feb. 14th, pp. 355–6; Feb. 21st, pp. 403–5); Financial Provisions of the Act (Feb. 28th, pp. 454–7); Medical Certification and the Regional Medical Staff (March 7th, pp. 508–9); The Approved Societies and the Money Benefits (March 14th, pp. 564–5; March 21st, pp. 623–4); Evidence of the Hearts of Oak Society (March 28th, pp. 677–9); Evidence of the National Conference of Industrial Assurance Approved Societies and of the Manchester Unity Approved Society (April 4th, pp. 731–3); Evidence of Independent Order of Rechabites, of Rational Association Friendly Society, and of Miners' Societies (April 11th, pp. 784–6; April 18th, p. 839); Evidence of Mr. Alban Gordon (April 18th, pp. 839–40); Evidence of Joint Committee of Approved Societies, of Stock Exchange and Lloyds' Health Insurance Societies, and of Group of Catholic Approved Societies (April 25th, pp. 889–91); Evidence of the National Insurance Beneficent Society (May 2nd, pp. 943–4); Evidence of the British Medical Association (May 9th, pp. 993–5); Evidence of the British Dental Association and other Dental Organisations (May 16th, pp. 1044–6); Evidence of the Insurance Committees (May 23rd, pp. 1097–8); Evidence of Various Approved Societies (May 30th, pp. 1135–6); Evidence of the British Medical Association (June 6th, pp. 1184–6; June 13th, pp. 1248–50; June 20th, pp. 1315–6); Evidence of other Medical Bodies (June 20th, p. 1316; June 27th, p. 1348); Individual Evidence (June 27th, p. 1348); Medical Services in the Factory, Ministry of Health Inquiry Room, Evidence of National Sailors' and Firemen's Union and of Loyal Order of Ancient Shepherds (July 4th, p. 36); Evidence of Friendly Societies' Medical Alliance, South Wales and Monmouthshire Alliance of Medical Aid Societies, Friendly Societies' Medical Officers' Union, Association of Approved Societies, Standing Committee of Scottish Insured Women, and Society of Medical Officers of Health (July 11th, pp. 86–8).

References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1309.

In suggesting further financial help from insurance funds, the witnesses stressed the point that they did not desire any compulsory levy, nor must there be any contract to treat insured persons as such. It was essential that the voluntary hospitals should preserve their voluntary status.

(Q. 17169.) You do not agree that a statutory requirement that the National Health Insurance funds should be drawn on for the support of the hospitals involves necessarily a certain measure of representation and control?—It is a matter of opinion, I suppose. I think that if there is a compulsory levy then there is reason for some control or some representation and that is rather my objection to anything compulsory in connexion with voluntary hospitals.

Viscount Hambleden thought that it would be dangerous to ask for anything in the nature of a block grant; what was desired was payment for services rendered. It would be objectionable to contract to give preferential treatment to insured persons. The object now is to keep the beds filled with the worst cases. Whether persons are insured or not does not enter into the question from a medical or hospital point of view.

As to financial assistance from insurance funds affecting voluntary contributions, the witnesses pointed out that—

(Q. 17170.) The Government gave a grant of half a million to be distributed by the Voluntary Hospitals Commission to help hospitals. Some people thought that would be the end of voluntary contributions. The contributions are rather bigger than they were before the grant was made.

As to the suggestion that panel practitioners referred to hospital unnecessarily cases which could be equally well dealt with by them in their own surgeries, the witnesses all agreed that no general charge of this sort could be sustained, although there might be individual cases.

The Sheffield Joint Hospitals Council.

(App. LVIII. and Q. 17286–17383.)

This Council represents seven different institutions in Sheffield, each having its own autonomy. It is a consultative and advisory body. Its spokesmen were Sir Henry Hadow and Mr. S. R. Lamb.

They said that a National Health Insurance service is not complete without the coöperation of the voluntary hospitals where the services of specialists and special equipment are available. The Council are encouraging the view that a voluntary hospital should be used largely for consultative and operative work, and a consistent effort is maintained to discourage treatment being given in the out-patient department of our hospitals which could as effectively be given by a panel doctor. In this respect they had no reason to think that there had been any abuse.

(Q. 17206.) The insured people who come to the hospitals in the first place roughly fall into three classes. There are the casualties who come because it is the nearest place; there are the people who want specialist advice, and who are recommended by their panel doctor, and come with his recommendation; and, thirdly, there is a small percentage of people who come because they do not know any better. They live in some poor part of Sheffield; they get ill and frightened, and they say: "I will go to the hospital." In those cases they come to the hospital, but I do not think there is any abuse.

It was probable that the third class were women and children mainly and not insured persons at all.

This Council suggests that the out-of-pocket expenses of maintaining insured in-patients and out-patients in a voluntary hospital should fall on the National Health Insurance funds. In any case, such expenditure by the voluntary hospitals on insured persons should, in future, be the first claim on the quinquennial surplus declared by the Government auditor.

Without wishing to suggest an exact proportion, they hoped that the contributions of societies which at present was about 15 per cent. of the cost of maintenance might go up to, say, 50 per cent.

In connexion with the voluntary character of the hospital administration and the importance that this should not be impaired, it was stated that the moral value of the contributory scheme in Sheffield is very great. It has brought 200,000 workmen into personal touch with the hospital work, and they have formed a Contributors' Council, which is of the greatest value. If grants from insurance or the public funds involved inspection, there could be no objection to this.

(Q. 17316.) On the point of representation, knowing the mind of some of the hospital boards, I think the only thing that would really frighten them would be if there was any chance of having a salaried official put in control of the work. Nothing in the way of supervision or inspection or representation would be anything else but palatable to them.

And, again, the witnesses said that their objection only extended—

(Q. 17370.) As far as having somebody permanently on the spot who was in any way hampering the autonomy of the hospitals. We should not object to anything which corresponds to the Government inspectors who come down to our University.

The Middlesex Hospital.

(App. LIX. and Q. 17384–17482.)

This evidence, given by Mr. A. E. Webb-Johnson and Mr. Walter Kewley, covered to some extent the ground traversed by the previous witnesses in so far as the need for support from insurance funds was in question, and was summarised in the form of a question by Sir John Anderson as follows:—

(Q. 17423.) The voluntary hospitals are meeting a recognised public need; they can only continue to meet that need if they receive financial support on the widest possible basis; they have, therefore, a strong moral claim on any section of the community which is in a position to contribute to their funds: in so far as approved societies have money at their disposal which could be made available for this purpose, the hospitals may properly look to those funds for a measure of support; and, quite apart from that, they are entitled to look to the individual patients, whether insured or no, who benefit by the service that the voluntary hospitals provide, to contribute according to their means.

It was recognised that support to the hospitals from insurance funds, if imposed by statute, must carry with it some inspection to see that an efficient and proper service was being rendered. The strain on the finances of voluntary hospitals did not imply any failure of the voluntary system, but it was due to the fact that the work done is greater in volume than it ever was before.

In regard to insured patients, Mr. Kewley thought there was a tendency on the part of some insurance practitioners to send patients for out-treatment which they could quite well give themselves. The witnesses thought that it was a defect of the Insurance Acts on the one hand, that no satisfactory provision is made for incurable cases which may require treatment over a lengthy period—e.g., cancer; on the other hand, the value of preventive treatment is not sufficiently recognised under the Acts.

Generally, on the need for closer coöperation between the public services and the voluntary hospitals, Mr. Webb-Johnson said—

(Q. 17482.) I would urge that this Commission, in making any recommendation, should not only have in mind the benefit to the insured person. . . . I think in recent years, when the State has been taking a greater part in the treatment of certain diseases, they have not always done it in ways which give promise of the best results. I maintain that for the sake of medical education and research and the advancement of our knowledge, it is to be deplored that when public authorities have assumed responsibility for the treatment of certain classes of disease they have not sought a closer coöperation with our great hospitals and medical schools which are the scientific centres of medical progress. It is to be hoped that these authorities will see the wisdom of establishing some of their treatment centres actually in, or in close association with, our great hospitals rather than in separate institutions.

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See also pp. 21 & 29

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THE LANCET.

LONDON: SATURDAY, JULY 25, 1925.

THE CANCER VIRUS.

As we indicated last week, the work of Dr. Gye and Mr. Barnard is as significant for its promise as for its performance. "By a theory," said Mendeléeff, "I mean a conclusion drawn from the accumulated facts we now possess which enables us to foresee new facts which we do not yet know." The identification of the virus and the brilliant demonstration of its coöperation with inanimate substances in the production of tumours appears to give us at once a means of testing anything for the presence of either. If a mixture of any substance with a chloroformed extract of the Rous chicken sarcoma gives rise to a tumour when it is inoculated into a fowl, the substance may be presumed to contain the virus. If a chloroformed extract of any tissue inoculated into an animal of the same species along with a fresh extract of a tumour from another species of animal causes a tumour to appear, the tissue may be presumed to contain the accessory substance which Dr. Gye calls the specific factor. At present the experiments throw little direct light on the *de novo* origin of tumours; no tumour appears to have been produced except from a pre-existing tumour. But methods have been found which should quickly illuminate the question of direct causation. When a tar cancer is produced, does the virus come from outside or is it generated in the skin? What are the conditions of time and place under which the specific factor appears? The distribution of the virus can be ascertained and the conditions under which the specific factor arises in the body can be worked out. Especially we shall be most interested to hear what happens when the fundamental experiments are repeated with the substitution for tumours of normal tissues, and tissues in various abnormal states associated with death and regeneration. From the wide distribution of the virus and the absence of specificity, it seems not unlikely that it may be a normal component of the body; it has proved possible in recent years to cultivate whole cells outside the body indefinitely, and Dr. Gye's results may mean that we can now cultivate also some of those components of cells which were dreamed of and dimly seen by Béchamp in his microzymes and Altmann in his bioblasts. If that proved to be the case, the important point in the causation of cancer would be the origin of the specific factor, and the possibilities of successful immunisation would become more remote. Or it may turn out that the virus does not normally exist in the body at all, but is generated within it in something of the same relation to the cells as the bacteriophage has to bacilli. Imagination can run on almost indefinitely, and in this case legitimately, for it is now plainly possible to submit these and many other speculations to experimental test; in this possibility lies the largest importance of the new discoveries.

There are two ways of formulating the problem of the causation of cancer. We may say: "Why do some people have cancer?" or we may say "Why does not everybody have cancer?" It is the same question, but the two ways of setting it out come from different points of view. Most people have started their thinking from the first mode of presentation. There are, however, many reasons for believing that the body does and can resist cancer to some extent, and in all the revision of our present array of facts which the work of Dr. Gye and Mr. Barnard has made so absorbing, it would be well to bear the second point of view in mind as well. A given chain of circumstances is not to be ruled out as a "cause" of cancer if it does not always produce cancer, and like any other mode of growth cancer is a resultant of the reaction between cells and their environment. The whole problem is being steadily cleared up. The demonstration by E. F. Bashford and his colleagues that something may pass out from a carcinoma cell which induces the neighbouring connective tissue to become sarcomatous, is one landmark; the discovery of the Rous chicken tumours was a second; the production of tar cancer by Yamagiwa and Ishikawa was a third. The present discoveries push the experimental study of the cause of cancer a great deal further and reasonably encourage us to hope that the fundamental facts may soon be reflected in human experience.

Throughout the communications published last week in The Lancet both authors regarded their work as requiring in many places confirmatory evidence, and obviously other experiments must be done in certain directions before more than tentative opinions can be formed. We note with pleasure the promptitude with which this situation has been recognised by the trustees of the late Sir William Dunn, who have made a donation to the Medical Research Council of £2000 per annum for a period of five years to be used for the promotion of research work in medicine at the discretion of the Council. The Dunn trustees have already made important benefactions to the advancement of medicine, for they endowed a chair of pathology at Guy's Hospital, and another in biochemistry at Cambridge, erecting a school for the purpose; they have also built and equipped laboratories for the University Medical Clinics at St. Bartholomew's Hospital, St. Thomas's Hospital, and the London Hospital, and have given a new building for the School of Pathology at Oxford. The Medical Research Council, in accepting this generous benefaction, have intimated that for the present they will apply this special Dunn Fund in chief part to the furtherance of the organised studies of filterable viruses which they are supporting, and in particular to the recent developments of work in relation to cancer by Dr. Gye, Mr. Barnard, and their colleagues.

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THE BRITISH MEDICAL ASSOCIATION AND INDIVIDUAL DEFENCE.

The Annual Meeting of the British Medical Association had its prelude at Bath on Friday last, July 17th, when Dr. H. B. Brackenbury presided over the Representative Body for the first time; on taking the chair he received an enthusiastic welcome from an assembly which knew how much the activities of the Association of recent years have owed to his enthusiasm and his industry. As will be seen from the report which we are privileged to make of the deliberations of the Representative Body, Dr. Brackenbury had a smooth time, for few of the motions on the agenda put forward by the Council of the Association for ratification provoked dissent, or even led to more than cursory debate. The agenda formed really a record of progress on the administrative side, while the financial statement made with great clearness by the treasurer, Mr. Bishop Harman, was a cheerful one indicating that increased expenditure, even to a record figure, had been accompanied by increased revenue and increased surplus. Two motions of the Council were, however, followed by keen discussion; the first of these was a proposal to establish a bureau for the provision of locum-tenents and assistants, and the second was a request by the Council for an authority from the Representative Body to prepare a draft scheme for a medical defence organisation to be affiliated with the Association. Both these motions had the common origin of a desire to help the recently qualified men and women, as they are recruited by the Association, and when they are faced for the first time with the necessity of finding a sphere in which to exercise their newly acquired rights, and with the accompanying necessity of avoiding professional risks.

With regard to the bureau for locum-tenents, the Council secured endorsement for the policy advocated. The opposition of existing agencies for the provision of locum-tenents and assistants, and for the sale and transfer of practices, was mentioned but discounted as negligible, and the motion for starting the bureau was approved, with the proviso that preferential treatment should be given to members of the British Medical Association. But with regard to the question of the formation of a medical defence association the Representative Body, by a substantial and possibly unexpected majority, declined to permit the Council to prepare a draft scheme along the suggested lines. The question of individual medical defence was threshed out in a debate of a high order. Dr. Morton Mackenzie, chairman of the Organisation Committee, produced strong reasons why the necessary authority should be given to the Council to proceed with the work of medical defence. He urged that they ought to be able to defend their new members from the outset of their professional careers; that the minority in favour of such action had through many years been growing steadily larger; and that in one form of defence—namely, "Optional and Complete"—the officers and organisation of the Association could do all that would be required through the skill and knowledge possessed by the officiate. He stated that less than 7000 members willing to pay an annual fee of £1 would render the undertaking financially secure. These propositions were supported from different points of view by various members of the Representative Body, and it was made clear from the beginning that the position of the Council in again seeking a further decision on a matter which had been settled already on several previous occasions was considered to be justified in view of an apparently growing feeling among the members that they should be offered this form of protection by the Association. But on an amendment being put forward recording the view that individual medical defence was being competently dealt with by various existing bodies, the supporters of that amendment had far the better of the debate. It became clear that the Organisation Committee had been unable to bring forward any arguments which had been calculated to persuade either the Medical Defence Union or the London and Counties Medical Protection Society that their constituencies had anything whatever to gain by coöperation. These bodies were ungracious enough to decline to commit suicide, and seem to have resented the suggestion that members of the British Medical Association should be admitted to the privileges of defence by them at a reduced scale, seeing that they existed for the protection of all qualified practitioners. Various speakers brought up for attention the strong financial position of the existing societies, who are in possession of large memberships and reserve funds, with the implication that a run of bad luck against any new defence organisation established by the British Medical Association would wipe out the young fund or would result in considerable loss to the Association.

But probably the strongest argument of all against the projected departure was that brought forward by Dr. Peter Macdonald and Mr. E. B. Turner, both of whom, though from different angles, pointed out the extremely awkward situation in which the British Medical Association would be placed if a defence body, under the ægis of the Association, should find itself defending a practitioner where the conduct which had to be defended might appear ethically indefensible. This is not a fanciful position; it is one which might well occur. A defence in a court of law might prove successful before a jury which did not consider the ethical side germane to the issues, and yet that very side might later come under the disciplinary notice of the General Medical Council. Such was the line of thought which led to the Representative Body refusing to follow the lead of the Council in the matter of individual defence.

THE EVOLUTION OF HUMAN VISION.

Man's body, like his civilisation, is made up of a vast assortment of parts belonging to varying dates. Some of these parts, such as his heart and lungs, are of ancient lineage; others, such as his facial features and the convolutionary pattern of his brain, represent recent acquisitions. His eye, on which he prides himself and through which he has learned most of what he knows concerning the world in which he lives, must be placed among his older parts. Eyes such as man has, set in sockets so that their axes are parallel, each provided with a specialised area of retina at its distal pole, each furnished with six muscles for external movements and an internal muscle for accommodation, came into existence with the evolution of the Primate stock early in the Eocene period. Binocular vision, or, to be more precise, bimacular or bifoveate vision, is thus much older than the human form; it is an inheritance from a common and distant ancestry which man shares with anthropoid apes and with all forms of monkeys—both those of the Old World and those of the New. The superiority of man's vision lies not in his eyes but in the brain which has grown up behind them. Such we take to be the chief lesson learned by those who were present at the symposium "On the Evolution of Binocular Vision," organised by the Convention of English-Speaking Ophthalmologists, when it met in London last week. The history of man's powers of vision and perception was then opened out in a masterly way by Prof. Elliot Smith, who was followed by Sir Frederick Mott, Prof. Whitnall, of Montreal, and Sir Arthur Keith. A brief report of these speeches is given on another page. In his Bowman Lecture, which we published last week, Sir John Parsons has made clear that the superiority of human vision is psychological, not ophthalmological.

Every infant in the development of its powers of vision bears witness to the truth of Darwinism. At an early stage of fœtal development the eyes swing forwards so that their axes become parallel. Soon after birth the fovea centralis appears. While this minute area of the retina becomes specialised for acute vision, the rest of the retinal cup remains merely a reflex feeder for the central or foveate area. By the sixth week after birth the eyes begin to move together and feed their centres of acute vision. The oculo-motor and cortical centres gradually obtain control of the muscles which move the eyes; by the sixth month a stage has been reached comparable to that possessed by adult monkeys. At the same time the muscles of the neck gain control of the head and can thus keep the eyes directed so that they may follow moving objects. Monkeys alter their field of vision by head movements rather than by eye movements. By the end of its first year a child's vision has reached a stage comparable to that of anthropoid apes—where conjugate movements become more free and temporary accommodation for near objects possible. Stereoscopic vision comes later; it begins to dawn about the third year and goes on improving up to the sixth year. These later improvements in vision depend not on the eye but on the brain. Indeed, ophthalmologists realise that it is hard to tell whether a young child's blindness is due to a defect of the brain or to one of the eyes.

With all these facts constantly before him the physician cannot well doubt the truth of evolution. Man differs from all animals in the perfection of his mental vision; compared to him all other animals are mentally blind. Human vision is Nature's greatest triumph, but it is a triumph reached by the evolution of the brain, not by the attainment of a superiority on the part of the human eye. In the oldest and most primitive of mammals the dominant sense was that of smell; their brains, as Prof. Elliot Smith demonstrated many years ago, were organised on an olfactory basis. In most mammals the nose still remains a master organ. In one fortunate group of arboreal mammals, which made its evolutionary appearance early in the Tertiary part of the earth's history, the eye became the governing sense organ; the axes of their eyes became alined; a spot in the retina, situated at the distal pole of each eye, became specialised for acute sight; bifoveate vision was thus evolved. This new form of vision entailed a reorganisation of all the parts of the brain which had to do with the movements of the eyes, and with the receipt and distribution of visual stimuli. The sight-brain gradually submerged the smell-brain. In the marmoset's brain we can still see an early stage in the evolution of the visual brain; man's brain represents the latest stage of this visual series. Between these two extremes lie intermediate links provided by the brains of various types of monkeys, the cerebral outfit of the gibbon and that of the great anthropoid apes. No one who has swept an eye along this series of brain-forms can doubt the truth of evolution, nor can he fail to convince himself that the superiority of man's vision lies in his brain, for all of these Primate animals are provided with the same kind of eye—all of them are sharers of man's bifoveate vision. As visitors to our Zoological Gardens may observe, the eye movements of the orang are almost human-like in their freedom, yet they are infinitely less effective than those of man. When the orang has swept his foveate centres over an approaching visitor he has learned whether or not there is a prospect of something to eat; with a similar glance a young woman will register the cut and colour of every article on the body of her similar.

While it is manifest that man's vision is a gift of evolutionary processes, the nature of these processes remains obscure. When Darwin's "Origin of Species" was first published, Mr. J. J. Murphy, of Belfast, made the criticism that chance variations could never give rise to an organ such as the eye, which requires exact adjustment in the construction of all its parts. We now realise that the evolution of man's vision involves much more than the eye and its muscles; it involves the nerve centres which control eye movements; it involves the primary optic nerve centres of the mid-brain; it involves areas of the occipital cortex and of the frontal cortex; it involves thousands of adjustments of all parts of the central nervous system. The skull and orbit require readjustment at each stage in the evolution of high vision. How are all of these widely scattered elements concerned in vision moved towards a common functional end during the development of the body? If the eye seems to be the *pons asinorum* of the evolutionists' Euclid, yet it has also proved to be the organ which has yielded the evolutionary key. We know now that the part of the brain which grows out to form the retina can cause any piece of embryonic ectoderm to form a lens; one embryonic element can control the growth of a neighbouring element. We know also, thanks largely to the researches of Dr. Ariens Kappers, that developing nerve cells are brought under influences which cause them to take up new and advantageous positions and arrangements in the nervous system of the embryo. Thanks to the labours of experimental embryologists, we are beginning to know that developing groups of cells of one kind can give out substances—growth hormones—which can and do control the development of other and allied groups of cells. As the new prospect opens out, the evolution of man's vision, if it becomes a still more intricate problem yet becomes one which we may hope to solve. Somehow developmental processes are regulated on a functional basis; there must be a machinery at work in embryo and fœtus for the common control of all parts that are concerned in vision.

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PROPOSED UNIT OF CLINICAL PATHOLOGY AT WESTMINSTER HOSPITAL.

The munificence of a private donor, Mr. A. J. H. Carlill, recently placed the sum of £20,000 at the disposal of the board of governors of the Westminster Hospital, and this they have decided to lay out in the establishment of a unit of clinical pathology around which all the work of the hospital shall centre. So to reorganise a teaching hospital as to render it primarily an institution for the study of disease is an important departure, but the difficulties in the organisation of such a scheme are immense. The scheme as now drawn up provides that the unit shall be under the management of a director, assisted by two heads of laboratories. The director will be in supreme command of the work of the unit and upon him will devolve the responsibility of determining in consultation with his colleagues what problems are to be attacked and the manner of the attack. He will have no beds, but will be expected to work in close coöperation with the physicians and surgeons of the hospital. The director will have his own laboratories. Under him will be two assistants, each in charge of their own laboratory. To ensure coöperation between the laboratories and the wards, there will be attached to the director and to both his assistants liaison officers whose duty it will be to see that their respective heads are kept cognisant of the cases in the wards. The arrangements for coöperation between the clinical and the pathological sides would appear to be as complete as they can humanly be made. Ultimately, however, success or failure must depend upon the personality of the staff. The director and to a lesser degree his assistants will necessarily require to be men possessing a thorough mastery of the general principles of pathology in its widest sense, with at the same time a sympathetic and intelligent interest in clinical work. The general trend of medical education in this country has not been such as to produce many men of the type who desire to master the fundamentals of medicine in order that they may the better see their way in treatment.

To many the Westminster scheme will appear to be merely an interesting experiment directed towards the placing of the teaching of pathology upon a new basis. Actually it is far more. This and all other plans of a like nature must stand or fall, not as they affect the teaching and study of pathology, but as they influence the teaching and practice of medicine as a whole.

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Annotations.

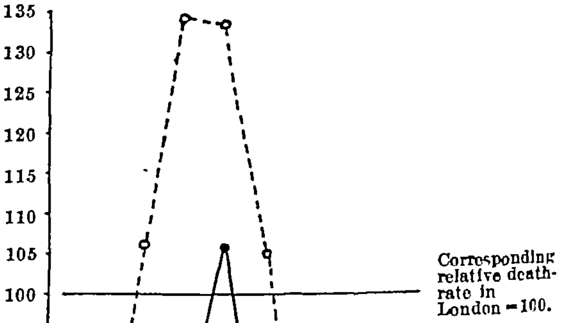
"Ne quid nimis."

INTERNAL MIGRATION AND THE DEATH-RATE.

IN a valuable though admittedly inconclusive inquiry,[1] pursued in a thoroughly scientific way, Mr. A. B. Hill has thrown new light on the problem as to what effect migration of young persons produces on the relative death-rates of urban and rural areas. The general facts obtainable from the Registrar-General's reports and quoted in Mr. Hill's report are fairly well known. Thus, in recent years the total urban death-rate for males is in excess of the rural at all ages under 75, but closely approximates to the rural rate at the age-periods 20–25 and 25–30 years. For females the urban death-rates fall below the rural rates at ages 20–30 years and occasionally also at ages 30–35. Similarly there is a higher death-rate in the rural counties from pulmonary tuberculosis at the ages of adolescence and in early manhood and womanhood, which partially explains the difference between total death-rates in urban and rural areas. The report before us seeks answers to the question why this should be, points out the difficulties inherent in the usual explanations which are offered, and throws light on the contention which has been advanced on good authority that much of the decline in the urban death-rate from phthisis is ascribable to urban migration of the more vigorous units of population and not merely to improved and more abundant food, to better housing, and to diminished dissemination of infection.

Briefly stated, the facts elicited, although not warranting dogmatic statement, appear to show that the high general death-rates from all causes in the rural parts of Essex in adolescence and early adult life are caused by corresponding high death-rates from phthisis, and that this has some relation to the migration into towns of adolescents of both sexes. The report recognises the need for evidence showing, as far as is possible, the life-history of migrants; and by securing the coöperation of clergy and others in Essex, returns have been received from some 55 villages, relating to 402 males and 367 females, of whom about one-half were migrants. It appears likely, in view of the information thus secured, that migrants have found prosperity in the town, and that their return sick to their rural homes is relatively rare. One explanation of the excessive rural death-rates at certain ages can, therefore, probably be ruled out. But it does not follow that the homekeepers —with a high death-rate in early adult life—had intrinsically worse lives. Hence an attempt is made in the report to assess their conditions in rural life as to work, to housing and environment, and to diet. No special evil condition in rural work is revealed; and although rural housing and sanitation are often unsatisfactory, this cannot be held responsible for the high mortality in early adult life, in view of the fact, not mentioned in this report but revealed by the Census figures, that there is terribly greater prevalence of overcrowding in its worst forms in towns than in rural districts.

Much valuable information is given as to rural dietaries, and this part of the report especially deserves study by the social worker. Two-thirds of the income of the Essex families investigated was spent on food, and expenditure on boots must have meant often going short of food. This would appear to have possible direct bearing on the excessive phthisis mortality in early adult life. It is pointed out in the report that the diet would probably be most defective during the first 12 or 14 years of married life, when the father is the only wage-earner, and that this corresponds roughly with the period at which rural death-rates are high; but as against this the curves of growth and weight of Essex children show no signs of malnutrition or lack of growth. If the Essex dietary is, as appears probable, below a desirable level for rural workers, the low phthisis death-rates which are lower than those for London except at ages 20–25 for males and at ages 10–35 for females (see figure below), do not appear to be consistent with the view that malnutrition has borne a large part in the result. It appears highly improbable that the effect of deficient food, even though the deficiency were greatest at these ages, would be limited to adolescence and early adult life. Nor can the "worse housing conditions" in rural districts, to which attention is drawn, be held to explain these differences, for surely their effect would not be shown to such a preponderant extent in early adult life; and as has been pointed out, room-famine is much greater in towns than in rural districts. In towns, furthermore, the opportunities of gross and repeated infection are much more numerous than in rural districts.



Phthisis, 1901–10.
* In ten rural registration areas in Essex.

The report is a careful review of a difficult and intricate problem, presenting many variables, some of them elusive in nature. It should be studied by all social workers as a competent statement of methods of investigation, of ways for overcoming these, and of caution in deducing results.

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[1] Internal Migration and its Effects upon the Death-rates, with Special Reference to the County of Essex. By A. B. Hill, B.Sc. Medical Research Council, Special Report Series, 95, 3s. 6d.

MONKEYVILLE.

MOST respectably-minded people are deeply shocked at the idea that those who are doubtful about the truth of evolution are numerous enough in Tennessee to pass a law forbidding school teachers to inculcate their pupils with the doctrine that man is in relationship with the apes. It is not a mere question of scientific conformity. Evolution has explained so much to so many of us in the last 60 years that almost everybody finds the world unintelligible without it; linking itself with the idea of progress, it has given all of us a buoyant optimism which is at once a comfort and effective. It seems almost beyond belief that there should be those who would gladly throw overboard such an admirable aid to good living. The prosecution of a young school teacher for breaking a law with which he was presumably well acquainted is, of course, of no great moment. It is the natural consequence of a rash and perhaps defiant act. Nor does it matter very much that such a law should exist. It is generally, if not universally, agreed in the United States that no religious teaching of any kind or description should be given in the public schools, and it is a reasonable corollary that anti-religious teaching should be prohibited too. And if such an understanding exists, it is compatible with common sense and toleration that very wide meanings should be attached to religious and anti-religious. It follows, too, that there are bound to be considerable and sincere differences of opinion as to where exactly the limits of these meanings are to be fixed, and it is possibly the wisest course to determine that in public education they must not even be approached.

Few people now are in the position of the majority 60 years ago in finding serious incompatibilities between science and religion. Difficulties there are and will continue to be, though they are chiefly difficulties of method rather than discrepancies in results. Revelation, for example, is not recognised in scientific circles as an appropriate way of getting information about the material world. But the existence still of a minority who find in the theories of science or, which may be more important, in the way and tone in which they are presented, something seriously discrepant with their particular religious revelation must be recognised, and if in some place they are a majority their will must prevail. Mr. Scopes has been found guilty of violating Tennessee law and (subject to appeal) has been fined one hundred dollars. But very little harm is being done either to the progress of knowledge or to the promotion of sound education. There are other educational agencies for young people besides, and perhaps more potent than, the school teachers, and those of us who do believe in evolution need not be too violent in our natural response to the new shock from America.

EXPERIMENTAL PATHOLOGY OF EPIDEMIC ENCEPHALITIS.

THE literature of the experimental pathology of this condition is a mass of contradictions, the whole dispute turning upon three debated points: The susceptibility or non-susceptibility of the rabbit to the disease, the identity or non-identity of the virus of this disease with that of febrile herpes, and the significance of certain lesions in the brains of experimental animals. On the one hand J. McIntosh, in this country, and a group of workers at the Mount Sinai Hospital in New York, have claimed that the disease is transmissible to rabbits with the greatest ease, whilst, on the other hand, S. Flexner, of the Rockefeller Institute, has stated that in many attempts he has never succeeded in doing this. A middle position has been taken up by C. Levaditi, of the Pasteur Institute, who states that the rabbit is susceptible but is only exceptionally infected successfully, and upholds at the same time the theory that the virus of febrile herpes—which produces indistinguishable lesions—is the same as that of encephalitis. Amongst recent contributors to this vexed study J. R. Perdrau[1] finds that whilst direct transmission of the disease to rabbits by the inoculation of human material is generally ineffective, by certain methods which he has devised the difficulty may be overcome and infection set up. He believes that an "aggressin" is associated with the virus, and that by using an inoculum in which this is artificially increased a "take" may be assured. The substance which he uses for this purpose is the brain of an animal previously inoculated intradermally with herpetic virus and in which organ the virus is presumably present. In addition the number and routes of inoculation of the encephalitic brain are multiplied. By these means two out of three cases of the human disease provided an active virus, and by another manœuvre a third case gave a like result. Perdrau assumes, as is necessary for his explanation of his results, that the herpetic and encephalitic viruses are identical. This is not in the least certain, and is ill-supported by clinical evidence; it is, moreover, difficult to be certain that the alleged aggressin does not contain a certain amount of active herpetic virus, or that the very intensive inoculation employed may not have been a determining factor. Flexner,[2] who, together with H. L. Amoss, has extensively studied the two conditions, definitely takes the view that the herpetic virus is a ubiquitous material and a very likely contaminator in such experiments. He does not, moreover, consider it merely a special variety of the encephalitic virus, and shows that whilst the serum of animals inoculated with the former exerts a neutralising action upon this virus, the serum of human cases which have recovered from encephalitis has no such effect. It cannot, therefore, be said that this crucial point has yet been cleared up.

HYGIENE IN FACTORIES.

ANYONE who compares the spirit pervading the latest annual report[3] on factory inspection with one of its forerunners of 25 years ago cannot fail to note how the work of the inspectorial staff has become less that of enforcement of statutory requirements by penal prosecutions, and more that of advice and help to employers who are coming to regard the inspectors as friendly experts rather than inquisitorial detectives. Although during the period under review trade was depressed, bright spots are reported: electrical developments, motor transport, and railway plants were busy; the output of carpets, linoleum, and furniture was brisk; fish-curing was prosperous; while new industries started, such as the Schmiedal process of making sulphuric acid and refining crude petroleum from Persia. Labour-saving devices continue more and more to improve working conditions, quicken production, and minimise occupational risks. Factories again increased in number and workshops declined, and for the first time on record the former with 142,494 outnumbered the latter with 133,729; the figures portray the tendency for small places to be absorbed by the big and for power to be used to replace human effort. The section dealing with safety tells how accident prevention is being scientifically approached through attention directed to different types and causes of mishaps. Owing to an alteration in the legal definition of an accident the records are not comparable with those of previous years; but we regret to find no effort made to express accident occurrence as a rate either of those employed in different industries or of man-shifts worked—what is possible for the mining industries ought at least be attempted for factory employment. Again, attention is directed to the vast number of accidents which are unpreventable by any known protection, and can only be guarded against by safe working methods adopted by the workers themselves and also by foremen and managers. Instances are quoted of the beneficial results of "safety-first" work; both frequency rates and severity rates always fall. The outstanding wonder is that a policy which gives such great financial returns is being adopted with comparative slowness. One movement worthy of note as combining safety and health is the substitution of abrasive wheels for natural grindstones. The abrasive wheel is safer as regards accidents due to bursting, and does not, during grinding, generate fine silica dust; fortunately operations are performed better and more quickly on abrasive wheels. The abolition of the old-time grindstone and with it of "grinders' rot"—i.e., tuberculous silicosis—cannot now be far distant. The increased demand for electric accumulators for wireless sets has led to adoption of new regulations to protect workers from lead poisoning. Dust in cotton cardrooms has again called for investigation, as appliances, introduced 10 to 15 years ago for removing it, and with it "strippers' asthma," have been losing their efficiency; progress, in the light of experience gained, seems certain. More and more interest is reported to be taken in standards of illumination, and the department is lending scientific aid to employers to demonstrate how improvements may be effected; already the minimum standards recommended by the Departmental Committee on lighting are receding into the background as economically insufficient.

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[1] The British Journal of Experimental Pathology, vol. vi., No. 3, June, 1925.

[2] The Journal of Experimental Medicine, vol. xli., No. 3, March, 1925.

[3] Annual Report of Chief Inspector of Factories and Workshops for the Year 1924. H.M. Stationery Office. (Cmd. 2437.) 1925. Pp. 145. 2s. 6d.

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[1] The World's Health. May, 19

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The fact that epidemic diarrhœa is limited to hot weather makes it evident that the effects of a high temperature must be accounted the most important of exciting causes. It is probable that heat not only influences unfavourably the digestion and absorption of food, but also by depressing vitality helps to lower the power of resistance.

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tried; but in cases in which the diarrhœa is already profuse further purgation will only do harm. Early irrigation of the colon with normal saline is advisable in all cases as it hastens the effect of the cathartic and removes offensive material. This should be done two to three times a day on the first day and only once a day afterwards, for prolonged treatment of this kind will merely exhaust the child.

3. *Restorative Measures.*—Thorough evacuation, no food, and plenty of water form the essentials of treatment in the first 24 hours. A bottle should be kept filled with half strength normal saline and offered to the baby when awake. Though the degree of recovery by this method alone is often surprising, in most cases further measures are necessary to make good the dehydration. The simplest is the subcutaneous injection of 2 to 3 oz. of normal saline (at temp. 105°) into each side of the abdominal wall, though the amounts should be regulated by the rate of absorption. 5 per cent. glucose is an alternative for infusion.

In urgent cases saline may be injected into the peritoneal cavity, a method which allows of large amounts being given quickly, and of more complete absorption. This is a safe procedure, under aseptic precautions, if care is taken to relieve abdominal distension and to empty the bladder; 6 to 12 oz. at a temperature of 100° may be given in this way, slowly, by the gravity method.

Of stimulants, brandy (♏ 5–10) well diluted, given every one to two hours, is the best. The value of many of the stimulants often advocated is debatable: but if there is acute circulatory collapse with rapid pulse, ♏ 1–2 of 1/1000 adrenalin chloride hypodermically is certainly effective. Camphor in olive oil (gr. ¼ to ♏ 5) may be tried in desperate cases.

The injection of 10 to 15 c.cm. of human blood, with the idea of increasing immunity, has seemed beneficial in some cases, but further evidence is required.

4. *Diet.*—All food must be withheld for 12 to 36 hours until the acute symptoms subside, boiled water, weak tea, or weak barley-water being allowed. Starvation at this stage is essential

The next stage, the return to food, presents difficulties. What may suit one case may not suit another, because, as already stated, the causal agents are not always the same. While ideally, perhaps, the mode of treatment should be suggested by the predominant type of organism (proteolytic, fermentative, &c.), this is not a practical proposition. Though no definite rules can be laid down, certain general lines may be indicated. Whatever kind of food is chosen it is important (*a*) to give small feeds at first, (*b*) to make additions slowly, (*c*) to note the effect of increases of food on the temperature, the general condition, and the stools, though it is not always wise to wait for too great an improvement in the latter. Milk is best avoided until the temperature is nearly normal, and, in all cases, when feeding is recommenced, fat is best omitted entirely at first unless albumin milk is used. Some help may be gained from the child's reaction to starvation. If there has been a decided improvement and a fall in temperature, success is often attained on a mainly protein diet, especially in those cases where the stools have been strongly acid. This may be given in the form of skimmed milk, fresh, or perhaps better, dried (such as Cow and Gate or Trufood), added cautiously to the water, giving at first ¼ to ½ oz. every second feed and gradually increasing if improvement is maintained. The next step, the stools now being formed, is to add sugar in small amounts. The safest variety of sugar is undoubtedly dextri-maltose, as it tends to ferment less easily than lactose. Finally, a half-cream dried milk or ordinary milk and water mixtures may be embarked upon.

As an alternative albumin milk may be prescribed; in dried form this has proved useful in my hands. Its value lies in the fact that while containing little sugar and whey the protein content is high and lactic acid is added. Whey may be well tolerated after the starvation period, but while satisfactory in milder types, it does not always prove so in the severest ones and is hardly to be recommended as a routine. To cases developing an infective colitis, recognised by the persistence of the temperature and by the continued frequency of the stools which become mucoid and contain blood, it is better to give foods containing little residue, and if skimmed milk does not agree, better results may be obtained by a malted milk or whey with added Benger's food. Fat is badly tolerated and should be ordered with care. Finally, if breast milk is available it may be given on the second or third day, and is superior to any other form of feeding.

5. *Drugs.*—Though they have their use, too much reliance must not be placed on medicines to the exclusion of the more important general measures. Opium is the most valuable, and is specially indicated when the stools are very frequent and there is much pain; it is perhaps of the greatest service in the choleraic cases. It must, however, be used with discrimination, and as a rule should not be prescribed in the early stages before the bowel has been emptied, if there is collapse, or if the motions are small and offensive while the tongue is furred. It may be exhibited as tinct. opii (♏ ⅙ at six months, ♏ ⅓ at one year) four-hourly, or as pulv. ipecac. co. (gr. ⅙ at three months. gr. ¼ at six months) six-hourly.

After the initial stages when the diarrhœa is less but still persistent, small six-hourly doses of castor oil are valuable (ol. ric. ♏i. with mucilage). Another plan is to alternate this mixture with a combination of hyd. c. cret. and pulv. ipecac. co., a dose of each being given three times a day. Bismuth, if ordered in large doses (gr. 5 to 20 from a few weeks to a year old), may be effective, especially when the large bowel is affected.

Special Symptoms.

Persistent Vomiting.—After a preliminary wash-out of the stomach with a weak sod. bicarbonate solution vomiting is, in many cases, controlled merely by reducing the feeds in size. If even small sips of water are rejected, feeding by mouth must be stopped and recourse had to saline injections to supply the necessary fluid. Drugs are of little value with the exception of morphia, which may be given hypodermically (gr. 1/100 at three months) in urgent cases when other methods have failed.

Hyperpyrexia.—A persistently high temperature (105° F.) should be relieved either by tepid sponging or by the application of a cool pack. This latter method helps to control not only the high temperature but also the nervous symptoms which accompany it. If restlessness is extreme sedatives may be given.

Ketosis.—Where there is clinical evidence of this state (stupor, air-hunger, acetonuria) it is best treated by giving plenty of fluid and, specifically, 5 per cent. dextrose solution (intravenously), which provides a more rational and safer treatment than alkalies.

Tenesmus.—This is best relieved by rectal irrigation with warm saline, combined, if need be, with doses of silver nitrate (gr. 1/12 to 1/6) or opium by mouth.

Prophylaxis.

The comparative immunity of the breast-fed is a testimony to the importance of breast-feeding, and if a child is on the breast it is unwise to wean during hot weather. Babies who have had previous dyspeptic disorder so readily fall victims to the disease that great care should be taken to see that prescribed mixtures are rational ones, and that upon the slightest sign of indigestion immediate steps are taken to correct this and to modify the feeds to suit hot-weather needs. Over-feeding by giving excess of milk, instead of added water, to satisfy thirst must be guarded against. The food should be prepared with care, fresh milk should be boiled, and if not beyond suspicion should be replaced by a dried milk. Attention to the details of the nursing care and hygiene of the child and his protection against the excessive heat by light clothing and adequate ventilation of the rooms contribute not only to his comfort, but also to the prevention of what may prove a serious disease.

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Special Articles.

SOME GENERAL REFLECTIONS ON PUBLIC HEALTH ADMINISTRATION.

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II.—THE MEDICAL PRACTITIONER AND PUBLIC HEALTH.*

IN that magnificent statement—"An Outline of the Practice of Preventive Medicine" (1919)—Sir George Newman embodies "the law and the prophets" of preventive medicine. In his summary of the present status and future prospects of preventive medicine he says:—

> "It is clear that such a policy as that which is here outlined calls for an adequate medical service and the appropriate administrative machinery. The foundation of a medical service is the medical practitioner. He is its pivot, its anchor, its instrument. If he is competent it has the first surety of success; if he is ineffective or ill-equipped it must fail" (*pp.* 100–101),

and he also quotes the Editor of THE LANCET as saying:—

> "The prevention of disease is as much the rôle of the practitioner as is the cure and care of patients."

About the same period the present writer, addressing the Australasian Medical Congress said:—

> "The medical practitioner cannot escape his responsibility to the nation. He has the knowledge, or is, at least, in the best position to acquire the knowledge; he has the patient under his hand from first to last; he has the confidence of the patient and his friends; and, of all conceivable agents, he is in the best position to apply effective measures of preventive medicine. He must accept his responsibility and must accustom himself to a state of mind in which he would feel the same shame at a secondary case of infectious disease in a family amongst his patients as he would at sepsis after an operation. The aseptic conscience must be sensitive to all forms of preventable disease, not merely those due to errors in surgical technique."

The General Medical Council of Great Britain has recently revised the medical curriculum in the interests of the

> "ever-widening subject of preventive medicine. The Council recommends that the subject should be a pervading influence all through the curriculum, affecting every subject in it, so that the student naturally and almost unconsciously adopts in his daily practice of medicine the attitude and spirit of prevention."

If the importance of the general practitioner is so great that "if he is ineffective public health must fail," the first inquiry that must be made is what actual steps have been taken by either the national governmental authorities or the elected governing directorate of the medical profession to ensure that the general practitioner is worthy of his high calling and that he is sufficiently well-trained, well-organised, and well-supported to be effective. It can be said at once that in neither the United Kingdom, the United States, nor Australasia has a complete organisation been developed which makes full use of the general body of the profession or gives in any way a *satisfactory* plan *for* the transferring of the edifice of public health to its proper "foundation"—the medical practitioner. There is no doubt as to the necessity for devising such a plan, and it is interesting to review certain attempts which have been or are being made towards this end.

The State of Alabama, U.S.A.

Perhaps the most striking, certainly the most interesting, although not the most valuable, attempt to attain this end is found in the legal code of statutes of the State of Alabama. The basic organisation of the State public health system is found in the following extracts from the Health Laws:—

> "The Medical Association of the State of Alabama is the State Board of Health. The State Board of Censors of said Association shall be known as the State Committee of Public Health. The boards of censors of county medical societies in affiliation with the Medical Association of the State of Alabama shall be known as county boards of health of their respective counties, including all incorporated municipalities therein, and shall be under the general supervision and control of the State Board of Health."

The actual status in practice of this arrangement is best indicated by the preface to the "Public Health and Medical Laws of Alabama" (1920 edition), written by Dr. S. W. Welch, State health officer.

> "The State of Alabama has been magnanimous in a legislative way to her medical profession. Perhaps in no other Government of the world has a like spirit of confidence in, and generosity to, her medical men been crystallised into law."

In support of this declaration the following examples are given:—

> 1. The State has wholly and entirely entrusted to her organised medical men the right of deciding who shall be admitted to their ranks, thus enabling them to elevate the standard of qualification of the practitioners of medicine in the State to such plane as they may desire, thereby protecting the people against the evils of ignorance, quackery, and dishonesty.
> 2. She has provided that her health boards—State and county—shall consist of medical men exclusively, and endowed these boards with the important legal function of administering the health laws and regulations of the State, the counties, and the incorporated cities and towns.
> 3. She has confided to the organised profession the right of naming all medical health officials—State, county, and city—and by doing so has not only placed the selection of these officials in the hands of those most competent to judge as to their fitness, but has thereby widely divorced her public health system from politics and from commercial influence.
> 4. She has provided her medical men, not only with the privilege, but with the right of practically applying through their organised bodies, State and county, whatever sanitary knowledge they may acquire to the prevention of disease and to the protection of the health and lives of the people.
>
> "It is hoped that every member of the profession in the State will avail himself of the opportunity which this pamphlet affords of getting full information as to the medical laws of the State. When that has been done, *the close coördination between the scheme of organisation* of the profession and the public health system and laws of the State will be obvious. Then every member of the profession in the State will know his duty, and knowing, should stand ready to discharge it faithfully and conscientiously."

That the control of the Medical Association over the administration is complete is illustrated in the case of county medical officers of health:—

> "No county health officer-elect shall assume office until his election shall have been approved by the State Committee of Public Health."

The Medical Association, as is indicated in the quotation above, has power of issue of certificates to practise medicine—i.e., it is not only a registration body but an examining and qualifying body.

> "The Board of Censors of the Medical Association of the State of Alabama is constituted a State Board of Medical Examiners."

One passage in the "Law Regulating the Practice of Medicine" reads as follows:—

> "The State Board of Medical Examiners may revoke a physician's certificate of qualification to practise medicine for any of the following: . . . (3) Being guilty of unprofessional conduct of a character likely to deceive, defraud or injure the public in matters pertaining to health."

As might be expected under the circumstances the law preventing the treatment of diseases of human beings by any system of treatment whatsoever by any person who has not obtained a certificate of qualification from the State Board of Medical Examiners is very precise and very rigid. On the other hand, it has been thought wise by the legislature to create special administrative bodies—e.g., the Alabama Tuberculosis Commission, the Child Welfare Department, independent of the State Board of Health and with separate statutory powers, while the regulation of the employment of minors in industry is confided to the State prison inspector.

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* Part I. appeared in THE LANCET of July 11th, and Parts III. and IV. will be given in subsequent issues.

While the purpose and the intention of this legislation appear to have arisen from an early realisation of the proper place of the medical practitioner in the public health machine, yet, in my opinion, the results obtained by this procedure have not been such as to justify the substitution for the recognised democratic manner of Government control of a system in which Government delegates its functions and its authority to a private organisation. Moreover, in practical working, many minor departures from the original idea have been introduced, until now the system actually in operation does not in practical detail differ much from the ordinary working of a Government department.

Dr. Ghapin, the veteran Health Commissioner of Providence, comments thus on this method :—

> "One plan to avoid political entanglements, which has been tried in several States, is to give the medical societies a share in the management of the health department. It is dangerous and unwise to give to non-representative bodies a share in the Government. Moreover, medical men as a body are not skilled in preventive medicine. Only great benefits, not to be otherwise secured, would warrant such a delegation of authority. It must be remembered that medical politics and medical log-rolling are at times as pernicious as any other form of partisanship."

The American Medical Association has fully acknowledged as its duty the encouragement of public health ideals amongst its members, and the dissemination of important information not only to its members but to the general public. Dr. Frederick Green, the secretary of the Council on Health and Public Instruction of the American Medical Association, laid down the position in 1914 as follows :—

> "There is to-day serious need of an increased appreciation of the social responsibilities of the medical profession. As these are largely responsibilities of physicians in the aggregate rather than as individuals, it is important that they should be discussed in medical organisations and should become the basis of intelligent action. . . . Since the relation of physicians to the public cannot be that of dictators or rulers, and since the power for restriction and regulation must always lie in the will of the majority, there remains only a single relation which physicians as a class can maintain towards the general public—namely, that of teachers."

These are extracts only from an informative article, but they serve to indicate the basis of the present policy of the American Medical Association—viz., a collective rather than an individual responsibility, and an educational rather than a political policy. In the interpretation of these ideas the American Medical Association has rendered most important service—e.g., in the exposure of pseudo-therapeutic frauds, of quasi-medical impostures, the publication of much public health literature in the form of reprints and pamphlets, and most recently the publication of a popular journal, *Hygeia*, of a high order of excellence.

Australia.

In Australia there has been an interesting series of steps towards the realisation of the ideal inclusion of the general practitioner as a working organic element in the public health system. At the time of the influenza pandemic the Commonwealth Health Department summoned a conference of representatives of the State Departments of Health and representatives of the State branches of the British Medical Association. This was a new departure from established practice, as these conferences had previously consisted of officials only. In 1921, when plague appeared in Brisbane, this precedent was followed and a similar conference summoned. In 1922, at a conference on venereal disease control, the same constitution was adopted. In this way the importance of the practising profession in all public health matters was acknowledged and has been definitely established.

When, in 1921, the Commonwealth Department of Health was created, it was considered important to maintain regular contact with the organised profession, and the suggestion was made that the Commonwealth Director-General of Health might attend and an unofficial talk might be held with the Federal Committee of the branches of the British Medical Association in Australia on the occasion of each of its meetings, held every six months. These talks, informal and perhaps inconclusive, have continued until now; and, while there is little to show of a tangible kind, there is much to cause satisfaction in two directions. The much closer association developing between the official departments and the controlling body of the medical profession offers promise of a practical expression to the acknowledged community of interest. In addition, there has been close consideration by the profession of the individual responsibility and opportunity of training physicians in matters of public health administration and possible reform; as a result the following has been adopted by the Federal Committee of the British Medical Association in Australia for the consideration of the whole profession :—

> "In no State is the service of the practising practitioner officially utilised for the prevention of diseases to any degree consistent with his knowledge and opportunity. Any scheme to rectify existing conditions (in respect of public health generally) must have as its immediate ideal . . . the linking up of the general practitioner into active participation in the administrative scheme and the steady inculcation of the ideal of prevention rather than of carrying out regulations, into both the actively administrative and actively practising members of the profession. On the medical side the unit is the medical practitioner, whether in general or special practice or acting as medical officer to industrial or school organisations or to institutions. In addition to the treatment of his patients he should—
>
> "(i) Notify to his district health officer on prescribed forms: (*a*) All birth, stillbirths, and miscarriages. Objection has been taken to this suggestion on the grounds that it would be impossible to secure notification of miscarriages in single women. The force of this objection is recognised. If it is so strong that notification of miscarriages would be a dead letter, it had better be dropped. On the other hand, it must be recognised that the notification proposed is to a medical not lay authority and that if the medical profession is to take its share in the lessening of criminal abortion, some such step will ultimately be necessary. Confidential notification of miscarriages by married women would frequently lead to the institution of treatment for otherwise overlooked maternal syphilis. Notification of stillbirths to the district medical officer would have the same effect. Notification of births to such authority would be of great value statistically and would assist in infant welfare objects. (*b*) All deaths. At present the death certificate is given to the relatives or undertaker and is largely formal. This practice would continue for burial purposes, but in addition a confidential notification to be made to the medical officer, as is at present done in Switzerland, could often show the relation of the cause of death to a previous infection in a way that is impossible now. This would afford more accurate statistical information and would make available a mass of information that is at present unutilised for public health purposes. The need is so greatly felt that some States already have a private arrangement between the principal medical officer of the State and the registrar of deaths, by which the latter forwards to the former copies of certificates relating to deaths from infectious causes. The present suggestion would gain the same object in a much more direct and far-reaching way. (*c*) All cases of communicable disease prescribed by the regulations. (*d*) All cases of mineral (lead, &c.) or organic (alcohol, &c.) poisoning.
>
> "(ii) Order in writing prescribed methods of concurrent and terminal disinfection in infectious cases. The methods would be prescribed by the State health authorities (with the conference of State health authorities suggested later in the scheme these would soon become uniform in different States). The prescribed methods would be printed on different forms for different diseases. The practitioner would only need to sign one of these and hand to householder just as quarantine officers in different ports now hand fumigation orders to captains of vessels which require fumigation.
>
> "(iii) Carry out the prescribed methods for the prevention of the spread of infection by contacts or carriers—i.e., throat swabs, collection of urinary and fæcal specimens, &c. At present some of these are done by nursing or sanitary inspectors. It would be far quicker and more efficient for them to be done by the practitioner seeing and treating the case.

"(iv) Examine school-children in particular districts by arrangement with the district health officer and education authorities. Such a provision would chiefly apply to country schools and might occur with regard to a particular threatened epidemic or with regard to physical examination of school. It would afford opportunity of coöperation of educational and health authorities in special cases.

"(v) Carry out other health duties as prescribed from time to time by regulations or as requested by district health officer. The objection has been raised that such a proposal puts the practitioner too much under the control of the district health officer. It must be remembered that in the discussion of a general scheme, some such clause must be inserted, to leave room for possible developments beyond the instances above cited. The term 'requested' as opposed to 'prescribed' is used to emphasise the fact that mutual coöperation between district health officer and practitioner is requisite to the scheme, rather than the purely formal carrying out of legal enactments.

"*Note.*—For all such services rendered the practitioner will receive fees prescribed by regulation. There would thus be an incentive to him to increase his activities; the more interest he showed in preventive measures, the more his remuneration; part-time medical officers would be abolished; all men in practice would be on the same level in relation to departmental administration."

If this proposal be adopted it will be a new move in public health progress. The enrolment of the private practitioner in the public health army is by no means a new idea, but the idea of making him the medical officer of health to his own patients will be a new move even if it is not a new idea.

Qualifications to these Proposals.

The present writer, giving evidence before the Royal Commission on National Health Insurance, after dealing with the above proposals, made the following qualifications:—

"All experience shows that modern preventive medicine is ignoring the general medical practitioner to its own disadvantage, and that it is now essential for the success of preventive medicine that all practising physicians should become actively engaged in the official campaign against the occurrence of disease and death. It is, however, necessary that: (1) The practitioner shall not be expected to undertake any duties which are not on the lines of his daily medical work; (2) the practitioner shall be adequately paid for all work done; (3) the practitioner shall be prepared to accept freely both advice and direction from trained public health officials on matters outside the range of his own experience or within the range of official necessities; (4) the practitioner should be prepared to accept discipline in professional matters relating to public health from an official body of his professional colleagues in place of the police court discipline now provided by various statutes.

"There is one phase of the relationship between the medical practitioner and any administrative organisation which requires consideration. It is an important item in the unwritten code of medical etiquette that a diagnosis declared to a patient by the doctor shall not be questioned in the presence of the patient and shall not be lightly altered even by a senior consultant. While the presumption of infallibility may in the past have been an important adjunct to the doctor's treatment, the general state of public enlightenment renders this now unnecessary and the attitude of the profession in relation to the sanctity of the original diagnosis as a matter of ethics might well be revised. Another related matter is the practice of some doctors of giving the patient a wide margin of benefit in the issuing of medical certificates for official purposes. It is very desirable that medical certificates of sickness or disability should be more reliable than they now are in many cases."

Here, then, on the one hand, is the idea, already widely accepted and frequently reiterated—the correlation of the medical practitioner with public health administration. On the other hand are three different types of practical expression of this idea. In Alabama the whole responsibility for public health administration was originally entrusted to the organised profession. The American Medical Association is doing much in developing a policy of intelligent collective action in public health work, but has not taken, as an association, any defined place in the public health scheme. The Federal Committee of the British Medical Association in Australia is working towards the objective of making the whole army of medical men in the country the fighting force in the public health campaign. This will have—if successful—several good results. It will increase the interest of every medical practitioner in the prevention of disease; it will compel the public health specialist to supply reliable information which means that he must know his subject thoroughly; it will give to the departmental authorities a solid backing of support which will enable them in their turn to compel attention, respect and, most important, funds, from Parliament and Government.

The administrative interpretation of the principles of public health in practical form as one of the functions of Government can hardly be considered a legitimate field for the organised association of the practising profession or even for its members individually. The devotion of part of the resources of the collective profession to the education of doctors and public in the principles and technique of public health is a legitimate and most valuable form of auxiliary enterprise, but it does not utilise to the full the great potential striking value of the medical army. This can only be achieved by enlisting that army as voluntary members and training them to coherent action with uniform and intelligent inspiration—the training, inspiration, and direction being supplied by a headquarters staff of trained specialists in which the whole army has full confidence.

Whether any one of these modes, or something quite different, is ultimately found to be the best, all are agreed with Sir George Newman that "an adequate medical service must seek to fulfil and conjoin all the varied elements of a national health policy, environmental and personal. There must be no divorce between the epidemiologist and the practitioner."

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics for 1921 of a group, including four metropolitan boroughs and the county borough of West Ham:—

Name of borough.	Mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. (from childbirth.
Kensington ..	178,700	16·2	13·0	0·83	1·6	3·2	25	75	1·7
Poplar	167,300	22·9	12·1	1·20	1·3	3·5	37	72	1·3
Westminster ..	130,000	11·6	11·8	0·99	1·5	3·0	27	59	3·1
Stoke Newington	52,020	10·6	11·2	0·85	1·4	2·2	27	68	2·3
West Ham ..	317,400	22 7	11·5	1·19	1·3	3·2	—	78	1·7

Kensington.

Dr. James Fenton reports several "bests on record" for 1921. These include the death-rate from tuberculosis, the infant death-rate from enteritis, the maternal mortality-rate, and the death-rate among illegitimate infants. The majority of the inhabitants of North Kensington are poor people, whilst in South Kensington such persons constitute only a small portion of the population. This fact is reflected in the birth-rate of 21·7 for North Kensington and 9 2 for South Kensington. During the year the council took successful proceedings against a medical practitioner for failing to notify a birth.

One of the most difficult of the housing problems in Kensington is the sanitary control of houses let in lodgings. There are 5000 tenement houses—i.e., houses let to more than one family without being specially adapted for the purpose. Of these 2904 are on the register of houses let in lodgings. About 55,000 persons occupy these houses. Worse than these are the houses let in so-called furnished rooms, and Dr. Fenton records with satisfaction the gradual diminution of these latter. Thus, in 1912, there were 187, and at the end of 1924 there were 83. A table is given in which the infant mortality-rates in the tenement houses and mews dwellings are compared. There are 2091 mews dwellings in the borough. The annual figures are small and have to be used with caution. The infant mortality in private houses was 43 in North Kensington, 61 in South Kensington. The infant mortality in tenement houses was 90 in North Kensington, 47 in South Kensington. The infant mortality in mews dwellings was 72 in North Kensington, 41 in South Kensington. During the last three years there has not been a single death from enteritis in the South Kensington mews dwellings, the majority of which are over garages instead of stables. During 1924 there were also no infant deaths from enteritis in North Kensington mews dwellings, in the case of which only a few of the stables have been converted into garages. The good results as regards enteritis in 1924 are attributed by Dr. Fenton mainly to the cold and rainy summer. Before any conclusions are arrived at as to the effect of housing conditions upon infant mortality, "consideration," says Dr. Fenton, "must be given to the fact that negligent, careless, ignorant, and poverty-stricken parents generally drift into the worst type of tenement house and mews dwelling." Infants in the better-class homes are not visited by the health visitors. During 1924 these "above-standard" births number 768, with 19 deaths, giving an infant mortality of 24. This is to be compared with an infant mortality of 93 for the remaining infants.

A table shows that the decline in the mortality of illegitimate infants has been very marked in recent years. Thus, during the period 1911 to 1921, the infant mortality of illegitimate children was much more than double that of the legitimate, while in 1922, 1923, and 1924 the rate for illegitimate children was 135, 127, and 97 respectively, as compared with 82, 70, and 75 for all infants. Antenatal work continues to make progress. Thus, for 2140 births coming within the scope of the council's scheme, there were 1199 expectant mothers who attended the antenatal clinics of the Queen Charlotte's Nurses' Home and the infant welfare centres.

Poplar.

Dr. F. W. Alexander's thirty-second annual report includes those of the chief health visitor, the senior medical officer of the Royal College of St. Catherine (Dr. H. K. Waller), and the council's dental surgeon. Artificial sunlight has been administered to a number of children and the results are so encouraging that permanent accommodation is being obtained for its much more extensive use. A permanent building is also to be erected for the installation of extended plant for the manufacture of electrolytic disinfectant fluid. There is an increasing demand for this disinfectant, and it is in regular use for the three swimming-baths. The arrangements with the Seamen's Hospital, Greenwich, for carrying out bacteriological examinations (other than tubercle) continues to be satisfactory. Plans are being prepared for an up-to-date maternity and child welfare clinic in High-street, Poplar, and also for the erection of observation wards. Provision will be made for a dental clinic and for artificial light treatment.

Dr. W. C. P. Smith, the tuberculosis officer, reports that the new premises for the dispensary, Wellington-road, Bow, have now been in use for a full year and that they have given every satisfaction. The comparatively quiet surroundings are much appreciated after the turmoil of the main road. The question of a branch dispensary in High-street, Poplar, is still under consideration. Cases of lupus are given Finsen light treatment at the London Hospital. The council pays a charge of 5s. per application. Seventeen cases received 440 applications during the year.

Dr. Waller, in his report, gives an account of a case which illustrates some of the disadvantages of institutional treatment of an infant suffering from malnutrition. The history of the baby was something as follows. It was born in a lying-in hospital and its weight was inaccurately registered at 9 lb. As it only weighed 7 lb. 10 oz. on the seventh day it was taken to the out-patient department of a children's hospital at a distance and breast-feeding was replaced by artificial feeding. It did not thrive, however, and was admitted into a Poor-law hospital on the fifteenth week where it improved rapidly up to the twenty-second week. For the next seven weeks it lost weight as an in-patient of a convalescent home. For the next five weeks its weight remained stationary at a resident childrens' nursery. At 35 weeks it was brought to the centre and weighed 11 lb. Its dieting and management with the help of the health visitor was found to be a simple matter. The visitor encouraged the distracted mother. The improvement was uninterrupted, and at 52 weeks the baby's weight was 20 lb. Dr. Waller emphasises the need for accurate weighing at birth and the importance of the health visitor's work in the home.

Westminster.

Dr. Francis J. Allan, in his farewell report, gives an interesting contrast of conditions and death-rates in the city of Westminster when it was re-incorporated 25 years ago and at the present time. At the former period the large slum areas north of the Strand with a density in parts of 900 to 1200 persons per acre was being dealt with. Underground habitations were common. The law is now more stringent and in 1924 only seven instances of infringement were discovered. In the earlier period the water-supply of houses was restricted and seldom carried above the ground floor. The abolition of the system of an extra charge for water laid on to upper floors helped matters. Now every tenement house has water on each floor. Refuse was only collected weekly or fortnightly, and this with the restricted water-supply inevitably led to a high infant mortality from diarrhœa. In 1903 the Westminster Health Society was inaugurated and has been active ever since. Needless to say, there have been great improvements in the death-rates. The male death-rate from all causes has declined from 16·5 in the first quinquennium of the century to 14·4 in 1921–24; the female from 12·5 to 9·6; and the infant mortality from the neighbourhood of 120 to an average of slightly over 50 for the last three years. The death-rate among children between the ages of 1 and 5 has been halved, while the death-rate among children from 5 to 15, always low, has remained practically constant throughout the whole period. There is little change in the death-rate of infants in the first week of life, but a marked improvement in the neonatal mortality. Amongst other matters mentioned by Dr. Allan is the improvement in the tailoring and dressmaking workshops in the northern areas. Better ventilation has been secured and the Gas Light and Coke Company have coöperated in providing proper methods for carrying off fumes.

Stoke Newington.

Dr. Henry Kenwood would like to see provision made for dental treatment in connexion with the maternity and child welfare scheme. Owing to the risk from small-pox two small shelter flats have been provided for the temporary accommodation of families during the disinfection of their houses. There appears to be a prejudice on the part of the public against occupying these shelters unless the circumstances indicate grave danger. Dr. Kenwood evidently thinks they might be used with advantage in cases other than small-pox. The tuberculosis officer (Dr. L. U. Young) says there is no apparent improvement in the housing conditions of the area served by the dispensary. General practitioners are sending up new cases to the dispensary in increasing numbers.

The children attending Stormont House School have responded well to open-air treatment. The Invalid Children's Aid Association have been instrumental in obtaining accommodation at convalescent homes for delicate and tuberculous children, but the need for a local home for advanced and urgent cases of tuberculosis still exists. Dr. Sophia Jackson-Smith (maternity and child welfare officer) says very few babies suffer from malnutrition but a large number from overfeeding and too frequent feeding. Education in food values is needed, she says, and the older girls should be taught cookery in a practical manner. Very few parents are unable to provide suitable clothing, but nevertheless many children suffer from unsuitable clothes. The toddlers do not get enough sleep. Antenatal work makes progress. Two women gave birth for the first time to living babies, one after three and the other after four stillbirths. More houses are needed, not on account of the industrial development of Stoke Newington, but to cope with overcrowding. Dr. Kenwood complains of the failure of the scavengers to keep the refuse carts covered with the tarpaulins provided for the purpose.

West Ham.

Dr. F. G. Collins only took up his duties last September. Thirty-one cases of encephalitis lethargica were notified, in three of which the diagnosis was not confirmed. One death of an infant girl occurred; eight of the 28 cases appear to have made a complete recovery. The remainder are under treatment suffering from various nervous symptoms and debility. As the introduction to a propaganda campaign, a Christmas card from the West Ham Council was distributed to each of the scholars in the elementary schools with the headline "Health is better than Wealth," and nine health maxims inside.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 11TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 88; scarlet fever, 1635; diphtheria 806; enteric fever, 49; pneumonia, 775; puerperal fever, 61; cerebro-spinal fever, 11; acute poliomyelitis, 8; encephalitis lethargica, 52; dysentery, 4; ophthalmia neonatorum, 183. There were no cases of cholera, plague, or typhus fever notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 2 deaths from enteric fever, 35 from measles, 63 from whooping-cough, 9 from scarlet fever, 95 from diphtheria, and 18 from influenza. In London itself there were no deaths from influenza; deaths from diphtheria numbered 7, from whooping-cough 16.

NO TAX ON TOURISTS IN FRANCE.—The French Parliament has fixed at 68 francs (10 francs for students and workers) the cost of the identity card which must be obtained by foreigners staying in France for a period exceeding two months. The card once obtained will be valid for two years. The Office National du Tourisme may take some credit for the preferential treatment thus accorded to bona-fide tourists.

ASSOCIATION STOMATOLOGIQUE INTERNATIONALE.—At a meeting to be held at 11, Chandos-street, *London*, W., on Monday, July 27th, at 8.30 P.M., the following societies will be represented: Royal Society of Medicine, Section of Odontology; British Dental Association; Public Dental Service Association; and the Incorporated Dental Society. The chair will be taken by Mr. A. Templar Barritt, L.D.S., dental surgeon to the French Hospital. After an address of welcome by Sir W. Arbuthnot Lane, papers will be read on the following subjects: Public Dental Service in England, by Mr. J. Clifford Wing, L.D.S. Professional Education of Medical Specialists in the British Isles (Stomatologists and Dentists), by Mr. J. Lewin Payne, M.R.C.S., L.D.S. Stomatology, Public Health, and the Qualifications for Specialists in Medicine in 1925 in Relation to International Social Problems, by Mr. Alfred J. Asgis, D.D.S., clinical professor of stomatology, New York Polyclinic Medical School. National Health Insurance (Dental Phase), by Mr. Fred. Butterfield, secretary of the Incorporated Dental Society and member of the Dental Board of the United Kingdom. The President of this Association is Dr. Chompret at 182 rue de Rivoli, Paris.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT BATH.

THE ninety-third annual meeting of the British Medical Association opened at Bath on July 17th, when the Representative Body met at 10 A.M. in the Grand Concert Hall of the Pump Room. Dr. H. B. Brackenbury occupied the chair.

Municipal Welcome.

During the course of the morning the Mayor of Bath, Alderman Cedric Chivers, J.P., visited the meeting to convey a welcome to the Association. He said that this gathering was, perhaps, the most important and certainly the largest company that had ever honoured the city with its presence; the bells of the Abbey had been rung in welcome, and he was glad to have an opportunity to recognise publicly the great service and vital value of the medical profession to civilisation. There was no need to extol the beauties of the city and locality; his task was to offer the fullest hospitality to the meeting, an offer bounded only by the space and material at the disposal of the municipal authorities. Dr. Brackenbury, in reply, said that the Association had looked forward for years with peculiar pleasure to this visit to a historic and beautiful city renowned for those principles of health and education for which the medical profession stood.

REPRESENTATIVE MEETING.

FRIDAY, JULY 17TH.

After the usual formal business the meeting passed a vote of deep regret and condolence with the President, Dr. F. G. Thomson, who was prevented by illness from taking his place at the gatherings. Mr. C. P. Childe was elected a vice-president of the Association, in recognition of his services as President 1923–24, and Mr. R. G. Hogarth of Nottingham was elected President for 1926–27. In 1927, the year of the Lister Centenary, the Association will meet in Edinburgh. Mr. F. G. Hallett was elected an honorary member in gratitude for his valuable services, particularly in connexion with the preparation of the Roll of Honour. The affiliation with the Canadian Medical Association was celebrated by the election of two of the Canadian delegates as Vice-Presidents: Dr. A. Primrose, Dean of the Medical Faculty in Toronto and chairman of Council, C.M.A., and Dr. F. N. G. Starr, honorary secretary of the Annual Meeting, 1906. At an extraordinary general meeting held in the afternoon the articles of the Association were duly amended to allow of the affiliation.

In moving the adoption of the annual report of Council, Dr. R. A. Bolam referred to the serious losses in personnel suffered by the Association during the year, particularly that of Dr. Haslip, the ex-treasurer, the fruit of whose wise judgment they continued to reap. He referred to the new "Sir Charles Hastings Fund," established through the generosity of a member of Council to form a reservoir from which urgent needs experienced by members of the Association might be relieved without undue formality.

The New House.

In approving the report of Council under the heading "New House of the Association," the Chairman referred to the award of the gold medal of the Association to Dr. Bolam, who responded to prolonged applause by expressing his deep appreciation of the honour done to him and his vision of the new house as rallying point for members in the Kingdom and the Empire, and a focus of activity which should be of the greatest value to the profession and the State. He urged those to come not to be afraid of undertaking heavy responsibilities and carrying out the larger plans for the headquarters, but to look with a generous eye to the future.

The Representative Body then placed on record its deep appreciation of the services rendered in connexion with the selection, preparation, and opening of the new house in Tavistock-square. The resolution is to be framed and hung in a suitable place within the house.

Dr. Bolam, in acknowledging these motions and the congratulatory speeches of Sir Jenner Verrall and Dr. J. A. Macdonald, said that it was largely a question of time and place and circumstance that any one man should be on the spot and be able to do the service necessary. He paid a tribute to the special and well-nigh indispensable qualities and knowledge of the financial secretary, Mr. L. Ferris Scott. It had been astounding and most gratifying to see the devotion of all officials, senior and junior, to the work of the Association during the trying period of stress, and the Association might well feel proud of the spirit animating all its workers.

Financial Position.

Mr. N. Bishop Harman, the treasurer, in moving the adoption of the financial report, pointed out that there was a surplus of over £8000 obtained on a record expenditure of £113,917. The forecast for the year 1924, published in the annual report of Council for 1923–24, showed an estimated surplus for the year of £5500; the actual surplus realised as shown by the books was £8923, a result accounted for almost equally by increases over the estimates in the revenues from subscriptions and advertisements.

A New Journal of Pædiatrics.

Dr. J. A. Macdonald, chairman of the Journal Committee, reported a very successful year, and announced that the Committee proposed to found a subsidiary journal of children's diseases to publish certain articles on this subject that were not suitable for the general paper, but could find no adequate place in any existing journal. It was hoped that the publication, a monthly one, would be self-supporting, and the principle might subsequently be extended.

Research Scholars.

Dr. C. O. Hawthorne, in submitting the report of the Science Committee, said that the Association might well congratulate itself on the work accomplished by its scholars. In particular the holder of the Ernest Hart Memorial Scholarship, Dr. A. J. Copeland, had succeeded in finding a new local anæsthetic with all the virtues and none of the perils of cocaine. The Committee was much indebted to the specialists who inspected the work of these scholars, and reported on them, and also to those who acted as judges in the award of prizes. The library was being increasingly used by members.

Mr. H. S. Souttar added his congratulations on the work of the research scholars, and pointed out that one of them, Dr. H. W. Cairns, had obtained a Hunterian professorship at the Royal College of Surgeons of England as a result of his work whilst holding a B.M.A. grant.

Mr. E. B. Turner said that the grant allowed for scientific work was much too small.

Standards of Remuneration for Teachers and Research Workers.

Dr. Hawthorne mentioned two projects not yet ready for discussion by the Representative Body, viz.:—

1. The establishment of a standard of remuneration for laboratory and research workers to the effect: Proposed that whole-time (*a*) non-professorial medical teachers, and (*b*) medically qualified laboratory or research workers, should be grouped into three grades as defined below, and with the salaries as stated:—

Grade III.—Comprising those who are junior workers temporarily employed on probation: no person shall remain in Grade III. for more than three years. That the minimum salaries for Grade III. shall be as follows: First year, £300; second year, £350; third year, £500.

Grade II.—Comprising laboratory or research workers or teachers who have had experience in Grade III. or in work of a similar character, and who are permanently and exclusively employed as such.

Grade I.—Comprising those of Grade II. whose qualifications or duties justify a position of seniority in status and a higher remuneration. That the minimum salary for Grade I. shall be £750 per annum; that after the probationary period (i.e., Grade III.) has been completed, dismissal should be possible only on grounds of neglect of duty, improper conduct, or incapacity.

Proposed that non-professorial medical teachers and medically qualified laboratory or research workers holding part-time appointments should receive remuneration, for the time engaged, at the rate of not less than £000 per annum.

A Book of Remedies.

2. The publication of a book describing the nature and quality of new and non-official medicines, similar to that published by the American Medical Association. The object which the A.M.A. has in view in publishing its book is to disseminate information among members of the profession in the United States relative to new and non-official medicines and medicinal preparations. For admission to the book any one of these must comply with the rules of the A.M.A. which prescribe, inter alia (i.) that the composition of all articles must be declared; (ii.) that generally speaking articles advertised to the public will not be accepted; and (iii.) that an article will not be accepted concerning which the manufacturer makes unwarranted, exaggerated, or misleading statements. The Council understands that the activities of the A.M.A. in this direction meet a real need on the part of the profession in the United States.

These proposals will come before the Representative Body next year. Dr. Hawthorne urged members to consider whether such a publication were necessary or advisable, if so, whether it were a suitable activity for the Association and whether it were a justifiable expenditure.

Oblique Advertising.

The chairman of the Ethical Committee, Dr. R. Langdon Down, presented the reconsidered recommendations as to oblique advertising which the Committee hoped would provide a compromise satisfactory to the press and the profession. The report recommends that practitioners who desire to discuss in the lay papers matters relating both to medical science and policy and to the health and welfare of the public should make it a condition of publication that laudatory editorial comments or headlines relating either to the contributor's professional status or experience shall not be permitted; that his address or photograph shall not be published; and that there shall be no unnecessary display of his medical qualifications and appointments. There is a special claim that practitioners of established position and authority shall observe these conditions, for their example must necessarily influence the action of their less recognised colleagues. Discussions in the lay press on disputed points of pathology or treatment should be avoided by practitioners; such issues find their appropriate opportunity in the professional societies and the medical journals. The report goes on to say:—

"After making all allowances for all those modes of publicity for which there may be some justification, there remain many instances which can only be regarded as gravely and unnecessarily contravening the spirit of the notice of the G.M.C. The Association is convinced that in taking up an attitude of determined opposition to these undesirable journalistic methods the Association is acting in the best interests of the public as well as of the medical profession. The extension of the system can only lead to a competition for public notice in which the more scrupulous men would be left behind, to the detriment of the public who are ill-qualified to judge of the true worth of scientific opinions. The extension of the advertising habit among the profession in general would certainly destroy those traditions of dignity and self-respect which have helped to give the British medical profession its present high status, and would gravely undermine the amenities and harmonious working of medical practice. The Association, therefore, draws the attention of the profession to the danger of these objectionable methods, and insists upon the urgent need that every member of the profession who values its honour should offer a firm resistance to them. If only those whose reputation is mainly derived from newspapers allow their names and opinions to be quoted or to appear as those of 'the eminent' physician, surgeon, or specialist, the practice will die a natural death."

Locum-Tenents.

The following motion governing the conduct of a practitioner desiring to set up practice in the area in which he had acted as a locum-tenent was carried without discussion:—

> That as a locum-tenent is introduced in confidence to the practice of which he takes charge, it must be presumed on principles of common equity that he cannot without dishonour commence practice in the neighbourhood where he has acted unless with a written consent obtained either from the practitioner whose substitute he has been or from the legal representatives of this practitioner. There may, however, be circumstances, for example of lapse of time, which would make the strict application of this rule an unreasonable interference with the freedom of the practitioner who had acted as a locum-tenent. If any such plea for the relaxation of the rule in any individual case can be advanced the facts should be stated to the Central Ethical Committee, and the judgment of the Central Ethical Committee on the point should be accepted as final.

Blacklegging.

A discussion followed on a motion brought forward by Dr. M. W. Renton, on behalf of the Dartford division, arising out of certain practical difficulties experienced by the Kent branch, which were explained to the meeting by the branch secretary, Dr. E. A. Starling. The present regulation allowed a practitioner to apply for a post at a salary below the B.M.A. scale in spite of protests, to secure the appointment, and then to negotiate with his employers so that the salary was brought up to the minimum by means of addition or emolument. He would then be restored to his position in the profession, to the chagrin of loyal members who had withdrawn their applications. Dr. Langdon Down expressed his sympathy with the aim of the Kent branch, but did not consider it necessary to alter the ethical rules to attain that end. Rule V. was intended to apply to established posts already held, in order to give their occupiers an alternative to resignation. Any individual applying for a new post advertised at an inadequate salary should be dealt with under Rule VI. as a recalcitrant member. The Association had been passing through a transition period in the matter of salaries, and no final decision had yet been reached. Both he and the solicitor, Mr. W. E. Hempson, urged the meeting not to throw the ethical rules again into the melting-pot, nor to make an alteration without considering very carefully where it might lead. The motion was lost.

Alleged Abuses of Psycho-analysis.

Dr. A. Lyndon (Hindhead) formally proposed a motion:—

> That the Representative Body instruct the Council to consider certain practices alleged to be prevalent among some medical men practising psycho-analysis and to report.

Dr. J. A. Parry (Brighton), bringing forward examples of the practices referred to, said he wished it to be clearly understood that this was not an attack on psycho-analysis as such, but was the result of much careful consideration by the Sussex Branch Council for many months. Judges and journalists were discussing these things, and it behoved the medical profession to take some action lest it be forced on them from without. He asked for discreet investigation, not condemnation.

Dr. Langdon Down said that there were two ways in which a practitioner might be considered by others to fail in his practice. He might hold a judgment with which his fellows entirely disagreed, but this could only be made an offence if the whole question were considered and rules laid down as to what was right, or he might deliberately do things contrary to his judgment, which would be extremely hard to prove. The best means open to the profession for the propagation of truth were scientific meetings and the columns of the medical press. Where a medical practitioner committed an offence against the public the remedy lay in the hands of the offended party; it was no part of the profession's duty to act for him. The speaker doubted whether the matter were worth putting to the Council.

Dr. Hawthorne agreed that it was a case for the police or the General Medical Council, rather than for the British Medical Association, which was not a legal judicial authority.

Dr. C. E. Douglas (Fife) said that this was an important and very serious allegation, far too important and difficult for the Representative Body to deal with. The Council could receive evidence for and against, and give a considered report.

Dr. Bolam said that there might well be matters for the police or the General Medical Council in this investigation, and yet be a residuum that might be dealt with by the Association or by representations from the Association in other quarters. He suggested that the whole question should be referred to the Council for consideration; beyond that it would be hazardous to go.

Dr. Parry accepted this amendment.

Health Insurance Service.

The reports of the Non-Panel and National Health Insurance Acts Committees were considered and accepted.

Dr. H. G. Dain (Birmingham Central) referred to the work of the latter in preparing evidence for the Royal Commission, and in establishing a panel of some 500 ophthalmic surgeons willing to see insured patients under the new ophthalmic benefit scheme. During the year the public press had taken active notice of certain difficult cases in which the Ministry of Health had given judgment. The Committee had obtained remission of the unpaid part of the fine in one of these cases, and had laid down four definite principles which should hold in cases where the Minister had to give judgment. To these the Minister had agreed, only differing in some slight details as to their application. The Defence Trust Fund had increased to £73,000, and the Committee had decided that the interest from it should be used in defraying expenses. Before long they might be considering what amount could be considered a sufficient reserve; at present they hoped that all committees would continue their subscriptions.

Appeal to the High Court.

A considerable discussion followed on the motion of Dr. H. J. Milbank-Smith (Chichester, Worthing, and Horsham):—

> That it be an instruction to the Council that when consulting the divisions as regards any suggested amendments of or additions to the policy of the Association in reference to the National Health Insurance Acts, or extensions of the same, they include for consideration the following proposal—namely, that, in addition to the right now enjoyed of appeal to the courts on the ground of improper procedure, appeal to the High Court shall be legitimate against any penalty, other than removal from the panel, imposed upon a practitioner by the Minister.

Dr. Milbank-Smith referred to recent cases in which the finding of the Minister had been contrary to that of a committee appointed to consider the case carefully. Much distress and anxiety had been caused to the profession by the lack of any possibility of appeal. An appeal in the Harnett case had completely reversed the situation and enormously strengthened the position of the profession. There might be a better relationship with the Ministry now, but ministers changed and there was no security that this would continue.

Dr. L. J. Picton (Chester, Crewe) said that N.H. Insurance had set up a new relationship between the practitioner and his patient, introducing a third party in the contract. The Common Law of the land should be the factor to adjust differences; the judges themselves did not think this would be unconstitutional. The patient could appeal to Common Law, and if a panel patient did so the Minister withheld his decision until the case had been tried; the doctor had no such right of appeal.

Dr. Dain reminded the meeting that a joint conference representing the whole profession had already agreed on this principle, and asked that cases involving removal from the panel should be submitted to a purely medical tribunal, while cases involving a fine should have the right of appeal to the High Courts.

The motion was lost.

Disciplinary Action by the Minister of Health.

Dr. R. D. Mothersole (Bolton) proposed :—

> (1) That the Representative Body strongly protests against the action of the Minister of Health in penalising Dr. X. for an alleged offence of which the Committee of Inquiry had declared that Dr. X. was not guilty, and that the charge ought not to have been brought; and (2) that the Minister of Health be invited to state what are the functions of a Committee of Inquiry, and how far its findings are binding on himself.

Dr. Dain said that representations had already been made to the Minister of Health on this matter, and he had agreed that judgment of proficiency must be a subject for the General Medical Council alone. The aim of this resolution had already been accomplished.

Some discussion followed, in which Dr. Brackenbury said it would be the opposite of serviceable to reiterate this protest, and Dr. Wallace Henry pointed out that to pass to the next business would look as if the meeting did not approve of the protest. The motion was eventually withdrawn in favour of the motion proposed by Dr. R. Wallace Henry (Leicester and Rutland), and seconded by Dr. J. F. Walker (South Essex) :—

> That this meeting approves the action of the Insurance Acts Committee in protesting in the case of Dr. X., and welcomes the declaration of the Minister of Health that he accepts the principle put forward by the deputation.

Royal Commission on Insurance.

Mr. E. B. Turner questioned the action of the Council in submitting the memorandum to the Royal Commission without bringing it before the Representative Body as such. He was extremely jealous for the democratic constitution of the Association and the rights of the Representative Body in which he had held every office from representative to chairman.

Dr. Bolam replied that the representatives had entered cheerfully into the method by which the Council had tried to obtain the opinion of the whole profession, and in his opinion it would have been very foolish to let the dry bones of the constitution over-ride the circumstances. The Association had repeatedly disregarded its standing orders in the effort to ensure that there should be no vestige of suspicion that it was trying to put forward anything in the name of the profession when outsiders had had no voice in it. The proceeding was eminently calculated to get the opinion of the whole profession as far as possible.

The Chairman pointed out that the evidence was not given as that of the Representative Body, but as that of the Council of the B.M.A. after certain procedures which were clearly set out. The present time was the correct occasion for the Representative Body to approve or censure the action of its Council.

No motion was put, but the applause that greeted Dr. Bolam's statement, showed that the meeting was satisfied that the method was a proper and constitutional way of dealing with the occasion.

Dividends on Panel Prescriptions.

Dr. C. J. Kirk (Darlington) then proposed :—

> (1) That the action of the Coöperative Societies in allowing the prescriptions presented by patients under the National Health Insurance Acts, who are also members of the Coöperative Societies, to rank for dividend is entirely opposed to the spirit of the Acts. It is calculated to encourage malingering, to throw unnecessary work upon the practitioners administering the medical benefit, and to bring the work of the Insurance Acts into disrepute. (2) That the Council be instructed to press the Ministry of Health to remove this abuse of the provisions of the National Health Insurance Acts.

On the suggestion of Dr. Dain, it was resolved :—

> That the motion be referred to the Council for investigation as to the extent of the practice.

Election of Council.

During the course of the day the unopposed return of the following 12 members to Council was announced : Dr. G. B. Hillman, Dr. I. W. Johnson, Dr. J. W. Bone, Dr. T. Ridley Bailey, Mr. E. B. Turner, Dr. W. Paterson, Dr. C. E. S. Flemming, Dr. S. Morton Mackenzie, Dr. C. E. Douglas, Dr. J. G. McCutcheon, Dr. John Mills, and Dr. J. Singleton Darling.

SATURDAY, JULY 18TH.

Membership of the B.M.A.

In presenting the report of the Organisation Committee, Dr. S. Morton Mackenzie said that the membership now totalled 29,680, a figure 3000 higher than ever before. He did not believe that the increase was a " flash in the pan," but it could not be expected to continue at that rate. They were particularly anxious now to do more for the young practitioner. The establishment of a scale of remuneration had placed them in the position of asking these men to give up posts without offering any help.

Locum Bureaus.

One way of helping them was by the foundation of a locum bureau, which was a real need in the provinces. Already several such local bureaus were in existence, but at present their position was unregularised. Legally the Association could not undertake such an activity, but it was proposed to form a private limited liability company in which the A shares, conveying voting power, would be held by officials and officers of the B.M.A., and the annual meeting of the company would be held during the session of the Representative Body.

A number of members asked questions, and discussed the legality and details of the proposed scheme.

Mr. Bishop Harman urged the meeting to express its opinion on the general principle and leave the details to the Council, who might be trusted to take every legal and financial precaution. Delay was dangerous as such bureaus were constantly being formed, and the more there were the greater the difficulty of coördination.

After some discussion as to the advisability of giving preferential treatment to B.M.A. members, the principle was approved.

Individual Medical Defence.

Dr. Morton Mackenzie, introducing a resolution authorising the Council to prepare a draft scheme and ascertain the number of members who would join in it, said that the discussions at Portsmouth and Bradford had made the Committee realise that there was still a very considerable minority that desired the Association to undertake the legal defence of its members. The Committee had, therefore, persuaded the Council to allow a thorough investigation of the matter, financially and historically. The history of the question had been written by Miss Lawrence, the intelligence officer, and showed that the argument had been going on for 50 years, and that the Council had repeatedly allowed the matter to slide even when the Representative Body had passed resolutions in favour of it.

Dr. Mackenzie said he thought he could shorten discussion by laying down certain propositions. First, he thought they were all agreed that if there were no existing defence societies it was a work the Association ought to undertake; secondly, they were quite agreed that the Association could not legally undertake the work under its existing articles and memorandum; thirdly, at the moment any form of coöperation with the existing societies was quite out of the question. He had held the opinion that the true solution of the question was to do it in coöperation with the existing societies, but he was sorry to say that neither of these societies had seen their way to accept the overtures.

The possibilities before the Association were: (1) Full medical defence for all members, either in conjunction with or in opposition to the existing societies. This he thought was not possible because very many members were quite satisfied with the societies. (2) Optional full defence for those members who wished for it. (3) Partial medical defence—e.g., every legal help given up to the door of the court and then no more, or meeting those expenses which were not paid by existing societies. (4) The establishment of a legal bureau at the offices for advice and help. In his opinion (2) was the only solution; it would satisfy those members who were agitating for B.M.A. defence without upsetting those who preferred to remain as they were. The disadvantages were few; there would be no reserve fund at first, but the new company would have the backing of the Association, and the brains in the B.M.A. office were quite as competent to manage the affair as any in the existing societies. It would require 6500 members to make its inauguration a sound financial proposition.

A motion from Guildford impugning the Council for bringing up the subject after the Representative Body had voted against it was rejected, but a lengthy discussion followed the amendment by Cardiff:—

That as the matter of individual medical defence is being competently dealt with by various existing bodies, and as it does not appear that the Association could conduct medical defence in any cheaper or better manner, and as the provision of individual medical defence is not within the present powers of the Association, this meeting is of the opinion that the matter should be dropped, and that the expense of the proposed referendum of the profession be not incurred; but that the Association should bring to the notice of all practitioners, especially those recently qualified, the urgent necessity of joining one of the medical defence bodies.

Dr. Peter Macdonald (York) and others raised the question of indefensible conduct and the loss of prestige to the Association if it found itself compelled to defend such a case.

Mr. McAdam Eccles (London) and Dr. S. N. Scott (Plymouth) spoke of the difficulty of persuading men to join the Association when their immediate question as to the provision of defence had to be answered in the negative.

Several members, including Mr. E. B. Turner and Dr. J. C. Matthews, voiced the impracticability of the scheme. The financial position would be most insecure at first, the new company would be unable to meet a large case; it would be most unfortunate for the Association to have to defend a man brought before the General Medical Council, and all B.M.A. members would have to leave the Council while such a case was being tried.

Dr. D. Lawson urged that the cobbler should stick to his last; he was not so optimistic as to accept the estimate of the ability of the B.M.A. staff, and its funds had not been accumulated to squander on speculation.

Dr. J. Neal (Hendon) said that the requirements of the profession were already fully met, and this doubtful experiment offered no advantage to its members. He denied that the existing societies had ever been asked to coöperate; they had only been asked to grant financial concessions, at their own expense, to members of the B.M.A.

Dr. J. F. Walker (Essex) thought that this dangerous weapon would be looked upon as an attempt on the part of the B.M.A. to entrench themselves behind their prerogatives to the detriment of the public and might well prove to be another horse of Troy.

Other members, including Dr. C. Sanders and Dr. C. E. Douglas (Fife), pointed out that the resolution only asked the Council to obtain information and report in order to show what the demand was and how far it might be practicable. If the scheme came into being it would only be by the support of the younger men; the seniors were loyal to their own societies and were not going to let them down, but times were changing and young men were coming on; this might be the step of the future.

Dr. Christine Murrell (London) said that if the new company were to be closely associated with the B.M.A., the practical difficulties would be very great and might be disastrous; if it were to be but loosely connected it would be equivalent to setting up a third society for which there was no particular need. There was a definite advantage to the individual in being able to get the little difficulties of practice redressed by a protection society without having to make it known to the professional and scientific association.

Dr. Dain believed that individual medical defence would mean loss of prestige; the Association had always maintained that anything it did must be in the interest of the public or else it could not be in the real interest of the profession. He thought the solution lay in real coöperation with the existing societies, which need not necessarily mean preferential treatment.

Dr. J. S. Manson (Warrington) suggested that the local division might decide whether any particular case should be taken up by the B.M.A. or not, but as Dr. Hawthorne and Dr. E. E. Brierley pointed out, this would place the divisions in an invidious position and might lead to conflict between the local and central authority.

Dr. E. R. Fothergill (Brighton) spoke of the difficulty of finding a suitable firm of solicitors, and said that the only real coöperation was for the B.M.A. to increase its subscription to £4 and offer to pay the subscription to any defence society the member chose.

Mr. Bishop Harman said that there was a growing involvement of medical defence with general propositions; it was no longer possible to leave defence of the individual to one society and of the profession to another. In the Harnett case the defence of the individuals had been the defence not only of the profession but of the public. Already the defence societies were giving advice on general medical matters. Coöperation was desirable, but coöperation could not be attained until the B.M.A. made up its mind what it was going to do. The future lay with those who had closest touch with the new practitioners. He begged the meeting to let the Council find out once and for all what was the volume of the demand which had so frequently made itself heard in the history of the Association.

The amendment by Cardiff was carried, on a roll-call vote of 97 to 72, and the principle of individual medical defence was thus again rejected.

Inquiries and Badges.

In moving the adoption of the Supplementary Report under Organisation, Dr. Morton Mackenzie said that the questions answered at the offices were increasing in multitude and variety; in addition to problems of practice and lodgings, they were asked how to open a banking account and how to get married, and, more particularly, about post-graduate work, which must clearly be the next activity of the Association. The overseas branches were in a satisfactory condition. New members of the Standing Committees were wanted. It was proposed that branch and division chairmen and secretaries should have a standard badge to enhance the dignity of their office.

Dr. C. G. H. Morse described a series of successful post-graduate courses in Bournemouth, and hoped the B.M.A. would not look on London as the only place for post-graduate work.

Dr. J. Stevens proposed that miniature badges should also be prepared, that ex-chairmen and secretaries might keep as permanent mementoes of their work.

Parliamentary Fund.

Dr. E. K. Le Fleming (Dorset and W. Hants) presented the report of the Parliamentary Committee and emphasised the fact that the Association had no political bias, but required that those who received its support should subscribe to the broad principles of policy laid down by the Representative Body. So long as the Labour Party had as a plank in its platform the State Medical Service and State aid for hospitals they could not assist its candidates. The position of the profession in Parliament was much more satisfactory than hitherto. The aim of the Committee was that the requirements of the profession should be clearly stated in the House, but the state of the Parliamentary Fund was still very unsatisfactory.

Investiture.

During the meeting the Chairman was invested with the new badge of office, bought in honour of the twenty-first meeting of the Representative Body, by Dr. W. Douglas, "the father of the Representative Body," supported by Dr. Milner Moore, a member of the Association since 1869.

(*To be continued.*)

CONVENTION OF ENGLISH-SPEAKING OPHTHALMOLOGICAL SOCIETIES.

LONDON, JULY 14TH–17TH.

(*Continued from p. 150.*)

ON the evening of Wednesday, July 15th, there was a very large gathering of members of the Convention to hear a symposium on the subject of the

EVOLUTION OF BINOCULAR VISION,

the chair being occupied by Mr. Treacher Collins, the President.

Prof. Elliot Smith said there were certain aspects of this problem upon which anatomists could throw a certain amount of light, or at least they could define certain issues which other speakers could more fully interpret. He considered that the problem of binocular vision was of the very essence of the question of human evolution, as the cultivation of vision and the increased reliance on it for guidance was the fundamental fact which brought about the evolution of the Primates and led to those distinctive qualities which differentiated man from other living creatures. Man's ancestors were certainly the first creatures to see the world in the sense properly understood. Such vision resulted in the ability to perform skilled movements and to acquire by experimentation a knowledge of the world and of the events-taking place in it, the knowledge which placed man in his position of supremacy. Thus, the problem was not merely that of the functional association of the two eyes in vision, but a study of the factor which constituted the primary stimulus to the emergence of the distinctive qualities possessed by man. The student had first to try and trace what series of animals could throw light on this gradual development. Fortunately, in the case of the Primates there survived—in many cases from the Tertiary geologic period—a series of creatures which had escaped the devastating effects of extreme specialisation, and so enabled a study to be made of the phases through which man's ancestry passed. The Primates came into existence in North America, near Wyoming, before the beginning of the Tertiary period; there they separated from the group of insectivorous animals, which had been studied so well by Mr. Le Gros Clark in Borneo, who specially examined the structure of the eye and retinæ, the cerebral cortex, and the oculo-motor nucleus. Shortly before the beginning of the Tertiary period the lemurs came into existence, and in one particular class smell began to be replaced by vision as a guiding sense. Primitive monkeys came into existence in the middle of the Eocene period, reaching Europe from South America, and they split up into tailed monkeys and the higher group of anthropoids. It was not until after that period that the giant anthropoids came into being. The nearest remains of the human family belonged to the Pleistocene period, but there still remained a gap which was unspanned. The most important class of animals for this study was the tarseus, as it had survived from the beginning of the Eocene period with practically no change. There was a shrinking and flattening of the nose to allow the eyes to come to the front of the face, so that the creature could look forward, and the visual fields overlapped almost as much as they did in the case of monkeys and in man. It was possible to demonstrate the fact that the ora striata reached its maximum size even in the most primitive monkeys, so that as the brain was much smaller in them than in the higher Primates, the visual cortex in them was proportionately great. Using this method, the speaker was able some years ago to map out, without histological technique, the distribution of the cortical areas in the series of animals represented in a diagram he exhibited, commencing with the jumping shrew. The primitive animal was guided by its sense of smell, but in its arboreal cousin smell was reduced and place was given to areas for vision, hearing, touch, &c. It was the development of the visual cortex which led to the emergence of the tarsoids, and in these there was an enormous reduction in the cortical area assigned to the olfactory sense and an increase in that subserving sight. He made this inquiry 15 years ago, and since then Mr. Le Gros Clark had shown the same thing by histological methods. Comparing the tarseus with the marmoset, a profound transformation in the brain structure was noted. Not only was the brain of the latter much the bigger, but there was a great expansion of areas allocated to sight, hearing, touch, and the pre-frontal region generally. All this made for increased precision of movement, and especially of finer movements. Equally certainly a very profound accompaniment of delicate intensive manipulations was the acquisition and development of binocular vision.

A striking pre-binocular vision stage was illustrated in the case of the chameleon, for this animal could look forwards with one eye and backwards with the other, and it used its eyes for fixing an object in much the same way as it shot out its tongue to seize its prey. The actual fixing of an object by the eyes occupied some minutes, the concentration being, doubtless, on the muscular act rather than on the object seen. It was this linked separate movement of convergence which had developed in mammals. Dr. Wilfred Harris had shown that the optic tracts of all vertebrates other than mammals could cross, but a certain number of fibres remained uncrossed. In some animals there was a reduction in the size of the snout, which allowed the eyes to move forwards, a prior necessity before stereoscopic vision could be acquired. Mr. Le Gros Clark had examined the retinæ of both living and dead tarseus, but was unable to find anything resembling a macula, either by ophthalmoscopic examination, by gross anatomy, or by histological methods. But though the eyes of tarseus looked forward and it had developed its ora serrata to a greater extent than had the lemur, and though its visual fields overlapped, it yet had not acquired full powers of stereoscopic vision, nor of guiding its hand movements as the monkey could, nor of carrying out a range of conjugate movements. There was evidence, however, that this animal felt the need of these accomplishments, and in obedience to that need it acquired the ability to so move its head that it could and did look backwards, as shown by an actual photograph. Research during 40 years had shown that it was the great pre-frontal area of the brain which was concerned with controlling these more complex conjugate movements which were distinctive of the apes and man. A true macula lutea was found only in the latter two species. In marsupials there was a small region in front of the motor area which controlled movements in only one eye. He showed slides of micro-photographs demonstrating that the eyes underwent transition from lemur to tarseus and then to monkey.

Sir Frederick Mott referred to the thesis he propounded in his Bowman lecture of 20 years ago, when he dealt with the evolution of binocular vision coincidently with that of the visual cortex. The conclusions then expressed had been confirmed, and he had not had the opportunity of carrying his research further. He exhibited slides showing that the lunate sulcus seen in all anthropoids was sometimes to be observed in man also. With the rise in the animal scale the peri-striate area of the occipital lobe was found to be increased, and coincidently there was a greater development of the frontal region of the brain. It had been found by Prof. Watson, of Baltimore, that a baby could fix a light soon after birth, but not until the 130th day did it acquire associated hand movements. It was found that in the full-term fœtus there was a myelination of the optic radiations, and hence it was argued that this region was instrumental in fixing the light. Sir Frederick Mott showed that all our visual experiences were associated with tactile perceptual ones, and exhibited a number of slides illustrative of the work which Prof. Sherrington and he did together. Closely associated with the area concerned with the conjugate movements of the eyes was that regulating movements of the eyelids. His conclusion was that the frontal region of the brain was that concerned with attention, and especially with that associated with binocular vision.

Prof. S. E. Whitnall (McGill) explained that his interest in this problem had been mainly with the movements of the eye muscles during the gradual transition of the eyes from the side of the head to the front of the head. He first pointed out how little animals, especially mammals, moved their eyes in order to see. Lemurs and all animals below them moved their heads instead of their eyes, and human beings moved their heads in order to see to a greater extent than was usually realised. This was appreciated in the light of the sense of inconvenience when one suffered from a stiff neck. The more an animal felt the need to increase its visual field, the more developed its muscles became. But one could find that some means were taken to compensate for this lack of development of muscles. If the eye was not moved to increase the visual field, the orbit could be moved, thus increasing the avenues of approach to the retina, and in herbivora there was an elongated pupil with the same purpose. Throughout all the vertebrate series there were the same four recti and two obliques. Prof. Whitnall showed by a series of diagrams the changes which occurred in the muscles of the site pari passu with the gradual swinging of the visual axes from the side to the front of the head, the angle subtended by the visual and orbital axes varying from 27° to 80°. He dealt in much detail with the change seen in each pair of muscles, and showed illustrations from Lindsay Johnson's atlas of the visual axes in various mammals.

Sir Arthur Keith, in view of the full contributions of his predecessors in this discussion, confined his attention almost solely to the chief modifications which had been gone through by the orbit and the skull in the evolution of binocular vision. Presumably, man began to take on a recognisable human form in the Miocene period, but his ocular outfit existed long before—namely, in the Eocene period—and he preferred for it the name "bifoveate." Even the marmoset had this. The progeny of the bifoveate stock had fared very differently in their evolutionary progress. Some had retained their ancient characters, others, such as man, had shed them. Between them was a series of intermediate forms, seen in living Primates, representing stages in evolutionary progress. By a deft use of those intermediate forms Prof. Elliot Smith had been able to build up a reliable evolutionary history of man's vision and of those parts of the brain which were concerned with that faculty. One of the greatest services rendered to anatomy was Prof. Elliot Smith's clear proof that the evolution of bifoveate vision was the result of sight ousting smell as the dominant sense. Sir Arthur Keith did not consider that the swinging forward of the eyes so that their axes became parallel had anything to do with the reduction in size of jaws, nor that bifoveate vision was a necessary result of arboreal life; he thought it was closely linked with the mode of climbing, and mode of locomotion seemed to have been a dominant factor in the evolution of the true Primates. All bifoveate Primates were jumpers, and they must be able to judge the distance of the branch they wished to reach. The golfer's axiom "Keep your eye on the ball" had a much older counterpart in the jungle, "Keep your eye on the branch." Twenty-four years ago the late Dr. Lindsay Johnson showed that though monkeys, anthropoid apes, and man had the same form of eye and retina, the same outfit of ocular and orbital muscles, these creatures differed widely in the degree and kind of their eye movements. In ordinary monkeys head and eyes moved together, there was but little power of lateral movement of the eyes. In the great anthropoid apes conjugate movements were free and frequent, convergence could be sustained only during short spells. It was clear that man's visual superiority lay not in the kind of eye with which he had been provided, but in the brain which had grown up behind the eyes. No one, he said, who had watched the gradual dawn of perfect vision between birth and childhood could doubt the truth of evolution; the facts deduced that evening could only be explained by supposing that man had been evolved from a very humble and primitive simian ancestry. But we remained still in the dark as to the evolutionary machinery which had transformed the visual world as seen by the marmoset into that seen by man. When this machinery was explained it must cover all the structural elements as they developed in the body of the embryo and of the fœtus. When it could be explained how man came by his vision, then the most difficult part of the problem of evolution would have been solved.

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On the morning of Friday, July 17th, the session combined to debate on the

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the President occupying the chair.

The Cornea.—Dr. Gordon Byers (Montreal) dealt with the cornea, remarking that because of its accessibility and the transparency of its refractive media, the eye early became a field for study by what had come to be called the "direct" method of pathological examination. With increasing accuracy and fullness the changes noted were isolated and described as the objective symptoms or signs of the clinical pictures. But though the direct method did evolve aids of great value, beginning with the introduction of focal illumination by Himley over 100 years ago, limits to its effectiveness were imposed by difficulties of illumination which seemed at the time to be insuperable. The value, he said, of the new method lay rather in its disclosing changes collectively, and in their topographic relations, a service of which the pathologist stood in need. For him it made significant many details which merely as scattered findings were without meaning. To the clinician the method gave fresh opportunities to add to the number and the qualities of his clinical pictures. Pathological changes in the cornea were observable with a special fullness and distinctness by the new method, because of the variety of illumination which focal structural differentiation made available for disclosure. Still, the revelations of the slit-lamp would probably be less novel in the cornea than it would in other components of the organ. He thought that betterment would consist rather in the addition of a wealth of detail and a truer perspective to details already established.

The Vitreous.—Dr. Arthur Bedell (Albany, New York) said the slit-lamp offered a method for the more careful study of vitreous detail than had hitherto been available. The vitreous, when examined by this method, showed innumerable variations in the definition of the folds of the frame-work and the consistency of the fibres in health. In disease the changed framework might consist in the massing of fibres and liquefaction and absorption of structures, and in pigmentation. He considered that no case of penetrating injury had been properly investigated until the slit-lamp had been skilfully used; and prognosis in such cases was never exact until such demonstration revealed the presence or absence of tension fibres which might be a cause of subsequent detachment. He gave a series of hints as to the use of the instru-

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The Lens.—This part of the subject was dealt with by Mr. T. Harrison Butler (Birmingham). He said the lens was suspended in the eye like the hub of a bicycle and was completely surrounded by aqueous. The retro-lental space was a cleft filled with aqueous, and it disappeared in cases of degeneration of the vitreous. After the removal of cataract in the young the retro-lental space was greatly enlarged. He said that in cases of congenital dislocation of the lens the zonule might be complete, rudimentary, or absent altogether. When the lens was forcibly dislocated, the zonular lamella might peel off with the fibres of the suspensory ligament, which were not then found attached to the lens. He showed drawings illustrating detachment in lens dislocation, in glass-blower's cataract, and in an example of a shrunken lens. The lens sutures were known to constitute the sites of various kinds of cataract. The lens shagreen he regarded as due to the intimate structure of the capsule itself. He showed that an abnormal growth of the lens zones caused central cataracts, and to the varied forms of zonular or lamellar cataract. He suggested that the varied curves associated with appropriate refractive indices were so balanced that chromatic aberration was corrected.

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and its bearing on the Argyll Robertson pupil reaction. They said that the break in the reflex arc which brought about the Argyll Robertson pupil probably occurred in the secondary intercalated neurone, which had its cell of origin in the anterior corpus quadrigeminum and whose axone passed down and probably bifurcated so as to link up with the third nerve nuclei on both sides. If the Edinger Westphal nuclei were concerned in the innervation of the sphincter pupillæ it was probable that the light reflex fibres were non-myelinated fibres running through the central grey matter straight to the neighbourhood of the Edinger Westphal nuclei. But Magitot contended that the Edinger Westphal nuclei could not be concerned with the control of the sphincter iridis, because in the human fœtus neither they nor any of the other anterior accessory nuclei of the third were developed at a time when the light reflex was already existent. That authority had seen the light reflex in a child which was born at the end of the fifth month, whereas the nuclei in question did not appear until the seventh month of intrauterine life. Mr. Paton suggested a reinvestigation of the embryology of the third nerve nucleus and its accessory nuclei, as that might throw light on this difficult question. A result of the examination of human embryos at various stages undertaken by one of the authors of this paper was that it seemed that the differentiation of the third nerve nucleus into its component parts commenced at a comparatively early stage, being well advanced before the end of the fifth month. Reference was made to the work of Kappers, and Mr. Paton said it could be shown that in human embryos the median nucleus appeared early, before the accessory nucleus, at a time when the swinging round of the eyes from the sides to the front of the head was taking place, while the appearance of the accessory nucleus was delayed until the first signs of differentiation of the margin of the optic cup to form an irido-ciliary region. In fœtuses of three and a half to four months the typical small cells of the accessory nuclei could be recognised, the anterior layer of the ectodermal part of the iris at the same time giving rise to the muscle-cells of the sphincter pupillæ. Thus, in both phylogeny and ontogeny the appearance of the median nucleus was associated with the possibility of convergence, and that of the Edinger Westphal nucleus with the possibility of a light reaction.

Glioma Retinæ.

Dr. J. Van der Hœve (Leiden) showed photographs of metastases of glioma retinæ in various parts of the head of a child after binocular enucleation, with the result of causing a massive disfigurement of the whole head and face. Exenteration of the orbit showed an optic nerve three to four times the normal size. The enlargement of the optic foramen he regarded as of serious prognostic import. In unilateral glaucoma the eye should be enucleated. Usually bilateral glaucoma did not come to the surgeon's notice until the disease had totally blinded one eye. In such cases the blind eye should be removed and the other should be treated by irradiation, though the results of this latter were not, he thought, very encouraging. The author thought that radiographs of the optic foramen should be more frequently carried out, as they would afford valuable diagnostic information, as well as giving a clue as to prognosis and treatment. Radiotherapy did not yet seem to have brought about many absolute cures of glioma.

Blood-Chemistry of Patients with Primary Cataracts.

Dr. Maxwell Langdon (Philadelphia) read a paper in which he pointed out that certain physical conditions accompanying lens degeneration caused also urinary changes, and he had been engaged since 1920 in an investigation of the blood-sugar and sugar-tolerance, also the blood-urea nitrogen and creatinin. Mostly his findings had been negative, and the analysis seemed to be of value only as regards sugar, several cases of potential diabetes having been discovered in which this appeared to be the only indication.

Intracapsular Extraction of Cataract.

A paper on this subject was read by Dr. A. H. H. Sinclair (Edinburgh), who showed in connexion with the paper some new instruments and explained their uses. He said the methods of intracapsular extraction practised to-day could be stated thus: (1) Dislocation and expression of the lens by pressure on the outside of the eyeball; (2) the dislocation and extraction of the lens by taking hold of its anterior capsule and removing it by traction; (3) a combination of traction and external pressure either simultaneously employed or with pressure following on forceps dislocation. He said his own method of intracapsular extraction now described was carried out with blunt forceps. The resultant vision in which the lens was removed completely came out as follows: 6/5 in two cases, 6/6 in 10, 6/9 in eight, 6/12 in one, 6/18 in one, 6/60 in one. He

explained that in nine cases the lens were not extracted complete in the grasp of the forceps. In these the vision was 6/5 in one, 6/6 in three, 6/9 in one, 6/12 in two, 6/18 in two. In his second series of 21 cases, since he had used his "expressor guard," there had been no loss of vitreous, and in this series there was only one case of iritis. The average vision in his first series was 6/11, in the second 6/7. Dr. Sinclair gave a remarkable cinematograph demonstration of the actual operation.

Late Results of Intracapsular Cataract Extraction.

Dr. Arnold Knapp (New York) related some late results of intracapsular cataract extractions in his practice. He said that criticism had been levelled against intracapsular cataract extraction because, in addition to vitreous loss in many, there was undue damage caused to the eye, the pupil was displaced, and set going degenerative changes which eventuated in damage. Some advocated retention of the posterior capsule, as it constituted an important support for the vitreous. Dr. Knapp submitted that the best answer on these points was furnished by a further examination, after a number of years, of patients on whom the intracapsular operation had been done. He did not think the ideal operation had yet been found. With this object he had followed up and re-examined as large a proportion of the 200 consecutive intracapsular cases done between 1910 and 1919 as he was able. He gave tables of results which were, on the whole, quite favourable. A small escape of vitreous did not seem to have any special significance.

Lt.-Col. H. Smith, I.M.S., said Dr. Knapp's results were very encouraging to those who thought of embarking on the intracapsular extraction of cataract, and the series reported showed that it was possible to exaggerate the seriousness of the escape of a small quantity of vitreous.

Sir Wm. Lister expressed his satisfaction that Dr. Knapp's contribution showed again that a successfully performed intracapsular extraction did wear. He had himself been astonished by the good results of the intracapsular operation as carried out by Colonel Smith, even in the bad cases, and he had himself investigated 91 cases in India. He asked ophthalmic surgeons to watch their cases in which they did the cataract operation and see what happened to them in a few years, and to base their views upon what they found.

Dr. Sinclair also considered that Dr. Knapp's series of operation results were very encouraging to those whose ambition it was to embark on this proceeding. He had not himself lost an eye after this operation in two and a half years.

Mr. D. V. Giri (Eastbourne) said that in many cases of hypermetropic cataract the vitreous was already fluid and filled with opacities, and when this was so the escape of a little vitreous even did good, as otherwise the degenerate vitreous might act as an irritant and cause further damage.

Dacryocystencleisis.

Mr. Eric A. Thomson (Beyrout) explained that this operation was intended as a substitute for dacryocystectomy, and was mostly indicated where the latter would be chosen, but hesitation was dictated by the infirmity or nervousness of the patient. The results were equally good. The operation consisted in the obliteration of the sac, canaliculi, and puncta by an inflammatory process caused by the injection of saturated corrosive sublimate aqueous solution, followed by absolute alcohol, strong tincture of iodine, alcohol again, and ether. The puncta were touched by the actual cautery as an extra precaution, and the cornea must be protected from the drugs employed. A pressure bandage and pad were kept over the region of the sac for six days.

Removal of Cataract in its Capsule.

Mr. John Hern (Darlington) contributed a paper in which he described his method of removing a cataract in its capsule, requiring the use of only two special instruments. These were: (1) An eye speculum which could be adapted to any face or either eye. A spring separated the blades, and by screw adjustments the lids could be slightly removed from the eyeball before operating. (2) A pair of forceps with entirely separate blades, fitted together by the ordinary "Smellie" lock. A preliminary iridectomy should be done, and the corneal incision should be limbal and fairly large. The chief danger was that from possible loss of vitreous, but with the lids so well under control by the special speculum there had been little trouble on this score; and he considered that the clear pupil and the impossibility of the occurrence of "after-cataract" more than compensated for this should it occur.

Lens Antigen Treatment of Cataract.

Dr. A. E. Davis (New York), in a paper with this title, said that by the use of lens antigen alone almost every case of cataract in its early incipiency could be arrested. Immature cataracts, up to 50 per cent. loss of function, in 85 per cent. of the cases could be arrested, and in more than half the cases there was improved vision. Mature senile cataracts he preferred to remove by operation. The prognosis was less favourable the later the cases were treated by lens antigen. The longest time he had had these cases under observation was four years, and the average loss of vision in the cases was about 12 per cent.

Recovery of Visual Field in Pituitary Tumours.

Dr. R. C. Davenport (London) reported two cases of pituitary tumour which were under the care of Mr. Foster Moore. Neither of them had marked glandular signs, but each showed primary optic atrophy and temporal hemianopia. In both the visual signs had been present some years, and had since been watched for three to five years. X ray examination revealed extensive bone erosion in the pituitary region in both patients. In one case one eye was blind, the vision in the other being 6/18. The whole temporal visual field was lost. The other patient had only the nasal half of the field in one eye, with an acuity of 6/12, that of the other eye being only 6/60, with only a small upper nasal section of the field remaining. The treatment of both was by irradiation of the head, directed to the pituitary region, and the fields had improved, but the visual acuity remained as before. A question which arose was as to how much the recovery might be spontaneous, and how much it was due to the shrinkage of the tumour from the application of the rays.

Cerebro-Macular Degeneration.

Dr. Gordon Holmes and Mr. Leslie Paton presented a paper on this subject. They said they had been able during recent years to examine ophthalmoscopically a number of cases of cerebro-macular degeneration of the Batten type. In most of them the retinal changes were fairly well marked when the cases came under observation. The occurrence of the disease in two members of a family led to the whole family being kept under inspection, and this resulted in the very earliest stages of the development being observed in a third member. The first noticeable change was the appearance of a small whitish area at the macula, surrounded by a reddened ring. Later, wavy radiating white streaks appeared on the retina; then the macula showed dotting, with granular pigment in and around the whitish area. The optic disc became paler and the vessels diminished in size. In the third stage the evidences of retinal atrophy spread out to the periphery, but the evidences were still most marked at the macula. Clinically, the cases were most closely related to amaurotic family idiocy.

Genesis of Myopia.

Mr. Ernest Clarke (London) examined the various inherited influences which had been suggested as the origin of myopia, and arrived, by a process of exclusion, to a confirmation of the view of Sir Arthur Keith that the origin of myopia was an inherited disorder affecting the very early growth of the sclerotic. He suggested that some bad cases of high myopia were

a manifestation of a disease of the coats of the eye, with myopia as a sequel, not as a cause.

Uveal Pigment in Diagnosis and Treatment of Sympathetic Ophthalmia.

A paper with this title was read by Dr. Alan C. Woods (Baltimore). He explained that the diagnostic tests were a complement-fixation reaction in the blood-serum against an antigen of uveal pigment and an intradermal test to determine the patient's specific hypersensitivity to uveal pigment. The treatment was based on the idea of removing the specific pigment hypersensitivity of the person by the repeated injection of small quantities of uveal pigment, which, at the same time, stimulated the production of specific antibodies. Dr. Woods's view was that this treatment was of definite value in sympathetic ophthalmia, but he did not regard it as an absolute specific. There was no reason against it being associated with other treatment. Dr. Woods said he did not think the ætiology of sympathetic ophthalmia had yet been fully demonstrated, but he considered that there was usually an allergic phase in the disease, and that uveal pigment was at least one of the factors concerned in this phase.

CONSTITUTION OF FUTURE CONVENTIONS.

A general meeting of members of the Convention took place on Thursday afternoon for the purpose of considering whether future conventions should be of an international character on a pre-war basis. After discussion a resolution was moved by Dr. Lucien Howe, and seconded by Dr. G. Ring to the following effect:—

> That this Convention of English-speaking ophthalmological societies hereby empowers its President, Mr. E. Treacher Collins, to appoint a standing committee of five, of which he shall be chairman. The duty of this committee shall be to obtain such coöperation as is possible from representatives appointed by various national ophthalmological societies in promoting matters of international ophthalmological interest, for example: (*a*) Aiding or initiating measures by international intercourse likely to prevent the dissemination of diseases of the eye and the lessening of hereditary blindness; (*b*) the establishment of uniform methods of recording results of visual tests and other matters pertaining thereto; (*c*) the interchange of ophthalmological literature; (*d*) the promotion of international ophthalmological congresses.

This resolution was adopted as well as a further resolution, proposed by Dr. Howe and seconded by Dr. Ring, thanking the English organisers for their hospitality and for the general excellence of the arrangements.

VISITS AND FUNCTIONS.

During the week members of the Convention visited a number of institutions, such as the Royal Institution, the Royal London Ophthalmic Hospital, St. Margaret's Hospital, the L.C.C. Myopia School at Islington, St. Dunstan's, the Royal Westminster Ophthalmic Hospital, the Central London Ophthalmic Hospital, the National Library for the Blind, the Royal Eye Hospital (St. George's Circus), the Royal Normal College for the Blind, and the White Oak Ophthalmia School at Swanley.

At St. Dunstan's Hostel for the training and care of war-blinded men, the visitors were received by Sir Arnold Lawson, Chairman of the Ophthalmic Advisory Board, and by Captain Ian Fraser, M.P., Chairman of the Council, who gave interesting facts and figures with regard to the success of the work at St. Dunstan's. A total of about 1800 blinded soldiers had passed through the Hostel, of whom roughly 1000 cases were due to gunshot wounds or to explosive shell or bomb; under 300 were due to actual bullet wounds. A few were the result of concussion and accident; only three injuries were attributable to bayonet wound. A tour was made of the wards, classrooms, and workshops, where the visitors had the opportunity of seeing the skill and cheery spirit shown by the blinded men.

The Convention opened with a reception at the Royal College of Surgeons of England. Sir William and Lady Lister gave a garden party at Aubrey House on Wednesday afternoon. There was a reception at the Wellcome Historical Medical Museum on Thursday evening.

An *Official Banquet* at the Guildhall terminated the proceedings of the Convention. Mr. Treacher Collins took the chair, and the company included many distinguished guests. H.R.H. the Duke of Connaught, in replying to the Loyal toasts, said that the more the English-speaking peoples worked together, the greater the prospect of peace and prosperity for the whole world. The medical people of London were to be congratulated on their hospitality to co-workers from all parts of the world. The President, in proposing the English-speaking Ophthalmological Societies, emphasised the common inspiration of the peoples represented and the common purpose of the gathering. The complete ophthalmologist, he said, was a practitioner of medicine, a surgeon, a neurologist, a physiologist, a mathematician, a physicist, and above all, a pyschologist. Sir John Parsons, replying for the Ophthalmological Society of the United Kingdom, remarked that the Society, since its foundation in 1880, had gone on from success to success, an ascent which culminated in the Convention just concluded. America, which owed much to English ophthalmology, was now repaying that debt, not in gold, but in the coinage of inspiration returned. Dr. de Schweinitz, on behalf of America, and Dr. Gordon Byers, on behalf of the Dominions, thanked their hosts for their hospitality, and laid stress on the essential unity and similarity of outlook of all the English-speaking peoples. Mr. J. H. Fisher proposed the toast of the Guests, which was responded to by Sir George Wyatt Truscott, representing the City and Corporation of London, Sir Humphry Rolleston, representing the Royal College of Physicians, and Sir John Bland-Sutton, representing the Royal College of Surgeons. Mr. E. Clarke proposed the health of the President, Mr. Treacher Collins, whose name, he said, was known and respected where ophthalmology was practised and taught.

On Saturday, delegates visited Oxford, where they lunched at Keble College, or Cambridge, where they were entertained at Trinity College.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. J. O'Hea is placed on the Retd. List with the rank of Surg. Capt.

ROYAL ARMY MEDICAL CORPS.

Maj. and Bt. Lt.-Col. T. S. Coates to be Lt.-Col., vice Lt.-Col. C. G. Thomson, to retd. pay, on account of ill-health.

Temp. Capt. R. W. Markham (Dental Surg.) relinquishes his commn. on account of ill-health and retains the rank of Capt.

TERRITORIAL ARMY.

Lt.-Col. R. C. Dun, having attained the age limit, is retired and retains his rank, with permission to wear the prescribed uniform.

Lt.-Cols. G. C. E. Simpson and J. H. Ray to be Bt. Cols.

Capt. E. M. Douglas-Morris to be Maj. (Prov.).

Capt. E. M. Jenkins is retired and retains his rank.

Capt. F. E. H. Keogh to be Maj.

Lt. C. Alison resigns his commn. and retains his rank.

2nd Lt. H. E. Suter (late Middlesex Regt.) to be Lt.

Supernumerary for Service with the O.T.C.—A. S. Gough to be Lt. for service with the Medical Unit Univ. of London, O.T.C.

TERRITORIAL ARMY RESERVE OF OFFICERS.

W. M. Robertson (late R.A.) to be Lt.

ROYAL AIR FORCE.

Flight Lt. T. C. St. C. Morton is promoted to the rank of Squadron Leader.

We regret to announce the death in his seventy-sixth year of Lieutenant-General Sir Lancelotte Gubbins, formerly Director-General A.M.S.

Correspondence.

"Audi alteram partem."

IS THERE A SEASONAL PERIODICITY IN SERUM RASHES?

To the Editor of THE LANCET.

SIR,—During my last years in Glasgow a record was kept of the serum rashes which occurred in the diphtheria wards with a view to determine whether certain batches of serum gave rise to an unusually large number of rashes. Three serums were used, Burroughs Wellcome, Parke Davis, and Hoechst, these being given in different wards. After I came to London in 1914 the record was not continued sufficiently long to determine the point for which the recording was originally instituted, but the figures suggest another point which has not, so far as I know, been raised—namely, the seasonal periodicity of serum rashes.

In Table I. the monthly admissions from diphtheria with the number of rashes are given for the years 1913 and 1914 in columns 1 to 4, and the totals in columns 5 and 6. In column 7 the percentage of the rashes occurring in the different months is given, and in column 8 the expected number of rashes if the frequency of rashes were uniform throughout the year. As the figures are small, they have been collected together in the four seasons of the year in Table II.,

TABLE I.

Month.	1913. Cases.	1913. Rashes.	1914. Cases.	1914. Rashes.	Total Cases.	Total Rashes.	Percentage of rashes.	Theoretical number.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Jan... ..	70	12	56	8	126	20	15·9	19·4
Feb... ..	52	14	42	2	94	16	17·1	14·5
March ..	69	12	43	10	112	22	19·6	17·3
April . ..	63	12	28	8	91	20	18·4	14·0
May.. ..	50	15	35	7	85	22	18·6	13·1
June . ..	49	11	27	3	76	14	18·4	11·7
July.. ..	46	6	31	4	77	10	13·0	11·8
Aug. . ..	59	1	21	—	80	1	1·3	12·3
Sept. . ..	77	11	48	5	125	16	12·8	19·3
Oct... ..	70	14	53	4	123	18	14·6	18·9
Nov. . ..	59	11	46	9	105	20	19·1	16·2
Dec... ..	74	4	34	3	108	7	6·5	16·7

TABLE II.

—	Cases.	Rashes.	Percentage of rashes.	Theoretical number.
Jan.—March ..	332	58	17·5	51·5
April—June ..	252	56	22·4	39·0
July–Sept. ..	282	27	9·5	43·5
Oct.–Dec. .	336	45	14·8	52·0

in which the number of cases, the number of rashes, and the expected number of rashes are shown. When the ordinary χ^2 test of Pearson is applied to these figures it is found that χ^2 is equal to 14·8, a divergence which would only occur in three samples out of 1000 on the laws of chance. It is, therefore, strongly suggested that there is a seasonal variation in the frequency of serum rashes. This suggestion can be easily confirmed or refuted by those in charge of large hospitals. It is a point which has great importance in immunity and epidemiology. If this variation really exists it shows that susceptibility as determined by the seasonal changes in the environment may be sufficiently important to modify greatly the progress of an epidemic, so that the epidemic might even, in certain cases, depend more on the physiology of the host than on the infecting power of the organism. This seems the only conclusion, as it is very unlikely that serums stored in a cold chamber will alter in quality to any extent with the seasons of the year.

I hope this short note will result in a sufficient record of observations by those who possess the information, either to prove or disprove it.

I am, Sir, yours faithfully,
JOHN BROWNLEE, M.D., D.Sc.

National Institute for Medical Research, July 20th, 1925.

OATMEAL AND RICKETS.

To the Editor of THE LANCET.

SIR,—With regard to Prof. E. Mellanby's investigations on rickets, referred to in your issues of April 11th and May 23rd, 1925, I suggest that in view of the report by Messrs. Webster and L. Hill on "The Causation and Prevention of Rickets" (*British Medical Journal*, May 23rd, 1925, p. 956) the pro-rachitic effect of oatmeal is in all probability due to the very high percentage (5·9 per cent.) of fat which it contains, and the consequent formation by it in the intestines of insoluble calcium soaps which are excreted unabsorbed in the fæces. Prof. Mellanby himself considers that this pro-rachitic substance is "associated with the fatty acids" as it can be obtained by the saponification of oatmeal with soda and the extraction of the mixture with petrol-ether.

Percentage content of fat in—

Oatmeal*	Maize*	Barley*	Rice*	Wheat*	Wheaten flour*	Germ of wheat†	White bread†
5·9	4·3	1·6	0·3	1·7	0·9	13·1	0·45

* Feeds and Feeding, Henry (Madison, Wis., U.S.A., 1904).
† *Notter and Firth, third edition, pp. 305 and 310.*

From the table given above it will furthermore be seen that the pro-rachitic action of the cereals investigated by Prof. Mellanby (with the exception of wheat) corresponds in a striking manner to the percentage of fat which each contains. Differences in the chemical constitution of these fats may also partly account for the different rachitic values of the cereals in which they occur.

The rachitic action of wheat is somewhat anomalous; wheaten flour which contains 0·9 per cent. of fat is stated to be less rachitic than rice which contains only 0·3 per cent. of fat, yet bread made presumably from such flour, and containing approximately only half the percentage of fat of the original flour—i.e., 0·45 per cent.—was found to be markedly rachitic in action, puppies fed on large amounts of bread developing rickets "most readily"; moreover, the addition to the diet in quantity of the germ of wheaten flour which contains 13 per cent. of fat was found to interfere consistently with the proper calcification of bone. I am, Sir, yours faithfully,

J. W. TOMB.

Mines Board of Health, Asansol, Bengal, India,
June 25th, 1925.

THE DANGER OF INCOMPATIBILITY IN BLOOD TRANSFUSION.

To the Editor of THE LANCET.

SIR,—In treatment by transfusion of blood it is of the greatest importance to select a donor whose red cells are compatible with the serum of the patient. Neglect of such a precaution may entail serious symptoms and even death. Individuals who present themselves at hospitals as prospective donors may state that they belong to, say, group I. or group II. In an emergency such a statement might be accepted as true without further investigation—e.g., where the patient has recently been grouped as a precautionary measure, and if the *ascertained* group of this patient happens to be compatible with the *stated* group of the donor. Under such circumstances the transfusion might be proceeded with forthwith.

This letter is written in order to call attention to the need of not accepting too readily as actually true a statement from a donor with reference to his blood group. An example may make this clear. At a large London hospital it was decided to transfuse a patient. This patient had been grouped while in that hospital as group II. (using B. W. and Co.'s sera). A donor presented himself as available for this patient and stated that he himself was a group II., since his blood had been so grouped a fortnight previously at another large London hospital. As a precautionary measure the blood of the patient and of the donor were put up against each other, and that of the donor was also grouped by means of stock grouping sera (B. W. and Co.'s). It was then found that the donor's blood was (i.) incompatible with that of the patient, and (ii.) belonged to group III.

Had the donor's statement been accepted and the transfusion performed, a fatal result might have occurred. Such an incident suggests that the blood of patient and prospective donor should always be tested against each other. Further, the eye alone should not be depended on for detecting the presence of agglutination, but a strong lens or a microscope should be used, more especially if stock serum is used for grouping. A fatal result has occurred when the eye alone was depended on.

I am, Sir, yours faithfully,
E. L. Hunt,
Bacteriologist, St. George's Hospital, S.W. 1.
July 18th, 1925.

Parliamentary Intelligence.

HOUSE OF COMMONS.

Wednesday, July 15th.

Custard and Egg Powders.

Mr. Walter Baker asked the Minister of Health whether he had received a copy of the report on custard and egg powders which had been presented to the Monmouthshire County Council by the President of the National Analysts' Association; and whether, in view of the fact that these powders were in the main dyed starch and that six eggs to the ton was sufficient to comply with the law, he proposed to take any action.—Sir Kingsley Wood (Parliamentary Secretary to the Ministry of Health) replied: Yes, Sir, my right hon. friend has received a copy of the report. He has no power to lay down any rules as to the composition of custard and egg powders so long as they are not injurious to health.

Sanitary Inspection of Offices.

Colonel Day asked the Home Secretary if he was aware that divers Metropolitan borough councils had made representations suggesting that the sanitary officers should be empowered to inspect offices where wage-earners were employed in the same way as factories and workshops; and would he consider introducing legislation with a view to the protection which was afforded workers in factories and workshops being extended to office workers.—Mr. G. Locker-Lampson (Under Secretary for Home Affairs) replied: No such representations have been made to the Home Office, but I understand that representations to this effect have been received by the Ministry of Health from two of the Metropolitan borough councils. My right hon. friend is afraid he cannot promise any legislation in the direction suggested.

Thursday, July 16th.

Publication of Trevethin Committee Evidence.

Mr. Snell asked the Minister of Health whether Colonel Harrison, a permanent official of the Ministry of Health, was acting under instructions when, at the recent congress of the Royal Institute of Public Health, held at Brighton, he prevented Mr. Wansey Bayly, the hon. secretary of the Society for the Prevention of Venereal Diseases, from quoting evidence which was given before the Trevethin Committee, on the ground that such evidence was confidential; whether this evidence was in fact confidential; and would he undertake that permanent officials of his department, except when acting under his instructions, would not prevent valuable information on important health subjects from being given to the public by competent medical men.—Mr. Neville Chamberlain replied: No instructions in this matter were given to the officer referred to. As regards the second part of the question, I am informed that no pledge was given to witnesses before the Trevethin Committee that their evidence would be regarded as confidential and not published, but the evidence has not been published and was not available to members of the congress, and its chairman ruled that quotations from such evidence would be out of order. I am unable to accept the implication conveyed in the last part of the question.

Uninsured Persons.

Mr. Herbert Williams asked the Minister of Health the number of employed persons in this country not insured under the National Health Insurance Acts.—Mr. Neville Chamberlain replied: No precise information of the kind desired by my hon. friend is available. The number of employed persons aged 12 or over in Great Britain in 1921, according to the census of that year, was 17,403,053, of whom it is estimated that 16,432,000 were over 16, and the estimated number of persons entitled to benefits under the National Health Insurance Acts in the same year was 15,134,000. The latter figure, however, includes some persons who had ceased to be employed, and for this and other reasons it is not directly comparable with the census figure. The balance of 1,298,000, therefore, is only a rough approximation to the number of uninsured employed persons, of whom the principal groups are non-manual workers earning more than £250 a year and persons engaged in excepted employment under the Crown and local authorities and certain statutory companies.

Health Visitor's Salary.

Mr. Gerald Hurst asked the Minister of Health whether he was aware that the Dorset County Council was advertising for a health visitor at a salary of £148 a year, out of which the person appointed had to contribute £7 15*s.* a year towards the superannuation funds and to find her own bicycle; and whether, seeing that this salary, with its yearly increments, was far below the normal scale, he would draw this council's attention to the effect of its action upon the standard of trained nurses likely to be attracted into the public health service.—Mr. Neville Chamberlain replied: Yes, Sir, I am in communication with the county council on the subject.

Optical Treatment for Panel Patients.

Mr. Blundell asked the Minister of Health the difference between optical treatment, which was previously allowed to be given as an additional benefit under the Health Insurance Acts, and ophthalmic treatment, as now allowed.—Mr. Neville Chamberlain replied: The difference is that with the new definition of the benefit it has been possible to make arrangements whereby an insured person is in a position to obtain the advice of an ophthalmic specialist when it is required in the opinion of his medical practitioner. Under the previous definition it was a matter of doubt how far this could be done.

Scarlet Fever from Ice-Cream.

Colonel Day asked the Minister of Health if he was aware of the recent outbreak of scarlet fever in Portsmouth which was traceable to ice-cream made by one manufacturer in whose employ a boy assistant was found to be suffering from the disease; would he, in the interests of public health, make an order that early notice of any illness of the principals or employees of an ice-cream manufactory should be made immediately to the local medical officer of health, and that such notice should become obligatory: and would he consider the advisability of powers being vested in medical officers of health so as to allow the inspection of places where ice-cream was made, and inspection of persons occupied with the manufacture or distribution of ice-cream.—Mr. Neville Chamberlain replied: I have received a copy of the report of the medical officer of health on the outbreak referred to. Provision is already included in the Infectious Disease (Notification) Act and in regulations made by my department for the notification of all cases of any of the principal infectious diseases, and a special provision is included in a Portsmouth local Act requiring manufacturers of and dealers in ice-cream to give notice of the outbreak of any such disease amongst their employees. I doubt whether it would be practicable to enforce a regulation that all cases of illness, however slight, should be notified. With regard to the regulation of places where ice-cream and other food is prepared, many local authorities in addition to the town council of Portsmouth have obtained special local Act powers as to ice-cream.

Friday, July 17th.

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The Summer-Time Bill was considered on report.

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Sir H. Cautley moved an amendment to leave out Subsection (2), the effect of which was to limit the period of Summer Time to that fixed by the existing law—i.e., from 2 o'clock on the Sunday morning following the third Saturday in April to 2 o'clock on the Sunday morning following the third Saturday in September. He said that there was no objection to the proposal to make summer time perpetual; the only point of controversy was as regarded the date on which Summer Time should begin and end. The promoters of the Bill proposed to add about a fortnight at the beginning of the period, and a fortnight or three weeks at the end, making Summer Time finish on the first Saturday in October. Although a very good case could be made that no sufficient time had elapsed since the compromise of 1922, he felt that this was a matter which should, if possible, be amicably settled. The promoter of the Bill had made an offer which he thought generous, though he (Sir H. Cautley) could not accept it as such. This offer was to give up the early part of the period leaving the commencing date as at present, provided the opponents of the Bill would agree to the full period proposed by the Bill at the end—namely, the first Saturday in October. As chairman of the Conservative Agriculture Committee, he wished to say that they would accept that compromise if the House was willing to accept it. (Hon. Members: "No.")

Dr. **Graham Little** said he wished to voice more especially the considered opinion of the medical profession inside and outside the House. Arguments in favour of the Bill seemed so overwhelming and objections so trivial that it was hard to understand why there should be any difficulty about it. This was a measure of far-reaching importance to the health and happiness of the community. It was really one of the most important Bills that had ever been before the House or the country. He would point out the profound significance of medical unanimity on this Bill. The British Medical Association in 1923 passed this resolution: "That the British Medical Association regrets that Summer Time has been curtailed this year, as it is our opinion that Summer Time is beneficial to the health of the nation." In 1921 the Society of Medical Officers of Health passed this resolution: "The Society regards the institution of Summer Time as a great benefit to the community as a whole and can find no sufficient evidence to support the view that it must prove detrimental to the health of infants and young persons." That resolution was confirmed in 1923 and 1924. In connexion with a deputation to the Home Secretary the medical officers of health brought to his notice the resolution. He (Dr. Little) had been connected with the staff of a London hospital for children, and he said without hesitation that the statements made about the difficulty of getting children to sleep was unmitigated "tosh." He urged very strongly that there should be no curtailment of the period of Summer Time.

After further discussion, the closure was moved by the promoter of the Bill (Lieut.-Colonel **Lambert Ward**), and on a division Sir H. **Cautley**'s amendment was rejected by 201 votes to 68.

An amendment in the name of Sir R. **Sanders**, providing that Summer Time should begin on the third Saturday in April instead of the first Saturday as proposed in the Bill, was then agreed to without a division.

Sir H. **Hope** moved a further amendment to fix the last Saturday in September instead of the first Saturday in October as the date of the termination of Summer Time, which after some discussion was defeated by 228 votes to 50. The Bill was then read a third time without a division.

Therapeutic Substances Bill.

Mr. **Neville Chamberlain** (Minister of Health), in moving the second reading of the Therapeutic Substances Bill (which has already passed through the House of Lords), said he believed that it would have the assent of all parties inasmuch as it was no exaggeration to say that the lives of many people would benefit from its early passage into law. It dealt with the standardisation of vaccines, sera, toxins, antitoxins, antigens, and insulin. Practically all civilised countries had an official standardisation for these various substances and as to their purity and potency—France, Germany, Italy, Spain, the United States, Norway, Sweden. Preparations which had failed to pass the test of foreign countries were liable to be imported here. It was proposed that no one should be allowed to manufacture these substances without a licence. A joint committee would be set up consisting of the Minister of Health, the Secretary for Scotland, and the Home Secretary for Northern Ireland, with power to make regulations, to prescribe standards and tests, and from time to time to make conditions. Veterinary substances were excluded except in so far as might be necessary in certain cases.

Major-General Sir R. **Luce** said in carrying this matter one stage further they had behind them medical and scientific opinion. The substances dealt with were medically roughly of three kinds. First there were those extremely difficult chemical compounds, such as salvarsan. The regulations under the Bill would help to make quite certain that these substances did not get into the hands of people who were not qualified to deal with them. He hoped that in committee it would be possible to add to the Advisory Committee a representative of the body of general practitioners who were directly responsible for the use of these substances, possibly nominated by the British Medical Association.

Colonel **Sinclair** said there was a time when the materials were for the most part inorganic, and could be standardised by tests, but they were getting right away from that now to the use of organic extracts, extracts from various glands in human beings or animals as substitutes for ordinary drugs. Obviously, these required to be subjected to physiological or chemical tests, and it was very important that they should be subjected to those tests by recognised authorities. There was, for example, pituitrin, an extract from a small gland in the brain. This was a very potent substance and was used for a variety of purposes. It was quite possible that practitioners using a particular brand of pituitrin might be quite accustomed to its effects, but in an emergency a man might use a brand which had not been adequately standardised and which might be five or ten times as strong as the brand with which he was familiar. In such a case where the intention was to stimulate a wound sufficiently to secure contraction, the effect of a drug of unknown strength might be to cause a rupture of the wound from over-stimulation. Another illustration was furnished by the valuable substance known as insulin. With the wider use of this drug other manufacturers of it would spring up and their products might be of various standards, and there might be preparations altogether too strong for general use. He cordially supported the measure.

Dr. **Vernon Davies** said the Bill was long overdue. He thought, however, that certain alterations would require to be made so that a serum which might be produced abroad, and had certain special properties, should be allowed to be brought in under licence without all the restrictions imposed by the Bill as it stood. He suggested that as many as possible of the Members of the House who were medical men should be placed on the committee to which the Bill was referred.

Mr. A. V. **Alexander**, on behalf of the Labour Party, supported the Bill.

The Bill was read a second time and committed to a committee of the whole House.

Diseases of Animals Bill.

Mr. E. **Wood** (Minister for Agriculture) moved the second reading of the Diseases of Animals Bill, a measure to provide for contributions to be paid out of moneys provided by Parliament as compensation for the slaughter of cattle in England and in Northern Ireland on the ground of disease.

Dr. **Vernon Davies** asked the Minister with regard to the provision as to the slaughter of cattle in case of the existence or suspected existence of tuberculosis what evidence he required? Was it to apply to tuberculosis of the udder with the consequent production of tuberculous milk, and the danger of communicating tuberculosis of the lungs, or was it to apply to tuberculosis of the lungs, and in that case would reliance be placed simply upon the tuberculin test? He also asked the Minister if he would bear in mind the possibility of vaccine treatment for these cattle, an experiment which he believed was just about to be commenced. If it were successful it would probably effect a great saving to the State.

Sir R. **Luce** said that the tubercle was of two kinds. There was a distinct form of tuberculosis which might be absolutely local and not circulating in the blood at all and in no way affecting the eatable parts of the food. The muscle of the body which formed the largest portion of the food was very rarely infected with tubercle at all. There were, of course, cases in which the udder of the cow which was infected and produced tuberculous milk was practically the only part of the cow that was affected, and this class of cow might be the most important class to destroy as they were the most potent source of tubercle to children. But the rest of the carcass apart from the udder might be absolutely innocuous to the community. It would be a great waste that such animals should be completely destroyed.

Lieut.-Colonel **Fremantle** said he preferred to err on the side of safety, but it seemed to him ridiculous that they should go in for a policy of slaughter in these cases when they were on the brink of discoveries which would absolutely eliminate the necessity of slaughter. If meat was properly butchered and marketed there would not be the same danger of meat being unfit for consumption being exposed as food. If they took greater precautions they could allow a great deal of latitude. Although he believed this Bill was necessary and the compensation to be paid was necessary, he maintained that hand in hand with it the Ministry of Health should go forward with the policy of seeing that butchering was carried out on proper principles and of ensuring better veterinary inspection.

Mr. **Wood** said he was satisfied on such inquiries as he had been able to make from the Minister of Health that

This letter is written in order to call attention to the need of not accepting too readily as actually true a statement from a donor with reference to his blood group. An example may make this clear. At a large London hospital it was decided to transfuse a patient. This patient had been grouped while in that hospital as group II. (using B. W. and Co.'s sera). A donor presented himself as available for this patient and stated that he himself was a group II., since his blood had been so grouped a fortnight previously at another large London hospital. As a precautionary measure the blood of the patient and of the donor were put up against each other, and that of the donor was also grouped by means of stock grouping sera (B. W. and Co.'s). It was then found that the donor's blood was (i.) incompatible with that of the patient, and (ii.) belonged to group III.

Had the donor's statement been accepted and the transfusion performed, a fatal result might have occurred. Such an incident suggests that the blood of patient and prospective donor should always be tested against each other. Further, the eye alone should not be depended on for detecting the presence of agglutination, but a strong lens or a microscope should be used, more especially if stock serum is used for grouping. A fatal result has occurred when the eye alone was depended on.

I am, Sir, yours faithfully,
E. L. HUNT,
Bacteriologist, St. George's Hospital, S.W. 1.

July 18th, 1925.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, JULY 15TH.

Custard and Egg Powders.

Mr. **WALTER BAKER** asked the Minister of Health whether he had received a copy of the report on custard and egg powders which had been presented to the Monmouthshire County Council by the President of the National Analysts' Association; and whether, in view of the fact that these powders were in the main dyed starch and that six eggs to the ton was sufficient to comply with the law, he proposed to take any action.—Sir **KINGSLEY WOOD** (Parliamentary Secretary to the Ministry of Health) replied: Yes, Sir, my right hon. friend has received a copy of the report. He has no power to lay down any rules as to the composition of custard and egg powders so long as they are not injurious to health.

Sanitary Inspection of Offices.

Colonel **DAY** asked the Home Secretary if he was aware that divers Metropolitan borough councils had made representations suggesting that the sanitary officers should be empowered to inspect offices where wage-earners were employed in the same way as factories and workshops; and would he consider introducing legislation with a view to the protection which was afforded workers in factories and workshops being extended to office workers.—Mr. **G. LOCKER-LAMPSON** (Under Secretary for Home Affairs) replied: No such representations have been made to the Home Office, but I understand that representations to this effect have been received by the Ministry of Health from two of the Metropolitan borough councils. My right hon. friend is afraid he cannot promise any legislation in the direction suggested.

THURSDAY, JULY 16TH.

Publication of Trevethin Committee Evidence.

Mr. **SNELL** asked the Minister of Health whether Colonel Harrison, a permanent official of the Ministry of Health, was acting under instructions when, at the recent congress of the Royal Institute of Public Health, held at Brighton, he prevented Mr. Wansey Bayly, the hon. secretary of the Society for the Prevention of Venereal Diseases, from quoting evidence which was given before the Trevethin Committee, on the ground that such evidence was confidential; whether this evidence was in fact confidential; and would he undertake that permanent officials of his department, except when acting under his instructions, would not prevent valuable information on important health subjects from being given to the public by competent medical men.—Mr. **NEVILLE CHAMBERLAIN** replied: No instructions in this matter were given to the officer referred to. As regards the second part of the question, I am informed that no pledge was given to witnesses before the Trevethin Committee that their evidence would be regarded as confidential and not published, but the evidence has not been published and was not available to members of the congress, and its chairman ruled that quotations from such evidence would be out of order. I am unable to accept the implication conveyed in the last part of the question.

Uninsured Persons.

Mr. **HERBERT WILLIAMS** asked the Minister of Health the number of employed persons in this country not insured under the National Health Insurance Acts.—Mr. **NEVILLE CHAMBERLAIN** replied: No precise information of the kind desired by my hon. friend is available. The number of employed persons aged 12 or over in Great Britain in 1921, according to the census of that year, was 17,403,053, of whom it is estimated that 16,432,000 were over 16, and the estimated number of persons entitled to benefits under the National Health Insurance Acts in the same year was 15,134,000. The latter figure, however, includes some persons who had ceased to be employed, and for this and other reasons it is not directly comparable with the census figure. The balance of 1,298,000, therefore, is only a rough approximation to the number of uninsured employed persons, of whom the principal groups are non-manual workers earning more than £250 a year and persons engaged in excepted employment under the Crown and local authorities and certain statutory companies.

Health Visitor's Salary.

Mr. **GERALD HURST** asked the Minister of Health whether he was aware that the Dorset County Council was advertising for a health visitor at a salary of £148 a year, out of which the person appointed had to contribute £7 15*s.* a year towards the superannuation funds and to find her own bicycle; and whether, seeing that this salary, with its yearly increments, was far below the normal scale, he would draw this council's attention to the effect of its action upon the standard of trained nurses likely to be attracted into the public health service.—Mr. **NEVILLE CHAMBERLAIN** replied: Yes, Sir, I am in communication with the county council on the subject.

Optical Treatment for Panel Patients.

Mr. **BLUNDELL** asked the Minister of Health the difference between optical treatment, which was previously allowed to be given as an additional benefit under the Health Insurance Acts, and ophthalmic treatment, as now allowed.—Mr. **NEVILLE CHAMBERLAIN** replied: The difference is that with the new definition of the benefit it has been possible to make arrangements whereby an insured person is in a position to obtain the advice of an ophthalmic specialist when it is required in the opinion of his medical practitioner. Under the previous definition it was a matter of doubt how far this could be done.

Scarlet Fever from Ice-Cream.

Colonel **DAY** asked the Minister of Health if he was aware of the recent outbreak of scarlet fever in Portsmouth which was traceable to ice-cream made by one manufacturer in whose employ a boy assistant was found to be suffering from the disease; would he, in the interests of public health, make an order that early notice of any illness of the principals or employees of an ice-cream manufactory should be made immediately to the local medical officer of health, and that such notice should become obligatory; and would he consider the advisability of powers being vested in medical officers of health so as to allow the inspection of places where ice-cream was made, and inspection of persons occupied with the manufacture or distribution of ice-cream.—Mr. **NEVILLE CHAMBERLAIN** replied: I have received a copy of the report of the medical officer of health on the outbreak referred to. Provision is already included in the Infectious Disease (Notification) Act and in regulations made by my department for the notification of all cases of any of the principal infectious diseases, and a special provision is included in a Portsmouth local Act requiring manufacturers of and dealers in ice-cream to give notice of the outbreak of any such disease amongst their employees. I doubt whether it would be practicable to enforce a regulation that all cases of illness, however slight, should be notified. With regard to the regulation of places where ice-cream and other food is prepared, many local authorities in addition to the town council of Portsmouth have obtained special local Act powers as to ice-cream.

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Mr. A. V. Alexander, on behalf of the Labour Party, supported the Bill.

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Mr. Wood said he was satisfied on such inquiries as he had been able to make from the Minister of Health that if the local authorities did their duty, as he had every reason to think they did, there was no meat passing into human consumption that was or might be prejudicial to human health. But if any case could be established that there was a chance of unsound meat being sold, he would be very willing in conjunction with the Minister of Health to take effective means to stop it.

The Bill was read a second time and committed to a committee of the whole House.

Monday, July 20th.

Civil Service Pensions in India.

Sir **Charles Oman** asked the Under Secretary of State for India whether European British subjects serving in the provincial services in India were entitled to retire on a proportionate pension, similar to that recommended by the Lee Report for the superior civil services; and, if not, whether any measures were contemplated for assimilating their position to that of the other civil services in this respect.—Earl **Winterton** replied: Eligibility under the Premature Retirement Rules is limited to members of the All India Services. No general extension of the right to retire under these rules is contemplated, but the Government of India is examining in consultation with local governments the possibility of entertaining applications from individual officers whose circumstances may appear to be of a very exceptional nature.

Burdens of the Milk and Dairies Act.

Mr. **Everard** asked the Minister of Health whether, in view of the burdens which the Milk and Dairies (Consolidation) Act, 1915, was likely to place on the owners and occupiers of agricultural holdings, he would consider the further postponement of the operation of this Act.—Sir **Kingsley Wood** replied: I think my hon. friend is unduly apprehensive as to the probable effect of the Act on the owners and occupiers of agricultural holdings, and in view of its importance as a public health measure my right hon. friend cannot contemplate the introduction of legislation to provide for its further postponement.

Valuation of Approved Societies.

Mr. **Thomas Williams** asked the Minister of Health whether the valuation of all approved societies under the National Health Insurance Act had taken place up to one period; if not, would increased benefits of societies whose valuation was delayed be made retrospective to July, 1925; and the reason why all valuations were not made at the same period and additional benefits made available at the same time for all members.—Sir **Kingsley Wood** replied: For the purposes of the second valuation approved societies and branches were divided into two groups, to be valued respectively as at Dec. 31st, 1922, and Dec. 31st, 1923. For those which have been valued as at the former date the schemes of additional benefits following this valuation operate from July 6th, 1925, and for the other group the scheme will commence in July, 1926. These arrangements were agreed to by the Consultative Council representing approved societies of all types, and were found to be necessary in order to avoid either a considerable increase in the number of the valuers and their staff or alternatively a prolongation of the period elapsing between the date of valuation and the commencement of the additional benefits provided as the result of the valuation.

Coroners' Inquiries in Murder Cases.

Mr. **Dixey** asked the Home Secretary whether he proposed to introduce legislation to remedy defects in coroners' inquiries in murder cases at an early date.—Sir W. **Joynson-Hicks** replied: Yes, Sir.

Further Accommodation for London University.

Dr. **Little** asked the Secretary to the Treasury whether the Senate of the University of London had declined the offer of April, 1920, made by the then President of the Board of Education, of the Bloomsbury site; and whether the Treasury was prepared to entertain alternative proposals for increasing the present accommodation at South Kensington for the central offices of the University.—Mr. W. **Guinness** replied: The answer to the first part of the question is in the affirmative. In reply to the second part the Treasury have already informed the Senate of their willingness to consider any practicable alternative proposal for an increase, without undue cost, of the accommodation for the central offices of the University which the Senate feel able to suggest.

Export of Morphia to China.

Mr. **Scrymgeour** asked the Secretary to the Treasury whether he was aware that packets of morphia, bearing the labels of three different London firms—namely, J. A. Wink and Company, manufacturing chemists, Battersea, P. Nicolaidi, and T. and H. Smith, Limited, 25, Christopher-street—were being exported for the purpose of being smuggled into China; and what steps were being taken in the matter. —Sir W. **Joynson-Hicks** replied: The answer is in the negative. The two first-named firms are not licensed to manufacture or deal in morphine and no licences for the export of morphine are granted them. In the case of the last-named firm, who are manufacturers of morphine, export licences would only be granted if my department is satisfied that the drug is required for medical or scientific purposes, but I think it is only right to say, in view of the fact that the firm's name is mentioned in the question, that I am not aware of any evidence to suggest that they have taken part in or connived at attempts to smuggle the drug into China or elsewhere. The hon. Member is probably aware that it is a common trick of the illicit dealers to put forged labels bearing the names of well-known firms on their wares.

Telephones and Rural Medical Service.

The House went into Committee of Supply on a vote of £32,958,000 for the salaries and expenses of the Post Office, including telegraphs and telephones, Captain **Fitzroy** (Deputy Chairman of Committees) in the chair.

Mr. **Macpherson** said he was speaking for the whole of the Highlands where there were houses and small communities 20, 30, or 40 miles from the nearest doctor, and there was no possibility of any person who might be taken suddenly ill getting a doctor, or near one, without a telephone. The telegraph offices were closed at night and he knew of case after case of extreme hardship because of the lack of extension of the rural telephone system. He was sure the House would agree to any loss that might be caused by the extension of this system.

Sir R. **Hamilton**, the Member for Orkney and Shetland, said that, as the Postmaster-General was aware, a petition had recently been sent to him from the island of Papa Westray which furnished a very good example of the difficulties which people suffered who lived in islands where there was no telephonic communication either with the mainland or the next largest island. Papa Westray was separated from the next largest island by a sound through which ran a strong current and it was dangerous for an open boat to cross at night in the winter. No doctor lived on the island, which had over 150 inhabitants, and it would be of inestimable advantage to them to be able to communicate by telephone with the doctor, not necessarily that the doctor should come across, but in order that he might have a statement of the case which would enable him to send over the telephone instructions as to how the patient should be treated.

Major **Price** said that in a village in North Pembrokeshire the other day two accidents happened within an hour or two. The nearest doctor was eight miles away. The telephone wire was down, as it had been very often. The only means of communication was by way of pony and trap. The patient had to be sent to the county hospital, which was 15 miles away, and there was a lapse of 11 or 12 hours before he could be got there, all of which might have been avoided if the telephone had been available. He urged the Postmaster-General to develop the telephone system so that it might be useful to the whole community, and specially to the rural community.

Mr. **Buchanan** urged the necessity for telephone kiosks, conveniently situated near the homes of the people so that they could use them, say, in connexion with a maternity case.

Lieut.-Colonel **Heneage** joined in the plea for increased telephone facilities and said in many villages at the present time the only way of summoning a doctor was by sending a man on a bicycle for him, with the result that sometimes the doctor was hours late in arriving.

Sir W. **Mitchell-Thomson** (Postmaster-General) said he appreciated as much as any hon. Member the importance of developing rural telephones. New rural exchanges were being opened at the rate of something like 20 per month. But he asked hon. Members not to press him too hard, as he had to consider the question of finance. Until the science of wireless telephony as opposed to wireless telegraphy had developed further he did not think it was practicable to instal wireless communication between the islands. So long as they were confined to wireless telegraphy the cost was out of the question.

Tuesday, July 21st.

Medical Treatment of Tuberculous Men.

Mr. **Gillett** asked the Minister of Pensions if instructions had been sent to tuberculosis officers to intimate to their ex-service patients who had been under treatment for periods of from three to six years to get light work; and whether, seeing that some patients who had been so informed were advanced cases of tuberculosis and that with so many unemployed it was impossible for such ex-Service men to secure the light work ordered, he would withdraw these instructions.—Lieut.-Colonel G. F. **Stanley** (Parliamentary Secretary to the Ministry of Pensions) replied: It would not be competent for the Ministry of Pensions to issue instructions to tuberculosis officers regarding the medical treatment of cases under their care, and no such instructions have been issued.

Sanatorium Treatment for Pensioners.

MR. LAWSON asked the Minister of Pensions if he would say what was the number of pensioners in receipt of pension at 100 per cent. following a course of sanatorium treatment; and whether he would consider the desirability of granting the special rate of 100 per cent. to all men discharged from sanatoria irrespective of its being a first, second, or third course of sanatorium treatment.—Lieut.-Colonel G. F. STANLEY replied: About 10,000 men are in receipt of pension at the rate of 100 per cent. in respect of total disablement due to pulmonary tuberculosis; but I regret that I am unable to say how many of these fall under the special arrangement for men who have completed a course of sanatorium treatment. With regard to the second part of the question, my right hon. friend is in agreement with the reply given by his predecessor to a similar question on July 31st, 1921.

Medical News.

THE CONTRIBUTION OF OPTICAL INSTRUMENT MAKERS TO MEDICAL SCIENCE.—In his presidential address, delivered on July 23rd at a luncheon of the British Optical Instrument Manufacturers Association, Mr. F. Twyman, F.R.S., welcomed the most representative gathering of the optical instrument industry which has ever taken place. He dealt in succession with the contributions of this industry to various important sections of national life. Speaking of developments in the microscope, Mr. Twyman said that the series of apochromatic objectives now provided in this country are superior to any made abroad, adding that many who are doing exacting microscopic work are discarding foreign lenses for British. The important British work on filter-passing micro-organisms demanded, he said, accuracy of focusing and rigidity which was not provided by any existing stand, and such a stand had now been evolved in this country. Improvements in illuminating systems were, if anything, more important than those in objectives. The evolution of the dark-ground illuminator, permitting of the use of higher powers, had resulted almost immediately in the acquisition of new knowledge of disease. He mentioned the combined illuminator used in Mr. J. E. Barnard's work in which a high aperture dark-ground illuminator is mounted concentrically with an encircling quartz condenser. While the former secured visibility and was used to locate the micro-organisms, the latter transmitted ultra-violet light and secured an image on the photographic plate. Mr. Twyman pointed out how essential to medical research is an efficient optical industry. British investigators knew the limitations of their apparatus and just what their requirements were. They laid their knowledge and requirements before the instrument-maker and in a short time were supplied with the instruments that enabled them to go forward and obtain results. Most of the instrumental essentials for the recent work of Dr. Gye and Mr. Barnard were, he was glad to say, British, like the work itself.

BEIT FELLOWSHIPS.—At a recent meeting of the trustees of the Beit Memorial Fellowships for Medical Research the appointment of Mr. Edward Wood, M.P., as a trustee was recorded on the minutes. The annual report, read by the hon. secretary, Sir James K. Fowler, notes the appointment of Dr. David Keilin, the first senior fellow to be University Lecturer on Parasitology at Cambridge. Dr. V. D. Allison, while holding a junior fellowship, was appointed Lecturer on Bacteriology at Queen's University, Belfast; Dr. Robert Keith Cannan and Dr. Ethel M. Luce, at the termination of their junior fellowships, were elected to Rockefeller Medical Fellowships tenable in the United States; Mr. Frank Cook, a junior fellow, has been appointed assistant obstetric surgeon to Guy's Hospital; and Dr. John Maurice Campbell, a junior fellow, has been awarded the Radcliffe prize at Oxford. There is still urgent need, the report states, for additional lectureships, assistant professorships, and professorships, so that a future may be in prospect for those who have gone far to commit themselves to a life to be spent in teaching and research.

The following are the names of candidates elected to fellowships, together with an indication of their proposed research:—

Senior Fellowship.—Herbert Davenport Kay.

Fourth Year Fellowships.—Ernest Basil Verney and John Lewis Rosedale.

Junior Fellowships.—George Hardy Eagles, M.D. Toronto. The specific agglutinogenic properties of streptococcus scarlatinæ and the possible further specific grouping of hæmolytic streptococci occurring in other pathological processes.

Dorothy Mary Needham. (1) A study of the oxidation-reduction potential of various organisms and tissues—e.g., (a) leucocytes in health and disease; (b) comparison of cancer, normal, and embryonic tissue; (c) cells under the influence of ultra-violet light and sunlight—using the method of micro-injection of oxidation-reduction potential indicators. (2) A continuation of the study of the pancreatic factor inhibitory to lactic acid formation in muscle, the nature of its effect upon carbohydrate metabolism, and its relation to insulin.

Ernest Noble Chamberlain, M.B., Ch.B. (Hons.) Liverp., M.D. Liverp., M.R.C.P. Lond. (1) Effects of the anterior lobe of the pituitary gland on the liver and other organs of the body; (2) investigation of the relation of pituitary and other ductless glands to cholesterol metabolism, including the variations found in the various pathological syndromes of endocrine disorders; (3) studies in the inter-relations of the various ductless glands by experimental production of over-dosage with one member of the series.

Eric Newmarch Allott, M.B., B.Ch. Oxf. The Growth of Bacteria on Artificial Media. To attempt to grow bacteria on purely artificial media, consisting of simple compounds, such as simple sugars, amino-acids, and salts, with a view to studying (a) what compounds or types of compound are indispensable for bacterial growth; (b) the variations in the characters of the bacteria according to the medium in which they are grown.

Francis Charles Kelly, B.Sc. Aberd. To continue research on iodine metabolism, especially the iodine requirements of animals and the influence on nutrition of diets deficient in iodine: (1) Feeding experiments on small animals with varying amounts of iodine added to the diet; (2) estimation of the iodine content of thyroid glands of animals fed on different diets; (3) determination by balance experiments of the influence of iodine on mineral metabolism, and especially the protein metabolism.

Derek Ernest Denny-Brown, B.M., B.Ch. New Zealand. To investigate spastic paralyses, decerebrate rigidity, and allied conditions, more particularly with regard to the influence of the sympathetic nervous system upon them.

Benjamin Stanley Platt, M.Sc. Leeds. The Relationship Existing Between the Formation of Peroxides by Bacteria and Certain of the Phenomena of Immunity. (a) An attempt to determine whether some constituents of bacteriological media promote peroxide formation by bacteria more than others, and, if such exist, whether they have any influence on the course of pneumococcal infections in animals; (b) a study of the interactions between bacterial peroxides and leucocytic oxidases as they affect the life of bacteria.

ROYAL SOCIETY OF MEDICINE.—The annual report of Council presented to the general meeting of Fellows on July 1st shows a membership of over 4000, being 400 more than in the first year of war. Over 3000 books have been added each year to the library, which was frequented in the last 12 months by 20,000 readers. In 1914 9000 books were borrowed, and last year 13,000. At the annual meeting the treasurers reported the finances to be in a strong position. A committee is at present engaged in studying further developments in the printing and publishing of the Proceedings.

THE House of the Royal Society of Medicine will be closed during the whole of August for cleaning and repairs.

ACCUMULATED FUNDS OF APPROVED SOCIETIES: DEPUTATION TO THE MINISTER OF HEALTH.—Mr. Neville Chamberlain received on July 20th a deputation representing, amongst others, the following bodies: Hearts of Oak Benefit Society, National Association of Employees' Approved Society, National Conference of Friendly Societies, National Conference of Industrial Assurance Approved Societies, National Deposit Friendly Society, National Union of Railwaymen Approved Society, Rural Workers Approved Society.

Mr. Meller, M.P., Mr. Oakley, M.P., and Mr. Blundell, M.P., and Sir Thomas Neill, who spoke for the approved societies, said that suggestions had been made in the press and in Parliament that part of the burden imposed on industry by the Contributory Pensions Bill could and should be removed either by taking money from the accumulated funds of approved societies or by lowering the contributions. The argument was that the size of the funds that had accumulated indicated that the difference between the income and expenditure was far larger than was required by the needs of the case, and that the insured person would readily agree to any reduction in the benefits that he might receive in exchange for a lessening of the contribution which he, in common with his employer, must pay. Their answer to this argument was that the funds that had accumulated were held in trust for the insured person, by whom, or on whose behalf, they had been paid, and that the possibility of paying additional benefits which had been provided for in the original Act and on the basis of which a number of societies had been formed for those occupations in which sickness incidence was small was a fundamental part of the scheme. They were anxious to receive an assurance from the Minister that he had not been shaken by the widespread attempt that was being made to tamper with the funds of approved societies.

The Minister, in reply, promised to deal with this matter on the third reading. Until what they described as "the attack" had been developed, he could not predict to them what line he would have to take in meeting it, but he could inform them that he was well aware of certain fundamental considerations, such as that the fund from which it was proposed to draw money for the relief of industry was not an aggregate fund, but merely the sum of a number of separate funds belonging to different approved societies. Nor, on the other hand, had those who were suggesting either of these methods of relief indicated what the starting-point was to be—whether the additional benefits given as a result of the first valuation or as a result of the second valuation were to be treated as inviolable. The only assurance that in the nature of things it was possible for him to give them at the present moment was that he would be a party to nothing which would endanger the solvency of societies or involve breach of pledges given by successive Governments.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—At the thirty-eighth meeting of the Commission, besides those already mentioned, evidence was given by the Joint Tuberculosis Council, represented by Sir Henry Gauvain and Dr. G. Lissant Cox, on the need for amendment in the treatment and cash benefits of insured persons suffering from tuberculosis. Mr. Walter Farris was examined on his scheme for fundamental alterations in the financial structure of the scheme.—The thirty-ninth meeting of the Commission was held at the Home Office, Whitehall, on July 14th, Prof. Alexander Gray in the chair. Evidence dealing with the constitution of the Central Fund, the methods of audit of approved society accounts, the accumulation of cash benefits in respect of persons in institutions, and the provision of dental benefit was submitted by Mr. William McLean on behalf of the Grand United Order of Oddfellows Friendly Society. The United Patriots National Benefit Society, represented by Mr. J. M. Roberts, gave evidence recommending the provision of curative treatment at the British spas as a benefit for members of approved societies suffering from rheumatic diseases, this evidence being supported by Dr. Fortescue Fox, past President of the International Society of Medical Hydrology, and Mr. John Hatton, secretary of the British Spas Federation. Thereafter Miss M. A. Hilbery gave evidence as to delays and irregularities in payments of cash benefits.—The fortieth meeting of the Commission was held at the same place on July 16th, Lord Lawrence of Kingsgate in the chair. Evidence was given by Mr. H. Lesser, on behalf of the London Insurance Committee, as to the powers and duties of the Committee and methods of improving the medical benefit service. Mrs. Hubback, representing the National Union of Societies for Equal Citizenship, put forward proposals for improving the position of women under the Act. The Standing Joint Committee of Industrial Women's Organisations, represented by Dr. Marion Phillips, submitted recommendations for extending medical benefit to dependants and widening its scope, for increasing the cash benefits, and for pooling the surpluses of approved societies. Thereafter Mr. W. A. Middleton, acting chief auditor of the National Insurance Audit Department, described the detailed arrangements for audit of the accounts of approved societies and insurance committees.

CANADIAN MEDICAL ASSOCIATION: ANNUAL MEETING AT REGINA.—Delegates from the British, American, and Chinese medical associations were present at the fifty-sixth annual meeting of the Canadian Medical Association held in Regina, Saskatchewan, under the presidency of Dr. David Low (Regina) in the first week of July. A grant of $30,000 (£6000) offered by the Sun Life Assurance Company of Canada to carry on post-graduate extension lecture courses throughout the Dominion was accepted by the Association. The organisation will be directed mainly towards helping the medical man in rural areas to keep abreast of medical advance of medicine. The report on medical education submitted by Dr. D. J. McLean (Winnipeg) emphasised the need for turning out practitioners qualified to render public service, rather than purely scientific men. Dr. T. C. Routley (Toronto), secretary of the Association, announced the opening of negotiations with the Royal College of Surgeons of England for the admission of Canadian medical graduates to membership of the College on easier terms. Dr. M. M. Seymour (deputy Minister of Health for Saskatchewan) foretold the time when communicable diseases would cease to menace mankind. Dr. Forest Leader (Victoria, B.C.) was chosen as president-elect for 1926–27, Dr. A. Primrose (Toronto) as chairman of Council, and Dr. A. T. Bazin (Montreal) as treasurer. Dr. Routley continues to hold office as general secretary. The executive committee is constituted as follows: Dr. David Low, Dr. Forest Leader, Dr. A. T. Bazin, Dr. T. C. Routley, Dr. W. G. Reilly (Montreal), Dr. G. S. Cameron (Peterboro, Ont.), Dr. T. Glenn Hamilton (Winnipeg), Dr. C. F. Martin (Montreal), Dr. J. G. Fitzgerald (Toronto), Dr. G. S. Young (Toronto), Dr. J. S. McEachern (Calgary). Dr. G. S. Seymour (Regina), Dr. F. N. G. Starr (Toronto), and Dr. S. L. Walker (Halifax). Dr. A. D. Blackader (Montreal) was reappointed editor of the *Canadian Medical Association Journal*, with Dr. Bazin as managing editor. Dr. W. H. McGuffin (Calgary) was chosen as president of the Canadian Radiology Society, and Dr. G. C. Brooks (Montreal) continues to act as secretary-treasurer. Victoria, British Columbia, will be the place of meeting in 1926, and the Canadian Radiology Society will meet at the same time and place.

THE King has appointed Sir Thomas J. Horder, Bart., a Knight Commander of the Royal Victorian Order.

CLIMATOLOGICAL CONGRESS AT DAVOS.—The Congress organised by the Davos Institute for Alpine Physiology and Tuberculosis Research will be held, as already announced, from August 16th to 22nd. The programme includes nearly 50 papers and demonstrations distributed among four sections: General, physical-meteorological, biological, and clinical. Dr. Carrière, head of the Swiss Public Health Department, will open the Congress with an address on the Relationship between the Various Climates of Switzerland and the Health of the Population. In the same section Dr. R. King Brown (London) will speak on the Climate of a Big City, and other speakers will include Prof. Dietrich (Berlin), Prof. Hellpach (Karlsruhe), Prof. Levi (Rome). and Dr. Wehrli (Zurich). In the clinical section Dr. Leonard Hill and Sir Henry Gauvain are announced to speak. Membership cards at a cost of 20 (Swiss) francs may be obtained on application at the Davos Research Institute, members being entitled to reduced railway fares and special terms for hotel accommodation.

AMSTERDAM INDUSTRIAL CONGRESS.—The Fourth International Medical Congress of Industrial Accidents and Diseases will take place in Amsterdam from Sept. 5th to 12th next, opening at 3 P.M. on Saturday, Sept. 5th, when the national exhibition will be inaugurated. On Monday, at 2.30 P.M., the ceremonial opening of the Congress takes place, followed by a banquet to the official representatives. At the plenary session on Tuesday morning, Prof. B. Cuneo (France), Dr. L. Teleky (Germany), Prof. J. Glaister (England), Dr. L. Heijermans (Holland), and Dr. F. Zollinger (Switzerland) will take part. Afterwards the Congress breaks up into collateral sections of industrial accident and industrial disease, in each of which papers will be read covering a wide range of subjects. At the plenary session to be held at The Hague on Saturday, Sept. 12th, Dr. Allers (Austria), Sir Thomas Oliver (England), Prof. L. Devoto (Italy), and Dr. A. Oller (Spain) will take part. The programme and further information may be obtained in this country from Dr. H. Menko, hon. sec. to the British Executive Committee, at 2, Grosvenor-gardens, London, N.W. 2.

THE LATE DR. G. S. SIMS.—George Samuel Sims, who died recently at Derby at the age of 70, qualified in 1884 with the L.S.A., having been educated at Owens College, Manchester, and at St. Thomas's Hospital, London. Four years later he obtained the M.R.C.S. and L.R.C.P. Lond. and graduated M.D. Durh. in 1900. For more than 30 years he was district medical officer to the Derby Board of Guardians and for nearly as many medical officer to the Liversage Charity. He was at one time President of the Derby Medical Society. At the outbreak of war, in spite of his age, he volunteered for service with the R.A.M.C., and did valuable work both at home and abroad. His surviving sons, Dr. G. H. Sims and Dr. T. H. Sims, both follow their father's profession.

FACULTY OF MEDICINE, VIENNA.—The Dean of Vienna University announces the following forthcoming courses: (1) Eighteenth International Advanced Course for Practitioners, Sept. 14th to 26th inclusive, covering the most important medical problems of to-day. (2) Practical Training Course for Students, Sept. 25th to Oct. 2nd inclusive. Applicants should send names, titles, and addresses in writing to Dr. A. Kronfeld, Sekretär der Internationalen Fortbildungskursus, Wien IX., Porzellangasse 22. (3) International Advanced Course in Dermatology and Syphilis, Nov. 23rd to Dec. 6th. Apply Dr. Kronfeld. (4) Special General Courses and Group Courses every month. Apply Das Bureau der Wiener Arztekurse, Wien VIII., Schlösselgasse 22. The Society for the Study of Digestive and Metabolic Diseases are also meeting from Sept. 30th to Oct. 3rd. Inquiries to Prof. Dr. Fuld, Berlin W. 15, or to Dozent Dr. Lugen, Wien XI., Alserstrasse 4 (Klinik Ortner).

MANCHESTER BABIES' HOSPITAL.—The medical report for 1924 shows that 223 children were in the hospital during the year, the average period spent there being 54 days for all cases and 30·7 days for fatal cases. There were 36 deaths, of which 16 were due to pneumonia, 11 to dyspepsia, 3 to tuberculosis, 2 each to status lymphaticus and congenital heart disease, and 1 each to cerebral abscess and congenital syphilis. Two deaths took place within 48 hours of admission. Research on the use of oxygen administration in the treatment of atrophic infants has been continued, the results having warranted the provision of a third special cot. The new buildings were practically finished when the report was written. The new wards include sun parlours and verandahs opening into the garden on the south side. Not only can 80 babies be taken, instead of 50 as hitherto, but the X ray, massage, and mercury-vapour lamp departments, which have been handicapped by seriously cramped conditions, will now be able to work in their own special quarters, to the benefit of both patients and staff.

The Salvation Army Mothers' Hospital Extension.—The new buildings of this institution at Lower Clapton-road were opened by the Queen on July 16th, among those presented to Her Majesty being Lady Barrett, who is head of the medical staff. The hospital additions include two new bungalow blocks, which increase the accommodation from 60 to 90 beds. These blocks are models of sunny spaciousness, the approaches and adjuncts being built with an eye to the mothers' comfort and convenience and to the staff's fullest efficiency. Another important new feature is a specially designed and fully-equipped operating theatre—a feature the hospital has hitherto lacked and has greatly needed. Other departments of the hospital have been renovated and re-decorated, the total cost being £17,500.

Professional and Business Women's Hospital League.—The annual report for the year ending Dec. 31st, 1924, states that 518 new members (50 of them students) joined during the year, making the total number 2008. The schedule of sickness and disease recognised by the League includes all cases which a general hospital will admit, and excludes mental illness, infectious disease, rest cures, and cases not sufficiently serious to be admitted to hospital. The ordinary benefits available are: 1. Four weeks' treatment in a hospital specified by the committee, either in London or in the provinces. 2. Free consultation with a gynæcologist, should this be necessary. 3. A reduction of cost on surgical instruments. Grants have been given for massage, X ray treatment, surgical splints, and help towards the cost of instruments. Up to the present it has been found impossible to give grants for specialists' fees. The subscription is now *7s. 6d.* a year, and every member receives a numbered membership card. During the year 82 members underwent treatment at hospitals in London, 11 in the provinces; grants were made to 42 others. Fourteen applications were refused, 7 were considered ineligible, and 11 were withdrawn. The Secretary of the League is Miss P. Strachey, at 36–37, Marsham-street, Westminster, S.W. 1.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.

MONDAY, July 27th, to FRIDAY, July 31st.—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street, W. A Special Course of Lectures, *including clinical* demonstrations upon selected cases, will be given at the Hospital at 5 P.M. as follows: Monday, Dr. Carnegie Dickson on The Pathology of the Cerebro-Spinal Fluid; Tuesday, Dr. Hildred Carlill on Lesions of the Cranial Nerves; Wednesday, Mr. Lindsay Rea on Ocular Manifestations of *Nervous Disease; Thursday, The* Registrar on Common Neuroses: and Friday, Dr. C. Worster-Drought on Clinical Forms of Neuro-syphilis.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, July 27th.—11 A.M., Surgical *Registrar: Surgical* Wards. 12 noon, Mr. Simmonds: Applied Anatomy. 3 P.M., Mr. Donald Armour: Operations.

TUESDAY.—10 A.M., Mr. Steadman: Dental Dept. 2 P.M., Mr. Addison: Operations. 3 P.M., Dr. Pritchard: Medical Wards.

WEDNESDAY.—11 A.M., Medical Registrar: *Medical Wards.* 12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Owen: Medical Out-*patients.*

THURSDAY.—11 A.M., Sir Henry Simson: *Gynæcological* Wards. 12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Bishop Harman: Eye Dept.

FRIDAY.—10.30 A.M., Dr. Dowling: Skin *Dept.* 12 noon, *Dr.* Pritchard: Modern Methods in Medicine. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.

SATURDAY, August 1st.—10 A.M., Dr. Saunders: Medical Diseases *of* Children. 10 A.M., Mr. Banks-Davis: Operations of the Throat, Nose, and Ear.

Daily, 10 A.M. to 5 P.M., Saturdays, 10 *A.M. to* 1 P.M., In-patients, Out-patients, Operations, Special Departments.

Appointments.

HAMILTON, W., M.B., Ch.B. Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Loanhead District of the County of Edinburgh.

Queen *Charlotte's Maternity* Hospital, Marylebone-road: LANKESTER, A. L., M.R.C.S., L.R.C.P. Lond., Assistant Resident Medical Officer.

Royal Chest Hospital, City-road, E.C.: GREENSLADE, C. M., M.B., Ch.B. N.Z., F.R.C.S., WILLIAMS, H. LESTER, M.B., Ch.B., F.R.C.S., Assistant Surgical Officers; and KERLEY, PETER, M.B., Radiologist.

Vacancies.

For further information refer to the advertisement columns.

Barbados General Hospital.—Sen. Res. Surg. £330. Jun. Res. Surg. £300.

Barnsley and Wakefield Joint Sanatorium.—Asst. Tub. O., &c. £450.

Birmingham Cripples' Union and Royal Orthopædic and Spinal Hospital.—Jun. H.S. £150.

Bournemouth, Royal Victoria & West Hants Hospital.—Hon. Med. Clin. Asst., Surg. Clin. Asst., Ophth. Clin. Asst. Also Hon. Asst. S. and Hon. Asst. P.

Brighton, Lady Chichester Hospital.—H.P.

Brighton, New Sussex Hospital.—Temporary Dental Surgeon.

Bristol, Cossham Memorial Hospital, Kingswood.—Res. M.O. £150.

Cairo, School of Dental Surgery.—Supt. and Lecturer in Metallurgy, &c. £E.600. Lecturer in Surg. £E.480. Asst. Lecturer in Surgery. £E.360. Lecturer in Mechanics. £E.480.

Cumberland and Westmorland Mental Hospital, Carlisle.—Jun. Asst. M.O. £350.

Hertford County Sanatorium, Ware Park, near Ware.—Asst. M.O. £350.

Hong Kong University.—Reader in Biology. £600.

Liverpool County Borough.—Jun. Asst. Sch. M.O. £600.

Liverpool, Royal Children's Hospital.—Two Res. H.P.'s and Two Res. H.S.'s. Each at rate of £80.

Liverpool University.—Professor of Entomology. £800.

London Hospital, E.—First Asst. and Reg. £200 for six months.

London School of Hygiene and Tropical Medicine.—Lecturer on Tropical Hygiene. 200 guineas.

Manchester, Ancoats Hospital.—Pathological Registrar. £100.

Manchester Royal Infirmary.—Second Surg. Reg. £150.

Ministry of Pensions.—Part-time Surgical Supervisor of Orthopædic Clinics. £500.

Mount Vernon Hospital, Northwood, Middlesex.—Surg. Laryngologist.

Pietermaritzburg, Grey's Hospital.—Male H.S. £500.

Rochester, St. Bartholomew's Hospital.—H.P. at rate of £200.

Royal Chest Hospital, City-road, E.C.—Asst. Tub. O. £550.

Royal Northern Hospital, Holloway, N.—Anæsth. £10 10s.

Salford Royal Hospital.—Radiologist. £300.

Samaritan Free Hospital for Women.—H.S. at rate of £100.

Staffordshire Mental Hospital, Cheddleton, Leek.—Jun. Asst. M.O. £350.

Sudan Government, Wellcome Tropical Research Labs., Khartoum.—Asst. Bacteriologist. £720.

Willesden General Hospital.—Hon. Anæsth.

Worcester General Infirmary.—Jun. Res. M.O. £120.

Births, Marriages, and Deaths.

BIRTHS.

ANDREWS.—On July 10th, at 152, Harley-street, W. 1, to Helen, wife of J. Alban Andrews, M.C., F.R.C.S.—a daughter.

DICKSON.—On July 21st, the wife of W. Muir Dickson, F.R.C.S., of a daughter.

LOCK.—On July 17th, at Glyngarth, Soho-hill, Birmingham, the wife of J. Lewis Lock, M.A., M.B., of a daughter.

MOODIE.—On July 15th, the wife of Dr. William Moodie, of Horton, Epsom, of a daughter.

NORMAN SMITH.—At "Stone Field" Maternity Nursing Home, Kidbrook Grove, Blackheath, on July 15th, *to Molly* (née Terraine), wife of Dr. Norman F. Smith (Khartoum), the gift of a daughter.

RAVEN.—On July 11th, at Victoria-parade, Broadstairs, the wife of Martin O. Raven, M.D., of a daughter.

WATSON.—On July 18th, at Del Rey House, Cheltenham, the wife of Lieut.-Colonel C. H. Watson, D.S.O., I.M.S. *(retd.)*, of a daughter.

MARRIAGES.

STUTTAFORD—ROYDEN.—On July 16th, at the Parish Church, Flegg Burgh, Norfolk, W. J. E. Stuttaford, *M.C.*, M.R.C.S., L.R.C.P., to Marjorie, only daughter *of Dr.* and Mrs. Royden, of Flegg Burgh.

WAKELEY—NICHOLSON-SMITH.—On July 21st, at St. Margaret's Church, Lee, S.E., Cecil P. G. Wakeley, F.R.C.S., of 5, Devonshire-place, W., to Elizabeth Muriel, *only* daughter of Mr. and Mrs. James Nicholson-Smith, of Blackheath.

DEATHS.

BEDDARD.—On July 14th, Frank Evers Beddard, D.Sc., F.R.S.

DUNCAN.—On July 15th, at Margate, Horace Duncan, B.A. Camb., M.B. Lond., son of the late *James Duncan, M.D.*, of Henrietta-street, Covent Garden, London, in his 64th year.

EVANS.—On July 18th, at Danygraig, Burry Port, Surg.-Lieut.-Colonel Evan Evans, T.D., M.B., F.R.C.S., D.P.H., of Llanelly, in his 72nd year.

FRY.—On July 14th, at his residence, Old Town, Clapham Common, John Marchant Fry, L.R.C.P. Lond., in his 62nd year.

HENDRIKS.—On July 17th, at Bicester, Cecil Morgan Hendriks, O.B.E., M.B., M.R.C.S., in his 70th year.

WILLIAMS.—On July 13th, at Colwyn Bay, W. M. Venables Williams, L.R.C.P., L.R.C.S., D.P.H., J.P., in his 68th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts

INFECTION BY BOOKS.

By J. E. McCartney, M.D., D.Sc. Edin.,
DIRECTOR OF RESEARCH AND PATHOLOGICAL SERVICES, METROPOLITAN ASYLUMS BOARD.

The method of spread of infectious disease is a subject of great importance, particularly from the point of view of prevention, and in order to ensure that an epidemic shall be properly controlled all the various methods of its dissemination must be considered.

Owing to the lack of knowledge of the biology of the causal agents of certain infectious diseases it is very difficult, if not impossible in many cases, to state whether the infective agent is present in an active state or not. It is obvious that the answer to such a question is of supreme importance, for if the virus is active then vigorous steps must be taken for its destruction, whereas if the causal agent of the disease is inactive then there is no dnger of the infection spreading.

The Problem.

A possible means of spread of infectious disease is by means of books—particularly library books. Briefly, the problem is as follows: A book has been borrowed from a public library and is taken to a house in which infectious disease is either present at the time or occurs while the book is there. The book, which may or may not be read by the patient, is returned to the library and is almost immediately taken out by another person to a house in which some of the inmates are susceptible. Is there a danger of infectious disease being carried from the one house to the other by means of the book? If books do carry infection then the possibility of spread of infectious disease may be great owing to the wide circulation which a public library enjoys. The precautions necessary for the prevention of such a means of spread must be thorough, involving the expenditure of much time and money. If, on the other hand, the chances of spread of infection are minimal, then the energies of those responsible for the control of disease can be expended more profitably in closing the known avenues of spread.

Various Possible Infections.

Of the infectious diseases *small-pox* must be considered separately owing to its virulent nature. Some observers have recorded instances where it would appear that small-pox has been conveyed by books and by letters, but this method of spread has not been conclusively proved. Although the virus of small-pox is comparatively short-lived outside the body, yet the amount of virulent material necessary for infection is extremely small, and while the chances of disseminating small-pox by means of books are not great, yet we must assume, in the absence of definite information, that there is always the possibility of such spread. This information could only be obtained by extended human experiment, which is, of course, out of the question.

Owing to the virulent nature of the disease and the dire consequences of its spread, no risks whatever can be taken with small-pox, and in the light of our present knowledge all books, letters, papers, &c., must be considered as potential means of conveyance of small-pox infection and should be rigorously destroyed.

With regard to exanthematous diseases such as *measles*, *rubella*, and *chicken-pox*, our knowledge of the nature of the infective agents is extremely scanty. The biology of these viruses is unknown and their period of survival outside the body can only be conjectured. It is not possible to transmit any of these diseases to animals, and in consequence experimental work is out of the question, and precise facts as to infectivity could only be obtained by carefully controlled investigations on the human subject. It is known, however, from clinical observations that these viruses are extremely short-lived outside the body, and their period of infectivity under these conditions is probably only a few hours. It is also known that the virus, in the case of measles and rubella, is present in the naso-pharyngeal secretions, and in order definitely to infect a book, the patient would have to be in the early stages of the disease and to cough or sneeze thoroughly into its pages. From our available knowledge it would appear that even if the book were infected with virulent material, the viruses would die out in a comparatively small time, and that the chance of spread of infection by this means is remote. No definite evidence has been produced, as far as we know, that measles, rubella, or chicken-pox has been transmitted through the agency of books.

Scarlet fever, though an infectious disease, is nothing like so infectious as measles. The naso-pharyngeal secretion is infective, and the causal agent may be disseminated by coughing and sneezing. If the ætiological agent of the disease is as recent work would indicate, the streptococcus, then it is known that this organism will survive drying only for a short time, and even if found viable outside the body, may not necessarily be virulent.

Investigations could be made on the period of survival of the streptococcus in infected books, and the length of time the organism is viable under the conditions under discussion could be ascertained.

In *diphtheria* the causal organism is known and its period of survival outside the body has been determined. Dried diphtheria membrane kept in the absence of light has been found to contain living virulent bacilli after several months, but that the organism would survive for that length of time under the usual conditions in which a book becomes infective is doubtful. The fact remains that books have not been definitely proved as a source of transmission of diphtheria, and if transmission does occur it is difficult to prove.

Limits of Our Knowledge.

There are numerous methods of spread of infectious disease, many of which we do not know, and a possible means is not necessarily the probable one.

The question of spread of infection by books was recently discussed by the Society of Medical Officers of Health.[1] The general opinion was that there was no knowledge that infection was conveyed through books, but in the light of uncertainty definite measures should still be taken to prevent the possibility of spread of infection.

This summary indicates the view that must be taken in consideration of the meagre knowledge we possess regarding the spread of infectious disease. Apart from small-pox, the chance of infection by books is extremely small, but the medical officer should take no risks and should deal with the books as if they were infectious. In conclusion, it may be stated that it is extremely improbable that library books play an active part in the dissemination of infectious disease.

HEALTH AND HOMECROFTING.

The close connexion which exists between the food of the people and the public health gives a scheme of homecrofting put forward by Prof. J. W. Scott an important medical aspect. The scheme has been clearly explained in a recent booklet.[2] Opportunity has now arisen for putting it to a practical test on the outskirts of Cheltenham; and Mr. J. St. Loe Strachey in the *Spectator* of July 11th has given the project his wholehearted support.

Homecrofting is in essence organised allotment gardening where each artisan dwelling has attached to it about one-third of an acre of land. At first the way to cultivate the land is taught by a skilled overseer, but each tenant should soon by his own labour be able to become independent of the greengrocer. The scheme plans for older school-children to be sent in rotation every third week to be taught homecrofting; how to prepare and manure the land; what succession of crops to sow; how to keep and feed rabbits, fowls, goats, and perchance a pig. Each time they return they would see the progress since they left and so be able to appreciate the value of their work. Thus a future generation would be educated for becoming scientific homecrofters, practising "subsistence agriculture," instead of being merely industrial consumers of food imported from abroad.

"Homecrofting," writes Prof. Scott, "is the art of making your own food with your own hands, so that you do not need to buy it. The suggestion is, take advantage of the short industrial hours. Aim at two shifts a day for the man: one shift at industrial work, earning wages, and another shorter shift, with his wife and children in his garden, producing food.

"A final way of escape from hunger. Wherever you have that you have a solution of the unemployment problem. That is what the homecroft plan tries to present."

In these days of short working hours and unemployment this scheme presents an ideal method for filling up leisure time. No form of recreation is healthier or more interesting than gardening. No vegetables ever taste so good as your own; no eggs are ever so fresh. *Nevertheless*, the plan is put forward, in the main, not for health purposes, but for economic and social reasons.

The first trial is to be on 18 acres, if the needed capital, £2500, can be raised. As the money will be invested in land and cottages, contributors, even if the experiment fail totally, will not lose all they invest. It is a worthy attempt to do something to rectify present social and industrial difficulties. The *Spectator* undertakes to receive and pass on any subscriptions and is offering prizes to the best homecrofters.

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[1] Public Health, 1923–24, xxxvii., 265, 295, 296.

[2] Unemployment: A Suggested Policy. By J. W. Scott. London: A. and C. Black. 1s.

An Address

ON

PERSONALITY, MAGIC AND MEDICINE.

Delivered before the University of Edinburgh at the Graduation Ceremony, July 24th, 1925,

By GEORGE M. ROBERTSON, M.D.,
F.R.C.P. Edin.,

PROFESSOR OF PSYCHIATRY IN THE UNIVERSITY OF EDINBURGH.

Vice-Chancellor,—My first duty is a very pleasant one. It is to congratulate those who have to-day achieved the high honour of becoming graduates of this University. In a short time many will be engaged in practising medicine, and others will have scattered to distant parts of our wide Empire. In the name of the University, I wish you all God-speed! Your course of professional study has been a long and arduous one, and during it you "scorned delights and lived laborious days." Do not take this too literally, for Promotors, like poets, enjoy a certain licence. I have no doubt that many of you, without detriment to your studies, have found time "to sport with Amaryllis in the shade." Gone, alas! are "the tangles of Neæra's hair." Since Milton wrote these lines fashions have changed.

Examinations and Personality.

You have all known what it is to suffer under the dark shadow of professional examinations. Such anxiety is a deadly poison to intellectual effort, but you have found an antidote in the magic of the Vice-Chancellor's touch, and of the cabalistic words which he has pronounced over every graduate. These graduation rites, however, are much inferior in picturesqueness and romance to those of a bygone age. A thousand years ago, at the famous medical school of Salerno, the Chancellor, or Rector, placed a crown of laurel on the brows of the successful graduate. Then he placed a ring on the graduate's finger. And finally, to mark the climax of the proceedings, the learned professors kissed the graduate. Even in those far-off days there were lady medicals!

No one has a good word to say about examinations. They are disliked by the professor who examines only less than by the student who is examined. They seem to be a sort of old-man-of-the-sea, of Chinese descent, who has fastened himself on the shoulders of our academic life. The Chancellor of the University, Lord Balfour, calls them "soul-killing institutions, bad for the teacher and bad for the taught." Now, if they are absolutely necessary in order to test your fitness for the practice of medicine, is it not strange that no test is applied to that which is the master-key to success as a physician—namely, "personality?" It is difficult to say what this personality is.

Personality is described by some in poetical language as personal magnetism. By others it is regarded as a miraculous gift of divine origin, the gift of healing. We are assured on the testimony of good people, like bishops, that there are persons, quite unequipped with any medical knowledge, indeed one might correctly say unhampered by any medical knowledge, who work miracles of healing. Such gifted beings are called "healers" in order to differentiate them from medical men fashioned of common clay, whose little learning has been laboriously acquired, and whose power of healing, unlike theirs, is subject to definite limitations. The difference in the methods employed by the healer and by the doctor is that which exists between magic and science. As the philosophy of healing is obscure let us investigate for a few minutes the problems connected with magic and medicine, giving, of course, the place of honour to magic, by right of seniority.

There is no Chair of Magic in the University of Edinburgh. This is most unfortunate, because, a knowledge of the history of magic helps us to understand the development of the human mind and also of science. Who can tell what chemistry owes to the search for the Philosopher's Stone—and pharmacology to the pursuit of the Elixir of Life? The Earl of Gowrie, who was killed in 1600, studied magic at Padua, but whether he did so in intra-mural or extra-mural classes we are not told. Sir Walter Scott, however, informs us that at the University of Toledo there was a Chair of Necromancy. Although there is no special Chair of Magic in Edinburgh, this important subject probably survives in one or another of the existing chairs. In the Faculty of Arts, the Chair of Natural Philosophy includes much that would have been regarded at one time as magic. Consider the applications of electricity alone. Last year when Wembley was opened thousands of persons in Princes-street Gardens heard a voice from the clouds repeating the Lord's Prayer, and then another voice, that of the King, addressing the people. Had King James VI., who founded this University, been present on this occasion, he would most certainly have regarded these as manifestations of a magical character, for he held strong views on witches and witchcraft.

Magic in the Medical Clinic.

In the Faculty of Medicine magic under a disguise is to be found. The preservation of life by insulin and the painless sleep of chloroform are in a sense magical. The protection from typhoid of millions of our fighting men during the war was in a sense as magical as the action of Moses when he made a serpent of brass, and it came to pass that all who beheld the serpent lived. Magic consists not only in the performance of rites invoking occult agencies, not only in the employment of materials possessing supernatural power and virtue, but also in a certain habit or attitude of mind towards inexplicable phenomena. Now, there exists to-day a curious and most amazing difference in the way that people have of looking, on the one hand, at phenomena of a physical kind, and on the other, at phenomena connected with the treatment of disease, a distinction actually fostered by the Church. No educated person now believes that the applications of physics are magical. They merely illustrate the progressive unveiling of the forces of nature and their subjugation to the uses of mankind. But it is not so with regard to the employment of remedies in disease. The element of magic in this sphere has never disappeared. No theory of disease is too fantastic, no line of treatment too futile to be accepted even by the most cultured. The sick person has some excuse for his actions and beliefs as he is never at his best; he is always off colour. He is more emotional and more suggestible. He is an easy prey to fears of ill-health, and he clutches eagerly at any remedy that chance brings within his reach. His mind is in an ideal condition to be worked on by magic. In colloquial language, "he is simply asking for it."

Let us see how readily the symptoms of disease lend themselves to treatment by magical methods. However unpleasant symptoms may be to the patient, almost all pass away naturally in course of time. And, if we exclude physical conditions, such as broken bones, we find that symptoms are almost exclusively mental. Pain is the basis of every symptom; malaise and discomfort are merely lesser varieties of it. And pain is a simple state of mind, just like the sensation of colour. It seems to be felt in a particular region of the body, just as colour seems to be the property of an external object, but both the sensation of pain and the sensation of colour are experienced within the brain and in the mind. Because of this localisation of

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sensation within the brain, pain may still seem to be felt in the foot, although the whole leg has been amputated.

Pain is sometimes called real and sometimes imaginary, but to the patient both forms are real and both forms are amenable to treatment by mental suggestion, whether magical or otherwise. Toothache, for example, due to an organic cause, such as the decay of a tooth, is of course "real" pain, as we can all vouch for, yet it sometimes happens that when the hand of a patient suffering from toothache touches the dentist's front door bell all pain suddenly vanishes. Suppose now that a patient desires treatment of a magical kind. He may go to a Christian Scientist or to a Spiritual Healer; he may consult a plausible charlatan; or he may seek the vendor of a secret nostrum. In many cases he will benefit: and why not? The majority of symptoms pass away spontaneously; the treatment he receives is mental and therefore suits the symptoms exactly; mystery is invoked and this appeals to the superstitious elements lying latent in the patient's mind; and lastly, the patient comes with a child-like faith in the treatment for which he asks. As honest seekers after the truth we must face these facts. Look at Christian Science and its incredible development in America. It is a very simple therapeutic system, from which diagnosis is excluded, and it employs one remedy. Painfully inadequate as it seems to us, it has succeeded in founding cathedrals and in comforting millions. It has built 74 churches in this country and hundreds in America. Would that some of the money thus subscribed by grateful patients had found its way into the empty coffers of this University! Why do we not receive this grateful help? Is it because we have concerted healing into a cold science instead of leaving it an impressive mystery and a passionate faith? For it has passed through those phases. Have we like Martha been careful and troubled about many things, material, but missed the one thing, psychic, that is needful? Men and women hunger after the mystic and the wonderful; they are just big children in matters connected with illness; and their craving for miraculous cures will not cease till the progress of the science of medicine has rendered such cures superfluous.

The patient may consult a regular practitioner of medicine, and what follows? Almost inevitably the doctor will prescribe certain vegetable or mineral products, and the patient will derive benefit from his prescription. Is this almost exclusive reliance on the physical action of drugs, when we know to what an extent symptoms are mental, either logical or scientific? How much of it is due to a mere desire to gratify the patient's faith in medicine out of a bottle? Or is it unconsciously derived from the pursuit of the "elixir of life"? We all know that traditions die hard, as witness the obsolete prayer to Jupiter, concealed in the symbol that heads our prescriptions. Drugs undoubtedly possess pharmacological actions which are invaluable, as, for example, the effect of quinine in malaria, but symptoms are mainly mental, and medicines largely depend for the benefits they confer on the confidence of the patient in the physician and faith in his prescription. If this be so, then the drug treatment of minor ailments does not differ so very much from those other forms of treatment that consist merely of mental suggestion, though called by another name.

THE POWER OF THE MIND.

What distinguishes the doctor from the healer is his undeviating rationalism. His recognition of the mental element in disease, whether as a cause, as a symptom, or as a cure, is deficient. He has a horror of introducing mystery into his treatment, even though his patients have not yet emerged from the darkness of superstition, and his practice would probably increase if they believed that the letters M.B. after his name indicated that he was a Bachelor of Magic. And he could always assure for himself and his family a respectable livelihood among the credulous, who form the majority of the population, if we could honestly assert that the letters Ch.B. were conferred upon him because he was a Bachelor of Charlatanism. It is not in the alleviation of symptoms, nor in the treatment of minor ailments, that medicine impresses us. It is in its confident challenge to the diseases that kill that the science of medicine reveals its greatness. Witness the attack on cancer, and the results just obtained by a graduate of this University. What also could be more convincing, what more impressive, than the simple statement that during our life-time the death-rate has fallen from 22 per 1000 to 12, and that the expectation of life has risen from 40 years to 55. The people of this country and of this generation have, through medical science, experienced in their own persons the fulfilment of the promise conveyed by the Prophet Isaiah to the dying Hezekiah: "I have heard thy prayer, I have seen thy tears: I will add to thy days 15 years."

Recoveries are effected by magical methods, by religion, by charlatanism, and by nostrums. The importance of these is not to be minimised because they occur in minor ailments, for once a neurosis or other illness has begun, no one can foretell how serious the end-results may not be. The medium of cure in all these cases is the mind. The body cannot get away from it any more than the body can escape the action of the force of gravitation. Its power is great both as a causative and a curative agent. It can produce organic changes; it can hasten or retard recovery.

At the beginning of the Christian era, the science of medicine was in its infancy among the Jews, who believed that disease was directly inflicted by God or caused by evil spirits. In this, the twentieth century, can science accept such primitive pathology? The sphere of the Church is spiritual and moral; and the clergyman is honoured in every household and welcomed in times of sickness and of sorrow. But the healing of the sick is the sacred trust of the physician, as absolutely so as the study of the heavenly bodies in their courses is the sphere of the astronomer, although Science can never forget that the Church did not concede even this point till Galileo had suffered.

THE MOST VALUABLE ASSET.

In the last place, the most valuable asset of the physician is personality. Its influence in sickness is mental healing, and it is of greatest value when trained and directed. The methods of employing such healing are infinite, for they vary with age and sex, with race and religion, and with circumstances.

Unquestionably, you, who have graduated to-day, are members of the only class fit to be trusted with the exercise of these great powers of healing. Your Alma Mater relies upon you because she knows that you possess a knowledge of the science of medicine, and because you follow the highest ideals of professional conduct. The superstitious and the ignorant are drawn, as by a magnet, into the pitfall of charlatanism.

Although you have passed no professional examination on this subject, you all have within you a psychic influence more powerful to relieve and more helpful in sickness than all the drugs in the British Pharmacopœia. This magical force is personality. It is this possession that makes medicine greater than a science: Go forth and use it wisely!

THE LATE DR. J. T. WILLIAMS.—The death occurred on July 16th at Barrow-in-Furness of John Terrell Williams, M.R.C.S., at the age of 80. He was the oldest member of the profession in Barrow. A student at St. Bartholomew's Hospital, he qualified in 1867, and held a house appointment at his hospital before becoming resident medical officer at Rossall School. For many years he was honorary consulting surgeon to the North Lonsdale Hospital. He was made a J.P. in 1890.

THE

Croonian Lectures

ON SOME

DISORDERS OF MOTILITY AND OF MUSCLE TONE,

WITH SPECIAL REFERENCE TO THE CORPUS STRIATUM.

Delivered before the Royal College of Physicians of London

BY S. A. KINNIER WILSON, M.D., B.SC. EDIN., F.R.C.P. LOND.,
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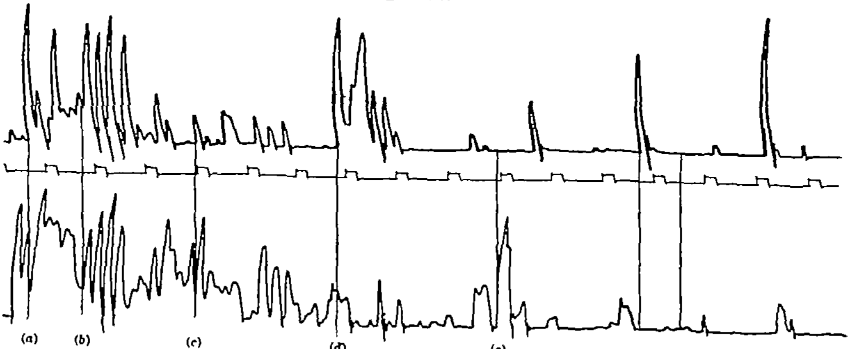
LECTURE IV.*

ATHETOSIS.

MR. PRESIDENT AND GENTLEMEN,—As with chorea, so with athetosis, a typical case is *easy of recognition*, though to define the symptom is not equally simple. In 1871 Hammond, who first drew attention to it, stated that "it is mainly characterised by an inability to retain the fingers and toes in any position in which they may be placed, and by their continual motion," and in another passage he said that "the movements are slow, apparently determinate, systematic, and uniform," *in contrast to those of [post-hemiplegic]* chorea, which are "irregular, jerking, variable, and quick." The contrast between the two, however, is by no means so definite as this description might lead one to suppose.

FIG. 27.



Athetosis. Upper record, contractions of left extensor communis digitorum: lower, left flexor longus digitorum.

CLINICAL CHARACTERS.

(1) Athetoid movements are characterised by relative slowness, in apparent contrast with the relative rapidity of choreic movements, and by the perpetual blending of one movement with another, leading to the "continual motion" of Hammond. They form a mixture of irregularly synchronous contractions of opposite muscular groups, so that on occasion the limb or a segment of it is immobilised momentarily in an attitude. The "mobile spasm" flows indifferently into muscular units, the result being a medley of contraction entangling the limb, as it were, and leading to no accomplishment.

During this irregular muscular display varying rigidity naturally makes its appearance, yet unless the athetosis is associated with some degree of "paralysis" there is *little*, if any, actual fixed *rigidity*, and this generally bears some proportion to the amount of "paralysis." In fact, during temporary relaxation of *athetotic activity the limb musculature is* frequently, if not constantly, hypotonic. "Voluntary" innervation of the affected part is always laborious and commonly aggravates the athetoid contractions, at least within a very short period; "voluntary" control over them is fleeting and imperfect.

(2) Closer analysis of the exact nature of athetosis can be made conveniently by means of double tambour tracings, care being taken by adequate limb fixation to ensure the absence from the record of *fortuitous (non-athetoid) movements*. *Fig.* 27 reproduces a tracing taken from the left forearm in a striking case of adult athetosis (of vascular origin, and progressive); the upper tracing represents the contractions of the extensor communis digitorum, the lower, of the flexor longus digitorum. At (*a*) practically synchronous contractions of these opposite muscles occur; at (*b*) a series of four similar concomitant contractions is seen; between (*c*) and (*d*) *flexor activity is more pronounced than extensor*; at (*d*) the extensor group contracts vigorously during flexor contraction; and at (*e*) flexor contractions take place by themselves. The irregularity of the individual contractions of one implicated muscle is well-shown in Fig. 28 (from the same case), recording the innervation of the long finger flexors during a period of extra-excitability. Here contraction follows *contraction in an extremely confused fashion*, one *being often thrown in before the muscle has relaxed* from the previous contraction. Fig. 20 records simultaneously the contractions of the biceps brachii and triceps of the same case; it shows, between (*a*) and (*c*), three contractions of the biceps *to one* (tripled) of the triceps; at (*b*) reciprocal innervation *is completely in default; at (c) flexor and extensor* contractions are almost but not quite synchronous; at (*d*) the triceps contracts and a little later the biceps, both relaxing together; and at (*e*) the former contracts in four quick innervations by itself.

Another series of records have been taken from a case of right infantile cerebral hemiplegia, with athetosis and Jacksonian *epilepsy*. *In this case I have* made use of the extensors of the wrist and fingers, the former normally relaxing (after synergic contraction during closure of the fist) when the fingers are extended.

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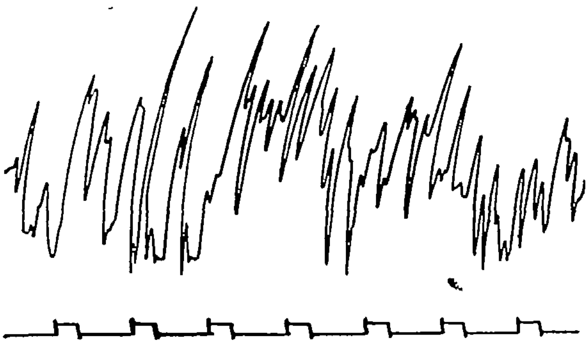
* Lectures I., II., and III. appeared in THE LANCET of July 4th, th, and 25th respectively.

In Figs. 30, 31, and 32 are represented three different results obtained from this patient; in Fig. 30 the wrist extensors relax more or less normally while the finger extensors contract, but they contract again in a quite abnormal fashion, notwithstanding the maintained finger extension; in Fig. 31 the wrist extensors decontract appreciably before the contraction of the finger extensors; in Fig. 32 the finger extensors contract normally, yet the wrist extensors hold their contraction for a time, then at length relax, but contract once more. Such modifications of physiological law are quite beyond the power of "volition" to effect. Nothing could more conclusively demonstrate the complete abrogation by disease of the normal physiological interaction of component muscular units in the performance of a given movement, and this interference with physiological law is entirely characteristic of the movements of athetosis. In paralysis agitans, as we have seen, the law is not annulled.

FIG. 28.



Same case as Fig. 27. Contractions of left flexor longus digitorum during a period of extra-excitability.

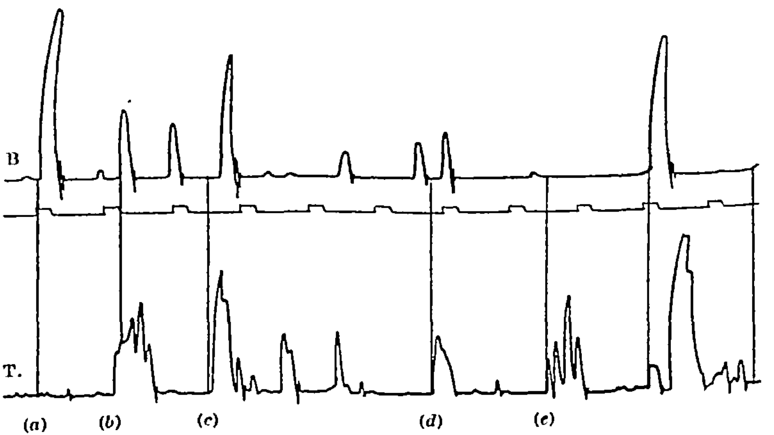
(3) Owing to the essential variability of athetotic contraction no enduring posture might perhaps be expected, yet the "athetoid hand" is sufficiently definite to merit attention. A saddle-shaped posture of the fingers is common, the terminal phalanx being in flexion while the proximal phalanges are in extension; with this extension (often hyperextension) at the metacarpophalangeal joints is coupled a notable flexion at the wrist, so that the hand often assumes that attitude of wrist and fingers which we have seen is of extreme frequency in chorea and which, as we have also seen, represents a "physiological shift" from the posture of the normal hand at rest. In athetosis, further, a tendency for pronation or hyperpronation of the forearm (the "pronator sign") is equally common.

(4) Comparing, now, the symptoms of chorea and athetosis, we find the resemblances more impressive than the differences. In respect of the latter, we have seen that choreic movement is discrete and rapid, while athetoid movement is slow and confluent. But this difference is more apparent than real; athetoid action is slow largely because it is confluent, and, on the other hand, confluent chorea results in slowing of the "spontaneous" movements. Besides, in some athetoses a degree of discreteness and quickness is observable. In respect of resemblances, in each the type of motor derangement is complex, elaborate, and specialised; changeableness and variability of movement is a prominent trait (i.e., absence of essential repetitiveness); the law of reciprocal innervation is at fault in athetosis and in confluent chorea equally; the movements, "caricatures" though they are in athetosis more than in chorea, have the appearance none the less in the case of the former of being subjectively purposeful—as for grasping or relinquishing an object, &c.—though they are objectively purposeless. In both, a degree of hypotonia is commonly discoverable; resemblances between the athetoid and the choreic hand are sufficiently obvious; involvement of the mechanism for emotional expression, if found in athetosis, is commonly bilateral, as in chorea, though to this there are exceptions. It is difficult to gauge the amount, if any, of actual weakness of the musculature in athetotic cases, since (*a*) they are not infrequently accompanied by definite corticospinal derangement (hemiplegia or hemiparesis), from which it is desirable to attempt to separate the athetotic element; (*b*) "volitional" innervation is constantly impeded by athetoid activity, rendering distinction arduous. Enough, however, has been said to justify fully the common grouping of choreic and athetotic movement under the general heading of "choreo-athetosis."

RELATION OF ATHETOSIS TO TONIC INNERVATION.

(5) The condition described as "tonic innervation" is constituted by inability to relax "voluntarily" a given innervation initiated by that process. As the patient "voluntarily" contracts his flexors (say) in movement active inhibition of the antagonists, the extensors, takes place, according to the law of reciprocal innervation; when next he would reverse this movement, he is able "voluntarily" to innervate the extensors, but no corresponding inhibition of the flexors takes place; these remain contracted, it may be for many seconds. From what we have been able to show by clinical methods, a condition resembling tonic innervation, in fact practically identical with it, may occur in athetosis. I have a number of observations confirming this statement, which, for that matter, was fully exemplified in a paper on "The Phenomenon of Tonic Innervation." The symptom was then described as occurring in cerebral cases (frontal) unassociated with athetosis, and as being seen mainly if not solely during so-called "volitional" movement. In the case of athetosis it is found, when present, during so-called "involuntary" activity, in the sense that antagonists may remain definitely contracted though the opposite muscles are rising into contraction, but it often also develops in typical guise during "voluntary" movement. I have already commented on the fact that no phenomenon of this kind has come under my notice in any of the scores of Parkinsonian cases that have been personally investigated.

FIG. 29.



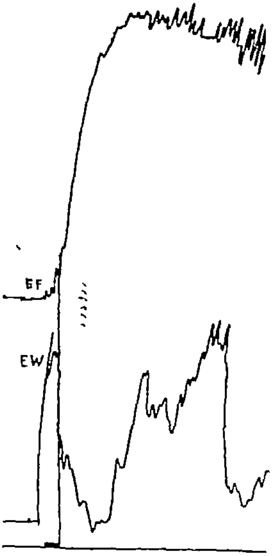
Same case. Contractions of biceps and triceps.

Clearly, it can only be explained satisfactorily by regarding it as a derangement in the proper relation between impulse and inhibition—i.e., as a disorder *of reciprocal innervation.* Thus our clinical study of athetosis leads us again to the view that its essential and underlying basis is precisely this interference with the normal laws governing the physiological interaction of component muscular units in movement, and it is immaterial whether this be "voluntary" or "involuntary," for no discriminating line can be drawn between the two.

On the sensory side, there was complete astereognosis in the right hand, with only slight diminution in the appreciation of tactile stimuli.

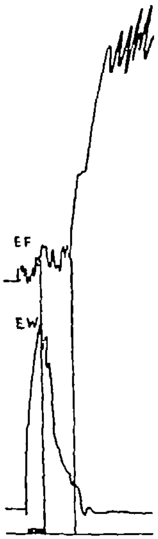
Apparently, an exhaustion paresis of the right corticospinal system made the athetosis temporarily impossible; only with recovery of power did it begin again. The evidence in this case pointed unmistakably to a *cortical* origin for all the symptoms.

FIG 30.



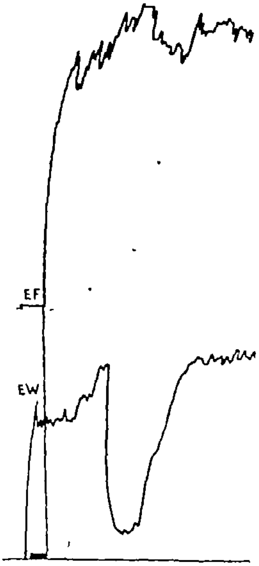
Athetosis. Abrogation of physiological law during *movement of extension* of the closed fingers: extensors of wrist decontract but contract again.

FIG. 31.



Same case as Fig 30. Decontraction of wrist extensors before finger extensors contract.

FIG. 32.



Same case as Fig. 30. *Wrist extensors* fail at first to decontract when finger extensors contract: after later relaxation they contract again.

PATHOGENESIS OF CHOREO-ATHETOSIS.

On the clinical side, evidence has been adduced indicating, both for chorea and for athetosis, that the following considerations bear on the problem of pathogenesis.

(1) Since the movements are active and continuing, for their existence relative integrity of some efferent path is a *sine qua non.* Many cogent arguments suggest that this path is the corticospinal path. I may refer the reader, for a moment, to the summary of the clinical analysis given at the close of the sections on chorea, and supplement the deductions there drawn by one or two more matters bearing on the topic.

Many cases of infantile cerebral hemiplegia with Jacksonian fits are accompanied by athetosis. We assign the hemiplegia and the epilepsy to encephalitis of the cortex and implication of the corticospinal tract, and it is justifiable and reasonable to assume in these cases a cortical origin for the athetosis also. Take a single illustrative case.

A little girl of 14 had suffered from infantile cerebral hemiplegia with athetosis and Jacksonian epilepsy since she was one year old. The aura to the fits was the appearance of "twinkling red, blue, and white lights" in the right field, followed by twitching in the right face and right fingers, which spread in typical Jacksonian fashion. For 20 minutes after each fit all athetosis disappeared from the right limbs.

I refer next to the case recorded by the late Sir Victor Horsley in his Linacre Lecture of 1909. A youth of 15 had had left hemiplegia with severe athetosis since an attack of scarlatina at the age of 7. Horsley found at operation that the right postcentral gyrus was reduced to half its normal size—a very significant observation. He excised the cortical motor area for the left arm, and the athetosis thereafter vanished entirely and had not returned when the patient disappeared from notice some 14 months later. On the other hand, the arm paralysis following the cortical excision had by that time been greatly mitigated. Similar cases have been put on record by Anschütz and others. Reference, too, may be made to Case XVIII. of Jakob's recent monograph, where left-sided athetosis disappeared entirely after a sudden left flaccid hemiplegia. The patient lived for 18 months after, but the athetosis never returned. (I venture to differ altogether from Jakob as regards the interpretation put by him on the pathological findings in this valuable case.)

Strong additional evidence is hereby furnished of the significance of *relative* integrity of the pyramidal system for chorea and for athetosis. I have never yet found a case of either in which "spontaneous" movements occurred in the presence of absolute corticospinal paralysis. No movements remotely resembling either have been seen in my clinical cases of decerebrate rigidity in man, and Magnus, similarly, has commented on their absence in his experimental animals (of various species) submitted to decerebration.

(2) Another line of clinical evidence points to the possibility of implication, in choreo-athetotic cases, of afferent paths to the cerebral cortex—viz., from the cerebellum by the regio subthalamica to the optic thalamus, whence there is a wide distribution of fibres to the pallium.

The frequent appearance of muscular hypotonia both in chorea and in athetosis has been mentioned above, and the element of incoördination is prominently in the clinical picture in both, especially, as concerns chorea, in the case of the confluent variety. In numerous instances of chorea the knee-jerk exhibits that "pendular" quality which pertains largely to cases in which cerebellar function is disordered. Now one of the many interesting facts connected with cerebellar dysfunction is, that whether the lesions be on the afferent side to that organ (spinocerebellar), or intracerebellar (cerebellar cortex, or from that cortex to cerebellar ganglia), or cerebellifugal (cerebello-cerebral), the same sorts of symptom to some extent make their appearance in each instance. It is impossible to say by clinical scrutiny alone of a case of cerebellar ataxia in which of these three divisions the lesion is situated. Hence where for other reasons a cerebellifugal (cerebello-cerebral) lesion is likely, we may well expect to find some kind of cerebellar symptoms. If, then, other clinical facts argue a cortical origin for a symptom-complex, the coexistence with it of certain cerebellar symptoms can justifiably be set down to the development of a cerebello-cerebral defect of function.

In other papers I have on more than one occasion laid stress on the many clinico-pathological cases which point to lesions somewhere on the cerebello-mesencephalo-thalamo-cortical apparatus being responsible for the appearance clinically of choreo-athetosis. The reality of "Bindearmchorea" (superior cerebellar peduncle, especially in the neighbourhood of Wernekinck's commissure) is fully established. In several cases of acute thalamic lesion (neothalamus) I have seen pronounced "involuntary" movements of the choreo-athetotic variety. I have in a recent case of "athétose double" found bilateral lesions of the neothalamus (posterior inferior region). A case at present under my care at Queen-square exhibits the thalamic syndrome with athetosis of the same limbs (arm in particular). I might also cite recent experimental work strongly favouring the view here maintained (Lafora), and the older and seemingly forgotten experiments of Bickel and Jakob, who produced so-called "cerebral sensory ataxia" by extirpation of the postcentral cortex, and who specially remarked "the peculiarly explosive character of voluntary movements" after the lesions. This, needless to say, is in fact a choreic character, as has been already discussed.

On purely clinical grounds, however, the evidence here adduced pleads clearly in favour of the hypothesis offered that athetosis and chorea are exteriorised via the corticospinal paths, and that behind their appearance is an afferent disorder of regulation, producing choreiform and athetoid characters in movement, ataxia or incoördination, and hypotonia. This afferent disorder or derangement of regulation is attributable to lesions situated on the cerebello-mesencephalo-thalamo-cortical path already described. As a consequence, "voluntary" movements via the corticospinal tracts exhibit characters corresponding to the functional defects; further, these tracts are, continuously or intermittently, usurped also by "spontaneous" movements of choreiform or athetoid character, movements in many ways closely resembling "voluntary" movements, over which the patient's inhibitory control remains desultory and incomplete. A persistent (or intermittent) stream of disordered cerebello-cerebral afferent stimuli keeps up the flow of "involuntary" movement; only in sleep are these excitations so damped down as to allow the movements to cease. During waking life, it may be for years, as we have seen, the stream flows to the cortex and the cortex ceaselessly responds.

Thus, in a definite sense, choreo-athetoid activity is the activity of cortical reflex arcs; the movements have cortical quality and yet they are "involuntary."

If the views here offered can be reasonably entertained, they lead to the conception of the possibility of "*involuntary*" *cortical motor activity*—a natural development of the hypothesis I have suggested. As far at least as chorea is concerned, the conception appears to me to have much to justify it, and little less in respect of athetosis. *The "spontaneous" activity of choreo-athetosis, thus conceived, is nought else than a succession of cortical "reflexes," high-grade movements largely comparable to those called "voluntary" except that the patient's "volition" neither initiates nor inhibits them.*

Further explanation, however, is requisite, in more than one respect.

(1) When I speak of cerebello-mesencephalo-thalamo-cortical dysfunction being an integral factor in the appearance of choreo-athetotic movements exteriorised via the pyramidal system, I do not limit the association to an anatomical link in the postcentral cortex. Thalamo-cortical fibre-systems are widespread, and a frontal radiation is just as definite as any to the postcentral gyrus, and no less important. For, on the efferent side, when I have been speaking in various preceding sections of the corticospinal system being usurped by movements of a "spontaneous" or "involuntary" kind, I do not wish it to be supposed that I regard the *anatomical* Betz-cell as the *physiological* terminus a quo of efferent motor activity. On the contrary, many lines of evidence are against such a supposition. From the excitable motor area (Betz-cell area) one does not obtain movements of so elaborate or intricate a pattern as are seen in everyday "volitional" action; the combinations of movement elicitable by the stimulating electrode are anatomical rather than physiological; the "march" of the movements in Jacksonian epilepsy is not paralleled in ordinary normal "volitional activity." For the complex movements of chorea, to take an example, we must postulate a motor centre higher in a physiological sense than that of the motor region *sensu strictiori*, and both clinical, pathological, and experimental evidence suggests that such a centre lies in front of the Rolandic area. Relatively short transcortical neural systems link the frontal to the Betz-cell area, and I imagine, consequently, that the afferent disorder of which I have spoken produces its effect by radiation from the thalamus on this postulated frontal motor centre, quite possibly from the parietal to the frontal cortex, and so on the (anatomical) origin of the corticospinal tracts.

(2) The inability of the choreic or athetotic patient to control adequately the abnormal activity of the cortical arcs of which I have spoken can only mean, translated into physiological terms, failure of transcortical inhibition from some unknown source. His "will-lessness" in respect of the abnormal motility from which he suffers can be nothing else, physiologically, than failure of one cortical element to inhibit another cortical element—a state of affairs the "extreme likelihood" of the occurrence of which is postulated by Sherrington for various fields of cortical action. Prosecution of this point would take me too far from my main thesis at present, but brief allusion to some aspects of the question may not be out of place. The objective study pursued in these lectures precludes, as I have shown, the likelihood of the corticospinal system (Betz-cell to muscle) being "voluntary" in any exclusive sense, though it is the *usual* path by which "voluntary" movements are

exteriorised. These must "start" at a still higher physiological level, as is apparent from the considerations advanced in the previous section. The "involuntary" movements of chorea are of a higher physiological type than those of Jacksonian epilepsy; therefore even the transcortical part of the whole "voluntary" motor efferent system is on occasion usurped by "involuntary" action. "Volition," therefore—always speaking physiologically—is driven back to some other transcortical source, remote enough from the Betz-cell, from whence its action on the whole motor path—say, fronto-rolandico-spinal—is, in the case of chorea, &c., very imperfect indeed; or, it is driven out by "involuntary" cortical activity. Consideration of the phenomena of chorea and of athetosis, of tonic innervation and of apraxia, and of cortical reflex arc activity in general, in my view, clearly supports this line of argument. "Volition," in short, seems to be little else than transcortical inhibition, a "voluntary movement" little else than a movement that is "allowed" transcortically, an "involuntary movement" (of this high class) little else than one that cannot be transcortically prevented.

It is of interest that the present objective studies point in the direction of these tentative conclusions, since quite other lines of research by other workers seem to indicate dissatisfaction with current conceptions. Lashley, for example, says "the conception of volitional activity is too vague to have any scientific value," and holds that the "volitional" or "automatic" character of the centrifugal neural impulses of the cortex can be defined "only in terms of their complexity of organisation and their relative importance in the total motor integration." Von Monakow, after declaring that the common views of pyramidal function must be essentially modified, says "it is probable that the pyramidal areas serve less for the execution of voluntary movements than for the inhibition of the kinetic *functions* of spinal coördination. Their function seems to be in the class of reflex activity." If lower centres are less under the directive than the inhibitory influence of higher centres, the same may well be true of some among the cortical centres themselves.

(8) Reverting finally, in this connexion, to the demonstrated disorder of reciprocal innervation characteristic of choreo-athetosis, we have to examine the question of the physiological level at which this phenomenon takes place. Reciprocal innervation is readily obtainable by stimulation of any particular single point on the motor cortex proper, but it is also produced by excitation of the internal capsule, the pyramids in the medulla, and at still lower levels. The action *of arrest* of one muscle and excitation of its opposite may certainly be elicited from the cortex, but, in Sherrington's own words, "the seat of inhibition in these reactions from the *motor* cortex lies probably at the place of confluence of conducting channels in a common path, likely enough at their confluence upon the 'final common path'"—in other words, at the spinal level. Clinically, too, it is likely, from a consideration of data that I cannot now elaborate, that the link between the muscular components of a given movement (protagonists, synergists, and antagonists) develops its activity at the spinal level, *but this* is not the whole question. We know quite well that reciprocal innervation is typical of the numerous spinal reflexes which can be elicited by stimulation of dorsal roots; this *has* been performed seriatim for cervical and lumbar roots by Sherrington and by Page May, and the widespread movement patterns thus *obtained* are systematised and largely invariable. Without reciprocal innervation such spinal reflexes would be impossible. Spinal coördination exists. But from the cortex itself, as we have seen, similar coördinated movements can be obtained, although they are limited in extent, as has already been remarked. Whether *precisely* the same coördinating mechanism in the cord is used both for spinal reflexes and for cortical impulses is undetermined; according *to* Graham Brown, "there is a finely differentiated mechanism in the motor cortex which does not set into action spinal centres in the same manner as do the in-going nerve-impulses carried by the sensory nerves of a limb, but is able in some way to pick out and set into action small portions, as it were, of the simple reflex movements." Be this as it may, *since reciprocal innervation is obtainable from the cortex, it can be deranged from the cortex.* It is in fact completely deranged in so-called tonic innervation, as I have previously demonstrated, and in these cases the lesions are situated in the frontal region and a transcortical effect is exercised on the pyramidal system. It is also entirely disorganised in choreo-athetosis, as has here been fully exemplified, and the argument which I have developed points definitely in the direction of a cortical arc being utilised for the hypermotility of these clinical states. While the ultimate stage probably is spinal, *the origin of the disorder in chorea and in athetosis is on the afferent side to the cortex or in transcortical neural systems from the afferent to the efferent side.*

I am not disinclined, from a study of my clinical cases, to suggest it is the cerebellar element, as I have already indicated, in the afferent cerebello-cerebral defect of regulation, that is responsible for the disarray of component units in a cortical movement, "involuntary" as the latter is (in the cases under consideration), and some experimental support for this view is forthcoming in the recent researches of Tilney and Pike. Although on clinical grounds I am not in accord with their general standpoint, their conclusion that the cerebellum appears to play a prominent rôle in maintaining the proper relation in the "synergic units" of the body has not a little to be said in its favour.

(To be concluded.)

Clinical and Laboratory Notes.

A CASE OF
ACUTE INTESTINAL OBSTRUCTION
DUE TO THE PRESENCE OF A DRAINAGE-TUBE LEFT IN THE PERITONEAL CAVITY.

BY R. LESTER WILLIAMS, M.B., B.CH. CAMB.,
F.R.C.S. ENG.,
LATE RESIDENT SURGICAL OFFICER, ROYAL INFIRMARY, SHEFFIELD.

THE following case of a foreign body lying unsuspected in the peritoneal cavity for 12½ years and causing no inconvenience is sufficiently unusual to justify its being placed on record.

R. H. J., male, aged 33, was admitted to the Sheffield Royal Infirmary on Jan. 13th last.

History.—On Jan. 11th at 4.45 P.M., while on his way to work, he commenced with slight abdominal pain. At 6 P.M. the pain was worse, and at 8 P.M. it became so severe that he had to leave work and return home. He vomited the same evening, and vomited repeatedly up to the time of admission. The bowels last acted on the morning of the 11th. On the 13th he was seen by his own doctor, who ordered two soap enemata at an interval of half an hour; the results of which were so poor that he ordered immediate removal of the patient to hospital with a diagnosis of intestinal obstruction. Previous history was as follows. In August, 1912, he had been operated upon for acute appendicitis, when an appendicular abscess was opened and drained with a rubber tube, but the appendix itself was not removed. After recovery from this operation he was sent home, and three weeks later was readmitted and the appendix removed. Since then he has remained perfectly well, and at work all the time. He has had no abdominal pain of any sort, and his bowels have acted daily without aperients.

Condition on Admission.—The patient was a healthy-looking man. Temp. 99.6 F°, pulse 80. A healthy healed pararectal appendicular scar was present. Abdomen distended and moved poorly with respiration. There was some slight general abdominal tenderness. Percussion yielded generalised tympanitic note; liver dullness normal. Rectal examination was very painful and could not be satisfactorily carried out. A diagnosis of acute intestinal obstruction due probably to adhesions or bands following the original operation for appendicitis was arrived at, and an immediate operation was performed.

Operation.—The abdomen was opened through a right lower paramedian incision. Coils of distended small intestine at once presented. The region of the old appendicectomy scar was first explored, but beyond some adhesions between the scar and the great omentum nothing abnormal was discovered. Passing down into the left side of the pelvis from the right iliac fossa a tubular structure not unlike a calcified internal iliac artery was felt. As there was no pulsation it was very cautiously dissected out from its sheath of peritoneum and fibrous tissue, and was found to be a piece of ordinary red rubber drainage-tube. On investigation of the pelvis it was discovered that the distal 4 cm. of the tube had passed through an aperture in the lowest part of the root of the pelvic mesocolon. Through this aperture had passed also about 3 feet of small intestine which had become strangulated. The strangulated gut was reduced without great difficulty, and on examination was found to be deeply congested but quite viable. The next problem was to close the opening in the pelvic mesocolon so as to prevent the possibility of a recurrence of the strangulation. The patient was placed in the Trendelenburg position and, with the aid of a headlight, a good view of the aperture in the pelvic mesocolon was obtained. The aperture admitted two fingers and running along its posterior margin were the inferior mesenteric artery and vein. The aperture was closed with some difficulty with two catgut sutures, during the introduction of which great care had to be taken to avoid damage to the inferior mesenteric vessels. The abdomen was closed in layers without drainage.

The patient made an excellent recovery and was discharged from hospital as cured 14 days after the operation. The drainage-tube measured 15 cm. in length and 1 cm. in diameter, and was in a perfect state of preservation. It contained four lateral holes (evidently for drainage), and the point where it passed through the hole in the pelvic mesocolon was marked by a well-defined constriction.

Comments.

The remarkable feature of this case is that, although the patient had this large drainage-tube in his abdominal cavity during the 12½ years that elapsed between the two original operations for appendicitis and the present operation for acute obstruction, he was nevertheless absolutely well, quite free from abdominal symptoms of any sort, and able to do full work. One would expect that the presence of a large drainage-tube amongst the intestines would have given rise to at least some abdominal symptoms due to the peristaltic action of the intestines pressing the tube downwards into the pelvis and through the base of the pelvic mesocolon. Had the tube not given rise to the attack of acute obstruction its presence could never have been suspected. The only really difficult part of the operation was the closure of the opening in the pelvic mesocolon which was so deep in the pelvis and which had the inferior mesenteric artery in such close relationship. The case illustrates the fact that although a large foreign body may lie for years unsuspected in the peritoneal cavity, it is always a source of potential danger to its host whose life it may place at any moment in the gravest jeopardy.

In conclusion, I wish to thank Mr. Ernest Finch, under whose care the patient was admitted, for his permission to publish this case.

VASO-NEUROSIS CAUSED BY TOXIC IDIOPATHY TO MILK IN A CHILD.

BY HECTOR M. WALKER, M.D. GLASG.

THE following case of vaso-neurosis in a child of 10½ months seems to be worthy of recording.

The baby, a male, weighed 21½ lb. He was 8¾ lb. when born. He had no illness beyond a rather troublesome dry eczema on the head, which came on when 2½ months old and lasted until about 6 months.

Condition on Examination.—When I saw him the mother complained that he had been sneezing a great deal for about a week and that lately he had come out in spots. On examination I found that he had an extensive urticaria on the front of the chest, abdomen, and legs. The right ear also was swollen to about twice its normal size, and was hot and red. The mucous membrane of the nose and throat was hyperæmic, but there was no catarrh. The swelling of the ear must have come on very quickly, since the parents had not noticed it, and it subsided about an hour after I left. The urticaria disappeared several hours later, but reappeared on the three following days, the attacks never lasting for long. Once the other ear became swollen. On the third day he developed diarrhœa, passing numerous small loose stools which contained abundant mucus. He had no sickness or temperature, but the appetite was poor. The mucus in the stools lasted for about three days.

The mother told me that the urticaria seemed to come on usually about an hour after he had taken any cow's milk. I did a sensitisation test by scarifying the skin on the arm and placing a drop of milk on it, and in about ten minutes there was an extremely marked reaction, a large circular red wheal being produced.

This case shows a general disturbance of the vascular innervation caused by sensitiveness to a foreign protein. By leaving cow's milk out of the diet there have been no further attacks of the urticaria, but the sneezing has persisted, although not so frequently as before. The association of urticaria, angino-neurotic œdema, vaso-motor rhinitis, and mucous colitis at the same time and in the same case is interesting. It seems probable in this case that the colitis was caused by the same influences which, acting on the skin, had caused the urticaria and, on the nasal mucous membrane, the rhinitis. There is no family history of asthma or vaso-neurosis.

Harrow.

A LOOSE BODY IN THE TUNICA VAGINALIS.

BY A. ERNEST SAWDAY, M.B., B.S. LOND.,

SURGEON TO THE DERBYSHIRE HOSPITAL FOR SICK CHILDREN.

I HAVE never met with any reference to a loose body in the tunica vaginalis, and the following note would appear to be of sufficient interest to place on record.

A boy of 8 was operated on in May, 1925, for a right undescended testicle, which was lying in the inguinal canal. On opening the tunica vaginalis a firm white mass, the size of a small pea, at once presented and slipped out. It was lying quite free, and there was no pedicle or adhesion whatever. The testicle, though maldeveloped, appeared otherwise anatomically normal. On microscopical examination of the loose body the section showed necrotic and amorphous fibrous tissue with areas of calcification.

What the origin of this body was it is difficult to say. Perhaps it was a detached cyst of the epididymis, or represented a cystic (? and tuberculous) degeneration of the hydatid of Morgagni or of the hydatid of the epididymis.

THE PRIZE-GIVING AT EPSOM COLLEGE.—Over 500 parents and friends were present on Saturday last at Epsom College, when the prizes were distributed by Lord Beauchamp. The following members of the Council were on the platform: Dr. Raymond Crawfurd, Dr. F. de Havilland Hall, Mr. Owen Lankester, Mr. Æneas Mackay, Mr. Samuel Osborn, Sir StClair Thomson, Sir Squire Sprigge, Dr. Harold Spitta, Sir John F. H. Broadbent, Surgeon Rear-Admiral Sir Percy Bassett-Smith, Mr. Douglas C. Bartley, Sir Ernest Goodhart, Dr. E. Climson Greenwood, Dr. Seymour Taylor, Sir Henry Dixon Kimber, Mr. T. Hollis Walker, K.C., Mr. A. Arthur Napper, and Sir William Hale-White. The headmaster, Mr. Arnold C. Powell, mentioned individual scholastic achievements by the boys, and said that in sports also the school was holding a good place. Lord Beauchamp, in presenting the prizes, said that the most important factor in education was not the prize, but the attempt to secure the prize. Dr. Raymond Crawfurd, Chairman of the Council, in proposing a vote of thanks to Lord Beauchamp, referred to the improvements in the equipment of the school effected during the past year, and those in immediate contemplation, and mentioned as two needs still existing a new infirmary, which would leave the old building available for the accommodation of more boys, and the levelling of the Lower School playing fields. The vote of thanks was carried by acclamation, after which tea was served on the lawns, where the band of the Second Battalion of the Queen's Own Royal West Kent Regiment played during the afternoon.

Medical Societies.

MEDICO-PSYCHOLOGICAL ASSOCIATION.

BIRMINGHAM, JULY 6TH–10TH.

THE annual meeting of the Medico-Psychological Association of Great Britain and Ireland was held at the University of Birmingham on July 6th to 10th, under the presidency of Sir FREDERICK MOTT, F.R.S.

The PRESIDENT announced that the Council had nominated Lieut.-Colonel J. R. LORD, C.B.E., M.B., editor of the *Journal of Mental Science*, to be the next President.

The Sympathetic Endocrine System.

Dr. DAVID ORR (Prestwich Asylum) gave a lantern demonstration on the Sympathetic Endocrine System. Dr. Orr said that intellectual life was inseparable from emotion. Certain areas of the brain were associated with the registration of visceral impressions, and there was no impression in any part of the body which was not registered in the brain and which did not immediately react on certain organs. The central nervous system could not be spoken of as a system per se; it was intimately connected with the sympathetic system, and this latter with the ductless glands. As every impression reached the brain it was accompanied not only by its own specific sense, but by an emotional content, and it aroused certain things; it produced either a pleasant or an unpleasant sensation, as there was no such thing in the human mind as a negative impression. Dr. Orr proceeded to elaborate his thesis, and demonstrated what took place during a nervous upset. His main thesis was the intimate coöperative working of the whole mechanism and the need for treating patients from the physiological point of view.

The contribution was discussed by Dr. M. J. NOLAN, the PRESIDENT, Dr. W. F. MENZIES, Prof. G. M. ROBERTSON, and Dr. LORD.—Dr. ORR replied.

President's Address.

Sir FREDERICK MOTT then delivered his address. He said that no progress was possible in knowledge of mental disease until the spell of metaphysical speculation had been shaken off, as that carried with it the doctrine of mind as an invisible intangible spirit with an existence separate from the body. The functions of mind depended on the whole body and on the harmonious action of all its parts. In the apparently healthy brain there might be subtle biochemical and biophysical conditions which were dependent on inborn functional or bodily defects. The highest level of the brain was the first to undergo the deleterious effects of any form of intoxication. This highest level represented the psychic personality of the individual, and was the personal equation due to inborn tendencies and characters derived from racial and familial ancestry, near and remote. In mental disease there might be no discovered differences in the brain structure, even by powerful microscopy. There might perhaps be a vital germinal deficiency manifesting itself by an arrest of the development of many of the cortical neurons or a lack of durability. Or vascular conditions might be present which interfered with the nutrition of the rapidly developing neurons.

The speaker then proceeded to deal with the changes in the mental attitude coincident with the involutional period, adolescence, remarking that all psychic activities were subordinate to and dependent upon physiological processes. The functional correlation of mind and body was shown by the profound influence which the reproductive endocrine system exerted upon the evolution at puberty and on the sentiments which had their roots in the sex instinct. Steinach had shown that the substances of internal secretion had a selective action in storage in the central nervous system, and it was not sufficiently recognised that a climacteric might occur in men between 55 and 65 years of age, being associated in some of them—but not in all—with arterio-sclerosis. Some cases of involuntary melancholia had their origin in testicular regression and the concomitant endocrine gland changes. A study of relatives in a large series of cases in the London county asylums revealed three main facts in relation to the causation of mental disease: (1) The importance of a neuropathic and psychopathic heredity; (2) the special liability of the neuroses and psychoses to occur in adolescence; and (3) the influence of child-bearing and lactation in women, acting as an exciting cause.

The general conclusion he wished to enforce was that it was the duty of medico-psychologists to practise general medicine in its broadest sense, and ascertain whether there was present any body condition which could act either as a cause or a contributory factor in the production of the abnormal psychic state.

Psychological Implications of Encephalitis Lethargica.

Dr. G. A. AUDEN pointed out that the late sequelæ of this infection gave it a sinister importance which was intensified by the steep rise in the epidemic incidence which had marked the past year. Encephalitis opened up an entirely new outlook in psychiatry and neurology, which might bring us to a better understanding of the genesis of certain psychoses and neuroses. Confining his remarks to children between 5 and 15 years of age, he pointed out that the clinical picture presented by the disease was one of a generalised toxic condition, which fell with especial weight upon the nervous system; while the later manifestations, both psychic and somatic, formed a syndrome which gave all the features of a definite and distinct morbid entity. One of these was a characteristic failure of adjustment to the inhibitions and sanctions of the social order, especially in the direction of persistent thieving and lying. Other features, such as a reversal of the normal sleep rhythm, coupled with noisy excitability and perverse habits, seemed to bring the disease into definite relationship with certain types of mental disorder. A considerable number of children developed peculiar habits and tics. Some of these might be attributed in the first instance to increased suggestibility—e.g., the hawking and spitting might be the result of a salivation which had passed off. Occasionally cases showed iteration-compulsions. In some of the advanced cases of Parkinsonism there was a superficial resemblance to catatonia, but in these cases, as Economo had pointed out, the patients were apperceptively and intellectually intact; appreciating fully their relation to their environment; well orientated, and with undiminished critical judgment. The main characteristics were a combination of mental apathy with explosive irritability, a rapid onset of fatigue, and a marked drop in attention, with a heightened susceptibility to emotional stress. These might be correlated with an inhibition of volition and a failure of the exercise of self-criticism. In the opinion of the author the theory of the development of the nervous system put forward by Head and Rivers gave a key to the proper understanding of these character changes and volition defects. They appeared to be *regressions* due to a removal or suppression of the epicritic control over the protopathic instinctive tendencies. The child was essentially, in Lloyd Morgan's phrase, a "self of enjoyment," and it was only as he grew that the ceaseless stream of suggestions of social import raised in him a predisposition towards social conduct. He submitted the following table relating to 64 cases submitted to him for examination:—

	Cases.	Morbid changes (per cent.).
Reduced intelligence	29	45·3
Disturbed sleep rhythm	50	78·1
Marked irritability	45	71·3
Moral defects and character changes	21	32·8
Parkinsonism, bradykinesia, tremors	27	42·1
Perverted habits	29	45·3

With regard to treatment, if the theory set forth in the paper was correct, punishment could have little or no deterrent effect; indeed, it might have disastrous results by fixing an antisocial attitude through the creation of a conflict or an inferiority complex. Under the simple and regulated life of a special institution, differing from the Borstal or industrial school type, sufferers from encephalitis lethargica would re-acquire the necessary epicritic control to enable them to again take their places in ordinary life.

The President showed on the screen slides of the lesions he had found in cases of encephalitis lethargica, and briefly discussed the paper.—Dr. P. C. P. Cloake (Birmingham) agreed with Dr. Auden's conclusions. This disease could be put in the great group of toxic cases with mental symptoms, and he considered that the mind was disordered differently under the influence of different toxins. He discussed the pathology of the sleepy state at some length.—The paper was also discussed by Dr. G. H. Melson, Dr. S. J. Cole, Dr. Taylor, Dr. Lord, Dr. Helen Boyle, and Dr. A. M. McCutcheon.—Dr. Auden replied.

Chronic Infective Processes in Mental Disorder.

Dr. T. C. Graves (medical superintendent, Hollymoor Asylum) read a paper on the Incidence of Chronic Infective Processes in Association with Mental Disorder. He said that often the conditions found were beyond the possibility of cure, as they were slow, insidious, and hidden, and sometimes they had not given evidence of their presence. He narrated a number of cases in which slides of the dental condition were shown and the clinical notes read out. In some cases after extraction of teeth a root had been left, and the shutting in of infection had led to spread into the bone. Some people with undoubted septic foci seemed not to suffer disability from them, the explanation being that they were putting up an effective resistance. He also dealt with the questions of sinus infection, infection of ear, tongue, tonsils, and in the female the genital tract, and contended that these septic processes played a definite part in the causation and the duration of mental disorder.

The paper was discussed by the President, Dr. Cloake, Dr. Bedford Pierce, and Dr. J. G. Soutar. Dr. Graves replied.

Delinquency.

Dr. W. A. Potts read a contribution on this subject. He said he thought the time would come when all sexual offenders, those of a kind now sent to remand homes and those who had committed serious offences, would be referred for a special medical examination. The first duty was to see that the person concerned was not suffering from a physical or psychological handicap, the latter being divisible into inborn and environmental. The presence of a physical disability did not mean that there was not a psychical one also; but when a physical factor had been efficiently dealt with the psychological factor disappeared. Of this he quoted some convincing examples. In many cases of juvenile delinquency the problem was the parents. It had been said that 10 per cent. of delinquents were mentally defective, but Dr. Potts regarded that figure as much too high; it was nearer 2 per cent. Mental conflicts must be recognised and treated as such. Usually the delinquent was failing along more than one line. He had found that homosexual offenders had been retarded, especially on the emotional side, and they responded well to psychoanalysis.

There was a full discussion on this paper, the participants being Dr. R. W. Branthwaite, Dr. McCutcheon, Dr. Marr, Dr. Hamblin Smith, Dr. Lord, and Dr. Soutar, and Dr. Potts replied.

The Iodine Content of Thyroid Glands.

Dr. F. A. Pickworth read a paper with this title. It represented a further stage of the work done by Sir Frederick Mott and submitted to the Association at its meeting in Belfast last year, its aim being to correlate the iodine content with histological structure and the mental and bodily condition of the patient. Dr. Pickworth described and demonstrated in the asylum laboratory his new method of ascertaining the iodine content in glands. It consisted of the destruction of the organic matter by fusion with alkali and oxidation of the resulting iodide to iodate with permanganate solution, the excess of the latter being removed by means of animal charcoal. After filtering, potassium iodide was added, and the iodine titrated with thiosulphate. Arterio-sclerotic glands showed less iodine, and in fibrotic glands the iodine was very low indeed. A case of tuberculosis showed a lowered iodine content, but one of miliary tuberculosis showed iodine above the normal. A low quantity of iodine was also found in melancholia, mania, dementia præcox, and arterio-sclerosis, as well as in dementia. In the 39 cases of general paralysis of the insane there was a large range of variation in this respect. It became clear from this investigation of over 100 cases that the iodine content in the thyroid was very important in combating infections, though it probably was associated in this influence with the endocrine products.

Institutional Treatment of Mental Defectives.

Dr. A. M. McCutcheon read a paper on this subject, with special reference to occupational training. He said the objects of the treatment of mental defectives in institutions were four: (1) to correct their antisocial conduct; (2) to restore their self-respect and happiness; (3) to teach them the work for which they seemed most fitted, leading to discharge, if possible; and (4) by stopping the procreation of children and so to prevent the blight from being handed on. All these could best be achieved, he thought, by segregating them in institutions, preferably of the colony type. A keynote to success was adequate classification. There was a good discussion.

The Psychopathic Personality.

This subject was dealt with in a paper by Dr. Hamblin Smith (medical officer, Birmingham Prison). He said the cases dealt with formed a large but ill-defined group, the members of which found it impossible to make satisfactory social adjustments. They had a strong inferiority complex, and however well the physical treatment of them might be carried out, the psychical must not be neglected. These people had a "shut-in" personality, and the hope for the future lay in taking the psychological view of them.

At the dinner the Lord Mayor of Birmingham (Hon. Percival Bower), Dr. Nathan Raw, Miss Bartleet, J.P., Prof. Kauffmann, Prof. Sir John Robertson, and Alderman J. H. Lloyd, J.P., were among the guests, while there was a good attendance of prominent members of the Association. A visit was also paid to the Hollymoor Mental Hospital.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

A meeting of this Society was held on July 1st, the President, Sir David Wallace, being in the chair. Sir Edward Sharpey Schafer opened a discussion on

The Pituitary.

Dealing first with the anatomy of the gland, he demonstrated its four parts, and its embryological development. The pars nervosa was formed from the brain tissue, the other three parts, pars anterior, medialis, and tuberalis respectively, being of epithelial derivation. The pars tuberalis surrounded the tuber cinerium, thus remaining unremoved in the so-called complete removal of the gland. The main network of vessels for the blood-supply to the gland was in the pars tuberalis and pars anterior, and therefore these parts were the seat of the maximum glandular activity. Numerous sections of the gland were shown demonstrating colloid material and its escape into the cerebrospinal fluid in the third ventricle of the brain. The posterior lobe consisted of the pars intermedia and the pars nervosa, and the physiological action on the circulation of alcoholic extracts from this lobe were described. On first injection a marked rise was seen, but on a "repeat" dose a fall resulted. The injection from the posterior lobe of the gland caused a marked contraction of the intestine, bladder, and uterus. Milk secretion was notably stimulated, and this even occurred in mammals when an extract of fish's pituitary was used. In the urine a highly diuretic action was exhibited, but repeat doses might cause a lessened secretion. Entirely different actions of stimulation and inhibition were obtained from alcoholic extracts of the gland and of the residue after extraction. The physiological standardisation of tests was described. These were: oxytocic test, pressor test, melanophore test, urinary test, and mammary test. The anterior lobe was concerned with the growth and development in mammals, birds, and amphibia, and administration of the anterior lobe, whether orally or subcutaneously, caused excessive growth and gigantism, while removal of the gland produced the opposite effect. Prof. Schafer remarked on recent and useful work which had been performed in a study of the gland and its action.

Discussion.

Mr. H. M. TRAQUAIR spoke on the subject from the view-point of the ophthalmologist. Symptoms from enlargement of pituitary were of two sorts, glandular and local; the latter, due entirely to mechanical pressure, manifested themselves in visual changes. The effect of pressure was modified by the local anatomical formations, as the gland itself lay in the immediate vicinity of the optic chiasma. Enlargement caused diminution of the fields of vision. Slides were shown of the chiasma and numerous slides of visual fields demonstrating the progressive diminution in size, which occurred in a clockwise or anti-clockwise direction according to the eye affected.

Mr. NORMAN DOTT described various pathological conditions such as tumours, affecting the gland and the subsequent symptoms, which depended on whether the tumour enlarged in an upward direction or not. Destructive growths were accompanied by hypo-pituitarism, while growths of an adenomatous nature caused excessive secretion and corresponding symptoms of body growth and function in general. Diagnosis was greatly aided by radiograms defining the sella turcica and revealing calcification which occasionally took place as a degenerative change. Operative interference could be carried out from above through the cranial vault or from below through the nose.

Prof. JOHN FRASER referred to the marked increase in growth of tadpoles fed on pituitary tissue. Prof. EDWIN BRAMWELL spoke of a case of myopathy he was treating which presented all the features of hypopituitarism. Several cases of this type had been described in the literature and the association of the two conditions was too frequent to be regarded as a coincidence.

SOCIETY OF SUPERINTENDENTS OF TUBERCULOSIS INSTITUTIONS.

A MEETING of this Society was held at 122, Harley-street on July 6th, Dr. JAMES WATT, the President, in the chair.

Dr. PETER EDWARDS opened a discussion on

The Treatment of Pleurisy.

He regarded all pleural effusions as tuberculous unless negatived by the guinea-pig inoculation test; since pyopneumothorax was occasionally afebrile he advised the examination of all effusions. He considered that efficient strapping of the chest diminished the incidence of effusions. When an effusion occurred in the less active side of a bilateral case he recommended partial aspiration and temporary gas replacement, employing a small-bore needle after previous softening, if necessary, with Sir Henry Gauvain's "1.2.3" solution; complete aspiration resulted in a rapid recurrence of the fluid. Dr. Edwards emphasised the importance of rigid asepsis in cases of artificial pneumothorax, and said that he was satisfied that neither the bore of the needle, the degree of pressure, the type of gas, nor its temperature had any influence on the development of effusions. The type of fluid was important on account of the production of adhesions, and it should be removed when it masked the full view of the collapsed lung, in spite of Dumarest's faith in the utility of benign effusions, because (1) the pleura still thickened after gas replacement; (2) all Dr. Edwards's cases of perforation had occurred in hydropneumothorax cases; (3) he considered fluid a very inefficient splint. If the effusions were left there should be a daily cytological examination and screening both in upright and recumbent positions. Other indications for gas replacement were: (1) When the mediastinum tended to move towards the side of the collapsed lung—here a high positive pressure should be left; and (2) when the fluid was fibrinous. In cases where it was purulent 10 c.cm. of a 0·2 per cent. solution of methylene-blue might be injected into it; this did not stop fluid formation but it mitigated the malignancy. Occasionally he had irrigated with saline, leaving a small quantity of methylene blue solution in the cavity. He quoted Water's successful employment of Churchman's joint-irrigation apparatus in aspirating the fluid, irrigating first with saline, then with a 1 in 1000 gentian-violet solution until the return flow is clear, and finally leaving a small quantity of the latter in the cavity. He had abandoned as quite ineffective the method of auto-serotherapy. For an effusion in the contra-lateral side of an artificial pneumothorax case he lowered the pressure and so made the pneumothorax partial, this being definitely advantageous, and then he aspirated.

Dr. ELEANOR SOLTAU drew attention to the fact that adherent pleura occasionally occurred unexpectedly in early cases without giving rise to any symptoms. One of the most useful indications was the sucking in of the intercostal spaces on inspiration, especially noticeable when the patient was in the usual position for induction of artificial pneumothorax. Dry pleurisy was not a hindrance and the subsequent limitation of movement, due to formation of adhesions, was probably beneficial.

Dr. A. R. SNOWDEN, in dealing with chronic and purulent effusions, excluded empyemata and limited himself to purulent effusions subsequent to a pneumothorax, spontaneous or artificial, or arising de novo from acute effusions. Removal or reduction of such was not advisable as a routine measure, but was indicated in the following circumstances: (1) If any interference with the circulation or heart's action were present. (2) If associated with indigestion, usually resultant from toxic and mechanical causes. (3) When the liquid filled two-thirds of the actual pleural cavity owing to the risk of jellification. (4) If active pus formation were in progress. Apart from these drawbacks, he considered an effusion to have a neutral if not a beneficial action as a splint and as a restraining influence on an irritable diaphragm, though an inert gas replacement resulted in less thickening and also allowed of more accurate X ray screening of the collapsed lung. He divided cases in two classes: (1) Those to be left alone, or have their fluid level maintained steady by gas replacement, keeping the final inspiratory and expiratory pressures constant. (2) Those to be eliminated by repeated gas replacements, with diminishing gas pressures. If the effusion be chronic the replacement should be done by degrees with intervals of from 8 to 14 days. He deprecated the frequent use of high pressures. Nitrogen, oxygen, and very dilute chlorine were the gases employed, but oxygen was found very irritant. In his experience purulent effusions were usually sterile and tended to clear up more quickly than simple ones. He had seen afebrile purulent effusions become non-purulent under the influence of ultra-violet radiation. Small doses of sunlight had also been beneficial. He had discontinued lavage as it caused thickening and occasionally sinus formation.

Dr. COLIN MILNE first discussed the differential diagnosis and then reviewed in detail the elements of local and general treatment of dry pleurisy. He pointed out that the induction of artificial pneumothorax for pleuritic pain was of limited use since it often occurred on the less affected side in bilateral cases. He quoted Fishberg's statement that 40 per cent. of dry pleurisies were tuberculous, in view of which he doubted the wisdom of alarming the patient unduly by diagnosing him as tuberculous in the absence of other physical signs. For the neurotic type of patient with pleuritic pain he resorted to the more drastic counter-irritants. In other patients he regarded pain as an indication of an exacerbation of the disease and ordered increased rest.

Discussion.

Dr. H. DE CARLE WOODCOCK reported that he had not had satisfactory results with gas replacement or injection of antiseptics in the more virulent forms of purulent effusions, but in simple effusions replacement was worth doing. He quoted Mr. Morriston Davies's recommendation to remove the gas if fluid returned so rapidly as to cause distress.

Dr. F. R. G. HEAF strongly recommended the inunction of iodex followed by exposure to radiant heat. He disagreed with Dr. Edwards's view that fluid was not an efficient splint.

Dr. G. M. MAYBERRY also advocated the use of iodex, but found methyl salicylate a useful addition.

Dr. ESTHER CARLING had found expectant treatment the best, and Dr. W. C. FOWLER reported favourably of his experiences with the use of radiant heat.

Dr. C. D. S. AGASSIZ replied to Dr. J. D. LEIGH's inquiry as to the occurrence of effusion in children, that it was very rare, and those few that did develop were probably not tuberculous.

A communication from Dr. VERE PEARSON was read in which he considered that oxygen replacement of an effusion following artificial pneumothorax was indicated in these circumstances: (1) If the chest were three-quarters full. (2) If the chest were one-third or more full, but associated for more than three and a half weeks with toxæmic symptoms. (3) If X rays showed that there was a danger of the lung expanding and becoming adherent. (4) If the fluid, though small in amount, was causing serious discomfort to the patient; this might occur in a convalescent patient on resuming a more active life. (5) In the rare cases of secondary infection of the fluid. In the case of spontaneous pneumothorax roughly the same rules for withdrawal of fluid held good, but the situation was complicated by the presence of an opening in the lung and frequently by secondary infection. Treatment must aim at dealing with these difficulties as well as at keeping the lung compressed long enough to obtain healing of the disease. Skilful adjustment of pressure by gas or fluid-withdrawal aided in healing the hole, while suction drainage and washing out the pleura often diminished the bad effects of sepsis. Open drainage was seldom called for, as it was very difficult to secure closure of the external sinus, and with this type of patient the hole in the lung also tended to remain unhealed. Thoracoplasty was sometimes of use in these cases provided the patient's general condition was good.

THE Nineteenth Voyage d'Études Médicales, which had been announced for September next, will not take place, difficulties having arisen at the last moment with respect to the facilities offered.

PROCEEDINGS OF THE
ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 182.)

EVIDENCE OF OPTICIANS' ASSOCIATIONS.

Institute of Ophthalmic Opticians.

(App. LX. and Q. 17483–17617.)

EVIDENCE was given on behalf of this Institute by Mr. Owen Aves, Mr. F. T. Gregg, and Mr. J. Forrest. Its members number over 1300 qualified persons; they are limited to those who hold (1) the qualification by examination for sight-testing of the Worshipful Company of Spectacle Makers; (2) the qualifications of the British Optical Association; or (3) the qualifications of the State Boards of Registration for Qualified Opticians in those parts of the British Empire which have already adopted legislation for the regulation of sight-testing opticians.

The general argument of the statement put in is to the effect that in the majority of cases the necessary treatment is sight-testing and the provision of optical appliances, and that this can quite safely be given by the qualified optician without the intervention of the medical practitioner or the ophthalmic specialist.

(Q. 17491.) The overwhelming majority of cases, we would say at least 95 per cent., require solely refractive treatment. . . . Such cases call for no intervention whatever of either the medical practitioner or the ophthalmic specialist, and . . . the qualified ophthalmic optician is the very best person to determine whether any such additional intervention or treatment is necessary.

The witnesses objected to the requirement which they understood to be imposed by the Ministry of Health that an application for ophthalmic benefit must only be considered by an approved society if it is accompanied by the written recommendation of a qualified medical practitioner.

With regard to the training of the qualified optician they made the following statement, and said that the Institute and other optical organisations have repeatedly requested the Ministry of Health to make thorough and searching inquiry into the facilities for training, and the methods of conducting the examinations for optical qualifications for diplomas in refraction.

(App. LX. 13.) The training of the qualified optician is not only intensive with respect to the theory and practice of refraction, but is also extensive concerning matters cognate to and arising out of such practice. Beginning with a basis of mathematics the optical student proceeds to the specific study of geometric optics and the properties of lenses. His further studies include ocular anatomy and physiological optics, on which foundation he is then taught the principles of sight-testing and the correction of refractive errors. Lastly he is taught to detect abnormal cases which require medical or surgical attention, in order that he may fulfil his ethical obligation to the public to pass on for medical advice those cases which require other than optical treatment.

The examinations of the British Optical Association and of the Worshipful Company of Spectacle Makers are, it was stated, conducted by eminent ophthalmic surgeons, refractionists, and physicists, and are admittedly searching in character and comprehensive in scope.

While the members of the Institute work in close coöperation with medical practitioners generally, and with many ophthalmic surgeons, they suggest that the large majority of medical insurance practitioners do not profess to know anything of refraction, and, as fully occupied public servants, are only too glad to avail themselves of the services of the qualified optician.

The witnesses contended that while clinical training in observation is certainly desirable and, in fact, given to the optical student, medical training in a therapeutic sense is not necessary. The following passage[1] was quoted in support of the view that thorough optical training is impossible to the average medical student with the present overloaded medical curriculum.

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* References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1369.

> (Q. 17408.) "The examination of the eye is conducted on principles so different from those employed in ordinary surgical and medical diagnosis that the help to be gained from the latter is practically valueless; the practitioner must, therefore, be prepared at first to approach the subject with his mind wholly detached from medicine and surgery."

The number of qualified opticians is sufficient to give optical benefit to the whole insured population.

With regard to the detection of disease, the sole duty of the optician where he finds evidence of disease is to send the case to a doctor, and the witnesses maintained that the fact that the refractionist is so competent to detect diseases of the back of the eye has led to the discovery of those diseases.

> (Q. 17510.) The patient is under the impression that his case is one merely of refraction, and . . . he visits the sight-testing optician in the hope that his case may be merely one of defective sight. The optician at once sees the cause of the trouble or of the symptoms. . . . If an ocular disease be present it is equally recognisable by the ophthalmic *optician as by the oculist.*

Amongst the recommendations of the Institute were the following: (1) That optical benefit should be extended to every insured person, preferably on a cash basis; and (2) that steps should be taken to set up a departmental committee to consider (*a*) the need of a national service of refractionists which would work under the National Health Insurance Act; (*b*) the definition of a standard of qualification for National Health refractionists.

Joint Council of Qualified Opticians.

(App. LXI. and Q. 17618–17704.)

This Council maintains a register of opticians who have passed the recognised examination, and administers a scheme of optical treatment in coöperation with approved societies. Mr. J. H. Sutcliffe, Mr. F. W. Bateman, and Dr. Margaret Dobson were the witnesses. This evidence to some extent covered similar ground to that given by the Institute of Ophthalmic Opticians. The register which is kept has no statutory force, but serves for purposes of disciplinary control. It was drawn up chiefly for the guidance of those approved societies who wanted to make use of the Joint Council's service.

With regard to the proportion of cases which come to the optician for refractive error, and which ultimately require ophthalmic treatment, one of the witnesses said:—

> (Q. 17624.) Out of the 35,000 cases last year only 303 were referred for medical treatment. This is less than 1 per cent. On the other hand, I can imagine that the cases presenting themselves at the out-patients' department of an eye hospital or a clinic would, perhaps, include fully 50 per cent. of diseased cases, the reason being that such cases would not present themselves if they were not eye diseases, as nearly all eye diseases are generally obvious to the patients themselves, and therefore do not go to the optician.

Asked to develop the argument for differentiating between the eye and other organs of the body as regards persons entitled to render remedial treatment, the witnesses said:—

> (Q. 17628.) With the eye it is simply a case of interposing a certain lens or refractive medium in the air between the eye and the object viewed. The skill of the optician is concentrated upon the determination of the position and the curvature of the lens. He does not add to or take away from, alter the shape or constitution of the eye any more than a cinema lantern operator in focusing the lantern has any effect upon the audience, other than that of making the pictures more or less comfortable as well as clear. Discomfort arising from an incorrect pair of glasses will be greater than any damage that could be done, as the patient can by discarding the glasses voluntarily return to his original state.

In view of this evidence, the question was asked why the witnesses objected so strongly to the unqualified optician. They said, in reply, that the unqualified man could do great harm, because he has not the training to detect an abnormal fundus. The harm that he may do is in failing to send cases to the ophthalmic surgeon rather than in supplying wrong spectacles.

These witnesses protested, as did the previous witnesses, against the action of the Ministry of Health in requiring an insured person to have a recommendation from a medical practitioner if he needed spectacles, and also against the intention of the British Medical Association to charge any doctors recommending patients to a sight-testing optician with infamous or covering conduct. They readily agreed that the ophthalmic surgeon is a higher authority on the diseases of the eye than the qualified optician, but they said that in turn the qualified optician knew more about the eye than the ordinary general practitioner. The implication in the statements of doctors that opticians lacked the necessary skill could only be due to the fact that those making them had not taken the trouble to ascertain how the qualified optician has been trained.

British Optical Association.

(App. LXII. and Q. 17705–17771.)

This Association is a training and examining body, and confined its evidence to amplifying what had been said by previous witnesses in regard to the schemes of training and examination. Evidence was given by Mr. W. B. Barker, Dr. J. McHoul, and Dr. J. L. Meynell.

During the last 30 years the Association has examined 3061 candidates, and has issued about 250 honours certificates and about 1050 fellowship certificates. The standard required of successful candidates is a high one, and on an average not more than 40 per cent. of the candidates qualify. The Board of Examiners appointed by the Council consists of scientific men, several of whom are ophthalmic surgeons. Its rules and practice are modelled upon those which prevail in the medical and dental professions. The treatment of defective eyes otherwise than by glasses is strongly discouraged by the Association, and the prohibition is enforced where necessary (like other disciplinary measures) by the withdrawal of the Association's certificate of qualification.

With regard to their high standard, the witnesses quoted from a lecture delivered in 1920 by Mr. W. S. Todd, an examiner of the Association, who was chairman of the Examining Boards of different States in America. He said:—

> (Q. 17708.) I think it is extraordinarily important that the British Optical Association should be recognised. I have had the privilege of examining for the British Optical Association, and one thing that has surprised me is the very high standard of knowledge. I can speak as a member of the medical profession very much interested in eye work. When I qualified at London University I would not have known the answers to the questions that I had to ask the students at the British Optical Association's examinations.

No difficulty is experienced in securing medical men to act as examiners; on the contrary, the Association have to refuse applications from ophthalmic surgeons because their quota is full. The Association courted the fullest inquiry into their procedure and constitution.

With regard to the United States, the training is conducted at certain recognised State schools and universities in the same manner as at similar colleges of technology in this country. The State Boards of Examiners insist on attendance at those schools before they allow a candidate to sit for the examination; and in certain States the examination of the British Optical Association is regarded as part exemption from those examinations.

For the requirements of an insurance optical service, the witnesses pointed out that as against 500 ophthalmic surgeons willing to undertake the work there were 2500 duly qualified opticians.

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[1] The quotation is from Ophthalmology in General Practice, by Dr. M. L. Hepburn, surgeon to the Royal London Eye Hospital.

In answer to a question similar to that put to previous witnesses as to the case for differentiating between the eye and other organs as regards persons entitled to render remedial treatment, the witnesses quoted Mr. Bishop Harman in support of the view that the eye is the only organ of the body where by direct observation its internal condition can be fully examined.

> (Q. 17723.) As opticians we claim to be physicists, and to supply a proper physical appliance for the correction of a physical error. In our studies we aim, in addition to that, not at a knowledge of pathology at all . . . but a very high knowledge of anatomy and physiology, so extensive that we can immediately detect any departure from normal appearance or function and immediately refer any clients so affected to the trained pathologist. . . The use of the two words "remedial" and "treatment" in the question are misleading. The qualified optician neither prescribes remedies nor does he undertake anything but purely optical treatment.

They also said that the law, as interpreted by the Lord Chief Justice in the case of Markham *v.* Thomas, imposed upon the optician the onus of detecting pathological conditions. Ever since the decision in that particular case the optician has been very anxious indeed, in his own interests, to make sure that he had the skill and ability to detect those conditions.

ROYAL SANITARY INSTITUTE:

CONGRESS AT EDINBURGH.

JULY 20TH–25TH.

THE Congress began on July 20th with a luncheon in the Students' Union, where Mr. Ewan F. Macpherson (Scottish Board of Health) remarked on the advances in hygiene which marked the progress of the Institute. The formal opening took place in the M'Ewan Hall, the chair being at first occupied by the Marquess of Aberdeen and Temair (a Vice-President of the Institute), who read a letter from the Duke of York regretting his absence. He then introduced the President of the Congress, Sir John Gilmour (Secretary for Scotland), who recounted how many-sided were the health problems of the Government and how well they had been met. He observed that Scotland was particularly easy to manage hygienically as she had always plenty of good water near her great aggregations of population; on the other hand, it was difficult to bring nurses in touch with all patients in the scattered isles. In each of its populous centres there was a university from which knowledge of hygiene was easily spread. Prof. Lorrain Smith was much struck with the personal care people were getting from health officials; the profession was coming again into personal touch with the community on the protective side too, where they seemed for a time to have lost that touch. Alderman W. Phene Neal (London City Corporation) hoped the Congress would be specially successful, as an encouragement to London, where next year's congress was to be held. Resolutions at conferences did do good. He had voted many times asking for municipal slaughter-houses, and now the last private slaughter-houses were to be closed in London. He wondered if people in general realised that 16 per cent. only of our meat was home-grown, only 14 per cent. in London, where only one loaf in ten was of English wheat.

TUESDAY, JULY 21ST.

The *Section of Sanitary Science* was opened by Sir George Newman, the President, whose speech was reported in our last issue. The other papers were on immunity and infectious disease, and great interest was taken in the Edinburgh attack on diphtheria by the Schick test and toxin-antitoxin injection, voluntary as far as the parents were concerned, but few objected; 16 cases of diphtheria had since occurred in children, shown to be positive, but not protected. Immunisation is giving very satisfactory results.

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The *Official Dinner* was held on Friday evening in the North British Station Hotel, the Chairman of the Council, Sir Henry Tanner, being in the chair. Prof. Bostock Hill, proposing the Lord Provost, magistrates, and Council of the City, the most beautiful in the world, spoke of the success of the Exhibition which had been particularly noticeable for its demonstration of women's work in hygiene and of the Scottish apprentices in plumbing. The Lord Provost, Sir W. L. Sleigh, thanked the Congress for the encourage-

In answer to a question similar to that put to previous witnesses as to the case for differentiating between the eye and other organs as regards persons entitled to render remedial treatment, the witnesses quoted Mr. Bishop Harman in support of the view that the eye is the only organ of the body where by direct observation its internal condition can be fully examined.

(Q. 17723.) As opticians we claim to be physicists, and to supply a proper physical appliance for the correction of a physical error. In our studies we aim, in addition to that, not at a knowledge of pathology at all . . . but a very high knowledge of anatomy and physiology, so extensive that we can immediately detect any departure from normal appearance or function and immediately refer any clients so affected to the trained pathologist. . . The use of the two words "remedial" and "treatment" in the question are misleading. The qualified optician neither prescribes remedies nor does he undertake anything but purely optical treatment.

They also said that the law, as interpreted by the Lord Chief Justice in the case of Markham *v.* Thomas, imposed upon the optician the onus of detecting pathological conditions. Ever since the decision in that particular case the optician has been very anxious indeed, in his own interests, to make sure that he had the skill and ability to detect those conditions.

ROYAL SANITARY INSTITUTE:

CONGRESS AT EDINBURGH.

JULY 20TH–25TH.

THE Congress began on July 20th with a luncheon in the Students' Union, where Mr. Ewan F. Macpherson (Scottish Board of Health) remarked on the advances in hygiene which marked the progress of the Institute. The formal opening took place in the M'Ewan Hall, the chair being at first occupied by the Marquess of Aberdeen and Temair (a Vice-President of the Institute), who read a letter from the Duke of York regretting his absence. He then introduced the President of the Congress, Sir John Gilmour (Secretary for Scotland), who recounted how many-sided were the health problems of the Government and how well they had been met. He observed that Scotland was particularly easy to manage hygienically as she had always plenty of good water near her great aggregations of population; on the other hand, it was difficult to bring nurses in touch with all patients in the scattered isles. In each of its populous centres there was a university from which knowledge of hygiene was easily spread. Prof. Lorrain Smith was much struck with the personal care people were getting from health officials; the profession was coming again into personal touch with the community on the protective side too, where they seemed for a time to have lost that touch. Alderman W. Phene Neal (London City Corporation) hoped the Congress would be specially successful, as an encouragement to London, where next year's congress was to be held. Resolutions at conferences did do good. He had voted many times asking for municipal slaughter-houses, and now the last private slaughter-houses were to be closed in London. He wondered if people in general realised that 16 per cent. only of our meat was home-grown, only 14 per cent. in London, where only one loaf in ten was of English wheat.

TUESDAY, JULY 21ST.

The *Section of Sanitary Science* was opened by Sir George Newman, the President, whose speech was reported in our last issue. The other papers were on immunity and infectious disease, and great interest was taken in the Edinburgh attack on diphtheria by the Schick test and toxin-antitoxin injection, voluntary as far as the parents were concerned, but few objected; 16 cases of diphtheria had since occurred in children, shown to be positive, but not protected. Immunisation is giving very satisfactory results.

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ment its meeting in Edinburgh had given to preventive medicine in that city. Lord Alness, Lord Justice Clerk, proposed the delegates, and Dr. A. A. Helmi (Cairo) and Dr. J. L. Oluwole (Lagos) replied. Dr. W. J. Howarth proposed the Local Committee and thanked them for their generous and spontaneous welcome. Edinburgh was full of local patriotism and he hoped there might be as much in London next year. Councillor Harvey and Mr. Alan W. Ritchie, chief sanitary inspector, replied.

THE HEALTH EXHIBITION.

The exhibition, well displayed in the Waverley Market, was opened on Monday afternoon by the Lord Provost in the presence of 700 people. Prof. Bostock Hill, who announced the judges' awards, drew attention to the change in health exhibitions. Traps and drains were now taken for granted, and modern hygiene dealt with the individual, the school-child, and the infant. Among the exhibits were many of great value.

Queen Victoria's Jubilee Institute for Nurses showed a bed with a sick patient illustrating model nursing appliances and their substitutes as improvised for poorer homes; also the kitchen of a tenement house prepared for an emergency operation. The stall equipped by the Town Planning Committee of the Edinburgh Corporation showed a map of Edinburgh in the twelfth century; houses in a single row on each side of the High-street and Canongate, each with its garden or close stretching away behind it. The crowded closes of recent days were shown in later maps as the gardens got covered with houses and the growing city became congested within its walls. Messrs. Morrison and Son showed a most interesting enamelled iron bath and basin combined whereby the cost of plumbing was halved. It had been designed for a housing scheme and cost just below £11. There was no "overflow," the plugs of bath and basin being on a short chain, so that they could not both be closed at the same time. Messrs. W. E. Farrar (Birmingham) showed glass coverings of taps, metal concealed, and the taps of various colours to suit the bedrooms in which they might be installed. Also shown was a double trough lavatory for a factory with roses all along for hand-washing, each opened by a foot-tap. Messrs. Chance Brothers and Co. (Birmingham) showed their Calorex glass which very effectively saved the face from the scorching of a large electric light though the light came through; also Vitaglass, which lets electric light through without cutting off the ultra-violet rays. Messrs. Davidson, of Belfast, showed the Sirocco fan, which has done so much for ship, colliery, and other ventilation, and tea-drying, and was here shown removing dust from flues. Mr. James D. Bennett showed his unbreakable school desk made of iron tube, all but the bookboard and seat, in its outline, recalling a bentwood chair (bronze medal). Messrs. Fairbank Kirby (Grimsby) (they also got a bronze medal) showed their cold-drawn cod-liver oil, prepared by the method of Dr. Mellanby. Activated Sludge, Ltd., had working models showing the forcing of air into the sludge, &c., to which the Institute had awarded a silver medal. Edinburgh Corporation Gas Department showed a new gas-oven which, being set at the mark determined as suitable for the cooking in progress, prevented, by a thermostat, the temperature in the oven from rising too high. The British Women's Temperance Association and the British Social Hygiene Council showed excellent literature and diagrams for advancing their propaganda. Messrs. G. W. Harrison and Co. showed their Silent Harriap flushing cistern. A solid piston by its upward movement lifts enough water to set the syphon action going, and when it is released a copper shutter on the piston opens and allows the rest of the water to complete the flush. As the shutter and its bearings are of copper and are fixed in the piston when it is cast, it is held that the system will never be eaten away by chemical action nor require repair (silver medal). The Lacre Motor Car Co. (King's Cross, London) showed a street-sweeping brush mounted in a motor body with only a single wheel behind to facilitate sweeping out corners (silver medal). Edinburgh Corporation Electricity Department showed the baking of bread in an electric-heated oven. A remark to the manager of the stall suggesting that electricity was too expensive for cooking and other household heating, led him to say that of course it depended on the price of current, but that a county asylum had had an interesting experience. It made its own electricity originally for lighting with carbon filament lamps, but as these were replaced by metal filament, and these by gas-filled lamps, there was so much electricity to spare that the kitchen, cooking for 1000 persons, patients and staff, was outfitted with complete equipment, ovens for bread baking, fish fryers, vegetable steamers, roasting ovens, &c., that this was found to be practicable with only its existing generating plant, and the change to electricity has ever since given complete satisfaction. At stall No. 54, North British Rubber Co., Ltd. (Edinburgh and London), was seen a novel and easily cleaned teat for feeding-bottles. There is no teat; that is replaced by a grooved strip of rubber which, doubled, passes through a slot in the dome of the cap; the child has the loop in his mouth and sucks the milk easily through the channel formed by the grooves. Once the knack of adjustment has been learned there is no difficulty in cleaning the teat and putting it again in use. Silver medals were awarded to Messrs. Southall, and to Hoover, Ltd., for their suction sweeper. Messrs. Parsons, of 315, Oxford-street, London, showed panels of their enamels of wonderful brilliance which won a bronze medal.

(*To be continued.*)

Reviews and Notices of Books.

SURGICAL TREATMENT OF PULMONARY AND PLEURAL TUBERCULOSIS.

By J. GRAVESEN, M.D., Medical Superintendent, Vejlefjord Sanatorium, Denmark. With a Foreword by Dr. S. VERE PEARSON. London: John Bale, Sons and Danielsson, Ltd. 1925. Pp. 155. 10*s.* 6*d.*

THERE are several books and countless papers on the surgical treatment of pulmonary and pleural tuberculosis, but most of them are out of date, so rapid has been the advance in our knowledge of this subject. Dr. Gravesen's book accordingly fills a gap.

It is proper and fitting that this book should have come from Vejlefjord Sanatorium, for it has probably done more than any other institution in the world to promote the collapse treatment of pulmonary tuberculosis, and its first chief, Prof. Saugman, Dr. Gravesen's predecessor, was a conservative revolutionary, who converted the Dettweiler conception of masterly inactivity in the sanatorium into an elaborate system embracing surgery as well as medicine. During the last 20 years of his life Saugman was untiring in his efforts to bring to perfection artificial pneumothorax and, later, the operation of extra-pleural thoracoplasty, thoracoscopy with cauterisation of pleural adhesions, apicolysis, and many other daring incursions into the surgery of the lungs. Dr. Gravesen, who served as his assistant for many years, has made good use of the ample material and experience at his disposal, summarising in orderly fashion the essentials of his subject. Only by a severe elimination of unimportant details could he have condensed his matter into 155 small pages; and to those who during the past decade have attempted to struggle with the truck-loads of literature on this subject, this achievement of condensation is most impressive. The description of the technique of the induction of a pneumothorax should be read by all who would practise this treatment, and who may be tempted to approach it with imperfect equipment. A considerable part of the book is devoted to pleurisy, and as tuberculous pleurisy with effusion is often encountered by the busy practitioner, he would do well to learn the most modern methods of treating this condition, improper treatment of which may seal the patient's fate many years later. The procedure which the author recommends in such cases is gas replacement which allows of evacuation of the peccant fluid and yet maintains that compression of the lung which is most desirable at this stage. It would be interesting to learn in what proportion of cases of tuberculous pleurisy with effusion in Great Britain this simple operation of gas replacement is practised.

Dr. Gravesen duly emphasises the importance of combining sanatorium treatment with surgical activity instead of allowing the one to become a competitor of the other. To encourage an alliance instead of a competition between these forces he foresees the need for introducing hospital-like conditions into the sanatorium, the conventional traditions of which must be modified so that in the future it will provide not only fresh air and rest, but also such widely different remedies as surgery, artificial light, chemo-therapeutic drugs, and whatever else medical research may give us in the future. In connexion with the author's reference to chemotherapy, it should be noted that he has used sanocrysin since April, 1924, without having lost faith in it, and he discusses the possibilities of combining or interchanging sanocrysin and surgical treatment. Sanocrysin is, of course, still on trial, but the surgical treatment of pulmonary and pleural tuberculosis has passed the experimental stage, and Dr. Gravesen's book will remain a standard work on this subject for years to come.

TETANY.

La Tétanie Infantile. By R. A. TURPIN. Paris: Masson et Cie. 1925. Pp. 224. Fr.16.

THIS is a work of considerable importance and interest, not all of which is indicated by the title. The scope of the book is by no means limited to carpopedal spasm, but extends to most of the symptoms commonly described as spasmophilic (*tétanie latente*), and the author's observations have important bearings on the whole question of the nature of rickets. The first part of the book consists of a summary of the numerous researches which have been carried out in recent years on metabolism in tetany, following parathyroidectomy and arising from other causes. The question of calcium metabolism naturally occupies a large part of this chapter; Dr. Turpin demonstrates the conflicting results of the experiments referred to, and asserts that tetany can no more be accounted for by a pure hypocalcæmia than by excess of guanidine in the blood.

The author's own observations are presented in the form of a comparative study of three forms of tetany: (1) arising after parathyroidectomy; (2) produced by voluntary hyperpnœa; (3) occurring in children, usually associated with rickets. The investigation was principally concerned with the alterations which take place in the electrical reactions of the affected neuromuscular units, and in the calcium metabolism. The author considers that the most characteristic feature of the electrical reactions is alteration of the chronaxie. In latent infantile tetany (spasmophilia) this takes the form of instability, usually increase. In tetany following removal of parathyroids or evoked by voluntary hyperpnœa there is a very considerable increase, which is present before the spasm develops, rises to a maximum during the attack, and diminishes as the spasm subsides. The changes which are found in the blood in tetany are described in detail, and illustrated by tables showing the hydrogen-ion concentration and calcium-ion content in a series of cases. The author's view is that the essential change which precedes the spasm in all forms of tetany is an alteration of the acid-base relation in the direction of hyperalkalinity, resulting in a fall in the ionic-calcium content of the blood, though not necessarily in the total calcium content. Treatment is to be directed to the correction of this alkalinity, and for this purpose ingestion of ammonium chloride and exposure to ultra-violet rays are the most effective measures. On the exact relation between tetany and rickets the author is somewhat reticent, though rickets appears as an almost constant feature of the cases which he describes; his work may perhaps strengthen the opinion of those who regard tetany as essentially a manifestation of rickets. A problem of equal interest is presented by the relation of neuropathic heredity in spasmophilia with the biochemical processes described in this work.

The value of the book is greatly increased by a comprehensive bibliography.

MANUAL ON MIDWIFERY.

Sixth edition. By THOMAS WATTS EDEN, M.D., F.R.C.P., F.R.C.S., Consulting Obstetric Physician to Charing Cross Hospital; and EARDLEY HOLLAND, M.D., F.R.C.P., F.R.C.S., Obstetric and Gynæcological Surgeon and Lecturer on Obstetrics and Gynæcology, the London Hospital. London: J. and A. Churchill. 1925. With plates and 303 illustrations in the text. Pp. 704. 21*s*.

THE preparation of the completely revised sixth edition of this standard text-book of midwifery has been entrusted by the author to Dr. Eardley Holland, who is responsible for the many alterations in it. Although much new matter has been added and certain parts rewritten, it has been found possible to reduce the original number of pages by 40, a relief for which the student will be grateful. The book is now divided into nine parts. Parts VII. and IX. are new. The former deals with "Diseases, Injuries, and Death of the Fœtus," asphyxia neonatorum being now included here. This is a valuable addition to the book as it represents the results of Dr. Holland's well-known investigations on this subject. He makes a strong plea to the medical profession for the adoption of the terms "live-birth" and "dead-birth" in preference to "still-birth." Pulmonary respiration and not cardiac beat is taken as the sign of the former, whereas death of the fœtus before it has breathed, even if its heart is beating at birth, is adopted as the definition of "dead-birth." In Part IX. a brief description is given of the statistics of maternal mortality, followed by an excellent account of the methods and purpose of antenatal supervision. This important section is wisely placed at the end of the book, for the student at this stage will be the better able to appreciate the great advantages of efficient antenatal care, not only to the pregnant woman, but also to the practitioner.

The management of normal pregnancy is dealt with in Part I., where new sections have been added on the functions of the placenta and on the changes in the maternal metabolism during pregnancy. Attention is here drawn to the diagnostic value of X rays, not only in the differentiation of an early pregnancy from such conditions as a vesicular mole or fibroids, but also in the determination at full term of the presentation and lie of the fœtus, particularly in hydramnios or multiple pregnancy. It is also of value in excluding premature twins or a monster in cases where a Cæsarean section is contemplated, for anencephaly is easily demonstrable, and the degree of the ossification of the bones will give some idea of the fœtal age. Three illustrative radiograms are admirably reproduced, the most interesting of which depicts the spine and leg of a fœtus at the sixteenth week. This may well be the earliest positive sign of pregnancy, but we doubt whether a negative result at this stage is of much value. The section dealing with the toxæmias of pregnancy, including eclampsia, has been largely rewritten, and Dr. Holland makes an impartial résumé of modern views. For himself he still regards routine clinical experience as a more reliable guide than biochemical investigation. Part IV. (Abnormal Labour) now includes occipito-posterior positions with extension of the head, this position being diagnosed "when the second stage of labour has lasted three hours—or less if the powers of labour have begun to fail—and there is no sign of forward rotation occurring," the position before this being dealt with in Part III. (Normal Labour). This division may perplex the tyro. A welcome description is given of Buist's pad and binder method of rotating the occiput during the last few weeks of pregnancy.

The subject of puerperal infection is dealt with in a thorough and up-to-date manner. The old division into sapræmia and septicæmia is discarded, and the infections are grouped into slight and severe, the latter with or without secondary septicæmia. "Primary septicæmia" is reserved for those fulminant cases in which the infection becomes generalised from the first. Great stress is laid on careful bacteriological examination of the uterine contents, and an excellent description is given of the technique. Dr. Holland is not convinced that auto-infection plays any part in the severer forms, but he assigns a definite place to latent gonococcal infection. The portion of the book dealing with Cæsarean section includes a short description of the two lower-segment operations which, the author claims, are especially suitable for cases in which infection has occurred or is suspected. There is less risk of adhesion, and so far no case has been reported of rupture of a scar in the lower uterine segment; whereas in a collective follow-up investigation into 1000 cases or more carried out by Dr. Holland in 1920, it was found that rupture of the scar occurred in 4 per cent. of cases after the classical operation.

This edition of the manual bids fair to maintain its position as one of the best students' text-books of obstetrics.

Medical Electricity for Nurses.

By **Harold Wigg**, Radiographer, Royal Buckinghamshire Hospital. London: The Scientific Press, Ltd. 1925. Pp. 196. 6s.

This little book has been written to assist the nurse in an electrical department to acquire a working knowledge of the uses of electricity for medical purposes. In less than 200 pages the author deals with physical principles, the sources of current electricity, the effects of electricity on the body, faradic, galvanic and sinusoidal apparatus, the methods of applying these currents, medical and surgical ionisation, muscle and nerve testing, radiant heat and light, X rays, static electricity and high-frequency, diathermy, and the electrical circuits in certain surgical instruments such as the cystoscope. An index of electrical treatment concludes the book. We fear that in attempting to convey to the average nurse an intelligible exposition of all branches of medical electricity and of the relevant parts of chemistry and physics in so small a book the author has undertaken an almost impossible task. He has written clearly, and in a manner well suited for the worker with some preliminary knowledge of science. For the nurse a more colloquial description and the frequent use of analogy would have been helpful.

Latin on the Direct Method.

By **W. H. D. Rouse**, M.A., Headmaster of the Perse School; and **R. B. Appleton**, M.A., Chief Classical Master at the Perse School. London: University of London Press, Ltd. 1925. Pp. 226. 7*s.* 6*d.*

If the teaching of languages, alive or dead, on the principles so lucidly expounded in this book were to become universal, we should hear less about time wasted on the study of the classics, and have gone far to roll away a national reproach. The results actually obtained by the direct method in the Perse school, as here exemplified, are astonishing, and the book deserves to be read by all concerned in education. It is plain that for the fortunate boys in that school the learning of Latin is not attended by terrors, but is full of lively interest.

JOURNALS.

Journal of Pathology and Bacteriology. Vol. XXVIII., No. 3. Pp. 397–539.—The Action of Sensitised Antigen in the Production of Specific and Isophile Hæmolytic Immune Body, by T. Iijima (Tokyo). There has been a good deal of difference of experience as to whether antigens saturated with specific immune body act as efficient stimulants for antibody production, whether in other words the antigen-immune-body combination will dissociate in vivo like a neutral toxin-antitoxin mixture. The author's experiments with hæmolysins show that fully saturated red corpuscles have a very small antigenic effect.—The Nature of the Acquired Resistance to Bacteriophage Action, by F. M. Burnet (Melbourne). If a large bacterial population is acted on by a bacteriophage a small number of individuals escape the lytic action and give rise to similarly resistant descendants. d'Hérelle interpreted this as an acquisition of immunity to a parasite. The author shows that this is unlikely and explains the phenomenon in terms of the bacteriophage being a catalyst for the normal autolytic ferments which are concerned in fission, showing that the acquisition of resistance is accompanied by the production of long undivided bacillary forms. In a second paper the idea is developed that the differences between different bacteriophages are due to the readiness with which they are adsorbed on to the bacillary enzymes.—Experimental Pneumococcal Infections of the Lung, by J. F. Gaskell (Cambridge).—The Thyroid in Experimental Tuberculosis, by S. R. Gloyne (London). The thyroid in man is surprisingly immune to tuberculosis; the same is true of the guinea-pig, less so in the rabbit. Thyroid preparations have no ill-effect on tubercle bacilli in vitro nor any curative action on infected animals, nor is the natural resistance of the white rat influenced by thyroid medication. The immunity of the gland is possibly due to some anatomical cause.—Attempts to Transmit Epidemic Encephalitis to Rabbits, by J. H. Dible (Manchester). Failed in ten cases. A fresh pitfall of abnormal appearances in the brains of normal animals is described.—Immunological Notes, by A. T. Glenny, O. G. Pope, H. Waddington, and U. Wallace (Beckenham). The ratio between the in vivo and the in vitro antitoxin values is not constant as Ramon claims. In making Ramon tests care must be taken not to be misled by a non-specific flocculation which may occur at a point in the titrations far removed from the true value. The relative strength of two batches of antitoxin may vary according to the toxin used for titration. Many diphtheria toxin-antitoxin mixtures can be greatly diluted without much loss of antigenic efficiency; beyond a certain point there is no advantage in increasing the dose. Strong diphtheria toxin cannot always be relied upon to keep; dilutions made up ready for the Schick test are very easily destroyed by shaking with air; half-full bottles cannot be transported safely even a short distance. Phenol of about 5 per cent. strength destroys relatively more antitoxin than toxin in a mixture which may be thus converted from a neutral to a toxic preparation; apart from this toxin-antitoxin mixtures are stable enough. High-grade tetanus antitoxin is best produced by giving horses a few preliminary doses of toxin and then resting them for at least a month, after which they rapidly respond to further doses.—The Excretion of Water Urea and Chlorides in Experimental Oxalate Nephritis, by J. S. Dunn and N. A. Jones (Manchester). In the tubular nephrosis produced in rabbits by oxalate poisoning urea retention may be relieved by the copious administration of water and the kidney has no difficulty in excreting extra salt at the same time. It is suggested that the urea retention is due to the damaged tubules being unable to prevent the indiscriminate reabsorption of the glomerular filtrate and all its constituents.—The Relief of Experimental Arterial Anoxæmia by Compressed Air, by C. F. Nelson and P. Woodard. Anoxæmia produced by unilateral pneumothorax or the intratracheal injection of gum solution can be largely removed by compressed air at about 21 lb. pressure.—The Preparation of Certain Substituted Ureas and their Use in the Treatment of Trypanosomiasis, by T. H. Fairbrother, F. A. Mason, W. H. Perkin, and A. Renshaw (Manchester). A preparation made according to Fourneau's formula for Bayer 205 had marked trypanocidal properties on *T. equiperdum* in mice.—An Improved Method of Mounting Pathological Specimens in Flat Celluloid Cases, by C. M. Acland (Cardiff).—The Temperature of White and Black and White Rats, by C. Price-Jones (London). Useful data for 200 normal animals; the range is from 97° to 103°.—Sarcoma of the Ampulla of Vater without Jaundice Leading to Acute Pancreatitis, by H. H. Moll (Leeds).

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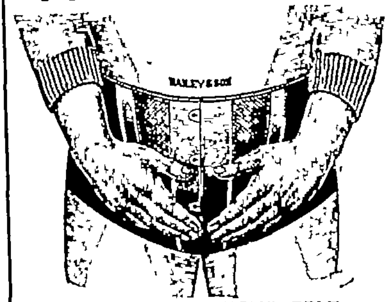

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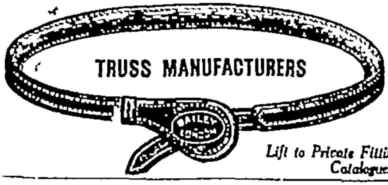

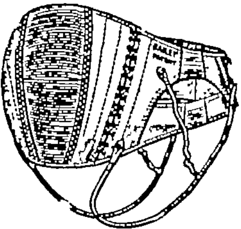

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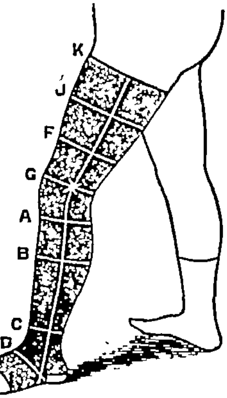

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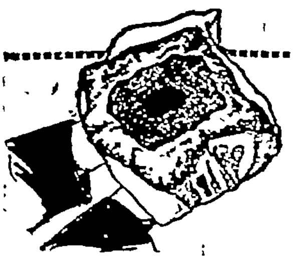

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THE LANCET.

LONDON: SATURDAY, AUGUST 1, 1925.

HOSPITAL ADMINISTRATION IN ITS BROADER OUTLOOK.

IT is 50 years since the Public Health Act of 1875, the charter of English preventive medicine, was placed on the Statute Book. A long struggle had led up to its enactment and the way for its passage had been paved by the work of pioneers who were not always popular. The efforts of Lord SHAFTESBURY, the factory legislation of the forties, the writings of CHARLES KINGSLEY, under the name of Parson Lot, and the steady education of public opinion by a host of other writers and speakers culminated in a new outlook. Finally, at the end of this period the discoveries of PASTEUR and LISTER revolutionised our views on infective disease. To read through the clauses of the 1875 Act and the statutes, such as the Rivers Pollution Prevention Act, which followed immediately after, is to get a historical view of the effort which was made by the sociologists of the day to attain to a healthy standard of living. With the passing of the Public Health Act there came to an end the age-long practice of laissez faire, which held that a man might do what he liked with his own, and that his doings, even if inimical to health, were no concern of his neighbours and least of all of the State. Throughout this initial period of reform we may trace three main lines of progress: (1) the attempt to make our expanding industrial system safe and healthy for the workers; (2) the endeavour to improve the sanitation of rapidly growing townships with their tenement dwellings—the word slum is a product of this period—which the new industries were calling into existence; and (3) the task of applying the new standards of cleanliness, sterilisation, disinfection, and isolation, which the work of PASTEUR and LISTER had introduced into infective and epidemic disease. Alongside these reforms there had been slowly growing up a public conscience on the question of poverty and destitution, and it is the modern reflection of this feeling which finds expression in the Social Service Department of the hospital.

No country in the world has witnessed such efforts as are made in our islands to relieve sickness and poverty by voluntary means, but much of this effort can only be described as indiscriminate charity; and it was inevitable that there should follow in the wake of the sanitary reforms, marking the closing years of what ARNOLD TOYNBEE termed the industrial revolution, an attempt to understand and relieve the causes and results of poverty. About the time of the passing of the Public Health Act the development of the University Social Settlements under the influence of the late Canon SAMUEL BARNETT and TOYNBEE, and the foundation of charity organisation societies, began to emphasise the importance of understanding these questions. To use the words of Canon BARNETT, it was necessary that "citizens should learn to understand the lives of each other," and so, gradually, the State came to realise, through the pressure of hard facts, that the care of its less fortunate citizens could not be left to indiscriminate charity. The legislation of this century, therefore, has seen a great increase in all measures for sociological amelioration. The care of the blind, the deaf, the epileptic, the feeble-minded, and the insane was an essential first step in the work in which our example has been followed by other nations, but we have now gone much further and have recognised that the school child, the child of pre-school age, and the expectant mother must also be the concern of the State if a healthy standard of living is to be maintained. It would be difficult to assess in actual figures the value of the great voluntary hospitals of this country in this movement, but in medical education, in research, in the high standard of clinical practice which they have maintained, the hospitals have made no small contribution. Great as these contributions have been there remains much yet to be done. Clinical practice and surgical treatment have been raised to a high level, but there is still a vast work in front of us in correlating the sociological causes of disease. In this matter the hospitals may have been slow to act, but their hands have always been over-full. It may perhaps be considered that this particular phase of a vast set of problems lies outside the scope of the hospitals' work, but at every stage in the progress of medical research, especially in clinical research, it becomes clear that the patient's habits and manner of life, his environment, his work, and his opportunities for a healthy life are intimately relevant to his treatment.

A reference to the reports of hospital almoners—those most important officers of the Social Service Department of the institution—makes this clear, especially in special departments where a preliminary sorting of cases has already taken place. The more carefully cases are followed up by home visitation and inquiry, the more it is realised that the financial side of the work forms only a small part of the Social Service Department of a hospital. It is true that the prevention of abuse soon became one of the essential needs and cardinal rules of the early days of hospital administration, but a great deal has happened during the last quarter of a century, especially as a result of the war, to alter the point of view of financial inquiry. Indeed, to a certain extent, it can be said inquiry into hospital abuse may obscure real sociological issues. The work of the Social Service Department, if it is to be interpreted rightly, is an essential part of clinical research, and from the point of view of medical education the sociological background must have a bearing on all teaching, whether clinical or preventive. General practice to-day is becoming more and more preventive and educational in its outlook, and the youngest student sees the narrow limits of the palliative measures with which a past generation had to be content. Thus the outlook is steadily changing. In the past too much stress has been laid on rules and regulations, especially negatives—the things which patients must not do. Nowadays, stress is being more and more laid on the positive educational side of hygiene. The modern patient has had an opportunity of acquiring a knowledge of elementary hygiene and physiology in school and in the popular science press, and he is keen to know the reasons for things and able to appreciate their importance and significance. The period under review has seen the introduction of many new words in sociological literature; preventive medicine is by no means the happiest of these. We need a term which is wide in its embrace of all the problems and is educational and constructive in its outlook.

CHOLECYSTOGRAPHY.

THE application of X rays to the problems of diagnosis finds ever new fields of usefulness. One of the latest is the mapping out of the gall-bladder or cholecystography. The investigation of hepatic function by means of dyes is not itself a new method, for it was introduced 12 years ago by ROWNTREE, HURVITZ, and BLOOMFIELD,[1] who administered phenoltetrachlorphthalein intravenously and noted the rate of its appearance in the fæces. The substance is removed from the circulation by the liver and excreted in the bile with the result that, in conditions where the excretory function of the liver is impaired, the appearance of the dye in the bowel becomes delayed. On account of the variable rate of action of the intestines in different individuals the test as devised by ROWNTREE was found unsatisfactory, but McNEIL,[2] AARON, BECK, and SCHNEIDER,[3] FRIEDENWALD and GANTT,[4] and other observers made use of the duodenal tube to recover the dye, and were able to establish the method as a useful one. In normal persons the dye, given intravenously, appears in the duodenum in about 13 minutes. More recently, FIESSINGER and LONGCHAMPT,[5] working in Prof. CHAUFFARD'S clinic, have further modified this test. Giving the dye intravenously, they take a sample of blood from the patient 20 minutes later and, by a colorimetric method, observe how much of it has been withdrawn from the circulation. They point out that the kidney as well as the liver serves as a path of excretion for the substance, but, as the amount lost by this route is small, the source of error is not serious. They do, however, criticise the method in that it gives information concerning one aspect only of hepatic function—namely, the excretory process. The great practical value of the method dates, however, from the discovery by GRAHAM that radiograms of the gall-bladder could be obtained by the use of this and similar substances. GRAHAM and COLE[6] showed last year that the intravenous administration of the sodium salt of tetrabromphenolphthalein or tetraiodophenolphthalein led, in the course of a few hours, to the appearance of an opacity in the gall-bladder enabling that organ to be examined radiographically.

Clinically this method of examination, here not improperly known as "Graham's test," has been exploited with good effect at the Mayo Clinic, and Dr. RUSSELL D. CARMAN communicated to the recent International Congress of Radiology a paper (which appeared in THE LANCET of July 11th) setting out the technique adopted, and giving some noteworthy figures of its employment in the diagnosis of diseases of the gall-bladder. At the Mayo Clinic this method of investigation has been employed in more than 1100 cases during the past 15 months, and in a large number of the cases the findings have been put to the test of operation. The substances used in Dr. CARMAN'S observations were sodium tetrabromphenolphthalein and sodium tetraiodophenolphthalein, given either by oral or intravenous administration, and the gall-bladder region was examined at certain times after the administration—namely, at the fifth, eighth, and twenty-fourth hour after giving the dye. The intravenous method was found to require strict preparation and diet during the period of examination. It gives rather more dense shadows than the oral method, but it not infrequently produces some local or systemic reaction, which may be severe. The oral method does not entail any special preparation or diet, and does not give any serious systemic reactions, though nausea and purgation sometimes occur. These effects are less common with the bromine salt than with the iodine. In consequence, Dr. CARMAN at present advises the oral use of the bromine salt as a routine method, but he uses the iodine combination intravenously to check the results in doubtful cases. The usual appearance in normal cases is an increase of intensity of the shadow followed by a diminution. In regard to the results obtained in diseased conditions, Dr. CARMAN finds that failure of the gall-bladder to fill with the dye sufficiently to cast a shadow is the most important abnormal indication, though persistent faintness of the shadow is almost equally suggestive of abnormality. Mottling of the shadow may be due to gall-stones; in some cases the shadow of the stones is denser, in others lighter than that of the dye; but gas in an overlying section of bowel may give an appearance of misleading similarity. As might be anticipated, the positive findings are of more value than the negative, and normal appearances with cholecystography must not be taken as excluding disease of the gall-bladder.

The Mayo Clinic results are sufficiently striking to warrant more extended trial of the method, which promises to give results of equal value to pyelography and to the method of investigation of the kidney by X rays after injection of oxygen into the peri-renal tissues. Why certain dyes should be opaque to the X rays remains obscure, but it would appear that it is the sodium and halogen elements in them that are responsible, the linkage with phenolphthalein serving to form a molecule which is excreted by the biliary tract. Further inquiry in this direction might also repay the trouble.

LABORATORY RESEARCH IN MENTAL DISEASE.

IN his presidential address to the Medico-Psychological Association of Great Britain and Ireland, which we print in abstract on another page, Sir FREDERICK MOTT enforced on medico-psychologists the duty of practising medicine in its broadest sense. Faced with an abnormal psychic state, inquiry should be made after a bodily condition which might be acting as cause or contributory factor. The annual report of the laboratory under the direction of the *Birmingham* Joint Board of Research for Mental Diseases, which has just been issued, gives a good example of such inquiry. The work of the laboratory during the year ending March, 1925, has been to develop lines of research upon the basis of endocrine functions; special attention has so far been directed to the thyroid gland, and details are given of the basal metabolism determinations and the analyses of thyroid gland for iodine content. There has been an inquiry into the action of certain hypnotic drugs upon animals with respect to the physiological action and the effect upon the general health and well-being of the animals. Routine serological, bacteriological, and chemical work has been done for the clinical staff of the Rubery and Hollymoor Hospitals; chiefly from the gynæcological, ear, nose and throat, and dental departments, and also for the purpose of investigating the occurrence of a few cases of typhoid in each institution; this latter work is still in progress. One hundred and thirty-four specimens from the Monyhull Colony have also been examined, especially in relation to the recent dysentery outbreak. Other work includes post-mortem examinations, the collection of material for histological and chemical examination, and of specimens likely to be of interest for future study. In view of the probable association between chronic sepsis and disturbed endocrine function the bacteriological work has become part of the research and has largely occupied the resources of the laboratory. The determination of the basal metabolism in the special respiration chamber has been improved upon both in procedure and in refinements of the apparatus, which has been perfected in the laboratory. There have been 90 determinations made of 22 patients and 11 nurses; and of these 4 patients and 1 nurse showed metabolism exceeding 110 per cent. of the standard, the highest being 125 per cent., and 8 patients and 4 nurses showed metabolism below 90 per cent. of the standard—the lowest, a patient, being just under 50 per cent. of the standard; the remainder are within 90–110 per cent. of the figures given in the Harris and Benedict tables for standard metabolism. One patient with defective metabolism was examined on ten occasions when only slight variations were found between 60 and 70 per cent. of the standard. The work will be made the subject of a paper for publication.

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[1] Rowntree, Hurvitz, and Bloomfield: Bull. Johns Hopkins Hosp., 1913, xxiv., 327.

[2] McNeil: Jour. Lab. and Clin. Med., 1916, i., 822.

[3] Aaron, Beck, and Schneider: Jour. Amer. Med. Assn., 1921, lxxvii., 1631.

[4] Friedenwald and Gantt: Amer. Jour. Med. Sci., 1923, clxvi., 519.

[5] Fiessinger and Longchampt: Presse Méd., 1925, xxxiii.,

[6] A. Graham and W. H. Cole: Jour. Amer. Med. Assn., xxii., 613 and 1777.

The investigation of the iodine content of thyroid glands previously carried on at the pathological laboratory of the London County Mental Hospital at the Maudsley Hospital has been transferred to Birmingham and is still in progress. Although a number of methods for the estimation of iodine are published, none of these has proved entirely satisfactory, and an original method for the accurate quantitative estimation of the iodine has been devised. It is found that there is a great variation in the iodine content—from 1½ to 44 milligrammes per gland—which corresponds fairly well with the result previously obtained as to the extreme limits but is more accurate in respect of individual cases. The chemical results are being correlated as before with the histological investigation in each case. A large number of organisms have been isolated and classified for reference by their sugar reactions. Organisms of the typhoid-dysentery class are also tested by their agglutination reactions; a few animal inoculations have been made for diagnostic purposes. Examination of sera for typhoid agglutination is to be extended to cover all the patients in the two institutions. A large number of vaccines prepared from carefully isolated identified and purified organisms are now on trial. Three cases of puerperal sepsis have been investigated by the laboratory—one of which showed at autopsy a thrombosed inferior vena cava with a generalised infection of *B. lactis aerogenes*; another showed during life a bacteriæmia of a Gram-positive coccus. From this organism a vaccine was prepared and the patient's brother immunised in preparation for a blood transfusion; transient good results in this case followed injection of aseptic guinea-pig serum-complement in conjunction with polyvalent anti-streptococcal serum.

It is interesting to note in view of the demonstrated sepsis of the mouth and nasopharynx that 23 of 30 specimens of test-meals showed no free hydrochloric acid. Examination of the fæces has revealed many varieties of organisms. Streptococci are present in many cases, occasionally in pure culture. *B. typhosus* has been found in six cases, para B in one case, *B. aertrycke* (mutton) one case, *B. dysenteriæ* "Y" in two cases (the latter from Monyhull). A large number of organisms other than *B. coli* are often found, which do not fall into the pathogenic groups by reason of their sugar reactions. *B. friedländer* often occurs in groups of cases—*e.g.*, 9 out of 20 in one ward, and *B. cloacæ* has been found in a blood culture in one case on two successive occasions; this suggests that organisms usually considered "normal," or at least non-pathogenic, may multiply and cause disturbance in debilitated patients such as those who are commonly met with in mental hospitals. A large amount of material has been collected for histological examination, but on account of pressure of other work it has not been practicable to proceed far with this department at present. A number of blood-sugar analyses have been made of specimens taken from hospital patients in the fasting stage with a view to demonstrating cases of definite hypoglycæmia. The sugar was determined by a modification of Calvert's method. Of 78 specimens tested, 9 gave results of over 0·12 per cent. of glucose, and 29 gave results of less than 0·09 per cent., including 14 under 0·08 per cent. Other work in progress includes the quantitative estimation of the fat, lipoid, and cholesterol content of suprarenal glands obtained at autopsies and correlations with micro-chemical tests and histological structure.

The value of this steady scientific research into the physical disorders underlying mental disease is unquestioned. It is to the laboratories of mental hospitals that psychiatrists are looking for some explanation of the tangled skein they seek to unravel. At present the work is too new for far-reaching conclusions to be drawn, but before long it should be possible to correlate the findings of the various workers.

Annotations.

"Ne quid nimis."

HYGIENE IN FACTORIES.

LAST week we noted some of the more general aspects of the report of the Chief Inspector of Factories and Workshops for the year 1924. The experiment of employing women and young persons on the system of two shifts permitted by the Act of 1920 has not had a fair trial yet owing to trade depression. So far, however, as it has been adopted, difficulties of enforcement have not been experienced, some economic advantage has followed, and, in certain cases, workers have expressed a preference for this method of work. For the most part permission to work the system has been made provisional on good welfare conditions. When trade improves this interesting system will be carefully watched. The general progress in the welfare movement now fixes it as firmly established; it is spreading and broadening; dental surgeries are being started; whole time nurses are being employed; in some cases medical service is being retained; in addition to the more usual canteen and recreational activities.

Sir Thomas Legge tells of the close eye kept by his medical staff for new occupational risks as novel processes are started, and for any relaxation in efforts to prevent well-recognised industrial disease. Lead poisoning has increased, largely due to ship-breaking in which fumes from old paint arise as the plates are cut by the oxy-acetylene flame; protection here is particularly difficult. A method of detecting lead absorption by the presence of punctate basophilia, which promises to be of practical value, has been worked out by Dr. A. Sellers. The recognition of cancer among mule-spinners has led to associating the occurrence of skin epithelioma with exposure to oil in other occupations, such as machinists, engine tenters, and brick pressers. Among the spinners 20 years was the minimum exposure. There seems no reason why, now that the danger is recognised, these cases should not all be avoided. Various investigations have been made into the occurrence of dermatitis, due to dyes, alkalis, oil, sugar, nickel salts, and other things; "barley itch" among dock labourers was ascribed to *Pediculoides ventricosus*. The campaign against dust, particularly that of fine silica, is being actively pursued; a recurrence of weavers' cough, a form of aspergillosis, is reported.

The number of girls, 102,217, medically examined for certificates of fitness again exceeds that of boys, 100,334; it raises the question as to what is happening to the boys. Welcome news is given regarding the provision in all factories for first-aid, made compulsory by Section 29 of the Workmen's Compensation Act, 1923. Response to the new requirement has been astonishingly rapid and marked by goodwill and general interest; the standard of equipment is high and such ancient and dangerous remedies as carron oil are being rapidly discarded. Education in its use is still needed, as we read that of 375 septic cases investigated, 216 had not had first-aid treatment. Notwithstanding the rapid increase in the use of electricity, accidents from this cause keep surprisingly low. The remarkable fact is reported that severe accidents at very high pressures, although causing permanent injuries, may not be fatal; thus out of 37 such cases only six were fatal. A special investigation into dust arising in dealing with grain cargoes throws the blame for the acute irritation of the upper air passages, which is experienced, upon fine hair particles derived from the grain to the exclusion of contamination with dirt and debris; the application of efficient exhaust plant should prevent escape of the dust. Recommendations are made accordingly.

The report concludes with an interesting account of the Government anthrax disinfection station for wool and hair at Liverpool. Notwithstanding abnormal difficulties during the trial period, the disinfection process which depends upon formaldehyde has proved unquestionably efficient. No case of anthrax has resulted from, or been imputed to, any of the materials disinfected, even though, from 1921–24, the material amounted to 8,300,000 lb. The cost per pound in 1924 was only 1½*d.* Unfortunately the process is not being adopted in other countries. In England the industrial anthrax problem has always concerned wool; in other countries hides and skins are more to blame. Thus in the nine years 1912–20 there were 372 cases from wool, as against 156 from hides and skins, but for 1922–24 there were only 52, as against 54. Wool sorters' disease seems within sight of abolition with us.

THE PLURAL OF VIRUS.

A GREAT pathologist once said that he thought the most fruitful and inspiring moment of his undergraduate career was his first introduction to "nucleated blastema" in which he ever afterwards found comfort at moments of stress. Everyone will have their own feelings about words and phrases which make a personal appeal to their own individuality; it might be a nice point whether one would prefer to sit under the professor of "pastoral theology" or his brother of "rural economy"; no one of taste could deliberately prefer the discourses of the professor of "American history" or of "biochemistry." And just as there are words which one is glad to meet and greet with a friendly smile, so there are expressions which almost everyone dislikes as they dislike the sight of some horrid and monstrous deformity. The disposal of human defectives is a difficult and often a repugnant business. What is to be done with verbal defectives such as the plural of virus? The word is come lately into pretty common use and for the good reason that it describes as handily as any other word a group of infective agents about whose place and nature and significance there is a certain amount of doubt. And so it becomes increasingly convenient to mention them in the plural if one is to put technical terminology to its proper use as a shorthand. But who can willingly tolerate "viruses"? The Society for Pure English, of which Dr. Robert Bridges is the moving spirit, prints in a recent tract (XIX., 1925, p. 36) a note by Mr. C. T. Onions (reproduced in the issue of the *Journal of Pathology and Bacteriology*, reviewed on another page), which concludes that there is no alternative. "Neuter pelagus and virus" is a jingle of our youth which remains with us; but the attempt to use "vira" seems ultra-pedantic and, in fact, there is no evidence that this was the classical plural, since the word is recorded only in the singular. It might be argued that the word is in fact taken from French rather than Latin; Pasteur used it a good deal and it has survived with his successors more continuously and freely than with us. But this would leave us in the undesirable confusion of having singular and plural spelt the same. There seems, indeed, as Mr. Onions says, no escape for the moment, except to drop the word altogether and think of another one. The progress of thought is always in advance of the progress of language, and the Society for Pure English has a field in the medical sciences which is inherently fertile enough, though whether it will respond very fruitfully to cultivation is another question. The meaning and real utility of such first-rate words as "antigen" become obscured and muddled through misuse, and sympathy may almost be felt with the musical comedy spirit which reduces "bacteriophage" to its final syllable.

A PATHFINDER IN MEDICINE.

Mary Putnam Jacobi was one of the first of the band of women who have taken up medicine as a profession and she met with the opposition from her family which most women pioneers did meet with. The story of her life is told in two volumes[1] which have recently appeared. She was the daughter of George Palmer Putnam and Victorine Haven his wife, George Putnam being a member of the well-known publishing firm. His mother was Catherine Palmer, a sister of whom became Mrs. Peabody, and one of Mrs. Peabody's daughters became the wife of Nathaniel Hawthorne. Mary Putnam was born in 1842 in London to which city her father had come to establish a branch of the publishing firm. The project, however, did not eventuate and the family returned to New York. Mary Putnam had made up her mind to enter the medical profession, but found few facilities in New York for acquiring any medical education, although she was able to take a degree in 1863 from the New York College of Pharmacy. Two years previous to this her father had asked her to postpone her medical studies. Between 1861 and 1863 occurred the Civil War in which George Haven Putnam, Mary's brother, served. He broke down in health and his sister was allowed to go to Brashear City, near New Orleans, to nurse him. On this her father, although still disapproving of her going on with her medical studies, did not withhold his consent. "I am willing," he writes in 1863, "that you should apply them (your abilities) even to the repulsive pursuit (for so it is in spite of oneself) of medical science." After a good deal of difficulty she was allowed to enter as a student of the Paris Faculty of Medicine, and in 1868 she attended the École de Médecine, being the first woman student of that venerable institution. This school, which obtained a separate building for itself in 1281, occupied for a period a house at the corner of the Rue de la Bucherie and the Rue de l'Hôtel Colbert, inaugurated by the anatomist Winslow, who taught there. This was in 1745, but by 1775 the building had got so out of repair that the school moved to the Rue de St. Jean de Beauvais, where Mary Putnam studied. She was admitted a Doctor of the Faculty in 1871, and in the meantime was fortunate enough to meet a number of interesting people, amongst others she became very intimate with the Réclus family. She was in Paris during the siege and the Commune. Her letters throughout her whole stay are bright, witty, and informing, and like a true woman she writes a lot about her clothes. After Paris she returned to New York, where she practised more or less continuously until her death in 1906.

The companion volume contains a carefully edited selection of Mary Jacobi's writings. The earliest of these take the form of letters from Paris to the *New*

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[1] Life and Letters of Mary Putnam Jacobi. Edited by Ruth Putnam, with a foreword by George Haven Putnam. Mary Putnam Jacobi: A Pathfinder in Medicine. With Selections from her Writings and a complete Bibliography. Edited by The Women's Medical Association of New York City. New York and London: G. P. Putnam's Sons. 1925. Pp. 381–521. 15s. each.

York Medical Record, beginning in 1867, when the writer was 25 years of age, and continuing to 1871, the year of her graduation. For so young a writer they show much accurate observation. One of the most interesting is a précis of a paper read by Mr. Rodet before the Imperial Society of Medicine at Lyons in July, 1867, upon the question of the contagiousness or otherwise of cholera. The meeting apparently came to no conclusion on the matter, but on the question of treatment Dr. Jacobi quotes from Rodet a prescription used by Mr. Lisle, physician at the Marseilles Insane Asylum, which was seriously affected by the epidemic of 1865. It consisted in the administration of copper sulphate. Dr. Jacobi gives the formula, but has unfortunately forgotten to give the dose. Before trying this remedy Rodet lost 12 patients out of 14, but after he began to use it he had 25 recoveries out of 32 cases. The use of copper sulphate has apparently dropped out, but the salt is well known to have a marked power of inhibiting the growth of low vegetable organisms, and a mere trace of it will keep a tank of rainwater free from algæ. Other papers are addresses mainly dealing with women in medicine, such as that reprinted from the *North American Review* for January, 1862. The final paper is pathetic, for it is the account written by herself of the early symptoms of the meningeal tumour compressing the cerebellum, from the effects of which she died. The record begins in 1896 and is continued down to 1903, three years before her death. Sydenham died from an acute attack of gout, a disease from which he had suffered all his life, and his treatise upon which is his chief work; but we have no parallel to a trained medical woman deliberately sitting down to chronicle the progress within herself of a disease which she must have suspected from the first would prove fatal.

OLIGURIA FOLLOWING BLOOD TRANSFUSION.

SETTING aside the avoidable danger of incompatibility, to which Dr. E. L. Hunt called attention last week in our correspondence columns, blood transfusion is only rarely responsible for results which endanger life. F. W. Barcroft[1] has recorded a case of oliguria following transfusion. A woman, aged 49, was rendered anæmic by metrorrhagia due to an incomplete abortion. Prior to curetting she was transfused 400 c.cm. by the Unger method. Tests had shown that there was no agglutination or hæmolysis of the cells of either donor or recipient. The transfusion was followed by a rigor. During the nine days following operation only 35 oz. of urine were secreted. The daily amount varied from 1 to 6 oz. The urine was clear, specific gravity 1010, and contained a trace of albumin. All attempts to increase secretion having failed and the patient's condition being desperate, both kidneys were decapsulated under gas and oxygen, the operation lasting 20 minutes. On the tenth day 9½ oz. were secreted and increased daily, reaching 51 oz. on the fourteenth day. Recovery ensued, but was complicated by a suppurative right parotitis and by a right lumbar intraperitoneal abscess, due to opening and infection of the peritoneum during the hurried decapsulation. Eight cases of extreme oliguria, or anuria, following transfusion are mentioned by Barcroft. Six cases died. Hæmaturia or hæmoglobinuria occurred in several of the cases. In most of the cases preliminary tests had shown compatibility of the bloods of the donor and of the recipient, but in some of the cases tests, performed after occurrence of oliguria, showed incompatibility, there having been errors of technique in the preliminary tests. In one case of pernicious anæmia two transfusions were made from one donor without complications. A week after the second transfusion a third transfusion was performed, this time from another donor. This was followed by anuria for 48 hours. The patient recovered from the anuria, but died of the pernicious anæmia. The bloods of both donors were compatible with the patient's blood, but when the bloods of the two donors were tested against each other hæmolysis occurred. Decapsulation in nephritis, performed by Harrison in 1896 and by Edebohls in 1901, has not been generally adopted. Bessesen, in November, 1924, stated that after decapsulation 65 per cent. improve, 20 to 25 per cent. remain in statu quo, and 5 to 10 per cent. die. He considers that, in nephritis, decapsulation is only of temporary benefit and is a procedure of necessity rather than of choice.

THREE HOSPITAL PHARMACOPŒIAS.

WE have heard it said that the "push-bike" is the piece of machinery approaching nearest to perfection which has yet been invented by man; for whereas formerly there were many varieties, now one type is dominant, and this type has remained constant for many years. On the same principle hospital pharmacopœias must also be approaching perfection, for in outward form they are very similar. Internally they do vary somewhat, but not to any striking extent. In the three examples before us there are, however, a few slips. We note *Sippey* for Sippy, *carbonis* for *carbonatis*, and the students' old error of taking *folia* as singular and declining it *foliæ*, *foliarum*. The London Hospital book opens with some minatory rules, which include the words: "Residents, in their prescribing are confined entirely . . .," on which immediately follows an excellent antidote table. The pharmacopœia itself includes the preparations of the B.P., an arrangement which increases its bulk and its usefulness. A handy summary of the Dangerous Drugs Act is placed at the end of the book, where it is easy to find. The West London Hospital separates its hospital preparations from those of the B.P., giving the latter as a list of doses. The London Temperance Hospital does the same, without giving all those of the larger work. Both of these hospitals go further afield with directions of a general nature. The West London tells how to bring up babies, how to arrange the sanitary condition of the home, and how to give Lenhartz, Sippy, and Graham diets. The Temperance Hospital describes preparation for operation, gives directions for cases of ringworm, and for the management of rickety children. As becomes a Temperance Hospital, there is a note that house surgeons and house physicians must not prescribe brandy and other beverage alcohol on their own responsibility. All three pharmacopœias are as nearly perfect as can be.

SCIENCE AND MISSIONARY WORK.

IN the current issue of the *Journal of the Cambridge University Medical Society* there is an interesting paper by Dr. J. Howard Cook, in which many instances are given of how science has aided the work of missions. Missionary work was from the start a prominent part of the Church's task, and although it did not extend beyond the limits of the Roman Empire during the first five centuries or so of the Christian era, those limits were roughly the limits of the known world, within which disease of all types was rampant. But as early as the sixth century the Nestorian Church pushed as far as Malabar, and by the eighth century China was reached. In the thirteenth century the Orthodox Church of the East had arrived in Persia and the Armenian Church in India, while a little later the Dominicans and Franciscans were at work in Northern Africa. The Jesuit missions of the sixteenth century and after are too well known to need more than mention, and from the seventeenth and eighteenth centuries and onward our own country exhibited active missionary effort. Therefore, for more than 1000 years missionaries have laboured subject to the plagues and pestilences of their centres of work. The records of deaths from disease amongst missionaries are scanty, but there can be no doubt

that disease took a large toll of life from these brave messengers, whose aims in recent days have been furthered by the advance of medicine. Most people welcome a religion if they can obtain some material good from it, and there can be no doubt that the benefits obtained from the cure or prevention of such diseases as malaria, plague, and sleeping sickness have proved, at any rate in primitive eyes, practical testimonials to the value of Christianity. Science has shown the way by which mission hospitals may bring healing to stricken multitudes, and Dr. Cook quotes some striking examples here. In the period 1901–1904 sleeping sickness was responsible for 200,000 deaths in Uganda, the mortality being practically cent. per cent. Missionary work was at first hindered, for the natives said, "Christianity has brought us the sickness." But preventive methods on the lines advocated by Castellani and Bruce were instituted, and the following figures for the kingdom of Buganda show the results: Deaths for 1905, 8003; for 1910, 1527; for 1915, 3; for 1917 and subsequently, none. Such results obtained by Christian teachers naturally disposed the native to a patient hearing. The power that may be obtained by an ethical leader who can cure or prevent disease is dramatic, and modern science is aiding the coming of the time when "all shall be one" in no uncertain manner, not only by disposing the hearts of people to receive Christianity, but also by rendering the lives of devoted workers far more secure than of yore.

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[1] F. W. Barcroft: Annals of Surgery, April, 1925, p. 733.

"COLDS."

SCIENTIFIC interest in a disease is apt to vary directly with its rarity, so that minor maladies, and in particular the common cold, do not receive that attention in text-books of medicine which their prevalence would appear to warrant. Of recent years the common cold, however, has been studied more assiduously and in particular from the standpoint of prevention. Dr. Leonard Hill and Dr. Argyll Campbell devote a chapter in their new book on "Health and Environment"[1] to the cause and prevention of "colds." They summarise the supposed causes of "colds" under five headings: chills and draughts, certain conditions of the weather, irritation of the respiratory mucous membrane, infection, and bad ventilation. Each of these supposed causes is then discussed in turn. Exposure by itself will not cause "colds" in healthy individuals, as is shown by the immunity to these disorders enjoyed by Arctic explorers and fishermen at sea. If, however, a person is already infected there appears to be some slight derangement of the heat-regulating mechanism, so that he feels a draught of cold air more easily than a normal healthy person and attributes a "cold" already "on him" to this cause. Cold, dry weather and strong drying winds do not favour epidemics of "colds," while unfavourable weather conditions, such as a high relative humidity of the atmosphere with a variable temperature, certainly do. Irritation of the respiratory mucous membrane by dusts and chemical irritants is also a cause of "colds," while a certain section of the community appears to suffer from a nervous derangement of the nasal mucous membrane, so that sudden changes of temperature and atmosphere may produce an acute paroxysm of rhinorrhoea. While "infection is not the whole story," there is no doubt about the importance of this as a cause of the common cold, and such factors as closeness of contact, duration of contact, and general conditions of ventilation vary for this as for other bacterial infections. In the opinion of these two authors, however, bad ventilation is the commonest cause of "colds." Warm, stagnant air produces a congested, swollen appearance in the nasal mucous membrane, which becomes covered with thick secretion and affords a weak spot for bacterial attack. In cool air, on the other hand, the membrane is pale and taut and well moistened with secretion. Added to the hot air so often present in the upper layers of a badly-ventilated room is the occurrence of cold air near the feet. Thus "cool breezes blowing round the head, the radiant heat of the sun, and a warm ground to stand on are the ideal outdoor conditions." The reverse of this which produces cold feet and stuffy heads is said by these authors to be present in the House of Commons! If these elementary facts about ventilation were appreciated a great many "colds" would be prevented. Dr. Russell L. Cecil, in a little popular book on this subject,[2] emphasises this, pointing out that the "non-contagious cold" largely depends upon the condition in which we keep our nasal mucous membranes. Besides dealing with the more common methods of treating "colds," Dr. Cecil describes the chlorine treatment, in which chlorine gas in a concentration of 0·015 mg. per litre of atmospheric air is inhaled by patients either in a special chamber or from an apparatus which delivers this concentration through a paper face-piece. This method, based upon the fact that no cases of influenza occurred amongst the workers in a chlorine plant during the epidemic of 1918, seems to have a certain amount of vogue in America, and Dr. Cecil speaks well of the results. The relationship between influenza and the common cold as suggested by this therapeutic measure is an aspect of "colds" which is especially dealt with in a review of the literature on influenza and the common cold by J. G. Townsend, published by the United States Public Health Service.[3] It is claimed that the association between influenza and minor respiratory disturbances, especially that known as the "common cold," is "more intimate than has been recognised or conceded." The Public Health Service arranged in 1923 to receive fortnightly reports from 10,000 persons in the United States as to whether they had suffered from any of these minor respiratory disorders during the period in question. The final analysis of the material thus collected may help to elucidate the problem.

PORTRAIT OF SIR JOHN MACALISTER.

THE Council of the Royal Society of Medicine has opened a fund to commemorate the 38 years of service of Sir John MacAlister as secretary of the Society. The memorial is to take the form of a portrait or bust to be placed in the Society's house. A letter has been sent to all the fellows and members of the Society. The Council believes that others outside the Society who appreciate the great work done by Sir John MacAlister in amalgamating 18 medical societies into one corporate body will desire to contribute to the portrait fund. Subscriptions should be forwarded to the hon. treasurers, Royal Society of Medicine, at 1, Wimpole-street, London, W. 1. These will be acknowledged in detail in our columns. The first well-supported list accounts for £615.

RETIREMENT OF SIR WILLIAM HAMER.

THE large number of medical men, hygienists, and officials who have come into relations with Sir William Hamer, *Medical Officer of Health to the London County Council*, will learn with sincere regret of his impending retirement. It is 33 years since he became Assistant Medical Officer to the Council under the late Sir Shirley Murphy, succeeding his chief as Principal Medical Officer in 1912. During that long period he has used devotedly his talents as epidemiologist, statistician, and organiser in the public service. He will carry with him into private life the good wishes of all who know the thoroughness and efficiency of his work, and who have experienced the courtesy of his methods.

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[1] : Arnold and Co. 1925. Pp. 203.—12s. 6d.

[2] Colds: Cause, Treatment, and Prevention. By Russell L. Cecil, M.D. London and New York: Appleton and Company. 1925. Pp. 111. 4s. 6d.

[3] Supplement No. 48 to Public Health Reports, 1924.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXXXIII.

THE TREATMENT OF IRREGULAR TEETH IN ADOLESCENCE.

OUR knowledge of the causes which produce malrelationship of the teeth and jaws is still very imperfect, but that knowledge is slowly increasing, and to the majority of workers in the field of orthodontics it is becoming evident that maldevelopment and lack of coördination of the factors governing growth account for by far the greatest number of malocclusions. The further back these causes are traced the surer becomes the conviction that treatment should be commenced far earlier than at one time was considered necessary.

Preventive Orthodontics.

Many cases are on record whereby successful treatment of the deciduous teeth at 3–6 years of age has rendered further movement of the permanent teeth unnecessary. No cases, so far as I know, have been described where a definite effort has been made so to influence antenatal development that the resulting child has been successfully reared with normal occlusion. Indeed, it would be difficult to prove to the scoffer that careful supervision of antenatal conditions helped to produce a normality which might occur in any case. The fact, however, that malocclusions have occurred even under a most favourable environment would tend to show that mixture of races and inherited tendencies must not be forgotten when considering this problem. Attention should be drawn to the work of Harold Chapman, who, in making an effort to trace the causes of malocclusion, has been studying the teeth and jaws of members of the same families reared under similar or different environment, and other workers are being enlisted to enlarge the scope of this investigation.

One of the causes which leads to a grave complication which intelligent foresight could so easily eliminate is the loss of space in the temporary dentition caused by the reckless extraction of deciduous teeth, and it is surprising that so many operators have so little regard for this important point. It is not to be denied that septic temporary teeth are a specific source of danger to the whole organism and can rarely be treated satisfactorily, but it is reckless prematurely to remove deciduous teeth without restoring lost function and retaining the interproximal space. The dental surgeon who impresses on parents and teachers the value of a healthy deciduous dentition, and carefully conserves those that come under his immediate care, may thus be regarded as a practitioner of preventive orthodontics.

Diet.—The careful preservation of the temporary teeth through the agency of well thought-out diets, attention to general health, and oral hygiene is the ideal to be aimed at, supplemented, if necessary, by simple conservative treatment. For infants breast feeding should be urged, the child's mouth being cleansed after each feed with a soft piece of muslin, wrapped round the little finger and dipped in normal saline solution. The desirable diets for young children have been thoroughly worked out by Sim Wallace and Harry Campbell among others; the reader is referred to their works for more elaborate details and arguments which are beyond the scope of this article. Suffice it to say that the chewing of hard foodstuffs should be arranged and wholemeal bread, crusts, and toast used freely. Most children enjoy biting hard things, and can easily be trained to do so. It will be found that they refuse to swallow lumps of food unless unduly hurried by an impatient nurse. Every meal should end with some form of sweet acid fruit, a little orange-juice, grated apple, or squeezed grapes when the child is very young; as a child gets older the quantity and method of preparation can be varied.

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CXXXIII.

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We are often called upon to give advice in cases where, through ignorance or possibly unfortunate environment, the patient *has suffered a loss of growth* that can never be restored and the apical base of Franke and Lundström is permanently reduced in size. It is then very doubtful if tooth movement alone will relieve permanently the overcrowded denture. The treatment of children of 13–14 *years of age suffering* from malocclusion, who have been deprived up to that time of any but the most primitive kind of dental service, *is a* difficult problem. Dolamore has shown that the most desirable ages for some forms of treatment, for example, when endeavouring to cure excessive overbite by means of a biting plate, are those which correspond to the most active *periods of bone growth, that is* to say, during the eruption of the first or second permanent molars, and should the latter teeth be late in erupting it may be quite feasible to undertake a line of treatment that would be doomed to failure in a child of more advanced development. It must be recognised that the physiological age of an individual does not necessarily correspond with the actual age. The dental surgeon *in England is* hampered by the boarding-school system of education, for children are mostly seen infrequently, if at all, during the school term, and dental *apparatus* of any kind must be so strongly constructed as to withstand a good deal of hard wear without supervision or *repair*. *In this* respect girls, who are still sometimes educated at home, have the advantage, and this is fortunate in that parents of girls are, as a rule, more concerned about disfigurement.

Another important practical problem that has to be faced is the length of time that *may* be involved in a course of treatment. Most authorities agree, although this idea has been a matter of controversy recently, *that tooth movement* should be slow enough and gentle enough to produce bone growth concurrently with that movement, thereby *shortening the period* of retention. The prognosis in adolescent cases *is* always obscure, because it is difficult to study the action and reaction of the different groups of muscles of the masticating face, and to ensure an harmonious coördination between them. If muscle exercisers such as Rogers recommends are used, it is only in exceptional cases that such treatment can be carried out without close supervision. If, for instance, a child is even a partial mouth-breather the group of muscles concerned in closing the mouth is necessarily kept below par for that individual, but muscle exercisers require regular and constant use and make almost impossible demands on an unwatched or unencouraged child. Much may be done in treating the disability of mouth-breathing by the insertion of an "anti-mouthbreathing valve," to be worn at night with the object of re-establishing the habit of nasal breathing after nasal stenosis has been eliminated. Rhinologists often overlook the fact that mouth-breathing persists as a habit even after the nasal airway has been rendered fully patent.

All cases will not, of course, yield to the same treatment. Cases of post-normal occlusion of the mandible with proclination of the incisors are reported successfully treated at the age of 15, and after, without extraction. But, on the other hand, many are known to have reverted that have been treated at a still earlier age. This type of case is often accompanied by a marked "over-bite," the mandibular incisors impinging on the gum behind the cingula of the maxillary incisors. After the second molars have fully erupted it would seem of slight avail to make any attempt to "raise the bite." If the canines are late in erupting and occupy a high position external to the arch the sacrifice of the first upper premolars will often produce a satisfactory result without any supplemental treatment. If at the age 13 to 14 lower incisors are markedly imbricated, showing a developmental lack of bone growth uncomplicated by post- or pre-normal occlusion, the removal of the most lingually placed incisor will often improve the appearance when the attempted retention of all the teeth would involve expansion of both jaws, a long process, and at this age of doubtful utility. Similarly, if second premolars have been allowed to erupt inside or outside the arch, it is doubtful if it is advisable to attempt to regain the lost space and place such teeth in their correct positions in the arch. But there are many cases where the occlusion, which always has to be most carefully studied, will not permit the success of this simple treatment, and misplaced teeth, even after the extraction of others, must be guided into the desired positions with extra mechanical help. Great care should be exercised to make this aid efficient—the mere "wearing of a plate" will not work miracles; any apparatus worn must be designed with intelligence and adjusted with skill. At this age cases of post-normal occlusion of the mandible with proclination of the incisors are probably treated best in this way. Prenormal occlusion of the mandible is usually accompanied by lack of development of the premaxilla, and any treatment undertaken must be accomplished with the additional aid of mechanical appliances.

Although there are many cases of all types that have been treated successfully without extraction at the age-period under discussion, intelligent use of the forceps with or without supplemental treatment would seem to offer the surest means of obtaining a reasonably æsthetic result with far less fear of relapse than any other method.

G. NORTHCROFT, O.B.E., L.D.S., D.D.S.

WOMEN'S HOLIDAY FUND.—For thirty years the Women's Holiday Fund has been engaged in the work of sending away tired women living in the poorer districts of London for a fortnight's holiday at the seaside or in the country. Each applicant contributes something towards her expenses, the average payment made being one-third of the total cost, which is about £2 17s. 0d. for a woman, and £3 7s. 6d. for mother and baby, for two weeks. The committee are making an emergency appeal this year for the sum of £4000–£5000 to purchase a holiday home for mothers and babies, the lease of the one they rented at St. Leonards for this purpose having terminated in 1924. Donations will be gratefully acknowledged by Miss G. Cooper, Secretary, Women's Holiday Fund, 76, Denison House, Vauxhall Bridge-road, S.W. 1.

Special Articles.

SOME GENERAL REFLECTIONS ON PUBLIC HEALTH ADMINISTRATION.

By J. H. L. CUMPSTON, M.D. MELB., D.P.H. LOND.,
DIRECTOR-GENERAL OF HEALTH, COMMONWEALTH OF AUSTRALIA.

III.—THE PRIVATE HEALTH AGENCIES.*

IN view of the trend of evolution in the United States, and, to a certain extent, in other countries and in the international field, it is interesting to examine the significance of some important developments leading towards the displacement of the legally constituted governmental authority from its proper place in control of existing public health activities and at the head of public health progress. Various private agencies have entered into the field of public health and have assumed, especially in the United States, an importance which is, for those who have not seen the conditions, difficult to realise.

There are four classes of unofficial agencies all having an influence on the evolution of public health in the United States more weighty than that of the official Government departments.

(a) The great foundations which have been endowed by wealthy people with large funds for the purpose of promoting the welfare of the community in some way or another, such as the Rockefeller Foundation, Commonwealth Foundation, and others similar.

(b) The various associations and societies which have been formed, such as the National Tuberculosis Association. These are membership societies composed of individuals, interested in some form or another of public health activity who have formed themselves into societies for the promotion of their particular interest.

(c) The American Public Health Association, which has a large membership mostly of persons engaged in some form of public health activity as their professional career.

(d) Agencies which have become interested in public health because of a direct business interest in the success of such work. The most notable of these is the Metropolitan Life Assurance Society, which now spends a very large amount of money annually in public health activities of a very specific and direct nature, on the ground that any improvement in the general standard of public health is financially to the advantage of the company in its life assurance activities.

Range of Private Enterprise.

These agencies are engaged in a wide variety of enterprises, ranging from what are known as demonstration campaigns, through actual field operations, to definite standardisation activities. As examples of these—

(a) The Metropolitan Life Assurance Company was engaged for seven years in a "health and tuberculosis demonstration" campaign at Framingham, the object of which was to demonstrate the principal factors in the spread of tuberculosis and the principal methods for its control, as well as making a general health survey.

(b) The National Tuberculosis Association operates, through its branches, a number of tuberculosis dispensaries, employs many tuberculosis nurses, and carries on similar activities directed towards the control of tuberculosis.

(c) The National Association for Child Hygiene has taken the lead (together with the Metropolitan Life Assurance Co.) in promoting the compilation of a survey of the health status of 83 of the principal cities in the United States.

(d) The American Public Health Association has actually compiled standards for the laboratory examination of milk, water, and sewage which have now been accepted by all official health departments.

The International Health Board stands in a class by itself because of the large amount of its endowment resources and because of its international scope. Notwithstanding its international application it is very closely associated with many activities within the United States—e.g., it subsidises many of the private membership associations, it provides funds for the building of schools of public health in universities, and it provides funds and staff for the inauguration of county health units, operating under the jurisdiction of State health departments. In one State at least an officer of the International Health Board staff is acting as an officer of the State Health Department, being loaned and financed by the International Health Board. It would appear to an outsider that these private agencies in the United States are more active than the official governmental agencies, although perhaps this appearance is due to the receipt by the private agencies of greater publicity. Their exact position in the scheme of public health activities challenges the inquiry of any visitor who goes to study the public health system of the United States.

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* Parts I. and II. appeared in THE LANCET of July 11th and 25th respectively, and the concluding part will appear in a subsequent issue.

Its Course of Development.

Notwithstanding considerable inquiry it is not easy to gain a clear or comprehensive conception of the conditions which called these agencies into being or an intelligent appreciation of their exact course of development. It would appear, however, that while in some States there has been for many years a strong realisation of the duty of the State Government to establish and maintain a modern health department in accord with the developments in scientific knowledge, in other States there has been a less complete realisation of the responsibilities of the State Government and a corresponding lag in the development of public health activities. In these latter States interested citizens have taken the lead in one or other directions, such, for example, as child welfare, tuberculosis, &c., and by the formation of societies, the enlistment of public interest, and so on, they have supplied the community with the institutions and equipment necessary for the public health, which the governments had failed to provide. This, however, is not the whole story, as these societies have come into being and have become active in States where the necessity for public health activities has been acknowledged by the Governments in practical form. For example, in Massachusetts the public health reform movement in the United States commenced with a vigorous crusade, arising out of the Massachusetts Sanitary Commission in 1850, which led to the introduction of many valuable public health activities and set a standard which has influenced public health development throughout the United States until now. Despite this, there is seen to-day in the city of Boston the interesting development that the city government provides a building, with caretaker and light services, for the housing of certain private societies to which it has, in fact, delegated its responsibility in respect of certain public health functions.

So, throughout the United States, there are seen: tuberculosis being dealt with by the tuberculosis associations; child welfare (including the management of baby clinics) by the child hygiene associations; the actual administration of health responsibilities of the State being delegated by statute to the Alabama State Medical Association; and certain county health departments being staffed by, and partly financed by, the International Health Board. The International Health Board invariably makes it a condition of its coöperation that the State or local community, as the case may be, shall contribute half the cost and agree to, or request, the coöperation.

Criticism of the Private Agencies.

The impression is that there are certain advantages and certain disadvantages attending this complex series of activities, and it would be desirable, in view of developments elsewhere, to consider these.

The advantages, as they were stated, may be summarised as follows:—

1. Private benefactions have provided larger amounts of money for public health than would probably have been available from public taxation.
2. Private agencies feel that they are freer to try experiments, and possibly make failures, than would be a government department.
3. Private agencies can use more unrestrained methods of publicity and public education than can a governmental department.
4. Private agencies reach the ear and sympathy of the public more completely than a government department.
5. By the provision of financial assistance active governmental agencies are enabled to undertake operations which they could not otherwise finance.

The apparent disadvantages may be summarised as follows:—

1. Several agencies in one community are apt to find themselves bidding against each other for (*a*) subscriptions, if in need of funds; (*b*) opportunities to work without competition, if well endowed.
2. If events do not move in the direction the particular agency desires, it is almost inevitable that the agency finds itself (or its officers) committed openly or engaging less obviously in intrigue to induce the Government or the officers of Government to adopt the policy which the agency concerned is advocating.
3. The officers employed by these private agencies or foundations are often persons trained only in a limited field, without any proper training in public health as a whole, and without any experience of public health administration. Public health requires, as an essential for efficiency in its servants, a reasonable appreciation of the whole field of influences which may affect the human individual, and this wide view is not attainable by the system of limited training necessarily adopted by these agencies whose activities are limited by the self-imposed limitations of their field.
4. The abundance of financial resources is in itself an embarrassment. These associations are almost compelled to find means for expending their income, and it has frequently happened that they have inaugurated institutions and campaigns at a rate of expenditure per head of the population concerned which is beyond the normal expenditure-out-of-taxation-revenue capacity of that population. When this has happened either the venture has quietly lapsed or the association or foundation concerned has been obliged to continue the venture out of its own resources.
5. Those associations which are not financially independent find themselves obliged to frame their policies along lines which will assure them of further public financial support and it may be regarded as problematical whether this does not offset the advantage, claimed above, of freedom to try experiments not influenced by political control.
6. It has happened that the associations or foundations have started activities in some communities, either with or without coöperation from the local government, but have found, when they wished to discontinue or to hand over administration to the local people, that the local community was not prepared to assume control; and the initial enthusiasm (sometimes artificial) having evaporated, a permanent result proportionate to the expenditure of energy and money has not been attained.
7. Finally, there is the fundamental objection which is always inseparable from all "easy money." No community can obtain lasting profit from anything which it does not earn by its own efforts. With a community, as with a person, the acceptance of a gift of this kind induces one of two attitudes—either that of the "borrower being servant to the lender," or the care-free laxity of the dependent who finds his needs supplied without any effort of his own. Either attitude is prejudicial to the vigorous growth of any community.

Trend of Events in the U.S.A. and New Zealand.

There are sufficient signs of the trend of events in the United States which should act as sign-posts for the road to be travelled in other countries. The necessity for correlating the activities of the various societies, associations, and foundations has led to the formation of a National Health Council, which represents a kind of group-management of policies without any organic unity. The associations represented on this Council are ten in number. These have now grouped their head offices in the one building, and it is significant that the New York branch office of the United States Public Health Service has its office in the same building and on the same floor as the National Health Council. This Council, or its components, has now associated with itself several persons with actual experience in public health administration as a whole field, in order to provide some approach to a bridge over the gap between these unofficial agencies and the official health machinery. But it is interesting to note that these unofficial bodies are now actively concerning themselves with the establishment of standards for a satisfactory health department for cities of a certain size, and with the formation and promulgation (towards the ultimate object of enforcement) of a mathematical basis of assessment by which the activities of the public health department of any city may be arbitrarily adjudged. In other words, the private membership associations and private foundations feel themselves competent and entitled to compile and promulgate standards by which the work of city health departments shall be adjudged. Inasmuch as this will probably apply in practice only to those cities in receipt, officially or otherwise, of financial assistance from these agencies, there can probably be little objection to those agencies framing standards by which to judge the extent of response to their generosity. But the situation is, in essence, unhealthy. In an educated and self-governing community the measures provided for the people must be such measures as are prompted by the conscious will of the people—i.e., by the Government—or they cannot be permanently successful.

On the other hand, in New Zealand the overwhelming success of the movement for the care of infants has been entirely due to the work of a voluntary society. It was by aligning the women of New Zealand behind his crusade for the protection of infants, and by this means alone, that Sir Truby King was able to secure such striking results. But it has now been found advisable to make a governmental activity of this movement, at least in part, and Dr. King has been joined to the Health Department as an officer of that Department—the whole work being under Health Department jurisdiction.

Government Control or Supervision.

There appears to be a growing opinion amongst these private agencies in the United States that all the work they are doing should properly be part of the work of Government, whichever form or function of government was best adapted to control any particular part of the work, and that the function, if any, of private agencies was to assist governments, not to act as their substitutes. It is impossible to conceive any course of action, other than autocratic governmental prohibition, which would prevent the spontaneous formation of such associations or societies, or prevent some philanthropically-disposed wealthy person bequeathing his money for some purpose of the kind now under discussion.

The State of Alabama has in its legal code an unusual provision :—

> "No board, body, or organisation shall engage in any public health work except under the supervision and control of the State Board of Health."

This method does not entirely prevent trouble. The simplest way to avoid complications arising from this source, a way which would at the same time be most calculated to bring lasting good to the community, would be for Governments, or, rather, the people whom Governments represent, themselves to perform those simple duties in the field of public health which apparently are being left more and more largely to private agencies. Private agencies cannot operate effectively in respect of environmental sanitation which is exclusively a matter for Government. Private agencies find their most profitable and most dramatic field for work in the various phases of individual hygiene, but individual hygiene in almost all its aspects depends for success upon efficient environmental sanitation. The mother, in her relation to public health—i.e., at the time of child-bearing—is influenced by her environment in respect of food, occupation, and infection. The infant at the time when it is the concern of the State—i.e., during the first year of life—is liable to environmental influence in respect of food and infections. The infantile diarrhœas are to a large extent referable to the same environmental factors of sanitation as are the typhoid and cholera group, and are controllable by the same measures as have been used successfully in those diseases. In tuberculosis it is now accepted that environment—i.e., housing, occupation, food (or economic status, which determines all three)—plays a part at least equal in importance to infections. Control of the environment cannot be secured by any haphazard efforts or transient stimulations of public interest by official or unofficial agencies, but must be solidly based upon a legal code deliberately framed by experienced sanitarians and backed by a solid public opinion demanding the enforcement of at least the major provisions.

Public Health Not Purchasable.

One of the most misleading public health epigrams is that officially used by the New York City Health Department—"Public health is purchasable"—as if public health were a tangible commodity. The implication is that with sufficient money the irreducible minimum of mortality- and morbidity-rates can be secured. All experience shows that this is not true. Public health is merely the expression of private individual health which in turn is regulated by the standard of education (upon these matters of health) attained by the individual and the degree to which the knowledge possessed is used. Money will not make a people wise. One can, without surrendering any convictions, welcome gladly the enormous assistance being rendered by these private agencies to the advancement of public health. The International Health Board is, beyond all question, the greatest single force in public health to-day. But, in the end, public health, to be successful, must be the practical expression of the conscious will of the people themselves—which is Government.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Recrudescence of Alcoholism.

DURING the last few years an increase in alcoholism has been noticed in France, which compares unfavourably with the marked diminution of the war period. A commission appointed by the Academy of Medicine has recently been inquiring into this. In his hospital experience during the course of six months, Dr. Achard has found obvious alcoholic stigmata in 44 men out of 418 entrants, and in 38 women out of 579 entrants (roughly 10·5 per cent. of men and 6·3 per cent. of women). This represents only the minimum, for many drinkers did not as yet show any stigmata. Apart from those diseases which had been aggravated by drinking, there were 21 cases—of cirrhosis, delirium tremens, polyneuritis, and gastritis—in which the illness could have been avoided by temperance. Cirrhosis was more frequent amongst women; in 100 alcoholics the proportion of cirrhotics was 18 per cent. for women and 9 per cent. for men. This increase in alcoholism is a reflection of the increase of alcohol consumption in France, which fell from 1.413.000 hectolitres in 1914 to 584.000 in 1918, but has risen again to 1,016,000 hectolitres in 1923 and 968.000 in 1924. The probable causes seem to be: The relative increase of wages amongst manual workers compared with other citizens; the eight-hour day with its increase in leisure; and the reappearance of absinthe in disguised forms. Complete prohibition hardly seems applicable to France, but it would be proper not to give official recognition to fermented drinks as "hygienic," and not to encourage the already excessive production of wine. The use of fresh grape juice, and the employment of alcohol industrially, ought to be developed. The oft-demanded suppression of the privileges of those who distil their own fruit seems an impossibility under the French political system. Some restriction of the number of licences might perhaps be considered, but the electoral power of the wine merchants gives them Parliamentary favour. Private campaigns against alcoholism have only a limited sphere of action. Propaganda should begin in the schools: it cannot be given to adults by their employers because of the distrust which would be excited. The workers' organisations would have more chance of success, and it is their leaders that have to be won over; but perhaps it is the doctor who is most qualified for the task in his rôle of disinterested adviser. It has been suggested that a special commission should be formed under the Commissariat de Santé to undertake a campaign against alcoholism.

Encephalitis and Vaccination against Small-pox.

M. van Bouwdyk Bastiaanse, of The Hague, in collaboration with MM. Bijl and Levaditi, have given an account of their observations on the ætiology of encephalitis in children following vaccination against small-pox. They were concerned with cases which, 10 or 12 days after vaccination, showed signs of encephalitis, characterised by sleepiness, fever, signs of irritation of the pyramidal tract and sometimes paresis, without spinal lymphocytosis. These accidents were noticed during an epidemic of encephalitis. Experiment and pathological research have shown that this form of the disease is not due to the virus of Jenner's vaccine. The various stocks of vaccine used were from a supply obtained from the calf which showed no exceptional neurotropic affinities. There is every reason to suppose that in these cases there was a latent infection by the virus of encephalitis lethargica, and that vaccination merely hatched it out. This agrees with the experience of Levaditi and Nicolau, who have shown that a neurotropic virus can bring out a latent infection due to a different but equally neurotropic virus (e.g., hydrophobia and vaccination). The fact that in the cases under observation the encephalitis developed in a site already affected by the vaccine virus explains the special histo-pathological changes seen.

Insulin in Non-Diabetics.

The trophic action of intramuscular injections of insulin in diabetes is well known. At the time of surgical intervention this substance is capable of hindering the development of toxic accidents; it facilitates the cicatrisation of the operation wound, and diminishes the time required for healing. H. Chabanier has reported a similar trophic action of insulin in the case of atonic wounds in diabetics—e.g., in perforating plantar ulcers and varicose ulcers. This action may also be observed in non-diabetic subjects. In small doses, given by injection, insulin leads to rapid cicatrisation of varicose ulcers in subjects with normal blood-sugar content; but he has employed it by injection and by local application in the form of dressings with an ointment of insulin. In every case the remedy has been well tolerated and a notable improvement observed in the patient's general condition in addition to the local change (modification of the skin in the periphery of the ulcer, which regains its normal supply and rosy aspect). In some cases cicatrisation was rapid. Alone or in combination with general treatment such local applications of insulin are able to render great service to the surgeon.

French Views on Rickets.

In spite of the large amount of work carried out within recent years on the ætiology of rickets, some physicians in France still hold views which they refuse to modify in the light of recent knowledge. Putting aside the opinions of Prof. Marfan, who still maintains the paramount importance of congenital syphilis as a causal factor in the production of rickets, even moderate French opinion by no means accepts, for example, the vitamin theory, although cod-liver oil was first used in France for the cure of this disease. At a recent discussion before the Société Médicale des Hôpitaux de Paris Dr. G. Variot sounded a note of warning on the subject of "sun-deficiency" as an ætiological factor, pointing out that because ultra-violet light had such a striking effect in curing rickets, it by no means followed that deficiency of this light was an important cause of the disease. He then elaborated the theory of "dysalimentation," which stresses incorrect diet at the period of weaning. This remained, in his opinion, the most important factor. He particularly indicted the removal of all milk from the dietary at this period and the substitution of starchy foods made with water. Prof. Comby, who also took part in the discussion, agreed with this view, and, while not denying the importance of hygienic factors such as the sun, air, light, and exercise, stated that these factors did not play any vital part in the majority of cases. He pointed out that in this his opinion had not changed materially since he first affirmed his belief in the alimentary factor 30 years ago; and in a review of the recent literature on this subject published in 1923 he had still maintained that defective feeding, and especially over-feeding, played a most important part in the production of rickets. That both lack of sunlight and defective feeding were closely related causes of rickets was advanced by Dr. Apert, who holds that one of these factors is as necessary as the other; but in reply Dr. Variot disagreed with this. It is noticeable that in the report of this discussion no mention is made of any vitamin, and it is probable that the recent work of Mellanby on the apparent antagonism between excessive starchy foods and the antirachitic factor will be taken here as an additional proof (as, of course, it is) of the dangers of overfeeding with starch during the period of growth. This is an illustration of the way in which facts can be made to bear slightly different interpretations according to prejudice.

The Comparative Action of Atropine and the Total Alkaloids of Belladonna.

Differences in the physiological and therapeutical action of the total alkaloids of a plant and of the essential principle are already well known. P. Lemay and L. Jaloustre have tested the action of atropine and of the total alkaloids of belladonna in the rabbit, and have confirmed the facts already noted by Cushny and Rothlin. The total alkaloids appear to be twice as active as atropine in their action on the cardiac wave, and the authors conclude that there is reason to use them in treatment (especially in spasm and vagotony) in preference to the galenical preparations of the codex. The physician has in them a remedy always of the same composition and twice as active as atropine without being more toxic.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Proposed Alterations in the Medical Curriculum.

A SPECIAL committee appointed by the Ministry of Education, in coöperation with the medical faculty of Vienna and the university boards of the three Austrian universities, has worked out a series of suggestions on the future regulation of medical study in this country. The principal change advocated is the extension of the period of studies. Hitherto ten semesters (five years) have been required; but the medical student will now have to work for a year longer at the university and at the clinics before he can take his diploma of M.D. At the end of his fifth semester (half-year) he will take three minor examinations (biology, chemistry, and physiology) and a severe examination in anatomy; after which he will serve during the next two years as junior assistant in various clinics. Here he will obtain practical instruction at the bedside in the modern technique of investigation, under the guidance of regular assistants of the clinical professors. The final examinations will be held at the end of the eleventh and twelfth semesters, and for both these terms the student will be required to serve in clinics. The "hospital year" for the graduated doctor, which has been adopted in Germany and some other countries, has not found favour here. The committee thinks it advisable that the student should have a year of thorough instruction at the bedside before he is granted a diploma which, according to the law, entitles him to settle down and practise. It has been thought wiser not to alter the fundamental legal regulation. Specialisation by the graduated doctor will also be much more difficult than hitherto. He will only be allowed to style himself "specialist" after having spent at least four years in hospital as interne and assistant after his graduation; and of this period he must have been working for at least three years in the special branch selected. He may then be recognised as "specialist" by the Union of Specialists, which alone is entitled to confer on him this title. It is even contemplated that those present-day specialists who have not obtained a university degree of docent or professor in their special branch should be compelled to pass a (nominal) examination. But this suggestion has met with so much opposition that it will most likely not be enforced.

Insulin Treatment in Cases of Extreme Leanness.

At a recent meeting of the Vienna Medical Society Prof. W. Falta showed several cases in which he had given regular insulin treatment with the intention of obtaining rapid gain in weight. From the very first administration of insulin the appetite was enormously increased, so that the patients were capable of ingesting huge quantities of food. The gain in weight amounted on an average to 1½ kilos per week; and in one case a distinct obesity ensued, so that the treatment had to be interrupted. The absence of œdema indicated that this gain was not a mere accumulation of water. It was, in fact, an apposition of real body substance, as was shown by the presence of layers of fat on the thigh, neck, and abdomen. Only in cases of diabetes was œdema produced by insulin. Prof. Falta pointed out that these observations substantiated his assertions that obesity of a pancreatic (insular) type was very frequent, and that it is probable that insulin—or rather, the organs producing insulin—plays an important part in the mechanism of the regulation of the desire for food. In the ensuing discussion Dr. H. Pollitzer, Dr. Bauer, and Dr. Nyiri reported that they too have observed rapid rise of appetite by insulin treatment. Especially the turgor of the tissues increases rapidly, as water retention without œdema is a practically normal condition which is aimed at in all "feeding up" cures. The insulin treatment must, of course, be conducted in a very careful way, especially in cachectic persons; such individuals are liable to an increased susceptibility to insulin, somewhat similar to that observed in severe cases of diabetes.

Increase of Saturnism in Austria.

Prof. Sternberg recently showed to the Medical Society of this city a woman of 36 years who had suffered for more than eight months from intense headaches, with nausea and frequent vomiting. Mental derangement of the type of a mild mania was also present at times. Slight paresis of the right abducens, a congested fundus in both eyes, and loss of irritability of the vestibular organs were thought to point to a cerebral tumour; but, besides that, a distinct discoloration of the lower lip on its dental aspect, consisting of fine point-like pigmentations typical of plumbism, was discovered. The few teeth present also showed a very distinct but narrow line of the same kind. The history of the patient explained the condition. She was occupied in copying illustrations and drawings for textile fabrics by means of an adhesive dye which contained colophonium, white lead, and soot. The constant use of this mixture had caused a chronic œdema of the brain which produced the symptoms. A course of iodides with intense sweating brought marked relief and the return of normal vision, and all the cerebral symptoms disappeared. In 1836 the name of encephalopathia saturnina was given to this rare variety of plumbism by Tanquerel des Planches. This case gave rise to an extensive investigation in all commercial and industrial enterprises using lead and its derivatives. Especially the use of certain white dyes is fraught with danger, as the workers generally are not aware of the presence of plumbum in them, and are therefore careless. In the discussion fo[illegible] the demonstration, Prof. H. Schlesinger [illegible] that h[illegible] war saturnism had been q[illegible] is[illegible] t that during the last six [illegible] rise in its frequency. [illegible] l electrical workers, it af[illegible] These use coatings containing a fair amount of lead, because lead-containing varnishes give a better finish to the work. Factories seem to neglect the precautions stipulated by the Industrial Labourers' Protection Law, and it is intended to include industrial lead poisoning in the suggested Labourers' Compensation Act as an accident, so that the factories will in their own interest be forced to pay more attention to this point.

Public Health Services.

SCHOOL MEDICAL SERVICE.

Name of district.	No. on roll.	Average elementary school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.*
Bristol.. ..	54,704	47,405	14,996	38,885	16·2
Warrington .	13,117	—†	3,983	4,678	17·8
Stoke-on-Trent..	50,951	—†	14,120	19,887	23·0

* Excluding dental defects and uncleanliness.
—† Not given.

Bristol.

Dr. R. A. Askins, in his dual capacity of school medical officer and deputy medical officer of health, is directly able to maintain the closest coöperation between the medical services of the education and health committees—a matter of great importance in a large community with many health activities. It prevents overlapping and also ensures the continuity of supervision from birth to school-leaving age. The importance of keeping in touch with the child welfare work is exemplified in the special report of the chief assistant school medical officer, Dr. R. R. Garden, on the early rectification of squint by glasses and orthoptic treatment. Seventy-nine children referred by the welfare staff were examined at the clinic; 46 of these were found to be convergent concomitant squints, of whom 12 responded at once by the use of suitable glasses and the others are now under treatment and are mostly improving. As with visual defects so with most incipient abnormalities, early recognition and treatment spells the end of much after-crippling.

Dr. Garden also reports on the outbreak of encephalitis lethargica in 1924. There were 50 cases, of whom eight died. Of the remainder, including a few cases before 1924, 21 appear to have recovered with so far no sequelæ, 19 have more or less severe after-effects—e.g., drowsiness, irritability, lack of concentration, and some loss of control. It is this class which forms a serious educational problem. Institutional care is neither desired nor expedient, yet to return them to an ordinary school, though no doubt advantageous to the individual sufferer, is detrimental to their class mates on account of erratic conduct and partial immunity from punishment. In eight cases the sequelæ—e.g., inversion of the diurnal rhythm, paralysis, intellectual and moral depravity—were so serious that institutional care is urgently required. These figures are comparable with those recently reported among 193 cases in London school-children by Dr. F. C. Shrubsall, and indicate the severity of this new scourge. Not least amongst the disquieting features is the fact that early cases are often missed or lightly treated on account of the mildness of the acute stage.

Dr Askins is happy in reporting on the opening of another new and up-to-date clinic, making the fourth now in operation; in addition, there is an orthopædic clinic where appropriate cases from both the child welfare and school departments are treated or [illegible]ern lines under Mr. Hubert Chitty. Heart cases are all seen by Dr. Carey Coombs and Dr. C. E. K. Herapath, who report in detail to the school medical officer; an excellent arrangement when we remember the highly specialised work of recognising early signs of cardiac involvement and the grave consequences following on untreated early carditis. Special schools exist for mentally and physically defective children. Mr. J. P. Harty, the aural surgeon, states that the numbers requiring admission to the special school for the partially deaf show a definite and steady decrease since the aural clinics were opened. There is an open-air school with accommodation for 140 and three open-air classes are daily held and accommodate 84 children. Since the results of this rational treatment are so good, it is hoped that further facilities will be provided. Deaf-mutes to the number of 55 are treated in a residential school, and special classes are held for myopes and the partially deaf with accommodation for 70 and 40 respectively, and 17 blind children are maintained by the committee at outside institutions.

Warrington.

Dr. G. W. N. Joseph states that the percentage of defects is lower than in any previous year, and a table is given illustrating the influence of infant welfare centres. Among the entrants who had attended these centres the percentage of defects requiring either treatment or observation was 15·3, compared with 27·2 among the other entrants. In other tables he shows how greatly loss of attendance from contagious affections, particularly "dirt" diseases, has been reduced, the days lost in 1922 being 18,227, whereas in 1918 there were 101,453, nearly six times as many. He points out that apart from the other great benefits there is considerable financial gain to the authority by increase of grant. Much credit is due to the school nurses for their preventive and curative work. A special table shows that in ringworm there has been a reduction both in numbers and in time required for treatment, the latter reduction being related to the use of X rays in treatment.

The figures for visual defects during the last four years are set out in detailed comparative tables; they are, on the whole, fairly constant and do not afford evidence of the increase reported in some other areas. As to their treatment we learn from the report that many children were dealt with by "other methods"—i.e., opticians. Many opticians to-day are well trained in general sight-testing and the fitting of glasses, but the strongly acting ciliary muscle of the child makes refraction without a mydriatic liable to error, and examples of the practical evils arising are well known to anyone with acquaintance of ophthalmic practice. A progressive diminution is described in dental defects—i.e., in the percentage of children having four or more carious teeth (a standard which we hope will soon be felt to be too low). On this basis only 0·32 per cent. are called defective, whereas the standard of the dentist gives 75·7 per cent. One expects some difference between the ideal and the practical working scales, but surely this discrepancy is too marked. The proportion of dental cases treated this year (22 per cent.) is low, and the fee scale, which was largely responsible for the falling off, has been relaxed. The dentist thinks that he should inspect less and devote more time to treatment. It is to be hoped that the projected orthopædic centre and the special mentally defective school will soon be in working order. For low grade defectives an occupation centre has been established, but this is badly handicapped by lack of a guide, and such centres are never proper substitutes for special mentally defective schools.

The need for remedy of some gross sanitary defects in the schools is emphasised in this report, the tone of which is otherwise optimistic. In certain other respects the arrangements are as yet scarcely worthy of a town of the importance of Warrington.

Stoke-on-Trent.

Dr. R. Hughes has compiled a voluminous report full of apt quotations and original mathematical tables. Although his interests are wide the consideration of the many topics does not lack thoroughness. He has been unfortunate in the constant changes of staff. No routine inspection has taken place in secondary schools. Dr. Hughes makes some pertinent remarks on the question of overcrowding. He quotes the recommendations of the Council of Ophthalmologists, and agrees with Dr. J. Kerr that progressive myopia is a distinct clinical entity and of great importance. Ionisation of ears is to be started again. Dr. E. A. C. Swainson, assistant school medical officer, remarks on the haphazard treatment which "running ears" usually get.

Stoke-on-Trent is unfortunate in its provision of treatment for enlarged tonsils and adenoids. Out of 1201 cases only 158 received any form of treatment. It has been resolved that the necessary steps be taken to provide for the erection of a school for mentally defective children of the county borough. Dr. Hughes's speculations on the comparative failure of some mentally defective schools are interesting, but his comments on these day schools seem unduly pessimistic. Two special contributions are added—one on the distribution of educational abilities amongmentally defective children has some original features; the other on the relationship of Binet test ages to abilities in individual school subjects is of educational value.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 18TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 00; scarlet fever, 1683; diphtheria, 033; enteric fever, 65; pneumonia, 707; puerperal fever, 38; cerebro-spinal fever, 5; acute poliomyelitis, 4; encephalitis lethargica, 32; dysentery, 6; ophthalmia neonatorum, 131. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 5 deaths from enteric fever, 18 from measles, 8 from scarlet fever, 78 from whooping-cough, 18 from influenza, and 20 from diphtheria. There were 30 deaths of children under 2 years from diarrhœa and enteritis, as compared with 41 and 29 in the preceding weeks. In London itself there were 7 deaths from influenza and 6 from diphtheria.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE ASSOCIATION.—The Fellowship announces that there will be a special series of lectures on tuberculosis from October to December. Beginning on August 24th to Sept. 5th, there will be an intensive course in general medicine, surgery, and the special departments at the Queen Mary's Hospital, Stratford. Sessions will be held each day from 10.30 A.M. to 5.30 P.M., including demonstration of clinical methods, groups of illustrative cases, &c. Special opportunities will be afforded to those desirous of obtaining practical study in gynæcology and obstetrics. The fee for the course is £3 3s., or £2 2s for either week. Courses in progress are: A general vacation course at the Prince of Wales's General Hospital, Tottenham, the fee being £3 3s. or £2 2s. either week, and special courses in nervous diseases and urology at the West End and All Saints' Hospitals respectively. An extensive programme of special courses has been arranged for the month of September. The Seamen's Hospital will give an operative surgery course from Sept. 7th onwards and classes will be held four times weekly. The Brompton Hospital begins a two weeks' course from Sept. 21st to Oct. 3rd, dealing with pulmonary diseases, by members of the staff. There will be an afternoon's course at the Blackfriars Skin Hospital and one at the Infants Hospital, both taking place from Sept. 7th to 10th. At the Royal Westminster Hospital a course in eye diseases will be given from Sept. 7th to 26th embodying instruction in the out-patient department and special lectures and demonstrations on the various branches of ophthalmology. An intensive course at the Westminster Hospital in general medicine, surgery, and the specialties is announced for Sept. 21st to Oct. 3rd. A weekly lecture-demonstration in electrotherapy will be undertaken by Dr. C. B. Heald at the Royal Free Hospital from Sept. 23rd to Oct. 14th. Copies of the syllabus of each of the foregoing courses may be obtained on application to the Secretary at 1, Wimpole-street, W. 1.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT BATH.

(*Continued from p. 200.*)

REPRESENTATIVE MEETING.

MONDAY AND TUESDAY, JULY 20TH AND 21ST.

Memorandum on Coroners' Law.

THE principal subject occupying the attention of the Representative Meeting on Monday was the Memorandum of the Council dealing with proposed Amendments in the Coroners' Law. The chief alterations it is hoped to bring about are the institution of two forms of certificate of death and stillbirth: (1) Notification of death by natural causes or otherwise, with duration and general nature of the disease, signed by a registered medical practitioner who has viewed the body; if possible by the one who had attended the deceased during life or had been called in at or about the time of death; and (2) a further report on the cause of death containing any scientific data considered necessary or desirable, such report to be private and only open to inspection by a coroner, medical officer of health, or superior police officer. The registrar, in the absence of the first certificate or in cases where it does not strictly follow the statutory form, would notify the coroner.

The discussion centred mainly around the question of the second certificate, whether there should be any reservation on the form issued to the relatives, and if so, what should be done with additional information. Dr. E. W. G. Masterman (Camberwell) argued that double certification involved an extra burden on the practitioner, annoyance to insurance societies, who, as Dr. J. Stevens (Edinburgh) pointed out, would scarcely be willing to meet claims when they knew that a second and confidential certificate had been posted to the registrar, and chagrin of the relatives at not being able to quote the cause of death as certified. Moreover, the scientific value of the second certificate would be small except in cases where a post-mortem examination had been performed or where there was some factor, such as alcohol or venereal disease, which the doctor definitely desired to keep from the knowledge of the relatives. An amendment to delete the line "State disease" on the first certificate was lost on the grounds that this was a concession to the desire of the relatives to have some general disease term given them as cause of death. The supplementary certificate clause was eventually amended on the motion of Dr. E. R. Fothergill (Brighton) and Dr. P. Macdonald (York) to read:

> In addition to the certificate of the fact of death there shall be sent direct to the Registrar-General a further report including further facts as to the cause of death and any scientific data which the practitioner who certifies the death considers necessary or desirable.

Various amendments to modify the suggested fees were thrown out and the remuneration for certification, including viewing the body, was left at the Council's figure of 5s. with additional mileage of 2s.

After a little discussion it was agreed that:

> The Representative Body is of opinion that additional death certificates should not be given except at the request of the patient's representatives or after their consent has been obtained.

Representation on the G.M.C.

The Council recommended:

> That having fully considered the position with regard to the present constitution and the duties and powers of the General Medical Council, the Representative Body does not consider that the Association should take steps (as suggested in Minute 185 of the A.R.M. 1924) with the view of obtaining a larger number of Direct Representatives of registered medical practitioners on the General Medical Council.

This was accepted by 84 votes to 53.

Payment for Health Certificates for Elementary School-Children.

The Representative Body in 1920 agreed that in the event of a school authority requiring a certificate of inability to attend school from a private practitioner the fee for such certificate should be paid by the authority. The Council recommended rescission of this minute as it appeared not to be consonant with the law. The meeting, however, emphasised again their opinion that this state of things ought to be brought about. Mr. Wallace Henry said that in Leicester no medical practitioner gave a certificate to a school-child under any circumstances. The school attendance officer notified the school medical officer if the absent child were seriously ill; if not, he told the parents to take their child up to the doctor for a decision as to whether school attendance was advisable or not. This plan had worked perfectly well. It was the duty of the education authorities to ascertain why a child was absent. The legal position had been known to the Representative Body all along, and in certain areas the education authority did pay, and it ought to in all.

Fees for Examination of Emigrants.

On behalf of the Council Mr. E. B. Turner proposed:

> That the fees chargeable by the medical referees appointed by the Dominions of the Empire to examine proposed emigrants should be as follows: 10s. 6d. for an applicant of 16 years of age or over; 2s. 6d. for each applicant under 16 years, provided their parents or guardians are sailing with them. Not more than two applicants under 16 years of age in one family to be charged for. Applicants under 16 years proceeding alone will be charged 10s. 6d.

This resolution, which was carried, amends the fees adopted in 1923.

Proposed Factory Medical Service.

The proposals of the Council for a Factory Medical Service was discussed, and the following items passed:

> 1. That there should be a distinct department of occupational hygiene attached to the Ministry of Health, which should include the present Factory Medical Service transferred from the Home Office.
>
> 2. That if any changes are made the interests of existing members of the Factory Medical Service should be carefully conserved or compensated.
>
> 3. That as a general rule any practitioner hereafter appointed to perform the duties at present performed by the factory surgeons, or duties analogous thereto, should at the time of appointment be in general practice or have had recent experience of general practice.
>
> 6. That any Factories Bill should provide for due retention of the powers already possessed by local sanitary authorities in respect of factories and workshops.
>
> 7. That so far as practicable all supervision of sanitation in factories, workshops, and workplaces, as defined in the Factories Act of 1901, should not only be retained by the local sanitary authority, but should be extended to all factories.
>
> 8. That any Factories Bill introduced should provide that the Regulations and Orders of the Secretary of State having reference to sanitation in factories, shall apply, local by-laws and regulations notwithstanding, and should be enforceable by the local authorities and not by the Factory Department, except in cases of default.

Paragraphs 4 and 5, dealing with transference of the work to local authorities where possible and the desirability of setting up a complete service of occupational hygiene, were referred back to the Council for further consideration.

Drug Addiction.

Dr. J. W. Bone, the representative of the British Medical Association on the Home Office Drug Addiction Committee, reported the proceedings of a B.M.A. Committee on the subject. The Association sent four witnesses to give evidence before the Home Office Committee—namely, Mr. E. B. Turner, Dr. E. K. Le Fleming, Dr. C. P. Symonds, and Dr. Cox, and Dr. Bone placed before the meeting the provisional findings of the Home Office Committee in order to obtain guidance. An interesting discussion ensued, but as the documents have not yet been placed before the Home Secretary the meeting decided that it would be improper to report the discussion, though useful decisions on the points raised by Dr. Bone were arrived at.

Unqualified Practice.

A motion was brought forward urging amendment of the Medical Acts so that unqualified practice should be illegal, but the meeting decided to pass to the next business.

Nursing Homes Registration Bill.

Dr. E. R. Fothergill, in proposing active opposition to the Nursing Homes Bill, 1925, urged that the Association should refuse support to any Bill that included the following principles: (1) Non-recognition of the local medical profession by the supervising authority; (2) disclosure of private case-records to supervising authority; and (3) inclusion within the definition of a nursing home of premises which are under the control of a registered medical practitioner. To this the meeting agreed, Mr. E. B. Turner pointing out that the original Bill had been withdrawn, as admittedly worded badly, and without doubt the preparation of a new Bill would be preceded by a Select Committee before which the Association would be invited to give evidence.

Remuneration of Assistants.

It was resolved:—

(*a*) That on general principles the employment in suitable cases of assistants by practitioners is in the interests both of the general public and of the profession; (*b*) that it is not desirable for a principal to employ an assistant where he is unable to exercise adequate personal supervision over the latter—e.g., in some types of branch practice; in such circumstances a partnership is to be preferred; (*c*) that the offer or a promise of a future partnership should not be made a reason for paying a lower salary to an assistant; (*d*) that the minimum commencing salary for a newly qualified inexperienced practitioner, acting as a whole-time indoor assistant to a practitioner, should be £210 per annum, with the addition of board and lodging; and in the case of such a practitioner employed on an outdoor basis, the board and lodging value should be estimated from £120 to £160 per annum, according to the circumstances of the individual case; that the only exceptions or possible exceptions to the foregoing should be in the case where, owing to arrangements made for study leave, or to physical disability or other reasons, the assistant is not able to give full time to the work; (*e*) that a whole-time assistant should be entitled to not less than two weeks' holiday a year on full pay.

No steps are to be taken at present to make these resolutions the formal policy of the Association.

Fees at Municipal Maternity Hospitals.

It was proposed by the Chairman of the Medico-Political Committee, and resolved to insert the following paragraphs in the report on the Utilisation of Municipal Hospitals for Civil Needs:—

That where the local authority makes provision for the institutional treatment of maternity cases this should be mainly or primarily for serious cases of antenatal complications, for cases requiring major obstetric operations, for cases where isolation and treatment of septic infection is specially indicated, and other cases where the home conditions are unsuitable or dangerous for confinements.

That where a general practitioner is called upon to render assistance at a confinement in a municipal maternity hospital the fees payable to such practitioner should be in accordance with the scale of fees approved by the Ministry of Health for the payment by local supervising authorities to medical practitioners called in on the advice of midwives, under Section 14 of the Midwives Act, 1918.

That where a consultant is called in by the practitioner in charge of the case the fee for the consultation should be three guineas; that the fee for a major operation should be not less than ten guineas.

Salaries for Public Health Posts.

A good deal of discussion arose on the proposed scale of salaries for public health posts; but the various amendments were lost. The chief difficulty as put forward by Dr. A. T. Jones (North Glamorgan and Brecknock) and Dr. Gordon Bell (Sunderland) was the occupation of junior posts by recently qualified men and women who had had great difficulty in obtaining a situation, and who were submitted to grave hardship and forced to refuse £500 a year offered by county and borough councils. But, as the Chairman of Council pointed out, the scale allowed inexperienced juniors to hold posts at commencing salaries of £500, only demanding that the experience gained by them after their probationary year should be recognised by increased emolument. On the whole, the Association did not wish to encourage the appointment of recently qualified practitioners to public health posts; the scale was intended for those who had had post-graduate experience, often a special diploma, and to whom the local practitioners could look as consulting authorities. Dr. Eustace Hill remarked that many of these posts were blind alleys, as the number of assistants greatly exceeded that of senior medical officers; this must be taken into consideration in assessing the remuneration, as also must the consultant position of these specialists, and the fact that any standard accepted would undoubtedly extend to other branches of medical work. The scale as accepted by the Representative Body is that which appeared on p. 1157 of THE LANCET of May 30th last.

Medical Benevolence.

Some discussion arose on the recommendation of Council to set up a British Medical Association Charities Committee to be constituted and directed according to the following provisions:—

1. The Committee shall consist of the officers of the Association *ex-officio*, three members appointed by the Representative Body and three members appointed by the Council, together with the Editor, the Medical Secretary, and the Financial Secretary.

2. It shall be the duty of the Committee through the machinery of the Association to direct the attention of members to the financial and educational positions which arise as a result of misfortune falling on members of the profession, and to appeal for contributions to meet these positions.

3. All sums obtained in response to such appeals shall be paid to a charities trust fund, the trustees being the members of Council for the time being in office, and shall be distributed to such medical benevolent organisations, and in such amounts as the Committee (subject to the approval of the trustees) shall deem advisable.

4. Contributions paid to the Fund may at the will of the donor either be left to the discretion of the Committee or earmarked for a particular purpose.

Complete unanimity was shown as to the importance and urgency of increasing the support of medical charities, but several members desired that the Association should conduct its own charitable work as the existing bodies were not satisfactorily run. The recommendation of Council was adopted on the appeal of Dr. Bolam, who said that he had had occasion to investigate the working of the Royal Medical Benevolent Fund, and he had found single-minded and devoted officers giving of their energy and often supplementing out of their own pockets the very small sums they were able to distribute; he had been particularly impressed by the work of the Ladies' Guild. The blame was on the profession; these organisations ought to be provided with the sinews of war; he strongly deprecated any assumption of management by the Association, and urged the meeting to help them to get on with the work and to do it cheerfully and freely, for the good of the profession and with no restrictions.

In reply to a question from Dr. Wallace Henry as to the individual voting power of subscribers under the new arrangement, the Chairman said that subscriptions might be earmarked for a certain purpose in which case the individual voting powers would be retained.

Lavatories in Railway Carriages.

It was proposed by Dr. W. Johnson Smyth (Bournemouth), seconded by Mr. Russell Coombe (East Cornwall), and carried without discussion, that the question of the defective ventilation in the lavatories of railway carriages be referred to the Council with power to take any necessary action in the matter.

Whole-time M.O.H.'s.

In proposing a motion—

> That the Representative Body is of opinion that it is inadvisable and improper that whole-time medical officers engaged in public health work should be required to undertake duties other than those for which they were appointed,

Dr. G. G. S. Johnston referred to a bacteriologist required to do post-mortem examinations and a tuberculosis officer required to examine mentally defective children.

The motion was referred to the Council for consideration.

Sale of Vaccine Lymph.

The following motion was brought forward by the Hendon Division:—

> That inasmuch as vaccination against small-pox by means of calf vaccine lymph is the sole obligatory medical operation known to English statute law—abstention being permitted only after statutory exemption has been obtained—calf vaccine lymph be now recognised in the British Pharmacopœia as a therapeutic substance; that standards of purity, potency, and source of seed used in its preparation be prescribed; that the provisions of the Sale of Foods and Drugs Act be made to apply, and that early Parliamentary action be urged to enable the Ministry of Health to lay down and enforce regulations governing the conditions of the preparation and sale of calf vaccine lymph.

This motion also was referred to the Council.

Preservatives in Food.

Dr. Ridley Bailey announced that a Home Office Departmental Committee on Food Preservatives had been assisted by Dr. C. Porter, of Marylebone, and Profs. Dixon and Clark on behalf of the Association. Certain vested interests had put pressure on the Government against the adoption of some recommendations of the Departmental Committee. It was therefore desirable to strengthen the hands of the Government by a strong expression of opinion from the Representative Body. The following recommendations were agreed to:—

> (*a*) That the Representative Body is satisfied from the experiments made, from the recorded cases, and also from the fact that other countries have discontinued their use, that it is essential in the interests of public health that boric acid and boron compounds should not be used as food preservatives.
>
> (*b*) That, whilst recognising that there are difficulties inherent in this country, due to the lack of cold storage facilities and efficient means of transport, which do not exist to the same extent in America and other foreign countries, the Representative Body is of opinion that as a matter of principle it would have been better if the example of other countries in prohibiting entirely the use of preservatives and metallic and other toxic colouring matters in foods could have been followed in the *Draft Regulations re food preservatives*, &c., issued by the Ministry of Health.
>
> (*c*) That the members of the Representative Body draw particular attention to the evils which have arisen in their own experience from the importation of liquid eggs preserved with boric acid, and the Representative Body considers that it is essential from the public health point of view *that liquid eggs preserved* with boric acid or other preservative should be prohibited *at once*.
>
> (*d*) That, subject to the foregoing recommendations, the Representative Body places on record its approval of the Draft Regulations (issued by the Ministry of Health on Feb. 17th, 1925) with regard to preservatives, &c., in food.

Retired Pay of Majors, R.A.M.C.

Sir Richard Luce, Chairman of the Naval and Military Committee, in proposing the adoption of the report of Council under "Naval and Military," drew attention to certain injustices which are present matters of negotiation. Of these the chief concerned the retired pay of majors of the R.A.M.C. This was £1 a day pre-war after 20 years' service, and in 1920 was raised to £396 per annum, but even this was subject to reduction. The War Office was in sympathy with the wishes of the B.M.A. in this matter, but the Treasury had not yet sanctioned the increase which would make their pension proportionate to *that of the rest of the Service*. Another difficulty had been the proposal to raise the age-limit in the Territorial Army, which led to a block in the promotion of majors. In the Navy, the negotiation about the gratuity to senior surgeon-commanders compulsorily retired at the end of the war had resulted in the acceptance of £300 by the officers concerned. The Council of the B.M.A. had suggested that a reconsideration of the pay of junior grades might help to overcome the reluctance of young graduates to enter the R.A.M.C., and the Army had replied that it hoped to lay before the B.M.A. at an early date proposals for the improvement of the conditions of service. After several members had condemned the attitude of the Government in this matter, it was resolved—

> That inasmuch as the provision for a 20 per cent. reduction in retired pay of majors after 20 years' service under the 1919 Warrant can have the effect of reducing the pensions of many of these officers below the sum of £1 per diem which was provided by the Warrant under which they joined the Service, the Representative Body is of opinion that a serious breach of faith has been committed by the *Government, and that, therefore, the Association is unable* to recommend recently-qualified doctors to enter the R.A.M.C., and declines to publish the terms and conditions of service in the R.A.M.C. until the Council is assured that this and other matters under negotiation have been settled to its satisfaction.

Hospital Policy.

Considerable discussion was raised by the proposal of the Council to rescind paragraph 10 of the hospital policy, viz.:—

> *Gratuitous contributions to hospitals* by employers of labour or by employees should not be treated as the payment of premiums for insurance against the cost of maintenance and medical treatment for sickness or accident, nor as entitling the contributors to claim hospital treatment, either for themselves or for persons nominated by them, but as charitable contributions to be expended at the discretion of those to whom the management of the hospital is entrusted.

Several members, including Dr. Peter Macdonald (York), Dr. F. Radcliffe (Oldham), Dr. R. D. Mothersole (Bolton), and Dr. J. M. Mitchell (West Bromwich) spoke to the motion, and the *provincial* members held that the hospital policy as proposed by Mr. H. S. Souttar, Chairman of the Hospital Committee, was not adapted to the conditions of midland and northern hospitals. Nevertheless, the motion of Council was passed by the requisite two-thirds majority, as was also the following new paragraph:—

> 9. Contributions to hospitals by employers of labour or massed or periodical contributions by employees should be considered as contributions for services rendered or to be rendered.

Dr. A. P. Thomson (Birmingham) proposed:—

> That taking into consideration the importance of medical education and the fact that the large teaching hospitals are specially organised and staffed for such work, this meeting is of the opinion that in the scheme of hospital policy of the British Medical Association these hospitals should be put in a class by themselves.

This was referred to the *Council for* consideration, and it was further agreed:—

> That in all cases of accident where medical attendance is given at a voluntary hospital, and such medical attendance is covered either directly or indirectly by insurance, the hospital authorities should recover from the insurance company the full cost of maintenance and treatment of such patient; that where patients who would ordinarily be considered as private patients are admitted to hospital solely on account of accident or emergency they should be considered as "private patients"; and that case-sheets and records of patients treated in hospitals should remain in the custody of the hospital: that they must be regarded as confidential documents and access to them allowed solely to the members of the visiting staff of the hospital.

During the course of the meeting Dr. Brackenbury was elected unopposed to the chair of the Representative Body, and Dr. C. O. Hawthorne was elected deputy chairman.

ANNUAL GENERAL MEETING.

Tuesday, July 21st.

The Annual General Meeting was held in the Concert Hall of the Pump Room on Tuesday, July 21st, when the outgoing President, Mr. J. Basil Hall, inducted Mr. W. G. Mumford as acting President during the illness of the President, Dr. F. G. Thomson.

The report of the Representative Body that Mr. R. G. Hogarth had been elected President for 1926–7 was received, and Mr. Hogarth extended to the Association a warm welcome to Nottingham next year.

Dr. R. A. Bolam, in proposing a vote of thanks to the past President, pointed out that he was the first President of the Association to visit America as an official delegate. Mr. Basil Hall expressed his enjoyment of his visits to the United States and Canada and the pleasure it had given him to occupy the presidential chair in such an active and interesting year. The meeting then adjourned until 7.45 P.M., when Mr. W. G. Mumford took the chair in the Palace Theatre. He was supported on the platform by the Marquis of Bath, Lord High Sheriff of the County of Somerset; Alderman Cedric Chivers, Mayor of Bath; Madame Sarah Grand, Mayoress of Bath; the Venerable Archdeacon of Bath; Mrs. Thomson, Mrs. Mumford, the past President, the President-elect, many members of Council, and the chief officials of the Association. Dr. R. G. Gordon, honorary local general secretary, introduced the two new Canadian Vice-Presidents and several distinguished foreign guests and overseas delegates. The Middlemore prize, consisting of an illuminated certificate and a cheque for £50, was then presented to Mr. Basil Graves in recognition of the contribution he has made to the microscopy of the living eye, especially in relation to the use of the slit-lamp. The gold medal of the Association, for distinguished services, was presented, amidst loud applause, to Dr. R. A. Bolam, chairman of the Council since 1920. Mr. Basil Hall, in introducing him, said that the engrossed testimonial set out many of his qualities and invaluable services, for which all were deeply grateful. His family motto should be "Service, not Self."

The Presidential Address, which appeared in last week's issue of THE LANCET, was then read by the President's son, Mr. Malcolm Thomson, and illustrated by lantern slides. A vote of thanks to the President was moved by Dr. Brackenbury and seconded by the Archdeacon of Bath, both of whom expressed the general admiration of the ability and grace with which it had been delivered. After a vote of thanks to Mr. Mumford, the company were received by Mrs. Thomson and Mr. Malcolm Thomson in the historic Assembly Rooms, where they enjoyed a pleasant social evening.

ANNUAL DINNER.

The annual dinner was held in the Assembly Rooms on July 23rd. Lord Dawson, in proposing the toast "Our Hosts," spoke of the beauty and hospitality of the city of Bath, and referred with particular appreciation to the part played by the Mayor in providing such lavish entertainment. Alderman Cedric Chivers, 695th mayor of the city, agreed with all Lord Dawson had said about Bath and its citizens, adding that the only exaggeration was contained in the reference to himself. The Marquis of Bath proposed "The B.M.A.," remarking on the pleasure it gave him, a layman, to wish the doctors the best of health. Dr. Bolam, replying, spoke of the attitude taken by the B.M.A. with regard to such questions as unqualified practice; he said that the Association must always stand for the interests of the community and must not interfere with the undoubted right of the head of every household to try his hand at healing his own relatives. Sir StClair Thomson proposing "Our Guests" gave a message of welcome from his kinsman the President. This toast was replied to by Dr. A. J. Orenstein (Johannesburg) and by Dr. W. D. Haggard (president of the American Medical Society). The presentation of the golfing cups by Mrs. Thomson followed. The Ulster cup was won by Dr. G. Brand of Glasgow, and the Childe cup by Dr. W. V. Wood of Yatton. "The President" was proposed by Dr. Brackenbury, who wished Dr. Thomson an early restoration to health, and thanked the acting President, Mr. Mumford, for the way in which he had risen to the occasion in particularly difficult circumstances. Mr. Mumford responded.

EXCURSIONS AND SOCIAL AMENITIES.

The Representative Body were taken by motor charabancs to Stonehenge on Sunday, July 19th, where they were met by Dr. J. P. Williams-Freeman, of Andover, who gave a most interesting and instructive lecture about the monument. An exceptionally large number of excursions and conducted tours were arranged during the week, and visitors were given every opportunity to see the baths and other interesting features of the town and its very beautiful environs.

SECTION OF PATHOLOGY AND BACTERIOLOGY.

WEDNESDAY, JULY 22ND.

Filter-Passing Viruses.

It had been arranged that the discussion on filter-passing viruses at this section should be opened by Dr. W. E. Gye, and after some preliminary words of welcome from Prof. J. C. G. Ledingham, President of the section, Dr. Gye was called upon. He began by explaining that it had been his original intention to speak on the general question of filter-passing viruses, and that he had actually composed a paper on this subject, but that he had since been requested to speak on his special research into filter-passing organisms found in cancer because of the widespread interest aroused by his article in THE LANCET of July 18th. He left it to the meeting to decide on which subject he should speak. Cancer was demanded with a unanimous voice, and Dr. Gye put aside his paper on filter-passing viruses and spoke for 20 minutes on his recent researches.

Up till recently, he said, we have been satisfied with the general conception that in order that disease may occur it is sufficient to bring together host and parasite. Though this holds good for many contagious diseases, it breaks down when applied to many bacterial diseases, particularly those due to anaerobic bacteria. Thus the tetanus bacillus, washed free from toxin, becomes harmless to laboratory animals. A mouse is not made ill by tetanus bacilli alone, but is killed by those germs if at the time of inoculation some tetanus toxin be also present. Although less clearly established, there is much to suggest that a similar third factor exists for diseases other than anaerobic infections. For example, 10 per cent. of the inhabitants of this country carry the cysts of amœbic dysentery; yet no epidemic occurs. We do not know the conditions which determine the onset of amœbic dysentery. Clearly the conjunction of host and parasite is not sufficient to cause it. An equally suggestive field for speculation is provided by cerebrospinal fever. During war-time outbreaks of this disease it was sometimes found that 50 per cent. of contacts harboured the specific germ yet remained well.

Dr. Gye then turned to the question of the specificity of malignant tumours. It is known that all species of animal are liable to cancers, yet hitherto cancers have only been successfully passed from one animal to another of the same species, and only by the medium of living cancer cells. Thus a tumour arising in a mouse may be transmitted by living cells to another mouse, but not to a rat. This strict specificity has always appealed to the pathologist as an almost incontrovertible argument against the hypothesis of a living agent as the cause of cancer; yet there remained one experience, an apparent exception, which forbade the dismissal of the germ theory of cancer. In 1911 Peyton Rous discovered that the filtrate from a chicken sarcoma tumour would produce sarcoma in fowls of the same breed. This was the first definite evidence of malignant tumours being transferred by other means than the injection of malignant tumour cells, but two other tumours were subsequently described which could be handled in a similar way. These three tumours differed radically in their characters. Thus the first was an embryonic type of sarcoma, the second an osteo-chondro-sarcoma (changed, by passage, from a benign to a malignant growth), and the third was a spindle-celled sarcoma with peculiar rifts running through it. All these could be diluted with saline and filtered, yielding an infective filtrate—but this was infective only for birds of the same species. The active filtrate always produced a tumour of the same character as that from which the filtrate was derived, and this specificity forced the conclusion that each type of tumour sprang from a separate type or species of virus. In defending other manifestations of cancer from the germ theory, orthodox pathologists argued that this strict specificity necessitated the postulation of a separate virus for every type of animal or plant tumour, an argument which seemed to reduce the germ theory to an absurdity.

Turning now to his own work, Dr. Gye gave a brief account of his recent researches. He described the method he had discovered for separating the filtrate of a chicken sarcoma into two fractions, each inactive without the other, but causing a malignant growth when both were injected. Thus by spinning the filtrate at about 9000 revolutions per minute, and washing the deposit obtained, he supplied himself with two fractions, a washed deposit and supernatant fluid. Neither of these would cause sarcoma by itself, but they were infallibly active when combined. This experiment, he declared, he had repeated many times, and he has come to look upon it as a key to the understanding of tumours. The next stage of his research was the production of tumours in mammals with cell-free filtrates. Previously this had not been accomplished for rat and mouse sarcomas; but Dr. Gye found that a tube of culture-media to which a piece of one of these tumours was added, possessed, after filtration, the capacity for inducing malignant growth. This proved that mammalian tumours do not differ essentially from the tumours of birds described by Rous. He was able to show finally that the same principles hold for mammalian tumours as for sarcomas of birds, and that two separate elements are necessary for the successful transmission of the tumour—(1) the living virus, and (2) the specific substance derived from the parent tumour.

Dr. Gye was followed by Mr. J. E. Barnard, who spoke on the microscopical examination of filterable viruses. Our readers have recently had the opportunity of studying the masterly exposition by Mr. Barnard on this subject (The Lancet, July 18th), and his remarks at Bath covered the same ground as this paper.

Dr. M. H. Gordon pointed out that there are two obvious criteria wherewith we can differentiate viruses—namely, (1) their highly specialised pathogenicity, and (2) their specific immunising action Three years ago he had submitted a paper to this section of the B.M.A. meeting at Glasgow on the influenza virus, but owing to lack of material, ignorance of how to handle the virus. and the difficulty of recognising the disease in the inoculated animal. he had abandoned this study and resorted to a humbler virus, a supply of which was always available—namely, vaccinia. For the last three years he has been studying this virus by the experimental method and the results have been embodied in a report to the Medical Research Council which is now in the press. Dr. Gordon showed a number of lantern slides illustrating the methods used in this research and some of the results obtained. The main conclusions to which this work has led are, first, that both vaccinia and variola viruses are particulate and largely retained by the Berkefeld filter. He declared that the presence and abundance of the virus can be measured, within limits, by the quantitative virulence test and by such serological methods as complement fixation and agglutination. He has satisfied himself that active immunity can be produced to vaccinia with either attenuated or killed virus provided the dose is sufficient. He reported some remarkable instances of the capacity of vaccinia to excite acute nasal catarrh. He noticed that the flocculi deposited from suspensions of vaccinia or variola virus by specific agglutination are composed of spheroidal bodies closely resembling those Mr. Barnard found in cancer cultures. Similar bodies have been found in flocculi from precipitin reactions. Further investigation along this line was not made, the immunity and serological questions being the chief preoccupation of Dr. Gordon's research.

Dr. Gordon was followed by Dr. J. E. McCartney, who began by saying that Dr. Gye was fortunate in having selected for study a tumour that could be examined under experimental conditions in its proper host. To learn more of the nature of filter-passing viruses we must turn to the simplest and those most easily studied, such, for instance, as the virus of mosaic disease of tobacco and tomatoes. The difficulties of work with human virus diseases was exemplified in his own experience with influenza, measles, common colds, and febrile herpes. All these diseases, not being natural infections of laboratory animals, offer perplexing difficulties, and it often remains extremely difficult to say with certainty whether or not the disease has been transmitted. Dr. McCartney explained the failure of the filtration of brain tissue from rabbits dead from herpetic encephalitis as being due to the fact that the lipoid material from the brain is in a state of colloidal suspension, and the pores of the filter become clogged with it. If, however, a small piece of the infected brain be placed in a tube of 2 per cent. glucose broth and incubated for 48 hours at 37° C., the virus passes out of the brain tissue into the surrounding broth, which, if filtered through a Berkefeld filter, is found to have retained its infective power. Dr. McCartney was emphatic that cloudiness in Smith-Noguchi medium does not necessarily mean virus growth, as this is frequently seen in sterile uninoculated control tubes. Smith-Noguchi medium, except for the growth of "globoid bodies" of poliomyelitis and *Bacterium pneumosintes*, is unsuitable for the cultivation of filterable viruses. The granules seen in stained films from cultures are not the actual virus. Animal experiment is the only reliable test for the presence of filterable viruses, but in this work the importance of adequate controls cannot be overestimated, as proved by a recent experience in which a virus disease appeared in experimental animals, a virus which was not ætiologically connected with the disease being studied.

Discussion.

At the conclusion of Dr. McCartney's paper a discussion took place, in which the following took part: Dr. J. A. Arkwright, Dr. M. Coplans, Dr. R. P. Garrow, Prof. Ledingham, Dr. Manson, Dr. J. Menton, Dr. Pybus, and Dr. Stephens.

At the President's suggestion the discussion was conducted in an informal fashion, and, for the most part, it took the form of questions which were addressed to either Dr. Gye or Mr. Barnard or Dr. Gordon. Neither Dr. Gye nor Mr. Barnard could be persuaded to go beyond their written word. Dr. Gordon and Prof. Ledingham both spoke on their recent researches on vaccinia. Dr. Coplans spoke of the differences which exist between different filters and pointed out many possible fallacies in filtration experiments.

SECTION OF MEDICAL SOCIOLOGY.

FRIDAY, JULY 24TH.,

Standardisation and Purity of Milk.

This section, under the presidency of Dr. C. E. S. Flemming, devoted two sessions on July 24th to the subject of milk-supply. The morning discussion was opened by Dr. R. Stenhouse Williams, of the Reading Institute, who said that the educational effect of the examination of milk might in time largely obviate its necessity as a control; for its own good the industry would offer only the best to the consumer. Bacteriological standards for cleanliness of milk were only introduced into England in 1917. At that time sufficient work had been done to justify a tentative standard for Certified milk of 30,000 per cubic centimetre and the absence of *B. coli* in two out of three tubes of one-tenth of a cubic centimetre. In New York the numerical standard was 10,000, and there was no standard for *B. coli*; he thought that the English standard, by the inclusion of the *B. coli* test, was a better means of controlling methods of cleanliness. As time progressed, and with the introduction of the Dairies Act of 1922, it had become possible to lay down further standards for different grades. The *B. coli* test did not apply to pasteurised milk. Dr. Williams then gave a series of results obtained at different periods of the year. These showed that it was possible to maintain the Ministry's standard for Certified milk, and that clean production depended not so much on the buildings and equipment as upon the skill of the workers and the unflagging interest of the farmer or milk dealer. The Ministry of Agriculture had done much to create this skill and interest—by demonstrations at cattle shows, by the distribution of literature, and, most of all, by the ever-increasing number of clean-milk competitions. In arranging these competitions it was desirable that they should continue for a long period—e.g., six or twelve months—so that a new habit of mind would have time to develop. Results hitherto obtained had shown the great value of bacteriological examination, by which alone it was possible to rescue the work from a fog of talk. The Ministry of Agriculture was encouraging agricultural colleges and county educational authorities to appoint agricultural organisers, who would not only carry out bacteriological tests but would go down to the cowsheds and the premises of the dairymen to study the conditions under which the work was done. Several such appointments had already been made.

Dr. W. G. Savage (county M.O.H., Somerset) said that the public health administrator made four demands on milk supplied: (1) That it shall not transmit infectious diseases; (2) that its nutritive qualities shall be maintained; (3) that no chemicals shall be added to it to the prejudice of the consumer; (4) that its price shall be as low as practicable after the above three postulates have been satisfied, so as to be readily available for the community. The third demand had been already met by the legislature. He thought that bacteriological standards should be used as a help to the trade and for picking out the worst cases. He was not yet in favour of a fixed bacteriological standard, non-compliance with which should be a punishable offence—the method adopted in the U.S.A. As regards the nutritive quality, it was well known that the average fat-content of milk, as judged by the examination of samples, was about 3·0; whereas the presumptive standard was only 3 per cent. If the presumptive standard were made a legal one, it would be unfair to the smaller purveyors and producers. The big companies with skilled staffs and working with large quantities of milk would be able to reduce their milk to the standard to a nicety; whereas the small man would be unable to hit the happy mean between a profitable abstraction of fat and an excessive but illegal removal. Milk producers who delivered milk below the standard should receive prompt notice, and the mixed milk of the herd should be sampled before any question of prosecution arose. Dr. Savage also considered that reasonable methods should be gradually introduced for keeping up the vitamin content of the milk. If we freed ourselves from the demands of extremists, there was nothing to prevent the milk-supply being rendered safe without an appreciable increase in cost. The Committee on Milk Production had pointed out eight ways in which cost might be lowered, one of which was the elimination of unprofitable cows by means of milk recording. Undoubtedly the cost of the supervision of the milk-supply would be increased by the new proposals. This, however, would not fall upon the milk trade, but rather on the general public health expenses of the country, and therefore it would not affect the price of milk.

Dr. Eric Pritchard spoke from the point of view of the clinician. Although milk was such a valuable food that any attempt by legislative or other means to attain Utopian ideals of cleanliness, irrespective of cost, would be little less than a national calamity, it was at the same time without question the most dangerous vehicle for the conveyance of infectious disease. Experience in this country and in the U.S.A. had shown that the commercial production of a raw milk, which is safe from this point of view, is an impracticable proposition. Complete safety could only be obtained from milk rendered sterile immediately before consumption. If we were prepared to dispense with absolute safety and to accept relative safety, the only solution was the commercial pasteurisation of the whole milk-supply. The old bogy that the nutritive qualities of milk were seriously prejudiced by the process of pasteurisation had, he hoped, been finally disposed of. For his part he was well satisfied with the standard required under the Milk Designation Order (1923), provided that the pasteurisation of all milk not reaching the Grade A standard was made obligatory.

Discussion.

Mr. Wilfred Buckley (National Clean Milk Society) stated that if cows got sufficient food it was impossible to increase the fat-content of the milk by choice of food. He did not see how the vitamin-content could be kept up during the winter. In his herd of about 80 cows the milk frequently contained less than 3 per cent. of fat, although the average was well up to 3·0 per cent. He did not believe that the practice of "toning" down the milk was in operation. Mr. Quinton (sanitary inspector, Liverpool) spoke in favour of the value of methods as contrasted with structures for producing milk with a low bacterial count. He believed that "toning" was practised. Mr. Ben Davis (United Dairies) said the home was the worst source of contamination. There was no "toning" of milk. The records of his company showed a progressive improvement in the cleanliness of milk supplied to it, as shown by bacterial count. Mr. J. C. Coleman, M.R.C.V.S. (Swindon), drew attention to the high charges made for the distribution of milk and to the impossibility of cleaning milk once dirtied. Mr. Tusting (lecturer to the United Dairies Co.) said he had leave to refer to an experiment recently carried out by the Medical Research Council showing the great improvement in school-children resulting from the addition of extra milk to their diet, and the fact that there was no deterioration in properly pasteurised milk. The report would be published in the autumn. Chicago was now supplied with 98 per cent. pasteurised and 2 per cent. Certified milk.—Mr. S. R. Whitley (British Dairy Farmers' Association) appealed to the doctors to say "Drink more milk."—Dr. H. Scurfield agreed that we should drink more milk; but in order to achieve that object the doctors must be convinced that the milk was safe. The protection of milk in the home was not the subject for discussion. The suggestion that the milk was contaminated in the home was no excuse for the delivery by the trader of contaminated milk.

Dr. Stenhouse Williams and Dr. Savage replied. Dr. Savage did not think, from his experience in Somerset, that distributing companies made any effort to encourage the farmers who supplied them with milk to deliver it in a clean state. He still thought that "toning" was practised.

The morning session concluded with the exhibition of two films showing methods of clean-milk production on the farm, and of pasteurisation on a big scale.

Milk-supply and Cost.

During the afternoon the section continued the discussion on milk-supply and cost. Mr. Wilfred Buckley spoke from the producer's standpoint. It was for various reasons at present impossible for the majority of farmers to maintain tubercle-free herds. Mainly by the Government's efforts the number of tubercle-free herds had increased from two or three to upwards of 250; but tubercle-free milk was unlikely to become general in this generation's life-time. Decent cleanliness was, however, practicable, and by coöperation the entire milk-supply could be raised to Grade A standard. The public should be educated to require this standard. He estimated that clean methods on the part of the dairy-farmer cost about ⅜*d.* per gallon and that the sterilisation of apparatus cost about ¼*d.* per gallon, and that a further expenditure of 2*d.* per gallon was necessary to maintain a tubercle-free herd. Mr. Buckley made a strong protest against the doctrine of Dr. Clive Riviere, expressed at the recent Tuberculosis Conference in London, that raw cow's milk should be given to infants in the hope that it contained a few bovine tubercle bacilli and might therefore produce a certain immunity against the human bacillus. Ordinary raw milk might contain no tubercle bacilli, or it might contain an excessive dose. Such a proposal was therefore quite unscientific.

Mr. George P. Male, M.R.C.V.S. (Reading), speaking as a veterinary surgeon, said that he was satisfied that the use of the tuberculin test, together with proper facilities for isolating reactors and for the breeding and rearing of non-tuberculous young stock, could be relied upon to secure a healthy herd within a reasonable time. It was much to be hoped that the Medical Research Council would be able to evolve a test which would be less expensive for the owner. The number of reactors found in a herd might vary from 5 per cent. to 90 per cent. It was a sound economic proposition to make a herd tubercle-free for many reasons. (1) The loss from wasters may amount to £300 a year in a herd of 50 cows. (2) Tubercle-free cows hardly ever need the help of a veterinary surgeon. (3) The average life of a tubercle-free cow is longer. (4) Cows suffering from a wasting disease like tuberculosis are more expensive to feed. (5) In the case of pedigree herds animals cannot be sold to foreign buyers unless they pass the test. (6) When a cow is tuberculous, sooner or later tubercle bacilli will find their way into the milk. When this occurs the owner will have to take steps to find the offending cow or cows. He may have his milk banned, or, under the new Act, he may be fined or lose his licence. (7) There is a ready sale at enhanced price for young stock from tubercle-free herds. (8) When sold to the butcher there will be no loss for subsequent condemnation. The public was now beginning to realise the value of clean milk from healthy cows and to be prepared to pay for it. Mr. Male believed that the production of Grade A tuberculin-tested milk cost the producer less than 3*d.* per gallon extra, and there was no reason why this milk should not be used by all. The producer, however, was waiting for a market, and the distributor for an assured supply. If medical men throughout the country recommended this class of milk, the whole of the milk-supply would be revolutionised.

Mr. J. H. Maggs (chairman of the United Dairies Co.) said that the volume of milk from tuberculin-tested cows was not likely within this generation to exceed a small percentage of the whole. He hoped something would come from the Spahlinger method of immunisation. He thought the reintroduction of the Tuberculosis Order would involve a sheer waste of public money. The sheet anchor of the distributors would for long be pasteurisation. He thought they should go slow with the idea of a maximum count; but that, as time went on, they would be able to lower the counts and make the examination more stringent.

Prof. Walker Hall (pathologist, Bristol Infirmary) said the Government standards were tentative, and could be tightened up gradually. Patient education of the staffs engaged in the milk trade was necessary. Progress had been slow in Bristol during the last 16 years, but more rapid recently. They must help rather than prosecute the farmer.—Mr. Cumber (farmer, Reading) believed that bovine tuberculosis could be eradicated in 20 years. A penny per gallon would pay for clean milk methods and 2*d.* per gallon for the added cost of maintaining tubercle-free herds.—Mr. Boutflour (agricultural organiser, Wiltshire) spoke on the great educative value of clean-milk competitions. The large proportion of reactors so frequently found in a herd was a legacy from past days of over-milking, bad feeding, and bad housing.—Mr. J. R. Catmar, M.R.C.V.S. (Abingdon), said there was very little clean milk and that much was still produced under appalling conditions.—Mr. Quinton testified that the Tuberculosis Order of 1914 was a valuable measure during the period when it was in operation.—Mr. Coleman said that tuberculin testing was often inefficiently done. Also there was the difficulty caused by doping.

Conclusions.

The speaking clearly indicated the variety of interests represented, which included the National Farmers' Union, the British Dairy Farmers Association, the Sanitary Inspectors Association, the United Dairies Ltd., and the Association of Women Sanitary Inspectors and Health Visitors. To anyone who had attended the milk conferences held in this country during the past four or five years it is obvious that some progress towards a better supply has been made, and that the Ministry of Agriculture is actively promoting better methods. But it is equally obvious that much remains to be done to educate the public (1) in the need for cleaner milk, and (2) in the greater use of milk as a food.

Exhibition of Instruments, Drugs, Foods, and Appliances.

The usual exhibition was held in the Markets from July 21st to 25th. It was opened by Mr. W. G. Mumford, F.R.C.S., on behalf of the President-Elect, in the presence of a large gathering of representatives and visitors, on Tuesday morning. The Mayor of Bath (Mr. Cedric Chivers, J.P.) offered his congratulations to the Association on the great improvement in the Market Hall brought about by the floral and other decorative effects. Mr. Mumford said that one of the most important factors in the success of an annual meeting was the existence of such a commercial and educational exhibition as that before him. The advance of science had made it a far more complicated undertaking than in previous years, and this year some 80 stalls were furnished.

Cancer Research in Manchester.—For several years cancer research has been carried on in Manchester by the Christie Hospital, by the Pilkington and Helen Swindell's trust at the University, at the Radium Institute, and at the Royal Infirmary. The various research agencies are now coördinated by a committee which proposes to extend them. Dr. R. Veitch Clark (M.O.H., Manchester) is chairman of the general committee, Sir William Milligan is chairman of the executive, and Dr. E. M. Brockbank is chairman of the research committee. The work will have the strong support of the Ministry of Health, and a considerable programme has been arranged.

Correspondence.

"Audi alteram partem."

DISABLEMENT FROM CHRONIC RHEUMATISM.

To the Editor of THE LANCET.

SIR,—All those who are employed in physical treatment must have read with interest the letter on this subject in your issue of July 11th, for the nature of our work brings before us this particular class of sufferer in bulk. The amount of disablement and of suffering due to this cause is appalling, and the sooner something definite is done to reduce both the better. The object, however, of this letter is to emphasise four particular methods of alleviation.

(1) It is remarkable how many patients with non-articular rheumatism are found to be suffering from an habitual low fluid intake. Indeed, among women particularly, this error in diet would seem to have far more important bearing on the development of their rheumatism than any other single factor. Anyway, this much may be said, that while the daily fluid intake is reduced, and many of these patients habitually consume under a pint and a half a day, no form of physical treatment will help them. As soon as the intake is increased to four or more pints a day, other causes being absent, treatment becomes efficacious. This, of course, is simply a question of education, but one which is terribly neglected.

(2) The letter draws attention to the part played by endocrine disturbance in many of these cases and suggests, as did an annotation in THE LANCET of May 9th (p. 980), the possibility of endocrine therapy. This has, I think, been unquestionably established, although perhaps little realised. In a large percentage of the non-articular type of case, even when the fluid intake is adjusted, patients seem to develop a new focus of pain directly the old one has been cleared up. For some two years now it has been my custom, when this story becomes evident, to ask Dr. H. Gardiner-Hill to investigate the metabolism, and the frequency with which physical treatment becomes curative and not palliative as the result of scientific dosage with pituitary and thyroid has been most striking. Time after time complete failure has been turned into striking success. The same applies, only in lesser degree, to the articular varieties.

(3) Occasionally in similar cases metabolism is reported as correct, and, in the absence of obvious focal bases of infection, it is necessary to turn to less obvious foci. To the most important of these attention was drawn recently by Dr. A. E. Cumberbatch and Dr. H. Robinson at the Royal Society of Medicine in a communication which attracted far too little notice—namely, the value of diathermy in disinfecting the cervical canal. By this means again, time after time, apparently hopeless cases have proved to be completely curable, or, if not, the progress of disease has been arrested.

(4) It must not be forgotten that all cases of so-called rheumatism are not what they seem, and no form of physical (or medicinal) treatment which aims at the cure of rheumatism will cure either lumbago or the pseudo-sciaticas that are due to lesions of the sacro-iliac or lumbo-sacral joints.[1]

Of course, these four suggestions as regards possible treatment cannot in any way be supposed to touch more than the fringe of the trouble. There will still remain innumerable cases with which we shall have to grapple where infection arises from nose, teeth, tonsils, chest, and abdomen. The first and last often present apparently insuperable difficulties in their present state of our knowledge. But even so, a large amount of suffering and incapacity could be saved by the regular consideration even of these four points alone. I am, Sir, yours faithfully,

JAMES MENNELL.

Park-crescent, Portland-place, W., July 20th, 1925.

ANURIC DIABETIC COMA.

To the Editor of THE LANCET.

SIR,—In his valuable paper on the above in your issue of July 11th, Dr. A. O. Begg states that "clinically, the most prominent symptoms were vomiting, restlessness, and feeble, quick pulse." This is distinctly interesting; it brings the cases of anuric diabetic coma more or less into line with the toxæmia arising in acute intestinal obstruction. In this latter *condition the impaired renal function* has been imputed to an absorption of toxic proteoses formed in the distended gut; but I have shown that the absorption of such proteoses is unreasonable, and, moreover, that the evidence on which the opinion of the renal impairment was assigned (put forward by one set of workers at least) is untenable.[1] I put forward the plea that in acute intestinal obstruction the renal (and probably the hepatic) impairment is the direct result of the vomiting, straining, restlessness, and doubtless the abdominal distension. It occurs to me that the vomiting and restlessness in diabetic coma or in the pre-comatose state may be the effective cause, determining the anuria which Dr. Begg has occasionally noticed in his cases.

In spite of the fact that marked and persistent vomiting, however caused, makes people feel very ill, as, for instance, in prolonged sea-sickness—as *many of us from our own experience can testify*; in spite *of the pernicious effect of marked* and persistent vomiting in patients recovering from post-operative anæsthesia—patent to all surgeons; in spite of the fact that in pregnancy, persistent vomiting *causes* a toxæmia—an hepatic and renal derangement—as shown by the effect of stopping the vomiting—an end admitted of pre-eminent importance by all obstetricians; the idea that vomiting is a pathological force has not been received by the profession as reasonable. In this age of serums, vaccines, and toxæmias, in which so many diseases are imputed to endolytic poisons, physical causes are discounted. Yet what a toxæmia arises in uncompensated valvular cardiac disease; in pulmonary pathological processes (e.g., emphysema); in obstruction of the biliary and renal systems! Cut off or greatly diminish the blood flow through a part, how can it function normally, or the whole body be well?

It is true that Dr. Begg states that all patients with diabetes going into coma or already comatose, whether anuria arise or not, usually vomit; but I take it from his statement that the prominent symptoms of the anuric type are vomiting and restlessness, &c., that the vomiting and restlessness in those is greater than in the other, the non-anuric type. To understand how persistent vomiting can affect the kidney, we must realise that the blood in the renal artery has a choice of two paths: it can either go through the cortex or through the medulla (via the arteriæ rectæ); and that this choice is determined by the respective resistances in the cortex and medulla. When we remember that the urine is secreted in the cortex and flows through the medulla, so do we see that the pressure in the cortex (however small be the difference) must be greater than that in the medulla (as Brodie believed). With the compression of the kidney by the act of vomiting, all these channels for the moment are either obliterated or greatly narrowed, or tend to be; with the relief of the compression which follows the act, if the pressure of the urine in the medullary uriniferous tubules is less or much less than that of the blood in the arteriæ rectæ, so will the medullary capillaries be distended with a pressure effectually blocking the exit of urine from the cortical uriniferous tubules.

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[1] THE LANCET, Sept. 22nd, 1917, and April 10th and 20th, 1921.

[1] The Toxæmia of Acute Intestinal Obstruction. H. K. Lewis and Co. 1923.

Clifford White has shown that in puerperal anuria (or oliguria) the renal tubules in the cortex are dilated; I have confirmed this in an experience of my own (not yet published). Dr. Begg states that in his cases of anuric diabetic coma the symptoms were those of obstructive suppression of urine. In these cases "certain changes" have been found "which suggest the kidney is an all-important factor." He promises us a further contribution on this part of the subject, which will be awaited with restless interest. Meanwhile, may I make two suggestions? The one is that Dr. Begg, in his cases of diabetic coma, should regard vomiting as an important pathological force, prone to determine renal aberrations. The other is clinical: that patients with this disease and impending complication should be placed on their side; that all means be adopted to limit or prevent vomiting; and that in the worst cases decapsulation of the kidney should be done. If the patient is to die, it makes no difference whether this event occurs in the theatre or ward; in eclampsia, patients almost in extremis have been saved by decapsulation; in diabetic coma, if the blood-sugar has been made to become normal by insulin, the objection to operation surely subsides. Decapsulation acts by relieving the cortical pressure (in which the capsule of the organ plays an important part); it allows blood to flow again through the cortical vessels, which distension of the uriniferous tubules prevented; and since blood can now flow through the cortex, there is less to go through the medulla; thus the block is removed, the vicious circle broken.

I am, Sir, yours faithfully,

Rugby, July 11th. R. H. PARAMORE, F.R.C.S. Eng.

To the Editor of THE LANCET.

SIR,—Dr. A. Clarke Begg classifies diabetic coma into two groups: one the usual type with acidosis and normal blood-urea; the other, the anuric type with slight or no acidosis, very high blood-urea, very high blood-sugar, and urine volume decreased even to anuria. This classification does not seem to me adequate. Last year Dr. E. F. Skinner and I reported in your columns[1] a case of diabetic coma with anuria, under the care of Prof. A. J. Hall, which cannot be placed in either of Dr. Begg's groups. The blood analysis in this case on admission yielded the following results (per 100 c.cm.): Blood-sugar, 0·957 g.; blood non-protein nitrogen, 110 mg.; plasma bicarbonate, 15·7 mg.; ketone bodies, 59·13 mg.; blood chlorides, 0·465 g. The low plasma bicarbonate and the degree of ketonæmia indicated a severe grade of acidosis not found in Dr. Begg's cases. Otherwise the findings are similar to those he observed in the cases of coma associated with anuria. It seems, therefore, necessary to consider at least two types of "anuric diabetic coma" according to the degree of concomitant acidosis.

I am, Sir, yours faithfully,

Sheffield, July 19th, 1925. C. GRAY IMRIE.

TUMORS AND CANCERS: A COMPLAINT.

To the Editor of THE LANCET.

SIR,—In your issue of May 23rd is a review of a work by Mr. Hastings Gilford on "Tumors and Cancers." This review struck me, as it has struck others, as an unjust and misleading statement of the nature and scope of the book. It conveys the impression that it is written by one who is himself a cancer researcher, in the narrowest sense of the word, and has taken advantage of the opportunity to make an onslaught on a book distinguished by its breadth and catholicity of view and which therefore puts his own particular work into its proper perspective. Some of his remarks were written obviously with the intention of creating prejudice. Thus one of the undoubted, if unavoidable, faults of the book is its bulk, but this bulk is largely due to the evident determination of the writer to support every statement with an ample backing of evidence. It is therefore an obvious and flagrant misstatement to say that the author's conceptions "are so often supported by simple assertions, by bad reasoning." Indeed a more logical or rational exposition of a difficult subject it would be hard to name. Such a statement could only have been made by one who had confined his reading to the "conclusions" and to mere glimpses at the main structure of the book. As for the other comments, some, such as that about alcohol, which is a truism, could have no other purpose than to bias the reader against the book. Then there is a grave and palpable omission. The reviewer is so occupied in his search for weak spots or for sentences which can by dislocation be made to appear gauche or ridiculous that he fails to do justice to the merits of the book. He dwells on those theoretical aspects and frills which he finds so disagreeable and says next to nothing of the real structure. In short, he displays his own personal feeling, but does not review the book.

Now, Sir, I should not have drawn attention to this subject now were it not for the circumstances that such a book as the book in question is so much needed at this juncture in order to form a background for recent achievements in laboratory research. It is therefore exceedingly unfortunate that an important volume containing such a recent and balanced outlook and review of cancer work in all its aspects should have been treated so scurvily by your reviewer.

Finally I may add that in writing as I now do I am expressing not only my own opinion but those of others who are equally impressed with the injustice that has been done and with the desire that the information contained in "Tumors and Cancers" should not be suppressed but should be broadcasted to all who wish to take a sane and just view of the present situation.—I am, Sir, yours faithfully,

Basingstoke, July 26th, 1925. NOLAN DALY.

THE REMUNERATION OF R.A.M.C. OFFICERS.

To the Editor of THE LANCET.

SIR,—The action of the British Medical Association with regard to the Royal Army Medical Corps recalls their similar action a few years ago with regard to the Royal Naval Medical Service. It is further an admitted fact that there is great difficulty in obtaining medical men for all three combatant services. It is to be hoped that the present dispute will lead to an exhaustive investigation of the lack of attraction to these great services. In my opinion a supply of good men will be obtained only if the opportunities to do first-class *medical and surgical* work and to keep themselves abreast with advances in their professional work are afforded. Such opportunities under existing circumstances are quite inadequate. Some time ago I submitted a comprehensive scheme to a committee, which included the Directors-General of the three medical services. It was damned with faint praise; but I do not despair that some such scheme may yet receive the official benediction.

I am, Sir, yours faithfully,
J. HERBERT PARSONS.

Queen Anne-street, Cavendish-square, W.,
July 23rd, 1925.

AN ACKNOWLEDGMENT.

To the Editor of THE LANCET.

SIR,—In connexion with the second edition of the "Encyclopædia Medica," Vol. XIII., article Diabetes, we have to regret that on p. 611 an acknowledgment was not made of the nomogram there represented to Dr. W. M. Feldman and Mr. A. J. V. Umanski, the authors of the article in THE LANCET, Feb. 11th, 1922, p. 273, where the nomogram originally appeared.

We are, Sir, yours faithfully,

Edinburgh, July 23rd. W. GREEN AND SON, LTD.

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[1] THE LANCET, 1924, i., 14.

Obituary.

HARRY DRINKWATER, M.D., F.R.S. EDIN., M.Sc. (HON. CAUSA) WALES.

Dr. Harry Drinkwater, who died at his residence in Wrexham on July 11th at the age of 70, received his medical education at the Universities of Durham and Edinburgh, qualifying in the year 1877. Eight years later, at the M.D. Edin. examination, he took a gold medal for his graduation thesis. In 1890, after several years of practice at Sunderland, he removed to Wrexham, and was appointed physician to the Fever Hospital there. He became closely interested in the clinical diagnosis of diphtheria and other exudations in the throat, and in a carefully illustrated paper contributed to our columns in 1920 he showed how the distribution of patches of membrane may serve for provisional diagnosis of a very high degree of accuracy before bacteriological examination can be made; and, although some of his views were criticised, he gave good reason for his belief that diphtheria can be diagnosed without bacteriology. Dr. Drinkwater was a man of wide interests, a justice of the peace for the borough of Wrexham, a Vice-President of the Chester Natural History Society, and a member of the Linnean Society. Not long ago he presented to the Welsh Natural History Museum at Cardiff a collection of botanical studies from his own brush. Last year he published a little book setting forth the main lines on which medicine had progressed during his life time, a book calculated to revive the failing heart of pessimists who see only the fields untilled in medicine. A year ago he received the hon. M.Sc. from the University of Wales. Dr. Drinkwater was twice married and is survived by three children of the first marriage and by his second wife, whose is a medical graduate of London University.

WILLIAM MONTAGU VENABLES WILLIAMS, L.R.C.P. EDIN., D.P.H.

Dr. Venables Williams, who died on July 18th at Colwyn Bay in his sixty-eighth year, was one of the most respected and, until his health began to fail, one of the busiest practitioners in North Wales. He was the only surviving son of the late Rev. W. Venables Williams, formerly vicar of Llandrillo, and one of the founders of Colwyn Bay as a health resort. He studied at the Liverpool School of Medicine and at Edinburgh, qualifying L.R.C.P. & S. Edin. in 1882, and after middle life qualified for the post of medical officer of health by obtaining the D.P.H. He remained until his death health officer to the urban district of Colwyn Bay and honorary physician to the Colwyn Bay Cottage Hospital. He is survived by his widow.

THE LATE DR. HAROLD CLIFFORD.

WE briefly announced in our issue of July 18th the death of Dr. Harold Clifford at Manchester. Dr. Archibald Donald writes: "His death came as a shock to his friends. His health had not been good for some three or four years, but there had been nothing definite apart from a sudden loss of vision in April last due to intracranial hæmorrhage. But his eyesight had improved and he was in good spirits again. On July 5th he was ill with what appeared to be a gastric disturbance, and he died on July 7th from a severe cerebral hæmorrhage. You have already mentioned some of the many important posts which Dr. Clifford held in Manchester. He was a member of the North of England Obstetrical and Gynæcological Society for many years, and held the office of President in 1922. He was widely known as a wise adviser and a skilful surgeon in his own department and had a large practice.

"Dr. Clifford was handicapped for the struggle of life by ill-health. He gave an example of what could be accomplished by a courageous and resolute spirit in a frail body. He was never fitted for any form of severe physical exercise, and the recreation of outdoor games or any kind of sport was barred to him. As it was he found his pleasure in his work during the day, and in reading and in the society of his friends in the evening. He was an excellent host and seemed to be happiest when he was entertaining a small circle of friends. His manner was quiet, and although he held so many important appointments and had attained to a position of distinction in his special department, he preferred to remain in the background himself. He will be missed by a large circle of friends and perhaps most of all by his colleagues."

EVAN EVANS, M.B. CAMB., F.R.C.S. ENG., SURGEON LIEUTENANT-COLONEL.

THE death has occurred at Bury Port of Dr. Evan Evans in his seventy-second year. Studying at Cambridge and St. Mary's Hospital, he graduated as B.A. in 1882 and as M.B., Ch.B. in 1886. He became demonstrator in physiology and pathology at St. Mary's Hospital and clinical assistant in the ophthalmic department there and also at the Royal London Ophthalmic Hospital. In 1888 he took his D.P.H. and in 1894 became F.R.C.S. Eng. Dr. Evans settled in Llanelly, where for over 30 years he has been medical officer of health for Llanelly rural district. He was Surgeon Lieut.-Colonel of the 4th Batt. Welsh Regt. (T.F.) and an ex-President of the South Wales and Monmouth branch division of the B.M.A.

MARY EVA HASTINGS MORRIS, M.D. LOND.

AFTER a prolonged illness Dr. M. E. H. Morris died on July 11th at Bath, where she had been in practice for several years and where she had gained a large circle of friends. After studying at the London School of Medicine for Women she took the M.B. degree in 1902 and the M.D. in 1918. Before settling in Bath Dr. Morris was house surgeon in the North Devon Infirmary and physician to out-patients in the Bristol Royal Hospital for Sick Children and Women. In Bath she was school medical officer from 1908 to 1917, and she acted as assistant pathologist in the Bath War Hospital. There was a large congregation at the funeral service in Bath Abbey on July 15th, and on the following day the interment took place at Ystradmeurig, Cardiganshire.

RICHARD HENRY GRIFFITH, L.R.C.P. EDIN.

THE death took place at his home in Nevin, Carnarvonshire, of Dr. Richard H. Griffith on July 13th at the age of 61. He was taken ill on the Saturday previous when playing golf. Well known in athletic circles in North Wales, he was an ex-captain of Nevin and Abersoch Golf Clubs. An experienced yachtsman, he often acted as commodore at the annual regattas in South Carnarvonshire. After studying at University College, London, he qualified L.R.C.P. and L.R.C.S. Edin. in 1892, having been a house physician in the skin department in University College Hospital, London. Besides having a large practice, he was medical officer of health for the Pwllheli union. Dr. Griffith leaves a widow and one daughter.

WORK OF PENSIONS MINISTRY.—Major G. C. Tryon, Minister of Pensions, opening the new Ministry of Pensions Hospital in Mossley Hill, Liverpool, on July 14th, said that since the Ministry was started in 1917 it had spent in its efforts to alleviate suffering a sum which, including the present year, would have paid off the whole of the National Debt before the war. This year it was spending £86,000,000. At the height of this work in 1920 they were providing treatment, or arranging for it through the civil hospitals, for 160,000 men. Up to the present time, not counting allowances, £30,000,000 had been spent on actual treatment of the sick and wounded, and among the men who had passed through the hospitals were 39,000 who had lost limbs. The number now receiving treatment of various kinds was 40,000. The new hospital at Liverpool is part of a scheme for the reduction and centralisation of Ministry of Pensions medical institutions.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. E. R. Townsend is placed on the Retd. List with rank of Surg. Capt.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lieut. (D.) A. G. D. Pridham to be Surg. Lt.-Comdr. (D.).

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. C. G. Thomson retires on retd. pay on account of ill-health.

Maj. A. C. Vidal, half-pay list, late R.A.M.C., retires on retd. pay on account of ill-health.

Capt. J. Vallance retires, receiving a gratuity, and is granted the rank of Maj.

ARMY DENTAL CORPS.

Temp. Capt. E. H. C. Caute, from Gen. List, to be Capt.

TERRITORIAL ARMY.

Maj. A. Topping (late R.A.M.C.) to be Capt. and to relinquish the rank of Maj.

Capt. G. J. Linklater, from General Hospital List, to be Capt.

Capt. G. D. Yates, R.A.M.C., to be Divisional Adjt. 52nd (Lowland) Div., R.A.M.C., T.A., and School of Instruction, vice Capt. R. C. Aitchison, R.A.M.C.

Supernumerary for Service with the O.T.C.—University of Lond. Contgt., Sen. Div.: Capt. H. H. Woollard to be Maj. (Prov.).

The King has conferred the Territorial Decoration upon Lt.-Col. (Bt.-Col.) G. C. E. Simpson and Majs. A. A. Hingston and S. F. Linton.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Lt.-Col. (Bt.-Col.) W. Bowater, from Active List, to be Lt.-Col. (Bt.-Col.).

Maj. E. J. Boome, from Active List, to be Maj.

ROYAL AIR FORCE.

Flight Lt. E. N. H. Gray is promoted to the rank of Squadron-Leader.

Flying Officer G. Clark is transferred to the Reserve, Class D.2.

DEATHS IN THE SERVICES.

Sir W. Launcelotte Gubbins, K.C.B., M.V.O., K.H.S., formerly Director-General A.M.S., who died recently, at the age of 75, from the effects of a cycling accident, was the son of the Rev. George Gubbins, Prebendary and Chancellor of Limerick. He graduated in arts and medicine at Trinity College, Dublin, in 1872, after passing a brilliant undergraduateship, being Erasmus Smith scholar. In 1873 he was gazetted as a surgeon in the army, and obtained his first experience in the field under the late Lord Roberts during the Afghan campaign of 1878. He was in medical charge of the 1st Battalion 5th Fusiliers in the operations in the Bazar Valley, and later became medical officer to Lt.-Gen. Sir Francis Maude, V.C., and saw much of the fighting in the Khyber Pass. Later he became divisional sanitary officer and secretary to the P.M.O. While still a junior in rank he was posted to Lord Wolseley's forces in Egypt during the suppression of the 1882 revolt, and after his promotion to Surgeon-Major in 1885 was sent out to India under Lord Roberts in the Burmese campaign. In 1894 he became Assistant Director at the War Office, his term of office embracing the period when the old Army Service became a Royal Corps, and he did much to develop the movement for voluntary aid in connexion with the Red Cross as a member of Lord Wantage's Committee. In 1899 he again served under Lord Roberts as P.M.O. to the 6th Division in the South African War with the local rank of Colonel, was at the relief of Kimberley, at Paardeberg, and entered Bloemfontein. Later he was in the Orange River Colony and the Transvaal, and was P.M.O. at Pretoria, Pietersburg, and on the northern line of communication. He received the commendation of Lord Kitchener as a capable administrator, who had accomplished much in the battle with enteric. On his return home he became P.M.O. on the Home District staff and was appointed to the Duke of Connaught's staff for the coronation of King Edward. The successful medical arrangements for the ceremony gained him the M.V.O., and soon afterwards he was promoted to Surgeon-General. Returning to India he became successively P.M.O. in Bombay and in the Eastern Command and chief of the Medical Division in India. In 1908 he returned to England, acted as Deputy Director-General, and two years later was made honorary surgeon to the King and succeeded Sir Alfred Keogh as Director-General of the Army Medical Service. During his term of office he greatly improved the physical standard of the army, and by the introduction of salvarsan much reduced the period of treatment in military hospitals of cases of syphilis. During the late war he was temporarily employed in various posts and keenly interested himself in the work of the British Red Cross Society, receiving for his services the reward for distinguished and meritorious service.

Medical News.

University of London.—The Committee of the Medical Members of the Senate have elected Sir Wilmot P. Herringham, K.C.M.G., C.B., M.D., F.R.C.P., to be their chairman for the year 1925–26.

Reader in Protozoology.—The title of Reader in Medical Protozoology in the University has been conferred on Mr. J. G. Thomson, M.A., M.B., Ch.B. Edin., in respect of the post held by him at the London School of Hygiene and Tropical Medicine. He was educated at the University of Edinburgh and has been lecturer in protozoology at the London School of Tropical Medicine since 1914.

In the recent examinations the following candidates satisfied the examiners:—

M.D. Examination.

Branch I., Medicine.—Percy C. Brett, St. Thomas's Hosp.; Gertrude B. G. Carden, London Sch. of Med. for Women; Edward Gallop, St. Bart.'s Hosp.; Paul C. Gibson, London Hosp.; Charles F. Harris, St. Bart.'s Hosp.; James L. Livingstone, King's Coll. Hosp.; William E. Lloyd (University Medal), St. Bart.'s Hosp. and Westminster Hosp.; Wilfrid P. H. Sheldon, King's Coll. Hosp.; John S. Sloper, St. Thomas's Hosp.; Richard H. Wade, St. Bart.'s Hosp.; and Samson Wright, Middlesex Hosp.

Branch III., Psychological Medicine.—Elizabeth C. Eaves, University of Sheffield and King's Coll. Hosp.

Branch IV., Midwifery and Diseases of Women.—Michael W. B. Bulman, London Hosp.; Macormack C. F. Easmon, St. Mary's Hosp.; and Winifred M. Gray, Hilda T. Haggett, Phœbe M. Phillips, and Elaine M. K. Salmond, London Sch. of Med. for Women.

Branch V., State Medicine.—Eleanor M. Reece, London Sch. of Med. for Women and Univ. Coll.

Branch VI., Tropical Medicine.—Khorshed S. Captain, London Sch. of Med. for Women and London Sch. of Tropical Med.; Henry C. V. Joy, London Hospital and London Sch. of Tropical Med.; Una F. M. Morton, London Sch. of Tropical Med. and Univ. Coll. Hosp.

M.S. Examination.

Branch I., Surgery.—Thomas G. D. Bonar, Guy's Hosp.; and John P. Hosford (University Medal), St. Bart.'s Hosp.

The following awards have been made in the Faculty of Medical Sciences at University College:—Cluff Memorial Prize (for proficiency in anatomy, physiology, pharmacology, and chemistry): R. M. Sargent. Anatomy: Gold Medal (Senior Class): Mary E. Sharp. Histology and Embryology: Prize equivalent to Silver Medal: Audrey Z. Baker and Margaret D. Wright (equal). Organic and Applied Chemistry: Silver Medal (General Course): D. F. Ogborn. Physiology: Gold Medal (Senior Class): J. R. Pierre. Pharmacology: Silver Medal (General Course): H. E. James.

University of Edinburgh.—At the graduation ceremony held on July 24th the following degrees were conferred:—

Doctor of Medicine.

Philip Barlow, *Ernest Bulmer, Sisir Chandra Chatterjee, †Leybourne S. P. Davidson (in absentia), Harold B. Dykes, Richard N. Gibson, David Landsborough, ‡Joseph C. Lorraine, ‡Kenneth A. T. Martin, ‡Solomon J. Rom, Sydney W. Smith, ‡Sahib Singh Sokhey (in absentia), May D. Stranger, ‡Brian G. Thompson (in absentia), †Thomas R. R. Todd, ‡Arthur R. Wightman, ‡Norman B. Williamson, and †Hedley D. Wright.

* Highly commended for thesis. † Awarded gold medal for thesis. ‡ Commended for thesis.

Master of Surgery.

Thomas B. Mouat.

Bachelor of Medicine and Bachelor of Surgery.

George L. Alexander, Christina W. Alston, Frank S. Anderson, George M. Anderson, Matthew D. S. Armour, Frank Ayrey, Ethel W. Barnley, John M. Bassett, David Bell, Hellet F. Bezuidenhout, James G. Bogie, Eleanor B. Bone, George I. Boyd, George G. Brander, Thomas Brewis, Anna M. Brown, James Brown, John S. Brown, William M. Brown, Joseph Bryant, Hsing Chang, James L. Chisholm, Ronald V. Christie, Robert Clark, *William J. A. Coldstream, Edwin G. Collins, John B. Colquhoun, John Comrie, Robert C. Craig, †Sidney

E. Croskery, John M. Davidson, Henry N. Davies, Eric F. Dott, Mary L. Drabble, George H. Duncan, Milad Luka El-Zik, Edgar L. Farrow, Jacobus C. Faure, Edward K. A. Firth, Charlotte E. Fisher, Charles G. Fletcher, Mary H. S. Forrest, Duncan H. Fraser, George Fraser, John A. Fullerton, Andrew N. Gardner, Margaret S. Gibb, Aubrey A. Gibbons, Alexander MacA. Gillespie, Silvio C. Gomes, Coleridge G. Gooding, Frank N. Grannum, Jessie Griffin, William Happer, Louisa B. Harper, John S. Hendrie, Edward J. C. Hewitt, John F. Hinksman, John C. Hodgson, John E. Howell, Laurence J. Howie (in absentia), Charles L. Hutson, Archibald M. de la Mazière Jamieson, Eric B. Jones, Marjory J. D. Kelly, Morris Kelman, Betty M. Kennedy, Frederick G. Kerr, John B. King, †John G. Kininmonth, Harold S. Kissenisky, William E. Knowles, Donald P. Lambert, Robert Lees, William M. Lloyd, William G. Love, *John G. M'Crie, Ogilvy J. S. Macdonald, William F. Macdonald, Duncan M'Eachran, John T. M'Glasson, Victor J. G. Macgregor, Roll C. Mackay, James Mackay, Margaret S. Mackay, Mary E. M'Laren, Christina J. M'Leay, Alastair Macleod, Annie E. M'Leod, Isabella Macleod, John Macleod, Duncan Macmillan, Frank G. Macnair, Ian G. Macpherson, Sheila Macpherson, Malcolm D. Macqueen, Hugh M'Vicker, Elizabeth P. M'Whirter, †Donald Mainland, William Marshall, William R. Martine, David E. C. Mekie, Ivor B. L. Menzies, De la Rey van der Merwe, Arthur L. Millar, Margaret M'D. Miller, Alexander J. Milner, Charles E. Mitchell, Kenneth T. Moir, William A. Morrison, John Morton, Hendrik van Reenen Mostert, William T. F. Muir, David A. Murray, Stanley J. G. Nairn, Susman G. Narunsky, Beatrice M. Nicholson, Elizabeth H. Nimmo, George W. M. Paterson, Patrick W. R. Petrie, *Hilta Inès Christina Pfister, Charles H. Piper, Andrew M. Porteous, Steven T. Pottinger, John Prentice, Alexander A. M'K. Reekie, †Alexander H. Rintoul, Alison Ritchie, Charles W. Robertson, Edith A. Robertson, Dora F. M. Rose, Maurice Rosenberg, Andrew C. Ross, Isabella M. Ross, Jean A. Ross, Margaret Round, Alexander W. Sanderson, Robert H. Sanderson, Alfred E. M. Sandison, Sophie Sash, John B. de Courcy M. Sanders, Hyman F. Schiller, Gordon I. Scott, William F. Scott, Henry Selesnick, William V. Semple, Crissie Short, Alfred J. Skinn, William B. Smellie, Alistair H. Smith, Dorothy Smith, Robert W. Smith, Thomas H. Stephens, Robert Strang, George M. Sturrock, James S. Sutherland, Jean Sutherland, Vigrow W. Sutherland, Dorothy M. Taylor, Arthur Teasdale, Donald W. Thompson, John Thomson, Irene M. H. Tincker, Norman S. Turnbull, Alec B. Walker, Alexandra A. Warnock, Alfred O. Watkins, John M. Watt, Dorothy Watterson, Barclay P. Webster, Lucien B. Wevill, John White, Janet Wilson, and Ai Sung Wong.

* First-class honours. † Second-class honours.

The following awards have been made: Cameron Prize in Practical Therapeutics: Dr. R. Magnus, Professor of Pharmacology, University of Utrecht. Goodsir Memorial Fellowship: Adam D. Macdonald. Gunning Victoria Jubilee Prize in Physiology: William G. Millar. Gunning Victoria Jubilee Prize in Surgery: Harold K. Corkill. Chiene Medal and Prize in Surgery: Thomas B. Mouat. Ettles Scholarship and Leslie Gold Medal: William J. A. Coldstream. Allan Fellowship in Clinical Medicine and Clinical Surgery: John G. Kininmonth. Murchison Memorial Scholarship in Clinical Medicine: Sidney E. Croskery. M'Cosh Graduates and Medical Bursaries: Hilta Inès Christina Pfister. Mouat Scholarship in the Practice of Physic: William J. A. Coldstream. Buchanan Scholarship in Gynæcology: Robert W. Smith. James Scott Scholarship in Midwifery: John G. M'Crie. Lauder Brunton Prize in Pharmacology and Therapeutics: Andrew R. Gilchrist. Beaney Prize in Anatomy and Surgery: John G. Kininmonth. Conan Doyle Prize: Hyman Felix Schiller. Annandale Gold Medal in Clinical Surgery: William J. A. Coldstream. Scottish Association for Medical Education of Women Prize: Hilta Inès Christina Pfister. Dorothy Gilfillan Memorial Prize: Hilta Inès Christina Pfister. Sir Robert Jones Prize in Orthopædic Surgery: Alexander W. Sanderson. Pattison Prize in Clinical Surgery: John Thomson. Wellcome Medals and Prizes in the History of Medicine: Gold Medal, Alexander Haddow; Silver Medal, Bryan Williams. Cunningham Memorial Medal and Prize in Anatomy: George I. H. Braine. Whiteside Bruce Bursary: Thomas P. Bliss.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College held on July 21st, Sir Harold J. Stiles, President, in the chair, the 28 successful candidates out of 58 entered, who passed the requisite examinations between March 30th and April 6th, were admitted Fellows:—

George J. Alexander, Leslie C. L. Averill, George H. Buckley, John A. G. Burton, Ernest Y. Comrie, Leopold R. de Castro, William A. Ekanayake, Doris C. Gordon, William P. P. Gordon, Reginald D. McK. Hall, Robert B. Hare, Charles F. W. Illingworth, Noel Kemm, Noel Kretzmar, Ramkrishin Harbhagwandas Lala, Claude H. Marshall, Finlay S. Mayne, Donald S. Middleton, Oswald O. Popper, Frank N. Reynolds, Edward H. Richards, Donald E. Ross, Cyril R. Sandiford, Robert Selby, John McD. S. Slater, Jacob W. van Reenen, Stewart A. Wallace, and William H. O. Woods.

The following candidates, having passed the Final Professional Dental Examination, have been granted the diploma of L.D.S. R.C.S. Edin.:—

Guthrie Russell, Douglas Sutherland, John Balfour, Albert G. Ueckermann, Ernee K. Wilson, Lewis W. G. Watson, Alastair O. Couston, John J. Seaton, William Mason, Margaret I. MacTaggart, and Mela Itam Soni.

SCHOOL FOR PRE-TUBERCULOUS CHILDREN.—At the annual meeting of the Liverpool Hospital for Consumption on July 22nd it was decided to provide and maintain an open-air school and hospital for pre-tuberculous children. This will be the first of its kind in the north of England.

HARROGATE ROYAL BATH HOSPITAL.—On Monday, August 10th, Princess Mary, Viscountess Lascelles, will open the new bacteriological and biochemical department at this hospital. The Earl of Harewood, G.C.V.O., will preside.

FINANCE OF THE GENERAL NURSING COUNCIL.—The income of the General Nursing Council for the year ending March 31st last was £27,505, and the expenditure £20,042. Examination fees produced the large sum of £12,301; the fees paid to examiners amounted to £4580. The Council has £20,000 invested and a further £5000 in the bank.

REGISTERED NURSES.—The new Register of Nurses contains 42,173 names, but recent additions have brought up the number to over 47,000. Some thousands of applications for registration received during the closing days of the period of grace have yet to be dealt with, and when they have been disposed of the total number of State-registered nurses will probably exceed 50,000. In future registration will be by examination.

CANCER RESEARCH IN YORKSHIRE.—It has been decided by the Yorkshire Council of the British Empire Cancer Campaign to appeal to the county for £75,000 for research work. Most of this work will have to be conducted at the Medical School of Leeds University, but Sir Berkeley Moynihan points out that the school has "no proper habitation" and that its equipment is inadequate.

MEDAL AWARDED TO BLOOD DONOR.—The Minister of Health on July 27th presented the Meritorious Service Medal of the Order of the British Empire to Mr. Bertie Wallace Tibble in recognition of his public-spirited work as a blood donor to the London Hospital. Mr. Tibble has given a pint of blood on more than 50 occasions, and although of small means has always refused the usual payment of 5 guineas for his service.

DUBLIN HOSPITALS.—In a speech at the Dublin Rotary Club, Sir W. de Courcy Wheeler declared that there are far too many hospitals in that city and that some of them are totally out of date. They lack lifts and patients have to be carried from the operating theatre along corridors and up staircases. Sir William Wheeler suggested that four or five of the hospitals might well be amalgamated, and laid especial stress upon the desirability of children being dealt with outside the city.

BAN ON UNVACCINATED SEAMEN BY U.S.A.—On July 14th a test case of importance to shipowners and seamen was heard at Liverpool City police-court, when a ship's fireman claimed for arrears of wages. It appears that when the ship arrived at Vancouver the crew were informed of a new American regulation that no ship could be allowed to enter the port unless the master could produce a certificate from the American consul in the last port of call saying that all the crew had been vaccinated during the last 12 months. Three firemen, including the plaintiff, stated that they had never been vaccinated and had conscientious objections to vaccination. They were left behind in Vancouver and the ship returned after a voyage to the United States and picked up the three again at Vancouver. After arguments by counsel, the magistrates decided that the men were merely put ashore, that the men had not signed off, and found for the sum claimed. The importance of the case lies in this new drastic protective regulation by the United States Government.

FIRST INTERNATIONAL MALARIA CONGRESS.—This Congress will be held at Rome under the patronage of the Italian Government on Oct. 4th, 5th, and 6th. Amongst others, the following subjects will be discussed: (1) Anopheles and malaria, (2) biology of the parasites (unicity and plurality of the parasites), (3) the alkaloids of quinine and the therapy of malaria, (4) epidemiological factors and antimalarial measures, (5) propaganda (statistics), (6) inoculation fever. All medical men will be admitted to the Congress, and the official languages will be English, French, German, Italian, and Spanish. All communications to the Congress should be sent to the secretary not later than Sept. 20th, and manuscripts or communications for distribution should arrive before Sept. 1st. Hotel accommodation will be provided by the Executive Committee of the Touring Agency, Ente Nazionale Industrie Turistiche, of Piazza Colonna, Rome, who will also supply any information useful to travellers. Applications for accommodation should be received by the secretaries of the Congress at 14, Via XXIV. Maggio, before Sept. 20th. A fee of Lir.100 will be charged for each member of the Congress.

UNIVERSITY OF PARIS.—A vacation revision course will be held at the Hôtel-Dieu from Sept. 14th to 25th. The subject will be Recent Medical and Surgical Views on Diseases of the Digestive Tract, fully illustrated by demonstrations of all kinds. Following the course there will be a study tour to Vichy. Further particulars may be obtained from the Clinique Médicale de l'Hôtel-Dieu, Paris.

BIRTH CONTROL CLINIC.—The original clinic for constructive birth control, founded by Dr. Marie Stopes and Mr. H. V. Roe at Holloway, has removed to more central quarters at 108, Whitfield-street, Tottenham Court-road, W. 1. Nurse N. Jones, who gained the C.B.C. certificate after training at this clinic has been put in charge of the birth control clinic recently opened by the Abertillery and District Hospital.

GUY'S HOSPITAL: A YEAR'S WORK.—The report of Guy's Hospital for 1924, which has just been issued, shows that during the year 9495 patients passed through its 616 beds, as compared with 8765 in 1921, yet the average number of days' residence (21·25) remained practically constant. It is claimed that this is "the result of careful organisation in reducing to a minimum the number of vacant beds." Adding the number of patients in the hospital at the beginning of the year, the total number who received treatment in the wards was 10,017, the largest ever recorded in 12 months. The out-patients numbered 124,000, and in this department a whole-time clinic for the treatment of venereal diseases has been opened. Between 1923 and 1924 the number of attendances for massage increased from 26,791 to 31,106; for remedial exercises the growth was even more remarkable—namely, from 4443 to 14,013. With a total expenditure of £158,000, the deficiency on income and expenditure account was less than £2000, thanks to a large increase in legacies. At the end of the year there were 267 nurses in training.

DONATIONS AND BEQUESTS.—By the will of the late Sir Rickman Godlee, the testator left, on his wife's decease, among other bequests, £5000 to the Royal Medical Benevolent Fund; £5000 (to include the amount of his debentures in that Society) to the Royal Society of Medicine, to be applied as far as possible for the purposes of the library of the Society; £10,000 upon trust for investment, and to apply the income in travelling scholarships for students of University College Hospital Medical School who had held a house surgeoncy and one other resident appointment at University College Hospital, and are, in the opinion of the committee, likely to benefit from visiting medical schools and scientific institutions abroad or in this country. If, in the opinion of the committee, there should be a more suitable form of post-graduate study the scholarships may be applied for this purpose, in the discretion of the committee. He stipulated that in the event of the hospital being taken over or maintained by the State or municipality or other public authority this trust should continue as a permanent fund to benefit students in the way indicated and not be merged in some general "educational trust." He also left £1000 to the Whitchurch District Nursing Association, offered as an endowment.—The late Mr. William Henry Armitage, of Buxton, left £1500 to the Manchester Children's Hospital, Pendlebury, for a cot; £1500 to the Salford Royal Hospital for a cot; £1000 each to the Manchester Royal Infirmary, Ancoats Hospital, St. Mary's Hospital, Manchester, and the Manchester and Salford Blind Aid Society; £500 each to the Manchester Ear Hospital, the Manchester Royal Eye Hospital, and the Manchester and Salford Hospital for Skin Diseases; £300 each to the Manchester and Salford Sick Poor and Private Nursing Institution, the Manchester City League of Help, and the Salford Civic League of Help; £200 to the Society for the Prevention of Cruelty to Children; £200 to the Boys' and Girls' Refuges, Strangeways; £100 to the Salford Lads' Club; and £100 to the Cinderella Club, Withy Grove.—As a result of the wireless concert organised by the Daily Graphic and Allied Newspapers, Ltd., £3853 will go to funds of the Infants Hospital, Westminster.—Alderman E. Dickinson, J.P., Wigan, left £250 to the Royal Albert Edward Infirmary, Wigan, to be invested for the annual provision of Christmas gifts for the children's in-patient department, and £1000 for the endowment of a bed.—During the year for the Hospital Sunday and Saturday Fund, Carlisle, £3200 was collected and distributed as follows: Cumberland Infirmary £2333, Carlisle Dispensary £242, Silloth Institute £185, Carlisle Fever Hospital £50, Carlisle Nursing Association £60.—Legacies of £1347 from the executors of the late Mr. Joseph Bell and £450 from the late Mr. Joseph Milnthorpe have been received by the Manchester Royal Infirmary.

Parliamentary Intelligence.

HOUSE OF LORDS.

THURSDAY, JULY 23RD.

The Public Health Bill.

THE House went into Committee on the Public He
Bill (a measure which consolidates a number of provis
contained in private Acts and makes them applicabl
the country generally). The EARL of DONOUGHMORE wa
the chair.

Lord BANBURY of SOUTHAM moved to leave out Clause
which provides for the removal to hospital of infect
persons suffering from pulmonary tuberculosis at
instance of the county council or the local authorit
cases where the lodging or accommodation occupied by
patient is such that proper precautions to prevent
spread of infection cannot be taken or are not being ta
He said that the clause seemed to be likely to give ri
very considerable expense, to interfere with the exis
hospitals, and to be of the nature of "grandmothe
legislation. Apparently everybody who was in ill-he
was now to be provided for by the State or by the
payers.

Lord EMMOTT (who was in charge of the Bill) said
he thought the clause was a very valuable one. It was
for the purpose of spending money, but for the purpo
taking steps where necessary to protect the public
infection. Pulmonary consumption was a highly infec
disease, and if the local authorities had not power to
with it, it was possible for it to spread very consider
There were great safeguards in the clause. First, its a
cation was limited to patients whose surround
prevented the adoption of proper precautions, and in
event it must be shown that serious risk of infection a
In the second place there was a requirement that the re
ing institution should have consented to the receptio
the patient, and that suitable accommodation existed.
the third place there was a requirement that the co
removal to, and maintenance in, the hospital shoul
borne by the county council or local authority. At
rate, that removed injustice from the individual. In
fourth place the period of detention was limited, and i
fifth case an application could be made on behalf of
patient to the court for the rescission of the order at
time after six-weeks from the date of the order.

The amendment was negatived.

On Clause 63, which deals with the extended u
ambulances, and allows people leaving hospital, not h
suffered from any infectious disease, to be put into veh
which have previously carried cases of infectious dis
provided that suitable precautions are taken to pr
the communication to any person of infectious disease

Lord DYNEVOR moved an amendment providing tha
each occasion a certificate should be signed by a regis
medical practitioner, so that it might be quite certain
proper precautions were taken against the spread of dis

Lord EMMOTT, in resisting the amendment, said th
would cause great delay and considerable expense an
did not think that it would add at all to the safety o
public and of the patients.

Lord DYNEVOR said that if the noble lord was
certain that no infection would be spread he would
press the amendment.

The amendment was withdrawn.

On Clause 64, which gives a local authority pow
make reasonable subscriptions or donations to a volun
hospital or institution, if it is satisfied that by so doi
will maintain, or extend, or increase the efficiency of ho
accommodation for the sick inhabitants of the district

Lord BANBURY moved to delete the clause on the gr
that it opened up a great vista of expense to the
payers. It would militate, he said, against the p
subscribing to the voluntary hospitals. It was an att
to provide State hospitals, which he thought was wro

Lord EMMOTT said he thought that it was possible
the clause would be a saving rather than a spending
There were many cases in which hospitals found it e
ordinarily difficult to live, and just a little bit of
from the local authority might enable them to keep g
It would not cause the hospitals to become public in
tions more than they were to-day.

The EARL of MALMESBURY thought that it was the
end of the wedge against the voluntary system if
introduced grants from public authorities.

The Lord Chancellor (Viscount Cave) said that no one would be more unwilling than he that the hospitals should cease to be voluntary, and come upon the rates. But for all that he was strongly in favour of this clause. He did not think that it would in the least endanger the voluntary character of those institutions. The local authorities who employed large numbers of workmen owed a great debt to local hospitals.

Lord Stuart of Wortley said he knew a town in which a contribution of a penny in the pound on wages by employers, as well as by the employees, had produced a sum which had placed the hospitals out of the reach of serious financial necessity. Could anyone say that in that case the local authority as a large employer of labour should not contribute its small quota to that desirable result? It was possible that the clause might be amended so as to limit it to contributions in respect of a municipality's own employees.

Lord Emmott said that there had always been some doubt in carrying out Section 131 of the Public Health Act, 1875, as to whether it did not contemplate that special accommodation should be provided at the hospital for the subscription paid, and whether subscriptions by the local authority in response to appeals from the hospital were authorised. It was to remove that doubt that the clause had been inserted in the Bill. There were already many such provisions in local Acts.

Lord Banbury said he had no objection to the amendment proposed by Lord Stuart of Wortley. If the noble lord would draft an amendment on the lines suggested and consult him afterwards he would withdraw his own amendment now with a view to another amendment being moved on the report stage.

The amendment was withdrawn.

The Committee stage of the Bill was concluded and the Bill was reported to the House.

Summer-Time Bill.

On the motion of Lord Desborough the Summer-Time Bill, which has already passed through the House of Commons, was read a second time.

Tuesday, July 28th.

Dangerous Drugs Bill.

Viscount Cecil of Chelwood (Chancellor of the Duchy of Lancaster), in moving the second reading of the Dangerous Drugs Bill, which amends the Dangerous Drugs Acts of 1920 and 1923, so far as is necessary to enable effect to be given to the Opium Convention, signed at Geneva on Feb. 19th last, said that the measure was not a contentious one, and was necessary because the Convention could not be ratified without some slight changes in our law. It was very important that the Bill should be passed before Parliament adjourned in August, because the Government were very anxious to ratify the Convention at the earliest possible moment. The first clause of the Bill extended the Dangerous Drugs Acts of 1920 to coca leaves and Indian hemp. The second clause made a small change in the machinery of The Hague Convention, under which these things had hitherto been governed. The third clause brought up to date, in accordance with scientific opinion, the definition of certain alkaloids, such as morphine, heroin, ecgonine, and things of that kind, which had been more carefully defined by the assistance of the experts at Geneva. Clause 5 gave power to strike out from the list of dangerous drugs those drugs which, by experience, had been found not to be capable of being used by addicts, and were therefore no longer to be classed as dangerous.

The Convention represented a very valuable advance in the struggle to bring under control the use of these drugs, and primarily the drugs and substances referred to in the Convention. There were three broad divisions of the subject dealt with by the Convention. There was raw opium, which was used for eating in India, which really was not an international question at all. It was concerned only with what the Indian Government allowed its Indian subjects to do with the opium grown in India. Then there was opium smoking which, apart from a few relatively unimportant exceptions, was a purely Chinese question. Practically it was only the Chinese who indulged to any extent in opium smoking. The large growth of opium in China and the unhappy condition of that country at the present time rendered it impossible to control in any way the illegitimate export of the drug.

By far the most important subject dealt with by this Convention was the question of the use of these very formidable drugs—heroin, morphine, cocaine, and the like. It was a very serious evil even for this country, and still more serious for other countries, in some of which those who trafficked in these drugs had even pushed their pernicious wares in the schools, thus leading children into vice. The evil was rendered all the more formidable by the fact that behind the traffic there were apparently syndicates with very considerable financial resources. He was glad to be able to assure their lordships that owing to the efforts of the Home Office the evil was not a growing one in this country, but was to a very large extent under control here. There was no doubt that international control of the traffic in these drugs would make it very much less easy for people dealing in them to find means of pushing their pernicious wares. The main purpose of the greater part of the provisions of these conventions was to institute international supervision and control of the traffic in these drugs. It was not so hopeless or so difficult a matter as one might assume at first sight, because the drugs were only manufactured in a very small number of factories—he thought there were not more than ten—and if proper national control could be obtained over these factories and international control over the traffic from them they might hope to assist in diminishing the trade. He would like to pay a tribute to the great services of the gentleman who preceded him as the representative of this country in these conferences and who had done more, perhaps, than any living man to carry forward the struggle against the illegitimate use of drugs. He referred to that exceedingly able member of the staff of the Home Office, Sir Malcolm Delevigne.

Viscount Haldane supported the Bill.

The Bill was read a second time.

Therapeutic Substances Bill.

The Commons' amendments to the Therapeutic Substances Bill were considered, and on the motion of Viscount Gage all the amendments were agreed to, except in respect of a slight modification to that which provided that a regulation should be modified or annulled following the voting of an address by either House of Parliament.

HOUSE OF COMMONS.

Wednesday, July 22nd.

Death-rates among Commercial Clerks.

Lord Henry Cavendish-Bentinck asked the Minister of Health whether, in view of the heavy death- and tuberculosis-rate among commercial clerks, owing to the insanitary, overcrowded, and badly lighted condition of the offices in which they worked, he would introduce legislation to give local authorities further powers to secure the better regulation of such offices.—Sir Kingsley Wood replied: Other circumstances besides the condition of offices go to account for the present death- and tuberculosis-rates among commercial clerks. Local authorities already have certain powers to deal with conditions in offices, and my right hon. friend cannot at the present time promise further legislation.

Protection of Civilians against Poison Gas.

Mr. Cecil Wilson asked the Secretary of State for War whether he was aware that in many countries scientific investigation was taking place regarding the most deadly forms of poison gas and other inventions designed to exterminate human life; whether any steps were now being taken in this country, or when would they be taken, in instructing the civil population as to any means whereby they might protect themselves; and whether he could indicate to the House what such steps were.—Sir L. Worthington-Evans replied: The answer to the first part of the question is in the affirmative. As regards the remainder of the question, the measures to be taken for the protection of the civil population against poison gas are now being considered by the Committee on Imperial Defence.

Thursday, July 23rd.

School Medical Services.

The House went into Committee of Supply on a vote of £35,852,751 for the salaries and expenses of the Board of Education, Mr. J. Hope in the chair.

Mr. Fisher said when he was President of the Board of Education nothing was more encouraging than the reports received from his inspectors as to the health and general well-being of the children in the elementary schools. He would like to know whether the reports which the Board now received were equally satisfactory in this respect. Although it was true that, very largely owing to the skill, energy, and devotion of the school medical services, the health of our school population had been greatly improved, nevertheless it was true that there were still great defects to be remedied. He noticed, for instance, that in the last report of the Board of Education it was stated that there were 200,000 children mentally or physically defective who had not yet received places in special schools. Owing to the great expense of such schools he quite believed that it would be sanguine to expect this deficiency to be made up immediately, but he noted with pleasure that the President of the Board was pressing the local education authorities to do their best to make up the deficiency, and he trusted that he might receive some support from the private benefactor.

Dr. HADEN GUEST said it seemed to him that they ought, in view of the very satisfactory nature of the results which had flowed from medical inspection, to increase the amount of health work and health care of children and not diminish it. That should apply to all the schools in the country, irrespective of whether they were public schools or others. He believed that the extension of medical health work to all schools would have exceedingly valuable results. He also wished to refer to the fact that some 10 per cent. of the children attending elementary schools were never adequately fed. He should like to see the Board of Education insist on the standard of physical well-being and feeding of children being raised very considerably higher than it was at the present time. It should be the business of the medical officer and the school inspector to draw up a list of children who would benefit by increased nourishment, and it ought to be part of the school curriculum to provide school meals which could be either paid for or given free to the children who required them. That was a method of practical Communism which would commend itself to both sides of the House.

The DUCHESS of ATHOLL (Parliamentary Secretary to the Board of Education), replying to Mr. FISHER, said the last report of the chief medical officer of the Board gave some very comforting figures. In 1923 30·7 per cent. of the children in the schools inspected had defects of one kind or another compared with 44 per cent. in 1894. That was certainly progress. In the same year there were 5·9 per cent. who had been diagnosed as under-nourished as compared with 12·8 per cent. in 1913. It was found that children suffering from defective hearing were only half what they were ten years ago. The work was carried on unobtrusively and was not spectacular, but day in and day out it was going on steadily.

The vote was agreed to.

Lead Poisoning and the Pottery Industry.

Mr. CLOWES asked the Home Secretary the number of fatal cases of lead poisoning in the pottery industry last year; what were the ages of the persons who died and the nature of the process worked; and what was the length of time each of the deceased had been employed on lead processes.—Sir W. JOYNSON-HICKS replied: The following are particulars of deaths from lead poisoning in the pottery industry for the year 1924:—

Case No.	Sex.	Age.	Occupation.	Duration of employment in lead processes.
1	M.	46	Glost placer.	16 years.
2	M.	65	"	Believed many years.*
3	M.	51	"	29 years.
4	M.	51	"	36 "
5	M.	55	Dipper.	38 "
6	M.	50	Oddman.	Many years.
7	M.	59	Glost placer.	47 years.
8	M.	63	"	At least 18 years.
9	M.	44	"	Many years.
10	M.	54	"	33 years.
11	M.	53	Dipper.	25–30 years.
12	M.	46	"	20 years.
13	M.	51	"	42 "
14	M.	54	Glost placer.	36 "
15	M.	48	Dipper.	32 "
16	F.	50	Ware cleaner.	20 "
17	F.	57	"	30 "
18	F.	35	Majolica paintress.	14 "

* But has not worked since 1912 on account of lead poisoning.

Committee on Child Assault.

Lady ASTOR asked the Home Secretary whether the Committee on Child Assault had finished taking evidence; and when it was anticipated that their report would be issued.—Sir W. JOYNSON-HICKS replied: The Committee are now considering their report, and I hope it may be issued soon after the summer holidays.

Insurance Contributions in Rural Areas.

Lieut.-Colonel HENEAGE asked the Minister of Health whether, seeing that the benefits authorised under the Health Insurance Act were greater in those societies composed mostly of rural workers as compared with those in purely urban districts, and that the former societies had created greater surpluses per person insured, he would consider authorising a reduced contribution under the National Health Insurance Act from those living in rural areas.—Mr. NEVILLE CHAMBERLAIN replied: Pending the report of the Royal Commission now in session I could not properly make such a change in the National Health Insurance system as is suggested. I may add that approved societies can repay as an additional benefit out of accrued surplus the whole or part of the contributions of their members, and accordingly societies composed mainly of rural workers and having a favourable sickness experience can now provide the normal benefits at an annual cost to members less than the product of the normal contribution.

Houses Unfit for Habitation.

Mr. TREVELYAN THOMSON asked the Minister of Health the number of houses which he estimated were not reasonably fit for human habitation in both urban and rural areas.—Mr. NEVILLE CHAMBERLAIN replied: Statistics on the point raised by the hon. Member are not available. According to the latest annual reports of medical officers of health there were 291,700 houses in urban districts and 30,954 in rural districts found on inspection not to be in all respects reasonably fit for one reason or another. During the same year defects were remedied in 12,987 houses in urban districts and 49,530 in rural districts.

Disease-carrying Mosquitoes.

Mr. FOOT MITCHELL asked the Minister of Health whether the available statistics showed any diffusion of disease-carrying by mosquitoes in this country; and whether any advice had been given to local authorities as to the desirability of eliminating likely breeding-places.—Mr. NEVILLE CHAMBERLAIN replied: I am advised that, apart from occasional casualties arising from the inflammation of mosquito bites, mosquitoes in this country are not known to carry disease other than malaria. The known cases of indigenous malaria arising in this way are very few, only four such cases have been reported during 1924.

Preservatives in Food.

Mr. SUTTON asked the Minister of Health whether independent scientific investigations had been made by his department as to the physiological effect of the use of preservatives in food; whether any and what offers had been made by manufacturers or others to combine with the department in pursuing such investigations; and whether he would arrange for inquiry to be pursued by means of independent investigation before proposing final regulations dealing with the subject.—Mr. NEVILLE CHAMBERLAIN replied: The physiological effect of the use of preservatives in food was one of the matters considered by the recent Departmental Committee on Preservatives and Colouring Matters in Food, which included a number of distinguished physiologists in no way connected with the Government or the trades concerned. I have had an offer from one large firm interested in the production of boron compounds to coöperate in a further inquiry into the effect of the consumption of small quantities of such compounds in food, but having regard to the full consideration which was given to this matter by the Committee I do not think it necessary to institute any further inquiry.

Value of Tuberculin Tests.

Mr. HURD asked the Minister of Agriculture if he was aware of the uncertainty that existed as to the value of the different tuberculin tests and the consequent discouragement of the increased production of graded milk; and whether he would issue a circular indicating what, in the opinion of the Ministry, was the best method of clearing a herd of tuberculosis and generally advising farmers in this matter.—Mr. WOOD replied: The Ministry has under consideration the investigation recently conducted under the auspices of the Medical Research Committee on the trustworthiness of various tests with tuberculin. My hon. friend will also realise that very varying conditions prevail among the herds of this country, and I am therefore doubtful whether at the present time a circular of the kind suggested would fulfil the purpose he has in view. The Ministry is always prepared to advise in cases of special difficulty.

FRIDAY, JULY 24TH.

Therapeutic Substances Bill.

The House went into Committee on the Therapeutic Substances Bill, Mr. J. F. HOPE in the chair.

On Clause 3, which deals with the restrictions on the importation of therapeutic substances,

Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) moved an amendment making it lawful to import any serum of foreign origin for which no standard existed, provided that the substance complied with the general regulations governing the quality and general purity of substances of the same class. He explained that as originally drafted the clause might have prohibited the importation of such a substance as the Spahlinger serum.

Dr. SHIELS moved an amendment to the amendment designed to allow a substance such as the Spahlinger serum to be consigned for test purposes to any medical practitioner in the country.

Sir K. WOOD said that the Government could not assent to the importation of sera without examination.

The amendment to the amendment was withdrawn and Sir K. Wood's amendment was agreed to.

On Clause 4 (*which deals with joint advisory committees*) an amendment was agreed to adding a member to be appointed by the British Medical Association to the advisory committee which is to assist the joint committee in framing *regulations* under the Bill.

On Clause 5 (which deals with the power to make regulations) Sir K. WOOD accepted an amendment moved by Captain W. BENN giving Parliament the power to move *an address praying for the modification or annulment of* regulations which had been laid before Parliament.

The amendment was agreed to.

The Committee stage was concluded and the Bill as amended was reported to the House.

Diseases of Animals Bill.

The House went into Committee on the Diseases of Animals Bill.

Mr. A. V. ALEXANDER moved an amendment to Clause 1 (which provides for the repayment by the Minister to local authorities of three-quarters of the amount of compensation paid by them for cattle slaughtered on account of the existence or suspected existence of tuberculosis). The amendment proposed to make this repayment dependent on the Minister being satisfied that no carcass, or portion of a carcass, had been, or would be, used for human consumption.

Mr. E. WOOD (Minister of Agriculture) said that the total condemnation of a carcass on evidence of local tuberculosis was unnecessary and wasteful. While he could not accept the amendment he would amend the Tuberculosis Order to provide that a veterinary inspector should send notice in writing to the medical officer of his intention to slaughter an animal under the Order, and that he should not remove a carcass or offal until he had received a notification from the medical officer stating whether any part of it might be disposed of for human consumption.

Dr. SHIELS thought there should be no room for suspicion in this matter, and the procedure should be along the line of "safety first."

Sir R. LUCE said that tuberculosis was localised in a large proportion of cases and there was a very large consensus of opinion in the medical profession that there was practically no danger in the use of a large portion of the carcasses of animals affected only by a local form of the disease. The amendment would lead to wasteful action.

Dr. DAVIES said that the consensus of medical opinion was definitely against the mover of the amendment. The danger anticipated from anything circulating in the blood of these animals was very much exaggerated, and it might *be absolutely ignored.* There was no danger of tuberculosis being carried by the blood-stream except in the case of a cow with acute general tuberculosis, and such animals were always destroyed.

Mr. ALEXANDER said he would withdraw the amendment on the understanding that if he was dissatisfied with the actual terms of the proposed alteration in the Tuberculosis Order he could raise the point again on the third reading of the Bill.

The amendment was withdrawn. The Committee stage was concluded and the Bill was reported to the House.

MONDAY, JULY 27TH.

Spahlinger Treatment.

Mr. MACANDREW asked the Minister of Health if he was aware that the sanatorium committee for Ayrshire was unanimously of opinion that the Government should contribute towards experiments with Mr. Spahlinger's treatment of tuberculosis; and what steps he proposed to take to assist in the encouragement of experiments with this treatment.—Mr. NEVILLE CHAMBERLAIN replied: The answer to the first part of the question is in the negative. As regards the second part, I would refer my hon. friend to the answer which I gave on the 9th inst. to the hon. Member for Bedwelty on the subject of the Spahlinger treatment.

Withholding of Addresses of Mental Patients.

Sir DAVISON DALZIEL asked the Home Secretary whether his attention had been called to the dissimilarity of decisions regarding the alleged criminality of withholding addresses of patients escaped from mental institutions; whether he would investigate the circumstances under which a Mrs. Gibbons, of Trinity-square, Brixton, was sentenced at the Lambeth police-court to two months' imprisonment for this offence and hurriedly released from Holloway ten days later; and whether he could give the decisions in police-court proceedings of this nature in 1923, 1924, and the first six months of 1925.—Sir W. JOYNSON-HICKS replied: In Mrs. Gibbons's case I felt justified by the facts that came to my knowledge in recommending a remission of the balance of the sentence. No other case of the kind has been brought to my notice, and the Home Office have no information of other cases of the kind that may have been dealt with by courts of summary jurisdiction.

Scientific Research.

Captain MACMILLAN asked the Secretary to the Treasury whether, in arriving at the total of £1,045,000 provided in the estimates, 1925–26, for scientific research, distinction was made between research, development, and experiment; whether he would give a detailed statement showing the different items of the total mentioned; and the sum spent on scientific research carried on purely for the advancement of natural knowledge and made known through the usual scientific publications.—Mr. W. GUINNESS replied: The answer to the first part of the question is in the negative. The items collected from the several departments from which the total of £1,013,000 is made up are as follows:—

Admiralty, £983,000; War Office, £405,000; Air Ministry, £1,373,500; Ministry of Agriculture and Fisheries, £348,756; Board of Agriculture, Scotland, £51,585; Fishery Board of Scotland, £16,010, Forestry Commission, £7057; Mines Department, £1850; Department of Scientific and Industrial Research, £380,203; Scientific Investigation, £158,087; Ministry of Health, £1350; Scottish Board of Health, £100; Post Office, £53,000; Colonial Office, £16,000; Office of Works, £157,180.

These figures do not include expenditure in respect of salaries, &c., of administrative staff, except in the case of the Department of Scientific and Industrial Research.

In the case of the service departments (and to some extent of other departments also) it is impracticable to distinguish between expenditure on pure scientific research and that on technical research and experiment. The figures given include as far as possible provision of all such expenditure.

The normal work of the Government chemist entails a considerable though varying amount of research to which no definite proportion of the annual expenditure can be assigned, and nothing has been included in respect thereof in the above figures.

It is impossible to give the information asked for in the last part of the question, for the methods of pure and applied research are the same, the distinction between them being solely one of aim. All the research done by Government, the cost of which it is almost impossible to separate from that of experiment and development, is in its nature the same as that carried on purely for the advancement of natural knowledge.

Inquiry into Mental Deficiency.

Mr. HURD asked the Minister of Health what official expert investigation into the effect of mental deficiency upon the national life was now in progress; who were the investigators; and when their report might be expected.—Sir KINGSLEY WOOD replied: The Board of Control in conjunction with the Board of Education are about to undertake an inquiry into the incidence of mental deficiency; an inspector of the Board of Control has been detailed to carry out the investigation; it is estimated that the inquiry will take at least a year to complete; and it is not anticipated that any report will be available before that time.

Poison Gas in Warfare.

Colonel ENGLAND asked the Secretary of State for Foreign Affairs whether the League of Nations was considering the organisation of international action with a view to the prohibition of the use of poison gas in warfare; and, if so, what was exactly the position of such action.—Mr. A. CHAMBERLAIN replied: At the Arms Traffic Conference held at Geneva in May last, under the auspices of the League of Nations, a protocol was drawn up prohibiting the use of chemical or bacteriological methods of warfare. Twenty-five States have signed the protocol, which remains open for accession by other powers. It comes into force immediately on ratification as between those States which have ratified.

Colonial Medical Services.

The House went into Committee of Supply on a vote of £117,483 for the salaries and expenses of H.M. Secretary of State for the Colonies and H.M. Secretary of State for Dominion Affairs, Captain FITZROY in the chair.

Mr. ORMSBY-GORE (Under-Secretary for the Colonies)' referring to medical research, said that nothing was more important, because it was the doctor as much as the engineer who made Panama. Further work in combating tropical diseases was most urgent. It was a fallacy to suppose that only the white man found it difficult to live in the tropics; the black man found it equally difficult. In East Africa the birth-rate was very high, but the infant mortality was appalling. So far as he could get the figures he believed that anything from 400 to 500 per 1000 of the children born in many of the native areas died within the first year. He hoped shortly to visit West Africa and to issue a report on the progress there.

The vote was agreed to.

Pharmacy in the Army.

Mr. SCRYMGEOUR asked the Secretary of State for War whether he was now prepared to publish the report presented in 1922 by the Joint Committee on the subject of pharmacy in the army; and whether the Army Council were now willing to accept the modified requirements of the Pharmaceutical Society as presented by a deputation thereof to the Director-General, Army Medical Services, at the War Office in May, 1923.—Sir L. WORTHINGTON-EVANS replied: The report of the Committee referred to was published by the Stationery Office last year in response to the wishes expressed by Members of this House. As regards the second part of the question, the Army Council are satisfied that the requirements of the army in regard to pharmacy and dispensing are adequately met under present arrangements, and they would not be justified in incurring the expense of carrying out the changes advocated by the Pharmaceutical Society.

Mr. SCRYMGEOUR asked whether, seeing that there was agreement between the Army Medical Service Department and those who represented the pharmacy interests, it was not recognised by the Department that there should be an improvement on the lines of the modified recommendations.—Sir L. WORTHINGTON-EVANS replied that he thought the Service, as now administered, was an improvement on the past, and was adequate.—Mr. MAXTON asked if it was not proper to take the same care to safeguard the interests of soldiers as of the civilian population.—Sir L. WORTHINGTON-EVANS: Oh, at least as great.

TUESDAY, JULY 28TH.

Miners' Nystagmus.

The House went into Committee of Supply on a vote of £113,045 for the salaries and expenses of the Department of Mines.

Colonel LANE-FOX (the Parliamentary Secretary for Mines), replying after the debate, said nystagmus was a most difficult disease to deal with. A short time ago a very interesting report was issued by a committee of the Health Advisory Council, which pointed out that in this country we were more humane than in foreign countries, where they said that nystagmus was largely a nervous disease and that it was a mistake to encourage too many people to think they were suffering from it. The subject was now receiving very considerable attention, and constant research work was going on. A scheme was being elaborated between the Home Office and the Mines Department for dealing with the disease, and he hoped it would shortly be put into operation.

Pay and Allowances of the R.A.M.C.

Colonel DAY asked the Secretary of State for War if he was aware that the recent conference of the British Medical Association had unanimously decided not to print in their official publication any reference to the terms and conditions of service in the Royal Army Medical Corps, in view of what they alleged to be a breach of faith by the Government; and if he would, in view of attracting the best type of medical practitioner into the service, cause a revision to be made in the pay and pension allowances to officers of the Royal Army Medical Corps.—Sir L. WORTHINGTON-EVANS replied: I have seen in the press that the British Medical Association are stated to have adopted the resolution referred to. I recently conferred with the British Medical Association on the subject of the Royal Army Medical Corps, and I hope in the near future to be able to announce decisions on the matters which were then discussed.

Ex-Service Patients Sent to Switzerland.

Colonel ENGLAND asked the Minister of Pensions whether any tuberculous ex-Service men had been sent for their health to Switzerland to undergo the Spahlinger treatment or otherwise; and, if so, what were the regulations with respect to the selection of such cases.—Lieut.-Colonel STANLEY (Parliamentary Secretary to the Ministry of Pensions) replied: A few cases of pulmonary tuberculosis have been sent to sanatoria in Switzerland by the Ministry. The cases selected are those in which the department is satisfied, on the advice of their experts in tuberculosis, that treatment abroad is essential and that equally good results cannot be expected from the facilities available in this country. I am informed that the Spahlinger treatment referred to has, in fact, been given in certain cases as an incident of their sanatorium treatment, but the resulting evidence as to the value of the treatment has not, in the opinion of my medical advisers, justified the sending of patients at the public expense expressly for this form of treatment.

State-aided Housing Schemes.

Captain FRASER asked the Minister of Health how many houses had been built under State-aided schemes during the years 1919, 1920, 1921, 1922, 1923, and 1924, respectively, and in 1925 up to the present date; how many were now in course of construction; how many had been authorised; how many houses had been authorised under the Housing Act of 1923; and how many under the Housing (Financial Provisions) Act of 1924.—Sir KINGSLEY WOOD replied: The numbers of houses completed each year since 1919 in connexion with State-assisted schemes under the Housing Acts were as follows: 1919, 100; 1920, 15,711; 1921, 80,660; 1922, 89,001; 1923, 19,185; 1924, 52,730; and 1925 (up to June 30th), 44,293; total 307,689. Statistics obtained during the last 2¼ years show that in addition to this number 160,506 houses had been built by private enterprise without Government assistance in the period between Sept. 30th, 1922, and March 31st, 1925. The total number of houses authorised under the various Acts is 499,464, and on the 1st inst. 63,495 were under construction. Under the Acts of 1923 and 1924 the number of houses authorised to be built are 218,769 and 66,969, respectively.

Closing of Wandsworth Maternity Home.

Mr. VIANT asked the Minister of Health if he was aware that the maternity home of the Wandsworth borough council had been closed; that during the past 17 months there had been 87 cases of mothers suffering from abscesses of the breasts; that complaints had been made by patients and public bodies as to the lack of cleanliness and proper treatment; and that the services of all the staff had been dispensed with except the matron, who was retained and receiving wages as usual; and, in view of these facts, would he institute an inquiry.—Sir KINGSLEY WOOD replied: The answer to the first part of the question is in the affirmative, and to the third part in the negative. My right hon. friend has, for some months, been aware of the special incidence referred to in the question, but repeated skilled inquiry has, up to the present, failed to elicit the cause of this unusual condition. He is informed that the borough council who have made every effort to grapple with the problem have now decided to close the home temporarily and to give notice to the staff. My right hon. friend is suggesting to the council that a conference should be held locally, at which his department would be represented, in order to discuss future arrangements.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

TUESDAY, August 4th, to SATURDAY, August 8th.—PRINCE OF WALES'S GENERAL HOSPITAL (N.E. London Post-Graduate Hospital), Tottenham, N. Intensive Course in General Medicine, Surgery, and the Special Departments. Work will begin at 10.30 A.M., and continue until 5.30 P.M., except Saturday, when there will be morning work only (first week).—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street, W. Lecture-demonstrations, illustrated by cases daily at 5 P.M. Tuesday, Dr. L. R. Yealland on Disorders of Coördination. Wednesday, Dr. E. W. Scripture on Speech Disorders in Nervous Disease. Thursday, Dr. E. D. Macnamara on Disorders of Posture and Gait. Friday, Mr. L. G. Brown on The Auditory and Vestibular Apparatus in Nervous Disease.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, August 3rd.—11 A.M., Surgical Registrar: Surgical Wards. 12 noon, Mr. Simmonds: Applied Anatomy. 3 P.M., Dr. Saunders: Medical Wards.

TUESDAY.—12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards. 3 P.M., Mr. Banks-Davis: Throat, Nose, and Ear Dept.

WEDNESDAY.—11 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Owen: Medical Out-patients. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 11 A.M., Sir Henry Simson: Gynæcological Wards. 2 P.M., Mr. Bishop Harman: Eye Dept.

FRIDAY.—10.30 A.M., Dr. Dowling: Skin Dept. 12 noon, Dr. Pritchard: Modern Methods in Medicine. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.

SATURDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations of *the Throat, Nose, and Ear.*

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

Appointments.

BRERETON-BARRY, JAMES, L.A.H. Dub., has been appointed Public Vaccinator for Weymouth and Melcombe Regis.

REID, H., F.R.C.S. Eng., M.B., Ch.B. Liverp., Honorary Assistant Surgeon to the Royal Infirmary, Liverpool.

Ancoats Hospital, Manchester: TWINING, E. W., M.R.C.S., L.R.C.P. Lond., Honorary Radiologist; WELLS, C. ALEXANDER, M.B., Ch.B. Liverp., Resident Surgical Officer; ROBERTSON, MAURICE C. G., M.B., Ch.B. Aberd., House Surgeon; WOOD, KENNETH W., M.B., Ch.B. Manch., Assistant House Physician.

Certifying Surgeons under the Factory and Workshop Acts: KILLARD-LEAVEY, M. E. P., L.R.C.P. Lond., M.R.C.S. (Barnstaple); SOUTHERN, W. G., M.B., Ch.B. Manch. (Broughton-in-Furness); MOLLOY, H. H., M.D. Dub. (Helsby, Chester); MCDONALD, J. R., M.B., Ch.B. Edin. (Durham).

Vacancies.

For further information refer to the advertisement columns.

Barbados General Hospital.—Sen. Res. Surg. £330. Jun. Res. Surg. £300.

Barnsley and Wakefield Joint Sanatorium.—Asst. Tub. O., &c. £450.

Birmingham, Highbury Group of Hospitals.—Jun. M.O. £350.

Bristol, Cossham Memorial Hospital, Kingswood.—Res. M.O. £150.

Cairo, School of Dental Surgery.—Supt. and Lecturer in Metallurgy, &c. £E.900. Lecturer in Surg. £E.480. Asst. Lecturer in Surgery. £E.300. Lecturer in Mechanics. £E.180.

Chichester, Royal West Sussex Hospital.—H.S. at rate of £200.

Jersey General Hospital and Poor-law Infirmary.—Res. M.O. £200.

Hull Royal Infirmary.—Cas. H.S. at rate of £130.

Leeds Public Dispensary—Jun. Res. M.O. £150.

London School of Hygiene and Tropical Medicine.—Research Studentships in Tropical Med. £250.

Manchester, Ancoats Hospital.—Pathological Registrar. £100.

Mount Vernon Hospital, Northwood, Middlesex.—*Surg. Laryngologist.*

Pietermaritzburg, Grey's Hospital.—Male H.S. £500.

Royal Chest Hospital, City-road, E.C.—Asst. Tub. O. £550.

Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. £150.

Royal Northern Hospital, Holloway, N.—Anæsth. £10 10s.

St. Mary's Hospital, W.—Cas. H.S. at rate of £100.

Sudan Government, Wellcome Tropical Research Labs., Khartoum.—Asst. Bacteriologist. £720.

Sudan Medical Service.—Medical Inspectors. £E.720.

West End Hospital for Nervous Diseases, Gloucester Gate, Regent's Park, N.W.—Sen. H.P. at rate of £150.

The Chief Inspector of Factories, Home Office, London, S.W., announces a vacant appointment for Certifying Factory Surgeons at Wrotham, Kent.

Births, Marriages, and Deaths.

BIRTHS.

COLLINGWOOD.—On July 26th, at Marlborough-hill, N.W., the wife of Prof. B. J. Collingwood, O.B.E., M.D., of a son.

DOUTHWAITE.—On July 21st, at "Carlingford," Worthing, Sussex, the wife of Dr. A. H. Douthwaite, of a daughter.

HAMMOND.—On July 23rd, at "Penmorva," Harrow Weald, to Norah, wife of A. G. Hammond, M.R.C.S., L.R.C.P.—a daughter.

NIXON.—On July 25th, at 7, Lansdown-place, Clifton, to *Doreen G. C. Nixon, M.R.C.S., L.R.C.P., wife of Dr. J. A.* Nixon, a son (Gervase John Mapletoft), who only lived an hour, and a daughter.

RANKIN.—On July 24th, at Shubra, Boxmoor, Herts, the wife of T. Thomson Rankin, M.D., of a daughter.

MARRIAGES.

REYNOLDS—STEELE.—On July 22nd, at St. Paul's, Knightsbridge, Captain William Leonard Eliot Reynolds, M.C., *R.A.M.C., to Margaret Joan Pattison*, only daughter of Mr. and Mrs. W. R. Steele, of Farnham.

DEATHS.

BEATON.—On July 21st, at Highbury New Park, N., after a short illness, Robert Milne Beaton, M.B., C.M., J.P., aged 71.

BOWEN-HOGG.—On July 24th, at Stranraer, St. Peter's-road, St. Margaret's-on-Thames, Richard Bowen-Hogg, M.R.C.S., in his 70th year.

HENDRIKS.—On July 17th, at Bicester, Oxon, after a short illness from septic poisoning, Cecil Morgan Hendriks, O.B.E., M.B., M.R.C.S., in his 70th year.

RUDDUCK.—On July 22nd, at West Mersea, Essex, John Burton Rudduck, M.R.C.S., L.R.C.P., late of Assam and Morocco, aged 72 years. Husband of M. M. Peraton Taylor, late of Palestine and Morocco. Buried at West Mersea, July 25th.

WATSON.—On July 22nd, at North Bar Within, Beverley, of pneumonia, Walter Geoffrey Watson, B.A. Camb., M.R.C.S., L.R.C.P., in his 39th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

INDEX TO "THE LANCET," VOL. I., 1925.

THE Index and Title-page to Vol. I., 1925, which was completed with the issue of June 27th, will shortly be published. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

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Notes, Comments, and Abstracts.

POISONING BY SHOE DYES.

CASES of poisoning by anilin and nitrobenzene used in the various dyes for staining boots and shoes have not received much attention in this country, possibly because of their very rare occurrence, but the symptoms produced are alarming and may even prove fatal; hence a knowledge of this form of poisoning is necessary. Dr. C. W. Muehlberger has collected 47 cases from the literature and added nine recent cases occurring in America to form an interesting review of the whole subject.[1] Cases of poisoning following the splashing of anilin or nitrobenzene on the skin have been recorded,* painters using anilin-containing paint have been affected and certain cosmetic preparations for the hair containing this substance have also been known to give rise to dangerous symptoms. Even the anilin used to put a laundry mark on diapers has been known to produce effects in infants. Despite the fact that there appears to be some uncertainty about the toxic action of anilin and nitrobenzene, Dr. Muehlberger states categorically that even when perfectly pure these substances are intensely toxic and can be absorbed through the unbroken skin. The symptoms produced come on insidiously within a few hours of the wearing of the shoes stained with these products and consist of an intense cyanosis, often first noticed by the patient's friends, followed by collapse with weakness, dizziness, headache, and vomiting. If the patient be put to bed and the offending footwear removed, recovery usually takes place fairly rapidly, and no other treatment is necessary. At least one fatal case, however, has been recorded in which the autopsy findings showed that the liver was in a condition resembling acute yellow atrophy. Animal experiments have shown that anilin especially attacks the conducting tissues of the heart, giving rise to heart-block and various disorders of rhythm. In no case was methæmoglobin found in the blood although the cyanosis occurring in these cases is frequently ascribed to this cause. Chemical analysis of one particular brand of black shoe dye, known to have caused five out of the nine cases of poisoning reported in this paper, showed that it contained over 40 per cent. of anilin, and the only way to prevent the occurrence of these distressing cases seems to be the prohibition of the use of this substance and nitrobenzene in the manufacture of shoe dyes. Research as to suitable substitutes for these solvents for pigments which shall be non-toxic is said to be proceeding. Even these toxic dyes could be prevented, however, from producing ill-effects if the shoes thus treated were allowed to stand for 24 hours before being worn and if the custom of staining shoes "while you wait" on a person's feet, which appears to be common in America, were discontinued.

HEALTH CONDITIONS IN HONG-KONG.

A REPORT for 1923 gives the estimated population of the colony, including New Kowloon and the new territories, as 681,800, of whom 15,000 are non-Chinese. The birth-rate for the year was 6·97 per 1000 among the Chinese community (but this figure is wholly misleading, as it is impossible to register more than a portion of the births) and 23·03 per 1000 among the non-Chinese community, as compared with 6·25 and 22·84 for 1922. Deaths from malaria numbered 674. The deaths from plague were 130, as compared with 1071 in 1922. Small-pox deaths numbered 1141, of which all but 9 were Chinese. There were 4317 deaths from respiratory diseases other than pulmonary tuberculosis, as compared with 4863 in 1921, and 35 of these were among the non-Chinese community. Pulmonary tuberculosis claimed 1472 Chinese and 31 non-Chinese victims, whilst other forms of tuberculosis represent an additional 605 deaths, making a total of 2108, or 15·36 per cent. of the total deaths among the community. Beri-beri was responsible for 1270 deaths, as compared with 892 during 1922 and 526 in 1921. In the civil hospital, which contains 170 beds in 21 wards, 5455 in-patients and 28,297 out-patients were treated during 1923.

The total cases of malaria for all Government hospitals and the Tung Wa Hospital showed an increase of 160 cases, as compared with the year 1922. In the Tung Wa Hospital only Chinese are treated, but European as well as Chinese methods of treatment are employed in accordance with the wishes expressed by the patients or their friends. The lunatic asylum is under the direction of the superintendent of the Civil Hospital. European and Chinese patients are separated, the European portion containing 11 beds and the Chinese 16. 300 patients of all races were treated during 1923, and there were 3 deaths.

Incorporated in 1911, the University of Hong-Kong is a residential university for students of both sexes for the promotion of arts, science, and learning, the provision of higher education, the development and formation of the character of students of all races, nationalities, and creeds. The university includes the three faculties of medicine, engineering, and arts. The Faculty of Medicine provides a five-year course of study in the usual pre-medical and medical sciences, supplemented by clinical work in the Government Civil and Tung Wa Hospitals, leading to the degrees of M.B., B.S. The degrees of M.D. and M.S. may be obtained for post-graduate work. The degrees above mentioned are recognised by the General Medical Council for registration in Great Britain. With a view to better securing the maintenance of the desired standard—which in the Faculty of Medicine is that of an English university degree—external examiners are, in all faculties, associated with the internal examiners in all annual and final examinations. In the main buildings are housed the chemical, physical, and biological laboratories. Special medical buildings include schools of anatomy, physiology, pathology, and tropical medicine, erected at the cost of Chinese gentlemen resident in the colony.

AN IMPROVED CYCLE SADDLE.

OUR attention has been called to a cycle saddle made by Leatheries, Ltd. (Sampson-road North, Birmingham), at the suggestion of "Kuklos," cycling editor of the *Daily News*. The saddle, which viewed from above has the ordinary contour, is longitudinally divided into two saddles the width of the opening or slot being adjustable at either end. The object of the saddle is to prevent friction or perineal pressure, and the construction should prove useful to patients suffering from hæmorrhoids or after operations involving the perineal region. We are informed that a cyclist weighing 14 stone whose prostate was removed used the saddle for some months with comfort.

SOCIAL ORIGIN OF PROSTITUTES IN MOSCOW.

INQUIRY was made recently in Moscow into the social origin of prostitutes. As the inquiry had nothing to do with the police, and no names were asked for, it was considered that considerable reliance could be placed upon the answers —with one exception, those relating to venereal disease. This was universally denied, a state of things, of course, much too good to be true. S. Weissenberg summarises the replies in the *Zeitschrift für Sexualwissenschaft* for July. 642 satisfactorily completed questionnaires were obtained, the results of which were compared with those of an enquête at Kiev in 1913 on 236 registered prostitutes. Of the latter domestic servants formed 44 per cent., hotel employees 12 per cent., shop assistants 8 per cent., factory hands 6 per cent., only 10 per cent. coming from other social strata. Thus the very large majority was from the lower classes. The same phenomenon appeared, though to a less extent in the Moscow investigation, 60 per cent. of the subjects being of proletarian-origin. Domestic servants were only 22 per cent., thus half the former proportion, but this, independently of the variations to be expected with small numbers, could be wholly accounted for by the diminution in the total population of domestics between 1913 and 1925. This factor allowed for, they recruited the ranks of prostitutes to a greater proportional degree than formerly. In the minority were women of origins not previously met with and not always exactly stated; thus "daughter of a high official," "widow of a governor," "noblewoman," "countess," and so forth. The contingent from the nobility and land-owning classes amounted to 5 per cent., as also did those from the ranks of teachers and nurses. It is reasonable to suppose that the upset due to the revolution, with its exalting of the working class and humbling of their superiors, may have had a good deal to do with this modification of the social composition and personnel of prostitution. What also appears evident, thinks the author, is that social conditions cannot take all the blame of prostitution, which attracts those of a particular disposition.

HEDONAL.

To the Editor of THE LANCET.

SIR,—Will any of your readers say whether any experimental laboratory work has been carried out in this country with hedonal intravenously or otherwise in animals?

I am, Sir, yours faithfully,
JOHN DONALD.
Glasgow, July 20th, 1925.

Corrigenda.—In our account last week of the Ophthalmological Convention (p. 203) some remarks by Colonel A. E. J. Lister, I.M.S., on cataract, were wrongly attributed to Sir William Lister. In Mr. D. V. Giri's remarks, reported on the same page, the word "hypermetropic" should read "hypermature."

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[1] Jour. Amer. Med. Assoc., June 27th, 1925, p. 1987.

The Relation
OF
PARALYSIS AGITANS TO THE PARKINSONIAN SYNDROME OF EPIDEMIC ENCEPHALITIS.

A Lecture delivered in English at the Royal Society of Medicine on the Invitation of London University

BY DR. RENÉ CRUCHET,
PROFESSOR OF PATHOLOGY AND GENERAL THERAPEUTICS IN THE UNIVERSITY OF BORDEAUX.

WHEN in 1917, taking as my basis observations up to 1916 collected while with the army at Commercy, Verdun, Bar-le-Duc, I described for the first time "subacute encephalomyelitis," later to be known as "encephalitis lethargica," I believed it was a new disease. I remarked then the curious polymorphism of the disease, and specially noted several cases in which the immobile face existed from the first. It was already evident to me that the Parkinsonian appearance was in reality quite different from the disease associated with the name of Parkinson.

Later on, after the great outbreak of epidemic encephalitis of the winter 1919–20, certain manifestations, the so-called "Parkinsonian syndrome," were frequently observed. These manifestations were only the continuation of the early Parkinsonianism; others—much more frequent—constituted earlier or later sequelæ of the acute period of epidemic encephalitis. But in both my opinion was not changed, and I considered this so-called "Parkinsonian" condition to be quite different from paralysis agitans. That was the idea which, with H. Verger and Hesnard at the Société de Neurologie de Paris in June, 1921, I tried hard to get accepted. At that time we were almost alone in this opinion: now our conception is commonly admitted.

For that reason we have tried to find out why excellent observers had confounded the "Parkinsonian post-encephalitic syndrome" with paralysis agitans. We found that in these the symptoms which we have isolated under the terms "bradykinetic syndrome" were common to two distinct pathological states, but that in addition to these common symptoms there were others in which these two clinical types were clearly differentiated. On that account we will study, in the first place, the symptoms common to these two clinical types: the "bradykinetic syndrome," and, secondly, we will point out the phenomena particular to each.

BRADYKINETIC SYNDROME.

A syndrome is constituted by the association of several symptoms. The bradykinetic syndrome—as recently studied with Henri Verger in our clinical lectures at the Hospital St. André, Bordeaux[1]—consists in several essential phenomena, of which the most characteristic sign is slowness of movement. The other phenomena are: immobility, fixed attitude, kinesia paradoxa. After considering these we will say a few words on the muscular resistance.

1. *Immobility* is specially remarked in the face which is fixed and expressionless. It is often called the "Parkinsonian mask," although Parkinson has never mentioned it. "Charcot's mask" would be a more exact term. This immobility is found also in all the other parts of the body: there are no longer visible those thousand little movements or *tics* which are the personal expression of individuality, or underline the course of thought. To the expression of life has succeeded the fixed state of a doll, a mummy, or a waxen image.

2. The *attitude* is equally a fixed one and very characteristic. Generally the body is bent forward, the neck sunk between the shoulders, the trunk stiff, the arms slightly flexed on the forearms, with the hands brought towards the abdomen, the fingers flexed or extended, assuming what has been known as the writing position. Other attitudes are also met with; a lateral inclination to the right or left, an inclination backwards, and others, which vary with each individual. But whatever the attitude may be, one always recognises the condition by the aspect which is fixed, stiff, rigid, or "wooden"—as it is also called. (Fig. 1.)

3. *Slowness of the movements* is the most important sign. That is why we have designated this syndrome as the "bradykinetic syndrome" (of βραδύς, slow, and of κίνησις, movement). The term "bradykinesia" is entirely peculiar to us, and we have used it for the first time in medicine in 1900 in our "Traité des Torticolis Spasmodiques." This slowness of movement is specially striking in the features. The expressions (laughing, astonishment, fear, sadness, attention, &c.) all show a want of spontaneity (Figs. 2 and 3); the slow movement is remarked in speech, opening of the mouth, movements of the lips (as whistling, blowing, &c.), of the tongue, and in mastication and deglutition. All the movements of ordinary life are equally slow. Movements of the head and neck, shoulders, trunk and the limbs, as in walking, sitting down, rising up, stooping, turning, &c., all become stiff and automatic-like.

In acts more complex, as in using the fingers, this bradykinesia is still more noticeable. In drinking, eating, shaving, doing the hair, washing, dressing and undressing, sewing, knitting, rolling a cigarette, folding, writing, playing the piano, &c., patients take a much longer time than they did when in health. The same remarks apply to professional work. We have known electricians, masons, book-keepers, embroiderers, cashiers, typists, &c., who required eight or ten hours for the work they previously did in four or even two hours or less.

It is interesting to particularise the characters of this bradykinesia. The slowness has nothing in common with what one meets with in people naturally slow by birth or temperament. Thus, all these movements seem restricted and stiffened, without the thousand little gestures whose disappearance has already been alluded to in describing the immobility and attitude. For instance, in walking the characteristic automatic movements of the arms are wanting; and in writing or lecturing, eating or drinking, none of the gestures of attention or accompaniment are to be seen. It is important to specify, however, that all these movements are correct and perfectly coördinated, though slow. Then, the beginning of the act is never sudden: it seems delayed and to follow at an interval on the act of will which causes it. The longer the act goes on and the oftener it is repeated it becomes slower and slower in its execution. Then stops, of which the length seems to increase, are observed until complete arrest occurs. At last it happens that the movement which is being executed lasts longer than the will to go on with it. Thus it is that the patient who wishes to stop when walking, or who is suddenly told to stop, goes on, against his will, to make a few steps forwards. In walking backwards or sideways the same happens.

4. *Paradoxical Kinesia.*—The term was used by Souques in 1921, but the condition was known to Parkinson himself in 1817. The phenomenon consists really in this, that certain patients, only able to walk slowly and with difficulty, become at times capable of running. One of the two pathognomonic signs of paralysis agitans, as James Parkinson described it, is here indicated—the festinating gait—that is to say, following his words: "A propensity to bend the trunk forwards, and to pass from a walking to a running pace." These phenomena are classical and met with in all the descriptions, principally in Trousseau and Charcot.

A patient, quoted by Souques, who was incapable of making any movement whatever, could at certain moments cross one knee over the other. Incapable during several hours of answering or answering with a few words five minutes after the question was put to him, he could, at instants, speak easily. That is another instance to which Parkinson makes allusion when he compares the failure of the will of the patient to effect an arrest of his running to the " volubility," " a similar affection of the speech, when the tongue thus outruns the mind." But these phenomena had passed completely unperceived in post-encephalitic bradykinesia till we in 1920–21 pointed them out for the first time. There is no question in the encephalitis of some limited movements which are always the same; the question is of various complex acts, executed in conditions which astonish the mind and constitute a real *activity of contrast*, of which I will speak later.

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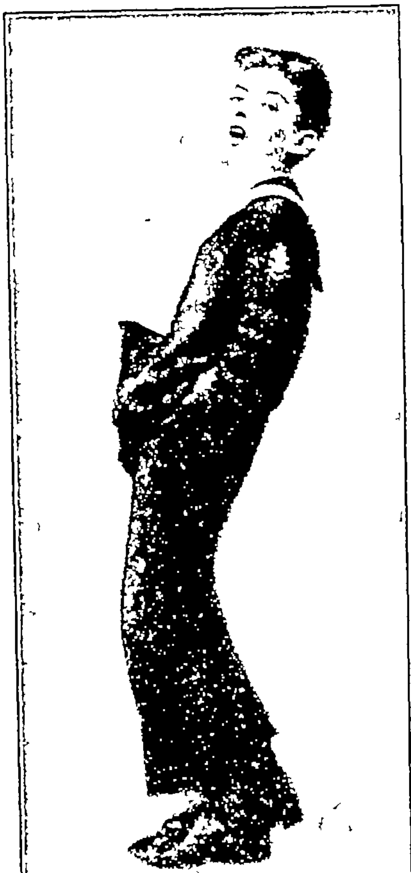
[1] Henri Verger and René Cruchet: Les États Parkinsoniens et le Syndrome Bradykinétique, Paris, 1925.

5. The four preceding symptoms are sufficient to characterise the bradykinetic syndrome. The study of *muscular resistance* is superfluous. It seems, however, that the authors who have specially described it have been the victims, with Charcot, of a preconceived idea. In considering the appearance of these patients, stiff and rigid and wooden, they have deduced an idea of rigidity; and as if that were not enough, others have made it worse and gone on to speak of hypertonus. Rigidity has come to be thought, since Charcot, the essential element of paralysis agitans. Tremor itself might not be present, and rigidity alone exist; these authors do not hesitate all the same to say that it is Parkinson's disease. Indeed, Parkinson himself would find it impossible to recognise in most descriptions nowadays the disease which bears his name. Tremor, for him pathognomonic, is not thought indispensable, while the rigidity, which he has never mentioned, is regarded as necessary and sufficient.

I do not hesitate to say that this description of Parkinson's disease is deplorable, because in this particular disease the rigidity is wanting, even when it is looked for. If these authors would take the precaution to tell the patient to remain absolutely passive and to oppose no resistance whatever, they would note that the movements are effected with freedom as in the normal state. If there be a muscular resistance, be it persistent as in lead-pipe, or intermittent as in cog-wheel, it disappears as soon as the first passive movement is ended. When the limb is again at rest, and you want to make it move, this resistance reappears, but disappears again with movement, and so on. Even in typical cases of Parkinson's disease, if it be not too advanced, this so-called rigidity is absent. Thus, the last Parkinsonian case with tremor which I saw some months ago was a man 68 years old; it was enough to put his superior or inferior limbs in complete release, and it was possible to move them in all directions without perceiving the least muscular resistance.

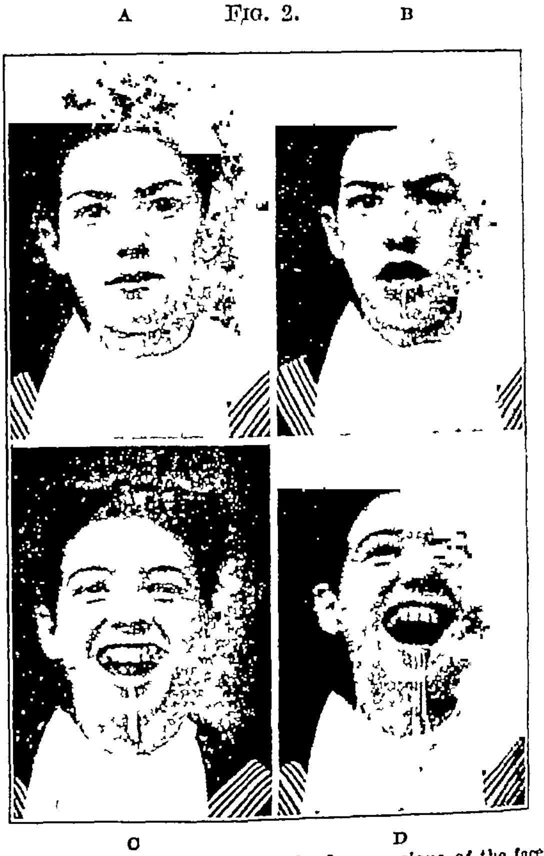
FIG. 1.



Postencephalitic bradykinetic attitude. Bent backwards, mouth half opened.

With old cases of Parkinson's disease, evidently, as with certain post-encephalitic bradykinetics, one may observe hypertonus and even the sort of rigidity which recalls the special contracture of spasmodic infantile diplegia; but those are patients ill for a long time. Even in those cases, not even in those of long standing, and often never, rigidity exists such as we have already shown it with Henri Verger.

FIG. 2.



The same boy as in Fig. 1 with fixed expressions of the face. A, Serious look with shut mouth. B, Commonly the mouth is open and saliva is trickling out. C, Smiling expression with salivation. D, Laughing, with still more salivation.

Thus reduced to its most simple expression the bradykinetic syndrome is common to a certain number of morbid states, amongst which, without speaking of the Parkinsonian disease and epidemic encephalitis, one may mention certain chronic deforming rheumatic cases, progressive lacunar cerebro-sclerosis, disseminated sclerosis and pseudo-sclerosis, dementia præcox, spasmodic infantile diplegia, chronic chorea, athetosis, chronic myoclonus, and myorhythmia. In 1906 we already showed that bradykinesia can become spasmodic and be associated with certain forms of spasmodic torticollis.

But we will limit our study to the particular characteristic signs which constitute the bradykinetic syndrome, as seen in Parkinsonian disease and in epidemic encephalitis.

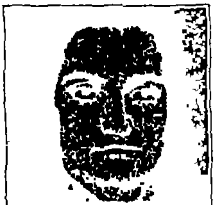
PARKINSONIAN BRADYKINESIA.

In Parkinson's original description the characters of bradykinetic syndrome are noted. The study of slowness of movements and of immobility, specially of the face, is, however, not particularly indicated. Has it been forgotten? Or is it not rather that the enumeration of these phenomena did not seem necessary to the author? As it is a question, following Parkinson, of paralysis, these troubles of the least motor activity, so common and so evident, are they not, by definition, a part of the clinical picture? James Parkinson insists only on the particular evolution of this paralysis; he shows its mode of progression, so different from ordinary paralysis, in which "abolition or diminution of voluntary muscular action takes place suddenly." Here, on the contrary, "the diminution of the influence of the will on the muscles comes on with extreme slowness."

There is a quite singular evolution for a paralysis according to the ideas of that period. Parkinson remarks it expressively. The movements of the face and all movements in general are diminished, "weakened," slackened; are these not evidence of a paralysis? Parkinson finds it needless to speak of it.

To return, two phenomena of a new kind strike him in this paralysis, first of all, and specially, the "shaking"; second, "a propensity to bend the trunk forwards." In this second symptom may be recognised the characteristic attitude of the bradykinetic syndrome. "This propensity to lean forward becomes invincible," as Parkinson says; the result being that the patient, "irresistibly impelled to take much quicker and shorter steps, and thereby to adopt unwillingly a running pace"—substitutes "running for walking," so as not to fall. There we find again the phenomenon of "kinesia paradoxa," already mentioned. And it is natural that it should have attracted the attention of a clinician like Parkinson, little accustomed to see paralytics running.

FIG. 3.



Young bradykinetic woman with the same scale of fixed expressions of the face—serious, smiling, and laughing.

But it is the shaking which gives to the Parkinsonian bradykinesia syndrome its essential and principal character; it is that which is the pathognomonic sign of Parkinson's disease, and so he incorporates it in the definition itself—"shaking palsy." That is why he studies this tremor with such care—an "involuntary tremulous action, in parts, not in action, and even supported." This shaking is the first manifestation of the disease. Most often it begins in one of the hands and arms, and attacks little by little other parts of the body. A sudden change of position, or walking, stops it for a short time. But the time comes when movements are carried out with more difficulty, whilst the tremor becomes incessant and increases in violence. At the same time, in a progressive manner, the trunk is almost permanently bowed; the patient can hardly run or walk any more; he is no longer able to feed himself, he masticates and swallows with difficulty; even the saliva is continually dribbling from the mouth, and ultimately he dies of extreme exhaustion.

Later works on the subject have added little to Parkinson's account; some details have been particularised in describing the shaking—as a movement like that of pill-rolling or cigarette-rolling. Authors have also laid much stress on the agitation, the instability of these patients, who can hardly keep quiet; but Parkinson had already noted this fact in a few words, when he remarked that to calm the incessant tremor which troubled them, "harassed by this tormenting round," as he says, they continually walked.

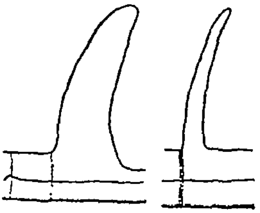
In short, the Parkinsonian bradykinesia is essentially characterised by its insidious onset, at an advanced age, its progressive evolution, its mental state (want of movement, irritability, bad temper); its late salivation, and specially its particular tremor which exists at rest and disappears in voluntary action.

POSTENCEPHALITIC BRADYKINESIA.

The bradykinetic syndrome is here quite complete; the general immobility and impassiveness of the face are striking, especially because we are dealing generally with young people. The fixed attitudes are equally remarkable, but more varied than in Parkinson's disease, where the bend-forward is especially characteristic.

Slowness of movement, rather neglected till we described it, has been studied with more precision than with the real Parkinsonian case, on account of the usual absence of tremor. We have noticed the delay in the beginning of movement, then the successive stops till a complete arrest ensues. All these phenomena have been remarked in the acts of ordinary life, and experimentally controlled, on myograms by H. Verger and Hesnard. (Fig. 4.) The modifications of handwriting, with progressive micrographic letters, are well known.

FIG. 4.



Myogram obtained after an auditory or visual test with a bradykinetic patient. On the curve to the left the reaction-time is longer than in that to the right, which is the curve of a normal man. The distance between the two dotted lines is wider on the bradykinetic than on the normal curve.

Reading is quite as interesting to study, as we have shown. The patient begins to read in that characteristic dull and monotonous voice; then a sudden stop occurs at the end of the third or fourth line. The eyes are obliged to go rapidly from the end of one line to the beginning of the next, and this movement does not take place immediately. Then it goes on, and reading continues, to stop suddenly again at the end of the line. But little by little, as the reading goes on, the stops are more and more frequent, every two lines, then, every line, and even, in the course of the line, sometimes in the middle of the word. The stops, first of all short, last longer and longer, the voice lowers, and comes to be hardly perceptible, and reading comes to a stop. In acts which require more complex movements, another very curious particularity is noted: it is the stopping of movement in motion, and that in the most uneasy positions. Thus, a spoonful of liquid remains near the lips, held in a sculptural attitude during several minutes; or a draught of milk, or a mouthful of food may remain in the mouth, without being swallowed.

One of my patients, while putting on his trousers, became all at once immobile and bent forward; another, when he wished to pick up something on the floor, bent down, caught the object, and after having lifted it a few centimetres remained for more than a minute in this bent position. Another one, standing, wishing to take his handkerchief from under the pillow of his bed, stretched *himself out on it and remained* immobile and fixed during three or four minutes, with the head forward and the hand held out, a few centimetres away from the desired handkerchief. A patient, quoted by Arthur J. Hall, "when brushing the hair, may raise the brush to the head and then progress no further." One sees in these attitudes, the catatonic perseveration, a truly singular phenomenon.

But it is the paradoxical kinesia which is chiefly remarkable. This activity of contrast, however curious, had passed completely unobserved till we called attention to it in 1920 and 1921. We have described several patients, who showed an inert, immobile and fixed aspect, and yet, all the same, at certain moments could play with a ball, or at battledoor and shuttlecock, or go up and down stairs, split wood with an axe, jump close-legged more than one metre high and three metres distance, even carry out evolutions on the horizontal bar. Others continued to motor, to cycle, play football, skip with a rope, to play the piano, violin, or brass instrument. I have seen three who seemed infirm and quite immobile in an armchair and who, all the same, began to dance in my consultation-room.

One of my patients, a brakesman employed in a railway company, at the arrival of the train in the station, came down from his car, shouted the name of the station in passing before every car, and then returned to his post till the next stage. Another, a man cook, whom they were obliged to help to dress and to eat, beat one day an excellent cream, to the great astonishment of those who surrounded him. He and his comrade, the brakesman, were both very skilful at the game with a cork, which consists in throwing down a cork covered with pennies, at 12 metres distance, with a quoit of the dimension of a guinea thrown with the right hand. They knocked down the cork each time, a rare performance for a normal man and all the more extraordinary under the circumstances.

These cases are now very well known. Arthur J. Hall has described how a "fine strong young man, whose immobile face, posture of limbs, and trotting gait are unmistakable, drove a three-ton lorry from Sheffield to London and back in three days, with nobody but a small boy with him. On another occasion, when leaving the out-patient department, he stepped on to the top-rail of the seat and jumped to the ground with the greatest agility." The same author has seen a young man cross the Strand opposite Charing Cross Station, at the busiest time of the day, by waiting for a momentary lull in the traffic, then trotting to the safety stage and stopping himself by clinging to the lamp standard. The second half of the passage was completed in safety, after a long wait, but he could only stop himself by clutching hold of a passing stranger, who thought the man had been taken suddenly ill, and escorted him to the railings. G. L. Thornton has noted that a young man, 29 years old, "in spite of his complaint of weakness in the legs, was able to jump over low obstacles and to run upstairs."[2] Finally, it is hardly necessary to point out the absence of rigidity, even less here than in Parkinson's disease. The clinical examination proves it; but the mere persistence of muscular activity, so considerable as to permit the execution of the preceding acts, would be enough to presume it.

That is for the bradykinetic postencephalitic syndrome.

But other complementary or added symptoms allow of a still better differentiation of the postencephalitic bradykinesia from the Parkinsonian bradykinesia. These are:—

1. *Tremor.*—The tremor is far from being the rule here, as in Parkinson's disease. It is, indeed, rare. In more than a hundred of my own cases I noted it ten times (one case in ten). Out of these ten cases, in three only did the tremor exist during rest and disappear during voluntary motion (Parkinson's type). In the seven other cases it did not exist during rest, and neither was it intentional, as in disseminated sclerosis. It appeared only in certain positions of fatigue, or else in movements which necessitated an effort, such as to write, to eat, to dress oneself, to shake hands, to carry a weight, &c., in which case its amplitude and intensity grew with the violence of the effort, to cease during complete rest.

A farmer, aged 53, was observed to have the tremor only in one position, evidently tiring: when he carried to his mouth a bowl or plate held with both hands, these were rapidly agitated by the tremor, and the liquid (coffee, milk, or soup) was upset. In the case of a typist, 26 years old, when she was asked to make a rapid movement of flexion of the right forearm on the arm, immediately the forearm began trembling at the speed of about seven jerks per second, with an amplitude from 2 to 8 cm. As soon as the patient changed the position of the limb the tremor ceased. But as these movements took place in many acts of ordinary life, such as eating, drinking, sewing, dressing, &c., it became a great nuisance for this young lady. Another character of this tremor, in distinction to the Parkinsonian shaking, is that it is not at all progressive. Several times we have noted it lessening with time; in three cases it completely disappeared in a few months, without ever coming back.

2. *Mental State.*—In contrast with the Parkinsonian bradykinetic, the postencephalitic bradykinetic patient is calm, peaceable, impassive, does not speak, asks for nothing, is willingly somnolent; he has an invincible repugnance to effort, even to the slightest movement. His greatest desire is to remain absolutely quiet, to have complete rest, rather in bed, where he will readily remain the greatest part of the day. To get up, to dress, even to remain sitting, is for him a fatigue which he would gladly avoid.

His intellectual state seems to slacken concurrently with his physical activity. His ideas are clear, his judgment intact, his memory retained, and his reasoning lucid; but to put his powers in use needs infinitely more time than before his illness. H. Verger and Hesnard have strikingly illustrated this bradypsychia or bradypraxis, or *psychic viscosity*. When these psychical modifications are not too marked, the activity is normal, but sensibly slackened; one would say that the patients have assumed a new personality.

An hotel-keeper, 56 years old, a woman, came to see me in February, 1923. She seemed a stolid person, with an expressionless face, speaking slowly and seldom, but perfectly clearly, her movements quiet and deliberate. She went on managing her business, attending to the cash and accounts. A stranger seeing this woman for the first time might very well have taken her for a person of quiet and reserved manner, calm and slow of speech and temperament, but, in fact, she had become so after encephalitis. Formerly she was a very active woman, always ready to laugh, quick and alert in movement and speech, and prompt in repartee. She knew herself to have changed, and complained of fatigue and lassitude. Indeed, her friends did not know her. Her personality had changed. I have seen other similar instances in my practice. Are they not curious and quite different from the proper Parkinsonian mentality?

3. *Onset.*—In contrast to the beginning of the Parkinsonian bradykinesia, "so slight and nearly imperceptible," writes Parkinson, "that it rarely happens that the patient can form any recollection of the precise period of its commencement," the onset of postencephalitic bradykinesia is nearly always easy to recognise. Somnolence, so-called lethargy, diplopia, frequent agitation with oneirism, even when there is no high fever, symptoms pointing to infectious disease, such as typhoid fever, toxic symptoms simulating botulism, enable us to fix the onset of the disease. The epidemic incidence is important. The greatest number of postencephalitic bradykinetic patients, whom we have observed, have had their attack between November, 1919, and April, 1920.

Age Incidence.—The average is about 60 in Parkinson's disease; the lower the age-period the rarer are the cases. On the contrary, with postencephalitic bradykinesia, the older the age-period the rarer the cases. Even children are frequently attacked—a quarter of the cases in my statistics.

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[2] Brit. Med. Jour., Jan. 3rd, 1925.

4. *Evolution.*—While Parkinson's disease is fatally progressive, postencephalitic bradykinesia may get better, and even be cured. This depends on whether one deals with the early or the late form. The *early* form, of which I have observed several cases, is pretty often curable. One also often finds a regression or stabilisation at a certain stage, without a real return to the normal state. But most frequently the *late* form is met with. It appears between six months and two years, and sometimes later, after the apparent cure of the disease. In that case, unhappily, prognosis is less favourable. However, it is not necessarily progressive and fatal. I have known patients—for instance, the hotel-keeper of whom I have already spoken—where the illness advanced slowly to a certain stage and then remained stationary. With certain people, I have even noted phases of aggravation followed by phases of regression which finally allowed patients to recover an important part of their social activity. Others, on the contrary, become at length real invalids: incapable of moving, mute, immobile in bed, showing often the limbs fixed in flexion or extension, having even eschars on different parts of the body, and finally become extremely wasted and die.

5. *Other Differential Signs.*—We will pass rapidly in review certain other phenomena which serve to separate postencephalitic bradykinesia from Parkinsonian bradykinesia. Salivation is a very frequent and early sign in encephalitis, while it occurs late in Parkinson's disease. Pupillary troubles (inequality, slowness or loss of reaction to light and accommodation, miosis, mydriasis), exaggeration of knee- and ankle-jerks (without Babinski's sign), various changes in the cerebro-spinal fluid—especially hyperglycorachia—are particular signs of the postencephalitic bradykinesia.

A few words are necessary as to torsion-spasms, which are often met with in postencephalitic cases.

6. *Torsion-Spasms.*—In these different parts of the body assume extraordinary and tormented attitudes. I have quoted several cases, some more curious than others, but principally that of André V., whose detailed story is found in our "Clinics of St. André."

This youth, markedly bradykinetic, ordinarily would be found sitting with the head on the right, his chin on his breast, but the face turned towards the left, so that in order to look straight before him the eyes had to be turned upwards, the eyelids being raised to the utmost. The trunk was bent forward, so that only the middle of the back touched the back of the chair. Then the trunk would be bent little by little to the right side; the back, more and more rounded, would form nearly a right angle with the pelvis, the head and the trunk completely off the seat of the chair. In this incredible attitude, which lasted 10 or 15 seconds, it was astonishing how the patient did not fall; then, with a rather rapid movement he would resume his first attitude. And so on the whole day.

Facts of that sort are really very characteristic. But are they as new as is said? I do not believe so. Most authors consider that the neurosis of tonic torsion (Ziehen), or *dystonia musculorum deformans* (Oppenheim), or torsion spasm (Flatau and Sterling), descriptions which date back to 1910 and 1911, belong to the same clinical family as Wilson's disease or hepato-lenticular degeneration, which, too, was described for the first time in 1911 before the Society of Neurology of London. H. C. *Hall* (Copenhagen) thinks also that pseudo-sclerosis, studied by Westphal and Strümpell, which is but an atypic variety of disseminated sclerosis, is an analogous pathological state. Finally, neurologists have remarked how much these spasmodic phenomena, when localised, remind one of spasmodic torticollis.

SPASMODIC BRADYKINESIA.

It is only true to say that, in 1906, writing from the clinical point of view alone, and prior to the descriptions given by Ziehen, Oppenheim, Flatau and Sterling, S. A. K. Wilson, and H. C. Hall, we called attention to the same pathological entity, under the name of *spasmodic bradykinesia*—bradykinesia, because the movements were slow; spasmodic, because there were tonic or clonic (rhythmic or arrhythmic) jerks, added to the *bradykinetic phenomena.*[3] Since then I have observed other similar cases of which one, quite typical, occurred in 1907.[4] In short, as we said in 1906 and 1912, we meet with a generalised spasmodic syndrome, causing a rigid, fixed state with stiffness and general slowness of movements. All voluntary acts, whatever they may be, are constrained and slowed: writing, walking, especially going downwards, gestures of the arms, head, and trunk. The execution of movements often exaggerates the spasmodic condition. Frequently, at rest, there are athetotic and choreiform movements of the extremities; muscular instability of all the parts of the body; evidence of vasomotor troubles (sweating or excessive redness of hands, armpits, feet); alterations of speech, which is slow, stammering, and difficult to understand. And we added: "One cannot say that it is chorea, athetosis, paralysis agitans, Little's syndrome, disseminated sclerosis, tabes, Thomson's disease, or spasmodic wry-neck. Without doubt certain symptoms recall some of these diseases, but in themselves they are not sufficient to bring them under any one of these categories. That is why I proposed to name them *spasmodic bradykinesia.*

There is a perfect concordance between the views of these authors and those which we put forward about 20 years ago. Even then we already recognised that these curious states were not the real Parkinson's disease. The discovery of epidemic encephalitis, increasing considerably the number of these bradykinetic forms and their spasmodic varieties, formerly regarded as exceptional, has but confirmed our conceptions. It has allowed us in the meantime to study them better and to observe that the spasmodic state was, in most cases, but secondary, and not essential to the real bradykinetic state. These torsion spasms take place with the *associated forms* which unhappily always complicate, in medicine, the pathological descriptions.

Epidemic encephalitis, more than any other illness, on account of its polymorphism, is predestined to share in this confusion of classification. In our first article of 1917, the earliest to appear on this disease, we had already, founding on our personal observations, shown the diverse clinical forms it could take. We have already indicated the most typical and simple varieties, avoiding the associated forms. It is that same method which has guided us in the statements we have just made.

MORBID HISTOLOGY OF THE BRADYKINETIC SYNDROME.

The morbid histology of acute epidemic encephalitis is to-day well known. The first case, of which the definite histopathology was made out, goes back to April, 1917. It was one of my patients who died in Bar-le-Duc, near Verdun, and my colleague Anglade (Bordeaux) examined the microscopic lesions. He was immediately struck by their resemblance to the histologic lesions of hydrophobia and poliomyelitis in the mesencephalon, both due to filter-passing virus. Now, we find these figured in all the books and, particularly, in the remarkable work of Arthur J. Hall on epidemic encephalitis. I wish here only to consider the lesions connected with the Parkinsonian syndrome. I will not speak of the constant lesions of nerve-cells which are greatly altered in the same manner (reduction, atrophy, destruction), either in the cerebral cortex, hind-brain, grey nuclei, or in pons varolii, peduncles, and anterior horns of the cord. I desire simply to emphasise the curious property of the pyramidal cells to be intensely stained by histological dyes. Also I must add, and it is very important, that the lesions are destructive, insular, unsystematised, and especially marked in the locus niger.

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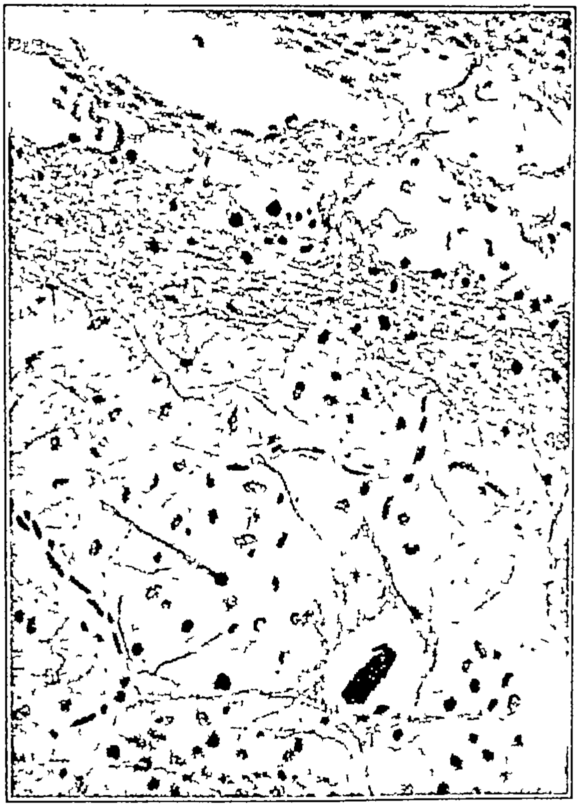
[3] Traité des Torticolis Spasmodiques. Paris. 1907. Pp. 340–394.

[4] Bradykinésie Spasmodique, in La Pratique des Maladies des Enfants. Paris: J. B. Baillière et Fils. 1912. Pp. 377–380.

Anglade explains certain forms of Parkinsonian postencephalitic lacunar sclerosis by a neuroglia sclerosis. It is quite an original point of view. In fact, here (Fig. 5) it is not the adventitia of arteries which is involved as it is in the classic lacunar arteriosclerosis. The vessel remains intact; but around it the thick wall of glia cuff is losing, little by little, its cellular elements and crumbles away and falls down. Lesions of the locus niger are very intensive, there being almost total destruction of ganglion cells, which are phagocyted by glia cells. The pigment disappears in the substantia nigra and is absorbed by glia cells. Neuroglia fibrils are not very thick, but are always of the *insular* form, which is the chief character of the histopathology of epidemic encephalitis. There are no lacunar lesions in the aqueduct of Sylvius, red nucleus, and locus niger. But, nevertheless, the lesions are very important.

FIG. 5.



One can see the glia wall, and in the middle of it, the glia cells and fibrils falling down: that is the first stage of the special Parkinsonian postencephalitic lacunar sclerosis.

CONCLUSIONS.

We have studied the bradykinetic syndrome in its elementary form; then we have shown that the additions found in the Parkinsonian and postencephalitic types mark them out as original diseases, perfectly differentiated. From what we know of the diffusion of the encephalitic virus over nervous centres, it is easy to understand that it may give birth in certain cases to the true Parkinsonian type—2 or 3 per cent. in our statistics. But this simple statement shows how rare the syndrome is.

Equally we can well conceive the association of the Parkinsonian and postencephalitic type, as we have seen a few cases. But it is only an associated form, which must necessarily be divided in two essential types, if we will talk about it in a good medical sense. That is why, after all, we always return to consider separately the Parkinsonian and post-encephalitic bradykinesia. We take a firm stand on the sure ground of clinical observation; for anatomical findings, however interesting they may be, do not yet permit us to localise in a certain and definitive way the lesions which cause the bradykinetic syndrome, and the two forms which we have studied.

But this is the true medical method, that of all great doctors in all times and in all countries, the one, in particular, of Sydenham. I do not believe that any better or surer has been discovered. It is that at least which we try to practise in the Bordeaux University.

Croonian Lectures

ON SOME

DISORDERS OF MOTILITY AND OF MUSCLE TONE,

WITH SPECIAL REFERENCE TO THE CORPUS STRIATUM.

Delivered before the Royal College of Physicians of London

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LECTURE IV.

(*Concluded from p. 219.*)

TREMOR.

BY comparison with chorea and athetosis, tremor is a motor derangement of a vastly simpler character. It may be defined as a succession of similar movements at equal intervals—more prec more
or less regular, rhythmical, al
of a muscular group or groups
This definition, however, is not
for the clinician encounters
tremors, felt rather than seen, i
is difficult to determine, wh
conditions are much more cla
tremor, and others still closel
superficially yet have a differ
complex alternating movements
sort have been grouped by th
term of "rhythmias," but this
descriptive than definitive.
this section, attention will b
whose organic origin is matter

CLINICAL CHARACTERS OF

(1) *Rate.*—Doubtless some tre
others, yet the rate of the per
traction is fairly constant, aver
five to seven or eight a second.
apparently a function of the len
concerned, for careful measuremen
paralysis agitans, will as a rule giv
for short muscles such as the inteross
hand muscles and for larger ones s
the neck or trunk. Tremors of wid
not of necessity slower; if anything,
times rather faster than tremors of
From a study of numerous examp
disease the average rate is six a seco
may be. This rate is found to var
moderate limits at the instance of factors of
an extrinsic and an intrinsic kind.

(2) *Range.*—Every intervening grade from the finest range to a coarse and wide movement may be met with; and in the same patient the excursion often varies from time to time, sometimes in a regular,

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w personality.
d, a woman, came to
seemed a stolid person,
speaking slowly and
her movements quiet
anaging her business,
counts. A stranger
ime might very well
quiet and reserved
and temperament,
after encephalitis.
tive woman, always
rt in movement and
e. She knew herself
ned of fatigue and
d not know her. Her
e seen other similar
not curious and quite
nian mentality?
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slight and nearly
"that it rarely
any recollection
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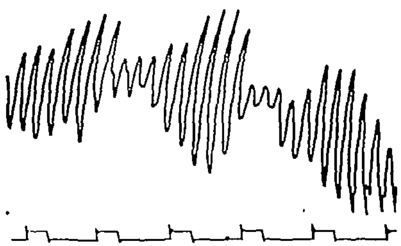
nearly always
alled lethargy,
ism, even when
ng to infectious
ic symptoms
e onset of the
ortant. The

sometimes in a highly irregular way. Fig. 33 taken from a case of postencephalitic Parkinsonism (unilateral) exhibits this range variation clearly, and a fair degree of regularity in the variation. Irregularity of range excursion is seen in Fig. 34 (also from a postencephalitic case).

(3) *Rhythm.*—On the whole, the majority of organic tremors exhibit a rhythm from which they depart but rarely; the tremor is set in such and such a way, and modification seldom occurs. The rhythm of the hand movement in the Parkinsonian from whom the tracing of Fig. 35 was secured is almost mechanical in its perfection. Fig. 36 represents another Parkinsonian tremor, of equally clock-like rhythm but of variable amplitude.

FIG. 33.



Tremor in Parkinsonism. Variation of amplitude with a certain regularity.

(4) *Localisation.*—While theoretically any set of skeletal muscles and its opposite group may be seized upon by tremor, from the lips, or the fingers, to the trunk, the small muscles of the body are more particularly its seat. A mere catalogue of tremor localisations would serve no useful purpose; what is of greater interest is the curious way in which tremor will shift its incidence in a moment from one group to another. I have noticed this particularly [illegible] cases of progressive lenticular [illegible]ation, but it is a feature [illegible] a few cases of paralysis [illegible] For example, a flexor-[illegible]emor at the wrist will [illegible] one of a side-to-side [illegible] radial-ulnar deviation), [illegible]y to one of pronation-[illegible] and so forth. Again, [illegible]es will migrate in a still [illegible]nded fashion, leaving [illegible] or its distal segments, [illegible] the head or trunk, or [illegible]osite side of the body. [illegible]s reproduced in Figs. 37 [illegible] from a case of progressive [illegible] degeneration with a pro-[illegible] tendency of this kind for the tremor to [illegible]." Within a second or two of placing the [illegible] in position for a record of a wrist flexion-[illegible] tremor it shifted its incidence to the [illegible]-supinator mechanism, but returned a few [illegible] later to the original group, with reduced [illegible]ode (Fig. 37). On another occasion (Fig. 38) [illegible]hmical and seemingly unvarying pronator-[illegible]itor tremor altered its character as soon as [illegible]racing started, and eventually left the group [illegible]ether, passing to the biceps-triceps combination. [illegible] this variability or fluidity of distribution is sug-[illegible]ive not of a fixed structural disorder so much as [illegible], morbid process or state prone to develop itself [illegible]uch and such a muscular combination as a sequel [illegible] the interjection of some additional factor, the [illegible]ature of which will be discussed a little later.

A more remarkable illustration of this fluctuation is provided by a phenomenon which I have now observed some four times in cases of unilateral Parkinsonism, in each instance following epidemi encephalitis. The particulars of one case may b given.

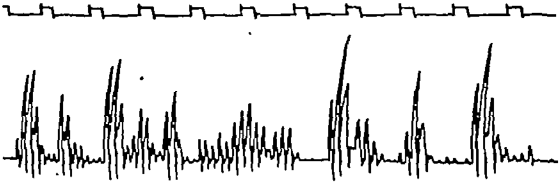
It was that of a youth of 10, with left-sided Parkinsonisr of a fairly severe character; his left hand and arm exhibite a typical rhythmical tremor which became particularl noticeable if the limb was unsupported, e.g., held out i front; support at all the joints either reduced it materiall or caused it to disappear. On the right (normal) side wa no sign of pyramidal or extrapyramidal disturbance. Th right arm could be held out by itself with absolute stead. ness. Now, when *both* arms were outstretched the lef at once exhibited marked rhythmical tremor of flexior extension at the wrist, and invariably, a second or tw later, the right outstretched and unsupported (norma hand went into a similar but finer tremor. Support applie to the left limb cut short its tremor, and within two c three seconds the fine right tremor would then disappe (Fig. 39).

Thus a limb in every objective respect apparentl normal developed a tremor whenever its fellow of th opposite side, rather severely involved in Parkin sonism, developed tremor; its tremor followed o the appearance of the Parkinsonian tremor, an ceased with cessation of the latter, yet both beginnin and end always occurred a second or two later in th case of the former. Its range was much finer, but it rate and other characters were identical. This pheno menon is of considerable interest, furnishing, as i does, additional proof of the fluidity of many organi tremors—a feature to be taken into account in respec of pathogenesis.

CONDITIONS INFLUENCING TREMOR.

We should derive a false notion of organic tremo if we contrasted it only with the known changeabl ness of so-called "functional" tremors, imaginin change to be typical of the latter and fixity of th former. Numerous "functional" tremors vary i minimal degree, while organic tremors can be an are influenced by a whole series of factors, as wi now be exemplified. When the back of the hand c a Parkinsonian patient whose tremor is in full swin is momentarily pricked with a needle the tremor ma cease for many seconds. Fig. 40 is the tracing fron such a case; at the arrow signal the dorsum of th moving hand was pricked for a moment and in thi instance something like ten seconds elapsed ere i recommenced. (The crescendo character of thi Parkinsonian tremor should be noted; the point i referred to below.) In a similar case of finer tremo the cessation thus produced lasted only for a secon or two. In still another case, of rather irregula tremor (Parkinsonian), the cutaneous stimulus effecte a transient interruption, followed, however, almos immediately by an exaggeration of the movement.

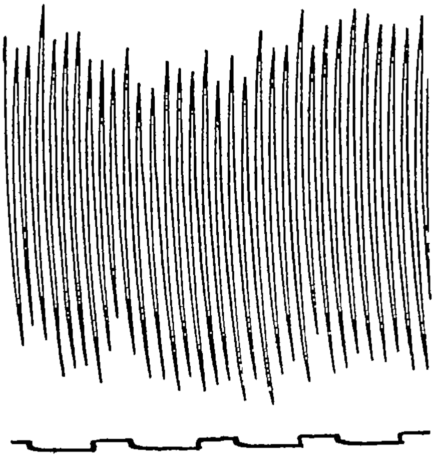
FIG. 34.



Parkinsonian tremor. Highly irregular amplitude.

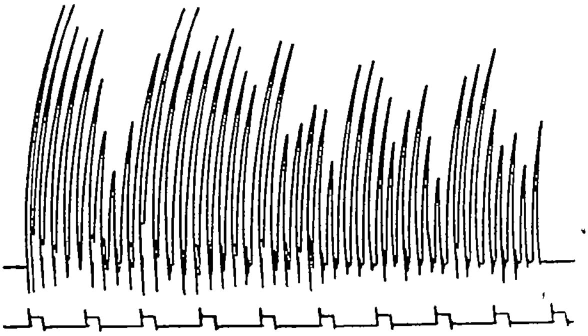
Other forms of extrinsic excitation may produc an effect. At the arrow signal in Fig. 41 (idiopathi paralysis agitans) the sudden loud bursting of a paper bag filled with air caused no more than th briefest disturbance of the rhythmical tremor, bu sometimes the effect has been more pronounced Stimuli of an emotional sort may or may not hav their influence; attention in this respect is a dis turbing factor. I have always obtained bette results in the maintenance of tremor for recording purposes when the subject's eyes have been closed, to exclude visual stimuli. Not a few patients discover for themselves means of checking the involuntary movement, if only for a time. One of my patients could at once cause his tremor to cease completely by the simple procedure of supinating his affected forearm and hand. In another case, hyperpronation (“voluntary”) had precisely the same effect. (A cinematographic record of this phenomenon was shown.) Intelligent patients often work out for themselves some proceeding which has the desired result. This did not escape the acute observation of James Parkinson, who says in his essay that “the wearisome agitation is borne until beyond sufferance, when by suddenly changing the posture it is for a time stopped in that limb.” He cites the case of a Parkinsonian patient, who, “to illustrate his observation as to the power of suspending the motion by a sudden change of posture, being then just come in from a walk, with every limb shaking, threw himself rather violently into a chair, and said, ‘Now I am as well as ever I was in my life.’ The shaking completely stopped; but returned within two minutes' time.” In other instances, however, it vanishes for reasons as elusive as they are inconstant.

FIG. 35.



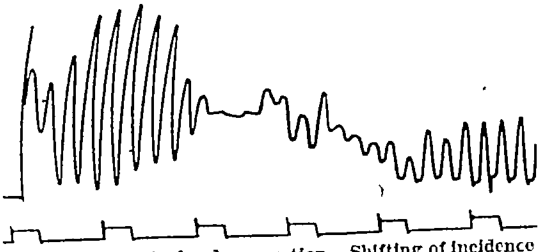
Parkinsonian tremor: almost mechanical rhythm.

FIG. 36.



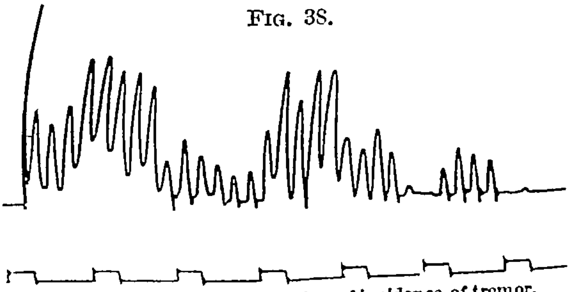
Parkinsonian tremor. Regular rhythm but variable amplitude.

FIG. 37.



Progressive lenticular degeneration. Shifting of incidence of tremor.

FIG. 38.



Same case as Fig. 37. Shifting of incidence of tremor.

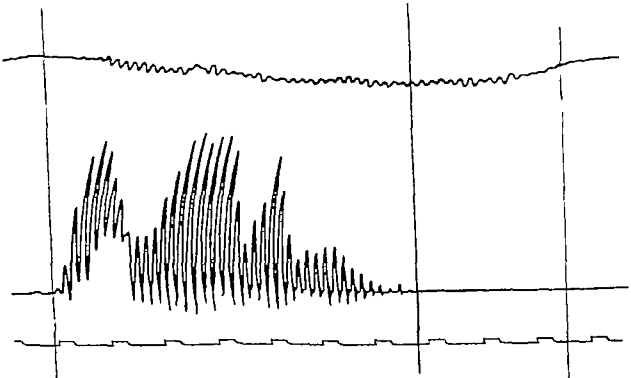
CLINICAL VARIETIES.

For years clinicians have recognised certain distinctions between the tremor of paralysis agitans and other striatal affections and that known as intention- or action-tremor, the latter being characterised by the fact that it begins only with “voluntary” innervation and increases with continuing action or “intention” up to a point, whereas the former is not so increased but may, on the contrary, diminish or cease. Further, action-tremor is seen only during “voluntary” motion, while the first variety occurs also when the limb is at rest. The supposed distinction has been recognised for centuries; it was already old when James Parkinson referred to it, quoting with evident approval the views of Sylvius de la Boe and of Sauvages, and indeed the germ of the idea is discoverable in the pages of Galen. In Parkinson's words: “If the trembling limb be supported, and none of its muscles be called into action, the trembling will cease. In the real shaking palsy the reverse of this takes place; the agitation continues in full force whilst the limb is at rest and unemployed; and even is sometimes diminished by calling the muscles into employment.”

Notwithstanding this authority, the distinctions are much more apparent than real; some cases of disseminated sclerosis, for instance, definitely show what I may call a “rest-tremor” as well as an “action-tremor,” while in progressive lenticular degeneration, as was demonstrated in my original monograph, the tremor is increased by voluntary action to a pronounced degree, though it is also prominent in the resting state. Thus combinations occur and invalidate distinctions. Moreover, in the finger-nose test the Parkinsonian limb at first often exhibits diminution or cessation of the tremor as it goes into action, yet after a moment or two of “rest” on the nose the fingers again become agitated, although the innervatory action of the limb musculature continues and the limb is certainly not “unemployed.” Clinical observation proves further that while in some instances a Parkinsonian tremor is checked by firm “voluntary” closure of the fist of the affected limb, in other cases the effect is transient and minimal, and the tremor redevelops notwithstanding the active “employment.” The exaggeration of the tremors of progressive lenticular degeneration by “voluntary” movement is strictly comparable to what obtains in disseminated sclerosis—an organic state to which "intention-tremor" is by some inaccurately, as I think, confined.

Reduction or cessation of tremor by supporting the limb—a reputed characteristic of action-, as compared with Parkinsonian, tremor—is met with nevertheless in the latter disease on occasion. *Its* occurrence has been shown in Fig. 39, taken from a typical case of the postencephalitic variety. On the other hand, the tracing of Fig. 42 is derived from a case of what I believe *to* be so-called idiopathic tremor, though I admit it is now exhibiting symptoms possibly suggestive of paralysis agitans. In this instance the tremor, at first seen solely during *unsupported* action of the limbs and vanishing instanter with support, is at length beginning to appear in the "resting state." On occasion, moreover, Parkinsonian tremors exhibit a crescendo feature (cf. Fig. 40), which is reminiscent of the similar crescendo of action-tremors.

FIG. 30.



Unilateral postencephalitic Parkinsonian tremor. Temporary appearance of tremor on the unaffected side (above). For details see text.

Finally, in this place, we may express doubt whether any hard-and-fast line can be drawn physiologically between a "resting" and an "active" state of muscle; action-currents in respect of these two differ only in a quantitative way. Clinically it seems a matter rather of degree of innervation than of differences in kind. From consideration of the data *the conclusion is, that the two types tend to run into each other and that neither is pathognomonic of involvement of a particular mechanism, radically distinct from that of the other.*

NATURE AND PATHOGENESIS OF TREMOR.

From its very nature we must allow that tremor can only be a phenomenon of a low physiological order, essentially different from the elaborate spontaneous movements of chorea and of athetosis. Tremor is purposeless and seems to have no "meaning," at least none easy of recognition, whereas choreic and athetotic action is subjectively purposeful *if none the less futile.*

(1) Various neuromuscular mechanisms are highly organised in the nervous system; others are organised in low degree or scarcely at all. Superior mechanisms *are capable of great variation*; inferior mechanisms are largely systematised. The more highly organised a mechanism, the lower is its physiological position. Spinal reflexes—e.g., the scratch-reflex—cannot be modified in respect of rate or character by variation of stimulus; cardiac and respiratory mechanisms are set at such and such a pace and, left to themselves, vary within narrow limits only. The fifty-a-second rhythm of motor nerve impulses *is practically* a constant. Instances of inherent neural and neuromuscular rhythms of minimal modifiability might be multiplied. By analogy, organic tremor is a *physiological phenomenon* of high organisation and low variability, for as we have seen its fundamental characters alter little and its average rate is fairly constant. It is constituted by a rhythmic discharge of neural energy, appearing in pathological states—a release-phenomenon set in a particular rhythm the innate nature of which, and its *raison d'être*, seem at present to be quite uncertain.

Clonus, similarly, consists of a rhythmical alternation in contraction of muscular groups, is a physiological state of a low order, falls into approximately the same rhythm as tremor, and undoubtedly tends *to manifest itself* when disease sets free inferior mechanisms. That tremor and clonus rates of contraction should not vary greatly from each other cannot be a pure coincidence, even though the anatomical cause of their respective releases be structurally different in each.

(2) This neuromuscular rhythm being *normally* held in check by inhibition and demonstrable only in certain diseased or abnormal states, the next point is whether for its appearance a particular condition of low motor centres, or of the muscles themselves, or both, is requisite.

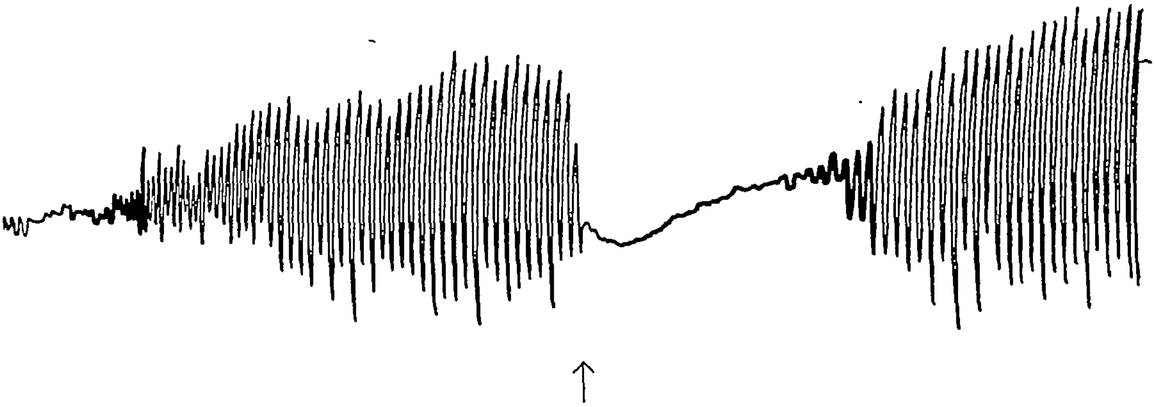
It is not found clinically in states of complete "paralysis." A paralysed and flaccid limb is never the seat of tremor. On the contrary, relative integrity of motor power is essential, and if as the result of an additional lesion a limb that has been exhibiting tremor is temporarily paralysed, one of the clinical concomitants is temporary disappearance of the involuntary movement. A fair number of cases are on record of the disappearance of tremor after an ictus of a hemiplegic kind, but it is important to note the absence of the tremor corresponds only to the time during which by diaschisis the *lower* motor neurones are *functionally* out of action; with some restitution of their proper activity, though the hemiplegia remains, the tremor will reappear. I have myself reported a case of this kind, in which syphilitic mesencephalitis was associated with the clinical symptom of tremor; a "stroke" led to cessation of the tremor, but only for a time which corresponded to the complete outfall of function throughout the corticospinal system; the movement reappeared after this acute stage, implicating *lower* motor neurones by diaschisis, was over. One hundred years ago James Parkinson observed a case of paralysis agitans where a sudden stroke paralysed the right side of the body; "*during the time of their* having remained in this state neither the arm nor the leg of the paralytic side was in the least affected with the tremulous agitation; but as their paralysed state was removed, the shaking returned." I am not aware of any recorded case where tremor has *permanently* disappeared after an ictus involving the pyramidal tract, and that alone.

(3) As a corollary, for the appearance of tremor *clinically the muscles implicated must be in a certain* state of tone. Atonic limbs do not exhibit the pheno-

menon; they may be hypotonic, however, and, as a fact, also, either ordinarily tonic, or hypertonic. We must therefore ask ourselves whether any relation or proportion can be shown to exist between the manifestations of tremor and of muscle tone.

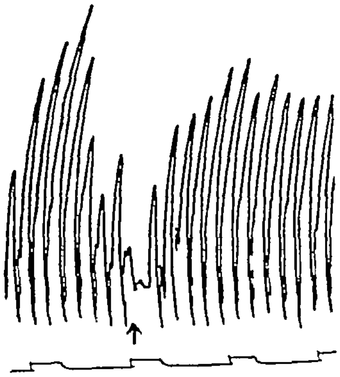
Of the common simultaneous occurrence of tremor and of muscle rigidity no question can arise; paralysis agitans is a frequent and convincing instance of the coexistence of tremor and rigidity; on the other hand, we have to explain the similar coexistence of tremor and hypotonia in not a few cerebellar cases. To take the former first: my studies lead to the conclusion that, clinically speaking, *those cases of Parkinsonism that are most rigid show least tremor, or tremor that is most limited in amplitude.* I have been able to convince myself of this interrelation by the frequent observation in postencephalitic cases, that with diminution of the rigidity by treatment the patient will likely pass through a stage in which the tremor becomes correspondingly more obvious. Several patients have made this observation independently and have commented on it. Conversely, tremor wide in excursion and sometimes almost violent is seen in cases where rigidity is at a minimum. Further, in any ordinary case of the syndrome those muscular groups which are more rigid (proximal segments) always exhibit less tremor than those that are less obviously rigid (peripheral segments), and the same remark is true in respect of lips, tongue, &c. Similar observations have been made for other striatal conditions such as progressive lenticular degeneration. Precisely those cases have exhibited the "wildest" tremors in which muscular rigidity has not been extreme.

FIG. 40.



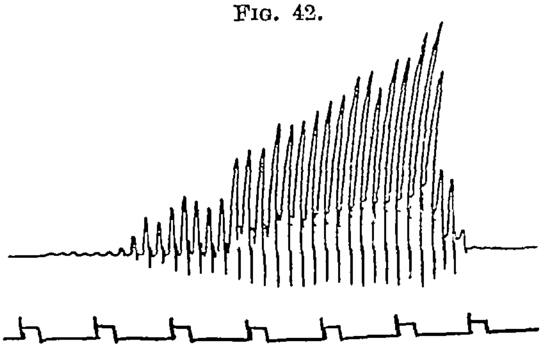
Parkinsonian tremor. Cessation after momentary cutaneous stimulus.

FIG. 41.



Parkinsonian tremor. Transient inhibitory effect of auditory stimulus.

FIG. 42.



Tremor (organic) produced when limb is unsupported and ceasing when it is supported.

Taking, next, cases where we have reason to suppose cerebello-mesencephalic lesions exist, rhythmical tremor resembling that of Parkinson's disease may be associated with a hypotonic state of the musculature. A number of such cases have been personally observed, and others have been made the subject of study by Holmes in his Croonian Lectures (1922). I am not able to cite any clinical instance of such tremor having been modified by subsequent alteration of the hypotonia through additional disease to a hypertonia, though were such a case to be studied and reported it would prove valuable.

According to a view expressed by Holmes, tremor is seen in hypotonic states only when "both the agonists and their opponents are contracted," as when a finger is to be held steadily say close to the nose without actually touching it. Diminution of postural tone allows the limb to oscillate, failure of fixation being followed by alternating contractions of certain groups of muscles and their antagonists. His explanation, however, only applies to cases where a hypotonic limb is being held "voluntarily" in such and such a position without support. Now we have seen similar oscillatory tremors to develop in limbs that are not hypotonic, as in some cases of paralysis agitans; and in the study of progressive lenticular degeneration, where also the musculature is hypertonic, analogous tremors have often been seen. Again, some cerebellar tremors of a regular, rhythmical sort are seen when no "active" innervation is taking place, as when a limb is hanging over a chair or over the edge of the bed (Holmes). That "voluntary" innervation is not a factor in the "spontaneous" tremors of resting limbs is of course obvious; nor is gravity a consideration, for the limb may be so placed as to counteract its action, yet the tremor continues.

Evidently, as tremors that are clinically indistinguishable can be seen to develop in limbs whose musculature is of differing degrees of tone—hypertonic or hypotonic—no explanation based solely on the state of tone can be applied universally. It is commonly understood, I think, that the rhythmical *alternating discharges of clonus are dependent on* enhanced muscle tone in the units concerned; an abrupt passive stretching effects a "stretching contraction," and this in turn will bring about a similar contraction in the antagonistic group, and so on almost indefinitely, so long as adequate tension is passively maintained. No explanation of this kind is applicable to the "spontaneous" tremors encountered by the clinician. Nor is any elucidation based on the presence or absence of "active" innervation sufficient to cover all the facts.

While, then, as regards diseased states characterised by both tremor and rigidity the degree of the latter is usually in inverse proportion to the extent of the former, we are not justified in claiming the tremor to be an expression of the muscular state *per se*. It is never found in the extremes of absolute atonia or hypertonia, but apart from these it may invade muscles whose tone varies within rather wide limits. Hughlings Jackson considered tremor and rigidity as it were opposite aspects of the same thing; he said that "tremor differs from rigidity, not fundamentally, but in degree," and explained the latter as being tremor "run together." He applied the idea in several other directions; for example, he spoke of a "diluted convulsion" as producing a condition "superficially like tremor." Again, he said that if by some magical process the movements made by a man in running were to occur simultaneously, "the result would be, not *any* movements properly so called, but an arrest of locomotion by a stiffening of the body into one attitude, a contention of all movements of locomotion." The applicability of this ingenious conception to the present question will be at once apparent to the reader. In a recent communication Walshe, however, declares the view that tremor and rigidity are interrelated to be "wholly untenable," although, curiously enough, he does not mention it as being due to Hughlings Jackson. That they are sometimes thus related is clear from their occurrence in inverse ratio, as illustrated above in Parkinsonian cases; but in other instances no such proportionate connexion is demonstrable.

(4) The fact that *tremor is not found clinically either in cortical or in spinal cases* I consider of prime significance. A lesion of the corticospinal system is not by itself sufficient to produce tremor, as everyone knows. As far as I am conversant with the literature, no case of tremor is on record pathologically in which the lesion has not involved grey matter situated somewhere in the vicinity of basal ganglia, mesencephalon, or cerebellum. In pointing out the occasional temporary cessation of established tremor by a corticospinal lesion, I do not admit the possible inference that, as Hunter states, "impulses through the cerebrospinal tracts are involved in the production of *spontaneous* tremor," if thereby the cortical arc is thought to be essential for its appearance. On the contrary, the evidence points in a quite other direction.

Brief consideration of the above-mentioned general localisation of the lesions associated with the appearance of tremor clinically at once suggests the existence there of some prespinal (*supraspinal*) centre or centres of control over a lower mechanism, whose activity expresses itself in the form of rhythmical alternating contractions of a given muscle group and its opposite, at a more or less set rate. Following the invariable rule, we say that since the lesions associated with tremor are destructive the supraspinal centre controls or inhibits, and when it is injured the lower mechanism is "let go." The alternations of tremor are, of course, an instance of reciprocal innervation, contractions of opposite muscles succeeding each other harmoniously in a never-ending series. We thus reach the conception that for tremor a particular condition of low motor centres is requisite, and that the state of tone of the muscles themselves is of less significance. None the less, it does not seem to be a mere coincidence that the levels of the lesions associated with tremor are also those from which alterations of muscle tone in large degree *arise*.

I must in the present instance leave on one side the data that might be adduced from experimental physiology to aid in specifying with greater exactitude the localisation of tremor-effecting lesions, as far as in the present state of knowledge we are able to do so. A brief excursus, however, may not be out of place.

Magnus has not seen tremor in any of his experimental "thalamus" animals, and comments on this absence of involuntary movement apropos of current striatal theories. Now in that animal *both* the corticospinal paths *and* the corpora striata are cut off from the parts further back (lower down)—an experimental state not in any way comparable to the lesions usually associated with the development of tremor in man. In fact, few if any experiments hitherto have satisfactorily reproduced the kind of case the clinician frequently encounters. That tremor, none *the less, is occasionally* producible by experimental methods is known from the work of Economo and Karplus, and of Lafora. In Graham Brown's stimulation experiments on the mesencephalon (decerebrate animal) tremor has been obtained in the red nucleus vicinity. I had the opportunity of seeing one of the hemi-decerebrate cats of Bazett and Penfield, and observed tremor in the advancing of the limbs on the affected side. The now rather older experiments of Ferrier and Turner on the superior cerebellar peduncle have lost none of their importance quâ the experimental production of tremor.

(5) Clinico-pathological evidence does not at present enable us to pronounce with certainty on the relative claims of the corpus striatum and the cerebellum (naming only two collections of grey matter) to constitute that tremor-controlling supraspinal centre which in view of the data here collected and the argument advanced we are justified in postulating. In former communications an attempt was made, possibly somewhat rigidly, to connect tremor with the lenticulo-rubro-spinal path. I have never doubted, and further pathological knowledge only serves to substantiate, the general conclusion formerly reached as to the localisation of the lesions underlying its appearance; their relative limits have already been specified. But a purely clinical study of the present kind cannot give us all *the material* requisite for final decisions.

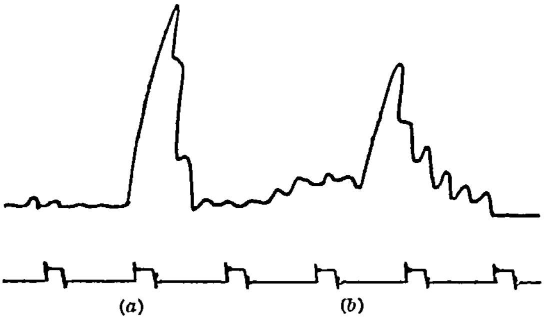
Viewed from another angle, however, as we have seen, tremor is to be considered the outcome of activity of a low-grade physiological mechanism released from a *non-volitional* prespinal centre, and it therefore becomes a matter of some interest to ascertain the relation of "volition" to, and its degree of control over, this *otherwise* decontrolled (say) mesencephalo-spinal mechanism.

THE PROBLEM OF "VOLUNTARY" CONTROL OVER AN "INVOLUNTARILY" DECONTROLLED MECHANISM.

The question, it will be realised, is a particular instance of an interesting physiological problem of which other examples readily suggest themselves. When a low-level centre is under the inhibitory influence of say two higher level centres of different kinds, one "volitional" and the other "non-volitional," what difference, if any, does *the* withdrawal of the latter control effect in the manifestations of the former control?

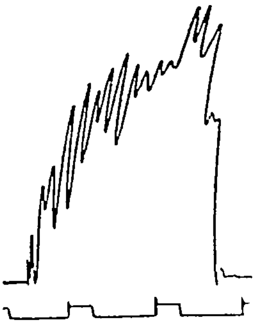
In the matter of tremor, "voluntary" influence is variable, fleeting, and not to be foretold, as it were. Thus during "voluntary" innervation of a tremor-exhibiting group of opposite muscles (say flexor-extensor) the current may suffice to blend the "involuntary" innervations into a tetanising contraction, of one or other muscle, as may be, with corresponding (relative) disappearance of the phenomenon for the time. Yet this is by no means constant, for in other instances "volition" augments and exaggerates existing tremor, or, alternatively, seems to bring out a latent state of this, existing as it were *in potentiâ*. Attention is directed to the accompanying figures. Fig. 43 is a direct tracing from the left quadriceps extensor cruris of a Parkinsonian patient with moderate rigidity and well-marked typical tremor. At (*a*) and at (*b*) "voluntary" contractions of the quadriceps were made, and during the ascent of the curve (shortening of the muscle) no tremor contraction is visible, though these begin again at once with decontraction, and continue. Now in the case of another equally characteristic example of the affection (Fig. 44) no such checking of the "involuntary" contraction is seen; on the contrary, it is traceable both in ascent and descent of the curve (contraction and relaxation of the extensor communis digitorum). Similar circumstances to those of Fig. 43 obtain in the record reproduced in Fig. 45, from another case (also left quadriceps). At (*a*) and (*b*) "voluntary" innervation serves to blend, or inhibit, "involuntary" innervations; at any rate, they are no longer to be recognised. If the reader will look back at Fig. 16, he will see how existing tremor is inhibited during the "voluntary" contraction of the extensors of the fingers and begins at once when the summit of contraction is reached, while during synchronous and equally "voluntary" (in the sense that the whole movement is one of "volition") decontraction of the extensors of the wrist the tremor maintains itself. The involuntary contractions blend with the "voluntary" contraction, but not with the "voluntary" relaxation that is going on simultaneously.

FIG. 43.



Parkinsonian tremor inhibited during "voluntary" contraction of affected muscles.

FIG. 44.



Parkinsonian tremor not inhibited during "voluntary" contraction of affected muscles.

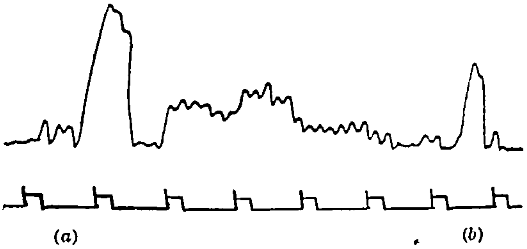
No other conclusion, I submit, can be drawn than that "voluntary" control over an "involuntarily" decontrolled mechanism is both imperfect and uncertain. It is unable to prevent the phenomena from making their appearances. The amount and maintenance of control are alike so variable that they preclude the possibility of similar fixed structural defects being responsible for the phenomena in every case. In a given instance it seems difficult to say what the interrelation of higher and lower mechanisms will turn out to be; tremor may be transiently inhibited by "voluntary" employment of muscles, or, on the contrary, it may accompany such action and refuse to be controlled—and this in different examples of the same disease. I believe considerations of this kind enable us to understand better the essential fluidity and variability of the clinical manifestations of tremor as described in preceding sections.

CONCLUSIONS CONCERNING TREMOR.

Summarising the results of the foregoing analysis of tremor, I may indicate some conclusions:—

Tremor cannot be due solely to a particular or specific manifestation of muscle tone, for it is met with in hypertonic, tonic, and hypotonic states; the fact of its being set in a rhythmical way at an average rate of fair constancy suggests it is the expression of an inherent property of neurocellular activity; its mechanism is of low physiological grade and is controlled by an ("involuntary") prespinal centre or centres at the general level of corpus striatum, cerebellum, and mesencephalon.

FIG. 45.



Parkinsonian tremor: "blending" of "involuntary" contractions during "voluntary" innervation.

"Voluntary" inhibition of this "involuntarily" decontrolled mechanism is essentially imperfect, inconstant, uncertain, and unsustained.

Tremor differs in fundamental characters from choreo-athetosis, above all in the fact that the law of reciprocal innervation is not abrogated in its case. Its underlying mechanism is quite distinct from that of the other group.

Tremor is an involuntary movement belonging to the old motor system (infracortical, subpallial), while choreo-athetosis is an involuntary movement of the new (cortical, pallial) motor system.

MOTOR FUNCTIONS OF THE CORPUS STRIATUM.

No pretence has been made in these studies to cover the whole field of striatal symptomatology, since they have been oriented from a somewhat different viewpoint. Much of the research, however, has an obvious bearing on theories of the function of that particular collection of grey matter, so that some discussion of our analyses of motor and muscle tone disorders is desirable in this connexion.

At the outset the serious obstacles in the way of reaching final conclusions were enumerated. Our uncertainty as to the diseases to be designated striatal (and solely striatal) on precise neuropathological grounds was specially emphasised, and hesitation in respect of these is still both natural and warrantable, notoriously as far as Huntington's and Sydenham's chorea is concerned. By comparison Parkinson's disease and progressive lenticular degeneration may be supposed to be less equivocally striatal.

Clinical analysis of various types of movement, and of the precise symptomatology of the two last-named affections, gives the following results. The assertions that they are characterised by "loss" of associated movements, reaction and defence movements, movements of coöperation, have been shown to be inaccurate. The view assigning a localisation of "automatic" movements to the corpus striatum is equally devoid of *foundation. The law of* reciprocal innervation holds for movement in striatal cases of the above group. Catatonic phenomena have no place in the syndrome. Still other points indicative of misinterpretation of alleged striatal motor symptoms have been recapitulated at various stages in the course of the lectures.

It may be of interest, perhaps, to refer now to one or two fallacies that have been noted in regard to movements and their meaning and localisation.

(1) One of the more serious is that which draws a hard-and-fast line between "voluntary" and "automatic" movements. No such line as a fact exists. "Automatic" movements, it will be granted, have been originally acquired, and, consequently, have at one stage contained a definite "voluntary" element. The child learns to walk. The supposition that this class of movement is at some unknown time transferred physiologically from a cortical locus to a striatal locus is devoid of any sort of probability and unsupported by any sort of evidence. However "automatic" walking and arm-swinging become, *they remain faintly "voluntary." As I have previously urged*, the gradation is not from "voluntary" to "automatic," but from "least automatic" to "most automatic," or from most to least "voluntary." After permanent lesions of the pyramidal system many acquired "automatic" *movements are* permanently lost. Were the intact corpus striatum the seat of these, they should exteriorise themselves via the lower motor neurone, which is not impaired *per se* in hemiplegias.

The other side of this question, so to speak, is that I have shown many cortical movements do not contain the element of "volition," but otherwise are similar in every respect to "voluntary" acts. Complex and elaborate tics are an instance in point, as are the motor phenomena of chorea. Before epidemic encephalitis became a clinical commonplace, tics were on their intrinsic clinical and ætiological characters with *entire* correctness attributed to disorder of cortical function. Some writers now appear to envisage all motor symptoms through an encephalitic *fog, arguing for* a striatal localisation of peculiarly elaborate movement-complexes because, forsooth, the virus of encephalitis has a striatal site in Parkinsonian cases! Such a claim can be made only at the expense of utterly ignoring the intrinsic clinical features of the movements in question. The corollary is logical, that if postencephalitic tics and *bradykinetic* syndromes are a sequel to striatal destruction, they must require for their activity non-striatal mechanisms. No hint is given as to where these are situated; but, assuming *from the complexity of the* movements *that* they are of cortical type, the inference would be that the corpus striatum is higher in the physiological hierarchy than the cortex itself, and that it controls *the latter*, so that when it is disordered cortical activity is "let go." This is *contrary to all our* conceptions of cerebral physiology.

The argument in preceding pages has pointed in the direction of a transcortical failure of *inhibition in the case of high-type* movements such as those of chorea, and the same argument is applicable to tics and similar *involved and intricate* movement-combinations. Continuing this line of discussion, I have already alluded to the *fact that movements* obtained experimentally from the motor cortex proper are not identical in all respects with the *movements* of "volition." *Physiologically*, they are of a lower class. The clinical phenomena of Jacksonian epilepsy bear out *this view. I have seen* individual muscles in pathological contraction from disease of the motor cortex, muscles that cannot be innervated "volitionally" in *the same way*. For example, I have seen in a Jacksonian case twitching of the right forefinger and thumb (a usual symptom, and of course not inherently different from "*voluntary*" movement of the same part) with *simultaneous twitching of the right levator menti alone*—this latter illustrates the present point. Again, I have observed distinct and prolonged *unilateral* twitching of the rectus abdominis in a Jacksonian case. *I do not require to adduce more* data to show that morbid processes can effect individual muscular contractions from the motor cortex, and that movements physiologically coupled can be dissociated similarly by *cortical* motor disorder. Further, interference with and derangement of the harmony of action of component muscular units in movement may occur at the cortical level and have been fully illustrated.

The Betz-cell anatomical area, then, is no more than a midway station between what I should prefer to call the true motor area of "volitional" action—viz., some much larger cortical region, possibly the frontal, and the lower centres of the pons, medulla, and cord. Clinical analysis of choreo-athetotic symptoms has shown us every variety of physiological dissociation and dysharmony in contraction of opposite groups, and converging lines of evidence have suggested such disintegration may take place at the cortical level.

(2) A second fallacy is common and insidious, *consisting in the tendency to attribute to lesions at* one physiological level symptoms which may in fact arise at more than one. If integration of neural levels is essential to harmonious motor activity the possibility of disintegration through a series of levels must be steadily borne in mind. I have illustrated the point in the case of such symptoms as micrographia, akinesis, poverty of movement, and catatonia. Since such symptoms may be caused by dysfunction at more than one neural level, no exclusive apportioning of the particular symptom to an anatomical lesion on one only can be justified. For several Parkinsonian symptoms I have shown above the probability of the intervention *of a "conscious"* factor. Not a little of the seeming akinesia follows from the patient's unwillingness to initiate movements that he knows will entail an effort. "Awareness" has been proved to play a part in the meagreness of the reaction- and defence-movements of some Parkinsonians. In these latter types the implication of cortical arcs is highly probable, since the selected excitations reach the sensorium If they are to be *set down to striatal activities alone*, and their absence to striatal disease, we are faced with the assumption that striatal function is a conscious function, for which it appears to me no evidence whatever can be adduced.

(3) A third source of confusion in a difficult subject arises from the variability of the symptoms called striatal at different times and under different circumstances, of which numerous clinical instances *have been provided in these lectures*. To identify symptoms with anatomical lesions thus becomes an unusually delicate and precarious business. As long ago as 1912 stress was laid, in discussing the pathogenesis of tremor and other involuntary movements, on the possibility of dynamic *modifications of function* without recognisable anatomical lesions. "Loss" of movement is a very elastic term. We have had more than one illustration above of the habit of arguing that "loss" of a movement justifies the supposition that the normal ganglion is the centre for precisely those movements which are considered to be "lost." What, then, is the anatomical state of the organ when movements are present at one time and absent at another?

I should like, in conclusion, to approach the problems that have occupied our attention from still another point of view.

(1) It is a priori highly improbable, and contrary to the dictates of common sense, that motor phenomena so conspicuously diverse and of such varying complexity as myoclonus, tremor, athetosis, chorea, tics, bradykinesis, torsion-spasm, micrographia, and

palilalia, should one and all be set down to disorder of striatal function. When we remember the histological simplicity and comparative structural homogeneity of the corpus striatum, in contrast with the greater dimensions, much more intricate cyto-architectonic complexity, and far wider connexions of the rolandic motor cortex, the idea of attributing all these disturbances to striatal disease, and of crowding corresponding "centres" into that ganglion, becomes nothing short of ludicrous. And we have seen that this Betz-cell area itself is physiologically inferior to a still larger motor region, which much cogent evidence suggests may be constituted by the frontal lobes. Too little attention has been devoted by striatal enthusiasts to the phenomena of apraxia or dyspraxia, to the movements of so-called coördinated epilepsy, to the syndrome of tonic innervation, to epilepsia partialis continua, and to other cortical and trans-cortical disturbances exteriorising themselves in motor symptoms, some of which at any rate are of a kind persistently attributed to affections of the corpus striatum.

In this connexion an anatomical look-round will help to correct distorted perspectives. The corpus striatum is a much simpler morphological structure than the cerebellum, simpler even than the optic thalamus, in which nuclear organisation has reached a stage unknown to its neighbouring ganglion. But no neurologist has hitherto assigned to disease of the cerebellum a heterogeneous miscellany of motor disorders of the kinds with which the corpus striatum is sorely overloaded. Some would reduce cerebellar function, perhaps with reason, to two or three elements, or even unify it completely. How, then, a relatively simple cell-fibre structure like the corpus striatum can mediate functions ranging from language (cf. palilalia) to innervation of muscle fibre (cf. myoclonus) is on the face of it inexplicable.

(2) Consideration of the intrinsic clinical features of some of the motor disorders put down to striatal dysfunction proves that under no circumstances can they be conceived of as resulting from defect or destruction of identical or similar mechanisms, for while some are physiologically of a high order others are of a low. Some can be understood only on the view that they contain elements belonging to the cortical series.

(3) My clinical studies have impressed me again with the belief, for which much support has been furnished here, that striatal symptomatology and striatal function must be comparatively simple; and they have forced me to the conclusion that the unwieldy and top-heavy symptom-complex which has gradually come to be erected on the ganglion must be rigorously stripped of non-essentials. In the preceding pages have been indicated the symptoms which must thus be discarded.

I have found no reason to modify in any important respect the syndrome originally enunciated, to the effect that the main features of disease of the corpus striatum consist of disorder of muscle tone regulation and the appearance of involuntary movements. These being "positive" symptoms, their causation is the freeing of non-striatal mechanisms from striatal control. The corpus striatum is a body one of whose functions is tone-control, for in its diseased state tone over-develops in the skeletal musculature generally; another of its functions is that of inhibiting the physiologically lower function of neuromuscular rhythm, for when it degenerates tremor is prone to make its appearance. I do not think, however, that in either respect its function is unique and exclusive of that of other centres of approximately the same order.

The "negative" symptoms of striatal disease would be constituted by actual loss or outfall of—what? Clinical analysis will not allow me to point to a single class of movement which is as a fact persistently and completely lost when the ganglion is out of action. We have had many instances of the ways in which different classes of movement are hampered as a sequel to striatal disease, but none of an absolute paralysis of any class. Fine movements of small muscles are seriously impaired—if the expression is preferred, "lost"; but then they are "lost" also in pyramidal disease. In this, as in certain other respects, gaps in our knowledge of striatal function remain to be filled.

Throughout these lectures no attempt has been made to assign separate functions to the composite parts of the whole ganglion, for in this region in particular speculation has completely outrun both clinical and pathological facts. On a previous occasion I have assembled the arguments against this special variety of striatal conjecture.

These studies were undertaken in the hope of making a further constructive addition to our knowledge of the basal ganglia, and if in some ways my results should seem rather of a negative or destructive kind I can only say that revision was sorely needed.

A STUDY OF THE FAMILY HISTORIES OF 300 PATIENTS SUFFERING FROM CHRONIC UPPER ABDOMINAL LESIONS.

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The patients under consideration were all under the care of my two chiefs, Mr. James Sherren and Mr. E. C. Lindsay, at whose suggestion this investigation was carried out, and to whom I am indebted for permission to use the figures obtained.

The lesions present were of four types: Chronic gastric ulcer (simple), 95; chronic duodenal ulcer, 129; carcinoma of the stomach, 30; cholecystitis, 57; total 311.

In every case the diagnosis was definitely confirmed at operation, and, where necessary, by further pathological investigation. Some cases showed more than one lesion—hence the total number as shown in the table exceeds the number of patients.

Some patients with one or more of these upper abdominal conditions have given very interesting family histories, which show a remarkable tendency to the occurrence of these lesions in members of the same family. The following are striking examples:—

Case 1.—A glass packer, aged 50, was admitted into the London Hospital and transferred on June 20th, 1925, to Mr. J. Sherren. At operation three days later the diagnosis of duodenal ulcer was confirmed. The familial tendency is shown below.

Case 2.—A medical student, aged 24, admitted under Mr. Sherren, Dec. 12th, 1924, with a history of recurrent attacks of biliary colic. At operation the gall-bladder contained no stones, but showed evidence of chronic cholecystitis and was removed; the diagnosis was confirmed on pathological examination. The family history given is tabulated below.

Further examples will be quoted later. Of those investigated the most striking histories were obtained from those patients suffering from duodenal and gall-bladder lesions. The occurrence of such family groups as these leaves one with the undoubted opinion that there is a distinct family tendency to these diseases.

Familial Tendency.

Little has been written on the subject, but in 1921 there appeared an interesting article by Hurst,[1] who drew attention to the undoubted existence of such a familial tendency, and expressed surprise that the fact had been rarely recognised in the past. This same point was also emphasised by Sherren[2] in 1924.

An attempt was made to estimate this tendency by means of records of a long series of cases. 300 consecutive cases operated upon have been investigated, each patient being asked as to the family history, and any history of indigestion has been counted as a positive case. The term "indigestion" is, however, one which is very loosely used, and as in the majority of instances no exact diagnosis could be obtained—a control series of 100 cases, none of which patients suffered from indigestion or abdominal disease, was obtained. The results are shown in Table I.

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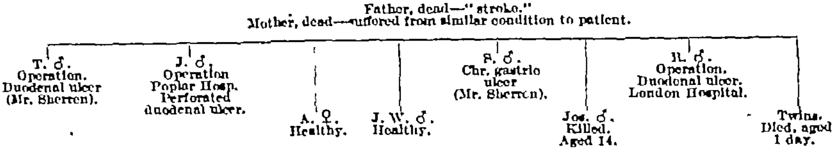
[1] Hurst, A. F.: Guy's Hospital Reports, 1921, lxxi., 450.

[2] Sherren, J.: The Lancet, 1924, i., 477.

CASE 1.—*Family History.*



CASE 2.—*Family History.*

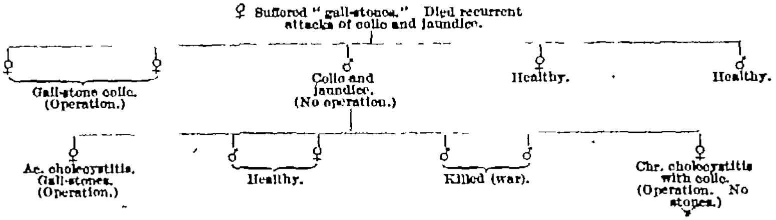


TABLE I.

—	No. of cases.	No. with indigestion.	Per cent.
Upper abdominal lesion ..	300	137	46
No history of "indigestion"	100	16	16

It is of interest to compare the frequency of these family histories in the various lesions, and this is shown in Table II.

TABLE II.

—	Total cases.	No. with indigestion.	Per cent.
Duodenal ulcer ..	130	56	43
Gastric ulcer	95	47	49
Gall bladder	57	24	42
Carcinoma	30	10	33

The points to be noted about Table II. are:—

1. The manner in which the percentage agrees in the first three groups.

2. The lower percentage shown in the carcinomatous cases. Carcinoma of the stomach may arise clinically in one of two ways—(1) primary, (2) secondary to a chronic ulcer. In carcinoma the familial tendency is not nearly as strongly marked; at the same time it should be noted that the percentage is higher than in the 100 "no indigestion" cases, and this is probably accounted for by the fact that in some of the cases the carcinoma arose on an old ulcer.

3. The gastric ulcer cases show the highest figure, although it has already been pointed out that the more striking histories are obtained in the duodenal and cholecystitis patients. This may possibly be accounted for in the following way—the duodenal ulcer tends to run in healthy families, whereas the gastric occurs as a rule in a family with a lower standard of general health, and so there is more probability of other extraneous causes of indigestion being present—e.g., ptosis.

The above figures confirm the fact already stated that there is a distinct family tendency to these diseases, though probably these figures, which are of necessity based on that extraordinarily vague term "indigestion," are of less importance than family histories, such as those recorded above in which the lesions were proved at operation.

Hurst in his article says:—

> "It is an interesting fact that I have never myself seen one member of a family in whom the presence of a gastric ulcer was proved, and another in whom a duodenal ulcer was certainly present. This suggests that the types of stomach which predispose to the development of gastric and of duodenal ulcers respectively are congenital, and either one or the other may exist in several members of the family."

Although Hurst states that he has never proved the presence of a gastric and duodenal ulcer in two members of the same family, such cases do undoubtedly exist; three such cases I quote below.

In Case 1 mentioned above it will be seen that three brothers were proved at operation to have duodenal ulcers, whereas a fourth one, who was also operated upon, had an ulcer situated on the lesser curve of the stomach. Two further cases are as follows:—

CASE 3.—On Nov 15th, 1923, a male, aged 30, was admitted and later operated upon for chronic duodenal ulcer. His mother had previously been operated upon for a carcinoma, which had supervened upon a chronic simple ulcer of the stomach.

CASE 4.—In February, 1925, a man of 40 was operated upon for acute cholecystitis; his father had previously been admitted and operated upon for a perforated duodenal ulcer.

The suggestion that the types of stomach predisposing to gastric and duodenal ulcers respectively are familial is probably largely true. There is, however, also probably a family tendency to certain infections which predispose to the formation of peptic ulcers; such are dental caries, as is shown below, and appendicitis, as mentioned by Sherren.[3] Now as probably in a family there are often the predisposing factors to both infection and the localisation of the ulcer, it is from members of these families that we obtain the most striking histories in which many suffer from one particular lesion—e.g., duodenal ulcer. If, however, the infection is the only common predisposing factor, then in one patient the lesion may be a duodenal ulcer, and in another member of the same family a gastric ulcer or gall-bladder infection.

The latter is illustrated in the first case mentioned, for in a family of four brothers, two, who were X rayed, had stomachs of different types—one high and hypertonic and the other low and sagging. In all the four brothers, however, there was a very definite history of marked dental caries preceding the onset of symptoms.

THE VALUE OF LIPIODOL IN THE DIAGNOSIS OF BRONCHIECTASIS.

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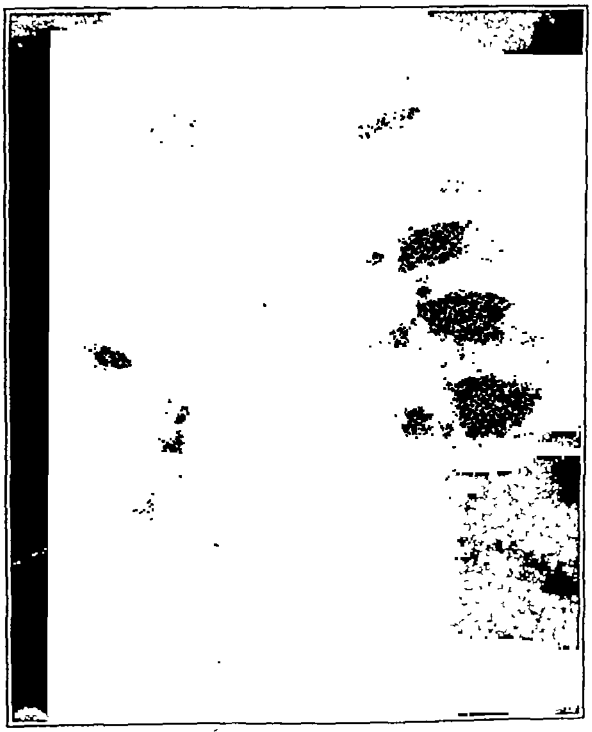
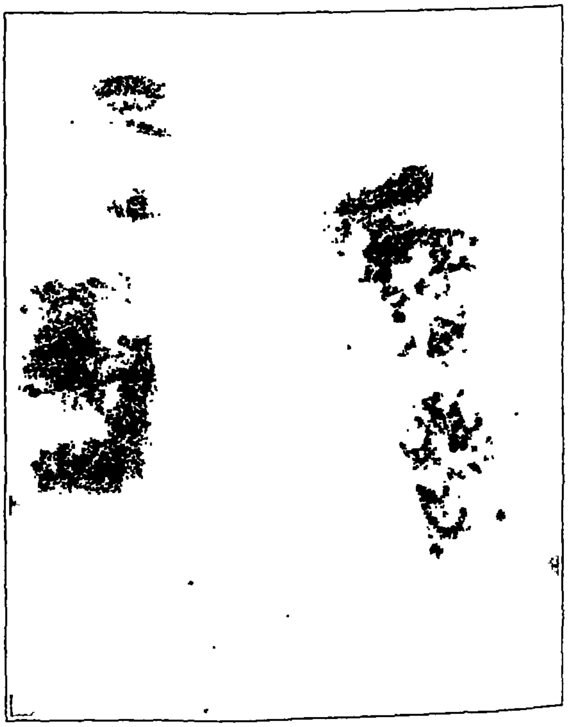
IN cases of unilateral bronchiectasis good results may be obtained by artificial pneumothorax or thoracoplasty. Usually, however, the disease is bilateral, and it is owing to this that the treatment so frequently fails. If an artificial pneumothorax is induced the quantity of sputum is reduced, but if there is *disease in the other lung* this reduction may be insufficient to afford the patient any real relief. The refills can then be stopped and the lung allowed to re-expand. If, however, thoracoplasty has been performed it is another matter.

FIG. 1.



Radiogram taken before injection of lipiodol. Left lung apparently sufficiently healthy to justify thoracoplasty.

FIG. 2.



Radiogram taken after injection of 20 c.cm. of lipiodol into the trachea. Condition of left lung contra-indicates thoracoplasty.

In one of our cases, a man with bronchiectasis had a large quantity of very foul sputum, was toxic, and running a high temperature. After an artificial pneumothorax had been induced he rapidly improved. He became afebrile, and what little sputum was left was no longer offensive. The collapse, however, was not complete owing to adhesions and areas of adherent pleura and, as so often happens in such cases, the lung was gradually drawn out and the pneumothorax cavity obliterated by the spread of these adherent patches. The symptoms returned and he became ill once more. As he had shown such great improvement when the lung was collapsed it appeared that there could be very little disease in the other lung, and he seemed to be an ideal case for thoracoplasty. This was performed and there was an immediate improvement, but unfortunately he contracted pneumonia and died.

In many cases, however, there is so much adhesion of the pleural surfaces that artificial pneumothorax cannot be induced at all, and it then has to be decided whether the better lung is sufficiently healthy to justify so serious an operation.

The following case illustrates the value of lipiodol *in helping to form an opinion as to the state of the* better lung.

The patient, a man aged 41, is a motor mechanic who enjoyed good health until February, 1922. He then had an illness which was diagnosed as influenza and pneumonia. Since that time he has had a cough and sputum, and every two or three months he has a febrile attack during which he brings up a quantity of offensive sputum. In October, 1924, he had an attack of dry pleurisy on the right side, and he went into a sanatorium. There were signs of fibrosis in the upper zone of the right lung, but although the sputum was repeatedly examined, no tubercle bacilli were found. At present his general condition is good between the febrile attacks and does not suggest any active tuberculous disease. He has great clubbing of the fingers. The right side of the chest is flat below the clavicle, and the percussion note is impaired all over the right side. Crepitations are heard at the right base and axilla, and there are a few below the right clavicle. On the left side expiration is slightly prolonged, the percussion note is resonant, and a few crepitations are sometimes, but not always, heard at the base. During the febrile attacks there is an increase of signs at the right base and axilla, but not on the left side. X rays (Fig. 1) show extensive fibrosis of the greater part of the right lung with interlobar pleurisy. The left lung shows only a general emphysema with some peribronchial thickening. Both from the clinical and X ray point of view it would appear that there is not sufficient disease in the left lung to contraindicate a right-sided thoracoplasty, if, as is probable, artificial pneumothorax cannot be induced. After injecting 20 c.cm. of lipiodol into the trachea with the patient lying on the left side, X ray (Fig. 2) showed very considerable disease at the base of the left lung, and on this account one could not advise a right-sided thoracoplasty.

We have seen more than one case where nothing was found in the better lung which seemed to contraindicate thoracoplasty, yet (after attempts to induce artificial pneumothorax had failed) the patient received no benefit from the operation, owing, no doubt, to disease in the other lung. The mortality from the operation for thoracoplasty is by no means negligible. Apart from this, it is a drastic method of treatment which cannot be lightly recommended, and lipiodol is undoubtedly of value in coming to a decision whether a case is suitable for the operation.

Reviews and Notices of Books.

THE CRIPPLED HAND AND ARM.

By CARL BECK, M.D. London: J. B. Lippincott Company. 1925. With 302 illustrations. Pp. xi.+243. 30s.

THE author of this book, a well-known Chicago specialist, has had ample opportunities of dealing with the various types of deformities of the hand and arm as the result of abnormal development, injuries and disease, and that he has made good use of those opportunities. As he states in his introduction, this work involves a great deal of plastic surgery, and, indeed, this book might well have been called "the plastic surgery of the upper extremity."

Part I. includes chapters on the normal anatomy and physiology of the part, and the rest of it is devoted to the consideration of crippled hands. In Part II. disturbances of the wrist, forearm, elbow, and upper arm crippling the hand are dealt with, and there are a few pages on artificial arms and a short chapter on technique. For the cure of webbed fingers, after describing some of the classical methods, including the impracticable one of Didot, Dr. Beck advocates the formation of a tunnel at the bottom of the interdigital cleft by means of a modification of Rochet's procedure for urethroplasty. For congenital defect of phalanges he recommends what is known in Europe as phalangisation of the metacarpals, but he seems to be unaware that he is not himself the first to use such a method. Priority, however, is of little moment compared with the excellent result obtained in the case here described. Hands crippled in all sorts of ways and to varying extent by mutilating injuries and burns have offered to the author a wide field of work in which he seems to have displayed high judgment and great patience. The truly heroic treatment recommended for Dupuytren's contracture of the palmar fascia should be noted. Dr. Beck considers that the only satisfactory method of treating an advanced case is by excising the whole of the skin and fascia of the palm and substituting for it an Italian graft from the chest or abdomen. He records a successful case Part II. is, perhaps, of less interest. It will be noticed that, as he himself confesses, Dr. Beck is very fond of the method of Tagliacozzi, and relies largely upon it to provide skin to fill the numerous gaps made by his straightening operations, taking his grafts generally from the chest and less often from the abdomen. We are surprised to find no reference to Volkmann's contracture, which might surely have furnished the author with opportunities to display his skill and resourcefulness.

As a record of actual experience this book will be of the greatest use to surgeons who are engaged in treating such lesions as it describes.

PSYCHOTHERAPY.

Principles of Psychotherapy. By Dr. PIERRE JANET, Member of the Institute, Professor of the Collège de France. Translated by H. M. and E. R. GUTHRIE. London: George Allen and Unwin. 1925. Pp. 322. 10s. 6d.

As a descriptive psychopathologist Janet is unrivalled, though even in his own country the value of his clinical work is not fully recognised, and whilst we are aware of the modern "plague of nerves" we do not profit by his teachings to investigate properly the symptoms of those smitten by the plague. His theory of the dissociation of consciousness provided, both for the manifestations of hysteria and for psychological automatisms, a unifying conception which held the field till the more dynamic theory of the unconscious seemed better to satisfy our craving for explanations in terms of cause and effect. But, though Janet shows the theory of the unconscious to be in the direct line of descent from the observations of Charcot and himself at the Salpêtrière, yet he summarily rejects this later development and places psycho-analysis in the same category as animal magnetism. A third of the book is given to a history of psychotherapies, from the religious treatments like those that made famous the temple of the Asclepieion, through the practices of the animal magnetists to those of the hypnotists, to the methods of Christian Science and the moral suasion of Dubois. Running through all these Janet sees a constant trickle of therapeutic success, but superficial and inexact interpretations have stopped the evolution of processes of treatment that in themselves possessed usefulness and power. Janet's own interpretation of psychopathological disabilities depends upon a postulate of "psychic tension" and the belief that by proper stimulation this tension can be raised or that by economy the "psychic income" can be made sufficient for the needs of life. He notes the importance of "influence" in treatment, and from the practical aspect his methods consist in a thorough understanding of the patient with deliberate guidance and encouragement when the influence is established. As was to be expected, the book is full of shrewd observation, but the reader who comes to it with the hope of learning easy methods of psychotherapy will be discouraged. Janet is cautious as well as experienced, as he shows in writing: "It is not enough for such patients to give them advice or to correct a fault. Patients who have disorders of intelligence, belief, or will, must be made to understand such advice, made to accept it, made to carry it out. This is something very different, and the treatment remains for the most part a problem of psychology."

The book is translated into English which is on the whole easy although there is an occasional obscurity of meaning.

Collected Papers. Vol. III. By SIGM. FREUD, M.D., LL.D. Case Histories. Authorised translation by ALIX and JAMES STRACHEY. London: The Hogarth Press and The Institute of Psycho-Analysis. 1925. Pp. 605. 30s.

THERE are difficulties peculiar to the writing of histories of cases treated by psycho-analysis. The intimacies of the patient's life are so closely concerned that everything leading to identification must be withheld or disguised; no close record can be kept of the analytical findings; links in important chains are so scattered that to join them involves a re-setting of the material; and, finally, the full report of a single analysis would be too voluminous for publication. Pleading these and other difficulties, Freud makes here no attempt to produce conviction in the minds of sceptics, but writes for the information of investigators already convinced by their own experience. The first of the five cases described is one of typical hysteria showing dyspnœa, nervous cough, aphonia, and migraine, with depression and hysterical unsociability, and these commonplace symptoms were bound up with an involved history of emotional events the description of which, with a running commentary, occupies over a hundred pages. The much criticised *Analysis of a Phobia in a five-year-old Boy* follows, with a postscript telling that both phobia and analysis were forgotten by the subject at the age of 19, when the account of his own case came to him as something novel and unknown. To the clinical psychologist the obsessional neuroses are, perhaps, the most interesting of the psycho-neuroses, though their presence is often unrecognised, since the obsessional patient, unlike the hysteric, tends to hide his symptoms from the world in general and his medical adviser in particular. Analyses of two cases are described and, even in their abridged form, they well indicate the complexities of the fantastic logic of the unconscious. More inferential is the application of psycho-analytical principles to elucidate the autobiography of a paranoiac.

The volumes of this series are in historical and logical sequence and should be read in their order of publication. The present one marks a stage at which the general reader can still cope with the difficulties of the subject, though it naturally appeals more to those engaged in treatment.

Problems of Personality. Studies presented to Dr. MORTON PRINCE. By Various Authors. London: The International Library of Psychology, Philosophy, and Scientific Method; Kegan Paul. New York: Harcourt, Brace and Co. 1925. Pp. 434. 18*s*.

Dr. Morton Prince is an American pioneer of psychopathology, best known by his studies of dissociated personality and by his views on the psychogenesis of epilepsy, and a bibliography at the end of this book enables one to trace the development of his interest in general medicine through neurology to the field of psychology and psychopathology. The contributors to this *Festschrift* write with authority in their own spheres, and within the one book the editors have brought together widely divergent views that in this case indicate the growing point of a vigorous branch of knowledge. In the list of writers of the 24 papers the names of Janet, Ernest Jones, Jung, and Putnam mark its international character, and we are reminded that while MacFie Campbell and William McDougall have left this country to take up academic posts at Harvard, the United States has given in exchange John T. MacCurdy to Cambridge University.

Problems of personality involve so many aspects of human behaviour that there is of necessity an absence of continuity of subject. Papers on witchcraft and on medico-legal experiences, on the signatures of Shakespeare, and on the association of psycho-neuroses with mental deficiency, find place under the title of "Abnormal Psychology and Psychopathology," and under the heading of "Unconscious Dynamics and Human Behaviour," Dr. Ely Jelliffe makes an important contribution to the study of unconscious processes in their relation to clinical conditions. Papers by Dr. Knight Dunlap and Dr. H. H. Goddard attack the concept of the unconscious, and Dr. McDougall vigorously criticises Freud's views on social psychology, whilst the psycho-analytical side is represented by MacCurdy and Ernest Jones. It is gratifying to find the psycho-analytical controversy handled upon a scientific plane.

The general reader may find it difficult to estimate the relative values of the views expressed in this book; the psychologically trained reader who feels more confident may bear in mind the warning of MacFie Campbell on page 74: "We are too much accustomed to think that there is only one correct way of dealing with experience, and that the angle, from which we personally come to experience, is the only one from which it can be approached." To both the general and the specialist reader the book can be recommended; it shows that we have travelled far since psychology was described as "the definition of the obvious in terms of the unintelligible."

OPHTHALMOLOGY.

Iris and Ciliary Body. Sémiologie Oculaire. Le Diaphragme Irido-ciliare. By Prof. FELIX TERRIEN, Ophthalmic Surgeon, Beaujon Hospital, Paris. Paris: Masson et Cie. 1924. With 126 illustrations. Pp. 240. Fr.25.

WE have here the second part of a work planned on a generous scale to include not only the symptomatology, but the anatomy, physiology, pathology, and to a partial extent the treatment of the entire eye, details of operative treatment alone being excluded. The first part ("La Calotte Cornéo-scleral") has already been reviewed in these columns,[1] and the remarks then made on the difficulties of considering separately the diseases of the various structures which make up the eye are equally applicable here. Nevertheless, an exhaustive study of the iris and ciliary body, such as this book gives, will be a valuable addition to any ophthalmological library.

In many places the book reflects views current in France and not in this country. Prof. Terrien retains the term rheumatic iritis, which in England has almost gone out of fashion, but he adds that perhaps many cases of rheumatic iritis should be attributed to a latent tuberculosis. In this country we are accustomed to think more of a latent gonorrhœa or of septic infection from the teeth. Tuberculosis of the uveal tract is well illustrated and on the subject of treatment we note that the author almost wholly rejects the use of tuberculin. When we employ tuberculin, he says, in doses so small as certainly to avoid any focal reaction, we deprive that substance of any therapeutic value. On the subject of sympathetic ophthalmia we miss any reference to the characteristic cells infiltrating the choroid described by Fuchs. The author considers favourably the idea that it is a local manifestation of anaphylaxis. In the section on glaucoma, which is included in this volume, the English reader will remark the small place allotted to perimetry as a method of diagnosis, and that in treatment by sclerectomy prominence is given to the method of Lagrange, not to that of Elliot. There are some interesting sections showing retinal atrophy caused by prolonged high tension.

The book is beautifully illustrated, more notable figures being a section of the ora serrata, showing the transition from the functional to the ciliary retina, a syphilitic granuloma at the root of the iris and sections showing the results of an experimental injection of gonococci into the anterior chamber, and demonstrating the beneficial effects of an injection of anti-gonococcal serum.

Medical Ophthalmology. Second edition. By R. FOSTER MOORE, O.B.E., F.R.C.S., Assistant Ophthalmic Surgeon, St. Bartholomew's Hospital; Surgeon, Moorfields Eye Hospital. London: J. and A. Churchill. 1925. With 8 plates and 93 illustrations. Pp. 344. 18*s*.

Mr. Foster Moore's book is considerably expanded since the publication of the first edition in 1922. The whole has been thoroughly revised and there are several new sections. Defect of the visual fields due to lesions of the temporal lobe is a comparatively new subject. There is a diagram showing how the ventral part of the optic radiations plunges first forwards from the external geniculate body into the temporal lobe and then backwards to the calcarine cortex. Intracranial aneurysms causing subarachnoid hæmorrhage are dealt with, and the various ocular symptoms thereby caused, including papillo-œdema and retinal hæmorrhages. Another addition is a section on juvenile and adolescent forms of cerebro-macular degeneration. One of the most interesting additions is a section on the Argyll Robertson pupil from causes other than syphilis. It is based on an original report of the author's on seven cases with Argyll Robertson pupils in whom most careful investigation failed to reveal any evidence of syphilis, or nervous or other disease of any kind. In certain cases it appears to be congenital and a quite isolated phenomenon. According to Kinnier Wilson, it is an occasional occurrence in diffuse toxi-infective states other than neuro-syphilis.

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[1] THE LANCET, 1923, ii., 334.

As in the first edition, the most interesting and original parts of this work appear to us to be those concerned with retinal arterio-sclerosis and renal and other forms of retinitis. These are especially well illustrated. We know of no other book where the relations between the ophthalmoscopic appearances and microscopic findings in these diseases can be so well studied.

LECTURES ON DISEASES OF CHILDREN.

Fifth edition. By ROBERT HUTCHISON, M.D., F.R.C.P., Physician, London Hospital, and Hospital for Sick Children, Great Ormond-street. London: Edward Arnold. 1925. Pp. 450. 21s.

THE fifth edition of Dr. Hutchison's lectures contains new material which adds considerably to the ground which they cover, while the individuality of the book has been preserved. Minor alterations have been made throughout the text, but the principal additions consist of five new lectures, dealing with acute rheumatic carditis, affections of the liver, the solitary child, abdominal pain, and disorders of growth and development. A new chapter is devoted to convulsions, which no longer appear among the functional disorders. New elements are introduced in the review of the ætiology of rickets. Dr. Hutchison has modified his view of the transmission of syphilis which he now regards as maternal and usually placental. In the treatment of tuberculous peritonitis he favours early surgical measures for all ascitic cases. The new lectures are characterised by the same lucid and homely style as the older ones. The lecture on the problem of the solitary child should be of particular value in directing attention to an aspect of children's disorders which is too commonly neglected.

The popularity of this book among students and practitioners will certainly be maintained by the new edition.

ORGANOTHERAPY.

Opothérapie Clinique; Organothérapie; Formulaire. By MARCEL LAEMMER. Paris: Masson et Cie. 1925. Pp. 151. Fr.10.

Opothérapie Endocrinienne. By GUY LAROCHE. Paris: Masson et Cie. 1925. Pp. 250. Fr.12.

THESE two books, so similar in title and appearance, are very different in content. Dr. Laemmer's book is that of an enthusiast, who is devoted, perhaps on account of some early successes, to treatment by glands and internal secretions, and who applies such treatment for all sorts of diseases. This enthusiasm carries himself and probably many of his patients to believe that material benefit is derived. To any doctor who thinks that bone-marrow, placenta, lung, breast tissue, given by mouth will improve his patient, this book will tell the dosage and method of giving. We cannot, however, avoid a suspicion that the doctor is more at the mercy of the manufacturer than Dr. Laemmer believes.

Dr. Laroche's book, on the other hand, while lacking enthusiasm, brings us in closer touch with modern ideas. It gives in fact a clear exposition of what is now generally believed. After some general remarks, the author gives a useful chapter on the methods of preparation used in making glandular products for medicinal purposes. He then takes each gland in turn, beginning with thyroid medication, and ending with insulin and polyglandular treatment. Each is discussed well and without bias, and the book sums up ably the present position of glandular treatment, or as the French prefer to call it, opotherapy.

DIABETES AND INSULIN.

Insulin. Darstellung, Chemie, Physiologie und Therapeutische Anwendung. Second edition. By Dr. H. STAUB, Privatdozent, 1 Assistent der Med. Klinik in Basel. Berlin: Julius Springer. 1925. Pp. 177.

IT is only a year since the first edition of this book was published and the necessity of a second edition, which is nearly double the size of the first, is a sign of the amount of new work which has been published as a result of the discovery of insulin. Dr. Staub gives a good account of the physiology of the diabetic condition and of the various efforts to discover the internal secretion of the pancreas, some of which only just missed success. The different methods of preparation of insulin are described, and the striking improvements in its manufacture are brought out. The known properties of insulin are enumerated, and the numerous experiments detailed which have helped to elucidate the problems. This part of the book will be valuable to other workers on this subject, since the arguments and experiments are fully discussed and abundant references are given. The clinical section of the book suffers a little by comparison, but mainly because the clinical problems are more difficult. The different methods of treatment are set out together with the ideals to be aimed at, and the indications and contra-indications found in practice. The absence of an index is to be regretted.

Die Insulinbehandlung bei Diabetes Mellitus. By Dr. H. STRAUSS and Dr. M. SIMON. Berlin: S. Karger. 1925. Pp. 74.

THIS is the third edition of a pamphlet which appeared two years ago. It opens with an adequate account of the discovery, properties, and manufacture of insulin, and then goes on to the description of its clinical usage. The authors do not use insulin in mild cases, regarding it as a luxury except in special circumstances. For the moderately and very severe cases they regard it as invaluable, although it has made the dietetic problem much more difficult. An account is given of the Hagedorn and Jensen method for estimation of blood-sugar, which is in many ways the most suitable for hospital work. The account of the theory of insulin action contained in the last 15 pages is too condensed to be clear.

Diabetes Mellitus and its Dietetic Treatment. Thirteenth edition. By B. D. BASU, Major I.M.S. (Ret.) Allahabad: Panini Office. 1925. Pp. 94. Rs.2.

THIS discursive little book contains details of diabetic cures with various carbohydrates. The short account of insulin which, as the preface states, has been embodied in the new edition consists of 15 lines and is hardly adequate. The fasting treatment is dismissed in four pages, and is followed by two pages on the cocoanut cure.

EVOLUTION, HEREDITY, AND VARIATION.

By D. WARD CUTLER, M.A., Chief Protozoologist to the Rothamsted Experimental Station, Harpenden. London: Christophers. 1925. Pp. 147. 4s.

THE importance of modern biology to medicine is not properly appreciated, and the medical implications of the subjects dealt with in this book have hardly begun to be explored. It must surely be as necessary that the ordinary medical student should know about Mendel and the normal curve of variation, as that he should be aware that salt is made up of sodium and chlorine. Medicine consists of individual cases, but medical science badly needs, as Mr. Yule reminded us lately, to think at least in terms of averages, better still in terms of distributions. Mr. Cutler has written quite a good introduction to evolution and heredity, and the publishers have made it available at a really modest price. The historical part in which the evolution of Evolution is traced with interesting personal touches is particularly well done. Thereafter there is rather too much Mendelism and rather too little Galtonism. It may be true that continuous variations arise from a multiplicity of Mendelian factors. On the other hand it may not, and in any case the impossibility of subjecting characters beyond a certain degree of complexity to factorial analysis makes it difficult to be sure about it. There is still plenty of room for looking at the world in Prof. Karl Pearson's way, as well as in Professor Bateson's. But the book will serve as an excellent introduction to the subject, though pathologists will wonder what the author is talking about in the paragraph headed "Blood Tests" (p. 32). If it is meant to be a summary of Nuttall's work on precipitins, it is as strange a travesty as there ever was, and it suggests that, if it would do medical men good to know a little more about Mendel, it might do protozoologists good to know a little more about immunology.

CLINICAL PSYCHOLOGY.

By LOUIS E. BISCH, M.D., Ph.D. London: Baillière, Tindall and Cox; Baltimore: Williams and Wilkins Company. 1925. Pp. 346. 15*s*.

As its name implies, this book deals with methods of mental examination of patients suspected of subnormality or abnormality. The author's scheme of examination is, as is usual with American investigators, elaborate in the extreme, pursuing every possible detail of personal, family, and social history, and including full inquiry into environmental conditions besides the actual personal interview and the use of intelligence and pedagogical tests. It is not suggested that one person should be responsible for all parts of the investigation, but the author is emphatic that the evaluator of the available data should be a medical expert with special training, an opinion which coincides with English practice, although the special training may still be somewhat less complete than is desirable. Most examiners will probably have to be content with a less comprehensive scheme than the book gives. It is fairly certain that much of the information asked for will be unobtainable or inaccurate, and it is also questionable if some of the details inquired into throw much light upon the mentality of the patient.

The rest of the book is essentially a text-book of mental deficiency, but special chapters are included on the epileptic, the syphilitic, and on functional conditions. On the whole the treatment is somewhat superficial: a chapter on the precocious child, which we should be disposed to welcome as a novel feature of such a book, is singularly unilluminating. A useful section distinguishes constitutional psychopathic states, including emotional instability, pathological lying and wandering, from amentia on one hand and insanity on the other. Here again we could have wished for fuller treatment. The author's attitude to the problem of the "moral imbecile" is that of most modern psychologists, who relegate it, rightly or wrongly, to the limbo of forgotten things. Heredity is cursorily dealt with, and it is surprising that, in a book in which Dr. A. F. Tredgold is so frequently quoted, his theories on this subject are completely ignored.

With regard to mental testing, the author advocates the use of certain performance tests, in addition to the Binet-Simon scale, in order to assess intelligence, and is careful to warn his readers that interpretation of tests is even more important than the actual results, a warning that is still necessary. A useful appendix gives complete descriptions of a large number of cases of all types, including some normals and super-normals in intelligence, well worth study by those who are commencing mental testing. The book contains a few good plates, which might have been increased in number, and are not well placed in the book.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT BATH.

SECTION OF PATHOLOGY AND BACTERIOLOGY.

(Continued from p. 248.)

THURSDAY, JULY 23RD.

THE PATHOLOGICAL BASIS OF TREATMENT BY RADIATION.

THE discussion on this subject was opened by Prof. Sidney Russ, who said that the most important therapeutic use of radium and X rays was in the treatment of malignant disease, whilst surgical tuberculosis and the deficiency diseases were those most susceptible to light and ultra-violet therapy. In the laying down of the pathological foundations of such therapy it was necessary not only to specify the cellular changes resulting from irradiation, but also to correlate them with the dosage employed and to indicate the processes by which the changes are brought about. The degree to which visible and ultra-violet radiation penetrated the tissues was small; it became, in fact, gradually smaller and smaller as pigmentation due to this exposure increased, and there was a natural tendency to attribute the reactions which occurred to some effect set up either in the blood-stream or the lymph, or to suppose that the nervous system played some important though obscure part. The pathological basis of heliotherapy was not so well defined as that of treatment by X rays and radium. Pathological researches had shown that cellular degeneration was a frequent sequel to irradiation of tissues. These changes might be due either to a direct action of the radiation upon the internal constituents of the cell, or to a direct action of the radiation upon the interfaces of the cell, or to an indirect action which irradiation initiated. Prof. Russ said that he would like to hear these alternatives discussed—his own views inclining him to the opinion that some interfacial action plays the dominant part in the first instance. Considering the tissues as systems involving a continuous adjustment of their equilibrium, he thought that the upset of such equilibria was more likely to have a profound effect upon the composite mass than the actual breaking down of the chemical complexes within the cell. In tissue clearly damaged by radiation we had evidence of the whole equilibrium being upset. In tissue submitted to doses which had no visible effect whatever we had the equilibrium entirely conserved, as it was towards visible radiation, and in those cases where only slight visible effects were produced; yet with integrity of the structure we might perhaps look upon them as stable yet entirely new conditions of equilibrium. Various tissues responded differently to a dose of radiation according to whether the time of exposure was short, the quantity being large; or long, the quantity being small. It was still obscure why there should be a difference in the reaction of the tissues when the actual dose was constant, the only variation being in the conditions of exposure. The effects of radiation on the tissues were unique. In living tissues we were confronted with a complex continuously adjusting its equilibrium with contiguous or enveloping structures, and experimental methods would appear more likely to reach success if the complex were kept in mind without the effort of reducing it to simple terms.

Dr. T. S. P. Strangeways gave a description of the effect of irradiation by X rays on cells undergoing division in tissue cultures of the embryonic fowl and on the embryo while in the unopened shell. The effects were observed during experiments which are being carried on by himself and his co-workers, Dr. R. G. Canti, Dr. M. Donaldson, Prof. Hopwood, and Dr. F. G. Spear. These experiments indicated that even small doses had a pronounced inhibitory effect on cell division and that they prevented new cells from coming into mitosis. Such small doses caused a definite retardation of the different phases of mitosis in those cells which had already begun to divide before the commencement of irradiation. It was found that there was no definite evidence that cells in actual mitosis were more vulnerable than those in a vegetative state. It was further found that, within the limits of the experiments, variation in the quality of the incident dose of X rays as measured by a Friedrich iontoquantimeter had no appreciable influence on the dose required to prevent mitosis.

Miss E. M. Hume read a paper on the

Action of Ultra-violet Light upon the Growth of Rats,

in which she described experimental work which proved that light cannot substitute cod-liver oil indefinitely for the growth and well-being of the rat. Although calcification may be promoted by the light, yet the set of symptoms due to injury to the mucous membrane eventually display themselves and lead to a fatal issue. It appears that some reserve is gradually exhausted. Possibly this other limiting factor is the original vitamin A, though how far this is completely independent of the light or antirachitic factor cannot at present be determined. The nature of the antirachitic vitamin or of any inactive precursor substance is at present uncertain; it appears to be fat-soluble; but it is not even proved that there is one specific substance. Antirachitic properties have been conferred upon various inactive substances by exposing them to ultra-violet radiation, and when fed to rats they produce the same effect as does direct irradiation.

Dr. A. Piney spoke on changes in the blood and blood-forming organs following exposure to X rays. On the bone marrow the effects are essentially destructive in character, and are seen in the shape of nuclear degeneration of the essential cells, although there is no change in the adipose tissue. In the lymphatic glands the results of radiation resemble those due to inanition, but occur much more rapidly. The involution of the thymus resulting from X rays is rapid and extreme. The changes in the spleen are more difficult to interpret because considerable variations occur in response to different doses. Ziegler was able to show that, if the dosage were so adjusted as to injure the Malpighian bodies without damage to the pulp, it was possible to demonstrate the occurrence of myeloid metaplasia in the latter structure within a few days. In the blood the great majority of investigators have shown that there is a distinct reduction in the number of leucocytes, which depends mainly upon decrease of the neutrophiles with consequent relative lymphocytosis. The basis of the changes occurring in the blood is still a matter of controversy.

Dr. R. G. Canti and Dr. F. G. Spear discussed the

Biological Action of Gamma Ray Irradiation on Tissue Cultures.

The experiments were undertaken as a result of certain observations on the effects of radium irradiation on cases of carcinoma of the *cervix* treated by Dr. Malcolm Donaldson. Most striking among these observations was the *absence of mitosis* which was observed as soon as the radium was removed after 24 hours *in situ*. The preliminary observations on tissue cultures were purely qualitative. Living cells were examined in the thermostat for prolonged periods under the microscope whilst under the influence of radium. The following conclusions had been reached: (1) Cells in mitosis divided in what appeared to be normal fashion and the daughter cells developed into full-sized apparently normal vegetative cells and did not again go into mitosis. (2) For a certain period, the length of which depended on the intensity of irradiation, cells continued to come into mitosis as before irradiation, but at the end of this period no more cells came into mitosis.

After satisfying themselves that radium irradiation brought about very definite changes in the cultures, they had undertaken quantitative experiments with a view to determining whether the same amount of irradiated energy brought about the same biological effects irrespective of the time over which that energy was radiated—i.e., if the radium were moved further from the tissue culture to a distance whereby the incident intensity were halved, then would double the time be required to produce the same biological effect? The physical measurements of intensity of radiation at various distances were made by a photographic method, and curves were drawn up comparing the physical effects with the biological effects as determined by the time taken at various distances to cause cessation of mitosis. These curves showed that when the radium was near the tissue culture there was no observed departure from the physical readings, but that at a greater distance a longer time was required to bring about the same effect than would be anticipated from purely physical laws. Further, the shape of the biological curve suggested that beyond a certain critical distance from the radium no biological effect might be expected. It was pointed out that, at this stage of the investigation, this course of events could not necessarily be translated into conditions when radium is applied to carcinoma *in vivo*.

A paper was read by Dr. Helen Mackay on

Foodstuffs Irradiated with Ultra-violet Light

and their effect on the bone lesions of rachitic children. Dr. H. F. Shaw had collaborated in this work, and he showed a number of lantern slides of X ray photographs. Their experimental work led them to the conclusion that the effect of direct exposure to ultra-violet light on the bone lesions of a rachitic patient appear to be dependent upon the power of light to produce in certain substances the so-called antirachitic factor. Rapid healing of the bone lesions in children can be brought about by dried milk irradiated with ultra-violet light from the mercury arc, and this antirachitic potency of the milk withstands ten minutes' boiling. Three ounces daily of white flour similarly irradiated had little or no effect, and the antirachitic power of 6 drachms daily of irradiated cotton-seed oil is probably slight. There is reason to believe that a prolonged exposure to ultra-violet light will destroy the antirachitic potency a shorter exposure has imparted. It seems probable that the action of a foodstuff artificially rendered antirachitic by irradiation with ultra-violet light is identical with the action of a naturally occurring foodstuff containing the antirachitic factor, and that no more beneficial effect is to be expected from irradiating a patient's milk than from giving cod-liver oil. But when cod-liver oil cannot satisfactorily be given then irradiated substance may in the future prove of considerable value.

At the conclusion of this communication an opportunity was given for questions to be addressed to the readers of papers, and the following took part in the subsequent discussion: Dr. J. Barcroft Anderson Dr. Braxton Hicks, and Prof. J. C. G. Ledingham.

FRIDAY, JULY 24TH.

THE PRESENT POSITION OF PATHOLOGY AND BACTERIOLOGY IN THIS COUNTRY WITH SPECIAL REFERENCE TO RESEARCH.

In opening a discussion on this subject the President of the Section, Prof. J. C. G. Ledingham, remarked that in the last annual report of the Medical Research Council the parts played respectively by physiology, pathology, bacteriology, biochemistry, and experimental medicine in contributing to the general advance of practical medicine in this country were discussed at considerable length. The report recorded praiseworthy progress in the fields of physiology, but found little to place to the credit of pathology and bacteriology during the last five years. This apparent sterility was attributed to the stated fact that the purely utilitarian side of pathology and bacteriology has lessened the opportunities of their exponents for contributing to the advance of new knowledge, and in some cases tended to withdraw from active research life workers who might otherwise have added to knowledge. Those universities were criticised which maintain the departments of pathology and bacteriology from fees received for the routine performance of diagnosis tests made on behalf of outside bodies. Prof. Ledingham agreed with the report of the M.R.C. that these practices are liable to grave abuse, and that immediate reform is necessary in the best interests of pathology, but declared that the place which routine diagnosis takes in the training of the professional bacteriologist cannot be ignored. Routine diagnosis is an excellent training for research; but when the research stage is reached routine diagnosis should not be allowed to interfere with the new interests. The best pathological service can be realised only when ward and laboratory and patient or laboratory are brought as near as possible, and mutual consultation on equal footing can be arranged. The inspiration to research need not of necessity be subdued in the atmosphere of routine work; but the research output might be very considerably increased if the training of men for professional routine pathology and bacteriology were more carefully organised. Bacteriology must be recognised as a broad and fundamental branch of science, coördinate with, rather than subordinate to, the other great divisions of biology. Therefore the universities should train the graduate aspiring to become a professional bacteriologist by providing advanced instruction in general bacteriology. Though posts for bacteriologists have increased of recent years there appears to have been no corresponding increase in the field of suitable candidates. There are welcome signs that increased facilities for training pathology laboratory workers may soon be available. Prof. Ledingham passed on to consider the research institutes, which occupy a somewhat different, but not essentially different, position from that of the universities. Since all the ancillary sciences which minister to medicine are usually represented in the institute, the staff forms a self-contained unit. Experience has shown that pathology and bacteriology, research in serum-therapy and specific disease prevention, supply a constant stream of problems which may or may not have their immediate echo in practical medicine. Occasions arise, however, when the direct appeal to the human patient becomes insistent; and both the Pasteur and Rockefeller institutes have made provision for this by the establishment of research hospitals. At the Lister Institute, Prof. Ledingham remarked, a site is ready for a research hospital when the necessary funds can be obtained.

In spite of the handicaps under which these sciences labour in this country at present, how far is the criticism expressed in the M.R.C.'s report justified? Prof. Ledingham considered that the author of the M.R.C.'s report was unwise in attempting an estimate of the achievements over a short period of pathology and bacteriology as compared with those of physiology and biochemistry. He declared that some of the arguments advanced to support the points were founded on irrelevant or inaccurate statements, and he concluded an eloquent appeal for a less materialistic attitude with these words: "If bacteriology fails in five years to throw up an attractive flower, heaven knows that in the past 40 years it has thrown up many. Let it rest for a while in the apparent slumber of growth and rejuvenescence, working out anew its fundamental problems in activities which do not attract perchance the attention of the superficial observer."

Prof. M. J. Stewart (Leeds) said that he found himself fully in sympathy with Prof. Ledingham's point of view. He spoke in particular of the training of young pathologists, observing that this required the abundant supply of pathological material for their instruction. There was usually little difficulty in imparting to a promising laboratory worker sufficient skill to carry out routine work; but often he lacked that broad fundamental training in mathematics, physics, and chemistry which would enable him to tackle with success the great problems of disease still awaiting solution. But facilities for better training were increasing. Thus the University of Leeds offers a four years' course leading to the degree of bachelor of science with honours in bacteriology. Within recent years there had been a revival of interest in morbid anatomy, and the prophecies of its decline had not been fulfilled. He thought that the study of morbid anatomy would be advanced if the teacher of histology approached the subject from the pathological point of view. Turning to the criticisms expressed in the last annual report of the Medical Research Council, he said he did not agree, among other points, with the wholesale ban on routine work therein pronounced. He pointed to an inconsistent attitude on the part of the author of the M.R.C.'s report to pathology and physiology. He concluded by entering a plea for a much maligned side of the pathologist's work—namely, "dead-room pathology"—and declared that the post-mortem room still provided an invaluable and almost inexhaustible field for original research.

Prof. Carl Browning (Glasgow) spoke particularly of the training of research workers, the facilities for research, and the endowment of research. After medical training he thought it to be of the greatest advantage to the pathologist to hold for several years a whole-time research fellowship. On the subject of facilities for research he considered it to be not excessive if every member of the staff of every pathological department had at least half of his working time free to devote to research work. He deplored the neglect of the facilities which exist at fever hospitals for the study of infectious disease, and appealed for a closer association of research in animal and human pathology.

Speaking of the endowment of research, he agreed that the M.R.C. had given almost inestimable assistance by paying both for personnel and material, but considered that endowments should be provided without the fettering condition of this being applied solely to the investigation of some particular specified problem or disease.

Dr. Braxton Hicks, Dr. J. A. Arkwright, Dr. C. C. Okell, and Dr. C. E. Dukes contributed to the discussion. In summing up, Prof. Ledingham said that he hoped that steps would be taken to bring the unanimous conclusions of the pathological section of the B.M.A. to the notice of all universities and hospitals of the country.

EXHIBITION OF INSTRUMENTS, DRUGS, FOODS, AND APPLIANCES.

SURGICAL INSTRUMENTS AND APPLIANCES.

THIS year sees the addition of much interesting surgical apparatus to the range shown in 1924.—[46] Allen and Hanburys, Ltd. (Bethnal Green, London, E.C. 2), showed various improvements in the St. Bartholomew's Hospital pattern operation table of last year, and a new horizontal model high-pressure steriliser, in addition to a wide range of instruments for general and special surgery.—[38] Arnold and Sons (John Bell and Croyden, Ltd., 50, Wigmore-street, London, W. 1): a new operation table fitted on double cylinder oil pump base and improved movement for raising and lowering the head and leg pieces, and a selection of surgeon's instruments made entirely of Firth's stainless silver steel. Their "Electrophonoide," an apparatus for re-educating the sense of hearing, was also being demonstrated.—[50] Down Bros., Ltd. (21, St. Thomas's-street, London, S.E. 1) showed a collection of surgical instruments and appliances.—[44] The Holborn Surgical Instrument Co., Ltd. (26, Thavies Inn, London, E.C. 1) had a large collection of hospital furniture and instruments, including a new pedestal operation table, Cumberbatch and Robinson's diathermy electrodes, and the "Jupiter" sun lamp.—[43] Mayer and Phelps (59, New Cavendish-street, London, W. 1): a selection of instruments and appliances, particularly the "Reavell-Moseley" electric rotary pump, for pressure and suction, which can be used to administer anæsthetic vapours, to work sprays, evacuate cysts, or to remove blood and secretions from an operation area, thus saving much time in swabbing; also a complete set of instruments for per-oral endoscopy by Irwin Moore, so arranged that the tubes can be used for either proximal or terminal illumination; an artificial larynx by Tapier, and a selection of tubes for use after total laryngectomy; Hammond's combined urological syringe for local anæsthesia or hypodermic, intramuscular, or intravenous injection, for lumbar puncture, and for injecting the anterior and posterior urethra and the pelvis of the kidney; also the "Chiron" ring pessaries.—[40] John Weiss and Son, Ltd. (287, Oxford-street, London, W. 1): a complete display of general surgical instruments, including the Vaquez-Laubry sphygmotensiophone; Ryall's cysto-urethroscope and combined cystoscopic lithotrite; Sinclair's *intracapsular forceps and outfit*, and a projection and operation lamp suitable for any voltage, with water-filter attachment for demonstrating microscopic slides.—[41] Hoskins and Sewell, Ltd. (Bordesley, Birmingham): an obstetric bed designed by *Dr. Remington Hobbs* for drainage treatment. This is made in separate halves, each having four legs and wheels; the foot end can be pulled away and stirrups put in the other half, minimising disturbance of the patient; a number of patent wheeling bedsteads particularly adapted to the open-air treatment of tuberculosis; the Alton sunshade for the head and shoulders of a patient receiving sun treatment.

Among the special instruments:—[2] G. H. Zeal, *Ltd.* (75, St. John-street, London, E.C. 1): the "Repello" clinical thermometer, which is reset by pressing a top bulb and requires no shaking. The "*Acello re-setting*" *clinical thermometer case*, for those who find it difficult to shake the ordinary thermometer; and an aseptic thermometer with graduations on the glass outer case and an unmarked stem, which is unharmed by any antiseptic solution.—[12] Theodore Hamblin, *Ltd.* (15, Wigmore-street, London, W. 1): a collection of ophthalmic instruments and equipment, including the new Lister hand-projection lamp for operating; a new luminous *Morton ophthalmoscope* for use with direct and indirect methods; *a new astigmatic test* with grey background and an improved form of the Lister perimeter and scotometer. They had also on view a series of drawings and lantern slides of eye conditions, *made* by their staff of trained draughtsmen.—[18] The Genito-Urinary *Manufacturing* Co., Ltd. (64, Great Portland-street, London, W. 1): a selection of all the latest instruments of bladder and kidney surgery, and particularly a series of diagnostic *instruments* not previously manufactured in this country.—[20] The British Hanovia Quartz *Lamp* Co., Ltd. (Slough): their quartz mercury anode type lamps, for direct current and alternating current without rectification.—[30] The Dowsing Radiant Heat Co., Ltd. (91, Baker-street, London, W. 1), showed an improved pattern of the Sunrae carbon arc lamp for ultra-violet radiation; an improved bed and lighter local appliances, and a bed-warmer fed from the house supply.—[31] Rayner and Keeler, Ltd. (Kemp Town, Brighton): various operating lamps and ophthalmoscopes, particularly a triple-beam operating lamp minimising shadow, an adjustable ophthalmic *bracket* fixed above the patient's head, and a slit-lamp with single focus for microscope and lamp; also Dr. R. Wallace Henry's new light perception instrument which was *demonstrated* at the Sectional Meeting.—[33] Hague and Son (32, Broad-street, Bath): *oph*thalmic instruments, including the Zeiss simplified Gullstrand ophthalmoscope and the Zeiss parallax refractometer, embodying slit-lamp and ophthalmoscope.—[45] The Inhaling *Drug* and Apparatus Co. (30, Grosvenor-place, London, S.W. 1): the *Apnea* inhaling apparatus (Spiess Drager), which transforms any liquid into an infinitely *fine* vapour for inhalation. Drugs, including insulin, may be administered through the respiratory organs by this means, reaching the circulation more rapidly than by hypodermic injection.—[52] H. E. Curtis and Son, Ltd. (7, *Mandeville-place, London*, W. 1): a series of abdominal supports and colostomy trusses, and a medicinal liquid paraffin "Colonol."—[62] General Acoustics, Ltd. (77, *Wigmore-street, London*, W. 1): the latest aids for the deaf, electrical and non-electrical, including a new microphone encased in light imitation tortoise-shell, giving a mellower sound; and a special theatre-box that enables the *deaf to hear loud speakers* as well as plays, speeches, and sermons.—[80] Ardente-Acoustique (95, Wigmore-street, London, W. 1): the new 1925 types, a distinct advancement on previous models with complete freedom from metallic or extraneous sounds.—[69] *Pedestros*, Ltd. (10, Conduit-street, London, W. 1): "Desoutter" light metal artificial legs for all types of amputation.—[84] B. Smith (6, Cambridge-*terrace, Widcombe Hill, Bath*): a series of adjustable aluminium limbs, splints, and callipers for bone-grafting, &c., with special apparatus for rapid lengthening and shortening; *also a showcase of* photographs of wounded men fitted with artificial limbs and appliances at the Bath War and Ministry of Pensions Hospital, 1915–22.

Other firms supplying surgical dressings:—[7] Antiphlogistine (Denver Chemical Manufacturing Co., London, E.C. 3) and [5] The Thermogene Co., *Ltd.* (Haywards Heath, Sussex) were demonstrating their well-known products.—[4] Fassett and Johnson, Ltd., were showing a full range of Seabury and *Johnson plasters*, dressings, and surgical requisites, including Mead's rubber adhesive plaster and the "Gold Cross" absorbent cotton.—[16] Jeyes' Sanitary Compounds Co., Ltd. (64, *Cannon-street*, London, E.C. 3): various preparations of cyllin, an antiseptic which has a Rideal-Walker coefficient for *B. typhosus*, 24–26.—[37] The Jaeger Co., Ltd. (95, Milton-street, London, E.C. 2): a selection of underwear and outerwear for men, women and *children*; *also* the "Domen" belts for pregnancy, hernia, and floating kidneys.

DRUGS AND PHARMACEUTICAL PREPARATIONS.

[46] Allen and Hanburys (37, Lombard-street, London, E.C. 3): in addition to the well-known "Byno" and "Polyglandin" *preparations*, the "A. B" brand of insulin, "Osmo" Kaolin, a specially purified *colloidal* kaolin, *prepared* by electro-osmosis and used in the treatment of intestinal toxæmias; "Sea-cones," suppositories containing chloral hydrate and bromide, for sea-sickness; "*Iodolysin*," a soluble compound of thiosinamin, containing 47 per *cent. of* iodine; a diabetic flour; and surgical Pitibulin, double the strength of the obstetrical Pitibulin, for surgical shock. "Antivirus" is a series of specific local immunisers *prepared* from the broth culture in which bacteria have been grown.—[47] *Boots Pure Drug Co.*, Ltd. (Station-street, Nottingham): a representative display of the firm's *special* medical products, fine chemicals, medicated capsules, and compressed tablets; *gonococcal* vaccines made at St. Thomas's Hospital; capsules of hexyl resorcinol, a new intestinal antiseptic, and a full range of the antivenereal preparations "Stabilarsan," "Bismostab," "Thiostab," "Acriflavine," and "Chloramine-T." The "Alpine" *sun* lamp was demonstrated in the local branch.—[83] C. J. Hewlett and Son, Ltd. (35–42, Charlotte-street, and 83–85, Curtain-road, London, E.C. 3): a number of *original* preparations, including Mist. Pepsinæ Co. c. Bismutho; Mist. Hepatica Conc.; an antiseptic cream; "Somnigen," a preparation of opium free from disagreeable *odour*, taste, and after-effects; "Veronigen," a liquid preparation of barbitone; "*Hormonigen*," a compressed pluriglandular tablet, and Dr. Crofton's human tubercle bacillus *solution*.—[64] The Hoffmann-La Roche Chemical Works, Ltd. (7, 8, Idol-lane, *London, E.C. 3*): besides the well-known "Omnopon," "Sedobrol," and "Spasmalgin," "Allonal" a non-narcotic analgesic; chocolate iodostearin tablets used in the prophylaxis and treatment of simple goitre in school-children, and "Digalen" amorphous digitoxin, a chemically standardised and physio-

logically controlled preparation of digitalis, free from inactive and toxic constituents.—[78, 79] Oppenheimer, Son and Co., Ltd. (179, Queen Victoria-street, London, E.C. 4): in addition to the various palatinoids, bipalatinoids and "Roboleine"; an aeriser for reducing all liquids to a fine invisible smoke for the treatment of affections of the respiratory tract; "Balmosa," an analgesic antiseptic cream; and "Pinheroin," containing terpene hydrate and heroin hydrochlor. with essence of Canadian pine.—[11] Parke, Davis and Co. (50, Beak-street, London, W. 1): a series of pharmaceutical preparations, including "Dibromin," a crystalline germicide containing about 56 per cent. of bromine; "Metagen," a concentrated vitamin preparation and "Metagen" combined with cod-liver oil; a 1 per cent. solution of silver nitrate in wax capsules to instil into the eye of the new-born baby; and a selection from the series of vaccines prepared at St. Mary's Hospital.—[51] Burroughs Wellcome and Co., Ltd. (Snow Hill Buildings, London, E.C. 1): amongst additions to the list of "Tabloid" products: "Tabloid" digitalis leaf, presenting the whole substance and activity of selected digitalis leaves; "Tabloid" hexamine and "Tabloid" methylene, blue; "Kharsulphan," a new antisyphilitic for hypodermic or intramuscular injection; "Hypoloid" bismuth metal suspended in isotonic glucose solution; a demonstration of the stages in preparation of "Tabloid" thyroid gland and "Wellcome" insulin; "Tabloid" iodicin, gr. 3, for adults and with chocolate base for children; and a series of vaccines and sera.—[67] Burgoyne, Burbidges and Co., Ltd. (East Ham, London, E. 6): a collection of pharmaceutical preparations, including Cooper's colloids; "Chlorobrome" for insomnia and sea-sickness; "Neutramyne" tablets of cod-liver oil, and ethyl chaulmoograte sodium morrhuate for leprosy.—[68] Ferris and Co., Ltd. (Bristol): pharmaceutical specialties, including Elixir parathyroid and calcium lactate; Elixir "Vi-glandin," a preparation of thyroid, pituitary, orchitic and ovarian substance in combination with the glycerophosphates of calcium, iron, sodium, potassium, and magnesium; "Otoids"; "Sterisols," for hypodermic injection; surgical instruments and dressings and scientific apparatus.—[77] Lionel Cooper (14, Henrietta-street, London, W.C. 2): various drugs, including "Milesia," a soluble tablet containing gr. 3 magnesium hydrate, plain or flavoured with peppermint; "Presoiod," an iodine solution prepared from the formula of Prof. Pregl, plain, concentrated or pepsinated; "Salvitæ," a uric acid solvent in granular form; and "Sil-Al," a physiologically pure silicate of aluminium in the form of a white tasteless powder which forms a colloidal suspension when mixed with water.

Special pharmaceutical preparations were shown by [6] J. C. Eno, Ltd. (Victoria Embankment, London, E.C. 4): the well-known effervescent saline laxative.—[8] Crookes' Collosols (The Crookes Laboratories, 22, Chenies-street, London, W.C. 1): the wide range of "Collosol" drugs, among the latest additions being "Collosol Lactalumina," an antacid; "Collosol Ichthyol," a British preparation; "Collosol Kaolin"; also a "Collosol Kataplasma Iodokaolin" for use as a poultice in inflammatory conditions.—[26] W. Dederich, Ltd. (Stanley House, Dean Stanley-street, London, S.W. 1): the original "Ichthyol" sulphonated schist oil preparation; "Pantosept" tablets, which when dissolved in water produce a solution of hypochlorous acid for antiseptic purposes. This firm is also the agent for the preparations of J. D. Riedel, A.G., Berlin, whose "Noctal," a soporific without disagreeable after-effects, deserves mention.—[36] The Semprolin Co., Ltd. (18, Leather-lane, London, E.C. 1): the various combinations of "Semprolin" emulsion of paraffin oil; the plain oil which may be prescribed with anything the practitioner desires; the emulsion with phenolphthalein; with guaiacol carbonate; with salol; and with bismuth and pepsin. Also "Carmex," the mild laxative and corrective for children.—[49] Armour and Co. (Queen's House, Kingsway, London, W.C. 2): a series of endocrine preparations in tablet, capsule, powder, hypodermic, and liquid form. The ovarian and corpus luteum preparations are now standardised as well as the pituitary.—[54] Genatosan, Ltd. (Loughborough, Leicestershire): in addition to their well-known "Sanatogen," "Formamint," "Genasprin," and detoxicated vaccines; "Nasmint," a germicidal snuff; and a particularly pure and stable calf lymph.—[57] A. and M. Zimmermann, Ltd. (3, Lloyd's-avenue, London, E.C. 3): several specialties from the Schering laboratories, including the hypnotic "Medinal"; "Atophan"; "Atophanyl," a solution of the sodium salts of "Atophan" and aspirin with novocaine; "Arcanol," a combination of "Atophan" and aspirin used for influenza; "Veramon," a powerful non-habit-forming analgesic.—[63] Deshell Laboratories, Ltd. (150, Southampton-row, London, W.C. 1): "Petrolagar," a compound of agar-agar with paraffin oil in its four forms: plain, with phenolphthalein, without sugar for diabetic cases, and with alkali for hyperacidity and the constipation of pregnancy.—[72] The Anglo-American Oil Co., Ltd. (Albert-street, London, N.W. 1): the well-known "Nujol" liquid paraffin; and "Mistol," a combination of menthol, camphor, and eucalyptol with paraffin; also "Cream of Nujol with Agar," and a new insecticide spray "Flit."—[80] J. W. Carnrick and Co. (40, Lexington-street, London, W. 1): various pluriglandular formulæ, including the well-known "Hormotone" and "Trypsogen"; also "Erythrogen," a bone-marrow preparation for anæmia; and "Rhythmin," a peristaltic stimulant.—[15] The British Dye-Stuffs Corporation, Ltd. (70, Spring-gardens, Manchester): the drugs S.U.M. 36 and S.U.P. 36; the arseno-benzine preparations for intravenous or intramuscular injection in gonorrhœa and inflammatory conditions.

Among toilet preparations:—[48] "Pepsodent," the pioneer acid dentifrice, and [56] Kolynos Inc. (Chenies-street, London, W.C. 1) demonstrated their dental creams.

Food Products.

[18] Brooks and Warburton, Ltd. [40–42, Lexington-street, London, W. 1): the various Mead's infant diet materials, including "Dextri-Maltose," for use in all cases where sugar is needed; "Re-Co-Lac," a reconstructed milk powder; and certified Newfoundland cod-liver oil, a biologically tested and standardised preparation.—[23] Thew, Hooker and Gilbey, Ltd. (Buckingham): Hooker's Malted Milk, and "Lacta," an evaporated milk for infant feeding.—[34] Benger's Food, Ltd. (Manchester): the various products of the company, including peptonising powders, peptonised beef, and chicken jellies and lentil flour; illustrated by photographic slides showing the action of an artificial gastric juice on milk and milk mixtures.—[35] Montgomerie and Co., Ltd. (Ibrox, Glasgow), the proprietors of Bermaline bread: two new brands of infant and invalid food, "Berina" food for children up to 6 months, and "Berina" Malted Milk for older patients.—[39] Trufood, Ltd. (Lever House, Blackfriars, E.C. 4): "Trufood Full Cream Milk," a full cream Cheshire dairy milk in powder form; "Seeway," whey in powdered form for delicate and premature infants; and "Humanised Trufood," which essentially agrees in its composition with breast milk.—[59] Virol, Ltd. (Hanger-lane, Ealing, London, W. 5): the well-known "Virol," a composition of marrow-fat, glycerine extract of red bone-marrow, malt extract, eggs, lemon syrup and salts of lime and iron; "Virolax," an emulsion of Virol with 60 per cent. liquid paraffin; and "Virol and Milk," a tonic food for invalids, nursing mothers, and athletes.—[61] Cadbury Bros., Ltd. (Bournville): cocoa and chocolate.—[66] Ambrosia, Ltd. (Huntley and Palmer, Ltd., Reading): "Ambrosia Devonshire Milk" for infants and invalids; "Ambrosia Cocoa and Milk," a nutritious food for growing children and nursing mothers.—[70] Glaxo, Ltd. (56, Osna-

burgh-street, London, N.W. 1): in addition to "Glaxo" full cream, three-quarter cream, half cream, and malted food, "Prescription Glaxo," a dried milk powder giving percentages closely approximating to breast milk; "Glax-Ovo," a combination of milk, malt, and cocoa with ostelin; and "Ostelin," a high concentration of the antirachitic unsaponifiable fraction of cod-liver oil, three drops being equivalent to 1 drachm of the original oil.—[81] Oxo, Ltd. (Thames House, Queen-street-place, London, E.C. 4): besides "Oxo," the peptonised and unseasoned hospital "Oxo"; Lemco unseasoned beef extract; the various "Oxoid" endocrine preparations in tablet and food extract forms, of which the latest is "Pitoxylin," a sterile and protein-free solution of the purified oxytocic and pressor substances from the posterior lobe of the pituitary, supplied in a 10 per cent. obstetrical and general extract and a 20 per cent. surgical extract.

MEDICINAL AND MINERAL WATERS AND SPAS.

[20] Ingram and Royle, Ltd. (45, Belvedere-road, London, S.E. 1): the bottled Vichy-Célestins, Contrexeville, and Hunyadi János waters.—[17] Harrogate: This spa is particularly active in scientific work. All the continental methods of treatment are available in addition to several original methods. An entirely new apparatus has been installed in the throat and nose department and many long-standing nasal troubles have yielded to the administration of the waters in an atomised condition. A special bathroom has been equipped with laboratory and clinical apparatus, and is used solely for balneological research. A permanent scientific officer and analyst has been appointed, and the attendants are fully certificated.—[65] Buxton: Attractive booklets, setting out the value of radio-active thermal water at 82° F. and the chalybeate spring. The baths contain swimming pools and immersion baths, in all of which the water is continually running from the springs. The attendants are specially trained and examined by medical men for their certificate.—[60] Droitwich, which is developing its technical work and considering the establishment of an electro-medical section. The brine content of the waters is considerably higher than that of any other European mineral springs. The social amenities are very complete, and include tennis and croquet lawns and a golf course, photographs of which were on view.—[42] Gaymer's Cider (Attleborough, Norfolk) were demonstrating for their twenty-eighth consecutive year an assortment of their various brands, of which their dry ciders have gained widespread medical approval.—[10] Alexander Riddle and Co., Ltd. (Bancroft-road, London): Stoewer's lime-juice and lemon-juice preparations, made from selected fruit and refined sugar, without artificial colouring, essence or acid, containing vitamin C.

MICROSCOPES AND SCIENTIFIC APPARATUS.

[3] The Tintometer, Limited (The Colour Laboratories, Salisbury): a variety of pathological apparatus, particularly the "Red Cell Suspensionometer" of Dr. H. St. Amand Agate for the Wassermann test; and an improved form of Oliver's hæmoglobinometer.—[15] The British Dye-Stuffs Corporation, Ltd. (Manchester): a range of indicators for pH values; microscopic stains, specially tested pathologically and chemically; and chemical reagents.—[24] O. Sichel and Co., Ltd. (52, Bunhill-row, London, E.C. 1): the "Kinograph," an apparatus suitable for photographing living subjects and pathological specimens—it will do every photographic process, including enlarging and reducing from X ray negatives, and the very high-powered and steady illumination employed gives perfect control over exposures; also the "Eco-Dry" cabinet, heated by electricity, for the rapid drying of X ray and other negatives.—[28] British Drug Houses, Ltd. (16–30, Graham-street, London, N. 1): the "B.D.H. Capillator," a series of sealed capillary tubes filled with buffer solutions containing indicator, which give very accurate pH indications with the use of a minimum of fluid; the "B.D.H. Comparator" case for storing sealed buffer tubes; the "B.D.H. Universal Indicator," showing the whole range of spectrum colours over a wide pH range; and the "B.D.H." histologically standardised microscopic stains.—[32] Messrs. Chas. Hearson and Co., Ltd. (68, Willow-walk, London, S.E. 1): several models of the well-known Reichert microscopes, for which they are sole agents; a spectroscopic eye-piece by Reichert; the dark ground illuminator of Prof. Arzt; a high-speed centrifuge giving 3000–10,000 revolutions per minute, suitable for the separation of ultra-microscopic viruses; and "Cornic's Half-Shadow Saccharimeter" for estimating grape-sugar and albumin in urine.—[53] Short and Mason, Ltd. (Atlantic House, 45–50, Holborn Viaduct, London, E.C. 1): the "Tycos" sphygmomanometers, portable and surgery types; also clinical and recording thermometers; and the "Micro-Barograph," a very sensitive recording barometer.—[76] Baird and Tatlock, Ltd. (14–15, Cross-street, Hatton-garden, London, E.C. 1): a series of autoclaves, centrifuges and other bacteriological apparatus; fittings of all kinds for hospital and public health laboratories; and apparatus for blood-sugar estimation.—[14] Eastman (Kingsway, London, W.C. 1): a series of "Dupli-Tized" X ray film negatives, with reductions and enlargements, showing the legibility and uniformity of the image; apparatus for simplified methods of development.

MEDICAL AGENCIES.

[9] The Medical Insurance Agency (420, Strand, London, W.C. 2), in addition to their usual literature, had a typical doctor's car for demonstration, supplied by Mann, Egerton and Co., and a qualified engineer to advise on car questions.—[73] The Medical Sickness, Annuity and Life Assurance Society, Ltd. (300, High Holborn, W.C. 1): demonstrations of various policies, including their "Every Contingency" Sickness, Accident and Endowment Policy; and the "Perfect" Educational Assurance policy.—[88] Arnold and Sons (50–52, Wigmore-street, London, W. 1): a medical transfer department for practices and locum-tenents.

BOOKS.

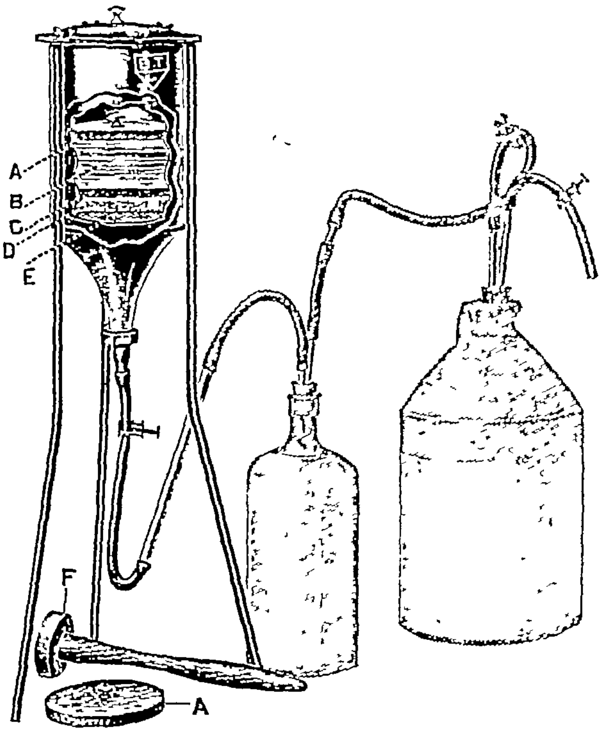
[1] Stanley Phillips (45, Brondesbury-road, London, N.W. 6): a collection of the latest publications of Messrs. F. A. Davis Co., Philadelphia; E. and S. Livingstone, Edinburgh; and Cassell's, London, including Hay's Diseases of the Ear, Nose and Throat; Sajous' Analytical Cyclopædia of Practical Medicine; Russell's "Ultra-Violet Radiation," and McKendrick and Whittaker's "X Ray Atlas"; and the "Practical Medicine Series of Year Books."—[21] H. K. Lewis and Co., Ltd. (136–140, Gower-street, London, W.C. 1): a selection of their publications, including L. R. Fifield's "Minor Surgery"; E. A. Barton's "Essentials of Infant Feeding"; B. Burnett Ham's "Synoptic Chart of Skin Diseases," and the second edition of W. Ironside Bruce's "System of Radiography"; the *Clinical Journal*; and a selection of card index systems, ledgers, case sheets, &c.—[58] Constable and Co., Ltd. (10–12, Orange-street, London, W.C. 2): a selection of publications, including a "Modern Methods" series; and "Towards Moral Bankruptcy," by Bureau.—[71] W. B. Saunders Co., Ltd. (9, Henrietta-street, London, W.C. 2): a number of standard works in all branches of medicine.—[75] John Wright and Sons, Ltd. (Bristol): the "Medical Annual"; the *Journal of Surgery*; new editions of many well-known handbooks; and various systems of bookkeeping.—[82] J. and A. Churchill (7, Great Marlborough-street, London, W. 1), celebrating their centenary this year, showed a number of new and standard works, including Beaumont and Dodds's "Recent Advances in Medicine"; Goulden's "Refraction of the Eye"; Jackson's "The Effects of Inanition and Malnutrition upon Growth and Structure"; and Koby's "Slit Lamp Microscopy of the Living Eye."—[85] The Oxford University Press (Amen House, Warwick-

square, London, E.C. 4): text-books on medical, surgical and allied subjects, including Price's "Medicine"; Leonard Williams's "Middle Age and Old Age"; Cope's "Clinical Researches in Acute Abdominal Disease"; and Taylor's "Neurological Fragments," by J. Hughlings Jackson.—[10] The Food Education Society (24, Tufton-street, London, S.W. 1) showed a series of pamphlets and books on food, cookery, and hygiene, including "The Gateway to Health"; "Rearing an Imperial Race"; "Facts for Patriots"; and "Puddings and Porridge."

New Inventions.

A NEW FILTER-PAPER PULP-HOLDER.

FOR several years one of us has used filter-paper pulp in an improvised holder for the purpose of filtering culture media and other fluids with invariable success. The chief feature of this pulp-holder is that as much as possible of the under surface of the pulp should be free for the passage of the filtered material. We have now devised the holder here illustrated designed to simplify the preparation of the filter.



1. For a filter of 6 in. diameter 4 oz. of dry filter-paper pulp is broken up in about two litres of water. It is then reduced to a state of very fine division by the hands or with a whisk. 2. Pour the prepared pulp into the filter-holder and allow the superfluous water to drain away. 3. Connect to the exhaust pump and filter bottle. Exhaust gently, in the meanwhile pressing the pulp down firmly and evenly with the rammer (F) until no more water is drawn through. 4. Cover the pulp (D) with about 1 in. of washed sand (C). 5. Place the float (A) on the sand. The float is of service because fluids poured on to it do not disturb the surface of the sand. 6. Draw through about a pint of water (hot water if jellies are to be filtered) to clear away any fragments of pulp which may have escaped through the gauge (E). When the water reaches the surface of the sand, clamp the tube connecting the filter with the exhaust pump. 7. Disconnect the filter bottle or flask, empty the bottle, and reconnect it to the filter. The filter is now ready for use. The procedure should not take longer than 10 to 15 minutes.

Procedure for Filtering.—1. Pour the fluid to be filtered on the float until the filter is full. If a jelly is to be filtered replace the remainder in the steamer until there is room in the filter. 2. Connect exhaust bottle by unscrewing clamp and exhaust gently. The water which was held in the pulp will come through first. By observing the glass connexion the filtrate can easily be seen to follow the water which was held in the pulp. At this point clamp off, empty filter bottle, reconnect, and exhaust again gently.

With a properly made filter, 5 to 6 litres of agar can be filtered in half an hour without the addition of egg albumin. By preparing the filter with two layers of pulp and sand alternately bacterially contaminated fluids or broth cultures can be freed of at least 90 per cent. of bacteria. When such fluids have to be passed through a germ-proof filter, a preliminary passage through a pulp filter represents a great saving of time and of filter candles.

Messrs. Baird and Tatlock have made the pulp-holder for us.

E. T. THOMPSON.
Orpington. E. CHARD.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt.-Comdr. J. S. McGrath and Surg. Lt. H. C. C. Veitch are placed on Retd. List.

ROYAL NAVAL VOLUNTEER RESERVE.

The King has approved of the award of the Royal Naval Volunteer Reserve Officers' Decoration to Lt.-Comdr. E. Elgood.

Proby. Surg. Sub-Lt. H. O'Connor to be Surg. Sub-Lt.

ROYAL ARMY MEDICAL CORPS.

Maj. G. O. Chambers retires, receiving a gratuity, and is granted the rank of Lt.-Col.

The undermentioned Majs. retire on ret. pay:—E. L. Moss and E. G. Anthonisz, and are granted the rank of Lt.-Col; M. Keane and G. H. Rees.

The undermentioned from Reg. Army Res. of Off. to be temp. Capts.: Lt.-Col. W. Owen-Prichard (and relinquishes the rank of Lt.-Col.), and Capt. S. Pinion (and relinquishes the rank of Capt.).

RESERVE OF OFFICERS.

Capt. A. G. Henderson, late temp. Capt., R.A.M.C., to be Lt.

MILITIA.

Capt. T. W. E. Elliott to be Maj.

TERRITORIAL ARMY.

C. E. Fenton to be Lt.

Capts. A. F. L. Shields (late R.A.M.C. Militia), H. F. W. Adams (late R.A.M.C.) and J. P. J. Jenkins (late R.A.M.C., Special Reserve) to be Capts.

2nd Lt. T. A. S. Samuel (late 15th Lond. R.) to be Lt.

ROYAL AIR FORCE.

Flight Lt. A. E. Henton relinquishes his temporary commission on ceasing to be employed and is permitted to retain his rank.

The undermentioned Capts., Army Dental Corps, are granted temporary commissions as Flight Lts. on attachment for four years' duty with the R.A.F.: M. J. O'Reilly, S. A. McCormack, and P. P. Hogan.

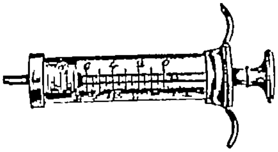
The undermentioned Flight Lts. (Capts., Army Dental Corps) relinquish their temporary commissions on return to Army duty: G. F. Charles, L. Somerville-Woodiwis, and J. H. W. Fitzgerald.

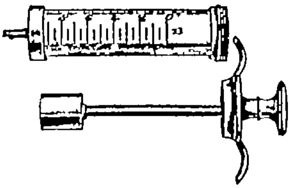
REGIONAL ANESTHESIA

Syringe, Needles, etc.,

as used by

GASTON LABAT, M.D.





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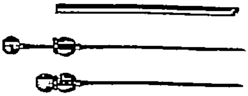
Spinal Puncture Needles, used also for epidural or caudal block. One of the needles has its stylet partly out, showing the device by which the stylet is held in position after being introduced its full length The protective shield is shown separately



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Length, mm.	20	50	80	100	120
Diameter, mm.	0·6	0·7	0·8	0·9	1

Labat's regional anesthesia needles, provided with special bayonet lock hub. Note the slot on one side of the hub and the helix collar The needle on the right side is in its protective shield and has its stylet in.

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[See p. ii. of cover

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See also pp. 13 *and* 21

THE LANCET.

LONDON: SATURDAY, AUGUST 8, 1925.

NEW LIGHT ON MUSCLE TONE.

A NOTEWORTHY feature of the study of diseases of the nervous system in recent years has been a return to more purely clinical and physiological methods of approach. This tendency is well seen in Dr. KINNIER WILSON's Croonian lectures on Some Disorders of Motility and Muscle Tone with Special Reference to the Corpus Striatum, of which the final instalment now appears in our columns. The Croonian lecturer is to be warmly congratulated on his survey of an admittedly intricate neurological problem; the space demanded for its elaboration was warranted by its practically helpful nature. It is no exaggeration to say that 20 years ago our knowledge of the functions and diseases of the corpus striatum was almost negligible, while our conceptions of disorders of motility in general and of muscle tone in particular were strictly limited. Since then an enormous amount of investigation, both clinical and pathological, has taken place, amongst which the original work of Dr. WILSON himself in identifying the syndrome now known as progressive lenticular degeneration (Wilson's disease) with disease of the corpus striatum must always hold a high place of merit. No one indeed is more fitted than he to throw light on the darkness of the general knowledge of this subject. But speculation and hypothesis have much exceeded ascertained facts in this as in other departments of medicine, and the student may well be disconcerted at the confusing nomenclature and theories which have been adumbrated. The various types and the sequelæ of epidemic encephalitis have, as is well known, added largely to the group of conditions in which disorders of motility and of muscle tone are commonly seen and attributed to striatal disease. The frequency in particular of the Parkinsonian syndrome as a sequel of this disease has provided opportunities of study of which Dr. WILSON has availed himself very fully.

Dr. WILSON's careful analysis of the symptoms of striatal disease as exemplified in the Parkinsonian syndrome may be compared with Prof. CRUCHET's University of London lecture, published in this issue, on the Relation of Paralysis Agitans to the Parkinsonian Syndrome of Epidemic Encephalitis. In many respects their opinions differ, as will presently be shown. The "paralysis," to use a general term, present in the Parkinsonian syndrome is considered to comprise three factors: (1) A relative motor weakness, most marked in those muscles whose mass is small; (2) a slowness of movement; and (3) a poverty of movements. The term "akinesis" is used to embrace these three symptoms, and the suggestion is made that part at least of this akinesis arises from an unwillingness to move, since in this disease movements require an unusual effort. One of the symptoms generally described as occurring in the Parkinsonian state is a loss or diminution of the so-called "associated" or "automatic" movements. Such movements Dr. WILSON prefers to call movements of coöperation, and he is at pains to show first that these sorts of movements are not in reality lost, and, secondly, that to argue from their supposed absence the existence of a centre for such movements in the corpus striatum is a fundamental mistake. With his opinion on this point we are in entire agreement. The general opinion that there is an increase in muscle tone in these disorders is upheld by the lecturer, though the relation between the increase in tone and the loss of movements is not constant. We cannot here follow the lecturer in all his arguments, but the reader will note with interest that Dr. WILSON disagrees profoundly with HUNTER's recent conclusions as to the existence of a condition of plastic tone in the Parkinsonian state. Involuntary movements of different kinds are usually held to hold a place in the symptomatology of diseases of the corpus striatum. The principle laid down by HUGHLINGS JACKSON is recalled that positive symptoms, such as involuntary movements or tremor, cannot be directly caused by a purely destructive lesion. Such symptoms may be due to irritation or they may constitute what is now known as a "release phenomenon"—that is, the incoördinated or unqualified action of certain neural mechanisms when released from the normal control of the mechanisms which have been destroyed. The problem, therefore, is, as Dr. WILSON suggests, not what mechanisms are paralysed but what are active. Regarding the involuntary movements of chorea, Dr. WILSON has made the interesting observation that in many cases he found an interruption of the normal reciprocal innervation of muscles. He considers that a relative integrity of the pyramidal or cortico-spinal tracts is essential for the appearance of true choreiform movements, an opinion which receives strong support from the established clinical fact that the greater the amount of paralysis in chorea ("limp chorea") the less is the amount of movement present. No sharp distinction can be drawn between the movements of chorea and those of athetosis, and it is natural to postulate a similar cause for the two conditions. Dr. WILSON's arguments lead to the view that both chorea and athetosis have their origin in some afferent disorder of regulation, attributable to lesions of the cerebello-mesencephalo-thalamo-cortical path, from which conclusion the conception of an involuntary cortical motor activity follows.

The pathogenesis of tremor has long been a matter of dispute. Few probably will gainsay the view that it must be regarded as a release phenomenon of some kind. In Dr. WILSON's view it differs fundamentally from chorea and athetosis, if only because in tremor the normal reciprocal innervation of muscles is still found, while in chorea and athetosis it is wanting. His conclusions are so interesting that they may be here repeated. "Tremor is an involuntary movement belonging to the old motor system (infracortical subpallial), while choreo-athetosis is an involuntary movement of the new (cortical pallial) system." Prof. CRUCHET's close clinical studies of the features of the post-encephalitic Parkinsonian state and of paralysis agitans have led him to the conclusion that the two conditions are entirely different, a view which we think few neurologists in this country will support. His description of what he calls the bradykinetic syndrome approximates very closely to the akinesis of Dr. WILSON. But where he differs profoundly from most authorities is in his denial of the existence of any true rigidity or muscular hypertonus in the Parkinsonian state, an opinion in which we confess ourselves unable to follow him, though with many of his differential points in diagnosis between paralysis agitans and the post-encephalitic Parkinsonian state we are in full agreement. We feel that these Croonian lectures should be of service in disentangling essentials from a mass of confusing hypotheses, which have been erected on an unstable base of unconvincing attempts in the correlation of clinical symptoms with the facts of morbid anatomy. In the unravelling of the problems of disease of the human nervous system the clinical method must always hold the first place and the value of these lectures as an example of close and unbiased clinical studies is great. They should serve to quicken interest in a difficult subject and rouse the possibly flagging spirits of any who may have been led to think that the day was past when purely clinical methods could achieve progress.

◆

FOOD SOPHISTICATION IN 1924.[1]

The sophistication of food is a tempting form of deceit, and the last report of the Ministry of Health shows that it has not lost its attraction for various trades. When the purveyor causes 2 lb. of sugar to appear where only 1 lb. grew before he is expressing his impulse to cultivate; in selling them by misrepresentation he is educating his wits; financially he is satisfying his acquisitive instincts. But these considerations do not appeal to a public which expects a pure food-supply. Wherever and whenever found such offenders should be treated in accord with their demerits, and it is matter for satisfaction that in this country to-day their careers are becoming precarious. Under the administration of the Sale of Food and Drugs Act there has been an increased activity on the part of many local authorities during 1924. The total number of samples analysed was 118,000—an increase of 3154 over the previous year—and, either as a result of rising interest in the subject or because of an improving moral atmosphere, the percentage of adulterations showed a slight reduction. A total of 6987 samples, or 5·9 per cent., was reported as adulterated or not up to standard, and, although this figure is very large, it compares favourably with the records of 1923 (6·1 per cent.) and 1922 (6·2 per cent.).

Milk was as usual the chief object of analysis, and of 62,133 samples which were purchased and submitted for analysis 7·7 per cent. were regarded as adulterated or not up to standard. This did not represent any improvement on the figure for 1922 and virtually none on that for 1923; but there were only 160 samples described as contaminated with dirt, as against 197 in 1923, which suggests that the efforts of the Ministry of Agriculture and other cognate bodies towards securing a clean milk-supply are proving effective. In 25 cases successful legal proceedings were instituted against vendors of dirty milk, and the cynical may note with relish that on Sundays there is more tampering with milk owing to the greater demand and a feeling of greater immunity from interference. Samples procured on Sundays in the county of Durham showed adulteration in 27·6 per cent. of cases, although the figure for all the specimens collected throughout the year was only 15·5 per cent. The addition of colouring matter is infrequent. Altogether 68 samples were reported against on account of such additions, and in 33 cases fines or costs were recovered; but in spite of the considerable number of prosecutions against milk-sellers, only two were prohibited from further carrying on their trade. As the fines inflicted were usually not large, it would seem that in all punitive proceedings reliance has been chiefly placed on the publicity which is given to the guilt. Over 10,500 samples of butter were analysed during the year, but of these only 1·4 per cent. were condemned as not up to the requirements of the Act. Loading with water is the most common treatment, and 74 samples contained water in excess of the maximum of 16 per cent. legally permitted. Foreign fats, such as margarine, were found in 68 samples, and in nine there was more than 0·5 per cent. of boric acid. At Leeds an informal sample of butter was purchased by the police from a hawker in the street. It was submitted to the public analyst, who reported that it was wholly margarine, and the vendor was sent to prison for three months for obtaining money under false pretences. Special interest has been taken in condensed and dried milks on account of the recent regulations dealing with them. A larger number of samples than usual was taken; but it was found that the percentage reported against remained about the same. Some were deficient in fat; three were contaminated with lead, and a good many were sold in tins bearing labels not in accordance with the law; but as the majority of the cases were first offences the local authorities generally contented themselves with cautioning the vendors. The sale of boricised cream without proper notice to the purchasers is still remarkably common. Altogether 196 out of 1089 samples bought as fresh cream contained boric acid, and 24 out of 1016 samples bought as preserved cream contained boric acid in excess of the maximum of 0·4 per cent. allowed. It may be observed in this connexion that the Committee appointed in 1923 by the Minister of Health to consider the uses of preservatives has advised the total prohibition of boron derivatives in food. Their cumulative action is obscure, but appears to be harmful, and from the practical aspect the Committee was convinced that they could be dispensed with in food without serious inconvenience to traders or consumers.

From the reports it would appear that the more unregenerate days of the "wicked grocer" are passing. A sugar adulteration of 0·3 per cent. of cases in 1924 is, comparatively speaking, negligible. The grocer is gaining a vindication from Mr. Chesterton's assertion that

> "He sells us sands of Araby
> As sugar for cash down."

Full-blooded poets are apt to belittle the grocer, and cry up mine host at the inn, so that the grocer may smile at the discovery that the righteous minds of innkeepers have led them in 13·5 per cent. of cases to adulterate their spirits. Two defendants charged with selling diluted spirits based their defence on notices exhibited in their bars advertising that the alcoholic strength of their wares was not guaranteed; but the ruling went against them on the ground that the article supplied was not of the nature, substance, and quality demanded. The display of notices in bars appears to be relatively inefficient. Not all grocers, however, have abandoned subtlety, and there has been some doubt in various places whether dyed and flavoured maize can legitimately be labelled as custard powder. Furthermore, several jam manufacturers have been prosecuted: one of them was fined £20 and ordered to destroy 1400 lb. of his produce, and another, whose strawberry jam contained not less than 75 per cent. of apple jelly but not one whole strawberry, had to pay a similar fine and costs. It is obvious from this information that the present machinery for detecting and displaying fraud is of great importance. Though it would be unwise to argue that the reduction of adulterated samples in two years from 6·2 per cent. to 5·9 per cent. indicates that in 40 years dishonesty will have been abolished in this country for ever, it may nevertheless be admitted that the outlook for the future is encouraging. In the meantime the machinery requires local support and extension.

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[1] Sixth Annual Report of the Ministry of Health (1924–1925); Annual Report of the Chief Medical Officer of the Ministry (1924). H.M. Stationery Office. 1925. Each volume 3s. 6d.

INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE.

THE Fifth International Congress of the History of Medicine was held at Geneva from July 20th to the 24th under the presidency of Dr. Charles Greene Cumston, lecturer in the history of medicine at the University of Geneva, with Sir D'Arcy Power as president of honour. The meetings, which were held in the Athénée, were well attended, representatives being present from Belgium, Cuba, Denmark, France, Great Britain, Holland, Italy, Morocco, Poland, Spain, Switzerland, and the United States. Opening addresses were delivered by the President of the Congress, the President of the Medical Society of Geneva, the representative of the Council of State, the rector of the University of Geneva, and the President of the International Society of the History of Medicine, and were followed by a lecture by Prof. Eugène Pittard, illustrated by lantern slides, on operations in the Stone Age. Special mention should be made of Dr. Cumston's address, which contained an account of the distinguished Geneva physicians Daniel Le Clerc, whom Dr. Cumston described as the father of the history of medicine, Jean Antoine Sarasin, the writer on plague, and Théophile Bouet, the morbid anatomist. In the evening the members of the Congress were entertained by the President and Mme. Cumston at the Hôtel des Bergues, where a concert terminated with the delivery of an ode specially prepared for the occasion in honour of the medical profession. On July 21st the principal papers read were one by Sir D'Arcy Power on the Disputationes chirurgicæ selectæ, or early eighteenth century theses, edited by Albrecht von Halle, and one by Dr. J. D. Rolleston on Voltaire and English doctors, particularly Cheselden, Mead, Hans Sloane, Friend, and Towne, the author of a work on diseases in the West Indies and translator of part of La Henriade. Dr. John Comrie lectured on the eighteenth century neurologist, Robert Whytt, who gave the first clear description of tuberculous meningitis; Dr. Guisan, of Lausanne, on Fabricius Hildanus, the celebrated surgeon of Basle; Dr. J. G. de Lint on a letter of Tronchin dealing with the Suttonian method of inoculation; Dr. Ernest Wickersheimer on the presence of syphilis at Geneva at the end of the fifteenth century; and Mr. C. J. S. Thompson on hygiene in early civilisations. In the afternoon a garden party was held in the grounds of Dr. and Mme. Rilliet's house at Vongeron, where, in addition to an admirable view of the lake and of Mont Blanc, the members of the Congress had an opportunity of inspecting the library of Dr. Frédéric Rilliet, the author of the well-known work written in collaboration with Barkez on diseases of children, and of meeting the veteran pædiatrist, Prof. D'Espine, whose resemblance to the late Sir Clifford Allbutt struck several of the British members present. On July 22nd papers were read by Dr. R. O. Moon on Paracelsus and medicine, by Dr. E. B. Krumbhaar, of Philadelphia, on the medical literature of the seventeenth century as exemplified in the Elzevir Press, by Dr. H. Renaud, of Rabat, on some recent acquisitions to the history of Arabian medicine in Morocco, by Dr. Tricot Royen on the history of lepers at Antwerp and Louvain, by Dr. Wickersheimer on the surgeon Jean Gispaden, who flourished at Grenoble and Annecy at the end of the fifteenth century, and by Mrs. Lilian Lindsay on the growth of dentistry in England from the earliest times to the beginning of the nineteenth century. The afternoon meeting was followed by a visit to the Rousseau Museum and the University library, where a number of rare works were on view. In the evening the Congress was received by the administrative Council of the city of Geneva at the Palais Eynard.

On the following day the Congress made a tour on the lake and visited the Castle of Chillon, when the medical profession of Montreux provided lunch, and then to Evian-les-Bains, where a banquet was offered by the administration of the spa. On the 24th Dr. Wierzbicki read a paper by himself and Prof. A. Wrzosek on auscultation in Poland during the first half of the nineteenth century. Dr. J. W. Courtney, of Boston, dealt with Dr. Benjamin Waterhouse, "the *Jenner of America*," Dr. De Alcardo of Madrid, exhibited the iron crown used in the middle ages as a cure for certain diseases of the head, and Dr. Bugiel described the life of the Polish students at the Paris Faculty of Medicine in the thirteenth, fourteenth, and fifteenth centuries. Mr. C. J. S. Thompson, in the absence of the writer, read Dr. J. B. Hurry's paper on I-Em-Hetep, prime minister to King Zoser, and afterwards the medical god of Egypt. The secretary of the Congress, Dr. de Peyer, contributed a communication on his ancestor Jean Conrad Peyer, the anatomist and physician of Schaffhausen. The Congress terminated in the evening with a banquet at the Hôtel des Bergues.

The next Congress will be held at Leyden in the last week of July, 1927, under the presidency of Dr. J. G. de Lint.

Annotations.

"Ne quid nimis."

COMFORTABLE WARMTH FOR MENTAL WORKERS.

RESEARCHES[1] carried out by Margaret Fishenden, D.Sc., and R. E. Willgress, B.Sc., on the heating of rooms for sedentary workers indicate that the most comfortable conditions for mental work correspond with an air temperature of about 55° F. in conjunction with the requisite intensity of radiation for warmth; that is, a source of radiant heat with a horizontal component of radiation equivalent to 75 British thermal units per square foot per hour, over the position occupied by the worker. In their work these authors used a room of about 4000 cubic foot capacity, and compared three sources of radiant heat: (1) gas fire, (2) electric heater, (3) low-temperature (up to 750° F.) specially-designed heater (6 ft. square), consisting of a shallow sheet-iron box with asbestos back and baffled interior almost filling the hearth opening and heated internally by a series of Bunsen flames playing upon an arrangement of refractory material. They preferred this low-temperature heater because it gave a more uniform distribution of radiation with height, the degree of comfort being greater than with either of the other two radiators. They found that with slightly higher air temperatures than 55° F. —e.g., 58° or 59° F.—a feeling of mental lassitude was produced, although radiation was still required to maintain warmth without physical exertion. Below 51° or 52° F. draughts or the effects of low air temperature became very perceptible, and the typical "scorched on one side, chilly on the other" sensations associated with open-fire heating in cold weather could be felt.

It is the relatively equable climate in Great Britain which renders open-fire heating practicable. Where long cold winters are experienced—e.g., the Continent, America, and Canada—open fires have to be abandoned as they do not supply sufficient air heating when the outside temperature is below 45° F., so that closed stoves or central heating are more generally used under these conditions. The authors deal also with air-heating systems, the air being heated either by hot-water radiators, or by ordinary luminous-flame bat's-wing gas burners arranged at suitable intervals around the room at a level of about six inches above the floor. Under such air-heated conditions without any source of radiant heat, an air temperature of about 65° F. is required to produce comfort; this means that the surrounding surfaces must also be at 65° F. and the air velocity very low (about ¼–½ ft. per second even near the floor). It is considered that with a surrounding temperature of 65° F. and ordinary clothing, the human body at rest is able to get rid of the heat produced therein by convection, radiation, and minimal evaporation. Comfort is thus maintained, but these conditions are not so favourable for mental work as when the air temperature is 55° F. and the extra heat supplied by a source of radiant energy. Of course, the air changes by draught up the flue are great with radiant heaters in the hearth, so that there is considerable movement of air in the room. Dr. Leonard Hill has long advocated the avoidance of stagnant air in rooms chiefly because of infection and monotony. He has pointed out in many of his researches that for health and mental alertness, ventilation by open fire and open window is the best in small rooms in this country. The present research confirms this view.

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[1] Department of Scientific and Industrial Research. Fuel Research Board, Technical Paper No. 12 The Heating of Rooms: A Comparison of the Costs of Different Methods on the Basis of Warmth Comfort. By Margaret Fishenden, D.Sc., F.Inst.P., assisted by R. E. Willgress, B.Sc., A.R.C.Sc. H.M. Stationery Office. Pp. 48. 1s.

Dr. Fishenden and her co-worker studied also the effects of draughts produced by electric fans. With air velocities of 2, 4, 6, and 8 ft. per second respectively, over the position of the observer dry-bulb air temperatures of 69° F., 72° F., 75° F., and 76½° F. were necessary to sustain warmth, in the absence of radiant heat. They found, however, that with draughts exceeding about 4 ft. per second the movement of air was annoying and detracted the attention from mental work. Of much practical value are the findings of these authors with regard to cost of heating. They calculate from their experiments the cost of different methods for imaginary rooms of 1000, 2000, and 4000 cubic feet respectively, and with occupants up to six in number. For continuous heating in small rooms, hot-water radiators fed from a coke-fired boiler are the most economical; but as the size of the room increases open coke or coal fires become cheaper, especially when there are only a few people in the room. This is because when air heating is employed the whole room must be warmed, however few the occupants, whilst with heating by radiation people can gather around a small fire whatever the size of the room. For intermittent heating, say, when a room is used only for four hours a day, hot-water radiators remain the cheapest for small rooms with more than one or two occupants, but for larger rooms, especially when sparsely occupied, open coal or coke or gas fires become cheapest. For longer periods of use the advantage of open fires over air heating is less pronounced; for shorter periods it is more pronounced. In larger rooms where people cannot gather round the fire, hot-water radiators are usually the cheapest method of heating.

From the health point of view, air heating with stagnation of air in the room is not desirable; and in practice it is often found that conditions of ventilation which appear to favour economy are by no means the healthiest. Thus the poor huddle together with much overcrowding, especially in winter. In China the natives cook their food by means of a fire under a brick platform and use the platform thus warmed as a sleeping couch at night. For many the cost of heating will remain a matter of greater consideration than the acme of hygiene. With the ever-increasing cost of fuel in this country these investigations of the Fuel Research Board have an immediate practical application.

THE DICK TEST.

THE admirable work of Dr. George F. Dick and Dr. Gladys H. Dick on scarlet fever has been followed in this country with keen interest. In January, 1924, they described their skin test for susceptibility to that disease, and in the following month a method of active immunisation. These successes were the result of a number of years of painstaking work and the experimental production of scarlet fever in the human being. In a recent paper[1] they resume this work, and cite further evidence of the production of immunity to scarlet fever. Accurate standardisation of the scarlet fever toxin is essential, and the Dicks state that on testing samples of skin-test solutions from various sources they have found them ranging from one-fourth to four times their proper strength. They believe that a positive reaction may be produced in immune persons by injecting a larger test dose, and that negative reactions may be obtained in susceptible persons by reducing the dose; further, that some skins react with papule formation to intradermal injection of mere sterile salt solution. In order to avoid confusion from this, and from the small reddened area which may be caused by the added preservative, the skin-test dose was so graded that an area of reddening of less than 1 cm. in all diameters is regarded as a negative reaction. On the other hand, an area of reddening, however faint in colour, measuring 1 cm. or more in any diameter, is considered a positive reaction. If the reaction has entirely faded at the end of 24 hours they regard it as negative.

In this country a number of observers have been engaged in testing the Dick susceptibility reaction with results in the main conforming to those obtained in America. Little, however, has been done in attempting to produce active immunity to the disease. The technique for the Dick test is the same as for the Schick test, but it is worthy of note that when the fluid is injected a little more deeply into the skin than it should be, the Dick test is liable to fail where the Schick reaction would appear. Several dilutions of the toxin have been used for experimental purposes, the amount of fluid injected into the skin being kept constant at 0·2 c.cm. The reaction has been found to vary in intensity, in the size of the erythematous area, in its time of appearance, and in the time it lasts. With a dilution of the toxin of 1 in 1000 the Dick reaction appears as an erythematous area (seldom indurated) arising at the site of injection, the erythema varying in intensity in a way comparable to the various tints seen in the different rashes of scarlet fever. The size of the erythematous area varies considerably, but usually measures from about three-quarters of an inch to rather over an inch in diameter. In the experience of Dr. F. Thomson at the North-Eastern Hospital the interval from the time of injection to the commencement of the erythema has averaged from five to six hours, but it may be postponed for 24 hours, and has been observed within two hours. The average duration of the erythema has been about 40 hours, and in two instances only was it under 24 hours. One of these had disappeared in 13 hours when rubbing re-elicited the erythema, which then lasted a further two days. With higher dilutions of the toxin—e.g., 1 in 6000, when injected alongside the 1 in 1000 dilution on the same person—the resulting reactions have been found not infrequently to be as large as with the dilution of 1 in 1000, but their duration was less—seldom lasting 24 hours.

Evidently more work remains to be done before the value of the Dick test can be assessed, but a certain amount of optimism seems to be justified. The occasional failure of the test, when failure is not to be expected, serves at times to create disappointment, but the difficulty in standardising the toxin and the possibility of faulty technique in carrying out the test must be remembered.

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[1] Journal of the American Medical Association, May 16th, 1925.

meantime it might be well to avoid defining too closely what or what is not a positive result, and to keep exact records of the reactions. The question to which we should like an answer is: Does a positive Dick reaction show that an individual is susceptible to scarlet fever and does a negative result show that he is not? And the answer is not yet forthcoming.

SUBSTITUTED UREAS IN TRYPANOSOMIASIS.

The undoubted value of the substance known as "Bayer 205," and the obscurity which has hitherto shrouded its constitution, have resulted in focusing attention on its chemical constitution. Since 1923 work of investigation has been carried out in the laboratories of the British Dyestuffs Corporation on the synthesis of certain ureas and their effect upon trypanosomes. The idea of working upon these ureas was suggested by the numerous German patents which had been taken out relating to such bodies, and by a formula, suggested by King in 1921, in which he indicated that the urea was built up by joining two chains which each contained two *p*-amido benzoyl residues. In a paper[1] published in the *Journal of Pathology and Bacteriology* T. H. Fairbrother and others have described in detail the preparation of three ureas and the investigation of their effect on trypanosomes. The trypanocidal action of these substances has been examined by ascertaining the action upon mice infected with *Trypanosoma equiperdum*. This organism is similar to the one which Wenyon employed in estimating the effect of "Bayer 205" in 1921. As a result of their work these investigators were able to show that there is definite evidence of trypanocidal properties in the substituted ureas, which are entirely dependent on the configuration of the molecule and on the groups which go to form it; but the only one of the three synthesised ureas which showed marked trypanocidal properties was the one built up on the formula of Fourneau. This substance is the urea from meta-aminobenzoyl para-methyl meta-aminobenzoyl amino-naphthalene tri-sulphonate 4 : 6 : 8. Whilst the trypanocidal action of this urea in vivo requires further investigation, it has been found that on injection into a mouse its tolerated dose is 10 mg. per 20 g. mouse. The curative dose is as low as 0·05 mg., and this makes the ratio of curative to tolerated dose of 200 : 1.

EXPERIMENTAL PNEUMONIA.

Pneumococcus pneumonia remains one of the serious infective diseases, and it is singular as being the only bacterial infection in which a knowledge of the causative agent has not resulted in any perceptible reduction in mortality. The isolation of the several types of organisms has done something; the discovery that the form of coccus which so many normal people harbour in their throats is not usually the form which causes fatal pneumonia has partly, but by no means wholly, explained one of the mysteries of the disease; serum therapy has saved some lives, but it has not come into that wide use which guarantees the substantial utility of a remedy. Progress has been disappointing and the state of affairs at present is highly unsatisfactory. Any further knowledge of the relationship of the organism to the lung is therefore welcome, and those who are interested in the subject will find in the current number of the *Journal of Pathology and Bacteriology* (1925, xxviii., 427) an illuminating paper by Dr. J. F. Gaskell, of Cambridge, on the results of infecting rabbits by insufflation. He worked with a single strain of pneumococcus, the virulence of which varied spontaneously or was deliberately altered during the course of his observations, and his main point is that the effect varies with the virulence and not with the dose. With cultures of low virulence broncho-pneumonic lesions are produced, generally near the root of the lung and strictly localised to the areas originally infected; the animal recovers. With higher virulence localisation is less effective, and by coalescence a lobular pneumonia arises which may extend to pleurisy; with a further increase the whole lobe is involved, giving a true lobar consolidation, often with pleurisy and pericarditis. Finally, with very virulent organisms, an intense fatal septicæmia is obtained with a characteristic miliary lesion throughout both lungs—the lesion, that is, which is produced by subcutaneous inoculation. It will be seen that these results are in accord with the views previously published by Dr. Gaskell and Dr. R. R. Armstrong that the differences between broncho-pneumonia and lobar pneumonia in man are essentially relative rather than absolute, and depend mostly on the ability of the lung to localise the original infection by an inflammatory reaction. We seem to have here evidence that the progressive spread of severe acute lobar pneumonia, which is so striking a feature of the disease anatomically and clinically, is due to the qualities of the pneumococcus rather than those of the lung involved. The suggestion that dose is relatively unimportant corresponds well with the experience that overcrowding, which is the great practical factor which determines dose in respiratory infections, has little to do with the occurrence of the disease.

RESEARCH ON DISTEMPER.

Some years ago the resemblance between distemper and influenza associated in a common effort those who love their fellow men and those who see in them only one more reason for admiring dogs. Since 1923 the Medical Research Council has coöperated in the work on distemper undertaken by the *Field*, and at specially constructed premises near Mill Hill much has been done under a technical committee nominated by the Council. The special study of filterable viruses associated with distemper was entrusted to Dr. P. P. Laidlaw, with the coöperation, in particular directions, of Mr. C. C. Dobell, Dr. W. E. Gye, and Mr. J. E. Barnard, and it is greatly to be hoped that the conclusions reached, or at least the methods devised, by the two last in their work on cancer may prove of value in elucidating distemper. In the meantime, however, much necessary preparatory work has been done, and useful knowledge has been acquired about the propagation and spread of the disease. Its contagion is remarkably easily conveyed—e.g., by the hands, boots, or clothing of persons who have been in contact with dogs suffering from the disease—and it was necessary to erect elaborately insulated buildings in which to carry out the experiments. A fence which cannot be climbed surrounds them, and in the wall of the compound is a cleansing room which is the only means of going in or out, and in which all who enter must abandon their garments, take a bath, and put on sterilised clothes. The exact risk of the carriage of infection by flies is still unknown; but, although it has not been possible to protect all the kennels from them, their exclusion from the hospital is strictly enforced. It has been difficult to provide a supply of dogs perfectly free from infection and free from any acquired immunity. To produce these "clean" and susceptible subjects several generations have been bred under controlled conditions, and the investigators are now suitably supplied. Canine distemper, however, occurs in ferrets, and the use of these animals, which should be popular with rabbits, has led to economy in effort and expense. Moreover, it is hoped that a mild form of virus may be obtained from ferrets which will be useful in producing immunity in dogs. The *Field* should have high appreciation in the medical profession for its contribution to this sound and important work. Apart from the ever-present chance of research on one subject throwing light on another, the fact that man has modified canine evolution and fashioned the races of dogs in accordance with his own ideas to be his servants and friends, makes him responsible for compensating them out of the fruits of his increasing knowledge.

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[1] Jour. of Path. and Bact., vol. xxviii., 1925, by Thos. H. Fairbrother, M.Sc., F.I.C., F. A. Mason, M.A., Ph.D., F.I.C., W. H. Perkin, F.R.S., and Arnold Renshaw, M.D., D.P.H.

MEMORIAL TO THE LATE DR. HERBERT WILLIAMSON.

ALTHOUGH he died in the plenitude of his powers, Dr. Herbert Williamson had been for nearly 20 years a member of the staff of St. Bartholomew's Hospital, where it was early recognised that he had beyond other men the gift of imparting knowledge. The proposal is therefore peculiarly fitting to establish a memorial to him in the hospital itself, and it is made with the full approval of the medical council of the hospital. The form which the memorial takes must depend upon the sum subscribed, but it is hoped that at least a sufficient amount may be secured to endow a bed in the department in which he worked. Subscriptions from Dr. Williamson's former colleagues, students, and friends may be sent to Mr. J. Barris, F.R.C.S., 50, Welbeck-street, London, W. 1.

THE PRICE OF GOVERNMENT ISSUES.

ON the occasion, some three years ago, of the publication of the Annual Reports of the Registrar-General for England and Wales and for Scotland, we remarked on the high and increased price demanded for these valuable issues. We were moved to comment by the fact that the preliminary figures issued by the Registrar-General at that date happened to be of vital interest to all public health authorities, so that a restricted circulation, due to high cost of purchase, could only be regarded as of real public disadvantage. Especially did it seem that the prices demanded would constitute a distinct penalty upon public health officers, while it was urgently important that these officers should have them under their hands for reference—indeed, all medical men requiring to verify the statistical bases of their work should have access to them. We learn therefore with pleasure of certain circulars from the Ministry of Health, admitting that the price of the Registrar-General's statistical reviews has been a subject of real concern to the Ministry, and proposing to mitigate the situation in important directions. The effect of the circulars is to offer the "Tables Part I—Medical" and "Text" volumes of the Statistical Review to public authorities and medical officers at a reduced price of 12*s.* 6*d.* per annum (instead of £1) on condition (1) that a subscription is taken up for five years and (2) that a sufficient response is received to justify an enlarged edition. The authorities are also informed that it is within their power to incur expense in providing the volumes for the use of their medical officer.

Even when protesting against the price demanded for these publications we were aware of the difficulty in which the Ministry were placed and would be placed, by the attempt to lower the figure, and we are not surprised to learn that even at the present prices the publication entails a heavy loss on the Exchequer. We have here the position with which publishers of scientific works are always faced, for in the nature of things they are dealing with two irreconcilables—the cost of production must be very high because of the special character of the work, and for the same reason the circulation cannot be widespread. But drastic curtailment in the scope of such work is the last thing that the medical profession or the public services would desire. Economy at such a cost would be disastrous. The only practical policy is to increase in every way the circulation, for no one would consider as a practical proposition the whittling down of the information contained in the reports until their practical utility was gone. The absence of a sufficient number of purchasers is the key to the situation, but it can hardly be expected that public health officers will find at their private expense the money to buy documents required in discharge of their public duties, especially when the sum required is considerable. The indication from the Ministry of Health to the local authorities that they have legal power to purchase the Statistical Reviews for the use of their medical officers removes at once an obstacle to a more general employment of these volumes, and in this way helps to solve the problem. The special price will not be confirmed until it is seen whether sufficient support is forthcoming, and the responsibility is now with the public health authorities and services for accepting the welcome opportunity offered. As is suggested above, the volumes are of obvious use to others besides those for whom the new arrangement has been designed especially; not only official departments and medical practitioners, but the public, through public libraries, may be moved to be purchasers, and by swelling the bulk of the circulation bring down the price of the volumes to a lower level.

POST-GRADUATE EDUCATION IN LONDON.

THE Minister of Health has appointed a Committee "to draw up a practicable scheme of post-graduate medical education centred in London." The Committee, whose chairman will be the Minister of Health himself, is constituted as follows: Lord Dawson of Penn, Sir Humphry Rolleston, Sir John Bland-Sutton, Sir Thomas Horder, Sir George Newman, Sir George Blacker, Prof. Hugh MacLean, Dr. R. A. Bolam, Dr. H. G. Dain, Mr. H. J. Paterson, Dr. J. Parkinson, Dr. H. L. Eason, and Mr. A. E. Webb-Johnson. The appointment of this Committee follows closely on the visit to this country of the Inter-State Post-Graduate Assembly of America, when Dr. Charles Mayo repeatedly advocated the foundation in London of a graduate school which should draw students from all quarters of the English-speaking world.

MEDICINE AND THE LAW.

Case of Alleged Malpraxis: Withdrawal of a Claim.

AN interesting case was recently heard before Mr. Justice Fraser, when damages were sought from Dr. R. G. Clements by an employee in the tramways department of the Manchester corporation for alleged malpraxis. The plaintiff had been attended for rheumatism, and his statement was to the effect that he had suffered no pain in his eyes until the doctor's assistant "flicked some powder from a box into them." Medical evidence for the defence showed that the plaintiff's condition could not have been caused by the drug, but that rheumatism, for which the plaintiff was first treated, and his eye-trouble were due to the common cause of an autogenetic poisoning. The defendant gave evidence, supported by specialists, to the effect that the general condition of the plaintiff and the condition of the eyes were due to a focus of poisoning which affected different parts of the body at different times, and before the medical evidence for the defence was completed the plaintiff's counsel intimated that he did not consider it right to go so far as to leave the case to be decided by the opinion of a jury. He withdrew on plaintiff's behalf every aspersion of any kind against the defendant, the proceedings having been brought under a misconception of the facts. The judge, in directing the jury to return a verdict for the defendant with costs, stated that there was not the slightest foundation for any suggestion of negligence, that it had been made abundantly clear that there were no grounds for any of the imputations, and that the course taken by counsel for the plaintiff was one that would have been expected from one of such legal experience.

The case is of importance to the medical profession as it illustrates the tendency on the part of patients to jump to conclusions on medical subjects without having the necessary knowledge to support the conclusions. The conduct of the defence was entrusted to the Medical Defence Union.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXXXIV.

THE TREATMENT OF PSEUDOCOXALGIA.

THE rationale of the treatment of pseudocoxalgia cannot be readily understood without a clear understanding of (1) the nature of the disease, (2) the various suggested causes, and (3) the clinical signs which vary in each phase of the process. As will be seen, treatment is different in the different phases.

Nature of the Disease Process.

Pseudocoxalgia is a condition of the hip-joint commencing in young children between the ages of 5 and 10, until recently not distinguished from tuberculous disease, and identified by means of serial radiograms which show a characteristic cycle of changes in the head and neck of the femur. Clinically, radiographically, and for the purposes of treatment, pseudocoxalgia may be divided into three stages named according to the predominant change in the head of the femur as seen in the X rays. Normally, in the child, the head of the femur consists of a cartilaginous envelope enclosing a bony nucleus. In the X rays the bony nucleus appears as a dense shadow. The surrounding cartilaginous envelope casts no shadow, but its extent can be judged by the clear space shown between the head of the femur and the acetabulum. The changes of pseudocoxalgia concern both the bony nucleus and the cartilaginous envelope.

In *Stage 1*, the stage of flattening, the head of the femur retains its normal shape as a whole, but the bony nucleus becomes smaller; there is more cartilage and less bone in comparison with the normal. Not only is the bony nucleus smaller but its density is irregular; in parts it is more, in others less opaque than usual.

In *Stage 2*, the stage of fragmentation, the cartilaginous envelope becomes flattened; it is no longer hemispherical but is spread out over a wide area and the neck on which it sits expands to accommodate it. The ossific nucleus becomes fragmented and in places disappears completely. It is as though the strength of the head of the femur has departed with the disappearance of the bony nucleus, and as a result the cartilaginous envelope has been flattened out by the superimposed body-weight of the patient.

In *Stage 3*, the stage of repair, the cartilaginous envelope retains the flattened expanded form it acquired in stage 2, while the bony nucleus gradually re-forms until a final stage is reached when the ossific centre has filled out the misshapen cartilaginous envelope, leaving only a narrow peripheral margin of cartilage. The time necessary for the completion of this cycle of changes—flattening, fragmentation, and repair—is uncertain. It is usually considered that two or three years elapse before repair is established.

Ætiology.

A number of different causes have been suggested to explain the changes of pseudocoxalgia; of these only two need here be considered—viz.: (1) That pseudocoxalgia is a mild inflammatory condition affecting the head of the femur. The arguments against this are many: Often the condition is without symptoms at any stage, and in nearly every case is symptomless in stage 1. In contra-distinction to inflammatory conditions, such as tuberculous disease of the hip-joint, the radiographic changes precede the clinical signs. Microscopic examination reveals no evidence of inflammation. Abscess formation is unknown. The blood count never shows a leucocytosis. The Pirquet test is usually negative and the Wassermann test is invariably negative. (2) That the condition is due to trauma. The traumatic theory best explains the sequence of changes in the head of the femur. This theory supposes that, following a mild trauma, the blood-supply to the epiphysis is damaged, and the bone cells, deprived of their nutrition, die or at least become decalcified. The cartilage which derives its nutrition from the synovial fluid of the joint remains alive, but with the disappearance of the bony nucleus there is nothing to retain the shape of the epiphysis which, therefore, is flattened out under the influence of the body-weight of the patient. Eventually, the vascular supply is restored and new bone is laid down, but not before the epiphysis has become misshapen and deformed. Pending a more exact knowledge of pseudocoxalgia the acceptance of this theory is justified when the results of treatment based on the theory are reviewed.

Clinical Signs: Management.

As noted above, the clinical signs and symptoms, as also the treatment, vary with the stage of the disease.

In *Stage 1* there are few or no clinical signs, and for this reason only a few patients with the early changes of pseudocoxalgia come under observation. There may be a limp, and careful examination will reveal a slight limitation in the range of movement at the joint; the X rays will show the characteristic change in the head of the femur. Various authorities, particularly on the continent, have stated that treatment will not prevent the characteristic cycle of X ray changes. Observation on the effect of treatment in early cases of pseudocoxalgia does not confirm this statement. It is true that even with efficient treatment fragmentation does occur—one cannot diagnose the condition as pseudocoxalgia without; but I am convinced that if the patient is seen early—before the cartilaginous capsule has become flattened and spread out—this flattening can be prevented by the removal of superincumbent body-weight, so much so that when repair has taken place it may be difficult to tell which hip has been affected. It is important to prevent the flattening; the flattening leads to a large expanded head which will not fit into the socket of the acetabulum and the function of the joint is thereby impaired. The relief from weight-bearing should be continued until sufficient bone has been re-formed in the epiphysis to bear the body-weight without danger of the head becoming deformed. If the body-weight is removed the epiphysis does not flatten and the fragmentation of the bony nucleus is not so clearly shown and it is therefore difficult to know when the stage of regeneration has commenced; in view of this uncertainty six months' relief from weight-bearing should be the rule. The surest way of doing this is to confine the patient to bed; but the patient may be allowed up on crutches with a patten on the boot of the sound leg providing the parents can be made to understand that the child must on no account put the foot of the affected leg to the ground. Movement at the hip does no harm. Treatment only aims at preserving the shape of the head of the femur during the stage when it is soft and malleable.

In *Stage 2* the clinical signs are those of irritation of the joint, and may exactly simulate those of an early tuberculous arthritis of the hip-joint—i.e., limp, wasting (usually slight, however), deformity, and limitation of movement in all directions caused by muscular spasm. On the traumatic theory, one may suppose that the signs of irritation are due to the fact that the contour of the flattening expanding head no longer corresponds to the contour of the acetabulum. This stage may be of long or short duration or may even never exist; many cases of pseudocoxalgia do not at any stage reveal their presence clinically. As regards treatment, rest is indicated for as long as the signs of irritation persist. The body is attempting to treat itself on these lines by keeping the joint still by muscular spasm. By rest is meant avoidance of weight-bearing and cessation of movement at the joint. The child should therefore be immobilised on a hip-abduction frame in bed.

Alternately, a plaster-of-Paris spica will enable the child to get about on crutches with a patten on the boot of the good leg to prevent the affected leg touching the ground.

In *Stage 3* the cycle of changes known as pseudocoxalgia are at an end. The active process—whatever it is—has terminated; repair is completed. When, therefore, a patient with pseudocoxalgia is seen in this stage no treatment is called for in respect of the pseudocoxalgia, but the function of a hip-joint that has been altered by the process may be improved. Instead of the normal spherical head of the femur fitting into an exactly similar shaped acetabular socket, the head has an expanded, flattened surface which is markedly different from the contour of the acetabular socket. This incongruity between the shape of the head and the shape of the socket may give rise to two conditions which will impair the function of the joint:—

(1) There may be a limitation of movement preventing normal use of the limb. The important movement that is apt to be restricted is abduction; the leg will not abduct beyond the midpoint (sometimes there is fixed adduction). Now, abduction at the hip is essential for a normal gait. If abduction is impossible, when weight is borne on the affected leg, the pelvis cannot be raised on the opposite side, and to preserve the balance of the body the trunk is thrown over to the affected side, exactly as happens in the gait of a patient with a congenital dislocation of the hip. This "dipping" gait is unsightly and can be overcome by performing a trans-trochanteric osteotomy of the femur and resetting the fractured femur with the lower fragment abducted, as in the treatment of an old tuberculous hip with adduction deformity.

(2) As a result of the asymmetry of the opposed contours of the head of the femur and the acetabulum osteo-arthritic changes occur, causing pain and stiffness and limitation of movement at the joint. The continued irritation, leading to osteo-arthritic changes, can be prevented by an operation at which the head of the femur is exposed and moulded by trimming off its expanded periphery so that it conforms more in size and shape to the acetabular socket. The contour of the head is not changed by this operation, but its size is diminished to such an extent that it will fit into the acetabulum. This does not damage the joint as the remodelled head is covered for the most part with cartilage and fits into an acetabulum lined with normal cartilage.

Summary.

In *Stage 1*, relief from all weight-bearing is required to prevent the softening head from being flattened out by the weight of the body. In *Stage 2*, when signs of irritation are present, rest is indicated—relief from weight-bearing and from movement. In *Stage 3* no treatment is required. In the aftermath of pseudocoxalgia an osteotomy of the femur may be necessary to increase the range of abduction of the limb, or a modified arthroplasty may be desirable to prevent arthritic changes developing in the joint.

George Perkins, M.Ch. Oxf., F.R.C.S. Eng.,
Assistant Surgeon, Royal National Orthopædic Hospital.

Superannuation for Municipal Officers.—The Minister of Health and the Secretary for Scotland have appointed a committee to inquire and report whether any amendments are required in the Local Government and Other Officers Superannuation Act, 1922, and in particular (*a*) whether it is desirable that the scheme of superannuation established by that Act should now be made obligatory on all local authorities; and (*b*) whether that scheme should, with or without modification in respect of particular classes of officers, be made applicable to all persons in the employment of those local authorities, other than school teachers and police. Dr. Drummond Shiels, M.P., is a member of this committee, of which Sir Amherst Selby-Bigge is chairman, and Mr. V. L. Harkness, of the Ministry of Health, secretary.

Special Articles.

THE TUBERCULOSIS CONFERENCE.

LONDON, JULY 6th–7th.

The eleventh annual conference of the National Association for the Prevention of Tuberculosis was held in the Robert Barnes Hall of the Royal Society of Medicine on July 6th and 7th, and reference has already been made to the opening session and to Prof. Pirquet's opening address, read in his absence by Dr. Richard Wagner (Vienna).

Sir William Thompson, Registrar-General to the Irish Free State, submitted a statement showing, for each sex, the tuberculosis mortality under 5 years, 5 and under 10 years, 10 and under 15, and at all ages, in Ireland, per 1000 of the population at these ages, in the years 1911 and 1924.

Year.		Mortality from tuberculosis in Ireland per 1000 population.			
		Under 5 years.	5 and under 10 years.	10 and under 15 years.	All ages.
1911	Males ..	2·09	0·70	0·80	2·14
	Females..	1·96	0·87	1·48	2·09
	Persons ..	2·03	0·79	1·14	2·12
1924	Males ..	1·00	0·45	0·55	1·41
	Females..	0·85	0·44	0·89	1·48
	Persons ..	0·93	0·44	0·72	1·45

Bovine Infection in Children.

Dr. A. Stanley Griffith (Field Laboratories, Cambridge University) detailed the results of the investigations he had made since 1911 on human and bovine infections in children and adults. It had been suggested, he said, on purely theoretical grounds, that small doses of bovine tubercle bacilli in milk might be beneficial to children by conferring on them an immunity to the more dangerous human infection. This hypothesis was based on two assumptions: (1) that the bovine tubercle bacillus was less virulent for man than the human tubercle bacillus; (2) that small doses of bovine tubercle bacilli generally produced mild and curable lesions. But there was evidence that the bovine tubercle bacillus had, if anything, a slightly higher intrinsic virulence for man than the human tubercle bacillus, and that the absorption of a small number of bacilli from the alimentary tract might lead to serious and fatal disease in susceptible infants and children. He had made examinations in the cases of two children, aged 2 and 6 years, who died of tuberculous meningitis; in both instances there were only minimal lesions in the mesenteric glands. Moreover, there was little doubt that the vast majority of the cases of surgical tuberculosis of bovine origin were produced by small doses of tubercle bacilli, since in these cases there was clinically no evidence of disease of the alimentary tract.

It was known that an animal already tuberculous is more resistant to an experimental infection than a normal animal. And it was reasonable to suppose by analogy that a child suffering from a chronic form of tuberculosis, whether of bovine or of human origin, may be more resistant to a subsequent infection. There was, however, not the least evidence that the absorption from the alimentary tract of a small number of bovine tubercle bacilli, which produced no lesions, had a significant or lasting immunising effect.

The numerous instances in children and adults of calcareous and encapsuled lesions which no longer contained living tubercle bacilli could only be taken as evidence of a natural immunity which might or might not have been enhanced by the infection.

Anticipatory De-tuberculisation.

In the afternoon the discussion was opened by Prof. Sir Robert Philip, Vice-Chairman of the Association, who outlined the recent progress of the preventive treatment of tuberculosis in children. One suggestion made was that children born of tuberculous parents should be separated at once from any domestic source of infection, as was successfully practised among cattle. But this method only shelved or delayed the risk. Under present conditions of communal life such a child must run the gauntlet of exposure to infection on subsequent occasions. The same fallacy underlay most attempts to obviate exposure to infection. While in earlier years of infancy it was doubtless sound to delay or minimise exposure, we must be careful not to credit the procedure with undue potential.

A similar fallacy attached to procedure based on the "Grancher" principle, in accordance with which delicate children, sometimes wrongly termed "pre-tuberculous," were transferred from dubious home environment to presumably healthy surroundings in the country. It was frequently suggested, and seemed to be generally believed, that the children were thereby saved from infection. In actual fact, most of the children thus taken in hand were already tuberculised. The excellent results frequently attained were to be attributed to heightening of the child's resistance by maintenance of improved environment—in other words, to a progressive de-tuberculisation along natural lines.

Another proposal was that prior to "spontaneous" infection the child should undergo artificial inoculation (vaccination) in order to anticipate the effect of exposure to infection. Various attempts in this direction had been made. According to Calmette's recent adaptation of the principle, the infant was given by the mouth on the third, fifth, and seventh days after birth a measured quantity of tubercle bacilli, the virulence of which had been reduced by repeated culture on a special medium. It was claimed that a temporary immunity to "spontaneous" infection was thereby attained; the claim was supported by encouraging observations on calves, but it had yet to be seen to what extent, in the absence of illness, parents would consent to submit their newly-born infant to inoculation with tubercle bacilli, however modified, and however simple the process might be. Time and intensive education would be required to leaven popular opinion to the necessary extent.

The plan introduced by the speaker under the name "anticipatory de-tuberculisation" proceeded on the assumption that infection practically always took place during childhood, that the occurrence of the subsequent process of tuberculisation might be definitely determined, and that it was possible to limit and counter tuberculisation by a process of de-tuberculisation.

The process of anticipatory de-tuberculisation had two aspects: (1) Environmental. The influence of improved environment on the resistance of the individual was admitted by all and the principle of the sanatorium should be carried into the whole of social life. (2) Antigenic—by the use (percutaneous) of tuberculin. Antigenic treatment should be commenced when the fact of tuberculisation was definitely established.

The remarkably uniform results observed over many years had much impressed him; not only was the local and immediate result satisfactory, but a systemic influence was exerted which tended to be permanent.

Percutaneous Application of Tuberculin.

Dr. Fergus Hewat (assistant physician, Edinburgh Royal Infirmary) gave an account of the percutaneous application of tuberculin which he had carried on for five years among out-patients from the wards and later at the special tuberculosis clinic. The patients included children with well-marked tuberculous cervical glands on which the surgeon did not advise operation, a number of post-operative cases, and also a considerable number of children who showed a positive tuberculin skin test, slightly enlarged cervical glands, and some degree of muscular wasting, and whose parents stated that they were always tired, that they failed to gain weight, and had poor appetites. In some of these children there were ill-defined abdominal symptoms with attacks of colic at intervals, and palpation showed slight resistance of the abdominal wall towards the right lower quadrant of the abdomen.

If the presence of any local source of septic absorption or any disease other than tuberculosis had been negatived, the children were given a test dose of 10 per cent. Moro's tuberculin ointment made up from Koch's original old tuberculin; this was rubbed into the skin, usually below the clavicle, and if a positive skin reaction was obtained treatment was given once a week, the strength of the ointment being gradually increased as the skin reaction became less pronounced.

No symptoms causing anxiety had occurred during the treatment of these children and very rarely indeed in adults; children were somewhat sleepy the day after the application, and showed a varying degree of skin reaction. Severe reactions amounting to eczema were completely healed in two or three weeks by a simple dressing of olive oil. During the treatment the toxic elements of the clinical picture gradually disappeared; in some two or three months the mothers would say that the children were brighter, more willing to play with other children, and had better appetites. Later the record sheets showed a steady gain in weight, the muscular irritability becoming less, and the children appearing less tired; any abdominal symptoms and physical signs disappeared.

Success was achieved in most cases; failures occurred especially among adults, but the regularity of attendance of the patients was a good index of the benefit they received. In children satisfactory results could be obtained from the use of tuberculin, particularly in a type of patient that drifted in an aimless way from one medical agency to another, never really ill and certainly never fully fit.

Ubiquitous Infection.

Dr. Clive Riviere (Victoria Park Chest Hospital) said that it was generally acknowledged that under present conditions in a civilised community infection with the tubercle bacillus could not be avoided, that such infection was dangerous in early infancy, and that in later childhood a very considerable resistance to tuberculosis was encountered. He laid considerable stress on the importance of immunity; it was mainly due to the general tuberclous infection and the immunity it had given that most of us were able to walk about the tubercle-soaked modern world without any obvious risk.

Prof. Louise McIlroy (Royal Free Hospital) pleaded for better institutional accommodation for pregnant tuberculous women and urged the provision of a special sanatorium with an obstetric staff in London or on the outskirts.

In the evening the annual general meeting of the Association was held in the Robert Barnes Hall. An excellent account was given of the work carried on, including propaganda and the conduct of the Burrow Hill Colony, Frimley, and the Association's new films, the "Invisible Enemy" and "Air and Sun," were shown.

Surgical Tuberculosis.

On the second day the conference was presided over by Sir Robert Philip.

The discussion was opened by Sir Henry Gauvain, who expressed his complete agreement with the views of Dr. Stanley Griffith on the importance of dealing with tuberculous milk, and showed slides illustrating the treatment at Alton and Hayling Island. He thought that personal cleanliness in the house was of more importance than roominess in the prevention of human tuberculosis; a clean pig-sty was safer than a clean palace. A false delicacy sometimes prevented instructions being given to the consumptive as to the necessary precautions. The horizon was widened nowadays; tuberculous arthritis was treated as arthritis in a tuberculous subject and attention no longer concentrated on the local lesion.

No special hospital for the treatment of surgical tuberculosis could be considered complete unless it possessed an out-patient department where discharged patients could periodically be examined, advised, and assisted. On discharge, full, complete, and individual directions should be sent to each parent or guardian. Advice in the choice of occupation and assistance in obtaining suitable employment should be forthcoming as well as medical help. Relapses might occur, deformities might arise, or neglect of simple rules of hygiene might create dangers to be combated and avoided. Facilities were desirable for sending old patients who needed change to open-air camps or holiday homes, particularly those working in conjunction with or under the management of the parent institution. Some cachectic patients, though no longer suffering from active tubercle, urgently required a prolonged stay in residential open-air schools. Others, whose deformities remained in spite of all endeavours to remedy them, should be transferred to a residential technical school for training in a trade suited to their limitations. Without such training restoration to health was insufficient to make them self-supporting, self-respecting citizens.

Prof. J. Fraser (Edinburgh) commented on the very large number of country children with surgical tuberculosis sent into the Edinburgh Children's Hospital, and explained it by quoting the experience of a medical friend who when being shown round a farm noticed a "fevered" cow, obviously heavily infected with tuberculosis, the milk of which was kept for the minister and his family, with the result that Prof. Fraser had to be called in to attend the sufferers. Inspection and supervision of milk were often a dead letter in Scotland; the staff of sanitary inpectors whose duty it was to supervise the production of milk was ridiculously inadequate, and insufficient encouragement was afforded to them in carrying out their duties. The phraseology of the legislation on milk gave him the impression that the wording was arranged to safeguard the producer rather than the consumer. He showed lantern slides illustrating the treatment of surgical tuberculosis at the municipal hospital at Colinton. He thought a word of warning was necessary against the use of mercury-vapour lamps by any except trained workers.

Dr. W. T. Gordon Pugh (C.M.O., Surgical Tuberculosis Service, Metropolitan Asylums Board) gave an account of the work at Carshalton where half the beds are reserved for surgical tuberculosis. He attributed the great improvement obtained nowadays in return of function to improvements in the appliances used and to the fact that a larger proportion of children were now transferred to suitable country hospitals at a comparatively early stage. But he feared that even now some patients were retained in London for weeks, months or even years when they should be in the country. In the first three months of a joint affection even a week's delay in securing constitutional treatment might mean in some cases permanent stiffening instead of complete functional recovery.

The speaker concluded by showing lantern slides illustrating the special spinal and hip frames and carriages used at Carshalton, designed to facilitate the application of heliotherapy. arc-lamp treatment, and gymnastic exercises, while immobilising the diseased part and facilitating locomotion.

General Discussion.

Dr. H. B. Bates (chairman, St. Helens Public Health Committee) initiated a resolution of the conference on the paramount importance of a tubercle-free milk-supply. Councillor Mrs. Dollan (Glasgow) spoke of the lack of courage of those who advocated such half-measures as pasteurisation in dealing with the evil. Prof. Share Jones (Liverpool) wanted full compensation for all tuberculous animals slaughtered for the public benefit. Dr. J. D. C. White (Harrow U.D.C.) elicited from Sir Henry Gauvain an advocacy of the carbon arc lamp for general purposes. Dr. R. M. Fenn (district T.O., West Riding C.C.) mentioned the help the N.S.P.C.C. afforded in obtaining reluctant parents' consent to treatment of their children. Dr. Morgan (T.O., Wallasey) had found that children after their return from institutions lost weight through insufficient hours of sleep, and Dr. A. Brownlee (Glan Ely Tuberculosis Hospital, Welsh National Memorial) called attention to the folly of patients in an advanced stage of phthisis being allowed to return home to infect young children in the family. Dr. W. B. Tomson (Hastings and St. Leonards Tuberculosis Care Committee) mentioned that in Hastings they had utilised the Grancher system: the Brighton Guardianship Society were placing infants in the villages near Hastings.

Sanocrysin Treatment.

The afternoon was given up to the treatment of tuberculosis by sanocrysin. Prof. Holger Mollgaard (Royal Veterinary College, Frederiksberg) said it could not be too strongly emphasised that this treatment was to be considered as a beginning only; clinical experience had already shown that rightly handled it may contribute a great deal to our present possibilities of curing tuberculosis of the lungs. After relating the principal ideas of chemotherapy, founded on the work of Ehrlich and built up on the numerous investigations following in the wake of salvarsan, he went on to develop the essentials of a rational chemotherapy of tuberculosis in which the peculiar features were the resistance of the tubercle bacillus due to its contained fatty substances and the poverty of the tuberculous tissues as regards blood-vessels. Any bactericidal agent to influence tuberculosis must be capable of *penetrating* the fatty system of the tubercle bacillus and be capable of reaching the tubercle bacillus by diffusing from the blood through the tissue at a rate faster than it is decomposed in or excreted from the human or animal body. Up to the present sanocrysin, the sodium salt of auro-thio-sulphuric acid, was the substance which best fulfilled the required conditions; the therapeutic agent was the negatively-charged ion AuS_2O_3.

Extensive animal experiments by Dr. Madsen and himself had established: (1) That sanocrysin is able to produce an acute, very severe intoxication in *highly* tuberculised individuals when injected in doses of 0·5 to 1·5 cg. per kilo. (2) That this intoxication exhibits all the principal features of tuberculin shock and does not occur in healthy animals, even when much larger doses are injected. (3) That the intoxication can be prevented or alternatively cured by means of a specific serum made by immunisation of healthy horses with killed tubercle bacilli. This meant that it was possible to confer upon tuberculous animals or human beings a specific immunity against the lethal effect of sanocrysin, and proved that the substance had a bactericidal influence on the tubercle bacilli in the organism and that the acute intoxication was due to liberated toxins. From the animal experiments they had learnt that the condition of absence of reaction to sanocrysin meant one of three things: (1) Sterilisation until negative results of guinea-pig tests or in Madsen's experiments until negative *result of* the inoculation on Petroff's medium. (2) Total immunity with loss of the Pirquet reaction, but without sterilisation. (3) Simple failure to react because the residual bacilli are too well protected by fibrous tissue or calcareous matter. In these cases the Pirquet reaction persists. In the human subject they had observed the last two conditions. To prove the existence of the first in a hospital clinic would probably be very difficult.

In the animal experiments the transitory stage between the disappearance of the clinical signs of tuberculosis in the lungs and the definite loss of reactions to sanocrysin was marked by "late reactions"—i.e., the reactions appeared two or three days after the sanocrysin injection. This fact was in close accordance with the power of sanocrysin to remain for several days in the blood and to diffuse through animal membranes. In the animal experiments the late reaction had been found only in the last stages of the cure, when the greater proportion of the bacilli had been got rid of. Clinical experience had, however, shown that in tuberculous man late reactions very often occurred at the beginning of the treatment. Such reactions had been found three and even five days after the sanocrysin injection, a fact of great importance because it meant that the injection of a fresh dose within this interval might bring upon the patients the risk of a cumulative effect of the liberated toxins.

The combined sanocrysin-serum treatment had brought about the clinical cure of calves and goats which had been severely artificially infected. Spontaneously infected monkeys, even when in a very serious condition, had been clinically cured, with disappearance of all objective signs of tuberculosis of the lungs, marked decrease of abdominal tumours, and large increase in weight. A year after treatment they were still healthy. The intracutaneous reactions in 12 spontaneously infected calves compared before and after treatment showed that five had lost this reaction and in three cases it had been reduced to the limit recognised in Denmark as representing a cure. In three cases the reaction had remained unaltered and in one case it had grown bigger. As the second tuberculin test was made four months after the treatment, it seemed probable that the loss of reaction was due to a real sterilisation.

Prof. Knud Faber's paper was published in full in THE LANCET of July 11th.

Prof. S. Lyle Cummins, C.B. (University College, South Wales and Monmouth), in a preliminary note said his experience was limited to eight cases, six only of which had been specially selected as likely to respond favourably to sanocrysin treatment. Of the unsuitable cases (the acute pyrexial type with pneumonic symptoms) one had already had five doses of sanocrysin, had suffered very severe reactions and was no better, perhaps rather worse, as a result. Of the other case it was still too early to speak as only two doses had been given, the reactions being very severe. All the selected cases had done well, and the improvement noted in them had been so much more rapid and so much more dramatic than could have been expected in cases of this type that he was unable to avoid the conclusion that sanocrysin was the favourable factor in each of them. His experience led him to think that we should safeguard the use of sanocrysin, not so much by reducing the dosage as by selecting patients with tuberculous lesions of relatively small extent. It would require years of observation and a careful following up of all the cases to decide whether the favourable results so far recorded are permanent.

SIR JOHN MACALISTER MEMORIAL FUND.

A FUND has been opened by the Council of the Royal Society of Medicine to commemorate the 38 years of service of Sir John MacAlister as secretary of the Society. The memorial is to take the form of a portrait to be placed in the Society's house. The list of subscribers to date is as follows:—

Dr. Peter Abercrombie, Dr. James Adam, Prof. J. George Adami, Mr. J. E. Adams, Sir Maurice Abbot Anderson, Dr. W. K. Anderson, Dr. H. Russell Andrews, Mr. Herbert Apperly, Sir Robert Armstrong-Jones.

Dr. Andrew Balfour, Mr. W. Girling Ball, Sir Charles Ballance, Dr. Charles Banks, Dr. G. F. Barham, Lady Barrett, Mr. J. Kingston Barton, Mr. Harold S. Barwell, Dr. F. Clifford Beale, Dr. W. Blair Bell, Sir James Berry, Lady Berry, Sir John Bland-Sutton, Mr. G. F. Harrison Bloom, Dr. Robert A. Bolam, Dr. Elizabeth Bolton, Dr. W. Cecil Bosanquet, Mr. H. Edmund G. Boyle, Dr. Charles R. Box, Mr. G. A. Bradnack, Dr. Edwin Bramwell, Mr. Elmore Brewerton, Sir J. Charlton Briscoe, Mr. W. Rowley Bristow, Dr. George S. Brock, Dr. Alfred Brown, Sir Charles Brown, Dr. J. Mitchell Bruce, Sir Bruce Bruce-Porter, Mr. A. H. Burgess, Dr. Dudley W. Buxton.

Dr. Harry Campbell, Mr. Percival S. Campkin, Dr. J. Walter Carr, Dr. George C. Cathcart, Sir Francis Champneys, Sir R. Havelock Charles, Mr. Arthur H. Cheatle, Sir G. Lenthal Cheatle, Sir W. Watson Cheyne, Mr. C. C. Choyce, Dr. J. F. Christie, Dr. J. B. Christopherson, Sir William Church, Dr. A. J. Clark, Mr. Ernest Clarke, Mr. F. J. Cleminson, Mr. H. S. Clogg, Dr. F. William Cock, Dr. E. A. Cockayne, Mr. Frank Coleman, Mr. Lionel Colledge, Dr. M. A. Collins, Sir Frank Colyer, Dr. Donald E. Core, Mr. Edred M. Corner, Sir Maurice Craig, Mr. Arthur Crook.

Mr. H. Morriston Davies, Mr. E. D. D. Davis, Lord Dawson of Penn, Surg.-Comdr. G. O. M. Dickenson, Mr. Alban Doran, Dr. Ernest Dore, Dr. J. J. Macwhirter Dunbar, Dr. J. Gray Duncanson, Mr. E. Craig Dunlop, Mr. Frederic Durham.

Dr. C. C. Easterbrook, Dr. Wilfrid Edgecombe, Mr. R. C. Elmslie, Dr. A. Geoffrey Evans, Dr. William Ewart.

Mr. C. H. Fagge, Dr. John S. Fairbairn, Mr. H. A. T. Fairbank, Dr. John Fawcett, Dr. Douglas Firth, Dr. Robert A. Fleming, Dr. H. Morley Fletcher, Dr. Ross Ford, Dr. David Forsyth, Dr. R. Fortescue Fox, Mr. Philip Franklin, Mr. J. S. Fraser, Dr. Herbert S. French, Dr. A. R. and Mrs. Friel, Mr. Edward P. Furber.

Dr. W. T. Gardiner, Mr. George E. Gask, Dr. C. Chapman Gibbes, Mr. Harold D. Gillies, Mr. Bryden Glendining, Dr. Lewis G. Glover, Dr. E. E. Glynn, Mr. C. H. Golding-Bird, Dr. W. N. Goldschmidt, Mr. G. Gordon-Taylor, Dr. Albert A. Gray, Dr. A. M. H. Gray, Dr. Emile de Gross.

Mr. Arthur J. Hall, Dr. F. de Havilland Hall, Sir William Hamer, Mr. Frank Harvey, Mr. J. P. Hedley, Mr. G. F. Hentsch, Lt.-Col. H. Herbert, Mr. William Hern, Mr. Harvey Hilliard, Mr. Montague L. Hine, Dr. C. Thurstan Holland, Mr. Eardley Holland, Dr. Geoffrey Holmes, Sir Thomas Horder, Mr. C. H. Hough, Dr. Cecil Hughes, Dr. William Hunter, Dr. Arthur F. Hurst, Dr. Arthur J. Hutchison, Dr. Robert Hutchison.

Dr. W. J. Smith Jerome, Dr. A. Mason Jones, Sir Robert Jones.

Mr. Frank Kidd, Mr. T. Pomfret Kilner, Dr. T. Percy C. Kirkpatrick, Mr. Albert Kisch.

Dr. G. H. Lancashire, Sir W. Arbuthnot Lane, Mr. William Lang, Mr. J. B. Lawford, Mr. T. B. Layton, Dr. James Leask, Dr. Henry A. Lediard, Mr. T. P. Legg, Mr. Hugh Lett, Mr. H. Levin, Dr. A. Goodman Levy, Mr. A. H. Levy, Sir William T. Lister, Mr. J. P. Lockhart-Mummery, Sir H. Bell Longhurst, Mr. George John Lucas, Sir Henry Lunn.

Dr. Charles J. Macalister, Sir Donald MacAlister, Dr. Anthony McCall, Dr. John McCrea, Dr. J. A. Macdonald, Dr. P. W. Macdonald, Mr. Robert McKay, Dr. Dan McKenzie, Dr. S. Ridley Mackenzie, Dr. Ashley W. Mackintosh, Sir Ewen J. Maclean, Dr. J. M. H. MacLeod, Dr. Arthur J. McNair, Maj.-Gen. Sir W. Grant Macpherson, Dr. John C. McVail, Mr. E. Distin Maddick, Sir George H. Makins, Mr. John D. Malcolm, Mr. George P. Male, Mr. H. J. Marriage, Dr. Cecily M. E. Maude, Dr. J. Preston Maxwell, Dr. H. Crichton Miller, Sir William Milligan, Dr. P. S. Mimbela, Dr. R. Pryce Mitchell, Dr. T. K. Monro, Dr. Irwin Moore, Mr. William James Moore, Mr. John Morley, Mr. Rutherford Morison, Sir Henry Morris, Dr. R. J. Morris, Sir Frederick Mott, Sir Berkeley Moynihan, Dr. George R. Murray, Dr. John Murray, Dr J. A. Murray, Dr. Nathan Mutch, Dr. Bernard Myers, Dr. Charles S. Myers.

Dr. David Nabarro, Dr. A. E. Naish, Mr. Humphrey Neame, Dr. E. A. Neatby, Mr. V. E. Negus, Mr. Cyril A. R. Nitch, Dr. Hubert J. Norman.

Dr. David Ogilvy, Dr. Martin Oldershaw, Mr. John F. O'Malley, Dr. John Owen.

Mr. Herbert W. Page, Mr. Stephen Paget, Dr. R. H. Paramore, Mr. Charles A. Parker, Sir Thomas Parkinson, Dr. William Pasteur, Mr. J. Lewin Payne, Mr. Herbert S. Pendlebury, Dr. Gerard Petit, Mr. G. H. Phillips, Dr. Robert C. Pierret, Dr. G. Newton Pitt, Sir R. Douglas Powell, Sir D'Arcy Power, Mr. Douglas S. Pracy, Mr. R. W. Prentice, Dr. Owen Pritchard, Mr. L. P. Pugh, Sir James Purves-Stewart.

Miss May Rathbone, Mr. R. Lindsay Rea, Dr. M. B. Reichwald, Dr. George Rice, Mr. Charles F. Rilot, Dr. Clive Riviere, Sir John Robertson, Dr. Alfred R. Roche, Sir Leonard Rogers, Sir Humphry Rolleston, Dr. T. A. Ross, Dr. Amand Routh, Dr. J. S. Risien Russell, Mr. E. Canny Ryall, Dr. John A. Ryle.

Mr. Louis Savatard, Dr. Mary Scharlieb, Mr. C. Schelling, Mr. Sydney Scott, Dr. James Searson, Dr. James H. Sequeira, Sir Seymour J. Sharkey, Dr. H. Batty Shaw, Dr. Edward B. Sherlock, Mr. James Sherren, Dr. W. Knowsley Sibley, Dr. Charles Singer Dr. Harold Sington, Mr. E. G. Slesinger, Dr. Heywood Smith, Mr. J. Priestley Smith, Dr. R. Percy Smith, Mr. Ivan S. Spain, Dr. Herbert R. Spencer, Mr. Walter G. Spencer, Mr. W. T. Holmes Spicer, Dr. E. I. Spriggs, Dr. Graham Steell, Dr. W. Gream Stone, Dr. Florence A. Stoney, Dr. Septimus Sunderland, Dr. W. S. Syme.

Dr. James Taylor, Sir StClair Thomson, Sir John Thomson-Walker, Dr. H. Letheby Tidy, Mr. Herbert Tilley, Sir Nestor Tirard, Dr. J. A. Torrens, Dr. A. Logan Turner, Mr. G. Grey Turner, Dr. William Turner, Dr. W. Aldren Turner, Dr. G. de Bec Turtle.

Mr. George E. Waugh, Dr. Lennox Wainwright, Dr. Jane Walker, Mr. F. Ashton Warner, Dr. W. M. Crawford Watson, Dr. Patrick Watson-Williams, Mr. A. E. Webb-Johnson, Mr. E. F. White, Dr. J. Douglas C. White, Mr. R. H. Anglin Whitelocke, Dr. T. Stacey Wilson, Dr. Thomas Wilson, Dr. T. Outterson Wood, Dr. A. Stanley Woodwark, Dr. H. W. Wunderly, Dr. F. Wyatt-Smith, Dr. Andrew Wylie, Dr. Andrew Ellis Wynter.

The total received to date is £615. The list is still open and subscriptions should be forwarded to the hon. treasurers, Royal Society of Medicine, 1, Wimpole-street, London, W. 1.

NATIONAL HEALTH INSURANCE AND THE MEDICAL SERVICES IN THE IRISH FREE STATE.

(FROM OUR DUBLIN CORRESPONDENT.)

A VOLUME of appendices to the Interim Report of the Committee of Inquiry on National Health Insurance and the Medical Services was issued last week. It contains the various memoranda submitted to the Committee, together with a summary of the evidence given by the witnesses. Nowhere in the evidence is there any opposition to the establishment of a national medical service for the Free State.

The strongest case in its favour was made by Dr. J. Power of the Irish Medical Committee, who received strong support from unexpected quarters. Mr. R. J. P. Mortished, speaking on behalf of the Irish Labour Party, found that a State Medical Service would be very desirable. The General Council of County Councils took the same view definitely in the following opinion :—

> "We recommend the establishment of a State Medical Service paid by the State and appointed under arrangements made by the State Health Authority. If it should be found impracticable to establish this service immediately, the promised legislation should make provision for its establishment as soon as possible, and the health scheme should be drafted with a view to its eventual establishment."

As some misunderstanding appears to have arisen as to the precise meaning of this recommendation, the General Council of County Councils was asked to submit a supplementary statement. The secretary of the Council then wrote as follows in regard to his evidence :—

> "During the course of my evidence the chairman suggested that the General Council should consider the relative merits of the making of appointments under a State Medical Service, (*a*) by the central health authority, or (*b*) by the local health authority from a panel submitted by the central authority. I have consulted the Executive Committee of the General Council on the subject, and am directed to state that, in their opinion, appointments to a State Medical Service should be made by the central health authority on the results of competitive tests—practical, as far as possible. They are of opinion, further, that in the conditions of appointment to a State Medical Service provision should be made for periodical tests of continued professional fitness."

The importance of the advocacy of a State Medical Service by the representative body of the county councils lies in the proof of willingness of these bodies to rid themselves of a patronage they possess at present. Equally important with the support of the county councils is that given by the Department of Local Government and Public Health. A memorandum submitted by the Department in reference to recent administrative changes in regard to medical treatment of the poor says that the Minister, in the changes he has so far made, has kept in view the possibility of a State Medical Service being introduced at a later date, and has been careful to say nothing that might militate against its being set up.

RADIUM AT THE NEW TORBAY HOSPITAL.—Miss V. E. Wills has given £6300 towards this hospital. Of the total such sum between £2000 and £4000 as may be necessary is to be used for the purchase of radium, and a further £500 is allocated for the construction and equipment of a radium room.

PROCESSIONS AND BALLOTS FOR HOSPITALS.—The authorities of the Church of Holy Trinity, Sloane-square, London, have protested to the Council of the Metropolitan Hospital Sunday Fund against the practice of holding Sunday processions of "men, women, and children dressed in weird and often vulgar costumes, the processions being the pretext for a lot of shouting and shaking of money-boxes," and of "appealing to the gambling spirit in issuing handbills on 'how to win a fortune for half-a-crown.'" It was pointed out that these processions are organised by an independent committee which gives the proceeds to the hospitals of its choice, but not necessarily to one hospital. The subject of "ballot appeals" was referred to the General Purposes Committee with instructions to report to the Council.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following table gives some of the statistics for 1924 of a group of two county boroughs, one city, and four boroughs :—

Name of borough.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Croydon C.B. ..	196,000	17·6	11·6	0·96	1·5	2·3	29	56	2·9
Eastbourne C.B.	54,830	12·1	10·9	0·79	1·5	1·6	40	58	—
Swindon B. ..	56,570	17·1	10·8	0·94	1·4	2·4	32	63	1·0
Worcester C. ..	50,220	17·2	13·3	0·97	1·2	2·9	22	51	1·1
Colchester B. ..	43,940	16·9	11·3	0·86	1·4	3·0	—	45	0·0
Hyde B.	33,770	14·7	14·0	1·10	1·6	2·7	40	103	4·0
Yeovil B.	16,060	17·6	10·8	0·87	1·3	1·6	42	78	3·5

C.B. = County Borough. C. = City. B. = Borough.
— = information not available from report.

Croydon.

Dr. H. P. Newsholme's report on the public health and school medical service marks an advance all along the line. Unification of the medical and nursing services has been achieved. Each health visitor is now responsible for all forms of health-visiting and school-nursing in her district. The school medical officers are also medical officers to the infant welfare centres, and each one is made responsible for the supervision of the health of the children attending a particular group of schools.

Negotiations have been completed for the extension of Cheam Sanatorium from 50 to 85 beds. There will then be 40 beds for tuberculous patients from Croydon, 40 for Surrey, and 5 for Kent. Early in 1925 the council approved a scheme for the development of occupational work at Cheam. The maternity hospital, St. Mary's Hostel (17 beds), is conducted by the Croydon Mothers' and Infants' Welfare Association, which is subsidised by the council. An additional subsidy for the purpose of extending the hospital and providing 13 additional beds is to be paid, and the council have approved proposals for the erection on a site adjoining the hostel of a new building at a cost of £6330. The new building will provide accommodation on the ground floor for an infant welfare centre and antenatal school, massage, dental and eye clinics, while the first floor will provide a sick nursery of 12 beds, one isolation cubicle, a ward of two beds for nursing mothers, and quarters for the resident staff.

Tuberculosis care work is to be handed over to the Croydon Council of Social Service, a voluntary organisation which coördinates many social activities, and includes representatives of official bodies. The council will provide an organiser trained in social work to assist the tuberculosis officer and the Council of Social Service. An occupation centre for the mentally defective has been established and is giving good results. Another new departure is an arrangement with the governors of the Croydon General Hospital for a public laboratory on an extended scale. Formerly the corporation bacteriological work was carried out at the hospital for infectious diseases. Under the new arrangement the Croydon General Hospital will provide a suitable building for the laboratory. The pathologist will be a salaried officer of the corporation and an honorary officer of the hospital, and will carry out all the pathological and bacteriological work required by the corporation and the hospital. The new arrangement is welcomed by the medical practitioners of the town. Early in 1925 arrangements were approved for the home nursing of measles, whooping cough, ophthalmia neonatorum, puerperal fever, epidemic diarrhœa, and infantile paralysis by the Croydon Nursing Service at a fixed charge to the corporation of 1s. 4d. per visit for such cases as are referred by the medical officer of health.

The school report concludes with an interesting inquiry into the incidence of adenoids, which is worthy of separate consideration. Adenoids are undoubtedly an important factor in diminishing a child's educational capacity.

Eastbourne.

Dr. W. G. Willoughby reports that the rainfall was 32·73 inches, being about 2 inches above the average for the last 40 years. The sunshine record was 1778·1 hours, which is claimed to be the fourth highest in the United Kingdom, and is 22·5 hours less than the average of the last 37 years. A "peculiar recrudescence" of enteric fever occurred during the year. There were ten cases from January to October, and in all those tested the blood-cultures showed paratyphoid B. No cause could be found, and all the patients recovered. The new male cases at the venereal diseases centre increased from 50 to 58, and the new female cases from 34 to 47. The increase is thought to be due to greater appreciation of the clinic. The existing cases of tuberculosis are being steadily reduced, especially of bone and joint tuberculosis; the deaths from tuberculosis in 1924 numbered 44, compared with an average of 51·7 for the previous ten years. The want of suitable occupation for cases leaving the sanatoria is badly felt, and Eastbourne is no exception as regards imperfection of after-care schemes.

A striking feature of the infant mortality was the large number of deaths during the first weeks of life; thus of 39 infant deaths 27 occurred in the first month One hundred and forty-three confinements took place at the municipal maternity home. Two of the babies were stillborn, and 18 died within ten days of birth. The infant mortality-rate for the first fortnight after birth in the home was 55 *per* 1000 births. One hundred and forty-four babies were born in the Infants' Home at 9, Upperton-road. Of these six were stillborn, six died on the first day, and two on the eleventh day. Antenatal work is growing, and 203 expectant mothers sought advice at the two antenatal clinics, a high proportion, seeing that the total births numbered 606. Insufficient housing and unemployment, says Dr. Willoughby, are the most serious adverse factors with which the department has to contend. Allowing six persons per house, about 150 houses are required annually to meet the increase of population. During the six years since the war only 405 houses have been completed. A better supply of small houses is needed. "The outlook for 1925 and 1926 is better and houses costing below £600 may be erected."

Swindon.

Dr. Dunstan Brewer again voices the urgent need for an adequate hospital unit in Swindon. During the past year progress has been made in the sanitary conditions of the district. The sewage works at Rodbourne have been completely reconstructed. The storm-water scheme for the newer part of the town was successfully completed during 1924, and despite the wetness of the year no flooding occurred in the lower part of the town. During 1925 it is hoped to reorganise the collection of house refuse by the provision of sanitary dustbins, and to make progress with the reconstruction of public lavatories. The canal is now practically filled up, thus removing an old-standing nuisance. The housing shortage does not diminish, though 200 new houses were erected in the borough during the year. "The position of the larger families becomes relatively and actually worse with each succeeding year." The corporation housing scheme is entirely without the borough. Dr. Brewer believes that it is possible to control scarlet fever, and founds his belief on the theory that scarlet fever is only infectious for the first day or two, but that certain persons possess the capacity of remaining infective for unlimited periods. It is by the control of these few infectors that he hopes for results. Diphtheria ceased to be endemic in Swindon in 1921. During 1924 60 cases of this disease were notified, but for the first year in its history no deaths from this disease occurred in the borough. For the better control of acute infectious diseases of the nervous system Dr. Brewer would like to have all forms of meningitis notified. The report contains an interesting appendix on the maternity and child welfare scheme of the borough with suggestions for its future development. The chief expenditure suggested is on a new maternity and infant hospital built on the pavilion system on an adequate acreage, and making provision for diseases of pregnancy, normal delivery, abnormal delivery, the puerperal state, and non-infectious diseases of infants.

Worcester.

Dr. Mabyn Read records that at the beginning of June, owing to the rapid rise of the Severn, 359 low-lying houses were flooded, and that active steps were taken by the health committee to relieve the consequent distress and to cleanse and disinfect the houses after the flood had subsided. The General Infirmary established during 1923 a fully equipped orthopædic department under the charge of Mr. Norman Duggan, F.R.C.S. In May, 1924, the council appointed Mr. Duggan honorary orthopædic surgeon to their Newtown hospital for the treatment of bone and joint tuberculosis. A satisfactory scheme has thus been provided for the treatment of these patients. In the first place they attend the orthopædic clinic at the General Infirmary, where they receive in-patient treatment, if necessary, and are provided with proper appliances. They then continue their treatment in the open-air wards of the corporation Newtown hospital. It is hoped soon to provide artificial-light treatment as part of the scheme.

Colchester.

Dr. W. F. Corfield reports an increase in respiratory diseases probably due to the wet and cold year, but that the pulmonary tuberculosis death-rate is lower than it has been for many years. Five members of the staff at the isolation hospital contracted scarlet fever. All of them made a good recovery. On the other hand, no cases of diphtheria occurred among the staff, and this result may have been due to the fact that all the junior staff who gave a positive Schick reaction were immunised. There was a decided increase in scarlet fever in the borough; 183 notifications, with five deaths. Two of the fatal cases were imbeciles from the Eastern Counties Institution, and Dr. Corfield points out the low resistance of such children to infections and to a fatal ending. There was a widespread epidemic of measles, with only two deaths, and Dr. Corfield attributes this result to the fact that parents have been educated by the health nurses to regard measles as a serious complaint. Whooping-cough, on the other hand, he says, is not treated seriously enough.

Hyde.

Dr. Nicolas Gebbie refers to the prevalence of pneumonia and respiratory infections and to the removal of the smoke cloud as the most important preventive measure. It will be noticed that Hyde is exceptional in having a three-figure infant mortality-rate, but a chart in the report shows that, whereas the infant mortality was just under 200 for the first five years of the century, it has been just under 100 during the last five years. The new maternity and child welfare centre, opened in June, is a valuable asset, says Dr. Gebbie, "and as a war memorial pays a worthy tribute to the men of Hyde who fell in the

Great War." Photographs and a plan of the building are included in the report. "The present rate of supply of houses in the borough is totally inadequate to meet present needs." Of 25 samples of milk examined for tubercle bacilli, three were found to be infected. In his school report Dr. Gebbie says there is a marked improvement in the general standard of cleanliness, but that inspections at frequent intervals are absolutely necessary to maintain the improvement. In July a committee of teachers arranged a visit to Wembley, and 353 children had to be examined by the medical officer; 51 per cent. of these showed evidence of successful vaccination. A few certificates were withheld on account of "nits" in the hair. The prospect of missing the trip and the energy of the school nurses in using Sacker combs at the clinic produced the desired result, and the withheld certificates were eventually granted.

Yeovil.

Dr. Charles W. Gee reports that the housing shortage still continues, and that a large number of houses are occupied by two or more families. The school care committee continues to provide from voluntary contributions much appreciated assistance to necessitous children who do not come within the scope of the Poor-law. Dr. Gee says an open-air school is badly needed to deal with pre-tuberculous anæmic and debilitated children, and special classes in such a school for dull and backward children. "In the meantime playground classes should be utilised as much as possible."

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 25TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 65; scarlet fever, 1580; diphtheria, 808; enteric fever, 60; pneumonia, 606; puerperal fever, 44; cerebro-spinal fever, 4; acute poliomyelitis, 0; acute polio-encephalitis, 2; encephalitis lethargica, 50; continued fever, 4; dysentery, 5; ophthalmia neonatorum, 107. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 6 deaths from enteric fever, 44 from measles, 8 from scarlet fever, 30 from whooping-cough, 22 from influenza, and 29 from diphtheria. There were 61 deaths of children under 2 years from diarrhœa and enteritis, as compared with 50, 44, and 29 in the preceding weeks. In London itself there were 9 deaths from diphtheria, 6 from whooping-cough, and none from influenza.

Correspondence.

"Audi alteram partem."

SURGERY BEFORE LISTER.

To the Editor of THE LANCET.

SIR,—In your review of Sir William Watson Cheyne's "Lister and His Achievement," being the first Lister Memorial Lecture delivered at the Royal College of Surgeons of England on May 14th, you say: "There is no reader of our pages but knows what surgery was before Lister's time. . . ." This, I think, is questionable, and the difficulty is to enable the present generation to realise the state of affairs that existed at that period. Even those who experienced something of the fringe of its horrors are apt sometimes to forget the advantages we enjoy to-day and to neglect some necessary precaution, with the result that we are pulled up suddenly only to realise their importance by a calamity. Well do I remember my first visits to a surgical ward in one of the smaller hospitals nearly 35 years ago, where the newer methods of wound treatment had not yet taken root. The surgeon pulling on the silk ligatures which had to be left hanging from the end of an amputation stump was a familiar sight and the regular application of linseed meal poultices to a suppurating tuberculous hip with its sour, sickly-smelling discharge. The earlier stage of a similar case left a still more vivid impression, for I can still see the surgeon incising a tuberculous abscess without any precautions whatever—for he neither removed his coat nor bathed his hands—and inviting me out of the kindness of his heart, for he was a great teacher, to thrust my unwashed finger into the freshly opened abscess so that I might feel the eroded head of the femur!

I have been told that in the old Royal Infirmary at Newcastle there was a "condemned" ward into which post-operative cases were put after a first rigor which so frequently ushered in a fatal septicæmia, and that patients commonly died of septicæmia after such simple operations as amputation of the toe, and that severe sepsis after any operation meant many months of painful suffering often followed by permanently impaired health. As Osler said, only those who have lived in the pre-Listerian days can appreciate the revolution which has taken place in surgery. All students ought to read the story of "Rab and His Friends," by Dr. John Brown.[1] There they will find in beautiful language an accurate description of an old-time operation for removal of the breast with the most wonderful picture of the after progress cruelly marred by the onset of a fatal blood poisoning—a name more embracing and expressive than those now commonly used. I can also strongly recommend "The Edinburgh School of Surgery Before Lister," by Alexander Miles, published by A. and C. Black. From it they will gather a vivid picture of operations in the earlier days and of the great men bold enough to perform them. But there is still room for some work describing the state of wound treatment just before Lister, and it should be done now while those who can most vividly write the story are still with us.

Of course, mention is often made of the conditions existing before Lister, but we require an exact description with some detail as much for educational as for historical purposes. I may be ignorant of what already exists, but the sort of work I have in mind should be easily accessible and suitable for student reading. It would supply a real want.

I am, Sir, yours faithfully,
Newcastle-upon-Tyne, July 31st. G. GREY TURNER.

THE ÆTIOLOGY OF CANCER.

To the Editor of THE LANCET.

SIR,—I think it ought not to be forgotten that ten years ago[1] Dr. A. S. Leyton and Dr. Helen G. Leyton isolated a streptothrix from sarcomata in rats and reproduced the disease in normal rats. Their procedure was briefly as follows: The press-juice from the tumour was passed through a porcelain filter, cultures were made from the filtrate, and the streptothrix grew. Rats were inoculated with the streptothrix and sarcomata reproduced. Acting on this brilliant piece of work Mr. W. Stevenson and I were able last year to cure a large sarcoma in a woman aged 38. The tumour was situated on the left side of the neck, and was so large that the patient's neck was turned to the right and fixed. Mr. Stevenson had reduced the tumour by about one-third of its bulk by radium. I then removed an intact piece of the tumour and obtained a profuse growth of diphtheroid bacilli (streptothrix). An antigen of this produced marked focal reaction in the tumour and general reaction. The tumour steadily retrogressed with the course of inoculations and completely disappeared. Some months later there was a recurrence in the glands of the left armpit from which I isolated the streptothrix again.

I am, Sir, yours faithfully,
University College, Dublin, July 24th. W. M. CROFTON.

To the Editor of THE LANCET.

SIR,—In your leading article of July 25th on the above subject you state "imagination can run on almost indefinitely and in this case legitimately." With that before me, I venture to add to the flood of hypotheses with the hope that my addition thereto may not be regarded as illegitimately indefinite. I use, or it may be unwittingly pervert, the facts summarised in the Ministry of Health Memorandum (July, 1924) by Dr. J. A. Murray, by Dr. Mervyn Crofton in a paper[1] on Cancer, and the published work of Dr. A. Leitch.

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[1] Reprinted in "Horæ Subsecivæ," second series (A. and C. Black), and in "Collected Short Stories," first series, "World's Classics" (Oxford University Press. 2s.).

[1] THE LANCET, 1916, i., 513.

There is no specific germ of cancer. The government of metabolism at sites in the animal body presumably varies in perfection, in accord with the grade of strain to which these are subjected in fulfilment of the respective functions subserved. Local irritation of mechanical, chemical, and toxic origin may be followed at certain sites by interruption of the sequence of processes of maintenance. In the human being more especially this may occur when these factors are aggravated by senescence and faulty dietetics. Independent of phagocytosis in the blood-stream, cell growth may be aided by ultra-microscopic microbes acting direct on effete matters, their influence on which may be restricted by toxic substances possessed by the healthy cell. In the presence of submaximal injury of cells as contrasted with their actual death, a struggle would ensue; in this the scavenger microbe may be at a disadvantage, toxic substances may gain the upper hand. When the process of irritation is chronic, the cells thus guarded would depend largely on physico-chemical processes (as illustrated in vitro experiments with fresh culture medium), and would assume a practically independent and insular existence with a scavenger service reduced to a minimum, if at all existent. Cells rich in toxin would guard the periphery. The toxic substance having fulfilled the function of protection locally might become surplus to requirements (*as shown in* the experiment in vitro of lack of growth in absence of fresh culture medium) and on entering the circulation would interfere with the scavenger microbe at the particular sites liable to overstrain in functioning, or owing to local irritation as defined above. Hence, there is *no specific metastasis*. On such an hypothesis cure of cancer would depend upon the judicious and intermittent flooding of the independent cell area (strictly within its confines) with the ultra-microscopic scavengers, in the endeavour to restore the balance of normal growth.

It seems to me that Dr. Gye's conclusion *that two* factors are necessary is met by this hypothesis, and is strengthened by the statement in the memorandum of the Ministry of Health that "the *active agent* behaves thus far like an ultra-microscopic virus, *but it has not yet been possible to produce the disease with artificial cultures of it.*" (Italics not in the *original.*) You seem to approach the subject much from the same point of view I express when, in your *leading* article, you state, "It may turn out that the virus does not normally exist in the body at all, but is generated within it in something of the same *relation* to the cells as the bacteriophage has to the bacilli."

A further tendency in this direction is found in your mention of the doctrine of Drs. Gye and Cramer involving "defence rupture" (kataphylaxis). My hypothesis would, however, regard Dr. Gye's "particulate bodies" as scavengers whose presence under normal conditions stimulates the production of a defence toxin in proportion to the zeal permissible on their part. When Dr. Gye injects both the particulate body (his "virus") together with the toxin (his "specific factor") he imitates, presumably, in healthy tissue the circumstance of the struggle of the scavengers and the defence toxin in the metabolism incident to submaximal cell injury; and is successful in securing the results he desires, because from the start he handicaps the particulate bodies by upsetting the balance with toxin in excess to the normal of the site. In this view it would be premature to regard the particulate body as a virus. Having regard to the largely accepted local irritation theory in causation of cancer, more light would be thrown on the subject were Dr. Gye's "virus" to be injected without his "specific factor" in tissue which recently has been subjected to submaximal injury.

This hypothesis may be *pour rire* when examined by experts: but I trust it will be regarded as quite as good as that which was accepted some time back as to the baneful effects of tomatoes in producing cancer!—I am, Sir, yours faithfully,

W. G. KING,
Colonel, I.M.S. (Ret.)

Hendon, N.W., August 3rd, 1925.

To the Editor of THE LANCET.

SIR,—Dr. Gye's remarkable researches have aroused intense interest. They have a special interest to me through my association with the work, on lines very similar in theory, of my father, the late Dr. W. Ford Robertson. His paper[1] on the Relation of Carcinoma to Infections describes the result of inoculation of mice with cultures of an anaerobic diphtheroid bacillus isolated from five different human breast carcinoma and one rodent ulcer. He did not filter these cultures as he looked upon this bacterium, universally present under these conditions, as being probably the essential factor. Nineteen out of the 22 experimental mice were inoculated with pure anaerobic diphtheroid cultures in saline which had been subcultured from the primary broth into special anaerobic hæmoglobin glucose agar for the purpose of enhancing purity of culture. On the two remaining mice primary cultures were used. In the light of Dr. Gye's work it would appear that Dr. Robertson deprived the inoculum of some of its virulence, for of the six positive experiments in the group, the resulting tumours did not appear until a lapse of from 9 to 23 months, while in the two cases where primary cultures were used (presumably containing besides the anaerobic diphtheroid bacillus a filterable virus) the period for tumour development was as short as two to three months.

Dr. Robertson's experiments are remarkable, in that out of a total of 22 mice which were inoculated with human cancer anaerobic diphtheroid cultures, without any specific substance, eight developed carcinomata and one sarcoma, and a further nine developed hyperplastic tumours strongly suspicious of malignancy (18 of these being examined and verified by the Laboratory of the College of Physicians, Edinburgh), making a total experimental production of 36 per cent. tumours of definite malignancy, and a further 41 per cent. of suspicious malignancy.. Control mice to the number of over 30 were kept for longer periods during the experiments without developing any kind of tumour.

With regard to the specific substance this must have largely been removed by the technique adopted in the majority of Dr. Robertson's experiments, and further, only two mice were inoculated with cultures that might contain specific substance, the others being treated with pure surface subculture in saline, which presumably could not have contained this material. Tumours were produced, however, but in a relatively much longer period, suggesting that owing to the removal of specific substance or its destruction by secondary organisms, further time was required for its redevelopment in vivo, either by unknown toxic factors, the diphtheroid itself, or the virus incorporated with it.

I am, Sir, yours faithfully,
W. MARSDEN FORD ROBERTSON.

Southport, July 28th, 1925.

To the Editor of THE LANCET.

SIR,—There are probably few pathologists in this country who have not already read the most interesting papers on cancer and the ultra-microscopic viruses by Dr. Gye and Mr. Barnard. The work, moreover, has been widely discussed and the results and conclusions appear to be accepted as correct by many pathologists. All, however, who wish well for the reputation of British medical science will be anxious lest an over-enthusiastic reception should blind workers to any possible sources of error which a more considered judgment might suggest ought to be thoroughly probed before a work of this nature is accepted as having been *proved* to be correct. Nothing could do greater harm to the reputation of British scientists that they should be shown to be in error, possibly in a year's time, by some worker in a foreign laboratory. I feel sure, therefore, that both Dr. Gye and Mr. Barnard will appreciate the desire of some workers to be given a little more information on several crucial points, a satisfactory answer to which would go a long way towards convincing those whose critical analysis of the results leaves them in some little doubt.

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[1] The Bordeaux Congress, 1924.

[1] Brit. Med. Jour., 1921, ii., 929.

In view of the fact that ultra-microscopic viruses will tolerate pure glycerine and to a certain extent ether, is Dr. Gye convinced that his chloroform-treated filtrate is quite free from the virus or contagion? Might not a small amount of specific contagion be left and be made active by non-specific products, including acids present in what he believes to be his cultures, in the same way that toxins affect the virulence of bacteria? Can he give us some experiments conclusively disproving this possibility? How many times has the experiment given in Chart 5 been made, and has the result always been the same? Have large quantities of the same treated filtrate only been inoculated, as controls, with negative results? Have cultures of non-cancerous tissue been tested side by side with cultures of cancerous tissue when the same treated filtrate was added in each case? In making subcultures from the primary cultures have any comparative experiments been carried out with subcultures made after heating the *primary* culture to such a temperature that any virus would certainly be destroyed? Would a fifth subculture from this fail to be made active by a chloroform-treated filtrate which for certain made active the fifth subculture derived from the unheated primary culture? Such experiments giving clean-cut results would, I suggest, be considered weighty evidence by most pathologists who may not be quite convinced by the result given in Chart 11.

This investigation of Dr. Gye and Mr. Barnard must have a considerable effect on all investigations at present being carried out on the ultra-microscopic viruses, and it is of great importance to other workers that their own investigations shall be carried along the right lines. I am sure if Dr. Gye is in a position to give us the information I have suggested it will be of great assistance to, and will be appreciated by, those working in other laboratories.

I am, Sir, yours faithfully,
F. W. TWORT.

The Brown Institution, University of London,
July 20th, 1925.

To the Editor of THE LANCET.

SIR,—Dr. Gye's paper in your issue of July 18th, in which he reports the very important results of his experiments on the passage of the Rous chicken sarcoma No. 1, raises a point of interest which has been in my mind since I first knew of his preliminary work, and which acquires more importance in the light of his more recent results with mammalian tumours. The point concerns the second filterable fowl tumour referred to in his paper—chicken sarcoma No. 7, of the Rockefeller Institute—a tumour which I originally transplanted and passed by filtrates, and the details of which were first published—without my consent—under the names of Rous, Murphy, and Tytler.[1] This tumour I have described separately.[2]

The original of this tumour was an apparently inert, cartilaginous nodule on the keel of the sternum, and during the first few passages the growth remained entirely benign in type—well encapsulated, cartilaginous during the first few weeks of growth, ceasing to grow after six to eight weeks, and then becoming more or less completely ossified, with the production of marrow spaces and blood-forming tissue. At about the fifth or sixth passage, however, it quite rapidly began to take on malignant qualities, and in the course of three or four passages became transformed into a soft, rapidly growing and invading, undifferentiated tumour, and at this stage I was able to pass it by means of a Berkefeld filtrate. The tumour passed out of my hands at this time, and for information as to its later course I was indebted to my former colleague, Dr. J. B. Murphy, from whom I understood that it acquired most of the characteristics of chicken sarcoma No. 1, to which it now bore a striking resemblance histologically, but always retained certain specific qualities of its own.

The point I wish to make, in the light of Dr. Gye's work, is the possibility that this originally benign tumour may have become infected by the active virus of chicken sarcoma No. 1. Numerous fowls bearing the latter tumour—many with large, extensively ulcerated growths—were being handled in the same laboratory, the danger of contagion was not at that time seriously considered, and we did not have the conception of a virus which could outlive the activity of the tissue preparations in use.

The suggestion is entirely speculative and impossible of confirmation, and would, indeed, have a very limited interest in connexion with the fowl tumour alone. But Dr. Gye's work leads us to hope, as I understand, with some justification, that he will be able to demonstrate the activity of his virus in the production of mammalian tumours, and to extend the results of his work to the whole field of malignant growths. In this case, the point I have raised may perhaps supplement in a small way the suggestion contained in his epoch-making work that contagion in cancer may be a factor of importance, a view which will no doubt appear revolutionary to the medical profession as a whole, as it does to me.

I am, Sir, yours faithfully,
W. H. TYTLER.

King Edward VII. Welsh National Memorial
Association, Central Tuberculosis Laboratory,
Cardiff, July 20th, 1925.

To the Editor of THE LANCET.

SIR,—It is a great pity that your leading article of July 25th did not appear in the same issue as Dr. Gye's communication. The communication was accompanied instead by a leading article which took a purely one-sided view of the question, accepting Dr. Gye's hypothesis as well as his facts, and even going beyond them in suggesting that the "specific factor" may be produced from irritated tissues, whereas Dr. Gye had produced it only from pre-existing tumours. Your article of July 25th took a more judicial attitude, and suggested that there might be another explanation of Dr. Gye's facts than his hypothesis of an extrinsic parasite, but, as far as I have seen, no notice of this second leading article has been taken by the daily press. The impression has thus been transmitted throughout the world that Dr. Gye has discovered the cancer parasite, and this impression is intensified by the unqualified support of the leading medical journal in the kingdom.

Pathologists are apt to ignore, or to regard with contempt, the views as to the constitution of living matter which are accepted by biologists. These views are that the cell is not the ultimate unit of life but is itself composed of different orders of smaller living units each of which is capable of growth and multiplication. Some of these units such as chromosomes, centrosomes, Golgi bodies, chondriosomes, &c., are visible under the microscope and their growth and multiplication can be studied directly. Others are invisible, but their existence is supported by very strong evidence.

According to Weismann the ultra-microscopic particles (determinants and biophores) are specific in character and determine the nature of the cells of which they form part. Since these views were first promulgated they have received remarkable independent confirmation in the facts of Mendelian heredity. There is little or no difference between Weismann's "determinant" and Mendel's "factor." Both are intercellular and ultra-microscopic, and capable of growth and multiplication. The "determinant" determines the nature of the cell and the "factor" determines the character with which it is associated. It appears to me that here we have an explanation which is in better accord with Dr. Gye's facts than his own hypothesis of an extrinsic cancer "virus."

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[1] Jour. Amer. Med. Assoc., 1912, lix., 1793.

[2] Jour. Exp. Med., 1913, xvii., 466.

Since cells can be cultivated under artificial conditions apart from the organisms of which they form part, there is no a priori reason why it should not be possible to cultivate these ultra-microscopic units apart from the cells. It appears to me that Dr. Gye's facts would be explained equally well on this supposition as they would be on his supposition that the "virus" is an extrinsic agent; and, for some of his facts, my suggestion offers the easier explanation. Cancer cells presumably contain an ultra-microscopic "factor" or "determinant" for cancer, and it is quite possible that Dr. Gye has succeeded in cultivating this factor, since he has not brought forward any evidence that his "virus" is an extrinsic germ.

The great majority of pathologists have always recognised that the known phenomena of cancer are incompatible with the theory of an extrinsic specific causal agent, and it does not appear that Dr. Gye's facts have removed the objections to this theory. To take one point only, it is now possible to induce cancer in animals without taking thought of any parasite. If an extrinsic parasite is to be considered necessary for the production of cancer, this organism must be present at all times either in all animals or else in the atmosphere. Otherwise it would be impossible to produce cancer without the specific introduction of the cancer parasite. There is, thus, very strong evidence in favour of the view that this so-called "virus" is not an extrinsic parasite, but is a constituent part of the cancer cell itself. This view is in accordance with the phenomena of cancer, whereas the hypothesis of an extrinsic agent is not. The question whether the virus is extrinsic in origin or is derived from the cancer cell itself is one of extreme importance, and it is much to be regretted that Dr. Gye's article was not submitted to more adequate criticism before being published, so that both sides of the question could have been presented to the public at the same time.

If my suggestion is correct, this work of Dr. Gye opens up vast possibilities in the way of cultivating Mendelian factors in vitro.

I am, Sir, yours faithfully,

CHARLES POWELL WHITE.

Manchester University, August 3rd, 1925.

To the Editor of THE LANCET.

SIR,—Dr. Gye's recent investigations have been of special interest to me, because I believe his virus will prove to be identical with the ultra-microscopic phase of the complex micro-organism which I described in 1921. This micro-organism I have obtained from a large number of cancers of all types. I have shown that the larger elements (coccal, bacillary, fungal) which soon appear in any ordinary culture medium containing a piece of cancerous tissue can be traced directly from minute elements, which emerge from the cells, or indirectly from an amorphous material, which escapes from the cells as globules and rods and which in this early stage is often curiously resistant to ordinary stains. This unstained "plasm" often first appears in and escaping from the dying cells as minute elements just on the verge of visibility. A study of these facts led me to write in 1922 that "the organism has, during its parasitic phase, acquired the faculty of infecting individual cells and of living in a sort of symbiotic relationship with the cells which it inhabits. This conclusion . . . goes far to confirm the view which I advanced in a previous paper (1921) that the organism lives parasitically in a minute phase which is unrevealed by ordinary methods of staining." The globules and rods can sometimes be seen to emerge from the cells with a clearness that is diagrammatic. The organised forms (coccus, bacillus, yeast) often spring from refractile elements, which appear in and are detached from the globule and rod. Glover of New York and his colleagues have recently described a microbe which they have obtained from all types of cancer and whose general characters are similar to mine.

A remarkable feature of this micro-organism is that the alternative forms, although springing from one common stock, can pursue each an individual and stable life as coccus, bacillus, or yeast, and they may resist any efforts to change them, although I have frequently during five years' study convinced myself that under certain conditions any one form can pass over into any other form. These facts are foreign to ordinary bacteriological teaching and have made my views uncongenial to many bacteriologists, although there is a great deal of evidence in the literature to support them (Löhnis, Mellon, de Negri, Hort, Almquist, &c.). It is, I believe, apparent from the recent literature that fixity of form in bacteria is illusory as a criterion of specific characters, for as Löhnis, Mellon, I and others have shown the alternative phases of the same organism can often and probably usually pursue an independent true-to-type existence. It is sometimes urged that such a conception is opposed to the facts of biology. This is not so. It is opposed to much of the traditional teaching of bacteriology, but it is obviously in conformity with the great biological fact that a multitude of different cellular elements, each capable of independent propagation, are commonly derivable from one common germ-plasm. The further back we go in the world of life-forms the more we find the differentiated cell retains its multipotential characters of the original plasm. In the bacteria this retention would seem to be complete. The essential resemblance between the primitive bacterial matrix and the germ-plasm of higher life led me to name the former the bacterioplasm.

The first indications of these facts in regard to the cancer parasite came to me when I discovered that "plasm" rod or globule, minute granule or thread (in this stage strikingly similar to Rickettsia), bacillus or coccus could apparently, depending on the culture medium and other factors, be derived indifferently from the cells of the same piece of cancer. The confirmation of these facts came with the discovery that from the same "plasm" all the different forms were derivable. In this stage the refractile granule is a common index. During this phase the germinating "plasm" is easily mistaken for masses of débris to which the bacterial forms have adhered. As Löhnis has pointed out, in the past it has been commonly looked upon as dirt.

Sir, with the attention now being paid to the cancer parasite I look forward confidently to an early confirmation of these views first published in 1921. For long I have been urging that a similar reorientation of the bacteriological mind would probably quickly resolve the difficulties surrounding typhus, influenza, small-pox, &c. If it be true that Weigl, Breinl, and Fejgin have all succeeded in deriving the *Bacillus proteus* (X 19) commonly associated with typhus from the Rickettsia of typhus, we have the first augury of the unexpected facts which will transpire with the application of this broadened outlook. We can safely prophesy big developments along the same lines in the near future.

That familiar bacteria may possess a filterable phase is suggested by the work of Heymans (*B. anthracis*), Valtis, Vannucci, &c. (*B. tuberculosis*), Almquist (*B. typhosus*), Hort (*meningococcus*), and Löhnis. The very striking investigations of Löhnis make it likely that all bacteria have a filterable mode of life; it may even be that this is the essential parasitic form of all bacteria.

I am, Sir, yours faithfully,
Edinburgh, August 1st, 1925. James Young.

THE PRINCIPLES OF DYNAMIC PSYCHOLOGY.

To the Editor of The Lancet.

Sir,—An opportunity, all too brief, occurred for the discussion of psychotherapy at the meeting reported in your last issue of the Medico-Psychological Association in Birmingham. Some of the opinions then expressed may be taken as typical of the progress the medical profession as a whole has made in the acceptance of the principles. Ten years ago it was difficult to obtain a hearing in medical circles for a paper dealing with the value of suggestion. The successes obtained during the war by the exponents of the Seale Hayne school and others, in the treatment of the conversion neuroses altered this, and the profession was bound to admit that suggestion had a definite therapeutic value. Having thus swallowed suggestion whole the profession appears inclined to rest there. If one may judge by the majority of practitioners one meets, the general attitude may be summed up by some such statement as this. "There are certain somewhat eccentric persons who have the power of curing neurotic conditions by suggestion, and there are certain nasty-minded cranks who believe that they can do good by means of a mystic ritual called psycho-analysis. Anyway, neurotic patients are a nuisance and if a bottle of bromide cannot satisfy them, let them go where they will."

There are those of us, Sir, who hold a different opinion. We say that considering the vast amount of misery, social and economic loss, caused by functional nerve disorders, the apathy of the profession, including most of its teachers, is nothing less than tragic. We know that suggestion at the best can do no more than remove some obvious symptom, and does nothing to enable the patient to adapt himself to his environment. It has no effect on phobias or anxieties, it will not cure the psychasthenic, or remove a tendency to criminal outbreaks. In order to treat such conditions as these one must have a knowledge of the workings of each individual patient's mind. One must recognise the existence of a dynamic Unconscious, and realise that the symptoms represent for each patient the satisfaction of some inner need, the solution of some unconscious mental conflict. We realise that an unhealthy body is not without influence on the mind. We do not minimise the importance of tracking down and eliminating all septic foci. We are aware that a dose of calomel may effectively purge melancholy, but we see too many individuals who have been subjected without benefit to every possible minor and major surgical procedure to believe that the root cause of a neurosis can be somatic.

Surely the time has come when students should not leave the medical schools without having learned something of the principles of dynamic psychology. Men when they go into practice will find themselves daily confronted with conditions which neither medicine nor surgery can solve. They will be consulted by women and men whom no examination, however thorough, will convince that they are not the victims of hidden cancer or tubercle. They will be asked to prescribe for adolescent girls who lose both appetite and sleep unaccountably. Healthy youths will present themselves with tales of woe which do not fit in with anything which the student has learned. These, as well as the readily recognisable hysteric and neurasthenic, will try his patience and waste his time and theirs, before taking their troubles elsewhere, unless he has the necessary psychological knowledge to deal with them. More important still, he will have many opportunities of dealing with the beginnings of neurosis in childhood, but he will pass them by.

The teaching I would advocate need not be definitely committed to the theories of either Freud, Jung, or Adler. Once imbued with the idea of the Unconscious as a dynamic force and not a lumber room, the interested student will pursue the subject on his own lines. I would emphasise, however, that as regards the lecturer, the terms neurologist and psychologist are not interchangeable, and it is for his psychological rather than his neurological knowledge that the lecturer should be chosen. An important part of the course would deal with the training of the young child, as it is during the nursery years that the foundations of most neuroses are laid, but something too would need to be said as to the part played in the anxiety states by the sex life of the adult. I am aware that post-graduate courses on these lines are in existence in some centres, but such lectures touch only the fringe of the profession. Such training as I advocate would at any rate enable the student in after life to recognise these cases when he sees them and enable him to advise treatment, even if he did not care to carry it out himself.

It is a mistake to think that there is no choice between neglect and a formal psycho-analysis. An astonishing amount of psychology can be dispensed over the counter, as it were, with lasting benefit to the recipients. Patients are frequently astonished, but never resentful of questions asked about their sex life, and show themselves extraordinarily grateful if the physician is able to point out where the shoe pinches. A varying amount of mental analysis is required in other cases and sometimes may be combined with suggestion, whilst in some other types the analysis must be carried to rock bottom. These last should be referred to recognised experts, but unless we train our students where are these experts to come from? Already this branch of therapeutics is overrun by men and women who have had no medical training. Some of them are honest and competent workers; others are not so, and bring disrepute upon a science which by its very nature arouses instinctive opposition. The value of psycho-analysis is freely recognised by educationists, the clergy are fully alive to its social uses; how long will the medical profession continue to turn the blind eye?

I am, Sir, yours faithfully,
Birmingham, August 4th. R. Macdonald Ladell.

PUBLIC HEALTH OF MARKET DRAYTON.

To the Editor of The Lancet.

Sir,—I enclose report of a recent conference at Hales Hall (the rural dean in the chair) which throws some light on the causes of high infant mortality for some years past at Market Drayton, but does not solve the question, "Why does the Minister of Health steadily refuse to publish the report as to the high infant mortality at that little town, made by his own medical inspector last autumn?" We infer from a statement made by Dr. Wheatley, the M.O.H. for Shropshire, on May 9th, that "bad housing and ignorance" were the principal causes, and that "the health education" should begin in the elementary school (*Newport and Market Drayton Advertizer*, May 9th, 1925).

At the conference, reported in the issue of the same newspaper on July 25th, we gather that the medical inspector's report recommended more education, probably including the education of mothers at the infant welfare centre, and help for that centre. The report, we are informed, also stated that "the sanitary record is poor"; and it "suggested the appointment of a woman guardian." Surely this report should be published in full; the ratepayers should be told what improvements should be made in administration by the guardians which a woman guardian could assist; ignorance should be dispelled, the interest of the inhabitants enlisted, and the lives of the infants saved.

I am, Sir, yours faithfully,
August 4th, 1925. J. Theodore Dodd, M.A., J.P.

THE MEDICAL DIRECTORY.

To the Editor of THE LANCET.

SIR,—The annual circular has been posted to each member of the medical profession. If the form has not been received, a duplicate will be sent on request. We shall be grateful for the return of the forms by an early post.—We are, Sir, yours faithfully,

J. AND A. CHURCHILL.

7, Great Marlborough-street, London, W.,
July 31st, 1925.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Bills Advanced.

ON Tuesday, July 28th, the Mental Deficiency (Amendment) Bill passed through Committee in the House of Lords, and the Dangerous Drugs Bill was read a second time. On the same day in the House of Commons the Diseases of Animals Bill was read a third time. On Wednesday, July 29th, in the House of Lords the Diseases of Animals Bill was read a first time, and the Summer Time Bill and the Dangerous Drugs Bill passed through Committee. On Thursday, July 30th, in the House of Lords the Diseases of Animals Bill was read a second time, the Public Health Bill was considered on report and certain minor amendments were agreed to, and the Mental Deficiency Amendment Bill was read a third time and passed. On Friday, July 31st, in the House of Lords the Public Health Bill was read a third time and passed, and the Pensions Bill and the Diseases of Animals Bill passed through Committee. Among a number of Bills to which the Royal Assent was given by Commission was the Mental Deficiency (Amendment) Bill. In the House of Commons on the same day the Lords amendments to the Therapeutic Substances Bill were agreed to.

HOUSE OF LORDS.

WEDNESDAY, JULY 29TH.

Indian Medical Services.

Lord SYDENHAM asked the Secretary of State for India whether measures were in contemplation adequately to fulfil the medical requirements of the Indian army, British residents, official and non-official, and the civil hospitals, and to secure the progress of medical science in all its branches throughout India. He said that we had conferred immense benefits upon the peoples of India by the introduction of Western medicine and surgery. Since Lord William Bentinck opened the Calcutta Medical College in 1835 the Indian Medical Service had grown to be one of the finest—perhaps even the finest—public medical service ever created. It had produced men who had won world-wide reputation, not only for research into the causes, the spread, and the prevention of diseases which afflicted India, but also for the fine work which had been done in educating the Indian students. While this service had always maintained a very high standard of health in the Indian army, to which it specially ministered, its achievements on the civil side had been most remarkable. The hospital system, which we introduced into India, had been spread broadcast over that country, and had been imitated in very many native States. The Indian Medical Service was in the strictest sense a key service, because it not only conserved the health of all the other British services, but it supplied the directive forces in all that might be called sanitation in India. The Indian Medical Service was crumbling away, and it had been necessary lately to send out medical officers on short contract, which was totally unsuitable to the conditions of India. It was essential that the medical officers of India should know the people and their languages and regard India as providing them with a career. This makeshift system could not possibly answer. In recent years there had been a great many inquiries into medical matters in India. The Royal Commission on the Public Services of 1912–15 in their report published in 1917, stated that the Indian Civil Medical Service was being economically and efficiently performed, which was undoubtedly true at that time. The Verney Lovett Report of 1919 proposed a unified service, to be called the Indian Medical Corps, the Indian Medical Service absorbing the R.A.M.C., and special provision being made for the discharge of the civil duties. The Esher Committee of 1919–20 declared that the Verney Lovett plan was the only feasible scheme of unification, but it decided that the amalgamation of the I.M.S. and the R.A.M.C. was at present impracticable. The Lee Commission of last year proposed that the R.A.M.C. should absorb the I.M.S.—which he believed would give rise to a great many administrative difficulties—and that a civil branch should be created which would be 50 per cent. Indian recruited. The Report alluded rather ominously to the requirements of the provinces for a separate medical service. Those words seemed to show that there had been some political pressure brought to bear on the Commission, and he believed that the best British medical graduates would never join a medical service which would quickly become purely Indian whatever proportion they arbitrarily fixed. Under the Act of 1919 all the medical services were made a transferred subject and subsequently a boycott of the Indian Medical Service officers was set up.

India had produced a limited number of medical men of marked ability, and the subassistant surgeons, a class which we had created, had done much useful work, especially when under British supervision. But India had never shown the aptitude for Western medical science which had distinguished Japan. The ways of Western medical science had not yet won the full confidence of the Indian people, or even of all the educated classes, although Mr. Gandhi, who was the greatest protagonist of Indian methods, was not anxious to be operated on by an Indian surgeon. Vaids and Hakims were still numerous and influential, and they accounted annually for a considerable part of the mortality in India. The Ayurvedic and Unani systems, which were not really systems, were now being subsidised from public funds in some places, and this waste of public money was sure to be increased in the future. If the I.M.S. was not restored there would be a large reversion to indigenous methods, which would have a disastrous effect on the general health in India, and there would also be widespread corruption. India could not at present produce men capable of directing, teaching, and developing an exotic system of medicine and surgery, and besides that caste laws might, and very often did, interfere with the work of the Indian practitioner. Of the very large number of students turned out annually from our medical schools a considerable proportion never made any attempt to practise and many of them became politicians, while a few had specialised in bombs. So far as British men, women, and children in India were concerned they must all feel that it was the duty of the Government to provide them with medical assistance from men of their own race. The Lee Commission admitted this, and proposed to set up districts each possessing a European officer supported in whole or in part at the public expense. If the districts were made small enough this plan might work, but already in some cases great hardship existed through the great distances which separated British people in India from a British doctor. He did not forget the work of the medical missions, of which he saw a great deal. They also were bringing Western science to the people of India, and perhaps especially to the women of India who were in dire need of it. The difficulties in finding a solution of many of the present problems were very great in view of the hostility towards British officials, British methods, and British science, which had been generated in recent years. He disliked and distrusted centralisation, but he was convinced that the general control of any civil medical service in India, of medical education, and of medical research must be retained in the hands of the Imperial Government. Failing this there would certainly be a general reaction and a fatal lowering of standards in the whole administration of the medical services throughout India.

The EARL of BIRKENHEAD (Secretary of State for India) said that the Indian Medical Service and its organisation had always been a question of extreme difficulty. It was at once a military and a civil medical service, and the interests of the two branches had not always been the same. The cardinal fact was that, generally speaking, the civil medical administration of India in the provinces, including the administration of hospitals, public health, and the provision for medical education, was a Provincial Transferred Subject under the Act of 1919, and the Secretary of State had divested himself of the powers of superintendence and control which he formerly exercised with regard to it. The Lee Commission, subject to certain limitations, took the same line with the Indian Medical Service as with the other all-India services dealing with transferred subjects. It appeared to them to be the logical and practical sequence of the reforms that, subject to the reservation of the rights of present members of the service, the provincial governments should in future recruit and control the services for whose work they were responsible to the Provincial Legislatures. In the case of the Indian Medical Service, however, the general principle was limited by two important considerations: first, the Civil Medical Service was the only source from which a medical reserve for the needs of the army, and in particular its requirements in trained British medical men, could be easily obtained in emergency; secondly, he had decided to adopt the recommendations of the Lee Commission for the provision for European services of medical attendance by British medical men. In the light of what he had said it would be clear that the Secretary of State would no longer undertake to recruit officers for the medical administration in

India generally or, in particular, for civil hospitals as such. Nor could he assume responsibility for the medical care of British non-officials resident in India. But the Act left as "Central Subjects," for which the Government of India were responsible, a number of matters, for instance, central agencies for research and technical training and the promotion of special studies, and a reserved responsibility in regard to legislation for infectious diseases and the regulation of medical qualifications and standards. For these the Secretary of State remained responsible, and he would continue to recruit officers to deal with them. He would also, of course, recruit for the civil medical needs of administrations that remained directly under the Government of India and for the Political Department. There remained for consideration the provisions to be made (1) for the army, including its medical reserve, and (2) for medical attendance on the European services as recommended by the Lee Commission. He had received the recommendations of the Government of India on these matters, and their consideration was already well advanced in his department. He was not yet in a position to communicate his final decisions, but he might, perhaps, indicate the lines on which he thought a solution of this difficult question would be found. The Lee Commission, with some hesitation, for they realised that military organisation lay outside their terms of reference, recommended that the military side of the Indian Medical Service should be absorbed in the Royal Army Medical Corps. The proposal had received very careful consideration from the Government of India and himself, and they had come to the conclusion that the solution proposed would raise many more difficulties on the military side than it would solve. They, therefore, thought that the Indian Medical Service must be maintained. It would be essentially a military service, but its reserve would be secured by lending officers to the civil administration. A consideration of the numbers in question went to show that the number of European officers in the reserve so lent would be sufficient to provide for the needs of the European services on the lines of the scheme proposed by the Lee Commission. These officers would be stationed at the headquarters of groups of districts throughout India, and would be made available for the European services and their families. The officers required by the Government of India for the central medical subjects would also be obtained from the Military Indian Medical Service.

It was, of course, a matter of the first importance whether a service constituted on these lines would attract recruits of the right class. He was inclined to think that it would be essential, with this in view, to reserve for the portion of the army reserve lent to the civil side but not required directly for the medical care of the British services, a number of civil appointments; for instance, research or professorial appointments. Such appointments had always been one of the attractions of the Indian Medical Service, and if the essential army reserve maintained in civil employment allowed a margin, as it almost certainly would, it was clearly a gain not only from the point of view of recruiting inducements, but a gain to Indian public health generally that they should be employed in the departments of research and teaching in which their predecessors had done so much for the welfare of India. His statement was necessarily tentative, for the final conclusion could only be reached after a careful balancing of the various interests involved, and, in particular, the claims of the Local Governments to the control of the provincial medical administration. But he was hopeful that a solution might be found on these lines, and that it would appeal to the medical profession. He was the more optimistic on the last point because, unlike certain other services, the Indian Medical Service was at present obtaining recruits of a high standard from the medical profession in this country, notwithstanding the uncertainty of the position pending his decision.

HOUSE OF COMMONS.

Wednesday, July 29th.

Appointment of Medical Service Chairmen.

Mr. **Meller** asked the Minister of Health (1) what was the present procedure for appointing the chairmen of the medical service, the pharmaceutical service, and the joint services subcommittees of an insurance committee; whether such procedure had worked effectively since the inception of the National Health Insurance Act; and whether he had received any request from an insurance committee for amending the present regulations; and (2) whether he had received from the insurance committee for the County of London a representation protesting against the National Health Insurance (Medical Benefit) Amendment Regulations (No. 2), 1925, which provided for the appointment of the chairman of the medical service subcommittee by the Minister of Health failing the unanimous vote of the subcommittee, and that such member might not be a member of the insurance committee; and what action he proposed to take.—Sir **Kingsley Wood** (Parliamentary Secretary to the Ministry of Health) replied: Under the previous Regulations the chairman of the medical service subcommittee was required to be elected by the approved society representatives on the subcommittee and the medical practitioners appointed to be members of it, or in default of any selection by them by the neutral members of the insurance committee. No request for an amendment of the Regulations has been received from any insurance committee, but in London failure to find a chairman commanding the confidence of both parties led to the withdrawal of the medical representatives and the machinery for the investigation of complaints was brought to a standstill. A similar situation has arisen recently in Southampton. The amending regulations of July, 1925, arose out of the difficulty in London, and represented a settlement which my right hon. friend understood to be acceptable to both parties to the dispute. My right hon. friend has recently received representations from the London Insurance Committee against the new regulations, but he can see no other method of preventing the recurrence in future of a deadlock which is prejudicial to the administration of medical benefit and to the interests of insured persons.

Thursday, July 30th.

Pensioners Medical History Précis.

Mr. **Hayes** asked the Minister of Pensions whether, in cases of appeal by a widow or orphan children of an ex-Service man whose medical history disclosed venereal disease, he would sanction the omission of all reference thereto from the précis sent to the widow or other appellant when such disease had no relationship to the cause of death.—Major G. C. **Tryon** replied: It has been the consistent policy of the Ministry, reinforced by repeated representations, to make a précis in a case of appeal a complete statement of the man's medical history as known to the Ministry, in order that the tribunal may have before it precisely the same and as full information as that on which the Ministry came to their decision. The Ministry are not in a position to determine the view which the tribunal may take as regards the connexion between the cause of death and any other disease of which there is evidence in the man's medical history. The case for presenting a complete statement to the tribunal is in my view so important that I could not authorise any exception to the rule.

Veterinary Inspection of Dairy Herds.

Mr. **MacKenzie Livingstone** asked the Minister of Health what local authorities now carried out veterinary inspection of dairy herds.—Mr. **Neville Chamberlain** replied: A few of the sanitary authorities in England and Wales systematically carry out veterinary inspections of dairy herds, and I believe that most sanitary authorities have made arrangements for obtaining the services of a veterinary surgeon for the inspection of cattle where occasion demands.

Industrial Hygiene.

Colonel **Woodcock** asked the Minister of Labour whether any effect had been given to the unanimous resolution of the conference of the International Labour Organisation, Washington, 1919, that an advisory committee on which the governments, the employers, and the workers should all be represented, should be appointed without delay to keep in touch with the work of the health section of the International Labour Organisation.—Mr. **Betterton** (Parliamentary Secretary to the Ministry of Labour) replied: So far as I have been able to ascertain up to the present the only committee appointed as a result of the Washington resolution to which my hon. and gallant friend refers is the Correspondence Committee on Industrial Hygiene. That Committee, however, consists of experts and not as laid down by the Washington resolution of representatives of governments, employers, and workers.

Tuesday, August 4th.

Deaths from Small-pox.

Mr. **Broad** asked the Minister of Health whether the Registrar-General would revise his figures for 1924 in regard to small-pox deaths, in the light of the information given in the recent Report of Sir George Newman, in which five of the small-pox deaths were transferred to other classifications, it being the opinion of the certifying doctor that small-pox was not the cause of death.—Mr. **Neville Chamberlain** replied: I understand that in the case of all the deaths in question small-pox is certified by the certifying doctor as being one of the causes of death. In such cases the selection from among several certified causes of the particular cause under which the death is classified for statistical purposes is governed by general rules, based upon international agreement, which in this country provide that deaths should be classed to small-pox if this disease is included among the certified causes. I see no reason for revising the classification in the case of these particular deaths, especially since full information regarding them is already given in the chief medical officer's report.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An ordinary quarterly Comitia of the College was held on July 30th the President, Sir Humphry Rolleston being in the chair The minutes of the Censors Board were read The following successful candidates were admitted as Members:—

Drs Henry K. Bates Robert H Baxter John Brander Edward A Carmichael Peter Connan, John H Dunn Edward Gallop Humphry H. Gleave Frank D Hewitt Redvers N Ironside Victor J F Lack, Reginald C Lightwood, James L. Livingstone Neville I Lloyd, George L Lyon Smith Bruce Maclean Cyril C. W Maguin Frederick H Moran Bernard E. Schlesinger John S. Sloper Harry L. Stokes Robert Y Stones Samson Wright and Harry W Wunderly

The following College officers members of committees and examiners were elected for the ensuing year:—

Censors—Sir John Rose Bradford Dr Cyril Ogle Dr James Calvert and Dr *Robert Hutchison*

Emeritus Treasurer—Sir Dyce Duckworth.

Treasurer—Dr Sidney P Phillips

Registrar—Dr Raymond Crawfurd.

Harveian Librarian—Dr T H Arnold Chaplin

Members of the Library Committee—Dr Frederick Parkes Weber Dr Herbert Spencer Dr William C Bosanquet and Dr Charles J Singer

Curators of the Museum—Dr John Mitchell Bruce, Sir Seymour John Sharkey, Sir Frederick W Andrewes and Dr William Hunter

Finance Committee—Dr Arthur George Phear Dr John Fawcett and Dr Frederick J Poynton

Examiners.—Chemistry: Dr Robert H A Plimmer and Dr William H Hurtley Physics: Dr William E. Curtis and Dr. Sidney Russ Practical Pharmacy Dr Edward A. Cockayne Dr Nathan Mutch Dr Alfred J Clark Dr Hugh Gainsborough and Dr *Orlando Inchley* Physiology Dr John B Leathes and Dr John Mellanby Anatomy: Dr G Elliot Smith Medical Anatomy and Principles and Practice of Medicine Dr H Morley Fletcher Dr Arthur G Phear, Dr William C. Bosanquet Dr James W Russell Dr Charles R. Box *Sir James Purves Stewart* Dr Lewis A Smith Sir John C Briscoe Dr Charles E. Lakin and Dr James A Torrens Midwifery and Diseases peculiar to Women Dr Cuthbert H J Lockyer, Sir Ewen J Maclean, Sir Henry J F Simson Dr William Gilliatt and Dr Stanley Dodd.

Examiners in Public Health—Part I Mr John H Ryffel Part II. Dr David S. Davies.

Tropical Medicine—Sir Percy W Bassett-Smith (Bacteriology): Sir Leonard Rogers (Diseases and Hygiene of the Tropics)

Ophthalmic Medicine and Surgery—Dr James S. Collier

Psychological Medicine—Part I Dr Eric D Macnamara Part II.: Dr Robert P Smith and Dr C. M Hinds Howell.

Laryngology and Otology—Sir StClair Thomson

Licences to practise Physic were granted to the following candidates, who have passed the Final Examination of the Conjoint Board, and are now entitled to receive the conjoint diploma:—

Ahmed K. Abdel Khalik, Cairo Geoffrey N M. Aitkens Charing Cross John S. Aldridge St. Bart's, David R Allison Leeds Roland G Anderson St Bart's; Colin B Andreae Guy's Reginald Armsden Univ Coll Humphrey M. H Ashwin Sheffield and Guy's Edward A. Aslett St Mary's; George S Aston Birmingham, Harold Awrounin, Charing Cross Herbert M. Ayres, St *Thomas's* Edward Bacon and Harold L. C. Balfour St Bart.'s; Douglas E. Barton St Mary's; George F G Batchelor St Andrews; Ralph M Bates, London *Sybil K. Batley Royal Free Cyril E. Beare Middlesex John G Y Bell, Kings Coll. Stanley A Belshaw, Cambridge and Middlesex, *Jane G Bevan Westminster Suryasen N Bhansali Bombay; Shankar S. Bhatnagar Punjab and Middlesex Charles A. Birch, Liverpool Hugh M Birch Adelaide and London Frank H Blackburn, Durham Norman W Bolton Manchester *Edith D Bowie Kings Coll., Harry C Boyde St Bart's Clarence S Broadbent, Oxford and Leeds *Theodora Brookes Royal Free Abraham S. S Brown Cape and Liverpool James A S. Brown Cambridge and London James L. Brown Kings Coll Thomas E. Brown Cape and St Thomas's Oglethorpe W B Browning Univ Coll Harold H Bullough Manchester *Eleanor G Burdett Royal Free and St Mary's Richard C.L. Burges Cambridge and Birmingham Thomas J Burke, Charing Cross and Cardiff, John W D Buttery Cambridge and St. Bart's *Avis R H Cama Bombay and Royal Free; Frederick F R Carreck St Mary's, Ferdinand Carroll, Madras and St Mary's. John H T Challis London *Irene E. Chandler, Kings Coll *Gwendolen S. Chataway, Royal Free and St Mary's *Eileen A Chennell St Mary's *Ella J Cockram, Oxford and Kings Coll. *Marian B Coleman Royal Free, Arthur C. Copley Cambridge and Guy's *Celia M M Culver-Evans, Royal Free *Evelyn J Curtis Kings Coll George W Curtis, Birmingham, Robert S Davidson, Manchester; Alfred Davies Cardiff and Middlesex Cyril I Davies London Harry G Davies and Llewellyn Davies Guy's; Vincent H G Davies Cardiff and Middlesex George H Day St. Bart's; *Doris L. Delittle Westminster; Norman A. Dickinson Manchester; Frederick R Dingle Guy's Charles Donald Aberdeen Lawrence Earlam, Liverpool, Robert G Eastwood, Leeds Richard W Edwards Cardiff and Guy's Abd el Kader H El Shurbagi Cairo and St. Thomas's, Horace Evans London Ivor Evans Cambridge and St Thomas's, *Thomas F Everett, Cambridge and* Middlesex, Harold E. Filmer, Guy's, Marcus Fine Cape and London John W Fisher St Mary's, Maurice Fishman, St Bart.'s; Arthur H W Fleming Manchester and Middlesex; *Elsie C I Focke Royal Free Ambrose J Foote Oxford and London Ernest A Freeman St Bart's, Leslie O F Fyah Oxford and London Joel Gabe Westminster Wilfrid F Gaisford St Bart.'s Eric A Gerrard Manchester *Winefride M Gibson, Charing Cross Reuben Glasser Cape and Liverpool Aaron Glatt, Liverpool; Eric H Glynn, Cambridge and Liverpool Thomas R Goddard Univ Coll; Joseph *Goldberg Cape and London* Walter I *Gopsill* St Thomas's James Gore Birmingham, *Edith L. Gould Royal Free *Gladys Goument Royal Free and St Mary's Sydney J P Gray Cambridge and St Bart.'s; Howard L. H. H Green Cambridge and London *Emily M Hall St Mary's *George T Hankey Guy's* Maurice J Harker Cambridge and St Bart.'s, Cecil G Harper, Middlesex *Helen M Harris Royal Free *Constance E. Harrison London Leslie F A Harrison, St. Bart's John W Hart Univ Coll Farid Y Hasaballa Cairo and St Thomas's William D Hasler Middlesex Benjamin E. Hawkins Guy's John C Heal, Liverpool *Lynette Hemmant Cambridge and King's Coll, *Dorothy G Herrey Birmingham *Kathleen L. Hicks, Univ Coll and St Mary's Charles H Highfield Guy's Gerald S. Hirst Leeds Chee H Ho St. Thomas's Bernulf L. Hodge St Bart's Simon J Hoffman Cape and Middlesex *Richard St J Honner Sydney and London* Charles L. Hunt St Bart's David J C. Hutton Middlesex Stuart W Innes Smith Edinburgh and Sheffield; Adanga Irathoo O Jacob Madras; Trevor L. Jenkins Cardiff and Middlesex Emrys Jones Guy's *Helen V Jones Cardiff and St Mary's *Iorwerth H* Jones Charing Cross; *Morfydd R. Jones Royal Free, Thomas S. L Jones Liverpool George W Keale Univ Coll., John J Keevil Cambridge and St Thomas's, *Frances M Kenyon, King's Coll Arthur K. Kerr St Bart.'s Bernard Kornblum, Warsaw and Guy's; Otto F A Krause Guy's Edgar D Lawrence St. George's; Henry E. Lewis, Guy's William F Lishman Liverpool **Dorothy M Llewellin* Westminster Thomas R. E. Longton Liverpool Edmund S S Lucas St Thomas's, William S Macgowan Middlesex Colin C Mackinnon Middlesex and Bristol *Aileen I McMahon Charing Cross; Ian McPherson Middlesex *Malcolm L Maley* St Bart's; **Joan G* Malleson Charing Cross Wilfrid N Maple St Thomas's Hugh L. Marriott, Middlesex Colin H Mason Calcutta and St Mary's Alexander K Miller and Nathaniel A. Miller St Thomas's Hugh P F Modder Ceylon and St George's William J Moody Cambridge and *London*, Arthur L. Moorby, Kings Coll Reginald H Morris Charing Cross Kavasseri V N Nair Madras and London William B Norcott Guy's *Kathleen G Norton Oxford and St. Mary's, Bryan V O'Connor Oxford and Middlesex; *Gwynedd M. E. Olive Royal Free *Edith G Peacock Charing Cross Robert W L. Pearson Cambridge and Liverpool Harry Peaston, Liverpool Kudatchige R. T Peiris, *Ceylon* and Kings Coll. Alfred B Plant Guy's William G. Platt, Leeds George L S. Plumbly Univ Coll Stephen M Power London Isaac Price and *Nora Procter-Sims King's Coll Trefor B Prys Jones Cardiff and Middlesex; *Violet R. H Rains, Kings Coll. *Jacob Raisman*, Leeds, James R. Ratcliffe, Guy's, Mysore P S. Rau Madras and Middlesex John E. Readman Manchester and London Eric W Riches Middlesex, James B W Robertson, Cambridge and St Bart.'s; *May E. Rogers Royal Free James C Ross Liverpool *George L F Rowell* Cambridge and St Bart's Enrique A Rucker Middlesex, Hubert Scudamore, Cambridge and London Adolph Sebba London Herbert J Seddon St. Bart's Stewart Q Servanté Middlesex Joseph Shepherd Univ Coll *Jonathan Shutt Leeds and London* *Amelia M. Simmons, Charing Cross John H Simmons Kings Coll., John A Simons Guy's Alexander Simpson Smith Cambridge and Guy's; Eric G Smallbone, Guy's; *Rachel M S. Smellie St Mary's Reginald H Smith, Manchester Richard K Smith St. Bart's *Simon* Speck Middlesex Leopold I Spero, St Mary's *Lois Stent Manchester; Thomas W Stephens Cape and St Thomas's, James M Stobo Glasgow and London, Richard Stuart, St Bart's Frederick W Ta Bois, London Alan C Taylor Guy's *Geoffrey F Taylor* King's Coll., William A Taylor London *Josephine I Terry St Mary's Daniel E. Thomas Cardiff and St Bart's John E. *Thomas*, Cardiff John L. Thomas Cardiff and Middlesex, Frank S Thornton St Thomas's Frederick T Thorpe Birmingham; Oscar C. Tobin *London* Harold Trafford, Guy's *Beatrice E. Turner Royal Free; Kavas A Turner Bombay and Leeds Leo G W Urich, *Middlesex*, Johannes N J L. Uys Cape and St Thomas's; Philip R Viviers, Cape and St Bart's Arthur G Walter Cambridge and St Thomas's **Elizabeth* M Whishaw, St Mary's Ivor E. Whitehall Univ Coll John S Whitten St Bart.'s John M Wilder London; Edward C P *Williams, Middlesex*, *Ellis J Williams Cardiff Gwilym O Williams Cardiff and Liverpool Herbert J Williams Birmingham; John H Williams London, William B Williams Charing Cross and Cardiff John H Willis, London Norman Wilson Univ Coll Richard E. Wolfendale Manchester Clarence J Wylde Bombay and Guy's Robert H Yelf King's Coll. and Thomas Yoxall Birmingham

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* Under the Medical Act 1876

The undermentioned diplomas were granted, jointly with the Royal College of Surgeons of England, to the following successful candidates :—

Diploma in Public Health.—Charles O. S. B. Brooke, Dorothy M. Campbell-Meiklejohn, John V. Carroll, Joseph Cauchi, Edward T. P. Eames, David G. M. Edwards, John C. N. Harris, Strafford S. Hewitt, Alice E. D. Karn, Burjor F. Khambatta, Chandu V. Ramchandani, Bisheshwar P. Srivastava, Doris M. Stone, and Frederick Tooth.

Diploma in Tropical Medicine and Hygiene.—Ahmed F. Abbassi, Mohamed Ali, Donald D. Anderson, John B. S. Baxter, John C. R. Buchanan, Matthew Burn, Angus H. Campbell, Robert A. Chambers, William Corner, John R. Davies, Gilbert H. Dive, Ibrahim Girgis, Francis M. Halley, Hans-Raj, George W. Harley, Alan McKenzie, Mir S. Mahmood, William J. Moir, Charles R. Philip, Louis M. J. R. Pilot, Sundramier Ramakrishnan, Hugh D. C. Rice, George W. Scott, Edward A. Seagar, Timothy F. Sheehan, Charlotte A. Stuart, Clement Sturton, and W. Wilkinson.

Diploma in Psychological Medicine.—Geoffrey T. Baker, George L. Cutts, Henry T. Jones, John J. Laws, John B. S. Lewis, Hugh C. McManus, Andrew H. Pearce, Gordon F. Peters, Reginald G. Riches, Gerald R. A. de Montjoie Rudolf, and John Russell.

Diploma in Ophthalmic Medicine and Surgery.—Edward W. Arndt, Harnand L. Batra, Kashinath D. Bhave, Catharine Boyd, Martin M. Cruickshank, Arthur W. D'Ombrain, Agnes Estcourt-Oswald, James A. F. Flynn, Kenneth B. Johnston, Wajid Ali Khan, Coimbatore V. Krishnaswami, Arthur P. Lawrence, Arthur L. McCurry, William M. C. MacDonald, Kizhakkekalattil K. Nayar, Kaikhushru B. Palkhivala, and Reuben W. Payne.

Diploma in Laryngology and Otology.—Sok Nin Chau, Edward D. D. Dickson, Robert McM. Glynn, Ronald E. Jowett, Jean P. Kies, Norman W. MacKeith, and John H. Shaw.

By-law 112, relating to the age of candidates for the Membership, was altered to read as follows: "Every candidate for the Membership shall furnish proof of having attained the age of 23 years."

The Baly Medal was awarded to Prof. R. Magnus, of Utrecht, on the recommendation of Council.—The President announced that he had appointed Sir John Rose Bradford to deliver the Harveian Oration in 1926.—A report was received from the Representative of the College on the General Medical Council concerning the proceedings of the Council at their session held in May and June last.—A report was received, dated May 29th, 1925, from Dr. Gordon Holmes, Representative of the College at the Charcot Centenary in Paris.—A report was received from Sir Percival Horton-Smith Hartley, Representative of the College at the Eleventh Conference of the National Association for the Prevention of Tuberculosis on July 6th and 7th.—A report was received from Dr. Dawtrey Drewitt, the Representative of the College on the Chelsea Physic Garden.—Sir Frederick Andrewes was reappointed a Representative on the Executive Committee of the Imperial Cancer Research Fund.—A report was received from the Committee appointed to revise the by-laws and regulations relating to the examination for the Membership.—After some further College business of formal nature, the President dissolved the Comitia.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a meeting of the Council of the College on July 30th, Sir John Bland-Sutton, the President, in the chair, Prof. Alexander Primrose was admitted a Fellow of the College, Mr. Evelyn Sprawson was re-elected a Member of the Board of Examiners in Dental Surgery, and Sir D'Arcy Power was re-elected a Member of the Executive Committee of the Imperial Cancer Research Fund.—The terms of a petition for a supplemental charter were taken into consideration and approved, and it was decided that the further steps to be taken in the matter should be considered at the quarterly meeting of the Council in October. The proposed supplemental charter is, in general terms, to enable the Council to make improved arrangements for certain examinations. In accordance with this subject it is proposed to give the Council power to increase the number of members of the Court of Examiners and to give greater freedom in the selection of examiners for the Licence in Dental Surgery. It is also proposed to admit women Fellows and Members of the College and Licentiates in Dental Surgery on the same terms and conditions as men and with the same rights and privileges and to effect certain minor adjustments.—The diploma of Fellow was conferred upon the following three candidates who have now complied with the necessary by-laws: Drs. John P. Hosford, Alec A. Lees, and Donald E. Ross.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the undermentioned subjects :—

Surgery.—S. J. Alexander, Sydney and St. George's Hosp.; S. Bartlett, Liverpool; F. Beinaschewitsch, Berne; F. Carroll, St. Mary's Hosp.; W. Hinds, Durham; and P. H. Knowles, Bristol.

Medicine.—S. Bartlett, Liverpool; F. T. Birkinshaw, Univ. Coll. Hosp.; A. H. Henson, Charing Cross Hosp.; A. Kaplan, St. Mary's Hosp.; T. A. Lazaro, St. Bart.'s Hosp.; C. H. Mason and C. S. Netscher, St. Mary's Hosp.; R. C. Pratt, Birmingham; and K. E. R. Robertson, St. Mary's Hosp.

Forensic Medicine.—S. Bartlett, Liverpool; T. A. Lazaro, St. Bart.'s Hosp.; R. D. Mason, St. Mary's Hosp.; P. B. P. Mellows, St. Bart.'s Hosp.; J. M. Moran, Manchester; and K. E. R. Robertson, St. Mary's Hosp.

Midwifery.—S. Bartlett, Liverpool; S. A. Joelson, London Hosp.; C. H. St. Johnston, Birmingham; J. Mindess, London Hosp.; J. M. Moran, Manchester; and P. H. Row, London Hosp.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: S. J. Alexander, S. Bartlett, F. T. Birkinshaw, F. Carroll, A. Kaplan, P. H. Knowles, C. H. Mason, C. S. Netscher, and K. E. R. Robertson.

THE Royal Free Hospital has received a gift of £2000 from an anonymous donor for the enlargement of its light treatment department.

KING'S COLLEGE HOSPITAL.—In 1922 the scholars and staff of the Mary Datchelor girls' school at Camberwell raised £650 in connexion with the London Schools' Hospital Fund towards the £1000 required for the endowment of a bed in King's College Hospital. The fund has now been completed and last week the Bishop of Kingston dedicated the bed. In 1912 the old girls endowed a cot at the hospital.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The Commission, having held 40 meetings at weekly or shorter intervals since October last for the hearing of oral evidence, have now adjourned until October next, when the final evidence from representatives of the Government departments will be taken, after which the Commission will proceed to consider their report. Proof copies of the oral evidence and the relative statements submitted at the meetings of June 25th (3*s.*) and 30th, and July 2nd and 7th (each 2*s.* 3*d.*), as well as Volume II. of the Minutes of Evidence, covering the period from Jan. 15th to March 26th (12*s.* 6*d.*), are on sale at H.M. Stationery Office.

TUBERCULOSIS IN WALES.—The Board of Governors of King Edward VII. Welsh National Memorial Association for the Prevention, Treatment, and Abolition of Tuberculosis met for the first time since its formation in 1912 for its annual meeting at Bangor on July 30th. The President stated in his opening address that English local authorities were being treated more generously than the Welsh Association. The Association had provided 1400 beds at an average cost of £322 per bed, including the cost of X ray installations, operating theatres, and other necessaries. Treasury grants had not amounted to more than £166 per bed, while the Corporation of Manchester for its tuberculosis scheme would receive, he said, grants at the rate of £525 from the Treasury. The annual statistics of the work of the Association during the past year showed that the number of people examined at the dispensaries and visiting stations was not quite so large as in the preceding year. During last year in hospitals or sanatoriums, 4480 patients were treated. The Association now had 1400 beds in their own institutions. In 1911 there were 3063 deaths from tuberculosis in Wales and Monmouth, and in 1921 the number was 3180, while the population in that period had increased by 300,000—i.e., for every million persons living in Wales and Monmouth in 1911 there were 1513 deaths from tuberculosis, while in 1924 the deaths per 1,000,000 numbered 1169. In the five westernmost counties—Pembrokeshire, Cardiganshire, Merionethshire, Carnarvonshire, and Anglesey—the death-rate per 1,000,000 persons in 1924 was 1664. In the other eight counties the rate was 986. The need for more beds, particularly for persons suffering from surgical tuberculosis, was strongly emphasised. Mr. J. C. Townley emphasised the incidence of tuberculosis in the three western counties, Merioneth, Cardiganshire, and Carnarvon. The contrast in the death-rates from tuberculosis was most marked between the eastern and western counties and even between the east and west districts of the counties themselves. In Carnarvon the deaths from tuberculosis ranged from 6 per 10,000 in Conway rural area to 28 in Gwyrfai and 26 in Glasfryn. In the part of Montgomeryshire which bordered Merioneth the rate was 6, while in the adjoining rural area of Dolgelly in Merioneth it was 14, and farther west it was 19. Colonel Lyle Cummins, the principal medical officer of the Association, said one satisfactory feature in relation to the three counties was that, while their mortality from tuberculosis started higher than other counties, the decline in the death-rate had been as pronounced as in the remainder. Several theories had been propounded to account for the greater susceptibility of the western counties to tuberculosis, including the prevalence of rain bearing winds, especially westerly winds. Another suggestion was that people living *in isolated districts had a lesser power of resistance than those* living in congested town areas, where they became more immune from attack and their resisting powers increased

DUBLIN: POST GRADUATE CLASSES —Arrangements have been made, with the approval of the Board of Trinity College, for a post-graduate course of instruction at the School of Physic during the autumn from Monday, Sept 14th, to Saturday, Oct. 3rd Members of the class can reside in college rooms and dine on commons.

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION —Queen Mary's Hospital will hold a general course in Medicine, Surgery, and the Special Departments from August 24th to Sept. 5th. Daily sessions will be held from 10.30 A.M. to 5 P.M., including demonstrations of clinical methods, groups of illustrative cases, &c. A special feature of the course will be the opportunity for practical study in gynæcology and obstetrics.—A variety of special courses will be held during the month of September From the 7th, continuing for five weeks, will be given an Operative Surgery course arranged by the Seamen's Hospital, the meetings taking place four times weekly —On Sept. 21st the Brompton Hospital begins a two weeks' course dealing with Pulmonary Diseases from all aspects —There will be an afternoon course with evening V D clinics at the Blackfriars Skin Hospital from Sept 7th to 19th.—The same date has been chosen for a course to take place at the Infants Hospital A special feature of this is the instruction available in all the latest methods employed for dealing with infant ailments, and facilities are provided for visits to centres away from the hospital —The Royal Westminster Ophthalmic Hospital has fixed a course from Sept 7th to 26th, consisting of instruction in the out-patient department and special lectures and demonstrations dealing with Diseases of the Eye —There will be an intensive course in General Medicine, Surgery, and the Specialties at the Westminster Hospital from Sept. 21st to Oct. 3rd —Dr C B Heald has undertaken a series of lecture-demonstrations in Electro-therapy, on Wednesdays, beginning Sept. 23rd, at the Royal Free Hospital.—Copies of the syllabus of each of the aforementioned courses, together with the general programme of the Fellowship of Medicine, can be obtained from the Secretary to the Fellowship at 1, Wimpole-street, London, W 1

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION 1, Wimpole-street, W

MONDAY, August 10th, to SATURDAY, August 15th.—PRINCE OF WALES'S HOSPITAL, Tottenham, N (N E. London Post-Graduate College) Intensive Course in General Medicine, Surgery, and the Special Departments. Sessions 10 30 A.M. to 5 30 P.M., except Saturday (second week) —ALL SAINTS HOSPITAL, Vauxhall Bridge-road, S.W Special Course in Urology, consisting of clinical instruction and special lecture on subject.—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck street. Lecture-demonstrations illustrated by cases at 5 P.M Monday, Dr L. R. Yealland on The Varieties of Muscular Atrophy Tuesday, Dr Hildred Carlill on The Reflexes in *Health and Disease* Wednesday, Mr C. Wakeley, on Cerebral Surgery Thursday, Dr E. D Macnamara on The Sequelæ of Encephalitis Lethargica Friday Dr C. Worster-Drought on Diagnosis and Treatment of Syphilis of the Nervous System

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith W

MONDAY August 10th.—11 A.M. Surgical Registrar: Surgical Wards 2 P.M Dr Scott Pinchin: Medical Out patients. 3 P.M., Dr Saunders Medical Wards

TUESDAY —11 A.M., Dr McDougal Electrical Dept. 11 A.M. Mr Endean Venereal Diseases 2 P.M., Dr Burrell Chest Cases.

WEDNESDAY —10 A.M Dr Saunders: Medical Diseases of Children 2 P.M Dr Dowling: Skin Dept 2 P.M., Mr Gibb: Eye Dept

THURSDAY —11 A.M Sir Henry Simson: Gynæcological Wards 12 noon Surgical Registrar Surgical Pathology

FRIDAY —2 P.M., Dr Burrell Medical Out patients 2 P.M Mr Sinclair Surgical Out patients. 2 P.M., Mr Vlasto Throat, Nose, and Ear Dept

SATURDAY —10 A.M., Dr Saunders Medical Diseases of Children

Daily, 10 A.M to 6 P.M., Saturdays 10 A.M to 1 P.M., In patients, Out patients, Operations, Special Departments

Appointments.

BUSH W H., L.M S.S.A., L.S.A., has been appointed Certifying Surgeon under the Factory and Workshop Acts for Chulmleigh, Devon

DONNELLY, N M., M.B., B Ch. R.U.I D P H., Assistant Medical Officer and Tuberculosis Officer for Deptford

MOXON, F., M.B., B S Durh., Ophthalmic Surgeon, The Nelson Hospital, Merton.

TURNER, EILEEN M., M.B., B S Lond., Assistant Medical Officer of Health and Assistant School Medical Officer, Holland, Lincs.

Manchester Royal Infirmary SHIRK, F H., M B., Ch.B., MARSHALL, C T., M B., Ch B., YOUNG, N., M.B., Ch B., and MUCKLOW, S. L., M.B., Ch.B, House Physicians, LANGFORD, C. F., M.B., Ch.B., BOLTON, N. W., M B., Ch.B., BOOTH, G H H., M.B., Ch.B., WOOD, R., M B., Ch B., and SEED, N F., M.B., Ch.B., House Surgeons, PENMAN, H., M.B., Ch.B., House Surgeon to Special Department, MUMFORD, P B., M.B., Ch.B., Assistant in the Dermatological Department; and JOHNSON, M., M.B., Ch B Surgical Clinical Assistant

Vacancies.

For further information refer to the advertisement columns.

Birkenhead Borough Hospital —Third H S £100

Bristol, Cossham Memorial Hospital, Kingswood.—Res M.O £150

Carlisle, Cumberland Infirmary —H P, &c, at rate of £165 Also Jun H S at rate of £135

Derby, Royal Derby and Derbyshire Nursing and Sanitary Association.—Hon Obstet P

Derbyshire County Council —Asst Sch. M O and Tub O £650

Jersey General Hospital and Poor-law Infirmary —Res M O £200

Liverpool County Borough.—Jun Asst. Sch. M.O £600

Manchester and Salford Hospital for Skin Diseases —H S £100

Newcastle-upon Tyne, Princess Mary Maternity Hospital —Asst. Res M.O at rate of £40

Plymouth Borough.—Asst M O H £600

Royal Free Hospital, Gray's Inn-road, W C —Cas. O £150

St Bartholomew's Hospital.—Ophthalmic S and Phys Accoucheur

St Peter's Hospital for Stone, &c Henrietta street, Covent Garden W C —H S, at rate of £75

Sudan Government Wellcome Tropical Research Labs Khartoum —Asst Bacteriologist £720

Sunderland Royal Infirmary —H.P, £140

Sunderland Royal Infirmary and Children's Hospital —Hon S for Ear Nose, and Throat

Warrington Infirmary and Dispensary —Jun H S. £175

West End Hospital for Nervous Diseases, Gloucester Gate, Regent's Park N W —Sen H P at rate of £150

West Riding County Council.—Dist Tub O for Barnsley £600

The Chief Inspector of Factories Home Office, London, S W, announces a vacant appointment for a Certifying Factory Surgeon at Maesteg (Glam.)

The Secretary of State for the Home Department gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906 for the Districts of the Aberayron, Cardigan &c. (Circuit No 31) Applications should reach the Private Secretary, Home Office, not later than August 22nd

Births, Marriages, and Deaths.

BIRTHS.

SATOW —On July 20th, at "Ackland" Oxford, the wife of Lawrence L. Satow, M C., M R C.S., of a son

MARRIAGES

HILL—VARLEY —On July 28th, at the Congregational Church St Leonards-on Sea Humphrey Cheetham Hill M B., B Ch. to Hilda Frances fourth daughter of Rev and Mrs Henry Varley of St Leonards.

LODGE—CRESSWELL.—On July 27th, at the Parish Church of St Mary the Virgin Burley-in Wharfedale Samuel Durham Lodge, F R.C S. to Margaret Ianthe Edgar Alston, eldest daughter of Lionel Cresswell J.P., Barrister-at Law, and Mrs Cresswell of The Hall, Burley-in Wharfedale

POTTS—HEPWORTH.—On July 30th at Brompton Parish Church South Kensington Dr John Leonard Potts to Nancy May younger daughter of Mr and Mrs Allan Hepworth, of Ealing

DEATHS

BUNNY —On July 23rd Joseph Brice Bunny, L.R C.P., M R.C S., of Victoria park, Weston-super Mare (formerly of Newbury) aged 78

N.B —A fee of 7s. 6d. is charged for the insertion of Notices of Births Marriages and Deaths.

Notes, Comments, and Abstracts.

PUBLIC HEALTH IN THE NEW HEBRIDES.

A DECLINING NATIVE POPULATION.

Mr. M. King, C.M.G., British Resident Commissioner, in his report for 1923, remarks that the New Hebrides, to which are attached the Banks and Torres Islands, have an area of about 5700 square miles. The natives are Melanesians, but in places there is a mixture of Polynesian blood. There is little change to be recorded in the numbers and composition of the non-native population of the group, the total of French nationality being 709 and of British 275. In regard to the gradual decrease in the native population, Mr. King thinks that of the many reasons assigned for it, those assigned by the late Dr. W. H. R. Rivers, F.R.S., than whom none was more competent to speak, are the most worthy of consideration. He attributed the decline of the Melanesian population to this: "That the people have been deprived of nearly all that gives interest to their lives, and this loss of interest has been brought about by the unintelligent and indiscriminating action of Europeans towards native institutions." The Resident Commissioner proceeds: "I will not quote further, but would invite attention to the original essay in the work referred to ('Essay on the Depopulation of Melanesia,' Cambridge University Press, 1922). The lack of intelligence displayed by would-be civilisers in their action towards natives and native institutions has often impressed itself upon me. The action of such people appears never to be guided by consideration of the effects, positive or negative, good or ill, of such institutions on the native mind or character. The fact that the natives take interest in, and derive pleasure from, such or such an institution, seems sufficient to ensure its discouragement and ultimate suppression. To many of these institutions the natives have been strongly attached, and the blank in their lives left by their discontinuance or suppression is one that cannot be filled."

In most of the islands of the New Hebrides there is a great disproportion between the numbers of the two sexes, males in all cases predominating. Figures collected not long since by the Rev. M. Frater, of the Presbyterian Mission, relating to the population of two of the larger islands and of seven smaller ones, reveal disproportions ranging 5 to 30 per cent., the aggregate of males being 6508 and of females 5408. The general opinion for long was that this preponderance of males in northern islands is due chiefly to female infanticide, ill-treatment of female infants, the premature marriage of girls, and other preventable causes. Careful inquiry has, however, revealed the fact that, while the influences cited have a powerful effect, there is another and probably the chief one, and that is that the excess, as Mr. Frater writes, "begins at birth and is determined by prenatal causes. The male largely out-number the female births, and through the operation of the other causes the disparity between the sexes becomes more marked in adolescence and adult life." This may also be one of the non-contributory causes of the general decline of the native population. As opposed, however, to the experience of the northern islands, a census of the scanty native population of Efate and the adjacent small islands, also made, and very recently by Mr. Frater, revealed a distinct preponderance of females, but not to the same extent as noticed in the case of the males of the northern islands.

The Mission Hospital on Iririki (John G. Paton Memorial) continued its good work, as did the French Government Hospital in Vila. Unfortunately, the departure of the medical officer in charge necessitated the suspension of active operations by the first named before the end of the year. During the months it was open the number of in-patients was 482 (Europeans 17 and natives 465), and the out-patients numbered 902. At the French institution 870 in-patients were treated (Europeans 154 and natives 716), and out-patients to the number of 1065. The deaths in the British hospital numbered 33, 2 being Europeans, and in the French 42, 3 being Europeans. At the French hospital in the Canal de Segond (Santo) many natives benefited from the care of the Condominium medical officer. The Mission Hospital on the island of Tanna has been reopened and much good work has been done by Dr. Williams, the medical officer in charge. It is to be regretted that the arrangement made by the mission authorities was for a few months only. A complete hospital on the island of Ambrym was destroyed by the great volcanic eruption of 1913. The authorities of the mission fund which supported this institution have, it is learnt, decided to replace the destroyed building by another to be erected on the east coast of the island of Malekula. This project, if carried out, will supply a long-felt want, the destruction of the Ambrym institution having left the northern part of the group entirely unprovided in this respect. Influenza, fortunately not of the pneumonic type, and dysentery have claimed their usual toll of native victims.

A LIST OF SANATORIA.

THE Ministry of Health has issued a new list, 10(b), dated July, 1925, price 2*d*., enumerating the sanatoria and other residential institutions approved for the treatment of persons suffering from tuberculosis. This list, which takes the place of an earlier list, 10(*a*), dated April, 1923, applies to residents in England and Wales, and gives the names of the administrative counties and county boroughs in which the institutions are situated. The list distinguishes institutions where admission is restricted as regards class of disease and sex and gives in each case the date on which ministerial approval expires.

CLITORIDECTOMY IN OLD CALABAR.

IN a note on the custom of fattening up the girls of marriageable age among the Efik tribe at Old Calabar, Mr. L. W. G. Malcolm, in the August issue of *Man*, gives some particulars in regard to the operation of clitoridectomy, usually performed by the mother. The fattening-up process takes place at the age of puberty when the girl is secluded for from six months to two years, the period depending on the social position of the parents. The "surgical" operation takes place at or near the end of the girl's period of seclusion. "A piece of coconut shell is shaved very thin and a hole bored through. The glans clitoridis is drawn through this hole and cut off with a sharp knife or splinter of glass. It is believed that the operation has the effect of making the girl sterile. Notwithstanding this the women themselves are the chief supporters of the custom and resent any interference." The note also shows by reproductions of photographs the remarkable effect produced by eating vast quantities of fat-producing foods, including pounded yams cooked in palm oil.

ORGANISED VOLUNTARY CHILD WELFARE.

THE annual report of the Central Council for Infant and Child Welfare for the year ending April 1st, 1925, is a record of steady advance in many directions. In addition to its activities as a centre of information the work of the Central Council included the organisation, in conjunction with the British Red Cross Society, of a day nursery at the British Empire Exhibition at Wembley. This nursery proved a most successful piece of pioneer work, since during the time it was open it cared for no less than 11,091 children.

Another scarcely less important development during the year was the reorganisation and extension of the Travelling Exhibition, which has been in such demand that it was found necessary to collect a duplicate. Bookings were received for every month except April and December when the exhibitions were, for various reasons, not available. The educational value of these exhibitions can hardly be overestimated. In Blackburn 30,000 people visited it during the ten days it was on view, and the attendances at many other places were equally good. A permanent exhibition is now being collected at Carnegie House in response to a widely expressed desire, in which model exhibits of maternal and child welfare work will be on view daily to those interested free of charge. The exhibits included model garments for expectant mothers as well as for infants and children; a dental section, with diagrams showing the effect of diet on the development of the teeth; a clean milk section; a diet section; a rickets section, with exhibit from the Lister Institute of Preventive Medicine; a tuberculosis section; a cripple section; a chamber of horrors; posters, both English and American; an Indian section; and a model of a Red Cross child welfare centre.

A valuable innovation has been the provisional arrangement entered into with the College of Nursing, whereby the Library of Nursing is to be available to borrowers recommended by the Central Council, the Council contributing an annual sum to cover the extra cost of books purchased and the expense of administration. The scheme appears to be working well, and should enable students and infant welfare workers to obtain the best and most up-to-date publications on any branch of public health work.

Brief reports are given of the work of the federations of infant welfare centres throughout the country, as well as of the various constituent societies of the Central Council. In each case the record is one of progress and development.

INDEX TO "THE LANCET," VOL. I., 1925.

THE Index and Title-page to Vol. I., 1925, which was completed with the issue of June 27th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

SOME

Practical Considerations

IN THE CONSERVATIVE TREATMENT OF

FRACTURES OF THE PELVIS AND LOWER EXTREMITY.*

A Course of Four Lectures delivered for the University of London at St. Bartholomew's Hospital

By Sir WILLIAM I. de COURCY WHEELER,
M.D. Dub., F.R.C.S. Irel.,
PAST PRESIDENT, ROYAL COLLEGE OF SURGEONS IN IRELAND.

LECTURE I.

In these lectures I will allude only to the management of cases of fracture of the lower extremity, directing my remarks to those who will have to deal with them under conditions where elaborate apparatus cannot be obtained by a nod, where highly skilled consultants are not always available, and where the results of after-treatment depend largely upon the doctor himself.

Fractures of the Pelvis.

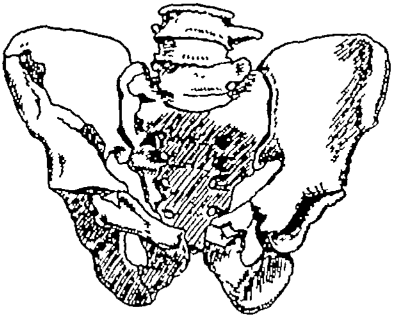
General Considerations.—When I was a student I was taught by the late Prof. E. H. Bennett—a really great authority on the subject of fractures—that extensive fractures of the pelvis were rare and that recovery seldom followed. Twenty-five years have elapsed. Under modern conditions both statements must be amended. Fractures of the pelvis have increased in frequency with the development of industrial machinery and rapid transport, for the crushing injuries associated with accidents to motor-cars, aeroplanes, and those employed in the modern factory supply us in bulk with this morbid material. Nor is the former gloomy outlook justified to-day, for surgery has not lagged in the race, and injuries contemplated with awe by our predecessors are confronted without misgiving and treated with success by modern methods.

Figures given by older authorities, such as Von Bergmann, Mikulicz, and Bruns, indicate that fractures of the pelvis constitute only 0.3 per cent. of all fractures. From my own experience alone the percentage appears to be greater. To illustrate these lectures I had no difficulty in recalling seven comparatively recent cases, without going through the hospital records. It must not be taken for granted that fractures of the pelvis arise only from severe injuries. Cases have been recorded from a slight fall on the hip, and death has followed in such cases from visceral injury and peritonitis.

In Malgaigne's classical double vertical fracture, the flanges of the ilia are approximated, the anterior portion of the pelvic arch breaks, and posteriorly there is either separation of the sacro-iliac joint or fracture of the ilium vertically downward from the crest to the greater sciatic notch (Fig. 1). The fracture in front is often on one side and the fracture behind on the other. When one side of the pelvis is thus broken away from the rest of the bone it and the attached lower extremity are necessarily connected with the rest of the body only by the soft parts which unite the pelvis to the spinal column and trunk. These soft parts are liable to severe stretching, laceration, and other injuries, which will be mentioned later on. The symphysis pubis or the sacro-iliac joint may be torn asunder, and, in a few cases, separation has occurred both at the symphysis and at the sacro-iliac joint. Separation of all three pelvic joints, not associated with fracture, is an injury the existence of which is doubtful, but I have seen a case with Dr. Gibbon FitzGibbon, Master of the Rotunda, in which there were very wide independent movements of one side of the pelvis upon the other due to laxity of the ligaments of all three joints, with no history of injury and not connected with pregnancy.

Of the isolated fractures of the pelvic bones which do not break the continuity of the pelvic ring, fracture of the acetabulum is the most interesting. I have in Mercer's Hospital at the moment a case of dorsal dislocation of the hip which, owing to a fracture of the posterior rim, slipped out of place after several reductions. The reduction was subsequently made by direct extension and swinging movements and maintained in position by fixed extension in a Thomas splint. This is one of the two common types of fractured acetabulum. The second type is illustrated in the case of a man admitted into Mercer's Hospital in 1909 after a severe injury to the hip. An impacted fracture was diagnosed, but X ray photographs showed the head of the femur driven through the acetabulum into the pelvis.

Fig. 1.



Comminuted fracture of the pelvis. (Spencer and Gask.)

In the first group of cases the fracture of the rim is associated with backward dislocation of the femur, and the symptoms are those of dorsal dislocation with difficulty in maintaining reduction. In the second group the head is forced into the acetabulum, causing fracture; sometimes the head passes through the fracture into the pelvis, sometimes not. The diagnosis is, in consequence, sometimes easy and sometimes difficult. In the more severe type the trochanter is less prominent than normal, the shortening is slight or absent; there is, of course, severe pain, and motion is restricted in every direction.

In differentiating between fracture of the acetabulum and fracture in the region of the neck of the femur, it will be remembered that in fractures of the neck from severe violence the limb lies extended and usually rotated outwards, and that impaction comminutes and makes the trochanter prominent. In fractures of the acetabulum with penetration of the head of the femur, the trochanter is much less prominent, but the difference may not be sufficient to make a diagnosis. In both conditions there is usually absolute loss of function. In most cases help may be obtained by making a rectal examination, but most surgeons will reserve judgment until an X ray photograph has been obtained.

In the one case of central dislocation through the acetabulum into the pelvis which I have seen reduction was impossible, but a fairly good functional result followed. The man, on leaving hospital, was able to continue his occupation as a hackney car driver.

Amongst the seven cases to which I have referred is one of isolated fracture of the sacrum and fracture of the coccyx in a child of 12. She fell from a swing on her sacral region. The interest in this particular case was the absence of symptoms except for some local pain. The patient was brought in casually for examination three weeks after the injury. An X ray

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* All the cases referred to were illustrated by lantern slides.

photograph showed a transverse fracture of the sacrum between the third and fourth segments without displacement. She was seen four years later and had no pain or trouble of any kind.

When displacement of the fragments occurs the injury is extremely painful and some of the sacral nerves are likely to be involved. There may be also interference with defæcation and urination in some cases due directly to the displacement of the fragments, in other cases to paralysis following injury to the sacral nerves. The displacement of the fragments can be felt per rectum, and under an anæsthetic the alignment can sometimes be restored. Fractures of the sacrum alone are very rare.

Fractures of the coccyx, owing to the mobility of the bones, are also extremely rare, and are of importance owing to the probability of subsequent coccydynia, necessitating removal of the bone. Fractures of the ilium are not uncommon. They involve the upper expanded portion, including the crest, and cases are reported in which the anterior superior, and inferior and posterior spines have been torn away by muscular action. With the body bent forward and the thighs flexed upon the pelvis, there is sufficient muscular relaxation to detect a fracture, and a good X ray picture can be obtained by placing the injured side upon the plate and passing the rays obliquely from before backwards. In treating these fractures care must be taken not to press the fractured portion of the ilium unduly inwards.

Isolated fractures of the ischium are extremely rare. Many standard authorities are silent upon this subject. Bennett[1] described a case in which the ischium was detached from the left innominate bone by fracture with displacement backwards and upwards. The great sciatic notch in this case was reduced to a mere slit, and the displaced bone was united to the side of the sacrum. The head of the femur participated in the displacement.

Treatment.

The treatment of fractured pelvis resolves itself into treatment of the injured soft parts and of the fractured bones.

INJURY TO THE URETHRA, BLADDER, AND SOFT TISSUES.

The urethra and bladder are the organs which suffer most frequently and, as compared with these, injuries to other parts are of little practical importance. The rectum and vagina may be injured, or the large veins of the pelvis may be torn—an accident rapidly followed by death. In a case recorded by Bell and Fischer a diffuse traumatic aneurysm of the gluteal artery developed after fracture of the pelvis. Bryant reported three cases in which thrombosis of the external iliac artery followed a fracture of the pelvis. This was due to over-stretching of the artery by the displaced fragments. The internal and middle coats had been torn, the external coat remained intact. In one of these cases gangrene of the leg developed.

Large extravasations of blood after injury to the pelvis may undergo suppuration. The sciatic and obturator nerve may be crushed, with subsequent prolonged and intractable neuralgia. It is, however, the complication of rupture of the bladder and rupture of the urethra, or of both, which is of most practical importance and requires urgent attention. If such complications are recognised without delay and treated along rational lines, the immediate and ultimate results are not at all so depressing as many would have us believe.

Rupture of the Bladder.

Rupture of the bladder may follow injury apart altogether from fractures of the pelvis, or the rupture may be associated with fracture of the pelvis without being actually produced by the broken bones. The site of the lesion may be either above or below the peritoneal reflection. If below, the tear is on the anterior surface, either in an accessible position or out of reach low down in the neighbourhood of the trigone. If the rupture is intra-peritoneal, it is placed more often on the fundus of the bladder or posteriorly. According to the position, the urine either escapes into the space of Retzius and percolates towards the anterior abdominal wall, or it is freely extravasated into the peritoneal cavity.

In the surgical works of Spencer and Gask, to which I am indebted for much information on the subjects under review, it is stated that wherever stale urine spreads it produces inflammation and sloughing. This statement applies, however, as is made clear in the text, to the more familiar types of extravasation following the ulceration and rupture of the urethra behind an old-standing stricture. The urine under such circumstances is foul and infected. On the other hand, the onset of peritonitis, cellulitis, and suppuration, with accompanying rigors, rise of temperature, and general symptoms of toxæmia, may be delayed for a period of even two or three days in cases of leakage from the urinary bladder containing healthy urine.

I recollect a case which occurred in a casualty clearing station in France, in August, 1916. The patient had fallen from the roof of a house, fractured his jaw and both forearms, and, so far as it was possible to ascertain, had sustained some fracture in the region of the pubes. He had abdominal tenderness, and made ineffectual attempts to pass water. Ruptured bladder was diagnosed, but on passing a catheter a full quantity of urine was withdrawn and it contained blood. The amount withdrawn appeared to us to justify delay. The abdomen became more rigid in a few hours, but his pulse remained between 80 and 90, and there was no vomiting nor rise of temperature. The inability to urinate continued, and a catheter was passed every four hours. Blood was present only on the first occasion, and urine was withdrawn at every catheterisation in moderate quantity. The patient's aspect became gradually worse. Rigidity was more marked, vomiting had commenced, and early signs of peritonitis became evident.

When I operated upon this patient 24 hours after admission a large rent was found on the fundus of the bladder, and the abdomen was full of urine without odour. The rent was stitched and the abdomen closed without drainage. A catheter was passed while the abdomen was still open, and it became obvious that on each occasion the catheter had gone through the rent in the bladder and the urine had been drawn from the peritoneal cavity. The first diagnosis on admission had been correct, but the result of catheterisation was so confusing that there was uncertainty and delay. Notwithstanding the multiple injuries and the lapse of 24 hours before operation, the patient did well.

The diagnosis of ruptured bladder is not as a rule difficult. There is always a strong but ineffectual desire to urinate. A catheter passes freely through the urethra, but only small quantities of blood-stained urine return. To make a diagnosis, some authorities suggest that a measured quantity of fluid should be injected and the quantity returned carefully noted and checked. The disadvantages of such a procedure are obvious. If the injected fluid leaks through a rupture into the peritoneal cavity the desired information is obtained, but the shock from which the patient suffers becomes more pronounced. If it returns in full quantity it may have passed through an extra-peritoneal rupture into the space of Retzius and return without appreciable diminution of quantity. Under such circumstances the surgeon is misled.

With an inability to void urine, associated with the free passage of a catheter and the return of only small quantities mixed with fresh blood, the case is one for immediate operation. The differential diagnosis between intra- and extra-peritoneal rupture is difficult in the presence of shock, tenderness, and rigidity, but the treatment is the same. Some suggest that the first exploration should be above the pubes, below the peritoneal reflection, but I agree with Keyes, who recommends the peritoneum to be opened in the first instance. The intra-peritoneal rupture is more common, and, furthermore, in dealing with extra-peritoneal injury in the presence of blood and extravasated urine and an empty bladder, sufficient room can scarcely be obtained by the usual extra-peritoneal suprapubic route.

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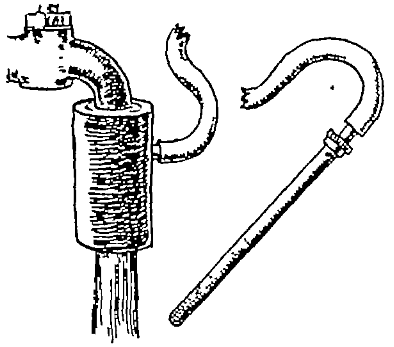
[1] Trans. R.A.M. in Ireland, 1887.

If the abdominal cavity is found to contain urine and blood, it is syphoned off through the simple aspirator (Fig. 2) now used largely for the withdrawal of accumulations of fluid of any origin, and the rent in the bladder is closed and covered, *if possible*, by a piece of omentum. A small corrugated rubber drain is passed to the line of suture. A self-retaining rubber catheter is introduced per urethram.

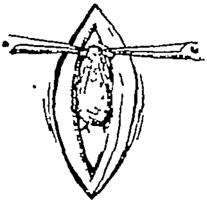
FIG. 2.



Aspirating pump attached to water tap.

In some of the earlier cases described by Walsham death followed operation owing to leakage at the point of suture, and on this account some recommend that fluid should be injected through the urethra to make sure of a water-tight closure while the abdomen is still open. I think such a procedure adds to the time and leads to confusion during operation, and that the use of a self-retaining catheter is a sufficient safeguard. If, on the other hand, it is found that the rupture is not into the peritoneum, the abdominal contents are packed away, and the injury usually will be found on the anterior surface of the bare area of the bladder and should be sutured in the ordinary way. A tongue-shaped portion of omentum (Fig. 3) pulled through the line of peritoneal reflection is laid flat over the surface to secure a firmer union. The space of Retzius is drained and a self-retaining catheter introduced.

FIG. 3.



Opening in bladder covered by omentum.

In certain cases where the rent is inaccessible for accurate suture and where bleeding has been free, suprapubic drainage with a tube in the bladder is the operation of choice.

Rupture of the Urethra.

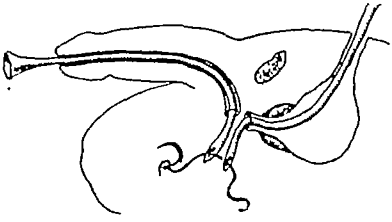
I will give two examples of recent cases of fractured pelvis brought about by a horse rearing and falling backwards on the rider, in which the urethra was ruptured. They illustrate the difficulties of treatment under one set of circumstances and the satisfactory outcome and ease of operation when conditions are favourable.

In the first case the patient, aged about 28, was injured in the manner indicated early in September, 1921. He was seen late at night in the country, after an accident in the early morning. He had been making intense but ineffectual efforts to pass water, and there was consequent extravasation. *It was impossible to pass a catheter beyond the region of the triangular ligament.* Urine and blood were penetrating into the perineum, scrotum, and from the space of Retzius forwards towards the anterior abdominal wall. Both layers of the triangular ligament were apparently torn.

The operation was of the emergency variety. The bladder was opened above the pubis and drained, and free incisions were made into the infiltrated tissues of the perineum. After ten days the patient was brought to Dublin, and an X ray photograph showed a double vertical fracture *involving both rami of the pubes on one side and the region* of the sacro-iliac joint on the other. The acetabulum was involved, a complication which subsequently led to bony ankylosis of the hip. Eleven days after the accident, in the presence of many drainage incisions, a successful attempt at secondary suture of the urethra was performed by a colleague, who kindly took charge of the patient during my unavoidable absence from Dublin.

An operation after such a lapse of time and in the *presence of infection is often very difficult* and unsatisfactory, and is followed usually by traumatic stricture. The hip joint, which was involved by the fracture and open to infection, was exquisitely painful, a condition which added considerably to our difficulties. Extension and abduction were employed until the patient was discharged from hospital five months after admission.

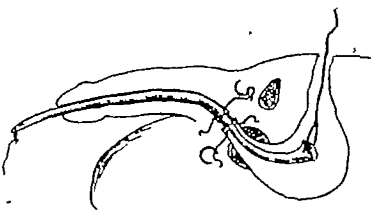
FIG. 4.



Catheters passed and made to point in perineum. (The instrument passed in *retrograde fashion* should be metal.)

I *found it necessary to pass sounds frequently*, generally under an anæsthetic, for nearly two years. Four weeks ago I received the following letter from this patient. He had failed to report regularly for over a year: "Sounds were last passed on me on Oct. 8th, 1923 (two years after the injury), and the last abscess was opened in November, 1923. Since then I have had nothing done, and have been very well indeed. I cannot yet manage to ride, but find every time I try I can manage better. There is a great strain when my legs are across a horse. I play a fair amount of golf and dance a bit, and I have great hopes of riding again some day." From this letter it would appear that the ankylosed hip is the main disability. It is a satisfactory report three and a half years after so serious an injury.

FIG. 5.



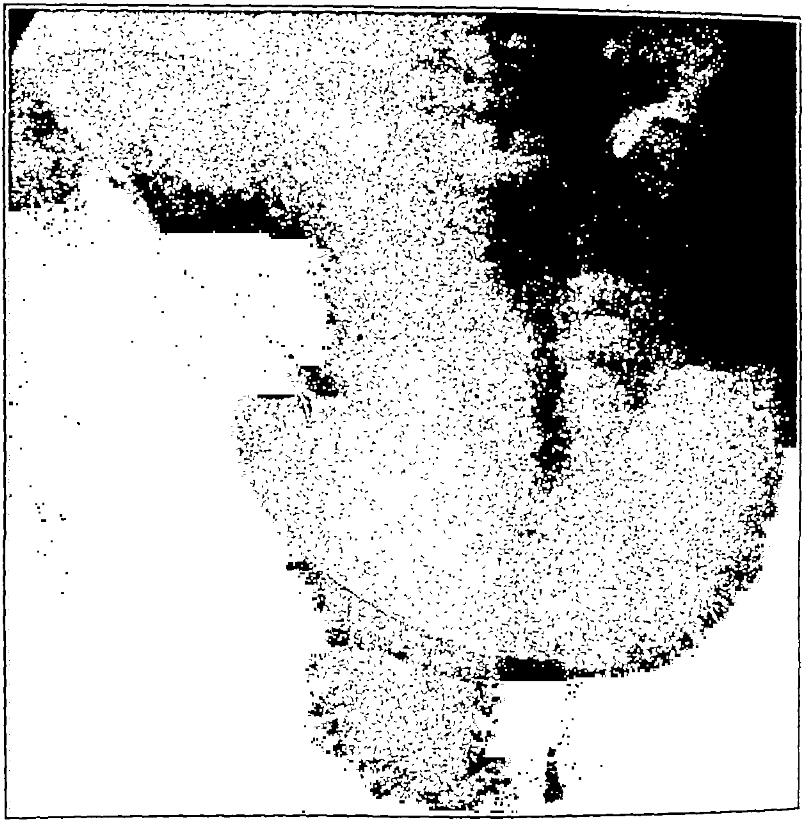
Urethra sutured with catheter as a guide. Note the thread coming through suprapubic wound.

I am indebted to Dr. J. V. O'Hagan for the later history of this case.

The second case arrived in hospital a few hours *after his accident, and illustrates* the happy results which follow when surgical interference is early and when ideal treatment is possible.

A young officer fell with his horse on top of him while hunting. The pubes appeared to be pulled apart, and X rays showed a stellate fracture along one margin of the joint. Again, there were all the signs of urethral rupture—a great but ineffectual desire to urinate, a desire which his medical practitioner in the first instance wisely warned him to curb. Efforts to pass a catheter completely failed.

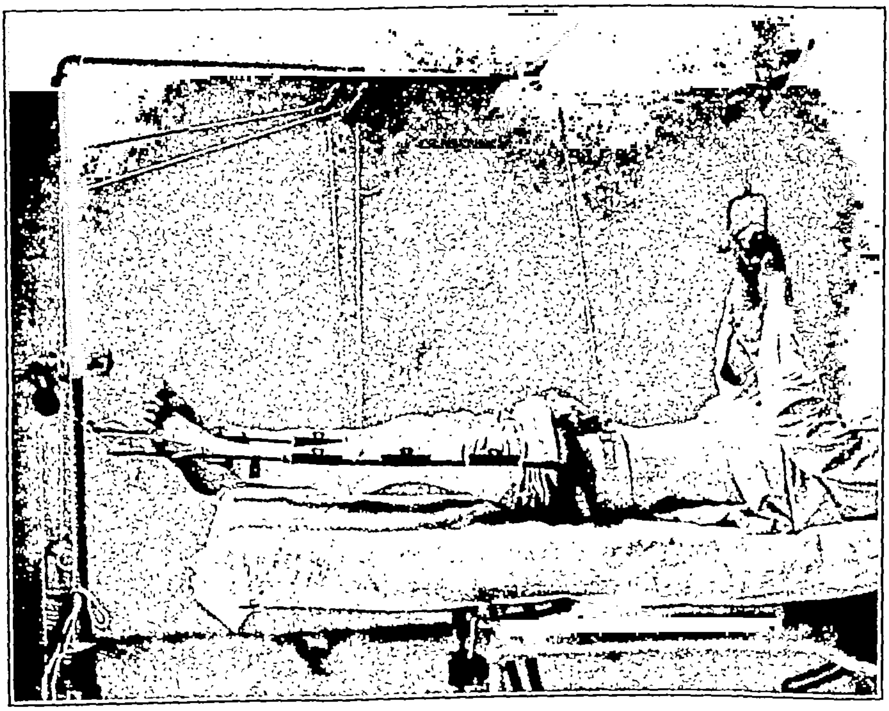
FIG. 6.



Double vertical fracture in which there were no indications of bony injury before radiograph was taken.

The line of treatment adopted is the line I would recommend in cases seen early. Instead of opening up the perineum through infiltrated and bruised tissues in search of the proximal end of the urethra, it is best, I think, to open the bladder in the first instance, and to pass a catheter in retrograde fashion down through the proximal portion of the tear. An assistant holds this instrument while the end of it is exposed through a perineal incision. A rubber catheter is now passed through the penile portion, and the eye is attached by a silk thread to the instrument passing from the bladder. The bladder instrument is withdrawn, pulling with it the rubber catheter, the eye of which now appears through the suprapubic wound. The urethra is then accurately sutured end to end with the rubber catheter as a guide (Figs. 4 and 5). A good headlight is essential for accurate work. The perineal wound is cleansed, preferably with some of the chlorine preparations (such as "Fecto") or treated with bipp. It is then sutured closely, a small superficial rubber drain being left in situ. A long thread is attached to the point of the catheter coming through the suprapubic opening before it is gently manœuvred into the bladder by a pull on the penile end; this thread may be conveniently tied to one of the skin sutures. The bladder is drained by a small suprapubic tube. At the end of four or five days a fresh catheter is attached by a stitch, to the meatal end of the one already in position, and by pulling on the suprapubic thread the new catheter takes the place of the old. This process can be repeated for a fortnight when a catheter is passed in the ordinary manner and the suprapubic wound allowed to close.

FIG. 7.



Convenient arrangement for treatment of pelvic fractures.

The patient so treated was admitted to hospital in January, 1924. He was up and about at the end of five weeks, and left hospital six weeks and two days after admission. On a few occasions afterwards an instrument was passed without difficulty, and he rejoined his regiment apparently well.

Fracture of the Pelvis without Distinctive Signs and no Complications.

The third illustrative case shows a double vertical fracture in a lady who was unfortunate enough to be in a motor-car when it overturned and who had apparently no injury to the soft parts beyond bruising and ecchymosis. At the first examination she stated she felt bruised and sore, and had some pain in her back. Movements of her knees and hip-joints did not cause pain; no shortening could be found. The crests of the ilia were in normal position; pressing them inwards caused no special pain. Rectal examination revealed nothing, and I came to the erroneous conclusion, in agreement with the local doctor, that there was no gross bony injury. An X ray examination was made as part of the routine examination, and a fracture was found on the left side, splitting the ilium from the lower angle of the sacro-iliac joint to about the middle of the crest (Fig. 6). The pubic arch on the right side was broken above and below the obturator foramen. The patient was kept in bed for six weeks, and after two months was able to move about apparently well. This lady wrote to me a few weeks ago as follows: "I am glad to say I feel absolutely no ill-effects in any way. I am not the slightest bit lame, and can dance all night; I have danced four nights this week into the early hours of the morning. I had not ridden for eight years, and rode for the first time recently, and went for a short gallop about a mile, and never felt anything. In fact, I can do anything I ever did before."

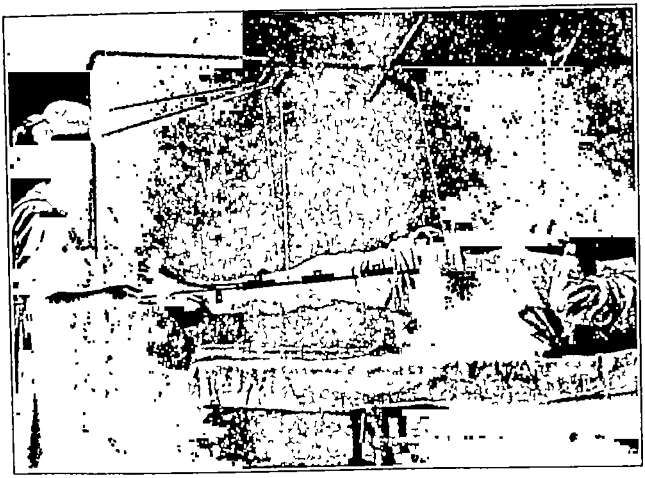
With regard to the treatment of fractured pelvis apart from complications. When a double vertical fracture exists, or when the bones are much comminuted, some effort must be made (1) to reduce displacements, (2) to give stability to the fragments, and (3) to assist nursing.

The muscles attached to the broken bones can be relaxed to some extent by flexing the leg at the hip and at the knee (Fig. 7). Both legs should be slung in Thomas splints in this position. (The splints in the illustrations should be shown bent at the knee.) A girth or strong bandage is strapped tightly round the pelvis between the trochanter and the ilium. Strong cords are attached to a ring on each side of the girth (Fig. 8) and passed over pulleys towards the head of the bed, where they are connected to a handle which the patient grasps when changing position. The raising of the pelvis for nursing purposes is thus rendered easy. If one side is displaced upwards, extension is applied to the corresponding leg by weight and pulley. As an alternative the double Thomas frame, as recommended by Jones, leaves little to be desired.

Isolated fractures of the pelvis must be treated intelligently. In the case of fracture of the posterior rim of the acetabulum, the dislocated hip, as already stated, can be easily reduced by direct extension with the patient lying on the floor under an anæsthetic. Extension can be maintained, and recurrence of the dislocation prevented, by the application of a Thomas splint with fixed extension. Cases have been described where a central dislocation of the hip with fracture of the acetabulum have been successfully reduced and treated. No routine manipulation can be described. Ordinary traction in the long axis of the limb and slight abduction may succeed. Lateral traction is indicated, but if the head has perforated the pelvis it will be necessary forcibly to disengage it from the encircling acetabulum before lateral traction will become effective.

In the rare case of fractured ischium, which involves the acetabulum and in which the head of the bone is drawn towards the sacrum, obliterating the sciatic notch, heavy weight and pulley extension seems the obvious remedy.

FIG 8.



Patient raised by his own aid for nursing purposes.

SOME OBSERVATIONS ON THE DOSAGE OF ULTRA-VIOLET RAYS IN ARTIFICIAL SUN TREATMENT.

BY ALBERT EIDINOW, M.B., B.S. LOND.,
M.R.C.S. ENG.

(From the National Institute for Medical Research, Mount Vernon, Hampstead.)

THE general method adopted in the treatment of disease by means of heliotherapy or "artificial sunlight" consists of the gradual exposure of the body to a source of light emitting ultra-violet rays. Dr. Leonard Hill has shown, by means of the acetone methylene-blue light gauge, that there is a great variation in the intensity of ultra-violet rays at different times of the day and at different parts of the country. Many kinds of "artificial sun lamps" are being used in various clinics where light treatment has been adopted, all of which vary considerably in their electrical energy and in the ultra-violet energy they radiate. These facts show that it is very difficult to compare or contrast the results obtained at the various clinics, for if patients are exposed to light for a definite period of time the actual quantity of the ultra-violet energy they receive must vary enormously.

The original work of Widmark[1] showed that the ultra-violet rays produced a biological action in the skin. Finsen, Freund, and Hamer carried this research further, and have conclusively proved that the ultra-violet rays which have the power of producing sunburn possess very great therapeutic value. In the practical application of light no isolated portion of the ultra-violet spectrum can be usefully employed, as there are no means available at present to produce individual bands of the ultra-violet spectrum of sufficient intensity.

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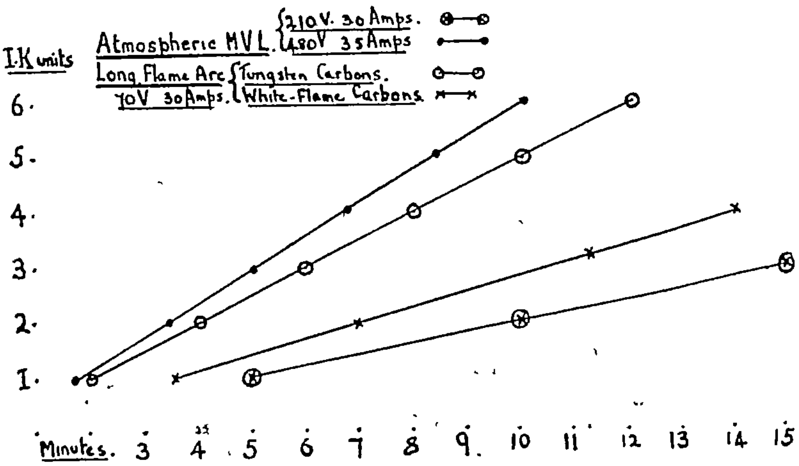
[1] Scand. Arch. f. Phys., 1889, i., 264.

Dosage of Ultra-violet Light Sources.

As a result the whole range of the spectrum, including heat, luminous, long and short ultra-violet rays, is employed, and the mass effect of the rays must be considered. Up to the present very little attention has been given to the question of dosage of ultra-violet light sources, and many workers consider this superfluous. The individual variations in sensibility to light make it impossible to fix a standard dose, even with a standard source of light. From this point of view it is indeed very difficult to determine the most suitable method for administration of light treatment, and further to decide if any harmful effects can take place from excessive dosage with light. Two important facts must be considered before accurate dosage with light can be established: (1) The quantity of ultra-violet rays which have biological action, emitted from a source of light; (2) the reaction of the skin to standardised doses of light.

CHART 1.



According to the investigations of Hausser and Vahle,[2] the ultra-violet rays of about 3130–2530 λ have the power of producing erythema of the skin. They exposed small areas of the skin of the arm to isolated ultra-violet rays by means of a large quartz spectroscope. The energy of the rays used was taken of equal value as tested by means of a sensitive thermo-electric couple. These investigators gave the following scale of skin sensibility estimated in relation to the degree of erythema produced:—

Wave length in λ.		Sensibility. Per cent.	Wave length in λ.		Sensibility. Per cent.
3130	.. ..	4·5	2800	.. ..	28
3020	.. ..	58	2650	.. ..	19
2970	.. ..	100	2530	.. ..	16
2890	.. ..	30			

Rays shorter than 2530 λ also produced a faint erythema.

H. v. Schrotter[3] has shown that light from 3600 λ was effective in producing erythema; Leopold Freund[4] claimed that light from 3000 λ was effective; but these observations cannot be confirmed. Therefore, according to Hausser and Vahle's investigations, 69 per cent. of light erythema is caused by 3020–2970 λ. Johansen[5] placed this percentage as 72. Dr. L. Hill has shown that when the skin of the forearm is exposed to light through a quinine filter (which cuts out all rays shorter than 3300 λ) no erythema developed after one hour's exposure. Further, he exposed his arm to the cadmium spark through a quartz spectroscope, and definitely showed that the rays 2750 and 2570 produced erythema, while 2320 and rays shorter than this failed to do so.

These facts clearly demonstrate that dosage of the ultra-violet must be primarily focused on the intensity of the wave-lengths about 3000–2500 λ, since this group of rays correspond to the rays which have biological action on the skin and on the therapeutic value.

Up to the present moment four methods of dosage have been recorded: (1) Bering-Meyer's[6] iodine method is based on the separation of free iodine from an acidified potassium iodide solution by means of light. Hackradt[7] determined the iodine colorimetrically with the Authenrith Konisberger colorimeter. (2) The Eder-Hecht Graukeil photometer was introduced by Freund,[7] and is based on the sensitiveness of silver photographic paper through a graded gelatin wedge. (3) Fürstineau's[8] aktinometer is based on the changes in the electrical conductivity of selenium on exposure to light. (4) P. Keller's[9] modification of the Bering-Meyer's iodine solution. He added starch and varying quantities of sodium thiosulphate to the potassium iodide solution and obtained a blue colour on irradiation. He has biologically standardised this solution against skin erythema.

All these methods, except that of P. Keller, do not bear any definite biological relation to skin erythema. All of them give reaction with the luminous and long ultra-violet rays, and are not specific in their reactions to the erythema-producing rays—shorter than 3000 λ.

The *methods of dosage of light* which have been adopted in the present research consist of: (1) Biological standardisation of sources of light; (2) test of sensitiveness of the skin to light; (3) the effect of a test dose of light on the bactericidal powers of the blood.

The Method Employed in Biological Standardisation of Sources of Ultra-violet Light.

Dr. L. Hill and the writer have shown that when infusoria are placed in a shallow water-cooled quartz cell and exposed to a source of ultra-violet rays they lose their motility and are finally killed. The time taken to produce this action depends upon (1) the distance from the source of light, and this corresponds to the law of inverse squares; (2) the temperature[10]; (3) the intensity of ultra-violet rays shorter than 3000 λ present in the source of light.

The bleaching of a standard solution of acetone methylene-blue corresponds to the action of light on infusoria, but proceeds at a slower rate. The time required to bleach a standard blue solution No. 9 of acetone methylene-blue to No. 8 corresponds to two to three times the time required to kill infusoria under similar conditions on exposure to the mercury-vapour lamp and four to five times that required on exposure to the carbon arc. Recently T. A. Webster prepared a rapid solution of acetone methylene-blue (No. 4), which was completely bleached in the same corresponding time to that taken to kill infusoria. Unfortunately, this solution is of an unstable character. The time taken to bleach a standard solution of acetone methylene-blue and the time taken to kill infusoria, at a temperature of 18°–20° C. and at a distance of 30 inches—i.e., the distance at which patients are usually exposed to light—gives a very satisfactory index to the quantity of ultra-violet rays which have biological action present in a source of light.

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[2] Strahlentherapie, 1923, xiii.
[3] Ibid., 1920, xi., 631.
[4] W. Klin. Woch., 1912, No. 5.
[5] Strahlentherapie, 1915, vi.

[6] Ibid., 1912, i.
[7] Ibid., 1920, x.
[8] Ibid., 1921, xii.; D. med. W., 1920, No. 49.
[9] Strahlentherapie, 1923, xvi., 62.
[10] The biological action is accelerated with a rise in temperature within the biological mean of life of the organisms (5°–30° C.).

If an area of skin is exposed to source of ultra-violet light erythema is produced after a latent period of four to six hours at the site of irradiation. The intensity of erythema corresponds to (1) the distance from the source of light—corresponding to the law of inverse squares; (2) the temperature—the action of the ultra-violet rays is accelerated by temperature; (3) the intensity of ultra-violet rays emitted from the source of light; (4) the susceptibility of the skin to light.

As a general working rule Dr. L. Hill and the writer have shown that an exposure of the normal white skin to a source of ultra-violet light, corresponding to twice the time required to kill infusoria under similar conditions, gives rise to a mild erythema. In this way the reaction of infusoria to light, the reaction of acetone methylene-blue solution, and the erythema of the skin after radiation have been standardised. All sources of light can therefore be standardised by means of these biological, chemical, and skin reactions, and the tests have a relation to each other.

The dose of light can also be expressed in terms of the time required to kill infusoria, each I.K. unit corresponding to the time required to kill infusoria, under the conditions in which the skin is irradiated. Table I. shows the I.K. values for (1) the long flame arc — 30 amps. + 75 volts with white flame carbons; (2) the long flame arc 30 amps. + 75 volts with tungsten carbons; (3) the atmospheric mercury-vapour lamp 200 volts + 3·2 amps. (K.B.B.); (4) the atmospheric mercury-vapour lamp (M.V.L.) 480 volts + 8·5 amps. (See Chart 1.)

TABLE I.

—	Voltage.	Amp.	Time taken to kill infusoria 30 in. distant.	Time taken to give faint erythema of skin.	I.K. units.
M.V.L.	480	3·5	1¾ min.	3½ min.	2

TABLE IA.

Lamp.	Voltage.	Amp.	Time taken to kill infusoria 30 in. distant.	Time taken to produce faint erythema (= 1–1·5 red)	I.K. units.
M.V.L. atmospheric	480	3·5	1¾ min.	3½ min.	2
K.B.B.	210	3·2	5 ,,	10 ,,	2
Long flame arc, white flame carbons	75	30	3½ ,,	7 ,,	2
Long flame arc, tungsten carbons	70	30	2 ,,	4 ,,	2

Individual Sensitiveness of the Skin to Light.

When three small circular areas of skin, about half an inch in diameter, are exposed to light for three periods of time corresponding to 2, 3, and 4, infusoria killing units on erythema varying in intensity is developed at each area exposed. Individuals vary in their sensibility to these standard doses of light, and besides this, the skin of different parts of the body varies in its sensitiveness to light. As a general routine the abdominal skin one inch above the umbilicus was selected for testing the sensitiveness to light.

A black silk band was attached to the abdomen by means of pieces of tape. This band had three circular diaphragms, about half an inch in diameter, cut out at two inches distance from each other, and had a black silk flap attached, so that each area could be easily covered up. The abdominal skin was exposed over these small areas to the source of light for periods of time corresponding to 2, 3, and 4 I.K. units. The following day two or three circular areas of erythema could be observed at the site of irradiation. The degree of erythema produced was estimated by means of the Lovibond skin colorimeter. Of all the patients tested in this way most gave a reaction with doses corresponding to 3–4 I.K. units, and the degree of reaction was taken as an index of the general individual sensitiveness to light. The colour of a normal white skin usually corresponds to the red No. 1 and yellow 1·0 of the tintometer scale; the exposure to light for 2, 3, and 4 I.K. units gave a very faint erythema with the 2 I.K. dose which disappears rapidly; sometimes it is not visible after 24 hours. The 3 I.K. dose gave an erythema which

TABLE II.

—	Colour of normal skin. R. = red. Y. = yellow.	2 I.K.	3 I.K.	4 I.K.
		Erythema which developed after exposure to M.V.L. at 30 in.—		
		3½ min.	5 min.	7 min.
Tuberculous glands.	1·1 R. 1·0 Y.	2·3 1·0	3·0 1·0	3·5 + 1·0
Sinusitis.	1·2 R. 1·4 Y.	1·2 1·4	1·6 1·4	2·1 1·4
Lupus erythematosus.	2·0 R. 1·2 Y.	2·5 1·2	3·0 1·2	4·0 1·2
Asthma and eczema.	1·0 R. 1·0 Y.	1·6 1·0	1·4 1·0	1·9 1·0
Rheumatoid arthritis.	1·0 R. 1·0 Y.	1·4 1·0	1·8 1·0	2·0 1·0
Tuberculous ankle.	1·4 R. 1·3 Y.	1·6 1·3	2·4 1·3	3·5 1·3
Anæmia.	2·0 R. 1·1 Y.	2·5 1·1	2·8 1·1	3·1 1·1
Lupus erythematosus.	1·5 R. 1·0 Y.	2·0 1·0	3·5 1·0	4·5 1·0
Dermatitis herpetiformis.	1·1 R. 1·0 Y.	1·1 1·0	1·5 1·0	2·0 1·0
Chronic bronchitis and asthma.	1·0 R. 1·0 Y.	1·6 1·0	2·1 1·0	3·4 1·0
Osteomyelitis of rib.	1·2 R. 1·0 Y.	1·8 1·0	2·1 1·0	3·1 1·0
Scleroderma.	1·2 R. 1·2 Y.	1·2 1·2	1·6 1·2	2·5 1·2
Lupus erythematosus.	1·4 R. 1·0 Y.	1·4 1·0	1·6 1·0	2·5 1·0
Anæmia.	1·0 R. 1·1 Y.	1·0 1·1	1·6 1·1	3·5 1·1
Phthisis.	1·2 R. 1·0 Y.	2·0 1·0	2·5 1·0	3·0 1·0
Goitre.	1·1 R. 1·2 Y.	1·5 1·2	2·0 1·2	3·0 1·2
Colitis.	1·2 R. 1·2 Y.	1·4 1·2	2·0 1·2	2·3 1·2
Sinusitis.	1·0 R. 1·2 Y.	2·5 1·2	3·0 1·2	4·0 1·2
Colitis.	1·0 R. 1·0 Y.	1·3 1·0	3·0 1·0	2·4 1·0
Myocarditis.	1·2 R. 1·1 Y.	1·2 1·1	2·5 1·1	3·5 1·1
Lupus erythematosus.	1·2 R. 1·2 Y.	1·0 1·2	2·4 1·2	3·0 1·2
Pruritus ani.	1·3 R. 1·0 Y.	1·7 1·0	2·0 1·0	3·0 1·0
Rheumatoid arthritis.	0·9 R. 1·1 Y.	1·0 1·1	1·4 1·1	1·6 1·1
Tuberculous knee.	1·0 R. 1·0 Y.	1·0 1·0	1·5 1·0	2·5 1·0
Sinusitis.	1·4 R. 1·1 Y.	1·4 1·1	1·8 1·1	3·1 1·1

was marked and persisted for two to four days. The 4 I.K. dose invariably gave rise to an erythema which was followed by desquamation and pigmentation.

The Lovibond tintometer is a very arbitrary method of estimating the colour of the skin and in many ways it is tedious. Much depends upon the individual selection in comparing colours, and the illumination of the skin plays an important part. It is anticipated that a better and more accurate method of controlling reactions of the skin will be adopted shortly.

The reaction of the skin and the power to produce erythema and pigmentation does not follow the usual routine in infants up to the age of 3 years. The reaction to light in these cases appears to differ from the adult skin. In comparing the erythema produced by varying doses of light, the degree of redness with each dose is obvious and gives a ready means of estimating the sensitiveness of the skin and the reaction to the source of light (Table II.).

Effect of a Minimal Erythema Dose of Light on the Bactericidal Power of the Blood.

Dr. Leonard Colebrook,[11] Dr. L. Hill, and the writer have demonstrated that exposure of the human skin or that of animals (rabbits and pigs) to a source of ultra-violet rays produced an increase in the hæmobactericidal power of the blood. It is therefore possible to observe the effects of radiation of the skin by estimation of the bactericidal power of the blood. Following the results obtained from these observations on the effect of the test doses of light on the abdominal skin, the dose of light most suitable for production of an increase in the bactericidal properties of the blood can be determined. In most of these investigations the dose of light selected was that which gave rise to a mild erythema which persisted for one to two days and then disappeared. This dose usually corresponded to 3 I.K. units. The chest and back exposed to the dose of light selected, after carrying out the test dosage of the abdominal skin, usually showed a very faint erythema of the chest—a mild erythema of the back and a definite line of demarcation at the level of the iliac crest, at the zone between the normal and irradiated skin.

General Plan of Procedure.—Three small areas of the abdominal skin were exposed to the mercury-vapour lamp (480 volts and 3·5 amps.) for 3½, 5, and 7½ minutes respectively, at a distance of 30 inches. This corresponded to 2, 3, and 4 I.K. units. The following day these small areas of erythema of different intensity were observed at the sites of irradiation. By means of the Lovibond skin colorimeter the degree of erythema was estimated for each dose of light and was gauged in the manner shown in Table III.

TABLE III.

		2 I.K.	3 I.K.	4 I.K.
	Colour of normal skin.	Erythema which developed after exposure—		
		3½ min.	5 min.	7 min.
Red	1·1	2·3	3·0	3·5 +
Yellow	1·0	1·0	1·0	1·0

All these areas irradiated show a definite erythema, although the 2 I.K. dose was faint. The dose of light selected for the bactericidal test was four minutes—i.e., between 2–3 I.K. units. From a series of investigations it has been found that patients who respond fully to all three doses of light, especially the 2 I.K. dose, are very sensitive to radiation. A sample of blood was taken by means of venepuncture and was placed in a sterile test-tube and defibrinated. The back and chest (to the level of the iliac crest) were exposed to two mercury-vapour lamps each 30 inches in front and behind the patient for four minutes. This corresponds to 2½ + 2½ I.K. units = 5 I.K. units. Two and a half hours after radiation a second blood sample was collected and defibrinated in the same way. The bactericidal power of the blood was estimated by means of slide cells, by the method described by Sir A. E. Wright, L. Colebrook, and E. J. Storer.[11] The next day results were recorded as given in Table IV.

TABLE IV.

Dilution.	W/6.	W/18.	W/30.	W/60.
Number of colonies of staphylococci which grew in each 50 c.cm. of blood before radiation at 2 P.M.	∞	74 1	42	22
Number of colonies of staphylococci which grew in each 50 c.cm. of blood 2½ hours after radiation at 4.30 P.M.	0	0	0	0
Number of colonies of staphylococci which grew implanted with each 50 c.cm. of blood ..	1400	466	233	140

	Per cent.
Average hæmobactericidal power of blood at 2 P.M. (before radiation)	= 83
Average hæmobactericidal power of blood at 4.30 P.M. (2½ hours after radiation)	= 100
Increase in killing power of blood (2½ hours after radiation)	= 17

From a series of investigations of 125 cases on the effect of radiation on the bactericidal power of the blood, it has been shown that a mild erythema of the skin after radiation is usually associated with an increased bactericidal power. The normal bactericidal power of human blood against the staphylococcus is usually high, and similar results have been experienced when the blood is incubated with different strains of streptococcus and pneumococcus. Sir A. E. Wright and his co-workers attribute the rise in bactericidal power to the greater efficiency of the leucocytes. Radiation of the skin with the ultra rays which have biological action produces some change in the blood causing increased bactericidal function. In many of the cases investigated in which subacute inflammatory changes occurred—i.e., No. 64—and in which there was chronic suppuration (116), the bactericidal power was very high indeed. In these cases the persistent mechanism of defence against the organisms can explain this phenomenon, for if the bactericidal power was low in these cases severe illness would result. In 41 cases in which the bactericidal power of the blood was investigated with test doses of light, 33 cases (80·5 per cent.) showed a definite increase from 2–35 per cent. Seven cases showed no change with radiation, and of these five cases had an initial bactericidal power of 98–99·5 per cent. The two remaining cases (Nos. 95 and 125) are of interest as neither showed any erythema after radiation, and when tested again seven days later with a dose of light-producing erythema they showed a marked increase in bactericidal power. One case of the whole series showed a lowering in bactericidal power. The dose of light employed in these preliminary tests corresponds to the minimal erythema dose as gauged by the test dosage armlet. There, therefore, appears to be a strong correlation between the bactericidal results and the erythema produced.

In carrying out these experiments on the effect of radiation on the bactericidal power of the blood, it was shown that heat rays and mustard poultices increased the hæmobactericidal power of rabbits. The heat had always to be sufficiently severe to produce a marked erythema and damaging of the skin before this phenomenon occurred. Prolonged use of a mustard poultice for one to one and a half hours over a large area of skin (the whole of the abdominal surface of rabbits) was necessary. Dr. Leonard

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[11] Brit. Jour. Expt. Path., 1924, v., 54.

[11] The Lancet, 1923, i., 417, 473.

Colebrook has failed to indicate an increased bactericidal power of the blood after the application of mustard plasters to the human skin. Table V. illustrates a series of results observed during the treatment of 60 patients.

TABLE V.

Case.	Diagnosis.	Dose of light.	I.K. units.	Av. % hæmo-bactericidal power (1) before, and (2) after radiation.	
				(1)	(2)
1	Lumbago.	Back exposed to arc 20 min.	6	97·5	100·0 + 2·5
2	Tonsillitis.	C.b. ex. M.V.L. 5 min.	6	98·0	100·0 + 2·0
4	Lupus vulgaris.	C.b. ex. arc 10 min.	6	97·0	93·0 − 4·0
6	Anæmia.	C.b. ex. M.V.L. 6 min.	6	89·0	96·0 + 7·0
11	Colitis.	C.b. ex. to double M.V.L. 5 min.	6	70·0	81·0 + 11·0
14	Locomotor ataxia.	C.b. ex. to double M.V.L. 4 min.	5	88·0	90·0 + 8·0
15	Anæmia.	C.b. ex. M.V.L. 6 min.	6	86·0	92·0 + 6·0
16	*Furunculosis.*	C.b. ex. to double M.V.L. 6 min.	8	82·0	91·0 + 9·0
17	Asthma.	C.b. ex. to arc 10 min.	6	86·0	92·0 + 6·0
19	Tuberculous adenitis.	C.b. ex. to arc 5 min.	6	90·0	90·0 + 0·0
26	Lupus vulgaris.	C.b. ex. to arc 10 min.	6	97·7	99·2 + 2·0
29	Rheumatoid arthritis.	C.b. ex. M.V.L. 7 min.	8	96·5	98·0 + 1·5
40	Tuberculous adenitis.	C.b. ex. to arc 6 min.	4	99·0	99·0 –
42	Tuberculous peritonitis.	C.b. ex. to double M.V.L. 6 min.	6	95·0	97·0 + 2·0
45	Asthma.	C.b. ex. M.V.L. 7 min.	8	87·0	99·0 + 12·0
46	Bronchitis and ichthyosis.	"	8	97·8	99·2 + 2·0
55	Colitis.	C.b. ex. M.V.L. 3½ min.	4	97·0	98·8 + 1·8
58	Pharyngitis.	C.b. ex. M.V.L. 6 min.	6	82·0	92·0 + 10·0
60	Dermatitis herpetiformis.	C.b. ex. M.V.L. 4 min.	5	87·0	95·0 + 8·0
64	Subacute arthritis.	C.b. ex. M.V.L. 6 min.	6	99·0	99·0 –
67	Lupus erythematosus	Back ex. 3½ min.	2	94·0	96·0 + 2·0
68	Psoriasis.	C.b. ex. 6 min.	6	84·0	98·5 + 14·5
71	Phthisis.	C.b. ex. M.V.L. 4 min.	5	58·0	93·0 + 35·0
75	Anæmia.	C.b. ex. M.V.L. 3½ min.	4	98·0	98·0 –
77	Lupus erythematosus	"	4	62·3	74·8 + 12·5
78	Emphysema and asthma.	C.b. ex. M.V.L. 4 min.	5	91·0	94·0 + 3·0
82	Tuberculous knee-joint.	"	5	75·0	90·0 + 15·0
83	Rheumatoid arthritis.	C.b. ex. M.V.L. 5 min.	6	90·3	92·7 + 1·0
88	Lupus erythematosus	C.b. ex. M.V.L. 3½ min.	4	88·0	93·0 + 5·0
92	Phthisis.	C.b. ex. M.V.L. 4 min.	5	92·0	99·5 + 7·5
93	Colitis.	C.b. ex. M.V.L. 5 min.	6	98·0	98·0 –
95	Sinusitis.	C.b. ex. M.V.L. 3½ min.	4	88·0	88·0 –
97	Asthma and eczema.	"	4	99·0	99·5 + 0·52
102	Debility.	C.b. ex. M.V.L. 6 min.	6	99·5	99·5 –
106	Parenchymatous goitre.	C.b. ex. to double M.V.L. 4 min.	5	83·0	83·2 + 0·0
114	Tuberculous adenitis.	C.b. ex. M.V.L. 4 min.	4	83·0	100·0 + 17·0
115	Scleroderma and colitis.	"	5	85·0	100·0 + 15·0
116	Osteomyelitis *of rib.*	C.b. ex. M.V.L. 5 min.	6	99·5	100·0 + 0·5
120	Tuberculous ankle.	"	6	90·0	97·0 + 7·0
124	Sinusitis.		6	89·0	98·0 + 9·0
125	Pharyngitis.	C.b. ex. M.V.L. 4 min.	5	86·0	86·0 –

C.b. ex. = Chest and back exposed.

Remarks.—Case 4: Patch of lupus exposed. Case 6: Yellow skin erythema. Cases 14 and 16: Marked erythema. Case 19: Yellow skin (Japanese) erythema. Case 67: Fair skin, light sensitive erythema. Case 75: No skin reaction. Case 95: No erythema after light dose. Case 106: Very slight skin reaction; sallow complexion. Case 125: No reaction of skin after radiation.

Individual and Regional Sensibility to Light.

There is a very marked difference in the degree of erythema of the skin produced by the same dose of light. Fair-haired people are, as a rule, more sensitive than dark people; but this usually applies to large doses of light and is not very apparent with smaller doses. In carrying out the test dosage of the abdominal skin, a high red index, 1·3 and 1·4, and low yellow index, 1·0, usually signifies sensitiveness to light. The skin bearing a high yellow index of 1·2–1·4 is rarely sensitive to light. The soft thin white skin, which sweats readily and easily bruises, is very often sensitive to radiation. Another easy method of detecting light sensitiveness is by means of transillumination of the air sinuses or of the skin. A very brilliant "red reflex" on ophthalmoscopic examination often signifies sensitiveness to light.

The degree of erythema produced by light varies considerably and this can be roughly classified in the following way: (1) Erythema which is just visible and usually disappears without any apparent sequelæ in one to two days. (2) Erythema which is readily perceptible, followed three to four days later by fine desquamation and results in faint pigmentation. (3) Erythema which shows a violent bluish flush, tender and hot on palpation, with slight œdema and raised hair follicles. This is followed by massive desquamation and results in a deep persistent pigmentation. (4) Erythema causing much pain and resulting in blistering and its sequelæ.

The different areas of the body vary extensively in their sensitiveness to radiation. The inner side of the arm and thighs are the most sensitive. The popliteal space, the side of the chest and back are the other sensitive sites of the body. The skin remaining after desquamation is extremely sensitive to light, and often a small dose of light (2–3 I.K. units) will produce a severe erythema and hæmorrhagic vesicles. The skin should therefore be rested for a while after the period of desquamation. Areas of vitiligo are more sensitive than normal skin; scleroderma is very resistant to radiation and only reacts with very slight erythema.

Dr. L. Colebrook[13] has shown that excessive dosage with light will produce a very marked decrease in the bactericidal power of the blood. The extent the luminous and heat rays take in producing this damage is not yet definitely decided. But in many animal experiments in which rabbits were inoculated so as to produce conditions of septicæmia, excessive dosage with light appeared to hasten death. In all cases of acute infections and in very sick patients, the dosage with light can be carefully controlled by means of the bactericidal test. Prolonged exposure to arc lamps increases the risk of overheating the body by means of the luminous rays. Many light-sensitive patients experience headache, sickness, and dizziness on exposure to light. This is followed by general malaise with or even without the presence of marked skin erythema. It is very difficult to determine whether this sensitiveness is mainly due to the ultra-violet or luminous heat rays. They usually appear to tolerate the mercury-vapour lamp better than the arc lamp.

Light Adaptation and Pigmentation.

Pigmentation and adaptation to light follows after repeated radiation. The nature of the colour of the pigment deposited varies with the source of light. Patients exposed to sunlight and the Finsen arc usually show a deep black-brown pigment. The long flame arc and tungsten carbons give rise to a reddish-brown pigment. The mercury-vapour lamp produces a yellowish-brown pigmentation. Karl Dorno[14] showed after many years' investigation at Davos, that in winter there is considerable heat intensity with minimum ultra-violet energy. In spring there is the greatest heat energy with less increased ultra-violet energy. In the summer there is great heat energy and the maximum ultra-violet energy occurring simultaneously. In the autumn there is great heat energy and a comparatively strongly maintained ultra-violet energy. He therefore concludes that the heat intensity fluctuates very little in the high mountains, but the ultra-violet intensity shows great variation according to the time of day and the time of year. The heat and ultra-violet energy—measured on an arbitrary scale and not in actual energy—are equal to one another on July 15th; the heat at noon on Jan. 15th is ten times as great as the ultra-violet radiation. The autumn sun is double as rich in ultra-violet radiation as the spring sun.

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[13] THE LANCET, July, 1923.

[14] Study of Light and Air of the High Mountains, 1911.

CHART 2.

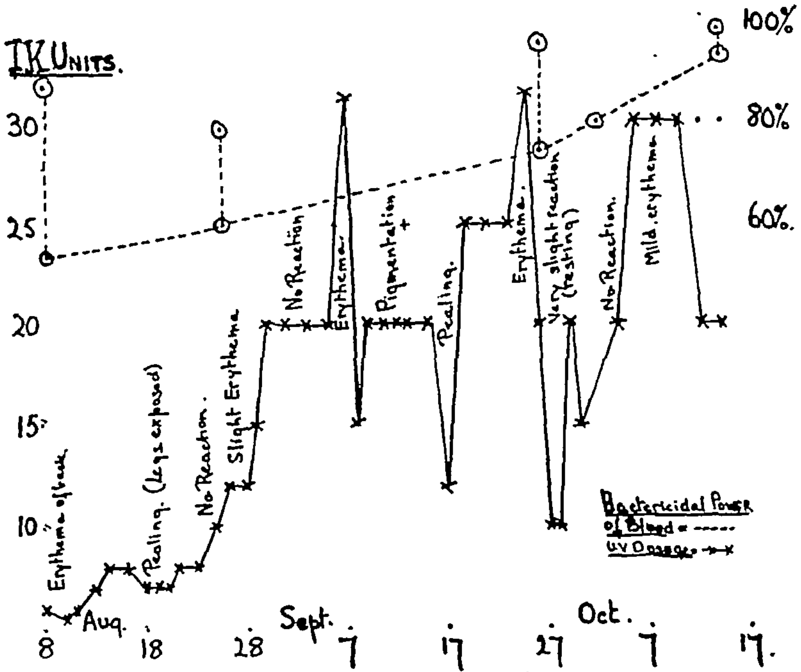

Chart of dosage of U.V. Radiation + Bactericidal power of Blood.

Tubercular Adenitis + Phthisis.—Very yellow skin—mild erythema + much pigmentation c̄ treatment.—

O. Bernhard[15] has shown that marked erythema of the skin occurs in the winter in the glacier regions, and that the most marked pigmentation is seen in the spring. He therefore maintained that pigmentation is prevalent at the time of greatest heat intensity and less increased ultra-violet energy. The chief function of the pigment melanin is to form a protective screen in the skin against excessive penetration of the luminous rays. There is no evidence to support the views of Rollier and Christen—that melanin is an optical sensitiser, similar to eosin and erythrosin.

Pigmentation is an effective screen to the action of the ultra-violet rays and prevents their biological action. Rost[16] has shown that skin areas repeatedly exposed to the Kromayer lamp become insensitive to light independent of the degree of pigmentation. There is no method available at present to determine the degree of pigmentation in any definite units, and therefore it is difficult to draw conclusions on the relation of pigmentation and light protection. Dr. P. Keller has demonstrated the following interesting points: (1) The development of ultra-violet pigmentation is independent of that of tolerance; (2) pigmentation alone does not imply light tolerance; (3) ultra-violet tolerance is possible without pigmentation.

Drs. L. Hill and Argyll Campbell have shown that a suspension of melanin will completely screen the frog's mesentery against the action of the ultra-violet rays and that melanin is not a sensitiser. The fact that pigmentation can be produced apart from light and also by means of heat rays suggests that pigmentation is not specific to the biological action of light. It appears to be closely allied to the heat and luminous rays, since it is more apparent with radiation of the warm sun and the prolonged exposure to arc lamps (one to two hours). The short ultra-violet rays appear to have the power of changing the distribution of the pigment so as to alter the colour of the skin. As the degree of pigmentation increases the sensitiveness to ultra-violet radiation usually diminishes, and light dosage must be increased. As a general working rule an erythema of the skin produced by light gives rise to an increased bactericidal function. It is therefore more advisable to utilise a scheme of dosage which results in the slow production of pigmentation, but definite erythema. This can usually be achieved by utilising a very great intensity of ultra-violet energy, and to avoid overheating of the body by using a short and intense dosage.

The dose of light over the irradiated area is controlled by the degree of erythema produced. During the stages of desquamation the skin is rested, so as to avoid excessive dosage which rapidly results in accustoming to light. A dose of light consisting of 12 I.K. units would correspond to 60 minutes' exposure to the Finsen arc. Seven minutes' exposure to the double M.V.L. (480 volts + 3·5 amps.) + double long flame arc gives a similar ultra-violet energy.

M.V.L.		M.V.L.		Arc.		Arc.		
(4	+	4	+	2	+	2	=	12)

CHART 3.

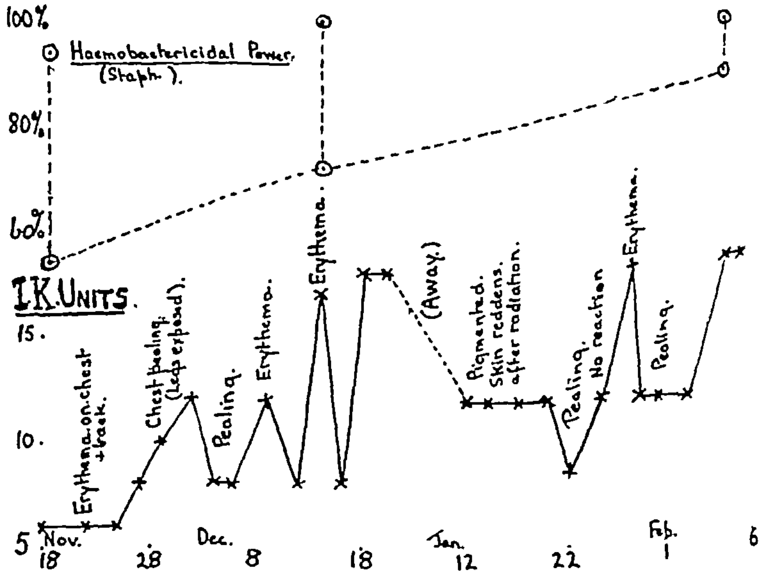

Chart of dosage of U.V. radiation + Bactericidal power of Blood.

Chronic Fibroid Phthisis – Fair Skin – Sensitive to Light – – Pigmented very slightly –

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[15] Strahlentherapie, 1919, ix., 520.

[16] Deutsche med. Woch, 1918, xxvii.

The amount of heating of the body is, by use of these means, much reduced. In all the cases under observation the degree of pigmentation is slight, and the dosage of light is controlled by the erythema response following radiation. Although it is impossible to decide the issue conclusively, in many cases pigmentation appears to be indicative of therapeutic action of the ultra-violet rays. The reaction of the skin to light, in the production of erythema which in a mild degree appears to be beneficial and in the production of pigment, can be controlled by carefully graded and regulated dosage.

Charts 2 and 3 indicate the dosage of light adopted in a series of cases under investigation. The dose of light is expressed in terms of infusoria-killing units, in the method previously described. In all these cases the light sensitiveness of the skin was first tested and a bactericidal test was carried out, with an estimated erythema dose of light. The chest and back were first exposed to the double mercury-vapour lamps and at each alternate sitting the front or back of the legs were exposed. When the skin became insensitive to 6 I.K. units with the M.V.L., exposure to the double arc was started. This was found to be of great value in the fair-skinned patients, as a very mild superficial pigmentation was present. In all cases exposure to light was stopped during the stages of desquamation, and a sufficient interval of rest was given to allow the newly-formed skin to "harden." The dosage of light was controlled by the reaction of the skin. The aim of dosage was to produce a mild erythema of the skin with each dose applied. In all these cases pigmentation was slight, and the sensitiveness of the skin was maintained during the whole course of treatment. At periodic intervals during the course of treatment, further bactericidal tests were carried out. The general conclusions from the tests showed that in cases where the hæmo-bactericidal power was low, a steady improvement could be established. The erythema dose produced increased bactericidal power in the blood.

SUCCESSFUL RESEARCHES IN THE TREATMENT OF INFANTILE PARALYSIS.

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EXPERIMENTAL treatment of infantile paralysis, carried out recently at the Heritage Craft Schools at Chailey, having been attended with marked success, it seems advisable to publish the results in order that it may be established at other institutions dealing with this affliction of childhood. Improvements will undoubtedly be made in the near future on the methods about to be described; in fact, they are already in mind, but for the reason stated above the writer has been induced to place the work upon record at its present stage.

The cases selected for treatment were, as will be seen below, children some of whose muscles gave no response to the interrupted galvanic current. Moreover, the acute attack resulting in the degeneration of the nerve-fibres had taken place so many years before that, acting on experience gained from the practice of massage and electrical treatment alone, one would have said that further measures with a view to restoring the function of the paralysed part would hardly be justified. At the same time palpation gave the impression that the muscles had not completely atrophied.

These cases having been selected, the treatment was begun on the dates given and has been carried on to the present time. The following measures were adopted:—

1. General radiation of the skin by artificial sunlight. (Occasionally the real sunlight was used, but during the past year this has been so seldom available that nine-tenths of the treatment has been given by artificial means.)

2. Local treatment of the affected muscles by rays from long ray lamps passed through red filters.

3. *Electrical treatment.*

4. Re-education of voluntary stimulus.

5. Instrumental support for the paralysed muscles and then (most important) abandonment of support, in some cases at an early stage. The writer would call particular attention to this matter which is referred to in detail below.

6. Massage.

The deductions which led to the adoption of the above methods of treatment are simply explained as follows:—

General Application of Artificial Sunlight.

Several years ago the writer began to treat rickets in children by means of artificial sunlight. Observation showed that children suffering from active rickets were frequently also suffering from acute neurasthenia. The active symptoms of rickets cleared up very quickly under the administration of the light, but the neurasthenic symptoms were the first to disappear. The deduction drawn from these observations was that neurasthenia and rickets are sometimes causal relatives. Rickets is caused by light starvation, so is neurasthenia. The writer believes that neurasthenia in the adult is a symptom frequently due to the lack of antirachitic substance at a time of life when the complete formation of the bone renders the bony symptoms impossible.

Following these observations he has successfully treated many cases of neurasthenia in adults by artificial light. Thus the disturbance of nutrition in the nerve-centres due to lack of antirachitic substance may be the cause of neurasthenia, and the cure found in the general treatment of the body by light. This would mean that the matter formed by the action of sunlight on the skin is a factor in the nutrition of the nerve-centres as well as of the bones.

With these observations clearly in mind, the writer turned his attention to the treatment of infantile paralysis. This acute infection produces a severe shock upon the whole nervous system. The hæmorrhagic myelitis leads to the total destruction of a smaller or larger number of motor nerve-cells, while at the same time many suffer a temporary suspension of their activities by disturbance of their nutrition in a varying degree, owing to compression. Thus some may recover function in a few days or weeks, others may lie sick and dormant for a longer period, and may lose their axons, which subsequently regenerate following revitalisation of the cell centre. After these attacks we also notice symptoms in the patient that are probably produced by neurasthenia.

Now the muscular atrophy following an acute attack of anterior poliomyelitis is intense, and in those cases where extensive degeneration of the axons has taken place, and has been followed by regeneration, the young axons, when at last they enter their muscular destination, find fibres in such an extreme state of atrophy that no response to the motor stimulus is obtained from them. The atrophied muscle-fibres are shrivelled up, the skeletal elements have lost their elasticity, and the contractile substance appears to have been largely absorbed, so that the nuclei have come together in heaps.

Under the action of light, changes take place in the skin resulting in the formation of the substance mentioned above which is carried away by the lymph and distributed throughout the body by the blood. This we may call the antirachitic substance. It has an intensely active rôle in the promotion of nutrition. Its absence produces the rachitic condition in the bones of growing children and neurasthenia due to the exhaustion of the nerve-centres, while its production by the action of light on the skin results in the re-composition of the rickety bones and the re-nutrition of the nerve-centres.

General Radiation.

So the writer started to treat his paralysed patients by the general application of natural and artificial sunlight to their skins, thinking that of all illnesses there is none so urgently demanding this treatment as acute anterior poliomyelitis. This treatment was given strictly in accordance with the principles laid down by Rollier for treatment by real sunlight, the chief of these being the avoidance of excessive or widespread erythema and a dosage regulated to the tolerance of each individual patient. This artificial light has been produced by the combination of the mercury-vapour lamp and a battery of the long-ray lamp bearing the writer's name, with the red screens in operation.

Having carried out treatment on a very large number of patients suffering from a variety of complaints, with different open arc lamps, the writer now feels confident of the complete superiority of this combination of mercury-vapour and incandescent filament lamps over the open arc lamps. The dosage of the patient with ultra-violet rays can be regulated with much greater accuracy with the mercury-vapour lamp than with any of the open arcs, while the treatment of the patients in the recumbent position is much simpler and better.

It will be seen that the efficient reflexion of the rays from the parabola of the writer's lamp is a most important factor when the shallow penetration of the ultra-violet rays is borne in mind, as the parallel rays from the parabolic reflector striking the skin (as nearly as can be arranged) at right angles penetrate more deeply than the majority of the rays coming directly from the source of the light because most of these rays penetrate the skin in an oblique direction and are consequently arrested nearer the surface.

The reflected rays being therefore of greater importance than the direct rays the advantage of the removable reflector fitted to this mercury-vapour lamp is manifest, as only the daily removal of the reflector for polishing can ensure efficiency of reflection. A nickel surface may be used, and in polishing this, extreme care must be taken that it is not scratched, because scratches particularly impair the reflection of the ultra-violet rays.

In regulating the dosage of ultra-violet light it is well to avoid over-pigmentation of the skin, as a dense pigmentation checks the penetration of the red rays. The writer aims at a moderate pigmentation. Here again most of the open arc lamps are at fault as they produce excessive pigmentation in some patients. This pigmentation is a needed protection when only real sunlight is used, because the proportion of heat and visible rays in sunlight is such that people exposed to them for long periods need something to moderate these waves. When artificial light is used this should not be necessary, and if penetration by red rays is required it is an impediment.

Rollier, supported by Gauvain, has pointed out to us that patients who pigment deeply under sunlight treatment respond better to the treatment than those who do not pigment. The writer is inclined to believe that this observation need not be interpreted as meaning that the pigment itself is the curative factor. It has been shown that the phenomenon of pigmentation is connected with certain endocrines—e.g., pituitrin. It is therefore possible that the "non-pigmenter" does not react to treatment simply because his endocrine production is abnormal, and not because he lacks pigment.

Local Treatment by Red Rays.

The long-ray lamps already alluded to consist primarily of a carbon filament in vacuo, the bulb of which is made of glass. These lamps are specially constructed for the writer by makers of electric filament lamps, as it was found that they were unobtainable. They yield a light much richer in red and infra-red frequencies than the metal filaments in gas-filled globes made for lighting purposes, and the writer was anxious to obtain red rays for the local treatment of the muscles.

The red rays penetrate the tissues much more deeply than the heat rays, because the latter are absorbed by water. The depth of their penetration is demonstrated by the simple experiment of holding the hand in the path of a sunbeam entering a room through a window. The red light will be seen plainly to penetrate the fingers. In order to give a strong dose of red light screens of red glass are fitted to the lamps. These screens cut off enough of the heat rays to enable a much stronger dose of red light to be given to the patient than would be possible without the screens. The red rays themselves produce heat but to a lesser degree than the infra-red.

The writer has found these red rays of the greatest value in the treatment of atrophied tissue and, judging by the results obtained in treating tissues exhibiting chronic inflammation, he has concluded that they produce in these tissues an increased power of resistance and repair, and it is perhaps not unlikely this effect is obtained through the local stimulation of the sympathetic nerve-fibres. There is certainly no comparison between this therapeutic effect of rays from the filament lamps that have been passed through the red screens and the same rays unfiltered, when in each case the dosage of light has been the maximum compatible with comfort and safety for the skin.

In the treatment of rheumatoid arthritis by artificial light the redevelopment of the wasted muscles became very marked when the writer began to use intense red rays. The above observations led to the adoption of this red ray treatment for muscles affected by acute anterior poliomyelitis, and the results given below surely prove its value. From 20 minutes to half an hour daily exposure was given locally to each affected group of muscles, the rays from the mercury arc being given to the body generally as a separate treatment. The writer believes that the time allowed for the local treatment of the paralysed muscles by the red rays might well be increased beyond the limits stated above.

Electrical Treatment.

The rationale of electrical treatment in infantile paralysis has been fully described by the writer in a paper read before the British Orthopædic Association in October, 1922, and subsequently published in the *Journal of Bone and Joint Surgery* of April, 1923, where it is pointed out that in considering the re-nutrition of muscles there is an important point that has always been overlooked and is essential to the restoration of contractility. It is explained by the theory of muscle contraction given by Schaffer.

When a muscle contracts, the clear contractile substance passes into the tubules of the sarcous element, which are elastic and are dilated by its entry. When the muscle is relaxed, this substance flows out of and remains outside the sarcous element, the little tubes narrowing as they elongate. As long as the muscle remains in a state of complete relaxation—for example, when elongated during paralysis—the little tubes remain in this posture. It appears to the writer that the atrophy following the paralysis besides causing absorption of the contractile substance is accompanied by a loss of elasticity in the sarcous element, so that the tubes can no longer dilate to their proper extent to admit the contractile substance for the contraction of the muscle in response to a stimulus. This loss of elasticity may be partial, leading to an impairment of contractility in the muscle, or if allowed to progress far enough, such rigidity is the result that dilatation is impossible and contractility is altogether lost. The above theory is absolutely in accordance with observed facts, and it will be seen that it is a separate condition apart from the mere loss of contractile substance.

In lesions of the lower neurone these changes take place more rapidly in young children than in older children and adults, so that in their case it is very needful to begin treatment early. But in any case there is really only one way absolutely to safeguard these paralysed muscles from this dire catastrophe—that is, to ensure a periodical contraction during paralysis, and the only way to ensure this is to employ electrical stimulation. There are no other means. The greatest care must be taken, however, not to over-exercise the paretic muscle. This is a very important point. A dozen good contractions daily for each muscle are sufficient in the early stages.

The cause of failure of electrical treatment in infantile paralysis lies too commonly in ineffective methods of application, and this leads to erroneous opinions held on the subject by those who observe the results. Treatment directed to an increase of the circulation in the affected limb yields good results up to a certain point, and undoubtedly improvement of nutrition in the limb as a whole takes place when, for instance, it is periodically immersed in a faradic or sinusoidal bath, but as a measure for preserving or restoring contractility of paretic muscles it fails because muscles most affected, and therefore most in need of the treatment, either do not respond to faradic at all, or at the best but feebly, while the normal muscles contract strongly and may do actual harm by stretching their weaker neighbours. This latter evil can be avoided by splintage during the treatment, but this is a difficult matter when a bath is used and a precaution rarely carried out.

It has already been stated that wasting and loss of contractility proceed more rapidly in young children than in older patients. This renders effective treatment the more urgent in their case, especially as the limb will be increasing in length. It cannot be too strongly urged that paralytic muscles should be treated only by operators who have learned this particular work under proper supervision in a school dominated by orthopædic ideas.

Re-education.

Re-education was very carefully carried out. It is most important that the patients should not be exhausted and discouraged by exhortation to contract muscles that will not and cannot respond. Patience should therefore be exercised and re-education withheld until the proper time has arrived, and it should then only be gradually and intelligently carried out. For instance, the long extensors of the toes must not be used instead of tibialis anticus in dorsiflexing the foot.

Instrumental Support.

Instrumental support was considered from an entirely new standpoint, as the writer believes that although it is of paramount importance properly to relieve a paralysed muscle of all tension until voluntary response is restored, yet it is a form of treatment very much overdone. When voluntary response is regained support must be discarded at times altogether, these periods varying according to the state of the neuro-muscular combination at the time being.

There are two points the writer would like to make particularly clear as they are taken into constant consideration, and he regards them as essential. The first of them is that so long as a paretic and wasted muscle is inactivated by a supporting appliance it will rarely regain useful activity, and it will rarely regain sufficient tone owing to the effect of such fixation upon the factors concerned in its production.

The second point is that whereas the constant pressure of the enveloping band or strap of a surgical appliance will cause severe wasting in even a normal muscle, such a factor has a far more serious effect upon a paretic muscle, and should never be allowed. Thus, when the quadriceps muscles are affected in anterior poliomyelitis and a walking calliper is used, flexion of the knee-joint should be prevented by a band passing over the front of the knee only, the straps commonly used, which pass over the quadriceps muscles, being very harmful.

When voluntary response has been regained in the quadriceps the writer has, with certain exceptions, discarded the calliper altogether, believing this to be the best procedure, so long as the psoas and glutei were activating, and allowed the patient to get about with poles or crutches according to the necessities of the moment. In such cases it is easy in this way to let the patient get about without support for the quadriceps muscles if a little care is exercised. The anterior tibial muscles, however, present a more difficult problem, owing to the tendency of the foot to drop into the equinus position during the day (so that some supporting appliance is needed), and to be forced into this position at night by the weight of the bedclothes. Thus a night shoe (keeping the foot at right angles with the leg with slight inversion) should be worn to a late stage, and the masseuse should constantly correct any tendency to shortening of the calf muscles. Should this condition be present in a marked degree when treatment is first begun, much valuable time will undoubtedly be saved by a tenotomy of the tendo Achillis, as in the writer's experience it is impossible permanently to reduce an advanced contraction of the calf muscles by physical means alone.

Before leaving the subject of supports, let it here be said that enveloping plaster-of-Paris splints were never used as these encourage atrophy by depriving the part of all light and air.

Massage.

Massage was carried out as a part of the treatment. In cases where atrophy is advanced it is of use, yet the more the writer uses sun rays, real and artificial, in treatment, the less he is inclined to employ massage. He always has in mind the danger of pulling the inert muscles out of shape in this form of treatment done day after day. This remark more especially applies to deep effleurage which is, in his opinion, a grave mistake. Massage is chiefly needed in cold weather.

Clinical Records.

F. T., aged 13, had an acute attack of anterior poliomyelitis when aged 14 months. Treatment was begun in January, 1924. He had then no faradic or voluntary response in the right quadriceps muscles. On Jan. 28th, 1925, he had regained a good voluntary response in these muscles, varying a little from day to day, but at times he can hold the leg with the knee extended with his thigh in a horizontal position. He is still steadily improving.

J. C., aged 12, had an acute attack of poliomyelitis in early infancy. In February, 1924, the glutei and all muscles of the right lower limb excepting the adductors gave no faradic or voluntary response. Treatment was started on that date. On Jan. 28th, 1925, there was a plain voluntary response in the quadriceps, the response being, however, weak. The glutei gave a good voluntary response, and they are becoming quite strong so as to give really useful activity. The hamstrings have recovered sufficiently to flex the knee-joint through the right angle with the patient lying in the prone position. The peronei have a weak but distinct voluntary response; the tibialis anticus is beginning to give voluntary response; all these muscles are improving.

W. B., aged 11, had an acute attack of poliomyelitis in both lower limbs when 4 years old. In January, 1924, there was no response in the left quadriceps. On Jan. 28th, 1925, these muscles have a weak response almost but not quite strong enough to support the weight of the leg in the horizontal position. The left anterior tibial group were very weak, but are now recovering rapidly; it is to be expected that at the present rate of progress this boy will be able to discard his instrument altogether. In the right leg in February, 1924, tibialis anticus gave no faradic or voluntary response. On Jan. 28th, 1925, it now gives a really useful voluntary response, almost sufficient to dorsiflex the foot. In this case there had been considerable contraction of the calf muscles on both sides so that he had been earmarked for tenotomy. The muscles have, however, completely yielded to manipulation so that the foot can now be placed at a right angle. The remarkable feature of this case is the splendid nutrition of both legs, which have developed excellently in this respect.

T. W., aged 15, had infantile paralysis when less than a year old. On Feb. 26th, 1924, no faradic or voluntary response was obtained in the anterior tibial group or the quadriceps muscles on the right side. On Jan. 28th, 1925, the quadriceps and all the muscles of the anterior tibial group were beginning to give a voluntary response. Atrophy in this case had been very severe, but he has lately much improved. On the left side tibialis anticus gave no faradic or voluntary response at first, but is now giving voluntary response.

Conclusions.

It is, of course, necessary that treatment of such cases as these should be continued over a long period in order to obtain a useful result, that is to say, to establish activation in the paralysed muscles so that they can assume their proper rôle without the support of any appliance.

When we consider that ten years is not thought too long a period for the mental tuition of these children during the greater part of every day, it is surely a very reasonable thing to demand treatment for three-quarters of an hour or so daily for three or four years, because this can very easily be done in establishments especially devoted to the welfare of cripples where they are resident and always available when required for treatment. The above cases have been selected for inclusion in this paper because they have shown a recovery of muscles that were completely paralysed at the beginning of the treatment and are therefore the strongest possible proof of the value of the methods adopted, but while their treatment has proceeded other patients have been treated in the same way, whose muscles were activating very weakly at the beginning of treatment and have shown quite exceptional recovery.

The writer has treated a very large number of cases of infantile paralysis at different hospitals for some years past by the methods mentioned above, excepting the general light treatment and the local treatment of the muscles by the red rays, and he has never obtained results that can be compared with these just described, nor has he seen such results elsewhere. The treatment by light therefore stands out very distinctly as a great advance. Among the cases hitherto regarded as hopeless there are unquestionably a large number in which destruction of innervation renders recovery impossible, and treatment is, of course, thrown away on these. At the same time, examination and a short course of treatment will show whether useful recovery of nerve-fibres has taken place.

Much skill, perseverance, and judgment are required on the part of the operators. The writer must therefore pay a tribute to his assistants, Miss F. Rolleston and Miss I. Seldon, who have been responsible for the carrying out of the above methods.

RHEUMATIC INFECTION IN CHILDHOOD.

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FIFTY cases, picked at random from a much larger series of Bath school-children selected during routine school inspection and clinic work, either because of heart disease. suspect heart disease, or symptoms suggesting rheumatic infection, have been examined, and 44 in whom the diagnosis was established to the clinical exclusion of other toxic states are reported upon fully. The detail embarked upon negatived the possibility of investigating a larger series. School medical records since 1920, compiled by one of us, were available, and each case in the present series was seen more than once in consultation. The inquiry into home conditions and house inspection was made by voluntary school-care visitors under the direction of the Care Secretary, Miss E. G. Greenall, and the reports were according to a very detailed schedule.

The subject is discussed from the viewpoint of the soil, including inheritance, family history, past history and physical make up of the child, and environment ; and the infection, including subjective symptoms, duration of ill-health, and objective physical signs.

In Respect of the Soil.

Inheritance.—Of the 44 cases diagnosed as suffering from rheumatic infection 21 had an adjacent and 14 a remote family history. By adjacent is meant definite rheumatic fever or rheumatic chorea in either parent, brother, or sister. By remote is meant " rheumatism " in the above relations, or rheumatic fever in a grandparent, uncle, aunt, or first-cousin.

Family Colouring.—The colour of the hair in the above adjacent relations was nondescript in 10, definitely fair in 10, definitely dark in 9, definitely red in 6.

Colour of hair in the cases under review was nondescript in 23, definitely fair in 13, definitely dark in 2, definitely red in 6.

Past history of the same cases : Rheumatic fever in 6, chorea in 11, scarlet fever in 5.

Environment.—Altitude of house : Under 100 ft. in 27 (61·3 per cent.) instances, under 200 ft. in 40 (90·9 per cent.) instances. In only 6 instances was residence in the present house under 3 years—in the remaining 38 cases the residence had been unchanged for over 5 years.

Subsoil.—Alluvial, 13 ; gravel, 15 ; lias, 12 ; other types, 4. The gravel in the majority of these cases is in an area adjacent to the river-bed and used to be flooded.

House Reports.—Damp, 20 ; ventilation inadequate, 14 ; light poor, 12. The terms dampness, inadequate ventilation, and poor light are those which would be, and in point of fact were, applied to conditions striking an ordinary educated person and not a sanitary inspector. In only 6 instances could the term overcrowding be applied to relation between the number of inmates and available rooms. Six houses only had under 4 rooms, 16 houses had 4 rooms, 9 houses had 5, and 13 had 6 or more.

The weekly gross income per head is as follows : In no case was it less than 5*s.* ; in 21 cases it was between 5*s.* and 7*s.* ; in the remainder it was over 7*s.* In practically every instance the parents of the affected children were in steady work, in receipt of a steady income, and generally belonged to the skilled artisan section of society.

In Respect of the Infection.

A history of symptoms in the children was given as follows : Headache in 10, sore-throat in 12, stomach-ache in 26, stiff neck in 8, growing pains in 31, stitch in 20, swollen joints in 3.

The nervous symptoms in the children were : Irritability in 5, nervousness in 14, sleep disturbances in 20, those of chorea in 4.

The duration of symptoms in the children was : Less than 1 year, 10 ; 1 to 2 years, 11 ; 2 to 5 years, 17 ; more than 5 years, 4 ; unknown, 2.

Physical Signs.—Pallor and anæmia are not recorded in that blood counts were not undertaken. In 16 cases the condition of the tonsils was such as to cause chronic enlargement of the submaxillary tonsillar gland.

The cardiac condition in the children was : Morbus cordis in 14, suspect cardiac disease in 22, normal cardiac state in 8.

Subcutaneous nodules were present in 35 children, chorea was present in 6.

The following table explains the association of the principal physical signs :—

Rheumatic infection—	
Without physical signs	5
+ nodules	3
+ chorea	0
+ nodules + chorea	0
+ C.I. (*a*)	0
,, (*b*)	3
+ nodules + C.I. (*a*)	16
,, ,, (*b*)	11
+ chorea + C.I. (*a*)	1
,, ,, (*b*)	0
+ nodules + chorea + C.I. (*a*)	5
,, ,, (*b*)	0

C.I. = Cardiac involvement. (*a*) = Suspect ; (*b*) = Organic.

Examination of Controls for Subcutaneous Nodules.—At routine school medical inspection among the first 100 children examined 25 were found to have nodules, 20 of whom gave a definite history of symptoms suggesting rheumatic infection, 2 an indefinite history, and 3 no history. These children were of the entrant and intermediate groups and accompanied by their parents.

Commentary.

Several salient points emerge touching environment and infection.

In Respect of Environment:—

(a) *Altitude and subsoil*: The figures are remarkable and require no comment. It is to be noted that the altitudes in Bath vary between under 100 feet to over 500 feet.

(b) *Social position of the parents*: Is not one of extreme poverty and slum dwelling, but that pertaining to a more or less skilled worker in constant employment. This directly opposes the suggestion that rheumatic infection is a poverty disease.

(c) The family inheritance and predisposition is confirmed.

In Respect of Infection:—

(a) *Nervous symptoms*: The frequency in which the parents' sole complaint was that the child was nervous and irritable, or was a sleep-talker and sleep-walker, or that there was a combination of these symptoms is remarkable. Seeing that efficient anti-rheumatic treatment cured these conditions it would appear that they are manifestations of the rheumatic virus.

(b) Subcutaneous nodules: As a physical sign the subcutaneous fibrous nodule is a small and apparently insignificant variation from the normal, in consequence of which practice is necessary for the clinician to be certain of its presence. The final proof that such nodules exist rests on their removal and microscopical section.

To quote from Prof. I. Walker Hall's report[1]:—

> "The nodule is composed of fibrillar tissue, aggregations of histiocytes and inflamed blood-vessels. . . . It is obvious that the ætiology of the nodule may be associated with a persistent irritant of the sub-infective or mildly infective type."

This particular reaction to infection, proliferation of the lining endothelial cells of arterioles and perivascular collections of histiocytes, is such as obtains in response to the virus of rheumatic fever, both in the endocardium and pericardium. It would appear therefore not improbable that these nodules are but pocket editions of the large subcutaneous nodes occurring in acute rheumatic fever and are analogous to the submiliary nodules of Aschoff.

(c) Treatment: It has been found that satisfactory results are more easily obtained by the exhibition of small doses of thyroid or iodine in addition to salicylates, alkalis, and arsenic. This treatment was adopted on the presumption that smouldering infections tax the thyroid gland. Rest, exclusion from school, and avoidance of wet were enforced where necessary.

Summary.

Forty-four cases of rheumatic infection in children have been investigated. The opinions reached are:

1. Rheumatic infection in elementary school-children is not a poverty disease.

2. It is extremely prevalent among such children.

3. The potency of heredity and low-lying locality is emphasised.

4. Subcutaneous nodules have been demonstrated in 35 out of 44 cases (79·5 per cent.), and are significant of an active rheumatic focus, as shown by their association with symptoms and their absence in three cases of stationary mechanical carditis formerly rheumatic. Thus their presence not only crystallises an otherwise nebulous diagnosis, but indicates the necessity of continuation of treatment, particularly in nervous children and in those with unsatisfactory cardiac sounds.

We wish to thank Miss Greenall and the voluntary care visitors under her supervision for their most valuable reports and scrupulous attention to detail, without which this investigation could not have been made.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT BATH.

SECTION OF MEDICINE.

WEDNESDAY, JULY 22ND.

Lord Dawson, President of the Section, in his inaugural address referred to the especial importance of the 1925 meeting of the Association. There were, he said, three things that made it notable—the meeting coincided with the important outcome of recent research into malignant disease; it was held at a time when the duties of the Association were rapidly widening, especially as they affected facilities for learning and teaching and promoted generally the health of the public; and it was held at Bath, which for so long a time had been a leading health centre of the country. Referring further to cancer research, he pointed out that the specificity of the factor of the soil, as opposed to the non-specificity of the virus, illustrated once again the principle that the reaction of man to morbid processes bears upon it the stamp of his own individuality. Modern medicine was opening out the questions of trend and tendency, and as a result medical men of the future must increasingly be the prophets and not the vassals of statesmen. The President then referred with great respect to the late Sir Clifford Allbutt, both as a great thinker and a great leader, and especially as a leader to the B.M.A. during the years of the war. He reviewed his great knowledge, broad outlook, and fine scholarship, and, most important of all, his sane optimism, which had made him pre-eminently an object of the allegiance which age might command in the young.

Sir Humphry Rolleston, after reference to the remarks of the President upon cancer research, and having paid further tribute to the memory of Sir Clifford Allbutt, opened the discussion on

Rheumatoid Arthritis.

He submitted that it was generally felt that the disease, if not entirely due to some form of infection, was, at any rate, chiefly due to it. Was, however, infection the sole cause? Might, for instance, disordered metabolism initiate the changes that occurred in the joints? Such an authority as Sir A. Garrod had expressed the belief that the infective factor had been over-emphasised, and it was necessary to ask whether we were justified in ascribing the arthritis in all cases to infection. Reviewing other possible causative factors, he did not believe that heredity disposition was of much importance. Errors in carbohydrate metabolism had been thought to have a place in the causation of the disease, and it had been reported that 20 per cent. of cases showed a lowered basal metabolism and a diminished sugar-tolerance; these findings, however, probably represented effects rather than causes of the disease, and it had been found that after removal of a septic focus the sugar-tolerance returned to normal; moreover, diabetes mellitus was not commonly associated with rheumatoid arthritis. Similarly chronic infection was more probably the cause of thyroid insufficiency and other endocrine disturbances than vice versa, and on the whole there was not much evidence that such metabolic disturbances stood in causal relationship to the disease.

Speaking of the source of infection, Sir Humphry Rolleston said that in one series the teeth and gums had been found in 90 per cent. of cases to be the main source; in another series the tonsils were infected in 75 per cent. Accessory nasal sinusitis, he thought, might be secondary to dental infection. Two varieties of dental infection had to be distinguished. *First*, pyorrhœa alveolaris, where the infection was open and probably had not much causal effect in arthritis apart from achlorhydria; *secondly*, dental apical abscesses, from which absorption into the blood-stream was direct. In the former mode of infection it was possible that perversion of the functions of the liver, which stood between the alimentary canal and the systemic circulation, might be a contributory cause of the disease; in such cases also the small rather than the large intestine appeared to act as a source of infection. In the genito-urinary tract the *B. coli* might act as an infective agent in a few cases, especially when harboured in the prostate. The respiratory tract, apart from cases of pulmonary arthropathy, could for practical purposes be exonerated. Although the opinion held in France that some cases of rheumatoid arthritis might be due to the toxins of the tubercle bacillus found little or no support in England, yet it was worth bearing in mind a possible analogy between syphilis and parasyphilitic disease on the one hand and tuberculosis and rheumatoid arthritis on the other. He referred also to the occasional association of arthritis with psoriasis and impetigo, and suggested that an anaphylactic relationship might exist between them. The chief objections to the infective theory were that people often have infective foci but no arthritis, and that in many cases we can find no infective focus. The uncertain factor of the soil, however, was to be borne in mind in weighing such objections, and search for a possible focus—e.g., in the prostate or nasal sinuses—was often incomplete. Again, certain foci of infection might be "closed"—the gall-bladder, for example—or one joint might act as a reservoir of infection for other joints. From the bacteriological standpoint it was usually a streptococcus that was incriminated, but there was often difficulty in recovering the organism from the synovial fluid and membranes.

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[1] Brit. Med. Jour., 1925, i., 530.

As to treatment, prevention was the keynote. Eradication of infection, as, for instance, in dental extraction, must be complete. Just as a match was as effective as a torch in firing a train of gunpowder, so a small focus of infection might set up an arthritis as severe as a large one. Dead teeth were a favourite seat for infecting organisms, and there was consequently a danger in killing the nerves of teeth. As to encouraging the soil, he referred to the possibility of stimulating metabolism by thyroid extract, parathyroid, arsenic, iodine, and heliotherapy, and he drew attention to the theoretical uses of protein shock in therapy.

Mr. W. R. Ackland considered the division of dental sepsis into pyorrhœa and dental abscesses too hard and fast. Apical abscesses sometimes discharged through the gum, while in pyorrhœa, on the other hand the deeper layers could never be properly drained. Gastric juice did not always destroy the streptococcus and it might even liberate an endotoxin. Moreover, there was no gastric juice in the stomach at night, when toxins might pour down into the stomach and ultimately produce achlorhydria, and if the liver functions were affected the infection would pass to the general circulation. The streptococcus appeared to have an especial affinity for a dead tooth. The results of treatment were, on the whole, disappointing. One might at least hope, however, that patients would not get worse thereafter. X rays of the teeth not being infallible, he was in the habit of condemning all bridges, crowns, and dead teeth.

Dr. Rupert Waterhouse, from a hydrotherapeutic standpoint, said that though the infective hypothesis of rheumatoid arthritis was in full swing in Bath 25 years ago, there yet seemed as a result to be no diminution in the number of patients seeking relief there. Since the war especially, and in contrast to gout, the disease had increased. Not more than 10 per cent. of the cases recovered; but it was something from a patient's point of view to obtain even a slight functional improvement. The ideal was to get the patient to take intermittent courses of treatment, lasting not longer than six to eight weeks; longer courses were undesirable as promoting debility.

Prof. Osgood (Harvard University) feared that it must be confessed that in most cases removal of infected foci did not lead to recovery; in one series, indeed, there had been more recoveries where the foci had *not* been removed. There might, he suggested, be a missing link between a disordered metabolism and an infection. As a result of the presence of toxins often specific in man (and, indeed, often possessing a strict tissue-specificity), the permeability of the perisynovial capillaries might be modified, and a lowering of the basal metabolism induced—a matter of sensitisation.

Sir Robert Jones emphasised the disease as being a conjoint problem for the physician and surgeon. When the surgeon was called in it was usually too late for him to prevent crippling deformities. The natural course of the disease was towards deformity, which it lay in the power of any general practitioner to prevent. The first physical sign of deformity was a spasm of muscles to obtain the position of ease. As a rule the flexors pulled more and more effectively than the extensors, and so deformity of the muscles resulted. Of two types, one proliferative and the other osteophytic, the former was the more difficult to treat owing to the greater pain. He then referred to special joints; in the wrist, for instance, palmar flexion and ulnar deviation might be countered by an appropriate dorsi-flexion splint; flexion of the knees and adduction of the hips could be prevented by posture, sand-bags, and gentle weight extension. Any movements given were only to be within the limits of pain, and the greatest care was to be taken not to permit rash movements, such as, for instance, forcible extension of a knee where posterior displacement of the tibia was present in addition to flexion. Open operation was often of great avail, even in advanced cases; masses could be removed from the joints or arthrodesis performed with very satisfactory results.

Prof. Cawadias (Athens), after referring to the great variability of the factor of resistance of the body to infection, suggested that disordered metabolism of sulphur might contribute to this aspect of the disease. In support of this hypothesis he advanced the following observations: (1) Cases of rheumatoid arthritis lost too much sulphur in the urine. (2) This imperfectly oxidised sulphur pointed to a general defect in oxidation. (3) The fact that there was no increase in the output of ethereal sulphates showed that the increased sulphur did not originate from mere destruction of cartilage.

Dr. J. M. H. Monro reviewed several series of cases, showing that changes in the blood—anæmia, leucopenia, leucocytosis, and complement-fixation—might be found, in contrast to normal blood, in about 80 per cent. of cases of rheumatoid arthritis. The *Streptococcus viridans* appeared to be the usual source of infection, and had been found in the roots of teeth in which the X ray findings had been negative. While cocci were the usual cause of infection, it was not uncommon to find coincident tuberculosis and even syphilis.

Mr. Timbrell Fisher, speaking from a pathological standpoint, proposed to substitute for the older nomenclature of rheumatoid and osteo-arthritis a division of cases into three groups of chronic arthritis: (1) Chondro-osteal type, in which there was a primary degeneration of the more central cartilage, with eburnation of the underlying bone, while the lateral part of the cartilage became hypertrophied. It was only later that the synovial membranes also became hypertrophied, and there was never any small round cell infiltration. These cases, occurring usually in later life, constituted a degenerative group. (2) Mixed type, in which the cartilaginous and synovial changes occurred concurrently. A pannus spread from the synovial membrane into the cartilage, and small round cells were present. Lipping only occurred later. (3) Synovial type, which appeared more inflammatory, with abundant infiltration of small round cells.

Sir W. Willcox regarded infection as the primary cause in the great majority of cases, but was careful to exclude gout, neuropathic joint lesions, and such a condition as intermittent hydrarthrosis from the group under discussion. In support of the infective hypothesis he brought forward the following considerations: (1) Other known organisms—e.g., gonococcus, pneumococcus, and *B. typhosus*—might produce arthritis very similar to rheumatoid arthritis; (2) rheumatoid arthritis frequently followed parturition; (3) an infective focus was almost always discoverable. Dental sepsis accounted for most cases (72 per cent.); the apical infections were not true abscesses causing pain from pressure, but rather necrotic areas. Tonsillar cases were fewer (10 per cent.) and occurred in younger patients especially. Diagnosis of antral infections was often difficult, even with radiography and transillumination, and in such cases it was best to puncture the antrum. The colon was often the seat of infection in elderly patients. Tuberculosis elsewhere was not, in his opinion, an important ætiological factor; on the other hand, he thought that the presence of septic foci predisposed to the development of phthisis. (4) The eradication of the infective focus had usually been followed by cessation of active inflammation. (5) Rheumatoid arthritis was only a manifestation in the joints of a chronic toxæmia. Treatment should aim at the removal of the infective cause, and might include Plombières colon irrigation as an important factor. Only after this removal were vaccines to be employed, and then only in small doses.

Sir J. Barr expressed his belief that acid fermentation in a dilated stomach was the main cause of the disease, and advocated a diet rich in red meat and poor in carbohydrate.

Lord Dawson said that it was an irresistible conclusion that infection played a part. The difficulty lay in the origin and measure of that infection, and hence a speculative removal of teeth and tonsils might be advised. Sometimes the source of infection might be inaccessible; at other times the infection might well be one which under ordinary conditions would have been non-pathogenic. In such cases treatment must be concerned with the raising of resistance. He looked to the bio-chemist to explain the expression "resistance," with the coöperation of the bedside physician. If the results of dental extraction were disappointing, and if it must be admitted that this was an operation of some violence, especially in the aged, yet there was a compensatory satisfaction in observing the increased care which the rising generation was giving to its teeth, even in hospital practice, as a result, he presumed, of its observations of its seniors.

Sir H. Rolleston replied. He referred to the sensitisation hypothesis of Prof. Osgood and to the observations of Prof. Cawadias on sulphur. He had always imagined that sulphur was given as an internal antiseptic. With regard to Lord Dawson's conclusion, he would put the question finally in another way: "Can you," he asked, "have rheumatoid arthritis without infection?"

Thursday, July 23rd.

Hyperpiesia.

Prof. T. R. Elliott having taken the chair, Lord Dawson opened a discussion on hyperpiesia. With a view to the necessity of confining his remarks to certain aspects of hyperpiesia, he postulated the assumption that this was a disease sui generis, involving certain disabilities, of which cardiac and vascular disease was the gravest. But it was better, he considered, in this inquiry not to examine those cases which showed most evidence of cardiovascular wear and tear, but rather to approach the subject through the avenue of youth, thus excluding those graver secondary complications; for it was in later life that hyperpiesia and arterio-sclerosis hunted in couples, and only by excluding the latter might they hope to determine whether hyperpiesia had its beginnings in structural change or in faulty function. The systolic blood pressure reached between the ages of 20 and 45 years the figure of from 115 to 130 mm. Hg; during this period it did not vary much, and he would from his observations view with uneasiness, at that period of life, a fixed systolic pressure of over 140. With exercise, of course, there was a rise, but in health a subsequent fall to normal took place within a few moments of resumption of rest. The studies of Alvarez had shown that of 1500 youths at the University of California 20 per cent. had pressures of over 140. No doubt there was a passing psychological cause for some of these, but it remained a fact that a certain proportion of the young had a true rise of systolic pressure. The diastolic pressure had been less widely studied, but he suggested that at this time of life it lay normally between 75 and 80 mm. Hg, and that at any age a figure of above 100 should be viewed with uneasiness.

Lord Dawson next referred to two families, each of two generations, in one of which no member had a systolic blood pressure of above 110, while in the other no member had a pressure of below 130. These examples prompted two reflections: (*a*) That vaso-constriction played a very varying part in different individuals; and (*b*) that hyperpiesia began as an exaggeration of a quality—in other words, that it began in the realm of physiology to end in that of pathology.

A special investigation had been made in 650 school-children between the ages of 10 and 17, and 52 of these, or 8 per cent., had shown a systolic pressure of over 130 mm. Hg. The observations had been multiplied to exclude factors of excitement, and it had not been found possible to identify hyperpiesia with any particular type of child. Prospects of a school examination did not raise the pressure; on the other hand, the classes for the Oxford Senior Local Examinations, attracting as they did ambitious children, in whom they might be supposed to engender some anxiety as to their prospects in life, showed a relatively high incidence of hyperpiesia in the children attending them. He believed that in these cases the high blood pressure was an expression of a type of mind which was naturally striving and ambitious. In this group of 8 per cent. one could fairly rule out any degenerative structural process; it was more likely that these cases showed an inborn peculiarity of function, which might become so accentuated as to produce damage in varying degree. Correction might be effected by choice of suitable careers; otherwise vaso-constriction, progressively provoked by slighter and slighter stimuli, might cause a condition of high pressure to become more or less permanent.

A more detailed investigation of nine cases selected from the same group had elicited more definite support of this view; these were all boys, and showed in most cases, in addition to the raised systolic pressure, palpable radial arteries and accentuated aortic second sounds; in four, moreover, there was hypertrophy of the left ventricle, and in three a blood-urea of over 0·050 per cent. One case had a urea concentration of under 1·5 per cent. As would be expected, there was considerable variation among these cases; they merged on the one hand with a physiological, and on the other with a pathological state, those showing the most definite cardiac hypertrophy being those subjected to the greatest strain. Pathological evidence was, of course, not easily forthcoming; but in one exceptional case of a girl, often showing a pressure of 240 mm. Hg systolic and 140 diastolic at the age of 10, it had been possible during an operation for decapsulation of the kidneys to secure portions of the organs for examination. Lord Dawson showed these sections on the epidiascope. They illustrated (1) marked hypertrophy of the tunica media of the larger arteries; (2) slight fatty degeneration of the intima of the smaller arteries; and (3) patches of partial atrophy of the tubules due to small round cell infiltration.

In later life high blood pressure might supervene upon a normal pressure in youth, and here it was necessary to consider, in addition to family or individual predisposition, the possible effects of chemical agencies, of pressor substances (such as guanidine derivatives), and of the products of erroneous metabolism. But in his view hyperpiesia had its chief origin as a habit of body and mind, systemic circulation, might be a contributory cause of the disease; in such cases also the small rather than the large intestine appeared to act as a source of infection. In the genito-urinary tract the *B. coli* might act as an infective agent in a few cases, especially when harboured in the prostate. The respiratory tract, apart from cases of pulmonary arthropathy, could for practical purposes be exonerated. Although the opinion held in France that some cases of rheumatoid arthritis might be due to the toxins of the tubercle bacillus found little or no support in England, yet it was worth bearing in mind a possible analogy between syphilis and parasyphilitic disease on the one hand and tuberculosis and rheumatoid arthritis on the other. He referred also to the occasional association of arthritis with psoriasis and impetigo, and suggested that an anaphylactic relationship might exist between them. The chief objections to the infective theory were that people often have infective foci but no arthritis, and that in many cases we can find no infective focus. The uncertain factor of the soil, however, was to be borne in mind in weighing such objections, and search for a possible focus—e.g., in the prostate or nasal sinuses—was often incomplete. Again, certain foci of infection might be "closed"—the gall-bladder, for example—or one joint might act as a reservoir of infection for other joints. From the bacteriological standpoint it was usually a streptococcus that was incriminated, but there was often difficulty in recovering the organism from the synovial fluid and membranes.

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THURSDAY, JULY 23RD.

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A more detailed investigation of nine cases selected from the same group had elicited more definite support of this view; these were all boys, and showed in most cases, in addition to the raised systolic pressure, palpable radial arteries and accentuated aortic second sounds; in four, moreover, there was hypertrophy of the left ventricle, and in three a blood-urea of over 0·050 per cent. One case had a urea concentration of under 1·5 per cent. As would be expected, there was considerable variation among these cases; they merged on the one hand with a physiological, and on the other with a pathological state, those showing the most definite cardiac hypertrophy being those subjected to the greatest strain. Pathological evidence was, of course, not easily forthcoming; but in one exceptional case of a girl, often showing a pressure of 240 mm. Hg systolic and 140 diastolic at the age of 10, it had been possible during an operation for decapsulation of the kidneys to secure portions of the organs for examination. Lord Dawson showed these sections on the epidiascope. They illustrated (1) marked hypertrophy of the tunica media of the larger arteries; (2) slight fatty degeneration of the intima of the smaller arteries; and (3) patches of partial atrophy of the tubules due to small round cell infiltration.

In later life high blood pressure might supervene upon a normal pressure in youth, and here it was necessary to consider, in addition to family or individual predisposition, the possible effects of chemical agencies, of pressor substances (such as guanidine derivatives), and of the products of erroneous metabolism. But in his view hyperpiesia had its chief origin as a habit of body and mind and crept into life without subjective symptoms; so that unless it were disclosed by a fortunate medical examination it might latently lead to actual structural disease.

Prof. E. H. Starling emphasised the extreme importance of the blood-supply to the vaso-motor centre in the medulla. This centre did not control its own blood-supply by vaso-motor fibres, but did so indirectly by controlling the pressure elsewhere. A raising of the blood pressure in the circle of Willis was compensated for by a lowering of the pressure elsewhere, and vice versa. This condition was demonstrated by an illustration of an experiment, in which it was shown that if the intracranial contents of a dog were cut off from the heart and connected with the heart of another dog, any variation which might be produced in the blood pressure in the cranial arteries was compensated for by an opposite change in the blood pressure in the other parts of the body, this change taking place at similar rate to that of the variation of the cranial blood pressure. The chief factors involved in maintaining blood pressure were: (1) The output of the heart, which was proportional to the flow into the heart; and (2) the peripheral resistance, which was under the control of the vaso-motor centre, and was chiefly regulated in the splanchnic area. Thus in man the pressure was maintained at 85 to 130 mm. Hg. But, he asked, what determined the average height? The answer was that the blood pressure was determined by the blood-supply that was necessary for the brain; thus even in heart failure the pressure must not fall, since at all costs the blood-supply to the medulla must be maintained.

In hyperpiesia the pressure was set at a higher level, and any oscillation took place around it. He submitted that the change in the level had to be effected and maintained because otherwise the vaso-motor centre would not receive an adequate amount of blood for its needs. Pursuing this line of thought, they might inquire what were the conditions under which the vaso-motor centre would, without a rise of blood pressure, obtain an insufficient blood-supply. These might be (1) gross changes in the vessels; (2) claudication; and (3) arterial spasm; but, more important than these, seemed to be (4) changes in the capillary walls—i.e., alterations in size and in permeability. If from such causes the pressure in the peri-capillary lymphatics were raised (a condition possibly present in uræmia and the toxæmias of pregnancy, and in the condition he referred to as "wet-brain," accompanied by transient paralyses) this peripheral pressure would explain the rise of general blood pressure necessary to overcome it. There was no evidence that a diseased kidney was directly responsible for the raised blood pressure. Cohnheim, indeed, regarded a rise of pressure in renal disease as compensatory; but even so the stimulus could only act through the vaso-motor centre. In conclusion, he submitted that in investigating any possible prime cause of hyperpiesia, it should always first be asked how that cause could modify the blood-supply to the vaso-motor centre in the medulla.

Dr. McCrae (Philadelphia) expressed his feeling that the most obvious things about blood-tension were the difficulties it presented. In certain cases of childhood a raised pressure appeared a temporary condition, in others it persisted; possible causes were organic disease and infections, early renal changes, and, in the case of hypo-pituitarism and the menopause endocrine influences. He wished particularly to emphasise the fact that here for the general practitioner was an opportunity for clinical research over a length of time such as hospital and consulting practice did not offer.

Dr. Batty Shaw said that he believed the main origin of hyperpiesia was toxic. The vaso-motor centre was not the only site of nervous control of the vessels; there was also the neuro-muscular plate, and he submitted that this point of junction might be affected by chemical agents. What were the toxic agents? Not, he thought, infective poisons which were depressor in their action, but such pressor substances as were derived from the suprarenal, the pituitary, and the renal cortex. He stressed the importance of recording the daily blood pressure as regularly as the pulse and temperature, and reported a case of hyperpietic crisis in which the pressure had suddenly dropped from 230 to 130 with accompanying coma and high blood-urea, and almost as quickly returned to the original level. He ascribed such changes to physiologically antagonistic toxins.

Dr. Otto May, speaking as medical officer to the Prudential Assurance Co., Ltd., while admitting that many sources of error arose in estimating the blood pressure of an individual, held that, where statistical calculations depended upon a very large number of cases, the individual fallacies became of relatively little importance. Such statistics showed that an increased systolic pressure was a definite menace to longevity; with pressures over 170 the outlook got rapidly worse, while at 200 and over the mortality was eight times the normal. He referred with regret to the relatively slight use made by medical men of the sphygmomanometer as compared with the stethoscope. He made his opinion quite clear that statistical information, even of the clearest kind, was not to be applied in individual cases without due consideration of other factors in the physical condition.

Dr. Geoffrey Evans, after reference to early researches which had not confirmed anatomical changes expected in cases dead with hyperpiesia, remarked that in the natural experiment of chronic interstitial nephritis they were now able to observe that hypertension and vascular disease were not necessary accompaniments of renal disease. He believed in the toxic origin of hyperpiesia, but was more concerned with the condition itself. Hyperpiesia was a clinical state quite independent of the kidneys; as Sir Clifford Allbutt had said, it did not end in nephritis—its evolution was rather towards heart disease and hæmorrhage. Its hall-mark was cardiac hypertrophy, as demonstrated by X rays and the electro-cardiograph. Retinal vascular changes and modifications of the aortic second sound were other characteristics of it. The morbid anatomy was quite definite, as compared, for instance, with that of a case of migraine. In hyperpiesia the body was plethoric, the heart large, and there was a definite hypertrophy of the arterial walls best seen on macroscopic section of the otherwise normal spleen and kidneys. Microscopically, the intima appeared swollen with endothelial cell-proliferation, which, being avascular, went on to fatty degeneration of the intima. The tunica media might or might not be hypertrophied, or the hypertrophy might be apparent only.

Dr. F. H. Humphris referred to benefits in hyperpiesia from electrical treatment; he maintained that every application produced a lowering of the maximal arterial pressure by 10 per cent.

Dr. W. Salisbury-Sharpe, from a study of 500 men of between the ages of 60 and 65, had found that a considerable degree of activity was compatible with high blood pressure.

Dr. A. Cawadias regarded hyperpiesia as a syndrome. Two diagnoses were necessary: (1) Diagnosis of the syndrome itself; here it must be recognised that there were local hyperpieses giving rise to crises—e.g., in the lower limbs and the heart. (2) Diagnosis of the cause. The influences which might act upon the vaso-motor centre were: (a) toxic—as in nephritis; (b) chemical—e.g., adrenalin; and (c) nervous. He considered the investigation of youth to be the best avenue of research.

Dr. Stacey Wilson referred to varying differences between estimations of the blood pressure made by different methods—e.g., tactile and auscultatory. He regarded these peculiarities as worthy of investigation by general practitioners. In one case the auscultatory method gave the higher reading, in another the tactile. Why was this? He was sure that toxic conditions were important: syphilis alone *was evidence enough of this.*

Prof. R. J. S. McDowall believed that in emotional and toxic states there was a condition of strain, as a result of which a functional overaction took place. He would cut down the protein of the diet in hyperpiesia.

Lord Dawson, in replying, said it was difficult to believe that hyperpiesia in children was toxic; an innate tendency in them seemed much more probable. Anxiety, and especially repressed anxiety, might raise the pressure and possibly there was a metabolic factor. But the border-line between functional error and morbid entity seemed to him, in this case at any rate, to be a blurred one.

Friday, July 24th.

The Uses and Abuses of Endocrine Therapy.

In opening the discussion on this subject, Lord Dawson being in the chair, Dr. W. Langdon Brown said that he would deal with the uses of endocrine therapy, leaving Prof. Swale Vincent to deal with the abuses. An endocrine preparation might be used either to replace a deficient internal secretion (thyroid, insulin) or for its pharmacological action (adrenalin). But before it could be used on a rational basis it must be shown that the gland in question forms an internal *secretion; that its active* principles can be extracted; and that the extract can be so administered as to admit of its utilisation by the body. In very few instances had all these criteria been satisfied, so that clinicians had been forced into more empirical methods. Empiricism had won success in other spheres—e.g., quinine, salicylates, and, previous to the discovery of vitamins, cod-liver oil—and moreover the functions of the thyroid itself had been made out at the bedside. Nevertheless, the empirical method was to be used critically, and the study of the basal metabolic-rate and of the blood-sugar curve had recently been useful in confirming the effects of extracts: of more limited use at present was the estimation of the calcium of the *blood.*

Thyroid extract fulfilled all the above criteria; its principle was a general quickener of metabolism. A total daily dose of 6 gr. of the extract of the fresh gland (which was one-fifth as strong as that of the desiccated gland) needed seldom to be exceeded. It was worth using in children suffering from stunted growth, nocturnal enuresis, night-terrors, and relaxation of ligaments—e.g., knock-knee, flat-foot, and lordosis—as well as in cases presenting the stigmata of hypothyroidism; it was the great stimulant to growth. Where growth was complete, thyroid was an agent katabolic of those products of incomplete combustion which, in conditions of thyroid deficiency, infiltrated many of the tissues.

The use of *parathyroid* extract was more justifiable now that Collip had isolated its active principle. Its uses were: (1) Sedative to the nervous tissues (e.g., in tetany, petit-mal, and eclampsia) by effecting a rise in the blood calcium, and (2) to promote healing in chronic sepsis (chronic gastric ulcer, varicose ulcer). It was absorbed when given by the mouth. There was a mass of evidence pointing to *adrenalin* as a general sympathetic stimulant to be used in such emergencies as *acute asthma*, vaso-motor paralysis, heart failure, and hypoglycæmia, but it was of little or no use for substitution therapy in Addison's disease. Extracts of the anterior lobe of the *pituitary* certainly appeared to have given results, when administered orally, in cases of deficient growth from pituitary insufficiency. As to the posterior lobe, he believed that its secretion, pituitrin, had an important association with the reproductive processes, in support of which belief he mentioned among others the following *observations*: (1) Fröhlich's syndrome was always associated with undeveloped sexual organs. (2) Dixon and Marshall had shown that a corpus luteum in the ovary in pregnancy could completely inhibit the action of ovarian extract which normally, on injection, caused an immediate flow of pituitrin into the cerebro-*spinal fluid. Just before parturition*, however, the ovarian extract would again, on injection, profoundly stimulate the production of pituitrin, leading to uterine contractions and lactation. Similarly, he had found clinically that an extract of corpus luteum soon stopped excessive lactation in a woman who had an enlarged pituitary fossa. Diabetes insipidus, believed to be associated with posterior lobe deficiency, had been treated with some success by spraying *extracts of pituitary into the nose.*

Speaking of *pancreatic* extracts, there could be no doubt of the efficacy of insulin and there were considerable numbers of patients who, having had a course of insulin, had later been able to give it up and yet to keep free of glycosuria. Dr. Langdon Brown protested strongly against statements which led patients to deprive themselves of this most valuable remedy of diabetes. Insulin had also been used tentatively for hyperthyroidism, and it should be used *in the acute* hyperthyroidism following operations on the thyroid gland. It could reduce the basal metabolic rate. It might be hoped that *ovarian* extracts, recently shown by Allen and Doisy to produce definite effects, might, *if they could be freed* from corpus luteum, benefit ovarian inadequacy, especially in the miseries of the climacteric in woman. He was sceptical as to the value of other endocrine extracts, though in the case of the testis the grafting method offered a chance of effective treatment.

Prof. Swale Vincent said that there should be no essential difference between the nature of observations made by laboratory workers and clinical workers. It was the duty of the latter, as of the former, to carry out an experiment if an opportunity presented itself. The difficulty for him appeared to lie in making satisfactory, or indeed any, criteria to justify the term "*experiment.*" *It was, for instance*, useless to claim that a drug had done good, unless they had a moderately clear idea of what would have happened if the drug had not been used; yet this obvious consideration had been universally overlooked even by medical men, and the public had not even begun to be suspicious of the resulting and blatant advertisement of the drug vendor. Again, he contended that the information derived from the observation of the effects of juices squeezed out of certain organs did not *justify at all* the assumption that the physiological action of those organs was the same as the pharmacological action of their extracts. If this were so the extirpation of the organs should produce effects exactly opposite to the *effects of injecting the extracts.* This did not occur. For instance, extirpation of the adrenal glands did not cause an immediate fall in blood pressure. Similarly, to prove that pituitrin was the internal secretion of the pituitary, it was not enough to obtain it by extraction from the gland.

If this erroneous type of conclusion were accepted —that the pharmacological effect of an extract justified the assumption of a similar physiological effect of the gland from which it was obtained—*what were they to* say about the other ductless glands and tissues? All tissue extracts in general (other than those of the adrenals and pituitary) had the effect of lowering the blood pressure, and by this argument it was rational to supply every month a *new* substitution product or hormone for lowering the blood pressure, derived from each tissue whose extract had been examined. In France it had been argued that each tissue produced its own substance for lowering its own local *blood* pressure. It could not be urged too strongly that the effects of these extracts were not specific and had nothing to do with any internal secretion on the part of the tissue in question. To argue that because extracts of the cerebral cortex lowered the blood pressure, it was therefore one of the functions of the cerebral cortex to manufacture and pour into the circulation a hormone, the duty of which was to keep down the blood pressure, would be absurd. Many physicians, however, had not claimed that their endocrine practice was based on sound physiological data, but had insisted on the empirical value of endocrine extracts. While there was no objection to this attitude, it was only reasonable that the a posteriori evidence of relief or cure must be satisfactory. In many instances this was far from being the case, and the scientific value of conclusions drawn under such circumstances was nil.

His conclusions were that there were only two clear cases where they could employ a true substitution therapy—those of the thyroid and the pancreas; and only the thyroid was known to produce effects when given by the mouth. The cases, however, of the parathyroid and the ovary were perhaps in a transitional stage, and the preparation made by Allen and Doisy from the ovaries appeared to be active if injected hypodermically. Out of the long list of preparations of 42 organs and tissues advertised by the manufacturing druggists and prescribed by the "clinical endocrinologists," only one—the thyroid—was of proven value when given by the mouth.

Dr. Gardiner Hill spoke about work done by the St. Thomas's Hospital Medical Unit upon thyroid and pituitary therapy. (1) In obesity thyroid extract had been given by the mouth together with whole gland pituitary. Many of the cases were women at the menopause or just after parturition. Their sugar-tolerance curves differentiated two groups—namely, recent cases, in which there was a slowly decreasing sugar tolerance, and longer established cases, in which the sugar tolerance was high. In the latter group thyroid was useful. The more recent cases of the first group were some of them potential diabetics. Whole gland pituitary helped the sugar curve to fall. (2) In undergrown children feeding with extract of anterior lobe of pituitary was useful, and the rate of growth might be more than doubled by this means, which also increased the sugar tolerance in every case. Giving thyroid in addition produced an even greater effect, which could be to some extent checked by estimation of the basal metabolism. Orchitic and ovarian extracts had been found quite ineffective in cases of amenorrhœa.

Mr. Kenneth Walker spoke from the surgical aspect only, and formulated certain principles concerning living transplants. (1) The more nearly related the donor to the host, the more successful the effects; grafts from another species from that of the host were rapidly absorbed owing to the development of fibrous tissue in the graft and leucocytic invasion from the host. (2) Different tissues disappeared with different rapidity—e.g., the medulla of the adrenal quickly disappeared while the cortex might survive. (3) In transplantation experiments it was possible to feminise male guinea-pigs only if they had been castrated, and to masculinise female guinea-pigs only after removing the ovaries. (4) A successful graft had to be calculated to supply a deficiency; any excess of material transplanted was apparently physiologically inert. There was still much to be understood in the varying relations between the host cells and the transplant.

Dr. H. W. C. Vines described endocrine therapy as an undeveloped science. They were attempting to discuss it as though it was fully understood, and he strongly deprecated destructive criticism, whilst admitting the danger of enthusiasm. In such a science there was necessarily empiricism, but so also was there in vitamin and light therapy, and in treatment even by simple drugs like squill. He had recently obtained some evidence that the influence of parathyroids upon the blood-calcium was due to a protective colloid, which kept certain organic complexes of calcium and lecithin from precipitation. From experiments he had made in vitro it appeared probable that a quantitative relationship might be found between the amount of parathyroid substance used and the calcium content of experimental solutions. It was not surprising, therefore, that in tetany the oral administration of parathyroid was generally such a failure, while grafts or extracts injected might cure the condition; for it was a question of the maintenance in the blood of a definite quantity of that protective substance. With regard to sprue, he pointed out four things: (1) Dr. Scott had had no success from the use of calcium salts. (2) He had had good results from using the "commercial" extracts of parathyroid with calcium salts. (3) The giving of thyroid invariably caused a relapse. (4) Scott's work had been confirmed by the work of other observers.

Prof. F. Langmead said that while Dr. Langdon Brown had emphasised the value of trial in endocrine therapy, many of the trials were not real tests at all, comprising too often the use of substances they had no knowledge of, in strengths which were quite uncertain, for treating diseases which were not understood. The value of thyroid medication in cretins was, of course, indubitable. He had also seen good results in rheumatoid arthritis and in large goitres of puberty, but he thought it was of no value in enuresis. Referring to certain observations of Mr. Kenneth Walker, he stated that large quantities of the gland might be taken without any signs of overdose. He asked, referring to parathyroid, where it all came from? He thought much of the work on the blood-calcium to be worth little, owing to sources of error in the estimations. He did not believe that adrenalin when swallowed could reach the stomach in sufficient strength to be of use in gastrostaxis. He agreed that pituitary when given by the mouth had a pharmacological action by influencing the blood-sugar. Cases of "hypopituitarism" were a mixed lot, compared with true Fröhlich cases which were rare. The blood-sugar was the criterion of true hypopituitarism. Dr. Langdon Brown had only attempted to claim results for six glands, so that the long list of suggestions for organotherapy fully justified the cold douche of Prof. Swale Vincent.

Dr. Woods Hutchinson (U.S.A.) considered that only six or seven out of 72 American endocrine preparations were active. He referred to the great importance of sodium iodide in diminishing the frequency of goitre in the States.

Sir James Berry professed himself whole-heartedly in agreement with Prof. Swale Vincent. He particularly protested against statements made with regard to the use of parathyroid in tetany, which was not probably due to parathyroid deficiency at all; the laboratory work on this subject had impressed him unfavourably. He considered that the term hyperthyroidism was used too loosely; it was sometimes applied to people with enlarged thyroid glands who happened to have a rapid pulse. If anything, these people were *hypo*-thyroidic. He suggested the term dysthyroidism as useful; symptoms might be very mixed—e.g., myxœdema with tachycardia. Iodine was good for early goitre of childhood, but too much of it might produce a true hyperthyroidism. Lack of iodine, however, was not the cause of endemic goitre any more than lack of quinine was the cause of malaria.

Dr. J. A. Nixon asked who it was that was creating the demand for the 72 inactive endocrine products, and would confess to doing so. The meeting would fortify the recipients of daily advertisements to resist them.

Dr. Langdon Brown, in replying, referred to a direct relationship existing between the basal metabolic rate and the pulse-pressure (excluding, of course, cases of aortic regurgitation). A pulse pressure of over 40 meant a basal metabolic rate above normal; this might be very useful in deciding whether cases of enlarged thyroid at puberty were hyper- or hypothyroidic. In many cases of tetany the calcium content of the blood was lowered, and the use of parathyroid, which raised the blood calcium, was justified.

Prof. Swale Vincent, replying, said that a certain measure of agreement between the two sides was beginning to appear. It was the advertising pamphlets and those medical men who wrote papers for them that required attacking.

JOINT MEETING OF THE SECTIONS OF DISEASES OF CHILDREN AND OF PUBLIC MEDICINE.

WEDNESDAY, JULY 22ND.

RHEUMATIC INFECTION IN CHILDHOOD.

THIS joint meeting was held under the Presidency of Dr. Robert Hutchison. Dr. F. J. Poynton (London), in introducing the subject, said there was no issue in practical medicine more important and more full of possibilities. Rheumatic heart disease was a frequent event under 12 years of age and a great cause of suffering and early death. In the young the heart had great recuperative powers if it was only rested and protected. There were many people with organic rheumatic heart disease living quiet useful lives and often doing more for the community than many a headstrong hale citizen who squandered his life in riotous living. Since chorea was so frequent among school-children in our large towns, there must surely be, he said, some discoverable factor straining the nervous system. He was not sanguine as to the eradication of this disease in the near future, but a great advance could be made by more careful organisation, greater supervision, and more widespread study. The first essential was to come to a decision as to what symptoms were good evidence of acute rheumatism. When the machinery was in better working order the inquiry could be extended to border-line cases. When county hospitals with facilities for prolonged rest, supervision, and education were established, it would be better to use them at first chiefly for children recovering from a first attack of rheumatic heart disease or from slight damage rather than for chronic cases. They would then be able to convince the public of the good achieved, and money would be forthcoming for the extension of the work. In the Hartfield Hospital in Sussex, established by the Children's Invalid Aid Association, for girls up to 15 and small boys, encouraging results had been obtained. Out of 123 rheumatic children admitted only two, after a period of much cold and rain in the first week in March, developed fever and rheumatic pains, whereas in London, during the same period from October, 1924, onwards, many cases of acute rheumatism, he said, were admitted to his hospital wards. The Hartfield Hospital was run on open-air lines, and although when it began its work the climatic conditions could not have been worse, the children gained remarkably in health and strength and their cardiac condition improved. Until we have a specific remedy for rheumatism, he said, the best we can do is to build up the body tissues. After puberty the tendency to cardiac rheumatism diminishes.

Further study would teach us what home surroundings were specially detrimental. We needed to know more about the modes of onset. The speaker's records of 1108 probable first attacks of acute rheumatism under 12 years of age showed 973 cases of carditis, 620 of arthritis, 617 of chorea, 344 of sore-throat, and 94 of nodules. One group of cases began with sore-throat, arthritis, and morbus cordis. A second group began with chorea, frequently accompanied by morbus cordis. A third, fortunately a small group, began with symptoms of great severity: fever, vomiting, diarrhœa, or sore-throat, followed by arthritis, carditis, nodules, rapid anæmia, and even chorea. Such fulminating attacks were most frequent in the younger children and in those with a strong family tendency to rheumatism. Such a first attack might prove fatal or leave the child terribly injured. A fourth group began with less acute though definite symptoms. These symptoms subsided, but left the child with fleeting pains, shortness of breath, and a tendency to develop the "rheumatic state." In such cases the first early dilatation of the heart was the key to the situation and was easily overlooked. In another group of cases one manifestation alone, such as chorea, was predominant. There were exceptions, but it was advisable to consider all cases of chorea as of rheumatic origin. From the aspect of prevention Dr. Poynton attached great importance to chorea, which was so frequently associated with the most important of all cardiac lesions—namely, mitral stenosis. It also suggested nerve over-strain as a factor predisposing to acute rheumatism. He was convinced that a widespread inquiry into the subject of chorea by school medical officers would supply valuable information. Heart disease as a sole manifestation was even more important than chorea. The most frequent early heart lesion was dilatation, and the percussion of the deep cardiac dullness in childhood was a remarkably accurate method of investigation. Another group of cases began with sore-throat, enlarged cervical glands, fleeting pains, and dilatation of the heart, and this group was easily overlooked. Much had been written against laying undue stress upon cardiac murmurs, but a cardiac murmur in a child always needed consideration. With Dr. Paine the speaker had been responsible for establishing the doctrine of the local focus in rheumatic disease, and the modern doctrine of enucleation of the tonsils was founded on this theory. He believed that the time had come when we were justified in pressing upon the public the need for a concerted effort to protect our children from the effects of rheumatism.

Dr. Robert A. Askins (deputy M.O.H., Bristol) stated that the school medical department of Bristol had been for some years paying attention to this problem, and paid a tribute to the enthusiasm of Dr. Carey Coombs, of the Bristol General Hospital, and Dr. C. E. K. Herapath, of the Bristol Royal Infirmary, in investigating the clinical condition of a large number of their cases. Dr. Coombs had found that about two-thirds of the cases of rheumatic heart disease in Bristol began between the ages of 5 and 15. He estimated that probably between 12,000 and 20,000 deaths occurred annually in England and Wales from rheumatic heart disease contracted during the school age. Our knowledge of the cause of acute rheumatism was so limited that we were unable at present to suggest measures for its prevention. In his opinion the disease was due to an organism of low infectivity with a special condition, such as prolonged or massive dosage. There were in addition secondary factors. He thought that infection rather than heredity was the cause of the disease running in families. If they could not prevent, they could, however, aim at early ascertainment and diagnosis, early treatment and after-care, and training of the cases which were crippled. For early ascertainment the School Medical Service had the opportunities afforded by three medical examinations during school life, and the arrangement by which a child with symptoms could be medically examined at any time, at the instance of teachers and parents. In order to encourage the latter method a circular had been issued in Bristol couched in simple language on lines suggested by Dr. Poynton. For early treatment Dr. Askins favoured the cardiac clinic. Cases should be sent from the cardiac clinic to an open-air country hospital school. When the patient returned from the hospital, training for a suitable occupation should be provided in a branch of a school for cripples. Throughout each stage the child should be under the supervision of medical experts who had special skill in cardiology. He believed a satisfactory scheme could be provided at comparatively small cost. A few cardiac beds under the care of a specialist might be established at each country cripples' hospital. All this work should be carried out by joint action between the clinician and the department of the medical officer of health and be linked up with the work of the voluntary hospitals and of the private practitioner. There was great need for research and the State must help.

Dr. Carey Coombs welcomed alliance between the clinician and the administrator. In order to secure early diagnosis many doubtful cases would have to come under review. Biochemical reactions were of no assistance as yet. They had only physical signs to rely upon. Hospitals must in future supply both open-air and occupation like the Forbes-Fraser Hospital in Bath.

Dr. Reginald Miller referred to the B.M.A. Committee appointed as the result of the discussion at the Portsmouth meeting. Its report was expected shortly and should prove a valuable document for determining the lines of investigation. He also referred to two groups of early rheumatic children, one being composed of highly nervous children, and the other group, with symptoms such as anæmia, night cough and tonsillitis, were frequently mistaken for early tubercle. The Public Health Service must settle the connexion between poverty and rheumatism. Choreic symptoms were not always rheumatic.

Dr. J. A. Glover (Ministry of Health) spoke as to the effect of damp and overcrowded buildings. He also referred to the American idea of moving rheumatic patients to a less rheumatic place. He would like to see the experiment of compulsory notification for five years in two areas with a varying incidence of the disease with a thorough investigation and a mobile research unit attached to each. Lancashire with Manchester as a research centre would be one suitable area.

Dr. Vincent Coates drew attention to a type of small subcutaneous fibroid nodule occurring chiefly along the ulnar border and over the spinous processes, which he had found to be a valuable early sign of rheumatism among the school-children in Bath. (At the close of discussion Dr. Coates demonstrated the presence of these small nodules on a patient (v. p. 326).)

Dr. R. E. Thomas said that it took him three months to learn to palpate the small nodules described by Dr. Coates, but he now relied upon them as a very valuable sign. He did not think these rheumatic affections were associated with poverty but rather with harassed parents. He thought they were more frequent in low-lying districts. They were a common cause of long absence from school, and accounted for 20 per cent. of such absence in London in 1922. (v. p. 326.)

Dr. A. P. Thomson (Birmingham) drew attention to the value of failure in writing as an early sign. The ordinary larger nodules were very rare in Birmingham, and he would be interested to see if Dr. Coates's smaller nodules were equally rare. He thought that the type of rheumatism and the predominant signs varied in different districts. The low-lying sites in Birmingham, near the so-called rivers, seemed to favour the prevalence of rheumatism. He thought house dampness was important and familial prevalence unimportant. It did not appear to be associated with neglected children. There was a hospital for 50 rheumatic children in Birmingham in which the duration of in-patient treatment was long, over six months. Their results from removal of tonsils were encouraging. Out of 70 cases treated only one had persistent valvular disease. Removal of the tonsils seemed to protect against cardiac trouble, but not against rheumatism. He thought the cardiac cases, and especially cases of chorea, should be kept out of general hospitals for cripples. There was no need for special cardiac clinics. Of 60 cases discharged from the Birmingham Hospital 35 had led normal lives for over a year.

Dr. T. Eustace Hill (M.O.H., co. Durham) thought cardiac clinics might be necessary in county areas. He welcomed coöperation with the clinicians.

Dr. Noy Scott (Devon) thought compulsory school attendance in all weathers and damp clothes had a bad effect in rural areas. He also drew attention to the ineffectiveness of modern damp-proof courses, even those sanctioned by the Ministry, and to the harm done by building on unsuitable sites.

Dr. F. E. Wynne (M.O.H., Sheffield) described the constitution of the Sheffield Medical Advisory Committee, which had instituted inquiries with regard to encephalitis lethargica and mammary cancer and intended to take the question of rheumatism in childhood as its third subject for inquiry. He believed that the large amount of routine work in the School Medical Service stood in the way of special inquiries such as they were discussing.

The Chairman emphasised the gravity of the problem and the need for early diagnosis. He hoped for good results from Dr. Coates's new sign. He distrusted the specialists and believed that the medical man with all-round experience was superior to the cardiologist. The financial side was important, as this was now a poor country. Their ignorance of ætiology was the crux of the question. He believed that chorea was associated with the mental strain at school. In his experience rheumatism was not a slum disease, but rather associated with hard-working, successful artisan families.

Reply.

Dr. Poynton, in his reply, hoped for a chief centre of research in London. He agreed that these diseases were not associated with the lowest poverty, but with the artisan class and anxious parents. His reason for objecting to the pressing of salicylates was that he found them bad for the rheumatic nervous child. He did not dispute their value for adult arthritis and for the relief of pain, but for cardiac cases in children he preferred the ethyl ester of para-methyl cinchonic acid.—Dr. Askins, in replying, expressed himself strongly in favour of cardiac clinics after his four years' experience in Bristol. They needed experts with great experience of heart cases to deal with these children satisfactorily.

SECTION OF PUBLIC MEDICINE.

Thursday, July 23rd.

Food Manipulation in Relation to Health.

A discussion on this subject was held under the presidency of Dr. T. E. Hill. Dr. William G. Savage, in the opening paper, said we could conveniently divide the effects of food manipulation into three groups, according to whether (i.) it affected the nutritive value of the food, or (ii.) produced bacterial or parasitic infections, or (iii.) resulted in chemical contamination. As regards (i.) he wished to protest against the views expressed by extremists. For example, he was much impressed with the importance of vitamins in our dietary, but he did not believe in advocating vitamins on grounds which we could not substantiate. As regards bacterial contamination of food, while dust or air-borne sources may be considerable, pathogenic bacilli were far more likely to be added from direct human handling. Great importance should be attached to the use of food which is sound initially. For example, *Bacillus botulinus* would find a suitable nidus for multiplication on or within damaged fruit and might produce a considerable amount of toxin. The danger of the survival of spores or even of toxin after heat-treatment was greatly increased by the use of damaged fruit or other food. It was important to classify the risks to health from manipulated food. Manipulated foods could be grouped according to the danger inherent in each different sort. In the first group came foods which were non-multiplying media for bacteria, and which were only eaten when cooked, such as ordinary cereals, rice, oatmeal, &c. In the next least dangerous group were non-multiplying media which were not subsequently cooked, such as bread. A third group contained foods which were multiplying media for bacteria, which were not subject to slow cooling, and which were subsequently cooked. Sausages were a good example. Sausages often contained numerous living bacilli and, being frequently only lightly cooked, a good many of the bacilli might survive. Sausages therefore should be well cooked, especially the German types of sausages containing blood, for these were more liable to harbour pathogenic organisms. In the fourth group came food which was a multiplying medium, was heated in its preparation, and subsequently cooled slowly, and then eaten without further cooking. If a food-poisoning bacillus gained access to such food when cooling, the temperature conditions favoured rapid multiplication. Many outbreaks of food poisoning had originated from this group, which included brawn, potted meats, and meat pies. In the most dangerous group were foods similar to the latter type, but containing viscera, and since pathogenic bacilli were more likely to be present in livers, lungs, and intestines, their preparation required special care. Fortunately these types of food were not greatly favoured in this country.

The following table showed the kind of food incriminated in 203 outbreaks of food poisoning in the British Isles, many of which were investigated by Mr. Bruce White, pathologist to the Home Office, and himself.

	Number and percentage.
Canned meat ..	31 (30·5)
" marine products ..	27
" fruit ..	4
Milk	14 (6·9)
Milk products ..	16 (7·9)
Made-up meat ..	61 (30·0
Manipulated meat	10 (4·9)
Fresh meat.. ..	33 (16·3)
Fruit and vegetables (not canned)	8 (3·9)
Other foods	6 (2·9)

As regards chemical contaminations, all preservatives except those scheduled as permissible should be prohibited, and the use of all permissible preservatives should be adequately declared on the label.

Dr. C. E. Goddard (M.O.H., Harrow-on-the-Hill) said it might be impossible to achieve perfect cleanliness, but it was incumbent on the public health service to prevent gross contamination. Imported food was a difficulty which might be dealt with by consular guarantees at the place of export. They had had recent revelations as to the conditions under which figs and sultanas were packed at Smyrna. He advocated the wrapping of bread. The M.O.H. had no power in the shops. He instanced the objectionable practice of customers pinching fruit, &c. Places where food is packed and made up should be licensed.

Dr. C. W. Cunnington said we needed more knowledge as to the effect of cold storage on the value of meat.

Dr. H. Scurfield agreed with Dr. Savage as to the tendency in some quarters to make exaggerated statements. He also deprecated the misleading loose general statements which were frequently made, even by those engaged in research work on this subject. He would like to see more work done to determine the vitamin content of such common foods as jam and marmalade. He thought there was plenty of evidence of something wrong with our dietary in the universal prevalence of dental decay and constipation and in last year's poor recruiting statistics. We were surely on safe grounds, he said, in advocating more milk and dairy products, more fresh fruit, and vegetables.—Dr. Noy Scott asked how it was that people could eat decomposed food in the form of game with impunity.

Dr. F. E. Wynne (Sheffield) said that the British Medical Association should insist upon the notification of cases of food poisoning. Opportunities for investigation were frequently lost by the failure of medical men to notify. He deprecated the use of much-advertised proprietary articles of food which were frequently extreme examples of food manipulation and the nutritive content of which was extremely expensive. It was unfortunate that such articles of food achieved such wide advertisement by their use at many infant welfare centres.

Dr. Hill said they were liable to "stunts" in public health, but that it was important to get what good they could from them. The wrapping of bread, for instance, might not be very important in itself, but was a good object-lesson. He hoped that the new regulations for preservatives would be issued unmodified.

Reply.

Dr. Savage, in reply, said there was no evidence that putrid food caused outbreaks of food poisoning. Such outbreaks were due to contamination with specific bacteria. *Bacillus botulinus* was endemic in the soil of some parts of California, but with ordinary precautions of cleanliness and the use of sound food the danger was infinitesimal. The Loch Maree outbreak was the only one in this country which had been traced to *B. botulinus*.

THE INFLUENCE OF LIGHT ON HEALTH.

A discussion on the influence of sunlight and artificial lights on health was opened by Dr. Leonard Hill in an interesting and valuable paper indicating the present state of knowledge on the subject. At the outset he described the varying effects of rays according to their wave-length. Smoke pollution cut off the shorter rays. What with mist, cloud, smoke, glass windows, and clothes, city people got almost no exposure to ultra-violet rays during the winter, and while every effort should be made to prevent smoke pollution and to educate people to expose their skin to the sunlight, a great deal could be done by means of arc baths which should be installed not only in hospitals, but also in schools and public baths. A skilled attendant would be required, but arc baths were no more dangerous than a public swimming bath. Given a long-flame arc, taking 2½ to 3 kilo-watts, with white flame carbon poles, and a wire net screen a yard away from it, children could safely dance within one or two yards of the lamp for five minutes, nude save for a loin cloth. As acclimatisation came on and the skin browned the time could be lengthened to 10 or 15 minutes. Such baths once or twice a week would do much to maintain good health and prevent such diseases as rickets, tuberculosis, rheumatic fever, skin diseases, and catarrhs. If tungsten-cored carbons were used the ultra-violet intensity was greatly increased and the time of exposure could be reduced to a third or even less. Goggles must be worn to prevent conjunctivitis. A great many lamps were at present on the market and many were so weak in ultra-violet radiation as to be of little use. Some were quack instruments giving only violet light. Ultra-violet radiation had power to cure many resistant skin diseases such as ichthyosis, psoriasis, eczema, and boils, and marasmic and delicate children were improved by it, and mothers who could not nurse their babies might be made more efficient. Some observers reported good results from the combination of red light and ultra-violet rays. The action of ultra-violet rays was not interfered with by ordinary daylight, therefore one could have the arc lamps in light rooms with the windows open. Febrile cases should be treated by light with very great caution. The hospitals of the future should be bungalows with open-air wards, verandahs, and unroofed open-air courts, about which the beds could be run according to the weather. Girls wearing open-necked blouses and short skirts with artificial silk stockings secured more ultra-violet radiation. Men would do well to alter their dress and get rid of the close collar and long trousers. While exposure to the lower part of the leg to light and cool air was a preventive of varicose veins, over-exposure in cold winter weather might produce a chilblain-like erythema. Physiological knowledge as well as fashion should rule dress and prevent both over- and under-exposure. There was no evidence that radiation could endow an inactive food with the growth qualities pertaining to vitamin A. The reaction of the skin appeared to have the same curative effect, whether produced by the mercury vapour, the white flame carbon arc, the Tungsten arc, or the Tungsten filament incandescent lamp with quartz globe. One clinician preferred lamps weak in ultra-violet rays and strong in heating effect with long exposures five days a week. Another used lamps powerful in ultra-violet rays with short exposures once or twice a week; one liked to produce a mild erythema; another avoided erythema. One liked to produce pigmentation; another thought pigmenting should be avoided. The need of the moment was to standardise the lamps for treatment and to find out the most economical methods of exposure. Dosage could easily be measured by the effect of ultra-violet radiation on the 30 per cent. acetone methylene-blue solution. Any loosely-woven garment let these rays through, but artificial silk fibre, being an acetyl-cellulose product, was more transparent than protein products, such as silk and wool fibres. If modesty required such material to be worn, longer exposures were needed. It had been stated that artificial sun treatment could not approach the real article. Dr. Hill's experience, however, was that properly regulated arc-light baths, with advice as to exposure to the open air, exercise, and diet, could effect cures in London which appeared to be no less good than those reported from Alpine sanatoriums. In order to eliminate tuberculosis from cattle similar exposure to light and air should be secured. Cattle as well as children might be given arc-light baths in the winter. Cattle also needed food rich in vitamin A during the winter and calcium to compensate the drain caused by heavy milking. Vitaglass, which allowed the ultra-violet rays to pass through, might have a use for verandahs and skylights.

Dr. G. B. Dixon (Tuberculosis M.O., Birmingham) said he had obtained good results in many forms of tuberculosis from the general light bath. Cases of lupus did well. Enlarged cervical glands first grew bigger and then gradually disappeared. Cases of hilus tuberculosis did well. Some bone and joint cases did well, while hip, sacro-iliac, and spinal cases did not, in his experience, show such good results. The tone of the muscles improved greatly under treatment. Non-pigmenters had to be treated more carefully. In some bone and joint cases with concurrent pulmonary disease the improvement in the bone or joint condition had taken place without the pulmonary lesion becoming worse.

Dr. Dora Colebrook gave her experiences of light treatment at the Islington centre. Small babies suffering from dietetic trouble did very well. Flabby muscles were toned up. In cases of malnutrition and vomiting the vomiting often ceased. There was an increase in vigour and brightness. Relapses after the cessation of treatment indicated success and the need for more continuous treatment. She believed in short courses of short exposures and found the treatment useful for nursing mothers. There was a distinct place for light treatment at infant welfare centres. She hoped that other centres would try the treatment and keep faithful records of the results obtained.

Dr. A. Eidenow said that many chronic fibroid pulmonary cases did extraordinarily well under light treatment. Infants and adults differed in their need of light. Beneficial effects were secured in very many resistant skin diseases, such as psoriasis and eczema. In the case of bone-tubercle, radiograms showed that there was increased calcification and density of the bone as the result of light treatment.

BAN ON POOR-LAW BUILDING.—The Minister of Health has refused to sanction the scheme of the Kensington Guardians for the enlargement of the X ray department and the erection of a new nurses' home at Kensington Infirmary. Mr. Neville Chamberlain declines to regard the plan as urgent, and adds that "in view of the scarcity of skilled labour available for housing schemes, and the uncertainty as to the future of the Poor-law generally, it is considered that all Poor-law building work which is not immediately necessary should be postponed."

SUSSEX PROVIDENT SCHEME. — The following amounts have just been paid to the institutions named for services rendered to subscribers of the Sussex Provident Scheme during the first six months of this year: Royal Sussex County Hospital, £1540; Royal Alexandra Hospital for Sick Children, £340; New Sussex Hospital, £325; Brighton, Hove, and Preston Dispensary, £150; Haywards Heath Hospital, £135; Sussex Eye Hospital, £115; Sussex Maternity and Women's Hospital, £105; Sussex Throat and Ear Hospital, £105; Brighton, Hove, and Preston Dental Hospital, £65; Uckfield Cottage Hospital, £50; Stephen Ralli Memorial Laboratory at the Royal Sussex County Hospital, £10; and Royal East Sussex Hospital, Hastings, £5. These sums make a total of £2945 for the half year. For the whole year of 1924 the amount distributed among the hospitals was £5320.

Reviews and Notices of Books.

SURGERY.

Practical Surgery Illustrated. By VICTOR PAUCHET. Translated by F. R. B. ATKINSON, M.D., C.M. Edin. With an introduction by Sir CHARLES GORDON-WATSON, C.M.G., F.R.C.S. Vols. V. and VI. London: Ernest Benn, Ltd. 1925. 18s. 6d. per volume.

THESE two volumes complete the English edition of Pauchet's atlas. Like the former parts, the drawings are unique in their clarity and depict the most varied procedures. In Vol. V. de Martel describes the operation for trigeminal neuralgia. The rest of the book is by the author, except Chapter IX. on the treatment of large scrotal hernia, which has been drawn up by A. Buquet. Pauchet's chief work lies in the abdomen, and his conclusions and remarks on the conditions delineated are interesting and full of suggestion. Some of his results are remarkable. He has implanted into the duodenum, with success, a persistent biliary sinus resulting from cholecystectomy, the patient being well 15 years later. In two other cases the common bile-duct was repaired around a tube and the patients are well seven and nine years after it. The author is at his best in describing gastric operations, of which he is a master. Another extremely good section is that dealing with carcinoma of the colon. In Vol. VI. different aspects of these two subjects are again brought in review. The operation for fistula in ano is described, the inguinal operation for femoral hernia, removal of a ureteric calculus, and some gynæcological procedures. The work now completed makes no pretension to be a complete treatise on operative surgery, of which many departments remain untouched, but the discriminating surgeon will find the book profoundly interesting and will lay it down with a sense of having profited by its perusal.

Die Chirurgie. By Prof. Dr. M. KIRSCHNER and Prof. Dr. O. NORDMANN. Berlin: Urban and Schwartzenberg. 1925. Vol. I., 18 marks; Vol. II., 18 marks.

A System of Surgery by a number of German-speaking contributors is appearing under the general editorship of Profs. Kirschner and Nordmann. Two volumes of this system are now before us. The first begins with an historical account, necessarily in bare outline, of the development of surgery, which will prove useful for its very complete bibliography. General and local anæsthetic methods are next discussed, followed by a section on antiseptic and aseptic methods. These chapters lose somewhat by compression; the English reader would have been glad to learn more of the local anæsthetic methods in vogue, for instance, and only one way of sterilising catgut is described. On the other hand, the chapter on the use of X rays and radium in surgery contains just what the general surgeon desires to know, and a well-balanced view of the therapeutic value of these agents is given. An account of X ray burns is included. The last chapter in this volume deals with constitution in relation to disease, an unfamiliar section to the English reader and worth perusal. The second volume, which is concerned with the surgery of the lymphatic glands, breast, thyroid, thymus, adrenals, and hypophysis, leaves little to be desired. The accounts of the diseases treated are systematic, straightforward, and conform to generally accepted ideas. The chapter on the breast contains a very complete set of illustrations of normal and morbid anatomy.

So far as it goes at present this System of Surgery can be cordially recommended to the English reader. Not the least of its merits is that it is essentially German in its outlook. To see things from the standpoint of an entirely different school of surgery is always profitable. Thus we find matters over which there is controversy in this country regarded in quite a different light in this book. For instance, fibro-adenoma of the breast is classified amongst the epithelial tumours, and the statement is made that it more easily changes into a carcinoma than a sarcoma. Carcinoma of the breast is accepted as spreading by the venous path at a certain stage of the disease. A number of statements will make the English student speculate upon the basis for his accepted beliefs. The standard of writing is high and the illustrations are admirable.

Chirurgische Propädeutik. By Prof. Dr. Erich Sonntag. Leipzig: George Thieme. 1925. Pp. 260. R.m. 0.60.

This book is for the use of students just beginning their clinical work. The author intends it to give instruction in those methods of examination which can be carried out with the unaided senses. So the book is divided up into sections which deal with the interrogation of the patient, inspection, palpation, auscultation, smelling, and measuring. Each section is divided into a general and a special part. Elementary methods of diagnosis are notoriously difficult to teach to the novice, and instruction of this kind is best given practically in the wards. Owing to the arrangement followed in this book, the students would have to refer to several sections if he desired to know how to examine, for instance, a tumour of the breast. Nevertheless, methods of clinical examination, as far as it is possible to impart such knowledge by the written word, are well described, and the illustrations are helpful.

CLINICAL PATHOLOGY.

Serum Diagnosis of Syphilis by Precipitation. By R. L. Kahn. Baltimore: Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1925. Pp. 237. 15s.

In this book the author gives an account of the precipitive test he has devised for the diagnosis of syphilis. The complicated technique required in the Wassermann test has stimulated many workers to produce a simpler test. So far a certain amount of success has been obtained by the precipitive methods based on the works of Klausner, Sachs Georgi, and others. The test depends on the fact that when syphilitic serum is mixed with the ordinary Wassermann antigen, or with a special antigen, a fine precipitate is formed. In the Kahn test for syphilis detailed in this monograph very careful standardisation of all the ingredients is performed as a preliminary to the main test. In fact, so numerous are these standardisations that it is doubtful if the Kahn test can be considered to be any less complicated than the Wassermann test itself—except for the fact that there is in the test one less variable factor, the complement. The test can be used for cerebro-spinal fluid as well as blood. Details are given of comparative tests against the Wassermann reaction, in which the test came out well, but it will, of course, take years before the real value and reliability of the test can be determined. This volume is chiefly intended as a technical manual for laboratory workers and as such gives an admirable account of the test and the technique employed.

The Cerebro-spinal Fluid in Clinical Diagnosis. By J. Godwin Greenfield, M.D., B.Sc., M.R.C.P., Pathologist to the National Hospital for the Paralysed and Epileptic; and E. Arnold Carmichael, M.B., Ch.B., Resident Medical Officer, National Hospital for the Paralysed and Epileptic. London: Macmillan and Co., Ltd. 1925. Pp. 272. 12s.

The need of an authoritative work in English upon this subject has now been supplied. The book before us opens with a very detailed and satisfactory account of the technique of the operations of lumbar, cisternal, and ventricular punctures. The anatomy of the membranes of the brain and cord and the physiology of the cerebro-spinal fluid are competently dealt with in Chapter II. To the laboratory worker the section on technique will prove particularly useful.

The authors lay great stress upon their indebtedness to the work of Westrezat, and it is true that no one working upon the changes undergone by the cerebro-spinal fluid in disease can fail to recognise this debt. Perusal of the book, however, makes it evident that it contains few, possibly no statements the truth of which has not been actually tested by the authors themselves, and a good deal of the value of the book depends upon their own original observations. There are a number of long-recorded observations the value of which has escaped recognition and the authors do good service merely in drawing attention to them. Such a hitherto rather neglected observation is the lowering of the chlorides in the cerebro-spinal fluid in tuberculous meningitis. That this is the first and for a time may be the only sign of tuberculous invasion of the meninges is a fact that has hitherto escaped the attention it deserves. In dealing with the glucose content of the cerebro-spinal fluid the authors seem to overlook the wide fluctuations undergone by this substance in the blood under normal conditions.

This is a work which will make a wide appeal; it contains much matter of the utmost importance to medical men, whether in practice or working in the laboratory, hitherto only available in a foreign language or scattered through the pages of periodicals and proceedings. The authors have arranged their matter so that both the clinician and the laboratory worker can readily find exactly what they want.

PREMATERNITY.

Candid Counsels to Expectant Mothers. By Florence Stacpoole. London: A. and C. Black, Ltd. 1925. Pp. 173. 3s. 6d.

This book has been written for young or expectant mothers, especially those of the educated classes, by a lecturer to the National Health Society of London who knows her subject thoroughly and writes on it convincingly and well. The four sections of the book deal adequately with: Care of the health during pregnancy; care of the health during confinement; care of the health after confinement; care of the new-born infant. Short appendices contain information on the preparation to be made for the baby's arrival, twilight sleep, birth control, and the method suggested recently by Prof. Louise McIlroy of oiling the baby in lieu of washing it with soap and water during the first nine days after birth. The author's style is chatty, but the book is pleasant to read. Some misgiving may be felt as to the wisdom of including in a book written for mothers so many prescriptions—e.g., a diarrhœa mixture containing laudanum and several mixtures for indigestion—but apart from this we have nothing but praise for a guide-book which should command a wide circulation among nurses and expectant mothers.

Approaching Motherhood. By George L. Brodhead, M.D. New York: Paul B. Hoeber. 1925. Pp. 193. $1.25.

The purpose of this book is to answer some of the questions which most women approaching motherhood are likely to ask. The contents are therefore arranged in the form of question and answer, the range of subjects discussed covering the period from pregnancy to the puerperium. Some of the sections are extremely short and sketchy, such as that on the anatomy of the female genital tract, which is discussed in less than 60 lines. The chapter on popular fallacies deals with only four fallacies, one of which—"that it is dangerous to raise the arms above the head for fear of causing a knot in the cord"—we do not recollect having come across; another, "that pregnant women have what is known as cravings," is a fact and not a fallacy at all. Some of the points raised are trivial—e.g., Do babies ever weigh 15 pounds? Is the theatre harmful? Am I carrying high or low? do not appear to be particularly helpful. And on one or two points the author is in disagreement with accepted views in this country, when he urges, for instance, that the "comparatively small and harmless operation" of circumcision shall be performed on every boy within two weeks of birth; or that a baby should have its mouth swabbed out with cotton and boric acid at the time of the daily bath. The book is written in plain and simple language.

CHILD WELFARE.

The International Year Book of Child Care and Protection. Second edition. Compiled from official sources by EDWARD FULLER. London: Longmans, Green and Co.. and *The World's Children*, Ltd. 1925. Pp. 565. *7s. 6d.*

THE new edition of this year-book is expanded and improved. Opportunity has been taken to revise the tables and a hundred or more of the sections have been practically rewritten. The "Who's Who" section has, we are glad to see, been omitted, its place being taken by an international bibliography of books and periodicals published during 1924 on child care and protection. Dr. W. M. Feldman has contributed a chapter on Hebrew law in relation to children, and the index has been amplified. Mr. Fuller, who is editor of the *World's Children*, remarks how little one-half of the world knows even yet as to how the other half lives, and the primary object of the year-book is to help the peoples of the world to a better understanding of the things which concern the life and care of its children. As a compiler, he has been embarrassed by the lack of common standards in making statistics and classifying facts. Even in England the legal definition of "infant" is not commensurate with the accepted use of the term, and disparities of this nature vitiate comparisons which might usefully be made. The year-book is one more plea among many for reform in the demography of child welfare. Mr. Fuller's book in its new guise will usefully serve the interests of children in many countries.

LEGAL MEDICINE.

For Members of the Legal Profession and Police Forces. First edition. By JOHN GLAISTER, Junr., M.B., Ch.B. Glasg., Assistant to the Professor of Forensic Medicine, University of Glasgow; Lecturer on Medical Jurisprudence to the Glasgow Police Force. Glasgow: Alexander Stenhouse. 1925. With 4 illustrations. Pp. 158. *5s.*

LEGAL medicine is approached from very different angles by the doctor, the lawyer, and the police officer. Points which may appear of great importance to the medical man may be of secondary significance to counsel conducting a prosecution or a defence. The police officer is concerned with the tracking of the criminal and collecting all the available evidence, whilst the lawyer sifts this evidence in order to present his case. Dr. Glaister has attempted to put to members of the legal profession and to the police force the medical point of view, and to illustrate the working of the medical mind when medico-legal problems are involved. He has also set out the difficulties with which the doctor has to contend and the dangers of dogmatic statements. The book appears to be the outcome of lectures to the police force at Glasgow, and as such forms an excellent manual for their guidance, especially in the direction of enabling the police. whether by action or inaction, materially to assist the medical man in his duties. Dr. Glaister discusses the signs of drunkenness, describing pupillary reactions, and gives differential points for the diagnosis of a fit. The police officer should, of course, regard every case as serious until the surgeon has given his opinion, and the risk lest a little learning should lead the police officer to make rash diagnoses is, we think, very small. To the lawyer the work is more limited in its usefulness. It may enable him to appreciate rapidly the significance of many medical conditions of criminal import, but where a prosecution or a defence involves more detailed consideration he will need to consult a larger text-book. Dr. Glaister, however, finds space to discuss in detail several classical criminal cases, aptly making his points from the lessons learned in these cases.

The book is simply and clearly written and the author has collected much practical information into a small space.

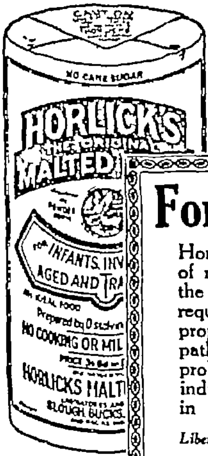
CHAMBERS'S ENCYCLOPÆDIA.

A Dictionary of Universal Knowledge. Edited by DAVID PATRICK, LL.D., and WILLIAM GEDDIE, M.A., B.Sc. Vol. III., Cata to Diop. Vol. IV., Diop. to Frei. Vol. V., Frej. to Humb. Vol. VI., Hume to Man. London: Chambers's. 1925. *20s.* per vol.

THIS encyclopædia is large enough to furnish an adequate outline of any subject referred to without being too bulky to fit into an average study library. The style of printing is attractive—the title of each article standing out in bold type; the information is concise and accurate and for the most part up to date. In some of the more technical articles where recent discoveries have altered the whole aspect of the subject, the addition of new paragraphs hardly meets the situation and an entirely new article is called for. The article on Embryology, for example, in Vol. IV. contains many references to work which is not now the last word on this rapidly growing subject. In Vol. VI. the historical account of the development of the University of London well explains the anomalies of the present organisation, while the description of the foundation of activities of the League of Nations, including its important health sections, is excellent. Indeed, it is impossible to turn over the pages of these volumes without being arrested by a title, an engraving, or a map which suggests a new point of view, or makes clearer the panorama from an old one.

JOURNALS.

INDIAN JOURNAL OF MEDICAL RESEARCH. April, 1925.—This number is of special interest. E. D. W. Greig and S. Kundu contribute three papers on Kala-azar, in one of which they compare the effect of treatment with various recently prepared antimony compounds, such as urea-stibamine and stibamine glucoside.—J. A. Sinton continues his series of studies on the Indian Species of Phlebotomus, paying attention to *P. argentipes*, the species recently suspected as being the vector of kala-azar, while R. B. Lloyd. L. E. Napier, and R. O. A. Smith have studied the blood meal of this insect identified by precipitin antisera, from which it appears that the insect feeds on the blood of cows in preference to that of man; the inference is drawn that the distribution of this disease observed in India is dependent on the absence of these animals from certain districts.—J. Cunningham and S. R. Pundit describe a new endemic focus of kala-azar in Southern India, L. E. Napier the environment associated with its prevalence in Calcutta.—U. N. Brahmachari and B. B. Maity continue their studies on the Chemotherapy of Antimonial Compounds.—M. J. Parmanand contributes the second part of his studies on the organism of rat-bite fever.—L. A. P. Anderson, A. Howard, and J. L. Simonsen have made important observations on the ætiology of lathyrism in India. The number also contains the eleventh section of W. F. Harvey's "bacteriological and laboratory technique."



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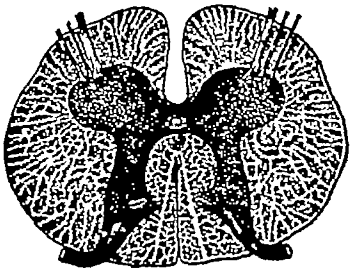

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THE LANCET.

LONDON: SATURDAY, AUGUST 15, 1925.

VOLUNTARY HOSPITAL ACCOMMODATION.

SOME four years ago when, particularly as an aftermath of the war and generally as a result of social changes, the whole voluntary hospital system in this country was ailing, the Government provided a stimulating draught of £500,000 to be administered pro rata to institutions which showed a readiness to help in their own cure. The distribution of this sum was entrusted to a Voluntary Hospitals Commission appointed in 1921.[1] This is the point chosen here to begin comment on a long story. The Commission accomplished their task with what must have been unhoped-for success, considering its nature, and then undertook, in April, 1924, at the instance of Mr. WHEATLEY, then Minister of Health, "to inquire into and report upon the extent of the additional voluntary hospital accommodation required in England and Wales and the best means of providing and maintaining it." The report on this work, which has just been issued,[2] is a record of valuable and painstaking labours, and the information obtained sets forth a proof of the vitality of the voluntary system and of its hold upon the country

It might have been an easy matter to erect ideal standards of hospital accommodation without regard for time or money, but the Commission have left such ideals alone, concentrating upon the consideration of such extensions as were immediately necessary, and such, which is more, as were capable of accomplishment within a reasonable period. The careful study of the answers to questionnaires sent out to all the voluntary hospitals through the local voluntary hospital committees, wherein all the facilities for the institutional treatment of disease in each locality were collated, has made it possible for the Commission to formulate practical and valuable propositions for the solution of many sides of a complicated problem. The accommodation of our voluntary hospitals, as everyone knows, is at present inadequate to the needs of the people; the inclusion in any estimate of all the subsidiary accommodation provided by cottage hospitals, and convalescent and recovery homes still leaves it badly short, while the Poor-law infirmaries remain only potential adjuvants. It is of interest to note that the data furnished by hospital waiting-lists proved, on close inspection, to be an unreliable basis for assessment. It was found, for example, that maternity cases for which beds had been booked weeks or months in advance were sometimes included in the waiting-list figures, while on the other hand a notable shortness of the list in an area where the accommodation was obviously inadequate might be explained by the reluctance of medical practitioners to enter the names of patients whose chances of admission were merely problematical. With regard to coöperation with Poor-law infirmaries, the report states that astonishing differences were found in the attitude of different areas towards Poor-law institutions. The majority of local committees were unfavourable to coöperation; when schemes of mass contribution are in existence, it appears that the public regard any plan for coöperation with Poor-law infirmaries as an attempt on the part of the voluntary hospitals to escape an implied bargain; further, in many parts of the country prospective patients have strong prejudices against Poor-law beds. On the other hand, however, from a careful inspection the important fact emerged that the number of vacant beds in institutions at all comparable with voluntary hospitals was much smaller than was commonly supposed. If Poor-law hospitals are to be conscripted for further service, their function, it would seem, must be differentiated from that of the voluntary hospital; those who know more than the surface of the matter will not be surprised to learn that the filling-up of the infirmaries with the surplus sick is not the prompt remedy that many speakers have told us. The Commissioners suggest that the larger voluntary hospitals be reserved for cases requiring special diagnostic facilities or a high degree of technical skill, while the local authorities' hospitals should deal with patients whose primary need is skilled nursing. In allocating the many gradations between these two types of case requiring treatment, individual and local considerations would be the deciding factor in the choice of institution. The patient suffering from surgical tuberculosis, for whom the local authority has a statutory responsibility, has been indicted as the cause of much present pressure on voluntary hospital beds. The Commission believe that if local authorities undertook the provision of beds for all their cases, whether by paying the capital cost of any necessary hospital extension or, in the case of surgical tuberculosis, by adding surgical wards to existing sanatoriums, a considerable number of existing beds would be released for other cases. Many of the smaller hospitals, particularly the cottage hospitals, are at present not adequately used. In many instances this is due in large measure to difficulties in regard to suitable medical and surgical staff, and the Commission advocates the linking up of such institutions with the nearest big hospital. The future multiplication of cottage hospitals does not find favour with the Commissioners, who hold, also, that the extension of convalescent homes would do little to relieve in-patient pressure. But there is a considerable weight of opinion in favour of increasing the number of available recovery homes, a system which is as yet only in the experimental stage.

The outcome of the investigations of the Commission is that some 10,000 additional beds are required in England and Wales, including London. The actual figures submitted by local committees outside of London amounted in England to 9525 beds and in Wales to 1089 beds, or a total of 10,614 beds, and King Edward's Hospital Fund recommended an addition in London of 2088, but after careful consideration of the reports of the Commission's inspectors it was thought that that total figure might be reduced by about 20 per cent. The addition of 10,000 beds represents an increase of approximately 22 per cent. on the existing hospital accommodation. At present-day prices, excluding the cost of site, furniture, and equipment, it is estimated that a reasonable figure for the cost of extending plain buildings of a utilitarian character would be £400 per bed. This represents a formidable sum,[3] and the Commissioners find themselves forced, however, reluctantly, to the conclusion that a substantial measure of State aid is essential. There are many pitfalls to be avoided, as the report points out, in administering a State grant in order that, among other things, the voluntary principle may not be endangered, while needs and expenses vary in different localities. The proposal submitted by the Commission is therefore to allow a grant of 50 per cent. of the cost up to a maximum of £200 per bed, subject, of course, to the remaining 50 per cent. of the expenditure being raised locally or being available from existing building funds. It is further proposed that the task of formulating comprehensive schemes for local areas should devolve on the local committees of the voluntary hospitals. It may be that, in view of these extra duties, such committees will require extension and reorganisation, and to secure the fullest measure of effectivity the Commissioners do particularly urge the importance of full and frank conference with the medical staffs of the hospitals concerned. The Commissioners are prepared, if the Government see fit to accept their proposals, to act as a central body responsible for the distribution of this grant.

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[1] THE LANCET, 1921, ii., 616.

[2] Ministry of Health. Voluntary Hospitals Commission Report on Voluntary Hospital Accommodation in England and Wales. H.M. Stationery Office. 1925.

We trust that the Government will come to the aid of the voluntary hospital system in the suggested way; for on all sides the improving prospect is admitted. Without the assistance and encouragement of the State there is in most cases little chance of essential extensions being undertaken within the next few years. Failure to meet the present needs of a growing population will not only entail a great amount of avoidable suffering, but it must also react to the prejudice of the voluntary system. There is no greater stimulus to subscribers, particularly to small subscribers whose regular support is essential to the solvency of voluntary hospitals, than the feeling that sufficient accommodation is provided to ensure reasonable hopes of admission. And it must be remembered that small subscribers, in the form of contributing patients, grow daily a greater financial asset.

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MIND AND BODY.

OF all concepts that most often to be used casually is among the least definable—namely, "mind." At the present time it has taken on a biological significance and expresses the life reaction of the entity which anatomically is represented by "the organism." No longer is mind regarded as a something essentially apart from body; psychology now moves hand in hand with physiology, though we are still far from making the relations definite. It is evident, however, that, though the central nervous system is essential for the function of mind, mental function involves much more than just that one system of the body.

Dr. JOSEPH SHAW BOLTON, for his recent Maudsley lecture, read before the Medico-Psychological Association,[1] chose as title Mind and Brain, and the matter and tone of his discourse throw into strong relief the controversy between the two opposing schools of mental research, the practical anatomists and the experimental psychologists. The lecturer belongs to the former and takes a determined stand on the facts that have been indisputably proved by years of patient anatomical labour. He regards the work of FREUD, McDOUGALL, and others who bring speculation and conjecture to elucidate their observations as an unfortunate and mischievous excrescence that so far from being of any service can only result in vitiating the work of men who, from their hard-won knowledge of the structure of the brain, are qualified to speak with authority on the nature of the mind. In the lecture he gives an able comparative survey of the anatomy and habits of insects, birds, and mammals, and includes sound comments on human psychology. Dr. BOLTON exposes the error that many habitually make of attributing human motives to lower animals; he shows that bees and ants have no kind of reason or sentiment to guide their collective labour, and that the behaviour of the trained bird is but an elaborate mechanical reaction. Both insects and birds have a rigid skeleton that has ensured their survival at the price of completely forbidding them to evolve further. He gives a detailed analysis of the brain measurements of a tomtit, a parrot, and a pheasant, showing that the cerebral pallium that gives the mammal its variety of function and capacity for further development is in all these representative birds a simple root to the lateral ventricle. He concludes from this that birds are merely elaborate machines, possessing neither mind nor a nervous mechanism for the evolution and performance of mental functions, a result certainly that it would be hard to controvert on the behalf of the many bird-lovers who claim for their pets an almost human intelligence. Dr. BOLTON sketches the development of mammals and shows that the growth of feeling and thought processes in higher animals like dogs and anthropoid apes depends entirely on the evolution of the highly complex cerebral pallium. His treatment of psychology—the disputed territory between himself and Prof. McDOUGALL, whom he quotes destructively throughout—is the climax of his lecture. He deals ably with language, voluntary thought, recorded experience, and recollection, the meaning of normal personality, of grades of cerebral activity, and of free association and dreams; after an analysis of feeling, and of the relative importance of education and the instincts, he considers mental disease, the best existing example of racial immaturity. He holds that the variety of mental deficiency and dementia amongst us indicates how slowly our minds evolve. "The greater the rapidity of evolution the more numerous the variations above and below the average—the more common must be individual genius and individual mental deficiency and dementia." Comparing human voluntary thought with the caricature of it seen in the lower animals, he holds that we are irresistibly impelled, "not to the idea that the lower animals think, but to the certainty that in the mass human beings do not."

Considering how valuable is Dr. BOLTON's insistence that truth must be sought by patient spade-work in the observation of facts, we regret the manner of his attacks on the concept of the "unconscious mind," and by implication of the spade-work of those observers who have invented and enlarged upon it. Truth is to be found by establishing facts, not by stating negatives—indeed, to quote Dr. BOLTON against himself, "even if many theories turn out to be false and many facts prove to be valueless, the individual who has produced them, so long as he has worked honestly, is the better for what he has done." Psychological function depends on brain structure, but brain anatomy is unintelligible unless the psychologists explain it. That function results in an extraordinary development of structural provision for possible future function the lecturer allows, and may it not be that the "unconscious mind" of the psychologists is the vague functioning of that unrelated structure of the brain pallium which stands ready to be specialised and developed as the human race moves forward towards its fulfilment? Truth at best is but a relative phenomenon, varying in its facets in accordance with the view-point of the observer. Considering the difficulty of the task in which workers in these fields are engaged, it is of the highest importance that every searcher for knowledge towards the understanding of life should realise that the truth may, nay must, be many-sided, and that, because his truth does not at once conform to another's, therefore the other is wrong. It is unfortunate that the broad view is so rarely to be found, but let us plead for a more concerted attack upon this most evasive of problems, seeking that the recognition of the usefulness of principles, whether psychological or physiological, be not obscured by the unbalanced and premature forcing of conclusions.

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[1] Journal of Mental Science, August, 1925.

RHEUMATIC INFECTION IN CHILDHOOD.

From the point of view of public welfare few subjects could be found of greater importance than that of rheumatic infection in childhood, which was discussed at a joint meeting of the Sections of Diseases of Children and of Public Medicine at the annual meeting of the British Medical Association on July 22nd. The toll of human life from heart disease originating from this cause during the school age amounts, according to Dr. Robert A. Askins, of Bristol, to between 12,000 and 20,000 annually in England and Wales alone, whilst the hospitals have difficulty in finding accommodation for both the early cases and those suffering from serious sequelæ. A full account of this discussion will be found elsewhere in this issue, where it will be seen that practically all the speakers urged the need for speedy research into the many problems involved. Dr. F. J. Poynton, who has done great public service during many years in this respect, reiterated the necessity for closer inquiry concerning various ætiological factors, especially as regards home surroundings, the various modes of onset, the prevalence of chorea, and the importance of nervous over-strain among school-children. There appeared to be little doubt in the minds of the various speakers as to the infective nature of the disease; but many of them, including Dr. Robert Hutchison, the President, held strongly to the view that acute rheumatism cannot properly be described as a disease of slums, but is rather to be found amongst the children of the more well-to-do artisan class. This belief is borne out in an article by Dr. Vincent Coates and Dr. R. E. Thomas which we publish to-day. These observers have made careful clinical and ætiological inquiry concerning 50 cases selected at random from a much larger series of school-children seen during school inspection and at clinics. They find that in practically every case the parents of the affected children were in steady work and belonged to the skilled artisan section of society, the weekly gross income per head of the various families being from five to seven shillings in about 45 per cent. of cases and above this figure in the remainder. In a considerable number of cases the houses inhabited by the patients were damp, but overcrowding was notably absent. As regards treatment the most pressing need of the moment was considered by most speakers to be the establishment of more clinics for the care of such children, and the provision of institutions where long-continued rest could be properly obtained. The success of the Hartfield Hospital in Sussex has in this respect been very encouraging. In view of the drain on the life and wealth of the population which rheumatic fever and its consequences at present entail, expenditure on such establishments and on adequate research centres should be a sound national investment.

Annotations.

"Ne quid nimis."

THE MEMBERSHIP OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

We do not know if the significance of the amended By-law 112 of the College has been fully appreciated by our readers. The by-law now runs, "Every candidate for the Membership shall furnish proof of having attained the age of 23 years," whereas the age for admission to the examination for the diploma was formerly 25 years. This means that men of 23 years of age can now take the examination and gain the diploma without waiting for two years, by which time many of them have settled down into practice and have neither the time nor the inclination to submit themselves to an examination. Many men at 23 have just finished house appointments, and their examination knowledge having not yet faded, their recent clinical experience admirably fits them for the trial before them. In the past some men, who might have secured the M.R.C.P. had they been 25, have embarked on some special line of work, such as pathology or X rays, and so when they became eligible were both immersed in special work and lost touch with general medicine, and especially with the important branch of routine clinical examination. As time went on these men rose to eminence in their special branch of medicine, but were not eligible for the F.R.C.P. because they had not taken the M.R.C.P., and they and also the Royal College of Physicians of London were the losers. At the Royal College of Surgeons of England the final examination for the F.R.C.S. can be passed before the age of 25 years, while the successful candidate has to wait for the diploma until he attains that age. At the Royal College of Physicians of London this relaxation was not allowed.

AN HISTORICAL REVIEW OF PUBLIC HEALTH.

We print this week the fourth and last instalment of Dr. J. H. L. Cumpston's reflections on public health administration, provoked by a visit to America and England paid by him in his capacity of principal administrative health officer to the Commonwealth of Australia. Dr. Cumpston lays his finger on some weak points in administration which are largely the result of the haphazard way in which the whole structure has grown up. No doubt his kindly but trenchant criticism will be taken to heart by those concerned, and we propose in the next few weeks to provide further material for laying down sound principles of international hygiene by seeing how the various European countries have solved the problem in the light of careful studies made by the Health Bureau of the League of Nations.

During the present year several other senior members of the medical profession have written sketches of the motives and principles which have actuated public health progress. Sir Arthur Newsholme in his book emphasised the fundamental value of the crude dictum that the search for public health was a crusade against organic filth, though the value of personal hygiene is fully recognised in its pages and scientific work with educational effort to secure its application are urged. Prof. E. A. Winslow, of Yale, has stressed the personal side of public health work, the value of public health nursing, and of educational work. It is evident that only by a *vue toute ensemble* can the whole truth be encompassed. The sketch[1] now before us by a distinguished leader of the medical profession in America will prevent any too narrow view of the factors of reform which have preceded our present

condition. The occasion of the second annual Sedgwick lecture was utilised by Dr. W. H. Welch, of Baltimore, to review the pioneer work of this great American sanitarian. Dr. Welch contends that America's chief contribution to public health progress has been in the extended use of the laboratory as a means of control of disease; and the outstanding examples of this are the work of the Lawrence Experiment Station on water purification and the introduction by Hermann Biggs of laboratory diagnosis as a means of controlling infectious disease in New York. A more recent contribution of America to public health consists in its prohibition of the sale of alcoholic drinks, and it is not irrelevant to contrast this with Dr. Welch's reference to the compulsory control of a disease by diet as evidenced by the obligatory administration of lime-juice begun in the British Navy in 1796. The lecture brings out very lucidly the value of a working hypothesis in the advancement and application of knowledge, and the whole history of public health can be written around successive hypotheses on which action, more or less successful, has been based. In respect of tuberculosis we have the well entrenched older views of the constitutional element in tuberculosis, and on the other hand the remark of Koch, which Dr. Welch heard him make, that so far as tuberculosis is concerned "predisposition is merely proximity to the bacillus." Attention is drawn to the millions spent for the eradication of yellow fever, and wasted, under the influence of a wrong hypothesis as to its origin; and it is added "the same is largely true of typhus." This remark cannot be taken too literally, for from England typhus had been almost completely banished before its transmission by body lice, and probably in no other way, was suspected. The lecture is worthy of its author and will be read with interest by all. Dr. Welch rightly takes the view that courses of hygiene in the medical student's curriculum do not suffice; for there is no subject of medical study without some bearing on preventive medicine, and every teacher should consider it his duty to emphasise these aspects.

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[1] Public Health in Theory and Practice: An Historical Review. By W. H. Welch, M.D., LL.D. Yale University Press. London: Oxford University Press. 4s. 6d.

DENTAL PROPAGANDA.

AT the May meeting of the Dental Board of the United Kingdom a good deal of time and thought were given to the subject of propaganda on the care of the teeth. Mr. F. Dyke Acland, the chairman of the Board, stated in his opening address that he was impressed by the amount of general good-will existing in many quarters towards the great object which the Dental Board had in view—namely, the improvement of the dental health of the nation. He expressed his belief that effective publicity might be attained without very considerable expenditure, if only it was properly directed and guided, and at a later stage in the proceedings the Board went on to allot a sum not exceeding £4000 during the present year for the purpose of propaganda. So far the publicity work of the Board has largely been in association with education and health authorities. During last year, for instance, more than 132,000 copies of a leaflet were distributed through 347 education authorities among teachers in primary and secondary schools; requests for dental films, including the popular "Tommy Tucker's Tooth," were received from 25 education and health authorities. But the Board, not content with this valuable educational work, set up an Advisory Committee with a view to working out the methods for a more general campaign. This Committee included representatives of the various dental associations, the Board of Education, the Food Education Society, the National Association of Insurance Committees, and of a number of manufacturers of dental supplies. The recommendations of this Advisory Committee, as presented to the Board, included the spending of a sum of £7000 in the first year on a scheme of press propaganda, the engagement of a journalist of suitable qualifications, and the envisaging of a campaign lasting three years at least. It is in this direction that some members of the dental profession, and those not the least influential, are feeling that the Board may be going a little too fast. An editorial article in the *British Dental Journal* for August regards the proposals with dislike, if not alarm, as an abandonment of the cherished tradition inculcated by the British Dental Association for nearly half a century—"*Thou shalt not advertise.*" In this article it is pointed out very forcibly how the "stunt game" is now so irrevocably associated in the public mind with some private interest lurking behind it, that the advertising pitch has been spoiled for orthodox professional play. The *Journal* is all in favour of propaganda through educational authorities, school teachers, medical officers of health, health societies, and the like, and sees in the education of parent and child in good dental habits, through the provision of good school dentistry, an agency for improvement without reproach. It is rather a piquant position for the dental profession, a section of which has in the past not been loth to use all available methods of publicity, now to be putting the brake on the Dental Board's proposed campaign of propaganda. We are in full sympathy with propaganda on the need for a healthy mouth, but we share the dislike felt by the *British Dental Journal* for a scheme of propaganda which entails extensive press publicity, the engagement of a special journalist, and a request for subsidies from the dental profession and the dental trade. With regard to the dental trade, we are sure that the best manufacturers concerned wish for no such publicity; and whatever its immediate success, the public will inevitably suspect in it a subtle way of increasing the income of the dental profession. It would, we believe, defeat its own end, and the *Journal* is probably right in thinking the scheme to be in the nature of a kite flown by the Board to test the feeling of the dental profession.

EYE SURGEON AND NURSE.

IT has often been said or implied that it is not the business of the nurse to know anything about the procedures which the surgeon may choose to adopt. But many surgeons have found that it is just such knowledge which is likely to increase her value, and certainly a theatre sister who does not know the uses of the instruments of which she has charge is likely to make mistakes which one who has familiarity with their use will avoid. For the nursing of eye cases a general training is not enough, and for operative work it is genuinely essential for the nurse to have expert guidance if she is to do justice to her patient. For these reasons we should like to commend a practical handbook[1] for the ophthalmic nurse which she cannot fail to find useful. This little book is evidently written by one who has had experience in the training of probationers in an eye hospital. It is neither too elementary nor is it prolix. Written in simple language, each chapter is of practical value and the illustrations are very clear. Just so much explanation of the anatomy of the eye is given as nurses need. Bandaging is well illustrated and a form of bandage described which, so far as we know, is peculiar to the Western Ophthalmic Hospital, where it is found to be very effective. After a chapter on the external diseases of the eye, which includes essential directions to the nurse in dealing with cases of contagious ophthalmia, she is introduced to the operating theatre, and the greater part of the book is taken up by an excellent description of her duties in the preparation of patients for operation, in the operating theatre itself, and during the after-treatment of operation cases. A useful chapter is appended on operations in a private house. In the section on local anæsthesia stress is properly laid on precautions against the roughening of the corneal epithelium that a careless instillation of cocaine causes. Exact directions are given for sterilising dressings, preparing swabs, and the sterilisation of sutures and

instruments. The directions for the after-treatment of cataract cases are full and include such points as how the nurse can help in a case of temporary retention of urine, and how best to arrange the bed-clothes for the patient's safety and comfort. Brief descriptions of the principal operations themselves are given.

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[1] Ophthalmic Nursing. By Mary Mason Springgay, Matron of the Western Ophthalmic Hospital London. With 67 Illustrations. London: Methuen and Co. 1925. Pp. 133. 5s.

We believe that this little book supplies what many probationers in eye-wards have desired. "A nurse thoroughly interested in her work," the author writes, "should not automatically use drops or applications simply because they are ordered, but should closely watch their effect on the cases." This is sound doctrine.

THE CONGRESS OF THE ROYAL SANITARY INSTITUTE.

WE reported at some length in our issue of August 1st the proceedings at the Congress of the Royal Sanitary Institute in Edinburgh, and we are glad to learn that its promoters consider it one of the most successful gatherings which the Institute has held. Sir George Newman's address, sketching the future of sanitary administration along the lines of unification and enlargement of sanitary units, coördination of the health services, and increased health education, was supported by the resolution of the Representatives of Sanitary Authorities, on the motion of Lieut.-Colonel F. E. Fremantle, M.P., for a unified health service, and many speakers supported the call for further health education of the public. Edinburgh promotes this spirit of public instruction by placarding her tramway stations with electrically-lighted health notices—"The M.O.H. says 'Spitting causes Disease,'" and the like, while Dr. C. S. Thomson (M.O.H. Deptford) told how his authority had asked him to give lectures on their policies and procedures, which he had found well attended. Expression was often given in the meetings of the Institute to the new outlook of preventive medicine, which aims to-day less at the direct reduction of mortality, and more at the reduction of disabling disease and at securing increased health and exalted resistance for the individual. Future advances, it is becoming felt, will depend largely on individual citizens by whom patient attention must be given to the laws of health.

The next Congress of the Institute will mark the jubilee of the Institute, which was founded in 1876; the meeting will be held in London on July 5th to 10th, 1926, under the presidency of the Duke of Northumberland, the opening meeting taking place in the Guildhall and the sectional meetings at Westminster.

ANIMAL PATHOLOGY AND PHYSIOLOGY.

ORGANISED research into animal diseases has been sleepy in its progress, but there are signs of an awakening movement. During the past year the Ministry of Agriculture's laboratory, the Institute of Animal Pathology at Cambridge, and the Animal Diseases Research Association at Glasgow, have all been actively engaged in the elucidation of puzzling factors in creature maladies. Braxy in sheep has always exacted a heavy toll in some districts and a vaccine is now being employed successfully against it. In 52,000 sheep which were inoculated, the death-rate was only one-quarter of that in untreated sheep. Lamb dysentery is another well-established disease, and persists so obstinately on some farms that the rearing of lambs has had to be given up. Mr. S. H. Gaiger, F.R.C.V.S., considers that the organisms which produce it are all "soil bacteria" and that the disease does not occur in the uterus of the ewe before lambing. This theory has been tested during the 1925 season, and the statistics of the Wellcome Physiological Research Laboratories, Beckenham, seem to indicate that inoculation of pregnant ewes with antigens made from the organisms isolated from cases of the disease has produced a decrease in the lamb fatalities. Scrapie and trembling or louping ill, two distinct diseases of sheep, have also been investigated; but not much progress has been made with them, as both seem to be of obscure nervous origin and transmitted by tainted stock. Grass disease in horses and mammitis in cows and ewes have also received attention, and as time goes on much of the leeway in the domain of research in animal diseases will be gradually overhauled. The Institute of Animal Pathology has carried out a considerable number of routine examinations for veterinary surgeons during the year and is getting together a good library on animal diseases. Mr. W. A. Pool, M.R.C.V.S., late of the Indian Veterinary Service, has joined the research staff as senior research assistant. On the physiological side work has been no less interesting. The Rowett Research Institute, which was established as far back as 1912, near Aberdeen, for the study of animal nutrition, has issued a series of collected papers under the editorship of Dr. J. B. Orr, the director.[1] They cover a great variety of subjects, including the mineral metabolism of pigs and its relation to rickets; the respiratory exchange of goats; the water balance of the body; the nature of scrapie in sheep; the diet appropriate to the intensive raising of chickens; and many other topics of interest and importance. To anyone who likes browsing in a various collection of printed matter—and what genuine student does not?—the volume will make a strong appeal. It will remind him of the great difficulty of trying to keep track of any subject in the flood of present publications. For example, it is of obvious moment that those interested in respiration should consult the papers on the influence of external temperature, work, and pregnancy on the energy exchange of the goat. These, however, have not been published also in one of the physiological magazines, but only in the *Journal of Agricultural Science*, and we have to thank Dr. Orr for the dissemination of the information. We wish him and his colleagues all success in their second volume. Their work has a wider interest than the nutrition of farm animals.

THE NEW MILK AND DAIRIES REGULATIONS.

THE suspended Milk and Dairies (Consolidation) Act, 1915, will come into operation on Sept. 1st next. This Act repeals and re-enacts a number of provisions contained in the Contagious Diseases (Animals) Acts and the Sale of Food and Drugs Acts with regard to milk and dairies. It also reproduces a number of amendments and new provisions which were contained in the Milk and Dairies Act, 1914, the operation of which was deferred. Sections 1 and 2 extend the list of purposes for which Orders may be made under the Contagious Diseases (Animals) Act, 1878, and it is proposed as soon as possible to make an Order under the new powers. Sections 3, 4, and 5 contain provisions similar in effect to those contained in a number of local Acts for stopping the supply of milk likely to cause tuberculosis. Under the new Act the duty of enforcement is placed on the council of the county or county borough in which the cows are kept, and any Order made by them will prohibit the sale of the affected milk in any area. Section 4 requires the medical officer of health of the county or county borough to make the necessary investigations on receipt of a notice from any other medical officer of health. The Tuberculosis Order of 1925 providing for the slaughter of bovine animals affected with certain specified forms of tuberculosis and for the payment of compensation in respect of animals so slaughtered will come into operation on the same day as the Act, and it will be the duty of the local authority discovering the presence in a herd of a tuberculous animal to cause it to be slaughtered or to report the matter to the relevant authority for the appropriate action. Sections 6 and 7 re-enact provisions contained in the Sale of Food and Drugs Act, 1899. Section 8, in conjunction

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DENTAL PROPAGANDA.

AT the May meeting of the Dental Board of the United Kingdom a good deal of time and thought were given to the subject of propaganda on the care of the teeth. Mr. F. Dyke Acland, the chairman of the Board, stated in his opening address that he was impressed by the amount of general good-will existing in many quarters towards the great object which the Dental Board had in view—namely, the improvement of the dental health of the nation. He expressed his belief that effective publicity might be attained without very considerable expenditure, if only it was properly directed and guided, and at a later stage in the proceedings the Board went on to allot a sum not exceeding £4000 during the present year for the purpose of propaganda. So far the publicity work of the Board has largely been in association with education and health authorities. During last year, for instance, more than 132,000 copies of a leaflet were distributed through 347 education authorities among teachers in primary and secondary schools; requests for dental films, including the popular "Tommy Tucker's Tooth," were received from 25 education and health authorities. But the Board, not content with this valuable educational work, set up an Advisory Committee with a view to working out the methods for a more general campaign. This Committee included representatives of the various dental associations, the Board of Education, the Food Education Society, the National Association of Insurance Committees, and of a number of manufacturers of dental supplies. The recommendations of this Advisory Committee, as presented to the Board, included the spending of a sum of £7000 in the first year on a scheme of press propaganda, the engagement of a journalist of suitable qualifications, and the envisaging of a campaign lasting three years at least. It is in this direction that some members of the dental profession, and those not the least influential, are feeling that the Board may be going a little too fast. An editorial article in the *British Dental Journal* for August regards the proposals with dislike, if not alarm, as an abandonment of the cherished tradition inculcated by the British Dental Association for nearly half a century—"Thou shalt not advertise." In this article it is pointed out very forcibly how the "stunt game" is now so irrevocably associated in the public mind with some private interest lurking behind it, that the advertising pitch has been spoiled for orthodox professional play. The *Journal* is all in favour of propaganda through educational authorities, school teachers, medical officers of health, health societies, and the like, and sees in the education of parent and child in good dental habits, through the provision of good school dentistry, an agency for improvement without reproach. It is rather a piquant position for the dental profession, a section of which has in the past not been loth to use all available methods of publicity, now to be putting the brake on the Dental Board's proposed campaign of propaganda. We are in full sympathy with propaganda on the need for a healthy mouth, but we share the dislike felt by the *British Dental Journal* for a scheme of propaganda which entails extensive press publicity, the engagement of a special journalist, and a request for subsidies from the dental profession and the dental trade. With regard to the dental trade, we are sure that the best manufacturers concerned wish for no such publicity; and whatever its immediate success, the public will inevitably suspect in it a subtle way of increasing the income of the dental profession. It would, we believe, defeat its own end, and the *Journal* is probably right in thinking the scheme to be in the nature of a kite flown by the Board to test the feeling of the dental profession.

EYE SURGEON AND NURSE.

IT has often been said or implied that it is not the business of the nurse to know anything about the procedures which the surgeon may choose to adopt. But many surgeons have found that it is just such knowledge which is likely to increase her value, and certainly a theatre sister who does not know the uses of the instruments of which she has charge is likely to make mistakes which one who has familiarity with their use will avoid. For the nursing of eye cases a general training is not enough, and for operative work it is genuinely essential for the nurse to have expert guidance if she is to do justice to her patient. For these reasons we should like to commend a practical handbook[1] for the ophthalmic nurse which she cannot fail to find useful. This little book is evidently written by one who has had experience in the training of probationers in an eye hospital. It is neither too elementary nor is it prolix. Written in simple language, each chapter is of practical value and the illustrations are very clear. Just so much explanation of the anatomy of the eye is given as nurses need. Bandaging is well illustrated and a form of bandage described which, so far as we know, is peculiar to the Western Ophthalmic Hospital, where it is found to be very effective. After a chapter on the external diseases of the eye, which includes essential directions to the nurse in dealing with cases of contagious ophthalmia, she is introduced to the operating theatre, and the greater part of the book is taken up by an excellent description of her duties in the preparation of patients for operation, in the operating theatre itself, and during the after-treatment of operation cases. A useful chapter is appended on operations in a private house. In the section on local anæsthesia stress is properly laid on precautions against the roughening of the corneal epithelium that a careless instillation of cocaine causes. Exact directions are given for sterilising dressings, preparing swabs, and the sterilisation of sutures and

instruments. The directions for the after-treatment of cataract cases are full and include such points as how the nurse can help in a case of temporary retention of urine, and how best to arrange the bed-clothes for the patient's safety and comfort. Brief descriptions of the principal operations themselves are given.

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[1] Ophthalmic Nursing. By Mary Mason Springgay, Matron of the Western Ophthalmic Hospital, London. With 67 Illustrations. London: Methuen and Co. 1925. Pp. 133. 5s.

We believe that this little book supplies what many probationers in eye-wards have desired. "A nurse thoroughly interested in her work," the author writes, "should not automatically use drops or applications simply because they are ordered, but should closely watch their effect on the cases." This is sound doctrine.

THE CONGRESS OF THE ROYAL SANITARY *INSTITUTE.*

WE reported at some length in our issue of August 1st the proceedings at the Congress of the Royal Sanitary Institute in Edinburgh, and we are glad to learn that its promoters consider it one of the most successful gatherings which the Institute has held. Sir George Newman's address, sketching the future of sanitary administration along the lines of unification and enlargement of sanitary units, coördination of the health services, and increased health education, was supported by the resolution of the Representatives of Sanitary Authorities, on the motion of Lieut.-Colonel F. E. Fremantle, M.P., for a unified health service, and many speakers supported the call for further health education of the public. Edinburgh promotes this spirit of public instruction by placarding her tramway stations with electrically-lighted health notices—"The M.O.H. says 'Spitting causes Disease,'" and the like, while Dr. C. S. Thomson (M.O.H. Deptford) told how his authority had asked him to give lectures on their policies and procedures, which he had found well attended. Expression was often given in the meetings of the Institute to the new outlook of preventive medicine, which aims to-day less at the direct reduction of mortality, and more at the reduction of disabling disease and at securing increased health and exalted resistance for the individual. Future advances, it is becoming felt, will depend largely on individual citizens by whom patient attention must be given to the laws of health.

The next Congress of the Institute will mark the jubilee of the Institute, which was founded in 1876; the meeting will be held in London on July 5th to 10th, 1926, under the presidency of the Duke of Northumberland, the opening meeting taking place in the Guildhall and the sectional meetings at Westminster.

ANIMAL PATHOLOGY AND PHYSIOLOGY.

ORGANISED research into animal diseases has been sleepy in its progress, but there are signs of an awakening movement. During the past year the Ministry of Agriculture's laboratory, the Institute of Animal Pathology at Cambridge, and the Animal Diseases Research Association at Glasgow, have all been actively engaged in the elucidation of puzzling factors in creature maladies. Braxy in sheep has always exacted a heavy toll in some districts and a vaccine is now being employed successfully against it. In 62,000 sheep which were inoculated, the death-rate was only one-quarter of that in untreated sheep. Lamb dysentery is another well-established disease, and persists so obstinately on some farms that the rearing of lambs has had to be given up. Mr. S. H. Gaiger, F.R.C.V.S., considers that the organisms which produce it are all "soil bacteria" and that the disease does not occur in the uterus of the ewe before lambing. This theory has been tested during the 1925 season, and the statistics of the Wellcome Physiological Research Laboratories, Beckenham, seem to indicate that inoculation of pregnant ewes with antigens made from the organisms isolated from cases of the disease has produced a decrease in the lamb fatalities. Scrapie and trembling or louping ill, two distinct diseases of sheep, have also been investigated; but not much progress has been made with them, as both seem to be of obscure nervous origin and transmitted by tainted stock. Grass disease in horses and mammitis in cows and ewes have also received attention, and as time goes on much of the leeway in the domain of research in animal diseases will be gradually overhauled. The Institute of Animal Pathology has carried out a considerable number of routine examinations for veterinary surgeons during the year and is getting together a good library on animal diseases. Mr. W. A. Pool, M.R.C.V.S., late of the Indian Veterinary Service, has joined the research staff as senior research assistant. On the physiological side work has been no less interesting. The Rowett Research Institute, which was established as far back as 1912, near Aberdeen, for the study of animal nutrition, has issued a series of collected papers under the editorship of Dr. J. B. Orr, the director.[1] They cover a great variety of subjects, including the mineral metabolism of pigs and its relation to rickets; the respiratory exchange of goats; the water balance of the body; the nature of scrapie in sheep; the diet appropriate to the intensive raising of chickens; and many other topics of interest and importance. To anyone who likes browsing in a various collection of printed matter—and what genuine student does not?—the volume will make a strong appeal. It will remind him of the great difficulty of trying to keep track of any subject in the flood of present publications. For example, it is of obvious moment that those interested in respiration should consult the papers on the influence of external temperature, work, and pregnancy on the energy exchange of the goat. These, however, have not been published also in one of the physiological magazines, but only in the *Journal of Agricultural Science*, and we have to thank Dr. Orr for the dissemination of the information. We wish him and his colleagues all success in their second volume. Their work has a wider interest than the nutrition of farm animals.

THE NEW MILK AND DAIRIES REGULATIONS.

THE suspended Milk and Dairies (Consolidation) Act, 1915, will come into operation on Sept. 1st next. This Act repeals and re-enacts a number of provisions contained in the Contagious Diseases (Animals) Acts and the Sale of Food and Drugs Acts with regard to milk and dairies. It also reproduces a number of amendments and new provisions which were contained in the Milk and Dairies Act, 1914, the operation of which was deferred. Sections 1 and 2 extend the list of purposes for which Orders may be made under the Contagious Diseases (Animals) Act, 1878, and it is proposed as soon as possible to make an Order under the new powers. Sections 3, 4, and 5 contain provisions similar in effect to those contained in a number of local Acts for stopping the supply of milk likely to cause tuberculosis. Under the new Act the duty of enforcement is placed on the council of the county or county borough in which the cows are kept, and any Order made by them will prohibit the sale of the affected milk in any area. Section 4 requires the medical officer of health of the county or county borough to make the necessary investigations on receipt of a notice from any other medical officer of health. The Tuberculosis Order of 1925 providing for the slaughter of bovine animals affected with certain specified forms of tuberculosis and for the payment of compensation in respect of animals so slaughtered will come into operation on the same day as the Act, and it will be the duty of the local authority discovering the presence in a herd of a tuberculous animal to cause it to be slaughtered or to report the matter to the relevant authority for the appropriate action. Sections 6 and 7 re-enact provisions contained in the *Sale of Food and Drugs Act*, 1899. Section 8, in conjunction with Section 14, enlarges the power of the local authority to take samples of milk at any time before the milk is delivered to the consumer. An authorised officer of one authority may by notice require the officer of another authority to take samples of milk within his area under the Sale of Food and Drugs Acts, when the sample will be deemed to have been taken within the area of the officer giving the notice. Section 9 amends the provisions of the Sale of Food and Drugs Acts with regard to the warranty defence. Where such a defence is pleaded by a purveyor of milk a sample from a corresponding milking must be taken in the course of transit or delivery to the purveyor, and if the owner of the cows so requests, a further sample must be taken at the dairy at which the cows are kept. The warranty defence will not be available where the sample in respect of which the proceedings are taken is a mixture of milk obtained from more than one seller or consignor. Power is also given to the local authority of the district in which the first sample was taken to take proceedings against the seller or consignor. For the purposes of the new Act the expression "dairy" does not include a shop from which milk is not supplied otherwise than in the properly closed and unopened receptacles in which it was delivered to the shop. The information is set out at length in Circular 612 of the Ministry of Health, which may be obtained from H.M. Stationery Office for 1*d*.

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[1] A limited number of copies is on sale at the Institute. Price 21s.

GIOVANNI BATTISTA GRASSI.

Italy has lost one of her most eminent sons by the death of Prof. Grassi in Rome last May. Born at Rovellasca, province of Como, in 1854, he graduated at Pavia in 1878 and occupied the chair of Comparative Anatomy at Catania until 1895, when he was called to the same position in the University of Rome, where he remained till his death. Pre-eminently a biologist, he was at the same time physician and naturalist. His own view was that the physician would do well to be something more of a naturalist and that the naturalist should not lose sight of the man in his researches and analogies. Grassi's conception of the importance of the intimate connexions which existed between man and the rest of the animal world, connexions which consisted in identity or analogy of function, and in the adaptation of their life in common, led him to the outposts of a new science of which he was one of the founders and to which he gave the name of parasitology. The relations which the lower animals had with man, the specific adaptation in alternate hosts and parasitic cycles, the analogies between parasitic diseases in animals and man, revealed to him their great importance in pathology. Of this trend of study, which subsequently assumed immense and grandiose proportions and on which is founded the greater part of tropical medicine, he was a pioneer. In the preface to his work on Parasitology, which appeared in 1881, he wrote:

> "I remember, when still a student and attending the course of general pathology, being often seized with an intense curiosity to know why the study of disease in every kind of animal was not included, and when I saw the pathologist endeavouring to reproduce experimentally human diseases in frogs and rabbits, I wondered why these and all other animals were not studied when they became diseased naturally. Even a limited application of Darwinism to pathology, would suffice to illuminate us with a new and fruitful light."

Thus Grassi guessed at the future which was reserved for bacteriology; indeed, it might be maintained that circumstances alone prevented him becoming an Italian Koch. His scientific energies were directed into many and various fields of research and are a matter of surprise and admiration for all who are acquainted with his work. While still a student he discovered the ova of *Ankylostoma* in the fæces, he investigated the developmental cycle of *Strongyloides stercoralis*, and demonstrated that the dog's flea was the intermediate host of *Dipylidium caninum*, that *Hymenolepis nana* had no intermediate host, while that of *Gigantorhyncus* was a beetle of the genus *Blaps*. From his researches on the *Helminths* were derived the fundamental conceptions which later on led him to the study of malaria and sand-fly fever. On these followed investigations on phylloxera, on the metamorphosis of the murenoids, and the constitution and development of the society of *Termites*, for which he was awarded the Darwin medal of the Royal Society of London, a series of researches any one of which would have secured his name to posterity. Working with Bignani and Bastianelli in 1898 on three species of mosquitoes, he finally concentrated his suspicions on *Anopheles claviger*, to the exclusion of *Culex* and other blood-sucking diptera, and in 1900 published his "Studies of a Zoologist on Malaria," in which Grassi placed on an impregnable foundation the doctrine that malaria cannot exist without *Anopheles*, the truth of which the universal experience of the last 25 years has confirmed. Eight years later the University of Leipzig conferred on him the honorary degree of doctor. To zoologists Grassi's name is very familiar because of his well-known work in association with Calandruccio, which first shed light upon the life-history of the common eel.

Grassi was a man of complex personality owing to certain qualities and even defects of character. Within a small and delicate frame, a wonderful example of the domination of mind over matter, he preserved a nervous and forceful will and a formidable capacity for work. In his laboratory from 7 A.M. till noon and from 1 to 8 P.M., with two or three hours' sleep and at work again before daybreak, such, even at an advanced age, was his constant habit, interrupted frequently by peregrinations into every part of Italy, often in his early days going on foot with his parcel of food in his pocket. He had derived a systematic precision from the schools of Gegenbaur and Bütschli at Heidelberg, and his marriage was a permanent link with Germany, but his genius remained essentially Italian. A man of large and clear ideas, not simply a specialist, but a focus of several specialties, he possessed the rare facility of changing quickly a mental attitude, of taking up a new point of view, of knowing how to free himself from the tyranny of an idea or an a priori conception. Even his prose had a marked personal style; he was not an elegant writer, but amid laboured and involved pages there were to be found terse phrases and sparkling epithets. He was full of strange contrasts, jealous of scientific fame, yet modest withal, and under a rough exterior concealing a simple good nature. He was an idealist in science; his ardour and even passion for work; his exactitude towards himself and others; his courage in exposing himself to dangerous experiments; his renunciation of everything except investigation and study, were fed by this sacred flame. His last wish expressed his philosophy of life: to be buried without public honours in a quiet cemetery in the Roman Campagna among the simple folk who were victims of malaria. This thought is emphasised in an admirable biographical notice by Dr. Massimo Sella,[1] which ends with the valediction: "Italians who are not forgetful will visit Thee in that lonely spot when they desire to strengthen their faith and their will, oh thou Great Italian."

Sir Charles Sherrington, P.R.S., Waynflete Professor of Physiology in the University of Oxford, has been appointed a member of the Medical Research Council from Sept. 30th next, in the vacancy caused by the retirement of Dr. Henry Head under the provisions governing the rotation of membership.

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[1] Il Policlinico, Practical Section, July 5th, 1925.

British Mosquito Control Institute.—The new building of the Institute at Hayling Island will be opened by Sir Ronald Ross on Monday, August 31st, at 1 P.M.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXXXV.—THE TREATMENT OF FLATULENCE

I.*—GASTRIC FLATULENCE.

FLATULENCE is a term applied to a collection of gas in the stomach or intestines in sufficient quantity to give rise to a sensation of fullness or even pain which is relieved when the gas is expelled. It may conveniently be considered according to its localisation in *the stomach or intestines, its genesis being* essentially different in the two situations.

Few symptoms are complained of *so commonly as gastric flatulence*, and certainly few are so misunderstood, a state of affairs due in large part to the persistence in medical parlance and literature of that mischievous term, flatulent dyspepsia. It will be well to emphasise at the outset that flatulence with very few exceptions is a symptom resulting from the habit of aerophagy or air swallowing, and that the fermentation theory, apart from rare instances, *is a* legacy of obsolete conceptions and has little more than historical interest to recommend it. Aerophagy *is the cause; flatulence and eructations are its* manifestations. A common courtesy amongst Mohammedan races, a gross breach of good manners in Western countries, a frequent associate of all forms of indigestion, and a visceral tic in an individual of neuropathic tendency, the results *of aerophagy* appear in so many and varied connexions that to maintain the term, flatulent dyspepsia, as a sufficient diagnosis is but to conceal the cause under the cloak of a prominent symptom. Under normal conditions the fundus of the stomach contains a variable quantity of air which is swallowed with the food and the saliva. This fundic air-bubble, so striking a feature of X ray examination, may be increased by: (*a*) deficient absorption of air; (*b*) fermentation or putrefaction of the gastric contents; (*c*) aerophagy or air swallowing.

Deficient Absorption of Air.

Deficient absorption *of air from* the stomach and intestines is a very rare cause of flatulence, but does occur at times as a result of chronic venous stasis in cirrhosis of the liver and cardiac failure. Treatment consists in the measures usually adopted for the relief of an embarrassed circulation, in the careful regulation of the diet, and in the exhibition of drugs to relieve the discomfort. It should be borne in mind that digitalis may not be well tolerated in cases of heart failure with prominent gastric symptoms and may, indeed, aggravate them. As regards the diet the general principles are: (1) that meals should be small and dry and not more than three in the day; (2) that the intervals between meals should be not less than five hours and that the principal meal should be taken in the middle of the day; (3) that fats and carbohydrates, with the exception of glucose, should be used sparingly. For the immediate relief of distension small doses of the carminative oils are undoubtedly useful, and as shown by Plant[1] act by increasing tone and contractile power. Saundby recommended the following combination:—

℞ Tinct. zingib. fort.
Olei cinnamomi .. .. .. 10 ♏
Olei carui .. .. 1 ♏
Olei cajuputi .. .. .. 1 ♏
.. .. .. 1 ♏

Dose 2—5 drops.

Oil of turpentine, 10–15 drops on a lump of sugar or in a capsule, is also of value, *and a teaspoonful of* powdered charcoal after meals is another well-tried remedy.

It should not be forgotten that to the flatulence of cardiac failure may be added the discomforts of aerophagy.

Fermentation and Putrefaction.

It is perhaps excusable for the layman to think that his food "may turn to wind in his stomach" and thus generate an apparently inexhaustible *supply of gas, but such a view* can no longer receive the serious attention of the medical profession nor be allowed further to obscure important issues. The rate of gastric emptying renders it impossible for flatulence to result from fermentation in the stomach *apart from structural narrowing* of the pylorus, and even in this condition flatulence is a somewhat rare complaint. The symptom may occur both in benign and cancerous stenosis and the eructated gases may be sour-smelling, putrid, or have the odour of sulphuretted hydrogen. Organic disease *should be* suspected whenever the eructations are malodorous, though, exceptionally, an odour may be imparted by oral or naso-pharyngeal sepsis. Investigation will speedily show the nature of the case and indicate the treatment proper to the condition, but as a temporary measure of relief and a useful preliminary to surgical procedure, frequent gastric lavage with hot water should be undertaken together with the oral administration of charcoal.

Aerophagy.

Aerophagy or air swallowing is, par excellence, the *cause of flatulence. In moderation* a feature of normal digestion aerophagy with consequent flatulence becomes abnormal under four main conditions.

1. As an unpleasant habit amongst those who bolt their food, or for other reasons are unable to masticate it *sufficiently*.

2. As a sequel to excessive salivation or sialorrhœa. This may result from oral or naso-pharyngeal irritation. Ryle[2] produced aerophagy in himself by painting the pharynx with an iodine preparation. Dental caries, *pyorrhœa, neglected dentures*, tonsillitis, nasopharyngeal catarrh, and more rarely œsophageal cancer are well-recognised causes.

3. As a symptom in those whose main complaint is indigestion. Flatulence may accompany any type of *dyspepsia, whatever* its cause, and irrespective of any abnormal conditions of gastric motility and secretion. The mechanism of aerophagy in these cases is described by Hurst[3] as follows: "The patient feels some slight discomfort in the stomach, which he thinks is due to 'wind' and which he hopes he will be able to 'disperse' by eructation; as there is *really no excess of gas present*, the attempt proves unsuccessful and results in the swallowing of air. After half a dozen attempts have been made, air being swallowed on each occasion, the stomach becomes so distended that an attempt is at last successful." As Bennett[4] points out, the habit is acquired so *gradually and unthinkingly that the patient is usually* unaware of it until it has been brought to his notice. Although flatulence may occur with dyspepsia from any cause, its association with gall-bladder disease is often so striking as to have some diagnostic value.

In this connexion it may be noted that Bennett[4] has recently drawn attention to the extremely important rôle played by aerophagy as a cause of post-operative acute gastric dilatation.

4. As a psychoneurosis. In patients of neuropathic tendency, as a result of fear, anxiety, or other morbid obsession, aerophagy may occur as a habit and should

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* An article on Intestinal Flatulence will appear in this series next week.

[1] Plant: Journal of Pharm. and Exp. Therapeutics, vol. xvi., 311.

[2] Ryle, J. A.: Goulstonian Lectures, THE LANCET, March 28th, 1925.

[3] Hurst, A. F.: Medical Essays, London, 1924.

[4] Bennett, T. Izod: Diseases of Stomach, London, 1925.

be regarded, according to Hurst, as a visceral tic, but it is probable that here, too, the aerophagy had its origin in some gastric discomfort long forgotten. This type of patient presents a familiar appearance; his face is a mirror of his mental and abdominal unrest; he lives on the atmosphere, and his resounding gusty eructations are a source of grave perplexity to himself and mingled astonishment and dismay to his friends and neighbours. In such a one the air does not enter the stomach but is drawn into the œsophagus and immediately and violently expelled. Excessive salivation may be a contributory factor, whilst cardiac symptoms such as palpitations, tachycardia, arrhythmia, and pseudo-angina may occur and make his distress the more acute.

Treatment of Flatulence Due to Aerophagy.

The aims in treatment will be three: (1) To search for and if possible remove the cause. (2) To treat the aerophagy. (3) To treat the flatulence resulting from it.

1. In all cases where the main complaint is of indigestion a careful investigation, by the usual methods, of the upper alimentary tract is essential, for as Bennett[4] says, an organic cause must not remain concealed by such camouflage as flatulent dyspepsia. In a word, the investigation of these cases is that of a dyspeptic and the treatment will vary according to its results.

2. When the symptom is so obtrusive as to demand treatment apart from its underlying cause, it becomes necessary to treat the aerophagy itself. When possible an emphatic assurance as to the absence of gross disease should precede a careful explanation of the mechanism of air swallowing supported, if need be, by a personal demonstration. The patient must be told to suppress all desire to eructate, since no one ever has or ever will be able to bring up wind voluntarily, and any efforts in this direction will but result in the swallowing of air. In the majority of cases explanation on these lines is readily accepted and is usually all that is requisite to break the habit, but in obstinate cases the patient may be advised to hold some small object, such as a cork or cigarette-holder, between the teeth after meals or he may wear a tight band or collar around the neck to act as a constant reminder of his habit. Meals should, in the main, be dry, since less air is swallowed with solid than liquid food, and should be eaten slowly. Excessive salivation when of purely nervous origin should be treated with belladonna, and the bromides may be added for their general sedative effect. In hysterical patients the passage of a large-sized stomach-tube and its maintenance in position for half an hour may be tried, the patient being informed that this procedure will cure the condition. In cases of exceptional severity where the flatulence is no more than a prominent manifestation of a generalised psychoneurosis complete isolation combined with psychotherapy is desirable.

3. The drug treatment of gastric flatulence is of quite secondary importance, but for the immediate relief of discomfort the carminatives are valuable and in view of Plant's work their use is rational. They have already been referred to.

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EXTENSION OF HAMPSHIRE COUNTY HOSPITAL.—A comprehensive scheme for the improvement and extension of this hopsital, the first instalment of which will cost £55,000, has been set on foot by a county meeting at Winchester. The nurses' home is to be extended at a cost of £26,000; an isolation block and a new out-patients' department are also to be provided. At present 21 nurses are housed in a worn-out army hut; another 27 live in houses outside the hospital, with the consequence that last winter many of them suffered from colds and sore throats. The hospital was founded as long ago as 1736.

Special Articles.

SOME GENERAL REFLECTIONS ON PUBLIC HEALTH ADMINISTRATION.

BY J. H. L. CUMPSTON, M.D. MELB., D.P.H. LOND.,
DIRECTOR-GENERAL OF HEALTH, COMMONWEALTH OF AUSTRALIA.

IV.—THE PROPOSED FAR-EAST CONVENTION.[*]

THE draft Convention, submitted by Dr. Norman White to the League of Nations as a considered proposal for the regulation of Port Health Organisation and procedure in the Far East, challenges serious examination, because Dr. White has appreciated the difficulties known to exist by all engaged in quarantine activities, and he has dared greatly in departing from the beaten path in his endeavour to find a remedy.

In Australia the conditions in the past have been such, and our present problems are so nearly related to those with which the report deals that we can feel well-disposed to Dr. White's attempts even if we cannot accept his draft Convention. We have been sorry that he could not visit Australia, as we feel we would have benefited from his vigorous outlook, and perhaps our 50 years of evolution in matters of quarantine might have provided precedents of legislative form of some assistance to him in his work. While Australia may not be generally recognised as a country in the Far East, it is only five days steam from Batavia to Darwin, and three days from Banjoewangi to Broome. Also there is continuous traffic down the coast, so that steamers from infected Asiatic countries travel from one Australian port to another within and beyond the incubation period of each of the diseases dated from the infected Asiatic port. Moreover, as Australia is entirely free (except during epidemic invasions) of these diseases, the epidemiology—i.e., the maritime epidemiology—of these diseases can be studied under conditions exceptionally free from complicating factors.

It is therefore perhaps justifiable to apply our experience in an attempt to discuss this draft Convention in the light of the forthcoming official revision of the International Sanitary Convention.

A. *The Draft Regarded as a Convention.*

Dr. White would probably be the first to admit that his draft requires some re-casting before it could be adopted as a legal document. The various points which seem to call for comment are as follows:—

(*a*) Certain expressions of loose form require reconsideration as to form alone, omitting for the moment any discussion of their significance:—Para. 11: "Measures shall be taken at the port of departure . . . in so far as these are practicable. Para. 18 provides that an inspection is to be made by a health officer immediately prior to the vessel's departure and this examination shall ensure that the vessel is mechanically clean in all parts prior to storing cargo or receiving passengers, and no communication with the shore shall be permitted after the completion of this examination. The paragraph says this, although it does not mean this.

(*b*) A Convention is a binding legal agreement by which every signatory country undertakes to adopt the procedure therein prescribed. The essential nature of a Convention excludes the concept of an ulterior power exercising jurisdiction or compulsion over the individual signatories. Despite this basic principle, the Convention contains internal evidence of the presumption of such a power. Para. 4 provides that ports shall be classified into three categories according as they possess or do not possess "qualified and adequate health staff," "adequate apparatus for fumigation," "suitable quarantine station," and other things "safe" or "adequate." The draft Convention leaves mysteriously undetermined the identity of the authority who shall determine the "adequacy" and so "classify the ports." But the preamble definitely states that "it would be advisable to leave the classification of ports to a central international epidemiological bureau."

Putting aside all questions of the authority controlling this bureau, and the acceptability to various countries of such external determination of fundamental data on which quarantine operations are based, it is essential for a Convention that the nature of the classifying authority and the scope of its functions be specified in the body of the Convention. Para. 16.: It is provided that the measures which shall be taken with regard to small-pox shall follow the procedure in Article 36 (of the proposed modification of the International Sanitary Convention) except that all the measures "shall be compulsory and not optional." The proposed modification provides that "it is recommended that the following measures shall be adopted." Dr. White's suggestion would, if adopted, involve for each country an obligation to carry out the prescribed measures under compulsion, presumably by some authority having power to compel. Dr. White probably means that each country should agree that the measures proposed should be enforced. This criticism is not over-meticulous, as Dr. White submits his text as a legal instrument fully prepared for insertion in the text of the Convention. The phraseology of para. 16 (*d*) would probably require some revision before it could be incorporated (if accepted in principle) in the text of a Convention.

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[*] Parts I., II., and III. appeared in THE LANCET of July 11th and 25th, and August 1st respectively.

B. *Basic Principles of the Draft Convention.*

The principal considerations which seem to have inspired Dr. White are stated in his preamble to the draft Convention. These are:—

(1) The importance of the human being in relation to plague-transmission is exaggerated in the International Sanitary Convention.

(2) The sanitary state of the port of departure should not be ignored to the extent permissible under the *International* Sanitary Convention.

(3) The action to be taken on arrival of vessels should be based on the sanitary state of the port of departure rather than on the condition of the vessel, and there is no necessity to classify ships as infected, suspected, and healthy, as is done in the International Sanitary Convention.

It is likely that Dr. White will find considerable agreement with these principles, even amongst those concerned with the drafting and revision of the Paris Convention of 1912. Probably the best way to discuss the practical application of these principles is to begin by considering a vessel newly arrived in port in a country free from the diseases in question. But before doing so, it may be permissible to point out that in all of the discussions of maritime quarantine the lessons of maritime epidemiology have been almost ignored and the *facts* of terrestrial epidemiology have been assumed to apply. All experience shows that maritime epidemiology *has* principles and laws of its own, and these laws should be studied much more completely than they have been hitherto.

A vessel on arrival at a clean port presents a problem for immediate solution. There are two elements in the problem: (*a*) Whence does this vessel come; (*b*) what has been, and is, her sanitary condition. Dr. White divides ships into infected or non-infected. An infected ship is one on which a case of one of the diseases in question is present or has occurred during the current voyage. (A curious omission is the lack of specific reference to rodent plague unaccompanied by a "case" of human plague, cf. paras. 16 (*a*) 1 and 3.) A non-infected ship is one which is not or has not been infected in the above sense.

Infected and Non-infected Ships.

Dr. White does not use these terms "infected" and "non-infected,". but they are necessary for discussion.

(I.) *The Infected Ship.*—The measures proposed by Dr. White for dealing with the infected *ship* do not differ essentially from those in the proposed revision of the Paris Convention, except that the "suspected ship" disappears and all vessels which have been *infected* during the voyage are regarded as infected. As a theoretical principle this commends itself as *quite sound*; but on examination the Paris Convention provisions commend themselves as equally sound and the distinction between "*infected*" and "suspected" is a matter of convenient classification. If Dr. White had to deal with a vessel arriving at a port with cases of plague on board he would: (*a*) inspect all on board; (*b*) disembark and isolate the sick and pay special attention to all who had been in contact with the sick; (*c*) disinfect bedding and quarters; (*d*) deratise the ship.

If, on the other hand, the vessel has no case on board and has had no fresh human case for seven days, he could not isolate the sick and he would, on his *own* showing, not consider it necessary to isolate contacts, but all the other things he would do. This procedure is precisely what the Paris Convention prescribes. The same is true of cholera and yellow fever.

There is, therefore, no force to the proposal that the class of "suspected" ship should disappear. It is artificial, certainly, but it is a convenient way of detailing the difference in measures applied to: (1) a ship which arrives in port with fresh cases, and (2) the ship which has had only an isolated initial case during the voyage. As a practical matter the difference is that between the vessel which has embarked a passenger or member of the crew incubating plague or cholera and the vessel which apparently has a source of infection on board or a spreading infection from the initial case.

(II.) *The Non-infected Ship.*—Dr. White first proposes (para. 15) that "cognisance" shall be taken of: (*a*) ships from infected or suspected ports; (*b*) infected ships from clean ports; (*c*) ships from clean ports carrying plague-suspicious or cholera-suspicious cargo from infected localities.

From the point of view of daily routine administration this proposal is incomplete. It assumes that Governments will *take no cognisance of other vessels.* Let us take an actual case. A vessel left San Francisco, which at that time was neither "infected" nor "suspected" with small-pox. It carried some passengers from the interior of the United States incubating small-pox. The vessel called at Honolulu, Suva, Auckland, and arrived at Sydney. The surgeon did not report small-pox. If the Government of Australia had taken no cognisance of that ship the cases of small-pox would never have been known, having been missed at the other ports. It is therefore necessary that a special distorted significance be given to the word "cognisance," or else that some other formula be devised permitting of the routine medical inspection of all oversea vessels arriving. The Paris Convention assumes this, and the Quarantine Act of Australia specifically provides for it and covers all of Dr. White's groups. In the Australian Act all oversea vessels (and in the event of an internal epidemic all vessels from the infected area) are "subject to quarantine"; all "infected" vessels (in Dr. White's sense) are "ordered into quarantine" *and then dealt with* according to the "suspected" and "infected" procedures of the Paris Convention; and all clean ships from "proclaimed" ports (which are Dr. White's infected and suspected ports) and their cargo or water-tanks are dealt with in accordance with the recognised procedure in each case.

Vessels on Arrival.

Dr. White's introduction leads the reader of his report to expect that he will introduce into his proposed procedure for dealing with vessels on arrival at any port some reduction of completeness depending upon the action taken at a first or second class port of departure. But the only reference to this is found in the preamble: "leaving the port health officer to determine the facilities and immunities that would be accorded vessels that had been treated adequately before departure from ports of the first or second class." Further, there is *para.* 18, in which it is proposed that a health officer shall inspect all vessels leaving an infected port of the first or second class. Quite apart from the anomalous position that a health officer will not know in any week until the next Saturday night whether his port is infected or not, it is interesting to examine the significance of this classification. The difference between ports of the first and the second classes is the possession by the former of fumigation apparatus and a quarantine station. It is not clear what effect the possession of a quarantine station, with a capacity of 500 passengers and crew, at a port is to have on the risk to overseas countries in view of the present obligation under the Paris Convention on the competent authority to prevent the embarkation of all persons liable to *transmit infection.*

The pre-occupation of each *Government* is the protection of its own people from imported disease. A Government in Europe or Australia is concerned only that a vessel approaching its shores shall have left an infected country in a clean *condition.* This is already covered by Article 12 of the Paris Convention and its achievement is fully possible without a quarantine station; for this purpose, and, in fact, for all the purposes of Dr. White's draft Convention, a port might well be classed as first class without a quarantine station, provided the port of disembarkation were so equipped. Here lies, possibly, the true purpose of Dr. White's proposal—viz., that some form of inducement is necessary to encourage all important ports in the Far East to provide themselves with a quarantine station and other essential equipment. Nobody with any experience will do other than applaud this purpose, but it is brought into the Convention in an illogical and resultless manner. Actually, so far as one can read the report, the design is that the "central epidemiological bureau" shall be in a position to encourage by moral pressure the establishment of such stations. That is a larger issue with many implications direct and indirect. It is sufficient to say here that such a design cannot be introduced in a subtle and indirect way, but must, if adopted, find clear and definite expression in legal form in the text of the Convention.

Vessels on Departure.

A very important practical provision, which might with advantage be incorporated in the International Sanitary Convention, is found, but in very tentative form, in para. 21 of Dr. White's draft Convention. This article reads as follows :—

> "With regard to other communicable diseases not coming within the scope of articles in this Section, each signatory Government shall endeavour to apply to departing vessels such measures as may be requested by the Government of the country of the port of destination."

To a certain extent this practice is recognised in the Australian Quarantine Act and Regulations, at least to the extent that exemption from deratisation measures is permitted if these have been effectively carried out according to prescribed means at an overseas port of departure. The same provision has been utilised in connexion with cholera, if the water-supply at an overseas port has been from a reliable source. In Dr. White's report, however, the position is left unsatisfactory in that the same basis of action is dealt with partly by Article 18, which provides for inspection by a medical officer at the port of departure, and Article 16 in which the reduced measures of protection at the port of arrival are based upon action of the kind now contemplated at the port of departure.

The Dutch Government has submitted to the Health Committee of the League of Nations a similar suggestion. In Holland the Government is authorised to exempt vessels going from one port from any health formalities before entering another port provided all necessary measures of disinfection, deratisation, &c., had been taken at the first port; the Dutch Government think that, from an international point of view, it would be highly desirable to extend the scope of this measure in the interests of commerce. This proposal was the subject of some discussion, and it was decided to entrust to a Commission the task of studying the practical measures necessary to facilitate the conclusion of agreements between Governments, aiming at the establishment of this procedure on a standard of scientific basis. It would probably be found that there is uniform agreement as to this principle of bringing into operation the protective measures against the transmission of disease at the point where the risk actually exists. It is merely the expression in another administrative field of the military principle that the best defence line is the enemy's frontier.

When bubonic plague occurred in Brisbane and Sydney, 1922–23, the immunity of the other portions of the Commonwealth from plague was due entirely to the fact that such measures were taken as to ensure the departure from the infected areas in an entirely rat-free condition of every single article of merchandise.

Progress Necessarily Slow.

Undoubtedly international sanitary measures will be improved from their present basis in proportion as measures of sanitary precaution can be taken in regard to traffic at the time of departure from the infected country, and each modification of the Sanitary Convention aiming at securing this result, step by step, would be hailed as an improvement. The prospects which we now have of securing the inclusion of a logically considered scheme of action in this regard in the next revision of the text of the Sanitary Convention represent one of the greatest advances which has been made during the evolution of the sanitary conventions. It is felt, however, that tangible results in this direction will be slow to materialise, as each port, in order to secure recognition, will need first to provide proper equipment, and second, to establish the confidence of other countries that the equipment is reliable.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 226.)

THE COUNCIL OF BRITISH OPHTHALMOLOGISTS.

(App. LXIII. and Q. 17772–17934.)

EVIDENCE on behalf of this Council was submitted by the following medical men: Mr. E. Treacher Collins, Mr. J. Herbert Fisher, and Mr. S. Mayou.

The Council is strongly of opinion that the examination of the eyes should be carried out by qualified medical practitioners, and supported its view by drawing attention to the report of the Departmental Committee on the Causes and Prevention of Blindness, in which the importance of the provision of adequate facilities for ophthalmic treatment is emphasised, and a definite recommendation made that "all persons with defective vision should first consult a competent medical practitioner."

A subcommittee of the Council jointly with the British Medical Association have made recommendations which include the following :—

1. That the so-called optical benefit should be designated ophthalmic benefit. Ophthalmic benefit would include examination and prescription for spectacles, if required, and such operative treatment and advice as can be given at a single consultation at the consulting room. A report, when necessary, would be given for the guidance of the private practitioner.
2. That insured members of every Approved Society should in any case of ocular disorder or visual defect apply to their insurance practitioner.
3. If the insurance practitioner considered the case one requiring special advice or treatment he would give the applicant a certificate, enabling him to consult a specialist at a reduced fee.
4. A list of ophthalmic medical practitioners qualified and willing to see members of Approved Societies at a consultation fee of £1 1s. should be prepared.

The Council considers that no course of training short of that required for full medical qualification can produce the skill and judgment necessary for the examination and treatment of the eyes. It is well known that changes in the refraction of the eye are often produced in the early stages of serious eye disease. In many such cases an optician may be successful in raising the acuteness of the vision to a normal standard, but he would almost inevitably fail to recognise the disease which is the cause of the refractive error. In fact, disease very serious to the eye, or threatening even life, may occur in an eye with perfect acuity of central vision.

Without the use of drugs to dilate the pupil or paralyse the focusing muscle, in many cases the optician cannot measure accurately the error of refraction, or be in a position to identify the cases which demand medical advice and treatment. If he were allowed to use such drugs he would become an even greater danger to the community by reason of serious disease which he in his ignorance might produce. The ophthalmic surgeon must have an adequate knowledge of diseases of the brain and central nervous system, of the blood-vessels and vascular system, of the kidneys, of the nose and its accessory sinuses, of the various ductless glands, &c. In fact, there is no branch of medicine which is not in close relationship with this special domain, nor is there any specialty in which a general medical knowledge is of greater importance.

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* References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1369.

On the question of the competence of the general practitioner to make an effective examination and diagnosis Mr. Fisher said:—

(Q. 17770.) Our idea was, I think, that the panel practitioner would be a cog in the wheel of administration of ophthalmic benefits, probably not actually doing himself any large proportion of the ophthalmic benefit, but here and there, there might be a panel practitioner who might have sufficient special knowledge to deal, at any rate, with some branches of ophthalmic cases. That would not be very frequent.

This led later to the following question:—

(Q. 17801.) Does it not simply resolve itself into this, that in a very large proportion of cases the general medical practitioner would be bound to say, and quite honestly bound to say: "This is beyond me altogether; go to an ophthalmic surgeon"; and that would involve a fee of a guinea in every case?—In a large majority of cases, certainly.

As to there being a sufficient supply of specially trained practitioners for a service for the whole insured population, the witnesses stated that a list had been drawn up jointly with the British Medical Association, and there was a sufficient supply for present needs and no doubt that the number would rapidly increase.

The witnesses agreed that the training of the general practitioner in eye work was quite inadequate, and the Council has repeatedly made representations on the subject to the General Medical Council. The Council was in possession of evidence of the danger of a patient going straight to the optician, the mistakes including overlooked disease, patients unnecessarily alarmed about their condition, and unnecessary glasses frequently supplied.

With regard to clinics, the witnesses said that if any clinic system were to be established it would have to be independent of the present eye hospitals, where it would be physically impossible to get through the cases in the accommodation available, but, in fact, the Council were opposed to clinics generally and regarded them as impracticable for the treatment of the insured population.

THE OPHTHALMIC BENEFIT COMMITTEE.

(App. LXIV. and Q. 17035–18020.)

This evidence was given by the following medical men: Mr. H. L. Eason, Mr. G. H. Pooley, and Dr. Charles F. Harford.

The Ophthalmic Benefit Committee represents the interests of ophthalmic medical practitioners who are willing to take part in an Ophthalmic Medical Service. The Committee is in hearty agreement with the evidence submitted by the Council of British Ophthalmologists and the British Medical Association. The Ophthalmic Benefit Committee came into existence about a year ago. Its membership is approximately 280, excluding the North of England, which has its own society, represented on the Committee by Mr. Pooley.

The witnesses confirmed the evidence given above as to the dangers arising from going direct to the optician, and said that the cases which they could produce in evidence involved both trained and unqualified opticians.

(Q. 17053.) Will you give us briefly some indication of the nature of the cases?—The common disease is glaucoma which, as you know, is one of the serious diseases which may affect the eye. Early cataract is another. Disease of the retina associated with some general medical disease such as renal disease and Bright's disease, which are apparent to any skilled observer and are only local indications of general disease.

They objected strongly to some of the advertisements of opticians, by which they considered that the public were misled. The optician might examine the inside of the eye through a lens, but without medical training he could not appreciate the importance of what he saw.

(Q. 17072.) By looking at the inside of the eye you have the opportunity of seeing a portion of the human body during life under a high magnified power. Arterial disease, nervous disease, many other diseases, can be seen in the eye before being recognised elsewhere.

Interesting evidence was given with regard to cases of hæmorrhage in the retina productive of headache and yet easily overlooked in a mere testing for glasses. It was suggested by a member of the Commission that this appeared to prove too much and to lead to the conclusion that people should go to the ophthalmic surgeon at intervals. The witnesses agreed that these cases would not necessarily be discovered by providing that persons should go for correction of error of vision to an ophthalmic surgeon rather than to an optician. Mr. Harford explained the matter as follows:—

(Q. 17080.) People are being persuaded by these specious advertisements that if they have a headache, if there is discomfort in various ways, they should not go to their doctor, but to an optician. If they had gone to their doctor he would have been able to throw more light on the other symptoms. People seldom have hæmorrhage of the retina without some other symptom, and, therefore, all things have to be discovered, and the right person to do this is the patient's own medical practitioner who is dissatisfied with their state of health, and feels that they ought to have further advice, which would mean an examination by an ophthalmic surgeon.

With regard to clinics, the grave defect was felt to be that it was a contract system whereby so many persons had to be seen in an afternoon whether the cases were important or not; the Committee thought that specialists would never be persuaded to take up clinic treatment under the Insurance Acts, though in reply to later questions bearing on the possibility of an improved and better organised system of clinics, Mr. Eason said:—

(Q. 18020.) In addressing ourselves to the fundamental question, the question of clinic or no clinic is to us of secondary importance compared to the main point, which is giving to the insured person when he goes to the clinic or anywhere else the best possible attention. If the first point is accepted then we can work out the machinery.

CHEMISTS' EVIDENCE.

(App. LXV and Q. 18030–18205.)

Mr. A. R. Melhuish and Mr. G. A. Mallinson gave evidence on behalf of the Retail Pharmacists' Union, which was founded to carry on, in addition to other activities, certain work, formerly undertaken by the Pharmaceutical Society of Great Britain, which, as the result of a test case in the High Court, was deemed to be outside the Society's charter. The membership of the Union is limited to those carrying on retail businesses as chemists, and it represents the whole of the panel chemists of the country through the Pharmaceutical Committees, all of which acknowledge the Union as the representative body. Scotland has its own separate organisation and the evidence related to conditions in England and Wales.

Under the National Health Insurance Acts prescribing is separated from dispensing excepting in many rural areas where the doctor necessarily does both. The chemist has no control over the supply, it being his business to meet the requirements of the doctor's prescriptions.

The arrangements under the National Health Insurance Act for the supply of medicines through the chemists are, it was stated, as complete as any which exist in private practice, and are a vast improvement on the conditions previously existing under the "club" practice system. The insured person can now have exactly the same medicines as the most wealthy patient can purchase. He has the right to the same range and quality of drugs and medicines. The doctor is the deciding factor, and whatever he orders the patient will get from the panel chemist.

The arrangements work well and there is a supply of chemists adequate to maintain a service for the dependants of insured persons. It was suggested that the separation of prescribing from dispensing is a natural result of the developments in medical science. The doctor has now no time to spare to make himself a specialist in pharmacy and dispensing. An advantage upon which too much stress cannot be laid is that the doctor may prescribe during his rounds and the patient can get the medicine without waiting for the doctor to return home, because the chemist gives a continuous all-day service. Further, the fact that a patient can be dismissed immediately his prescription has been written lessens the congestion in doctors' waiting-rooms. The hospital practice of using stock mixtures is not viewed favourably by chemists, who maintain that the tendency should be in the other direction, towards the higher-class medical practice of writing individual prescriptions.

With regard to delays that may occasionally arise in making up prescriptions, it was thought that there might be closer coöperation between Panel and Pharmaceutical Committees in regard to surgery hours and the hours of closing chemists' shops.

As to the checking of medicines supplied by chemists, the witnesses said that the machinery of the Food and Drugs Act had not proved fair or effective. The chemists were themselves desirous of adequate tests being made and of proper disciplinary action, and the Retail Pharmacists' Union had submitted a scheme to the Ministry of Health. In general the scheme provides for medicines being made up by the chemists on prescriptions specially written by the doctors and presented by an agent of the Insurance Committee, who proceeds to divide the medicine in the presence of the chemist and takes one-half away to be analysed. The doctor does not write these special prescriptions because he is under contract to do so, but because it assists in promoting the efficiency of the service. For what they described as manipulative error, the witnesses thought that an all round 5 per cent. margin should be allowed.

On the subject of advice asked for by customers, the following questions were answered :—

(Q. 18205–8.) You mentioned that people come to you for general advice. I suppose about a cut finger and things of that sort ?—Yes. And you advise them ?—Yes. In a certain sense you act as medical advisers in a small way ? Hardly that. You act as a layman with a knowledge of medicine ?—It is what you would do in your own family.

It was claimed in the course of examination that as between chemist and client there was something of the same desirable personal relationship which counts for so much as between doctor and patient and that in any case it was clear that a person thought much more of medicine supplied by the chemist than he did of supplies from a dispensary or the out-patient department of a hospital.

DRUG STORE PROPRIETORS.

(App. LXVI. and Q. 18266–18436.)

This evidence, given by Mr. W. Huntrods and Mr. A. Hutchison, contains statements of a rather sweeping character suggesting unnecessary services rendered by doctors to insured persons and fraudulent practices on the part of chemists, such as the alteration of prescriptions for their pecuniary benefit, and the supplying of short measures and inferior articles—statements which the witnesses had not the material necessary to support in oral examination.

Other statements were as follows: Persons earning more than £100 per annum should not be compelled to be insured because they are generally of a higher education and social standing than the average working man. . . . The administration of medical benefit should be simplified by establishing State medical officers and dispensaries. . . . There is not the slightest doubt that the National Health Insurance Act has created a neurotic drug-loving nation. . . . Careful consideration should be given to (1) repeal of the Act; (2) the taking of a plebiscite; (3) making the Act voluntary.

BRITISH PHARMACEUTICAL CONFERENCE.

GLASGOW, JULY 27TH–31ST.

THE sixty-second annual meeting of the British Pharmaceutical Conference was held at Glasgow during the last week in July. Mr. Edmund White, B.Sc., F.I.C., the chairman, in his address, dealt with recent and coming events in British Pharmacy.

Chairman's Address.

Mr. White began by referring to the progress that has been made with the scheme for establishing a laboratory for the biological examination and standardisation of therapeutic substances; rooms in the Pharmaceutical Society's buildings had been allocated for the laboratories, and with the passing into law of the Therapeutic Substances Bill, the Society will be able to meet the demand for an institution which will be competent to examine and issue certificates for therapeutic substances requiring standardisation by biological and physiological methods. There is no doubt that such standards will receive extended recognition as and when facilities are provided for their establishment and they are shown to be reliable indications of value and potency. Mr. White next referred to the recent remarkable growth in the membership of the Pharmaceutical Society and then to the prominent part the Society is now taking in international pharmacy, and the steps lately taken towards the advancement of pharmaceutical education and research at home. In this latter connexion he mentioned the establishment this year of the degree of Bachelor of Pharmacy, instituted by London University under conditions which will enable the Society to accept it as a registrable qualification, and the raising of the standard of the curriculum and examination for the qualification of pharmaceutical chemists. The fact that London University has recognised pharmacy as a branch of learning necessitating the provision for facilities for the highest form of education and research will do much to place pharmacy in its proper relation to the other sciences. Finally, Mr. White, after referring to the difficulties in the way of the international unification of pharmaceutical methods, said he believed that a serious effort to unify pharmacy in the English-speaking communities would yield encouraging results at once: "You have only to compare the British Pharmaceutical Codex with the United States Pharmacopœia to see how British and American practice runs on similar lines, and the time has now arrived when our great overseas Dominions, such as Canada, Australia, New Zealand, and South Africa, should be invited to take a more active share in moulding the destinies of pharmaceutical practice as reflected in our Imperial and National Pharmacopœias."

Scientific Papers.

In the Science Section 19 papers were contributed, some of them being of a high standard and bearing evidence of patient work. In a paper on the Identification of Alkaloids, W. M. Cumming, D.Sc., F.I.C., and D. Brown, B.Sc., described how, using potassium ferro-cyanide as a reagent, the alkaloidal salts in definite crystalline form may be obtained from neutral, acid, and alcoholic solutions. The paper was copiously illustrated by lantern-slides, showing the characteristic appearances of the crystallised salts. H. Finnemore, B.Sc., F.I.C., read a paper on West Australian Sandalwood Oil, in which he suggested that this oil may prove to be as efficacious medicinally as the East Indian oil. There seems to be little, if any, reason why the B.P. specification for sandalwood oil should not be made to include the West Australian product. A. J. Jones gave the results of his investigation of the question of the variability of the density of bismuth carbonate; incidentally he remarked that it was a mistake to suppose that a light carbonate always suspended or diffused better than a heavy one. A typical pharmaceutical paper was contributed by F. J. Dyer and R. Melville on Phosphorus Pill; the official formula produces a pill that is too soft for general practice, and the authors, while presenting a new formula, suggested that the administration of free phosphorus in pill form should be replaced by some other method, as, for instance, phosphorated oil in capsules. A communication from the Pharmaceutical Research Laboratory of the Pharmaceutical Society was made by T. E. Wallis, B.Sc., F.I.C., and Ellinor J. Mowat, on true and false santonicas; from time to time there appear on the market specimens of santonica which closely resemble the genuine drug in external appearance, but which contain no santonin. The examination of a large number of species of *Artemisia* belonging to the section *Seriphidium* enabled the authors to select those features which are useful in distinguishing between nearly related species and to formulate characters by which the flower heads of genuine santonica of commerce can be identified with certainty. Another communication from the same laboratory was made by G. R. A. Short on the structure of coccinium; these two papers illustrated the valuable research work which is being done in the Pharmaceutical Society's laboratories. A paper of more direct interest to practising pharmacists was contributed by G. T. Elsdon, B.Sc., F.I.C., on the testing of insurance dispensing; he made observation on 800 mixtures, dispensed under the Insurance Act, which he had examined and showed that in recent years adulteration was almost entirely absent; incidentally, he mentioned that it was now possible to obtain machine-made bottles having an accuracy of about 2 per cent., in all cases. Bernard F. Howard, F.I.C., and Oliver Chick drew attention to two minor discrepancies in the quinine monographs of the British Pharmaceutical Codex; their comments will be of assistance to the Revision Committee. In a paper on the estimation of small amounts of reducing sugars in urine F. Wokes, B.Sc., drew attention to the importance of carrying out accurate estimations of small amounts of reducing sugar in urine and suggested a micro-method for use by pharmacists; he also showed how to make allowance for variations in urine due to diet and the time of collection of samples.

Among other papers contributed were the following: A Chemical Examination of the Oleo-Resin of Indian Valerian Root, by K. Bullock, M.Sc.; the Identification by Chemical Methods of Drugs Containing Tannins, by A. H. Ware; Cochineal: the Utility of Assay Methods in the Estimation of Comparative Colour Values, by A. O. Bentley and S. Meakin; Note on Morphine Hydrate, by D. B. Dott; the Picrates of the Opium Alkaloids, by C. W. Maplethorpe and N. Evers, B.Sc., F.I.C.; the Colorimetric Estimation of Benzoic Acid in Cordials, by A. J. Jones; A Note on the Official Process for Assaying Galenicals of Hydrastis, by H. B. Mackie and H. A. Cleary, B.Sc.; A Note on Oleated Mercury, by F. J. Dyer and K. M. Metcalfe; the Vitamin Content of *Cortex Limonis* B.P., by S. G. Willimott, Ph.D., B.Sc., and F. Wokes, B.Sc.

At a meeting of delegates from the Pharmaceutical Society's branches, held in connexion with the Conference, under the chairmanship of Mr. P. F. Rowsell, President of the Society, a paper was read by Mr. F. Pilkington Sargeant entitled An Historical Survey of the Charters and Acts of Parliament Governing the Society's Activities leading up to the Present-day Position. Mr. J. Keall read a paper on the Dangerous Drugs Act. A meeting of the newly-formed League of Ex-Service Pharmacists was also held under the chairmanship of Major E. S. Peek. Papers were contributed on the Development of Pharmaceutical Service in the Army, by Captain Hill, and on the Use of Antiseptics in War, by Mr. F. Wokes.

CANADA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Montreal Vital Statistics: A New Milk By-law.

Dr. Boucher, Director of the Health Department of Montreal, has issued recently the annual report of his department for 1924, in which the vital statistics of Montreal are discussed. These show that there has been, compared with 1923, a decrease in the death-rate (14·87 as against 15·67), an increase in the birth-rate (32·75 as against 31·91), and a slight falling off in the number of marriages per 1000 (9·24 as against 9·49). The figures are calculated on the basis of a population estimated at 655,800. The average of the surplus of births over deaths for the past ten years was 9·749, showing consequently an increase of 1000 over the average of the past ten years. Under the head of infant mortality the report states that 3151 deaths of children under one year were registered in 1924, as against 3057 in 1923, or an increase of 91. The infant mortality death-rate for 1924 is the lowest observed in Montreal since the organisation of the bureau of statistics, but Dr. Boucher finds a decrease of 2·4 per 1000 births not sufficient, and believes it would be improved by reliable milk by-laws.

A by-law has been drawn up by Dr. Boucher, and was prepared to the end that a more effective hygienic control over the condition of milk might be imposed by employing educative measures towards the producer and retailer. The by-law embodies the rules for producing a clean, healthy milk, and keeping, transporting, and handling it until it reaches the consumer. In those cities, according to Dr. Boucher, where pasteurisation has been adopted, it has resulted in the appreciable diminution of deaths among nurslings. New York is quoted, where the ravages of tuberculosis have decreased amongst children under 15 years through pasteurisation by 53 per cent., when the figures for 1924 are compared with those 25 years ago. The new by-law allows the sale of natural and sterilised, as well as pasteurised, milk, so that the public may buy what they desire. Pasteurisation seems to be in high favour in the cities both of Canada and the United States, but the new milk by-law, which it was anticipated would pass without objection, has been held up temporarily, and at the time of writing has not been passed.

Inadequate Accommodation in the Hospitals of Montreal.

Superintendents of the Montreal institutions for treating the sick and injured, English and French, find the overcrowded condition of their institutions serious. Major A. K. Haywood, superintendent of the Montreal General Hospital, pointed out recently that Montreal requires 1600 more beds for general cases. In his opinion, a city with adequate hospital facilities should have 5 to 7 beds per 1000 inhabitants, whereas Montreal has only 3 to 5. But he considers the reason that Montreal cannot build additional wards is not so much because of the capital expenditure as because of the cost of maintaining the beds when accommodation has been found. Every public ward, he went on to say, means a loss to the hospital. With the present large deficits facing the boards of management, these cannot consider the addition of more beds until assurance is given as to the financing of them. Dr. L. A. Lessard, secretary of the Notre Dame Hospital, has stated that every day his hospital is compelled to turn away emergency cases. The situation is better now than it was and than it will be in the winter, but is serious even at this season.

A Proposed Jewish Hospital in Montreal.

Dr. N Vincent, President of the Montreal Clinical Society, at a meeting of the organising committee of a proposed Jewish and General Hospital in Montreal, stated that there is accommodation for only 1 out of 10 cases which require hospital treatment. He pointed out that there were English Protestant hospitals, French Catholic hospitals, and he hoped that there would be a Jewish hospital, where the particular tenets of the Jewish religion as to diet could receive due consideration. Jewish graduates would also have a better opportunity of learning clinical work, though the proposed hospital would not be entirely for Jews, of whom there are between 60,000 and 70,000 in Montreal. Dr. A. Bercovitch, secretary of the organising committee, announced that the medical men interested in the project had promised $20,000 towards its cost. The erection of the hospital as proposed would cost about $500,000, and accommodate 150 beds. A resolution was passed unanimously voicing the need of the institution.

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Ilford U.D. ..	88,701	16·2	9·9	0·73	1·3	1·0	10	43	0·7
Edmonton U.D.	70,450	19·7	10·1	1·05	1·1	2·2	—	60	5·1
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Dr. Buchan gives the history of the negotiations for an open-air school which have been going on since July, 1911, and points out that the provision of an up-to-date open-air school with a mentally defective department would enable the unsuitable and inefficient schools at Furness-road, Leopold-road, and Leinster-road to be abolished. The percentage of verminous children has been reduced from 20 in 1914 to 7·1 in 1924. In December the Education Committee approved the formation of an experimental class for stammerers. Willesden is badly off for an efficient home-nursing service. There are some eight nurses at work in connexion with churches and associations, in addition to the one home nurse employed by the council, whereas Dr. Buchan estimates that some 30 to 40 are needed. An orthopædic clinic for crippled children is another urgent need, and it is suggested that a local clinic be established to be based on the Stanmore Hospital and staffed by that institution. The staff of sanitary inspectors for dealing with housing inspection Dr. Buchan considers to be quite inadequate, and he suggests it be augmented.

Tottenham.

Dr. David C. Kirkhope reports that "the one great outstanding environmental defect in the district is the lack of housing accommodation." Quite a number of houses are ripe for demolition. The housing of Tottenham people has not been improved by the erection of L.C.C. houses, as these are let to families displaced from other parts of London. The pollution of the tributaries of the Lee has received special consideration, but the condition of the river is not yet satisfactory. Dr. Kirkhope hopes that this river "may yet come to be regarded as a place of beauty and a source of pleasure." A preliminary account is given of the trial of an anti-scarlatinal serum, and Dr. Kirkhope thinks the results are encouraging. The last effort to establish a branch of the District Nursing Association in Tottenham failed, and Dr. Kirkhope suggests that the council should "not allow this matter to rest until Tottenham is adequately equipped with a nursing staff for the domiciliary treatment of those requiring expert nursing care in illnesses other than those of an infectious character." The school report shows that 137 cases of otorrhœa have been treated by ionic medication and that in 82 of these the discharge from the ears has ceased. It is not claimed that these 82 have been cured and they will be kept under observation for a long period. Arrangements have been made with the North Middlesex Hospital for the operative treatment of children suffering from enlarged tonsils and adenoids, and provision is made for retention of cases in hospital where necessary.

Ilford.

Dr. A. H. G. Burton says that the housing difficulty in Ilford "has been very little eased." An inquiry at the end of the year showed "that just over 150 gallons of Grade A milk (or about one-tenth of the total sale of all milk) was retailed daily in the district." Dr. Burton thinks that the standard of Grade A milk is not exceptionally high and does not see why all milk sold should not be Grade A. He thinks the designations of milk have been unnecessarily multiplied. He finds little demand at present for pasteurised milk sold as such. "Much milk is pasteurised and sometimes re-pasteurised, but is sold as pure fresh milk to the consumer." Dr. Burton gives some comparisons with past years in order to indicate the efficiency of the school medical service. In 1908 there were 135 cases of ringworm in the Ilford schools; at the end of 1924 there were only five. The 1919 percentage of uncleanliness—namely, 10·7—became 4 in 1924. After the war there were 30 cases of itch discovered by medical inspection and 110 at the clinic. Last year the corresponding figures were two and three respectively. The cases of impetigo, or contagious sores, have been reduced from 546 to 243. An open-air school is still under consideration, but a site has been approved by the Board of Education. There is no school for mentally defective children. There are 30 young persons over 16 who were certified to be feeble-minded when at school in Ilford and who received no training. "There are 20 feeble-minded children at present attending the elementary schools and seven not attending any school who should be receiving education in a special school, either day or residential."

Edmonton.

Dr. H. W. Harding records that ten cases of encephalitis lethargica were notified in Edmonton, three of which ended fatally. Of the seven survivors, one shows a lack of concentration only; another, who was previously dull, falls to sleep at frequent intervals for a short time; a third tells unreasonable lies and has become cowardly; a fourth is mentally normal, but almost completely paralysed and has to be fed; a fifth suffers from twitching of the lids and double vision; a sixth suffers from double vision, is sleepy during the day, and easily tired; the seventh has left the district. Dr. Harding knows of two other cases which were not diagnosed or notified. Both are of the Parkinsonian type with "a mask face, general weakness, and mental lethargy." A big scheme, to cost £140,000, is in hand to improve the sewage farm which it is hoped will prevent flooding in the low-lying parts of the town and enable the sewers to be self-cleansing. The sanitary inspector reports continuous trouble from gypsies of the lowest class. Trenches have been dug across entrances in order to prevent their access to vacant land. The corporation are negotiating for the purchase of a recreation ground which is a favourite encamping place of the gypsies and which it is hoped to "control" when the property has been transferred.

Wimbledon.

Dr. A. Gilmour reports that 87 working-class dwellings of the parlour type are in course of erection on the housing estate. A new system of water filtration has been installed at the municipal public bath, Latimer-road. Negotiations are still proceeding with the Ministry of Health for a sanction to a site and buildings for a new day-nursery. Ten cases of encephalitis lethargica were notified, eight during the first six months of the year. Two cases were admitted to the isolation hospital, one of which was of the myoclonic type and ended fatally. The other cases were of a mild type, resembling influenza, and followed by giddiness, double vision, and drowsiness. A close investigation of the history did not establish any direct contact with other cases. A piece of vacant land, at the junction of Wandle-, Leyton-, and Denburgh-roads, caused a nuisance owing to the dumping of offensive matter. All endeavours to trace the ownership failed, and the council obtained an Order from the Ministry of Health under Section 21 of the Public Health Amendment Act of 1907 to clean and fence the land. This was done after copies of the Order and statutory notices had been fixed to a post erected on the land for the requisite period. The school dental scheme needs extension, as the staff is unable to attend to the "leavers," which means that much of the good done by previous work is wasted.

Hendon.

Dr. T. S. McIntosh reports that the scheme for the new permanent isolation hospital, delayed by the war, now only awaits the approval of the Ministry of Health. A scheme for the coördination and extension of the maternity and child welfare and school medical work has been approved, by which the gap between infancy and the school age will be filled by reasonably continuous supervision and the treatment of dental and visual defects and of minor ailments will be adequately met.

Finchley.

Dr. Wilson Jameson thinks that Finchley's greatest need at the present time is a number of small houses containing a living room, scullery, bathroom, and two bedrooms. In the council's housing scheme this type forms less than 9 per cent. of the whole. "Such accommodation," he says, "is suitable for younger married couples and can be let at a figure within measurable distance of an economic rent." Dr. Jameson regrets the resignation of Mr. Mellor, the organiser of physical training, and states that, in the short period of nine months, he was successful in securing the interest and coöperation of both staff and pupils, and that his work will prove of lasting benefit to the schools. He hopes that before long the Finchley education authority will find itself in a position to make this appointment a permanent one.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED AUGUST 1st, 1925.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 45; scarlet fever, 1377; diphtheria, 819; enteric fever, 73; pneumonia, 573; puerperal fever, 37; cerebro-spinal fever, 8; acute poliomyelitis, 5; acute polio-encephalitis, 3; encephalitis lethargica, 48; continued fever, 1; dysentery, 6; ophthalmia neonatorum, 98. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 3 deaths from enteric fever, 27 from measles, 9 from scarlet fever, 35 from whooping-cough, 16 from influenza, and 18 from diphtheria. There were 101 deaths of children under 2 years from diarrhœa and enteritis, as compared with 61, 50, 41, and 29 in the preceding weeks. In London itself there were 6 deaths from diphtheria, 7 from whooping-cough, and 2 from influenza.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

C. R. Moore, W. J. Doody, and T. F. Crean to be Surg. Lts.

Surg. Comdr. R. B. Scribner is placed on the Retd. List with rank of Surg. Capt.

ROYAL ARMY MEDICAL CORPS.

Maj. W. C. Nimmo, from half-pay list, retires on retired pay.

Capt. J. A. W. Ebden retires, receiving a gratuity.

ARMY RESERVE OF OFFICERS.

N. M. Maclennan, late 2nd Lt. 3rd Camerons, Spec. Res., to be Lt.

MILITIA.

Capts. H. Gwynne-Jones, G. E. Pepper, and W. A. Lethem to be Majs.

TERRITORIAL ARMY.

General Hospitals: Lt.-Col. (Bt.-Col.) J. H. Ray resigns his commn. and retains his rank with permission to wear the prescribed uniform.

General List: Capt. G. Moore (from R.A.M.C., T.A. Reserve) to be Capt.

Capt. H. D. Smart, having attained the age limit, is retired and is granted the rank of Maj.

Lt. T. S. Torrance (late Defence Force) to be Lt.

ROYAL AIR FORCE.

Squadron Leader H. Harvey is transferred to the Reserve, Class D.2.

INDIAN MEDICAL SERVICE.

The King has approved the grant of a temporary commission as Lt. to Berent Narain Khan.

The King has approved the relinquishment of his temporary commission by Capt. Manmahan Shamnath Drulow, who is permitted to retain the rank of Capt., and has approved the resignation of his commission by Capt. A. F. G. Balkes.

KIRKBY MOORSIDE ORTHOPÆDIC HOSPITAL.—On July 31st Princess Mary opened the Yorkshire Orthopædic Hospital at Kirkby Moorside. The building consists of three wings with wards that will accommodate 100 beds; one of them is named after the Rt. Hon. J. R. Ferens, of Hull, who has given generously towards the cost. An operating theatre, a gymnasium, staff quarters, and a refectory have been provided, and the site was given by Mrs. Edward Thaw, of Welburn Manor.

Obituary.

WILLIAM WYNN WESTCOTT, M.B. LOND., M.R.C.S., L.S.A., D.P.H.

THE death is announced from Durban of Dr. Wynn Westcott, well known as one of the most active of London coroners, at the age of 77 years.

William Wynn Westcott was born at Leamington, the son of Dr. Peter Westcott, of Oundle. He was educated at Kingston-on-Thames Grammar School and University College, London, graduating in medicine at London University in 1871, after having taken the M.R.C.S. and L.S.A. a year previously. For ten years he was in general practice at Martock, Somerset, where he was certifying factory surgeon and local secretary of the Sydenham Society, and then came to London as medical officer of health for Islington, an appointment which he shortly relinquished on being chosen deputy coroner for Central Middlesex and Central London. Thereafter for a period of 20 years he acted as coroner for North-East London, during which time he held inquests numbering not many less than 1000 a year. At this time he was admitted a member of the Middle Temple.

With his original mind and outspoken habit, the coroner's court over which he presided became noteworthy for eliciting other important matters than the immediate cause of death in the particular case. At one time he noted that every tenth case he inquired into was a death of an infant while in bed, and the lenient view of an "accident" began to be less general. He was a sharp critic of official death returns, for he had abundant experience of the reluctance of medical men to certify the actual cause where this was due to fault or failing. Simple natural deaths of adults were in his view nearly all due to cerebral hæmorrhage or to syncope consequent on heart disease, but he would have been a bad judge before whom to advance this view when it might conceal more sinister circumstances. He formed the opinion that the best witness in most criminal injuries was the police surgeon of several years' standing, and that in cases of poisoning an analytical chemist was more useful than an expert pathologist. His book on the history and causation of suicide was based on knowledge and experience gained in the court where he had on the average a case a week to investigate. It was a great regret to him that the pathological discoveries of the coroner's court were not systematically recorded and preserved.

Public work outside the coronership occupied much of Dr. Westcott's time. He was one of the first presidents of the Society for the Study of Inebriety, he was a constant attender at the Medico-Legal Society's meetings, and for a long while he was a divisional director of the Red Cross Society in Islington. He collaborated with the late Mr. William Martindale, F.C.S., in the production of the Extra Pharmacopœia which appeared in 1883, and was sold out in a few weeks; and for 18 editions his intimate medico-legal knowledge and his shrewd advice in points of doubt and difficulty were invaluable in helping Mr. Martindale and his son to keep the volume scrupulously up to date as a work of reference. Dr. Westcott was a widely read man who placed his culture freely at the service of others. Quite recently he had contributed papers to the Theosophical Society on such subjects as conscience, prayer, music, and Mohammedan doctrine. He made a hobby of Egyptian and Hebrew antiquities and was an authority on books concerning magic and alchemy, being chief of the Rosicrucian Society of England.

His home life was marred by bereavement. His wife, the daughter of Mr. E. Crawford Burnett, predeceased him four years ago, and of his five children only a daughter survives. Two sons, one qualified in medicine, the other in dentistry, died at the outset of their careers, and he also lost two daughters. His memory will be cherished as one who did much for his time and generation.

GEORGE KENNEDY SMILEY, O.B.E., M.B., B.A.O. R.U.I.

Dr. George Smiley, Regional Medical Officer to the Ministry of Health in the Manchester area, whose death occurred recently at Alderley Edge, was born and educated in Londonderry, entering Queen's College, Belfast, for his first medical training. As a young man he was characterised by the independence of judgment, which marked all his life, while he was known among his student contemporaries as a skilful and daring half-back at Rugby football. He graduated in medicine at Dublin in 1897, went to sea for a year, and then, after a short period in the south of England as an assistant, settled in Londonderry in general practice. Here he grew interested in ophthalmology, and became attached as honorary surgeon to the Eye Hospital of the city, taking out for several years post-graduate courses at Moorfields. In 1906 he married and left Ireland to carry on a practice in Derby, and while here he began his intimate association with the British Medical Association on being appointed secretary of the Derby Division. He was duly elected on the Representative Body and the Council of the Association, and when the National Health Insurance Act came into force became secretary of the Derby Local Medical Committee, and later of the Panel Committee. In 1916 he was chairman of the Medical Benefit Sub-Committee, a position which he held for two years, when his fairness and width of outlook led to his election as chairman of the Insurance Committee.

When the war broke out he found work ready to hand at the depôt of the Sherwood Forresters at Normanton, where he eventually acted as P.M.O., and, though without a commission, his services were later recognised by the award of the O.B.E. About six years ago he contracted an acute sepsis which, after an illness of many months' duration, left him with a damage to his left hand, such as rendered it impossible for him to carry on general practice, so that his appointment upon the Regional Medical Staff of the Ministry of Health, which was particularly well justified by his character and career, was one that he was able to accept with gratification. He was selected to fill the important post of the Manchester area, and soon established himself in the esteem of the insurance practitioners in that city and of his own colleagues in the service. Unhappily signs of serious abdominal mischief showed themselves last year, and while a palliative operation gave him relief, and indeed wonderfully good health for 15 months, the issue was merely postponed. He died on August 2nd, bearing the last two months of his illness with fortitude under the care of a devoted wife, to whom we express our sympathy.

THE LATE DR. S. J. LEONARD.—Stephen Joseph Leonard, L.R.C.P. Irel., L.A.H. Dub., died at his residence, Warrington, on July 31st, in his sixty-ninth year. A native of Galway, he studied medicine at the Royal College of Surgeons in Dublin, where he qualified as licentiate in 1893. For a time he was in practice in Dublin, and then moved to London, where he remained for 20 years as a busy general practitioner. Eight years ago he took over the practice of the late Dr. Adams in Warrington, where he proved himself a highly popular and much respected physician. He leaves a widow and four sons.

THE LATE DR. G. L. L. HAWKEN.—Giles Lockwood Lang Hawken, who died recently at Brighton after a lengthy illness, was a well-known medical practitioner in the Hurstpierpoint district. A Cornishman by birth, he received his medical training at University College Hospital, London, and qualified with the M.R.C.S. and L.S.A. in 1874. He went to Hurstpierpoint in the following year, joining Dr. Holman, and with other partnerships carried on practice for 40 years. For many years he was surgeon to St. John's College, Hurstpierpoint—one of the colleges of the Woodard Foundation—and to the local company of the Volunteer Force. Very popular in the district, he had a wide practice, his cheery manner winning a large circle of friends. He retired about six years ago, and after a few years' stay in Devonshire went to Brighton, where he passed away. He was interred at Cuckfield on August 4th.

Correspondence.

"Audi alteram partem."

PERIODIC MEDICAL EXAMINATION.

To the Editor of THE LANCET.

SIR,—I have read with much interest Dr. Otto May's article on Periodic Medical Examination in THE LANCET of Jan. 24th. For some years past in my work at the Children Homes (Detskie Doma) in Temir Khan Schura, about 500 children, I have noted the results of periodical examinations of about 500 children in a book which I call the "Bio-Sanitary Passport." Each child has his own passport, that contains: (1) results of the periodic examination twice a year; (2) changes of health occurring during the year; and (3) the condition of the child's life. If such a passport could be kept from birth and continued until death we should gain: (1) knowledge of the developments and changes of the human constitution; (2) early recognition of character (both physical and psychical), and the possibility of drawing all the advantages of prognosis and prophylaxis.—I am, Sir, yours faithfully,

Dr. A. A. PETROVITCH,
Temir Khan Schura, Dayestan S.S.R., Union of Socialist Soviet Republics (Russia).
July 18th, 1925.

THE ÆTIOLOGY OF CANCER.

To the Editor of THE LANCET.

SIR,—Long years ago, but not many months before Koch showed that tuberculosis was a micro-parasitic disease, I attended a Brown lecture delivered by Sir John Burdon Sanderson. The subject of the lecture was "scrofula," and the eminent lecturer told his audience that scrofula could not be a specific disease because he had collected dust from St. Paul's Cathedral, from Westminster Abbey, and from his own drawing-room; and in each instance the dust when inoculated into a guinea-pig had produced a tuberculous lesion.

It is interesting to compare this experience of mine with the opinions expressed by Prof. Powell White in THE LANCET of August 8th. He writes: "The great majority of pathologists have always recognised that the known phenomena of cancer are incompatible with the theory of an extrinsic specific causal agent. . . . To take one point only, it is now possible to induce cancer in animals without taking thought of any parasite. If an extrinsic parasite is to be considered necessary for the production of cancer, this organism must be present at all times either in all animals or else in the atmosphere."

My friend, the late Prof. Shattock, with whom I had the privilege of working for many years on the intimate pathology of cancer, held "that the parasitic hypothesis of the nature of cancer recommends itself as bringing the essential pathology of new growths into natural relation with other diseases, such as tuberculosis, the parasitic pathology of which admits of demonstration"; and further he believed that the parasitic hypothesis was the only one on which research on cancer could be hopefully based. I need scarcely add that Prof. Shattock was as conversant as any biologist (*pace* Prof. White) with the constitution of living matter. I am, Sir, yours faithfully,

CHARLES BALLANCE.

Harley-street, W., August 10th, 1925.

PERIODICITY OF CHOLERA IN INDIA.

To the Editor of THE LANCET.

SIR,—In reply to Sir Leonard Rogers's letter of June 14th, which refers to my note on the periodicity of cholera in India, I may say that I felt it incumbent on me to make my preliminary announcement as brief as possible. Apparently, however, brevity can be carried too far.

In a Memorandum on the Epidemiology of Cholera, which was written by me at the request of the Health Section of the League of Nations—and which I understand will be published shortly—I have given a more or less complete bibliography of the literature on the subject. H. W. Bellew's book and A. Herbert's work are both included in that bibliography, and are discussed in the Memorandum. The words "no such periodic trend" in my note in your columns were perhaps unfortunate, but referred, of course, only to the six-yearly periodicity, and were not intended to include Bellew's "three-year cycle," which he himself failed to substantiate. I think the last paragraph of my note plainly indicates that the Madras Presidency Public Health Department not only *can* foresee cholera epidemics, but *has* foreseen them in time to prevent disseminations of the disease. It is particularly with regard to the control of pilgrim and festival centres that we have scored our greatest successes.

I agree with Sir Leonard Rogers when he says that there are other conditions giving rise to cholera epidemics "not so simple as any 'three-year' or 'six-year' cycle." "The other work on the same subject" which I alluded to, and which is nearly ready for publication, will deal with a number of those conditions.—I am, Sir, yours faithfully,

A. J. H. RUSSELL,
Major I.M.S.

Madras, July 17th, 1925.

IS THERE A SEASONAL PERIODICITY IN SERUM RASHES?

To the Editor of THE LANCET.

SIR,—I do not think that the solution of this question is quite so simple as my friend, Dr. Brownlee, would have us believe. Some years ago (THE LANCET, March 2nd, 1918) you were good enough to publish certain tables, prepared by me, by which it was shown that the incidence of serum rashes varied with the age and sex of the patient. Other factors, besides age and sex, have to be taken into consideration—namely, the volume of serum injected (which may explain the age-incidence), the source of the serum, the quality of the serum—that is, whether it is whole or whether it has been refined—and, last but by no means least, the accuracy of the records. I confess to being horribly suspicious of those scanty rashes in July, August, and December in Table I. of Dr. Brownlee's letter. Those months are seasons of holidays and temporary assistant medical officers.

It so happens that some months ago I got out—with quite a different object—the figures for the North-Western Hospital for the years 1922 and 1923, in the same form as in Dr. Brownlee's Table I. Here they are, as in his Table II., with the exception of the theoretical number, which I, being no mathematician, am unable to supply. Perhaps he will do so.

—	Cases.	Rashes.	Percentage of rashes.
Jan.-March ..	539	225	41·7
April-June ..	354	147	41·5
July-Sept. ..	385	161	41·8
Oct.-Dec. ..	466	229	49·1

Dr. Brownlee appeals for information to those who possess it. Well, there are the records of over 20 years at the Eastern Hospital, Homerton, and of five years at this, the North-Western Hospital, Hampstead, of which, I am sure, the Metropolitan Asylums Board would allow him to make use, and for the accuracy of which I can vouch, so far as hospital statistics can be accurate.

I do not dispute the importance of the question in respect of the epidemiological points referred to by Dr. Brownlee.—I am, Sir, yours faithfully,

E. W. GOODALL.

North-Western Hospital, Hampstead, August 9th, 1925.

FAMILIAL ABDOMINAL LESIONS.

To the Editor of THE LANCET.

SIR,—I read with much interest the article by Mr. G. P. B. Huddy in THE LANCET of August 8th. He assumes that in certain families a type of stomach exists that either anatomically or functionally produces gastric or duodenal ulcer or carcinoma. Is it not at least equally, or more likely, that the familial factor, which one can admit, is concerned with diet, more particularly, as he suggests, with bad teeth, which again are possibly if not probably the result of diet? My own family history would appear to support his thesis. My maternal grandparents reared 13 children. Of these four (all females out of a total of six) suffered from stomach disease. My mother suffered from gastric ulcer for the last four years of her life, with indigestion and hæmatemesis, and died probably (almost certainly) of gastric cancer. An aunt died of hæmatemesis, another of perforated gastric ulcer, and a fourth suffered from severe attacks of melæna and indigestion. This was a long time ago, and I do not know if they had good or bad teeth, *but* I do know that as children and young adults they drank well water, and it was the family practice at the end of a meal to put salt in their tumblers and count "heads" of the visible animalculæ so killed. *This in a doctor's house!* Personally I regard the cause of ulcer as being due to sepsis. I cannot remember seeing a case of chronic ulcer with a clean mouth of natural teeth, though I have seen them in cases where carious teeth have been removed and a false set substituted after the ulcer had occurred.

While on this subject I may perhaps be allowed to add the following interesting fact. Yarmouth is annually visited by a large number of the Scotch fisher-folk; it is an unquestioned fact among the members of our hospital staff that with their arrival there is a greatly increased rate in the admissions for perforated ulcers. I should say that we usually get three or four admitted during the season of three months. I myself had three cases last fishing. What the factor is is only guesswork, but they are great salt eaters, and the girls drink the brine out of the barrels. Also they are perforce uncleanly in their habits and their teeth are not good.

I am, Sir, yours faithfully,

R. LEONARD LEY, M.B., B.C. Camb.

August 10th, 1925.

PS.—In regard to my mother's family, the boys all, as far as I know, escaped stomach trouble, yet the relative incidence in males is much greater. The boys would be more often away from home and would and did leave home earlier. This points very strongly to the foul well water being the causative factor.—i.e., sepsis.

THE SITE OF BETHLEM HOSPITAL.—The governors of Bethlem Hospital have offered to present five acres of the site to the London County Council as an open space. Of the total of 11 acres, which will be vacated by the transfer of the hospital to the Monks Orchard Estate, about three are occupied by the buildings.

WORK AND FINANCE OF ST. BARTHOLOMEW'S HOSPITAL.—In 1921 the excess of ordinary income over total expenditure was £9535; the ordinary income was £181,805. The in-patients numbered 9208, and their average stay was 23·78 days; the first attendances of casualty patients numbered 67,000; 2781 cases of street accidents or illness were brought in—nearly eight a day. Since the additional accommodation required cannot be provided on the site the governors have bought for £51,203 premises in Charterhouse-square and Charterhouse-mews suitable for the housing of a large portion of the nursing staff. The first block of the new nursing home has cost £96,000, and the further section now being built will entail additional expenditure of £87,000. The nursing staff numbers 321, which is insufficient to allow for holidays, illness, and emergencies, and a material increase is contemplated. Meanwhile the governors report "a marked decrease" in the number of applications for general training. The hospital's laundry work cost £7883, and more than a million and a quarter pieces were washed during the year.

Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the quarterly Final Examination of the Conjoint Board, held from July 7th to 31st, the following candidates were approved in the undermentioned subjects:—

Medicine.—R. B. Alston, St. Thomas's; W. A. Ball, King's Coll.; F. G. Beauchamp, Birmingham; J. M. Brodrick, Liverpool; Irene F. Callender, St. Mary's; J. P. Carpenter, Birmingham; W. S. Chapman, Univ. Coll.; Dorothy A. Chown, St. Mary's; G. Coope, Manchester; P. F. S. Court, Guy's; Anne A. Craig, Royal Free; A. C. Dalzell, King's Coll.; May W. de Livera, Ceylon and Royal Free; H. V. Dicks, St. Bart.'s; J. Dockray, Cambridge and St. Bart.'s; Marjorie M. Duggan, Cardiff; G. H. Dymond, St. Bart.'s; J. Evans, Guy's; J. P. Evans, Charing Cross; M. M. Fikri, Cairo; G. W. S. Foster, St. Bart.'s; A. C. Gairdner, London; S. E. Gawthrop, Durham; A. P. Gorham, Bristol; G. J. Gregerson, Adelaide and London; R. N. Hall and L. J. Haydon, St. George's; Kathleen M. Horton, London; J. P. Huins, Birmingham; J. W. Jeffery, St. Mary's; Mary Jennings, Royal Free; D. M. Johnson, and G. L. C. Jones, St. Bart.'s; Adele A. Kahan, L. C. Kalra, and H. Kesselson, Charing Cross; R. H. Knight, St. Bart.'s; Alice B. Laker, Charing Cross; T. P. Lalonde, Bristol; A. H. Levers, Westminster; S. Levy-Simpson, London; G. M. D. Lobban, Leeds; Mary C. Luff, Univ. Coll.; I. H. Mackay, Sydney and London; Nancy S. Marshall, St. Mary's; S. Mellins, Middlesex; P. B. P. Mellows, St. Bart.'s; D. G. Morgan, Cardiff; Margaret E. Morton, Royal Free; Gertrude M. Nicholson, Durham; T. C. Oakley, Birmingham; S. C. St. G. C. Parry, Middlesex; F. B. Parsons, St. Bart.'s; L. B. Phillips, Bristol; H. P. Pieris, Madras and Middlesex; O. L. Prosser, Liverpool; R. L. Quilliam, King's Coll.; L. D. Richards, Charing Cross; Bertine M. Rix, St. Mary's; Alice L. Robson, Royal Free; E. J. Rubra, Westminster; A. G. Schroeder, Adelaide and London; J. W. Shackle, Guy's; Sara C. A. Sharpe, St. Mary's; E. V. Slaughter, Middlesex; E. Sorabjee, Guy's; A. W. E. Soysa, King's Coll.; A. W. Spence, Cambridge and St. Bart.'s; R. K. Stockbridge, Adelaide and London; R. G. Strouts, London; B. R. Sworn, St. Thomas's; A. G. S. Tabb, Charing Cross; G. M. Tanner, St. Bart.'s; Elizabeth L. Taylor-Jones, Royal Free; E. J. E. Topham, St. Bart.'s; I. Vitenson, London; W. N. Welinkar, Middlesex; H. L. Wilson, St. Bart.'s; Jessie Wiltshire, Univ. Coll.; F. G. Winterton, St. Bart.'s; J. Wiseman, Guy's; and Rosa S. Wordsworth, Charing Cross.

Surgery.—Y. Abdel-Messiah, Middlesex; A. R. Adderley, St. Thomas's; P. W. A. Agnew, St. George's; R. M. Ainsworth, Liverpool; V. M. Albuquerque, King's Coll.; C. R. Alderson, Univ. Coll.; R. C. Amies, St. Thomas's; E. N. C. Annis, Guy's; S. A. Antoun, Birmingham; H. Y. Awad, St. Thomas's; H. Aziz and Marion L. Bainbridge, Manchester; J. C. H. Baird, St. Bart.'s; D. G. Balakirsky and A. L. Banks, Middlesex; J. V. Bannehr, S. B. Benton and W. F. D. Benton, St. Bart.'s; E. I. Bieber, Liverpool; C. E. Bigger, St. Thomas's; A. D. Blackwell, Middlesex; Ellen W. M. Bridge, Manchester; W. Buckley, London; F. Bunje, St. Mary's; Lillie M. Burton, Manchester; De L. Carey, St. Mary's; W. S. Chapman, Univ. Coll.; B. Chaudhuri, Middlesex; W. F. Cooper, St. Bart.'s; P. F. S. Court, A. R. Cox, and P. C. Cumber, Guy's; P. E. J. Cutting, St. Bart.'s; S. D. Dalal, Bombay; E. A. Darukhanawalla, Middlesex; S. W. Davies, Cardiff; Winifred de Kok, Royal Free; G. C. Dewes, St. George's; Mary G. H. Dickson, King's Coll.; G. Dignam, Manchester; W. H. Dowell, Guy's; I. A. Evans, Cardiff; O. F. Farndon, R. R. Fells, and P. H. Flockton, St. Bart.'s; R. M. Forsayeth, London; S. W. Gabbe, St. Thomas's; S. E. Gawthrop, Durham; J. F. E. Gillam, St. Thomas's; B. M. C. Gilsenan, St. Bart.'s; Z. A. Goma, Birmingham; E. P. Gough, St. Bart.'s; S. E. Goulstine, Durham; D. P. Gray and W. H. Green, Middlesex; L. A. N. Greenway, King's Coll.; H. W. Greenwood, Middlesex; Margaret H. Greg, Royal Free and Manchester; J. C. P. Grey, St. Thomas's; H. R. Griffin, Middlesex; B. J. Griffiths, Cardiff; G. J. Gross, King's Coll.; K. H. A. Gross, St. George's; W. S. Grove, Guy's; F. P. Guilfoyle, St. Bart.'s; C. W. Harrison, Los Angeles and St. Bart.'s; A. Hobson, Birmingham; D. P. Holmes, Westminster; R. L. Holt, Manchester; L. E. Houghton, Guy's; S. Howard, London; Ruth T. Hurnard, Royal Free; I. A. Jackson, Guy's; E. D. Jones, St. Bart.'s; J. Kahanas, Berne and London; W. R. Kirkpatrick, Guy's; P. H. Knowles, Bristol; S. N. Lahiri, St. Andrews Univ.; M. E. Lampard, King's Coll.; C. G. Le Couilliard, Middlesex; A. H. Levers, Westminster; H. M. Levy, Middlesex; S. Levy-Simpson, London; D. W. E. Lloyd, Guy's; A. J. McMillan, Middlesex; F. G. Martin, Charing Cross; R. G. Mathews, Univ. Coll.; Clara Mendelssohn, Westminster; R. D. Milford, St. Thomas's; D. E. J. Mitchell, Manchester; F. E. Montague, St. Thomas's; C. M. Moody, St. Mary's; P. Morton, London; D. H. P. M. Q. Mylechreest, St. Thomas's; T. K. Natesan, Madras and London; C. E. Nicholas, London; H. E. Nourse, Middlesex; Eileen A. Nugent, Royal Free; T. C. Oakley, Birmingham; E. J. O'Keeffe, London; C. J. S. O'Malley, St. Thomas's; A. Orlansky, Middlesex; C. H. Parker, London; G. E. G. Peirce, St. Mary's; W. G. Porter, Guy's; Winifred E. Probert, Westminster; F. W. F. Purcell, St. Thomas's; Marjorie D. Reddan, Royal Free; A. M. Rhydderch, London; L. D. Richards, Charing Cross; R. I. Roberts, Manchester; P. H. Rossler, Lausanne and Zurich; D. J. L. Routh, Univ. Coll.; I. J. Sachs, Middlesex; M. Schwartz, Univ. Coll.; S. T. Seccombe, St. Thomas's; J. Silverstone, Westminster; H. J. Simmons and K. S. Smith, Middlesex; R. E. Smith, Guy's; J. Spencer, St. Bart.'s; F. E. Stabler, Durham; H. B. Stallard, St. Bart.'s; C. A. Stanley, St. Thomas's; A. F. H. Stewart, Guy's; Mary Stirk, Manchester; Stella C. C. Stuart, Royal Free; E. D. Thomas, Middlesex; R. S. Tooth, St. Bart.'s; D. Vidofski and R. J. Vince, London; F. H. A. Walker, St. Bart.'s; E. Walsh, Manchester; L. H. F. Walton, St. Thomas's; T. E. Watkins, Cardiff; J. K. G. Way, Guy's; Ruth E. Webster, Westminster; H. L. Wilson, St. Bart.'s; J. T. Woodhead, St. George's; A. T. Worthington, St. Bart.'s; and H. P. Yew, Guy's.

Midwifery.—A. R. Adderley, St. Thomas's; R. M. Ainsworth, Liverpool; V. Albuquerque, King's Coll.; C. E. Allen, Guy's; R. B. Alston and R. C. Amies, St. Thomas's; H. K. Ashworth, Manchester; F. J. Bach, St. Bart.'s; Marion L. Bainbridge, Manchester; W. Baker, Leeds; A. L. Banks, Middlesex; J. V. Bannehr and S. B. Benton, St. Bart.'s; Florence K. Bibby, Charing Cross; C. E. Bigger, St. Thomas's; C. R. Birnie, King's Coll.; M. S. R. Broadbent, St. Bart.'s; Gladys Brocklehurst, Manchester; V. H. Brink, London; A. Burlingham, Univ. Coll.; Lillie M. Burton, Manchester; E. S. Caley and A. L. Canby, St. Thomas's; E. Carew-Shaw, St. George's; M. S. Chafey, Charing Cross; G. P. Chandler, St. Thomas's; J. R. B. Chatterton, Univ. Coll.; B. Chaudhuri, Middlesex; S. Chazen, Guy's; F. H. Chick, Birmingham; J. C. K. Chilcott, King's Coll.; A. Clark, St. Bart.'s; W. J. S. Clemmey, Liverpool; R. Cohen, Leeds; A. Coleman, London; A. B. Connell, St. Thomas's; R. G. Cooke, Liverpool; D. H. Couch, Guy's; J. B. Crabtree, St. Bart.'s; Olive C. Crowley, Charing Cross; A. T. Curnow, Guy's; P. E. J. Cutting, St. Bart.'s; A. J. Daly, London; A. C. Dalzell, King's Coll.; S. W. Davies, Cardiff; T. E. Davies and T. S. Dewey, St. Thomas's; Marjorie M. Duggan, Cardiff; J. J. F. Dunn, St. Mary's; G. C. Edwards, St. Thomas's; J. A. Edwards, St. Bart.'s; E. S. Evans, St. Thomas's; R. Evans, Guy's; M. M. Fikri, Cairo; B. Fink and S. J. Firth, Manchester; P. H. Flockton, St. Bart.'s; Elsie G. M. Ford, Leeds; J. N. C. Ford, St. Bart.'s; H. K. Fozdar, London; J. Freudenheim, Charing Cross; T. D. W. Fryer, St. Thomas's; S. C. Gawne, Liverpool; P. Gibbin, Cardiff; J. F. E. Gillam, St. Thomas's; W. L. Gillbard, St. Bart.'s; R. S. Glennie, St. Thomas's; G. Gorstige, Leeds; D. P. Gray, Middlesex; R. M. Greenop, King's Coll.; H. W. Greenwood, Middlesex; F. P. Guilfoyle, St. Bart.'s; B. Guyster, London; J. G. Hattingh, Liverpool; A. C. de B. Helme, St. Bart.'s; A. Hobson, Birmingham; R. L. 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Milles, King's Coll.; G. C. Milner, London; C. M. Moody, St. Mary's; Margaret E. Morton, Royal Free; C. E. H. Moykopf, Guy's; D. H. P. M. Q. Mylechreest, St. Thomas's; C. B. Nicholson, Middlesex; D. Nicklin, Birmingham; G. A. H. Norman, Westminster; H. E. Nourse, Middlesex; Eileen A. Nugent, Royal Free; Audrey S. Nunn, Charing Cross; R. Okell, St. Bart.'s; C. J. S. O'Malley, St. Thomas's; J. E. J. Palser, London; L. B. Phillips, Bristol; H. P. Pieris, Middlesex; D. Plum, St. Thomas's; C. G. E. Plumstead, St. George's; A. L. Pollock, Westminster; Margaret M. Price, St. Mary's; E. K. Pritchard, St. Thomas's; Winifred E. Probert, Westminster; J. D. Procter, Univ. Coll.; R. L. Quilliam, King's Coll; J. D.'I. Rear, Guy's; A. M. Rhydderch, London; J. H. Ripka, London; Bertine M. Rix, St. Mary's; L. Roberts, Middlesex; Sibyl D. Rodgers, King's Coll.; R. P. Ross, King's Coll.; P. H. Rossler, Lausanne and Zurich; E. J. Rubra, Westminster; J. A. Rushworth, Manchester; Margaret M. Russell, King's Coll.; C. H. Saint Johnston, Birmingham; J. W. Schofield, Middlesex; R. H. Scott, St. Mary's; J. A. Screech, St. Thomas's; M. Sendak, St. Mary's; W. D. Sheldrake, Guy's; Mary A. Silcock, Charing Cross; J. Silverstone, Westminster; H. Simmonds and G. Simon, St. Bart.'s; J. F. Simpson, St. Mary's; H. Sissons, Manchester; E. M. Smith, Univ. Coll.; K. S. Smith, Middlesex; L. G. Smith, St. Bart.'s; R. E. Smith, Guy's; H. B. Stallard, St. Bart.'s; Beryl M. Stevens, Royal Free and St. Mary's; I. H. K. Stevens, Univ. Coll.; R. K. Stockbridge, Adelaide and London; K. R. Stokes, St. Bart.'s; Stella C. C. Stuart, Royal Free; R. D. Summers, London; B. R. Sworn and C. C. Taffs, St. Thomas's; Dorothy S. Tait, St. Mary's; G. K. Taylor, St. George's; S. P. Taylor, Bristol; L. H. Thomas, St. Thomas's; R. Thorpe, St. George's; J. C. T. Tregarthen, Guy's; F. B. Turner, London; W. J. D. Twort, Univ. Coll.; D. Vidofski, London; D. C. Virmani, Charing Cross; H. Waldenberg, Leeds; F. H. A. Walker, St. Bart.'s; J. K. G. Way, Guy's; H. D. Weatherhead, St. Thomas's; T. C. S. Webb, Univ. Coll.; Ruth E. Webster, Westminster;

T H Wehlburg St Bart's, Janet Welch Royal Free; J G Wigley, St Thomas's; Beatrice A Wilkinson, King's Coll; G H J Williams London; H Williamson, King's Coll; A J Williams Middlesex; H Winch St Bart's, W R Wood, St Thomas's, and H R Youngman, St Thomas's.

THE LISTER WARD AT GLASGOW ROYAL INFIRMARY —The famous Lister Ward, which was pulled down last year, has been "re-edified" at the Wellcome Historical Medical Museum in Wigmore street The walls and contents of the ward have been preserved and reconstructed, and the original fireplace and equipment transferred This equipment includes the central pillar and round table, Lister's sterilising apparatus, and the actual beds in use in his time

LONDON (R F H) SCHOOL OF MEDICINE FOR WOMEN (UNIVERSITY OF LONDON) —At recent examinations the following awards for 1925–26 have been made:—Sarah Holborn Scholarship: Miss Mary Gould; Dr Margaret Todd Scholarship: Miss M M White; School Jubilee Bursary: Miss O N Grant; Flora Murray Bursary: Miss H E. Newman; Alfred Langton Scholarship: Miss G V Smallpeice; Mabel Sharman Crawford Scholarship: Miss E. T Moss; Helen Prideaux Post Graduate Scholarship: Miss Gladys Hill, M B, B.S; St Dunstan's Medical Exhibition: Miss E. M G Stevenson; Mrs. George M. Smith Scholarship: Miss G B Castle; Isabel Thorne Scholarship: Miss Maureen Evans.

DONATIONS AND BEQUESTS —The late Mr G Collis, of The Wick, Richmond Hill Surrey, left by will, among other bequests, on his wife's death, £500 to the Croydon General Hospital and £500 to the Royal Hospital, Richmond —By will the late Surgeon Lieut. Colonel Heinrich Friedrich Lawaetz Melladew, Royal Horse Guards, left £1000 in memory of his late wife and her brother, Judge Bain, to Winnipeg Hospital towards the provision of an X ray outfit for the hospital; £500 to St. Dunstan's work for Blinded Sailors and Soldiers; and £500 to the Children's Country Holiday Fund —Under the will of the late Mr John Douglas Oliver, of Dacre-street, Morpeth, the testator left, on his wife's death, £3000 to the Morpeth Cottage Hospital and District Nursing Association.

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION —At Queen Mary's Hospital, Stratford, there will be an intensive course embracing general medicine, surgery, and the specialties from August 24th to Sept 3rd The sessions will begin either at 10 or 10.30 A M and continue until 5 P M. In September a variety of courses will be held—viz., Diseases of the Chest at the Brompton Hospital Sept 21st to Oct 3rd; Diseases of the Skin, Blackfriars Hospital, Sept 7th to 19th, also the same date a course at the Infants Hospital; Ophthalmology at the Royal Westminster Ophthalmic Hospital, Sept 7th to 26th; a series of weekly lecture-demonstrations in Electro-therapy at the Royal Free Hospital, Sept 23rd to Oct 11th, and a general course in medicine, surgery and the special departments at the Westminster Hospital from Sept. 21st to Oct. 3rd Copies of the syllabus of each of these courses may be obtained on application to the Secretary to the Fellowship of Medicine at 1, Wimpole-street, London, W 1

Appointments.

GREENWOOD A C M R C S L R C P Lond has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Horncastle District of the County of Lincoln

Vacancies.

For further information refer to the advertisement columns

Birmingham University—Lecturer in Bacteriology £150
Bradford Royal Infirmary—Two H S's Each £200
Bristol General Hospital—H P's, H.S, &c Each at rate of £80
Burnley, Victoria Hospital—H.S. £200
Derbyshire County Council—Asst Sch M.O and Tub O £650
Greenwich Union—Sen Asst M O £500 Also Asst M.O £400
Hull Victoria Hospital for Sick Children—Res H P £80
Jersey General Hospital and Poor-law Infirmary—Res M.O £200
Leeds General Infirmary—Hon Asst Phys.
Leeds St James's Hospital—Third Asst M O £275
Liverpool Brownlow Hill Infirmary—M.O £150
Manchester, Northern Hospital for Women and Children—Hon Asst Gyn S
Manchester and Salford Hospital for Skin Diseases—H.S £100
Manchester, St Mary's Hospitals—Hon Asst S
Newcastle upon Tyne Royal Victoria Infirmary—Hon S
Plymouth Borough—Asst M O H £600
St Peter's Hospital for Stone, &c, Henrietta street, Covent Garden, W C—H.S at rate of £75
West Riding County Council—Dist Tub O for Barnsley £600

Births, Marriages, and Deaths.

BIRTHS.

DAVIDSON —On August 4th and 5th at 84, Bickenhall mansions, Gloucester place W, the wife of Maurice Davidson M D, of two sons (twins)

HEPPER.—On August 7th at Felnley, Surrey, the wife of Dr John E. Hepper of a son

MARRIAGES

BOWIE—WILSON —On August 1st at the Barclay Church, Edinburgh Major John Darling Bowie, D S O, R.A M C, to Winifred Margaret, daughter of the late John Wilson and Mrs Wilson of Braidwood, Corrennie gardens Edinburgh

CARTER—WESTMACOTT —On August 5th, at St Martin in the Fields Ernest Edwin Carter M B, B S, to Eileen Helen Maude Westmacott second daughter of the late Colonel H R Westmacott Welch Regiment, and Mrs. Westmacott, of Woodside Ashley, Hants

SIMPSON—BATTEN On August 5th at St Mary Abbot's Kensington Reginald Hugh Simpson, M D, M R C P, to Joyce Rayner Batten M B, B Ch younger daughter of Dr and Mrs Rayner Batten, of Campden Lodge, W

DEATHS.

ATKINSON —On August 6th from pneumonia Dr Arthur William Atkinson of Mirion House, Crewe

DANIEL —On August 2nd, at Beaminster, Dorset Thomas Palmer Daniel M R C S, in his 80th year

DUKE.—On July 22nd at Kenman, Victoria B C, Valentine de Saumarez Duke, L.R.C.S Irel L.K Q C P Irel, formerly of Nuwara Eliya Ceylon aged 70

JOHNSON —On August 9th, at 4, Heath hurst road Hampstead Florence the dearly beloved wife of Dr Rance Johnson

KELLETT —On August 3rd at Waterloo-road, Bedford, Leonard Henry Kellett M D, Inspector General R N retd, aged 73 years

WYNNE.—On August 4th, at Killard, St Martin's, Guernsey, John Darley Wynne M B., son of the late Frederick Wynne Bishop of Killaloe

N B —A fee of 7s 6d is charged for the insertion of Notices of Births Marriages, and Deaths

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

THE FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION, Wimpole-street, London W

MONDAY August 17th to SATURDAY, August 22nd —ALL SAINTS HOSPITAL, Vauxhall Bridge road, S.W Clinical demonstrations Wednesday evening Thursday afternoon and evening, and Saturday afternoon Wed 2 P M, Mr H E. Griffiths on Neoplasms of the Testis —QUEEN MARY'S HOSPITAL FOR THE EAST END Stratford Intensive course in General Medicine, Surgery and the Specialties. First week as per syllabus Morning and afternoon sessions

INDEX TO "THE LANCET," VOL. I, 1925.

THE Index and Title-page to Vol. I, 1925, which was completed with the issue of June 27th, is now ready A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2

THE LANCET: SUBSCRIPTION RATES.

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Subscriptions not paid in advance are charged out at the published price of 1s per copy, plus postage Cheques and P O's (crossed "Westminster Bank, Ltd, Covent Garden Branch") should be made payable to THE MANAGER, THE LANCET Offices, 423, Strand, London, W.C 2.

Notes, Comments, and Abstracts.

MEDICINE AND SCIENCE AT WEMBLEY.

A visit to the British Empire Exhibition at Wembley may be made the occasion of a useful study of public health and the applications of science to human need.

The Ministry of Health has issued a guide (price 3*d.*) to its exhibits in H.M. Government Pavilion, where the first hall is occupied with an historical sketch of the medicine-man with his amulets and charms, and the alchemist with his alembics, in contrast with the equipment of the modern laboratory. The exhibits illustrate the progress in the campaigns against malaria, leprosy, plague, and louse-borne diseases and in the technique of port medical work. In the second hall is a model of the Lister Ward and of a modern operating theatre, along with examples of water purification and sewage disposal, while the third hall contains well-thought-out schemes of applied medicine in municipal affairs, including housing, child welfare, industrial disease, pure food, and clean milk.

A second edition has now been issued of the handbook[1] to the exhibits of the Royal Society, which itself is worth the whole of an afternoon visit. This book is compounded of essays by some 24 distinguished scientific men in illustration of the demonstrations which are on view and of the progress of natural knowledge: it is not in any sense a glorification of modern science as the handmaid of technological success. The result is admirable, though naturally to each reader some of the sections will appeal more than others. About a third of the whole is taken up with the structure of matter and radiation; there must be many readers of The Lancet, in whom X rays, ultra-violet light, and wireless have surprised an imperfect knowledge of modern physics, and they will find the diagram of the range of various electro-magnetic waves, which forms the frontispiece, well worth the modest price of the volume. Dr. Simpson on the water in the atmosphere and Dr. Tate Regan on Darwinism strike particularly good notes as essayists, and it is pleasant to find Prof. Poulton still standing on the impregnable rock of natural selection in his short discourse on mimicry.

Commercial Exhibits.

Many of the series of exhibits in the Chemical Section at Wembley, organised by the Association of British Chemical Manufacturers, are well worth the inspection of clinical medical men; there may be no special appeals to medicine or therapeutics save in a few directions, but to preventive hygiene there are many. Such matters as the materials for house construction and their preservation, for road manufacture, for paving and for fire-proofing are of growing importance to doctors, as questions of domestic accommodation, sanitary environment, and convenient transport become more intimately associated with public health. Such stalls as those of Messrs. Albright and Wilson, Messrs. Brunner Mond, Messrs. Chance and Hunt, and Messrs. Naylor Brothers can be studied with advantage, while the products exhibited by the Gas Light and Coke Company and the South Metropolitan Gas Company will be also found of practical interest.

The fine display of Messrs. Burroughs Wellcome is of considerable historic interest to medical men. At the stand of this firm, and still bearing the dents of hard usage and particles of earth from the world's highest mountain, a relic of the Mount Everest expeditions of 1921, 1922, and 1924 may be seen—it consists of the "tabloid" medicine chest as supplied for use in these huge adventures. The medical officer in charge of each of the expeditions has sung the praises of this chest, which in 1922 travelled over 1000 miles by yak transport—the most trying in the world, and has served for three successive expeditions. It is still fit to do duty with a fourth. The case which accompanied R 34 in the first airship flight from England to America and back is also shown, prompting the representatives of the firm to anticipate a distant time when leviathans of the air will carry their own physician and medicines for a passenger list approaching in length that of a Victorian liner. Here also is the actual tube of solidified ginger essence, one of the four phials of "tabloid" medicines, which Peary carried in his last dash to the North Pole. Here are the cases which Amundsen and Scott carried to the South Pole in 1911–12. One case bears in Amundsen's handwriting the inscription. "Sydpolem, 14-12-1911." The other is sadly devoid of inscription. What may be termed "the explorers' corner" in this display also contains dioramas of the following pioneer events: Stanley crossing darkest Africa, the final attempt to climb Mount Everest, Bleriot flying the Channel, Alcock flying the Atlantic, Ross Smith on the final stage of his flight to Austr[illegible] U.S.A. [illegible]don: world-flight airmen arriving at Croydon. In every instance the original "tabloid" medical equipment which served these pioneers on their travels is shown.

At the stand of the Clayton Aniline Co. everything is designed to remind us of the discovery which led to the manufacture of aniline on a commercial scale, and gave the first impetus to the development of the colour industry. This was in the "fifties" of the last century, and in 1875 the Clayton Aniline Company, Limited, was founded for the manufacture principally of aniline oil and salt. Ever since the company has added to its activities, more or less as a natural outcome, the manufacture of dyestuffs. Although at first aniline was used almost exclusively as the starting-point in the production of synthetic dyestuffs, only a small proportion of the total dyes now produced are actually derived from aniline, but the term "aniline dyes" is used as a popular expression to cover practically all coal-tar intermediates and dyes. The Clayton Aniline Co.'s exhibit does not rely only on the number of colours shown, but calls attention to the evidence supplied of the accumulated knowledge of years of research and experience in a most intricate industry. Some 250 dyes appear of various hues and shades, and are shown in their application to cotton, woollen, silk and artificial silk fabrics, leather, and paper. There are colours for practically all industries, textiles, leather, glass, rubber, and paper, each providing opportunities for the chemist. The Clayton Aniline Company also shows the products manufactured in England of the "Ciba" brand pharmaceutical specialties, one of which, "Phytin," is symbolised at the stall in an attractive statuette, the work of Miss Phyllis Mott. Cases are being shown of Dial, Didial, and Elbon "Ciba" tablets, of other products whose therapeutic effects have been noticed in our columns, such as Lipoiodine "Ciba" tablets and Digifoline tablets—this last being a preparation of vegetable origin, containing the glucosides of digitalis leaf in their natural proportions, free from inert or harmful extractives.

A large range of technical products is displayed by various firms whose names are widely associated in the public mind with activity in the production of bleaching powders or perfumes. Among these are Messrs. Boake Roberts and Co., who show, in addition to many essential oils and terpeneless oils used in perfumery, a range of sulphur dioxide salts with a wide technical application, and a recrystallised menthol which conforms to B.P. requirement. The Castner-Kellner Alkali Company issue a number of interesting pamphlets upon chlorine derivatives and products in relation to public health; the Erasmic Company, Ltd., show many samples of scented preparations in a striking colour scheme; Messrs. J. and E. Atkinson show a complete range of toilet preparations; Messrs. Thomas Fell and Co. specialise in pot-pourri; the Graesser-Monsanto Chemical Works include on their stall some fine specimens of phenol and cresol derivatives; the various employment of hydrogen peroxide inspire the exhibits of Messrs. B. Laporte, Ltd.; bismuth salts occupy a prominent position at the stall of Messrs. Thomas Tyrer and Co.; the stand of the United Alkali Co., Ltd., indicates the various products of the company both in heavy and refined chemicals and in dye products; Messrs. Edwards and Gritton call attention to their medicinal paraffin prepared from Russian petroleum; the Electro-Bleach and By-products, Ltd., show high grades of bleaching powder and caustic soda, as well as Sesqui carbonate of soda, and samples of anhydrous ferric chloride and an especially fine carbonate of lime; and Messrs. Grieve and Gordon make a feature of eucalyptus preparations. Messrs. Charles Roberts and Co. exhibit models of standard tank wagons for the conveyance of all forms of chemical liquids.

Messrs. G. M. Taylor show a fine range of artificial eyes, sadly required in post-war days; and Messrs. Baird and Tatlock, at a stand fitted by the firm's own men, and made at their own works, demonstrate the materials used by them in fitting up laboratories. The finish is that normally used in laboratories, and the same type of benches and finish are in use in the modern laboratory exhibited by the Ministry of Health.

The apparatus on view, it will be seen, covers a wide range from chemistry to psychology, from mechanics to bacteriology.

An Overcrowded Mental Hospital.—The Commissioners of the Board of Control state that the Salop Mental Hospital, upon which otherwise they report favourably, is overcrowded. The accommodation is for 313 males and 388 females, but the average number resident during the past year has been 317 and 421 respectively. The construction of the building will not allow of proper classification, and the Commissioners say that the hospital can only be brought into line with similar institutions of more modern construction by the erection of an admission hospital with cottages for recovering and convalescent [illegible] The accommodation for nurses is "far from ideal."

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[1] [illegible] of Modern Science. By various [illegible] A. and F. Denny, Ltd. 1925. Pp. 232. 3/[illegible]

SOME

Practical Considerations

IN THE CONSERVATIVE TREATMENT OF FRACTURES OF THE PELVIS AND LOWER EXTREMITY.*

A Course of Four Lectures delivered for the University of London at St. Bartholomew's Hospital

By Sir WILLIAM I. de COURCY WHEELER,
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LECTURE II.

The views of the older writers on the subject of injuries to bones are worthy of study. In the process of literary excavations we come across some useless débris, but here and there are found nuggets of pure gold.

Fractures of the Neck of the Femur.

Astley Cooper, whose investigations are so imposing in the history of the surgery of bones, explicitly states that in all cases of *transverse fracture* of the neck of the femur which he has had the opportunity of examining, he has never seen one in which there was union by bone. "The dissections which I have made," says this illustrious surgeon, "have convinced me that *fracture of the* neck of the femur, when it is situated within the capsule, is never united by bone. The union is solely effected by *means* of ligamentous substance, as in fracture of the patella." "This celebrated surgeon," says Dupuytren, "has since *modified* his opinion, as we find him remarking that, as a general rule, fracture of the neck of the femur within the capsule is united by ligament and not by bone, as in the case of the olecranon and the patella, but that it would be a rash assertion to deny the possibility of ossific union, and to maintain that the general rule laid down admits of no exception."

This was more or less *the teaching* up to our own time. Fifteen years ago I treated an aunt of my own, aged 70, in a plaster case with abduction and internal rotation, and obtained bony union.

One of the first statements made by Dupuytren, in an essay on *fractures of* the femur, is that he never saw a fracture of the neck of the femur in a child. We know now this is not uncommon, and after such a statement we wonder whether it is worth while referring back to authorities of the pre-X ray era. The reason I *do so is this*—that credit must be given to Dupuytren for anticipating to some extent the modern work of Whitman, Jones, and other *authorities* for whom we all have such deep respect.

Dupuytren points to specimens in the Museum of the Faculty of Paris and of the Hôtel-Dieu, where numerous examples of intracapsular fractures united by bone are to be found, and *states that* he regarded osseous union of intracapsular fracture of the neck of the thigh bone as demonstrated beyond doubt. He disproves *and* discounts all arguments advanced at the time against the possibility of bony union. He denied that the upper *fragment* was devoid of sufficient blood-supply, and showed that the vessels passing to the head via the ligamentum teres were sufficient. The importance of the ligamentum teres in preserving the viability of the head of the femur has been established *beyond* doubt by Bonn.[1] Dupuytren showed that the neck of the femur is not devoid of periosteum, as stated by some contemporaries, *and that* the bathing of the fragments in synovial fluid could not be a determining factor in *connexion with non-union, as it does not* affect the union of fractures into other joints.

But then comes this significant statement. "The fact is, that the great difficulty lies in the perfect and accurate adjustment and relation of the fractured ends of the bone," and he insinuates that if this can be accomplished bony union may be expected. He *was a shrewd observer, for he realised that* union in this situation must be slow, and suggests as an axiom that fractures of the neck of any bone should be kept at rest twice as long as ordinary fractures of the same bone, and even after that period displacement might occur.

He does not seem to have realised the full importance of abduction, but his *description of the reduction of* a fracture indicates that he was not oblivious to its significance. He describes his procedure thus: "The patient being placed on his back, and the pelvis being fixed by assistants, I bend the thigh on *the belly by raising it, and* then gently draw it from the body, the knee being at the same time flexed. This is immediately followed, without difficulty or the employment of violence, by the limb resuming its natural length and the foot its normal direction." By flexion he relaxed the adductors which produce eversion of the foot, and the glutei and others which draw upwards the *shaft of the* bone. He adopted the principle of Percival Pott, who introduced the flexed position of limbs in the treatment of fractures generally. He designed a double inclined plane splint, the thigh being fixed at nearly a right angle to the pelvis and the leg forming a similar angle with the thigh. He says by this method union takes place without shortening, and quotes *some convincing* cases.

Although abduction is the essential feature in the treatment of fractures of the femoral neck, the arguments of Dupuytren in favour of the double inclined *plane are impressive. His* reasoning is so persuasive that I wonder why this old method fell early into disuse and was supplanted by so unsatisfactory a treatment as weight-and-pulley extension. If there is any one thing I am proud of in the *treatment of fractures* over the last 25 years, it is this—I have never used a long Liston splint, and I have never treated a fracture *of the neck of the* femur by Buck's extension.

It is interesting to note that in 1921 Moore contributed an article in the *Boston Medical and Surgical Journal* recommending that the fracture be reduced under an anæsthetic, and the *leg put* up in right angle flexion of both hip and knee in a plaster cast. In this way the patient can sit up and be moved about in a wheeled chair from the very first. Out of 42 cases so treated by this method, the average age of the *patients being* 65 *years*, 60 per cent. gave a good result.

If the thigh is flexed at right *angles* with the abdomen and the knee at the same angle with the thigh, the relaxation of the muscles tends to prevent *shortening*, and any progressive power of contractility which follows after this position is assumed cannot assert the *direct pull* which produces shortening when the limb is extended. Flexion of the leg corrects eversion of the foot, as was pointed out by Dupuytren in 1810, and again in an excellent paper by Russell as recently as January, 1924, in which he says: "That upward lifting of the bent knee is the natural way of inverting the limb when we wish to correct eversion. Instinctively we first bend the knee and then lift it upwards. The practical fact is that eversion gives no trouble."

Fractures of the Neck of the Femur in Children.

First importance attaches to the partial fracture-separation of the epiphysis of the head of the femur. The condition is most often found in or about puberty, more often in boys than *in girls*. It may arise out of some comparatively trivial and forgotten trauma. Any displacement which occurs may be gradual, the diaphysis yielding in an upward direction and becoming gradually rotated outwards in relation to the head. Solid union takes place, leaving behind a traumatic coxa vara.

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* All the cases referred to were illustrated by lantern slides. Lecture I. was published in The Lancet of August 15th, p. 313, and Lectures III. and IV. will appear in subsequent issues.

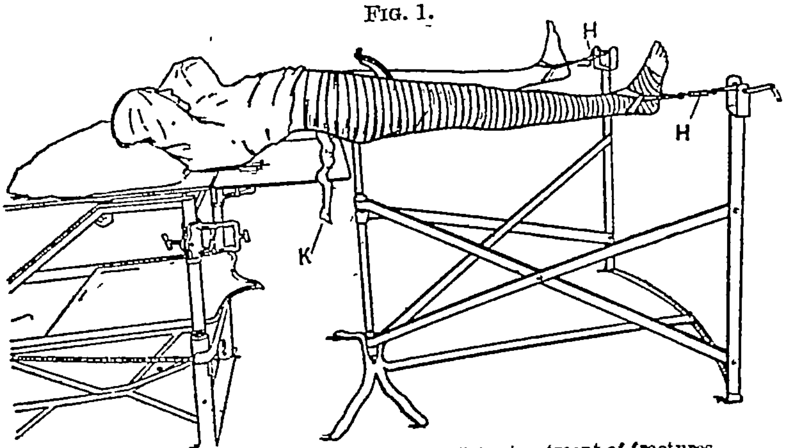
[1] Arch. f. klin. Chir., 1924.

It is a difficult injury to diagnose early, even with the help of X rays, and Sir Robert Jones says it is the most often overlooked of all hip injuries, even by extremely good surgeons. It is suspected when rotatory movements are extremely painful, and when abduction beyond a short range is impossible. There is, at first, no shortening, and the symptoms disappear with rest, but later on, when activities are resumed, shortening occurs, and separation of the epiphysis, partial or complete, will be then recognised. In contrast to this, there may be a complete separation of the epiphysis, a fracture through the neck, or a fracture involving both neck and epiphysis.

Whitman calls special attention to fracture of the neck of the femur in children. The fracture occurs after traumatism to the hip, probably more frequently than separation of the upper epiphysis. It is generally impacted or of the greenstick variety, but the signs and symptoms are much the same. The immediate results are good, but yielding at the point of fracture will produce a coxa vara if the limb is not protected from weight-bearing for many months by a calliper splint. The immediate treatment, whatever the position of the fracture may be, is the same as in adults. Shortening and eversion must be reduced, with subsequent fixation in the position of abduction.

To obtain reduction; flexion and inward rotation followed by traction and abduction, or abduction alone, are required. Seven cases of ununited fracture of the femur in early life are mentioned by Whitman, to prove that non-union may follow this injury in childhood if the treatment is inefficient. Thus he shows that non-union is not accounted for by deficiency of blood-supply, nor by advancing years, but by inefficient treatment. Plaster-of-Paris fixation is the best, and after six or eight weeks the child may be allowed to walk on a calliper splint for two or three months. If the fracture is diagnosed and no displacement has occurred, a short period of rest followed by ambulatory treatment with a calliper splint is sufficient.

FIG. 1.

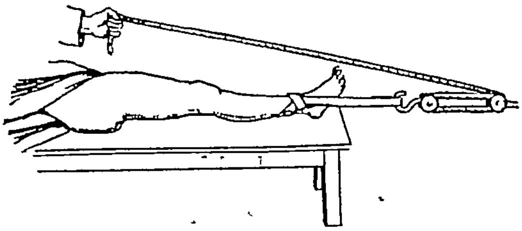


Simple orthopædic table (designed in 1905) for treatment of fractures.

Fractures of the Neck of the Femur in Adults.

I do not think, from the point of view of treatment, that it is necessary to say more than this—that if, in a strong adult, a fracture is impacted, and there is more than half an inch shortening with eversion of the foot, the impaction should be forcibly broken down under an anæsthetic, the deformity reduced, and the treatment carried on as in unimpacted cases. Rotation outwards of the foot matters much more than a little shortening. If the foot is in good position without any outward rotation and the shortenening is inconsiderable, then it is not necessary to disimpact. If there is impaction in an old person, all the circumstances must be carefully weighed before the impaction is broken down to reduce moderate deformity; but it must be remembered that the so-called impacted fracture from indirect violence in elderly people is very incomplete, and functional disability will certainly follow weight-bearing in the absence of proper reduction. A decision must be made as to whether, in an exceptional case, the risk of reduction and fixation is too great. Under such circumstances, crippling, non-union, and deformity must be the result, mitigated to some extent if a calliper splint can be worn.

FIG. 2.



Block and tackle extension (Jones).

The object of treatment of this, as of all fractures, is to restore the symmetry of the broken bone, thus eliminating the primary cause of non-union, deformity, and loss of function. Henderson states that of 120 cases of ununited fracture of the hip seen at the Mayo Clinic, not one had received proper treatment at the time of the injury.

The modern treatment can be summarised in one sentence—reduction of the deformity and fixation in the abducted position. Whitman deserves due credit for insisting upon these conditions. Abduction is checked by tension on the capsule, by contact of the upper border of the neck with the rim of the acetabulum, and of the great trochanter with the side of the pelvis. In abduction the neck of the femur is normally in a horizontal position. In fracture of the neck the fractured end of the proximal fragment points laterally, and it is only by bringing the distal end of the neck into a horizontal position that accurate apposition of the fragments can be made. Not only are the fragments brought into apposition by full abduction of the leg, but the tension on the capsule provides for direct mutual pressure of the fractured surfaces. The trochanter being in contact with the pelvis, any muscular effort likely to displace the fragment is impotent, and fixation is complete.

If absorption of the neck and shortening and stiffening in the movements of the hip result after the abduction treatment, the tilt downwards of the pelvis on the affected side, in order to bring the two legs parallel for locomotion, will correct the shortening. If adduction follows treatment of an injury to the hip, the reverse is, of course, the case. The abduction treatment is now the standardised routine. To encourage us further, Whitman points out that the fracture in the aged is usually at the base of the neck, and that the central fracture is more common in the young and the vigorous. The reverse of what was formerly believed. Bearing this in mind, and also that fractures elsewhere unite readily in aged subjects, we have every ground for optimism when considering the prognosis of these cases.

It may be confidently predicted that the immediate and efficient treatment of fractures of the neck of the femur by the abduction method will be followed, in most instances, by repair. If union fails when accurate apposition of the fractured surfaces has been maintained for a sufficient time—as confirmed by X ray examinations—it indicates a low vitality in the tissues, and Whitman advises in such cases a reconstruction operation which will be mentioned later.

In 1905 [1] I designed an apparatus for the reduction of fractures of the lower extremity which resisted manual traction, and in the absence of one of the more perfect tables of the Hawley type, I still find it useful. The original cost was £2 10*s*. (Fig. 1.)

The apparatus consists simply of two iron gates, about 4½ ft. long, swung on an upright which carries a perineal bar, attached to which is a small support for the sacrum of the patient which is included in the plaster, but afterwards removed. This pelvic support and the upright on which it sits are supported by a heavy stand. On the distal ends of the gates are rollers, square on section, in order to obtain a firm hold on the cords or bandages when extension is being applied. By pushing the handle inwards the square bar fits into a hole of the same shape and diameter, and so locks. This is a simple substitute for a ratchet Fixed to the stand, and running at right angles to it along the floor between the two gates, is a bar, and the distance of the gates from this bar indicates the exact amount of abduction and enables plaster to be applied with both legs spread from the pelvis at equal angles. In this way there can be no obliquity of the pelvis. If it is desired to note the exact amount of extension required to hold the fracture reduced two Salter's sportsmen's balances, registering at least 50 lb., are necessary additions.

I have found the apparatus useful in all recent cases of fractured femur in any position where shortening could not be reduced with ease, and in the treatment of malunited fractures. It provides a substitute for the block-and-tackle pulley arrangement as a means of reducing the overlapping and shortening in the latter group, and it facilitates the application of plaster of Paris when employed during the treatment (Fig. 2).

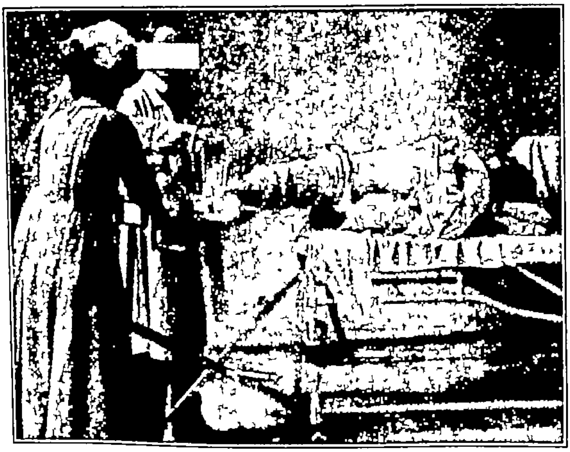
Reduction of an Intracapsular Fracture of the Neck of the Femur.

The patient is anæsthetised The gates are brought to the end of the table, and the patient is put astride the padded perineal crutch Manual traction and manipulation is usually sufficient for reduction, but by attaching the foot to the end of the gate, extension and abduction are readily obtained, and the application of the plaster of Paris rendered very simple

It is best to apply the plaster to the foot and lower third of the leg in the first instance, and when this has set a clove-hitch or a wet skein of wool, passed round the ankle and over the foot in figure-of-eight fashion—as recommended by Watson Cheyne—is connected with the ratchet. These connexions may be incorporated in the plaster bandages used to complete the cast before the extension is released. Or, alternatively, a steel pin is passed beneath the tendo Achillis in contact with the os calcis to act as a connecting link between the foot and the ratchet. The steel pin is removed when the plaster coat is complete.

The limb on the sound side is held abducted to the normal limit by an assistant who stands at the end of the gate, or it may be attached to the rachet by a clove-hitch. The surgeon notes the normal range of abduction on the uninjured side. The knee and the thigh are kept slightly flexed by a sling under the knee from the upright bar which is attached to the gate. This flexion corrects the inversion of the foot. The injured leg is extended by tightening the ratchet, slowly abducted by moving the gate, and rotated inwards with the hands. The surgeon or an assistant supports the joint and presses the trochanter gently downwards. The neck of the bone is first felt to hitch on the upper border of the acetabulum, but this obstacle is easily overcome. Abduction is continued until the normal range is obtained. The trochanter rests against the side of the ilium, and the anatomical relationship between the shaft and the neck of the femur is now restored. The limb is in the Whitman attitude of extension, complete abduction, and slight inward rotation. Plaster of Paris is rolled on with great facility, with the aid of this apparatus. The plaster is allowed to dry with the patient still in position on the gates. (Fig 3.)

FIG. 3.



Application of plaster of Paris for fractured hip

In the ward the head of the bed is raised one or two feet, an inclination the reverse of that required for traction. It is more comfortable, and Whitman thinks that the influence of this position on the blood-supply makes the chances of repair more favourable

The completed spica (Fig 4) is retained in position for from 8 to 12 weeks, and several more weeks are spent in bed for treatment with massage and the restoration of movements in the joints. Weight-bearing is not permitted until the movements of the joints are free and painless, and X ray photographs indicate the stability of repair.

Jones treats these cases on his abduction frame slightly modified. In very feeble patients who are bad surgical risks, a Thomas splint slung out over the side of the bed is substituted, the sound leg being kept in abduction by sandbags.

Waldenstroem [2] says there is a marked difference between the results obtained when the fracture is held by a plaster cast and when it is held by extension. When a plaster cast is used, out of 15 cases 11 gave good results, 8 with bony union. In 18 cases treated by extension methods there were three good results. Bony union resulted in two.

The treatment of fractures of the neck of the femur may be summarised as follows:—

1. In all subjects, of whatever age, reposition of the fragments should be attempted, unless the patient is too frail for treatment, and then the fracture must be neglected. Sometimes, but not often, such a patient can endure walking on a calliper splint, but in the majority the rest of their lives will be spent either in bed or in a chair.

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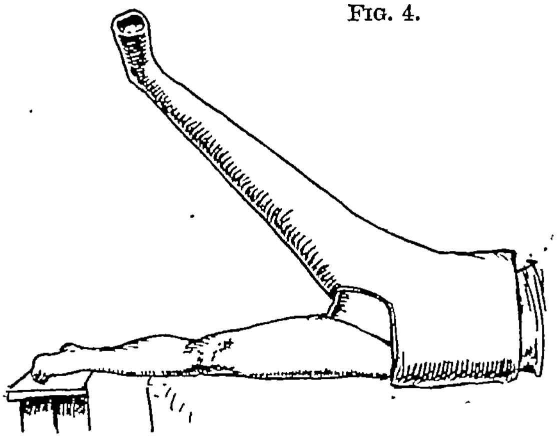
[1] Medical Press and Circular, March 8th, 1905

[2] Jour. de Chir., 1924.

2. When the fracture is reduced under anæsthesia, a plaster-of-Paris splint, as described by Whitman, is the most effective appliance.

3. To apply a plaster case properly for this fracture, some form of orthopædic table is most desirable, but a perineal prop with pelvic support which clamps on to any table, gives immeasurable help.

Fig. 4.



Completed plaster case (after Whitman).

4. In the absence of a perineal prop, counter-fixation of the pelvis during reduction is accomplished by passing a strong bandage round the groin on the sound side, and tying it to the table near the patient's head.

5. In cases unsuitable for plaster, good abduction and extension can be maintained on Jones's frame, or the injured limb may be slung in a Thomas splint in abduction over the side of the bed, and tilting of the pelvis prevented by supporting the sound leg in abduction with sandbags.

6. The position of abduction should be maintained for at least two months.

Two recent cases illustrate the above remarks.

A woman, aged 79, was knocked down by a bicycle in 1923. She was treated by the abduction method after reduction under an anæsthetic. She has firm bony union, there is no shortening, and no loss of movements in the hip-joint. In January last I wrote asking her to report. She replied as follows in February: "My injured hip is as well as ever. I have no lameness, do not use a stick or crutches, I have no pain or limp, and have full movements."

A man, aged 70, was admitted in 1923. He was feeble and difficult to manage, and was treated by a Thomas splint slung in abduction over the side of the bed in extension; he was under supervision for three months in hospital. He reported three weeks ago, walking on crutches, with slight crutch palsy. He would not wear a calliper splint; 1¾ in. shortening. Full movements of flexion and extension; strong fibrous union. With a little encouragement he discarded the crutches, but walks with a marked limp.

In this case no anæsthetic could be given, and there was no attempt at orthodox reduction. An X ray plate showed clearly an atheromatous artery in the pelvis, which is an indication of the senility of this patient, although nine years younger than the case referred to above.

Whitman's Reconstruction Of Whitman has
designed a reconstruction op old-
cases, where absorption of th
and where the functional resu
that this operation is to be pre
The operation is designed to restore early capacity in vigorous subjects. The base of the trochanter is cut through in an oblique direction with a chisel, the obliquity corresponding to the angle of the neck. A new neck is thus formed, and is thrust into the acetabulum with the leg in abduction. The trochanter is drawn downwards and is secured by a peg to the femur at a lower level.[4]

Fracture of the Trochanters.

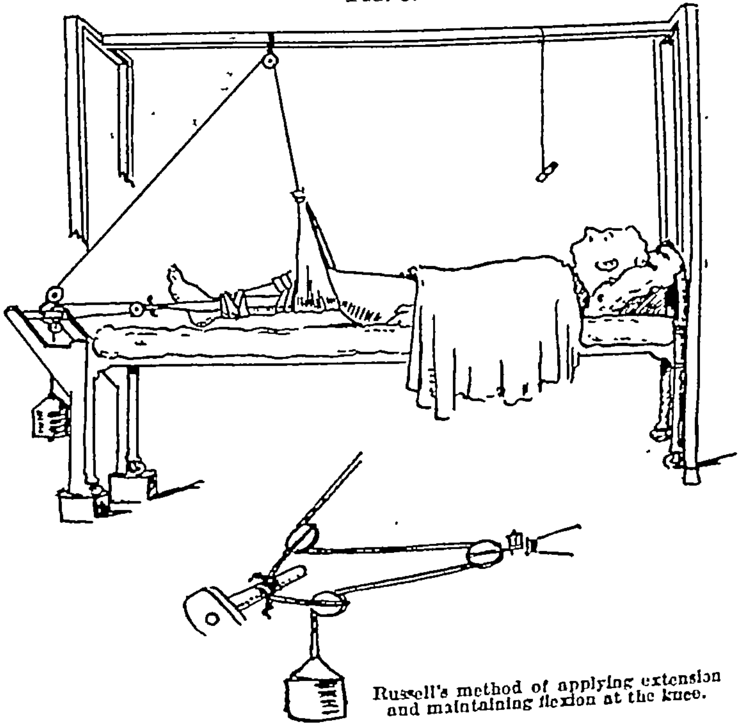
In subjects under 18 years, epiphyseal separation of the great trochanter is not uncommon. Fracture of the great trochanter is rare. When it occurs the trochanter is displaced upwards, and the best apposition can be obtained by the abduction method of treatment.

Langdon[5] reports two cases of fracture of the lesser trochanter. Only 25 are recorded in the literature. Langdon's cases were those of boys 12 and 16 years of age. The cause is said to be a sudden strain on the ilio-psoas muscle, causing avulsion. The pathognomonic sign is inability to flex the injured limb in the sitting position. Poston[6] also calls attention to this injury, in a boy aged 14. The treatment in the early cases was very variable, but notwithstanding the difficulty of getting accurate apposition and reduction, the results were uniformly satisfactory. Operations are therefore contra-indicated. In Poston's case a plaster spica with the thigh flexed at the hip was applied for 14 days, and afterwards treatment was carried on by massage and passive movements. He had full recovery in 36 days.

Fractures of the Shaft of the Femur.

General Considerations.—Seventy-five per cent. of the fractures of the femur seen at the Mayo Clinic present mal-union, non-union, delayed union, chronic osteomyelitis, or joint stiffening following treatment elsewhere. This is the statement of Meyerding in the "Mayo Clinics" of 1923, and it is a severe

Fig. 5.



Russell's method of applying extension and maintaining flexion at the knee.

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[4] A complete description of the operation appeared in Surgery, Gynecology, and Obstetrics, June, 1921.

[5] Surg., Gyn., and Obs., Abs., October, 1924.

[6] Brit. Jour. of Surg., October, 1921.

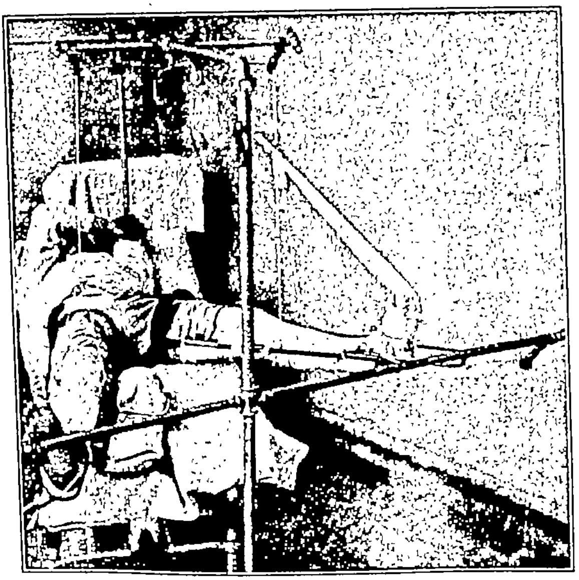
commentary on the treatment of recent fractures elsewhere.

To obtain satisfactory results in fractures of the shaft there are two alternatives open to those surgeons who prefer non-operative methods:—

(a) The shortening and deformity may be reduced under an anæsthetic at once by means of powerful traction, if necessary, on a suitable orthopædic table. The limb—including the foot and the lower part of the body—is then encased in carefully applied plaster of Paris. (I do not practise this method apart from cases of fractured hip.)

(b) The deformity may be reduced under an anæsthetic, with the knowledge that the reduction will, in most cases, not be maintained completely by any form of splint, but will be gradually restored under the influence of traction and simple contrivances to correct lateral or antero-posterior deviations.

FIG. 6.



Fracture of the femur (upper third). Patient in bed after reduction. Note gauze glued to sole of foot to support it at right angles.

The methods of treatment are much the same, whatever the position of the fracture. When the fracture is in the trochanteric region, it is necessary to remember that the upper fragment is usually abducted, the lower fragment drawn upwards and inwards. Occasionally, when the obliquity runs from above downwards and inwards, the upper fragment may be pushed inwards instead of outwards. It is best to treat these high fractures in abduction, although it is doubtful if the upper fragment remains abducted once the limb is placed in a position of comfortable extension. Notwithstanding this, I think abduction is the best position on the principle of "safety first"—for if union takes place with the lower fragment adducted the functional result is unsatisfactory, owing to the necessity of compensatory raising of the pelvis on the injured side.

Mr. Russell[1] holds that there is only one circumstance which can justify operation in recent fractures of the shaft; that is, mechanical impediment to the reposition of the fragments; this is a sound doctrine.

I would like to say here that in simple fractures of the shaft of the femur, or of any other long bone, it must be an extremely difficult matter for soft structures to impose themselves between the fragments if sufficient extension is applied. All the muscles and other tissues run, for the most part, in a parallel line to the long axis of the bone, and the more they are pulled upon the more there is a tendency to disengage themselves from the line of fracture. When the patient is out of the anæsthetic, muscular tone comes into play, as if there were bands of elastic reaching from the pelvis to the tibia and fibula, and in fracture of the long bones tonic shortening of the muscle will be progressive.

"Our first aim, then," says Mr. Russell, "will be to pull out these muscles to their correct length, and when we have accomplished this we may be sure that every other structure of the thigh will be in its correct position, including the fragments. This does not mean exact anatomical reposition, which is neither necessary nor even, in my opinion, always desirable." This is another fundamental truth, for everyone with experience of the treatment of fractures knows that a slight lateral or antero-posterior displacement of fragments is of no account, provided there is no abnormal angulation or rotation.

There are many observations in Mr. Russell's paper worthy of note. "What must we pull upon?" he says; "clearly the tibia and fibula, seeing the muscles are attached to them. We are going to use strapping and bandages for the extension, and we shall, accordingly, not carry them above the knee for reasons that are obvious. I think that the practice, which seems universal, of carrying the strapping up the thigh indicates some confusion in our mental picture of the object to be attained. Anxiety as regards the ligaments of the knee is quite needless, for, being attached to a fragment, they cannot be subject to stretching. The whole of the extending force will fall on the muscles, none at all on the ligaments. To convince ourselves of this, we only have to reflect that if the muscles were severed at the seat of fracture the limb would drop off." Mr. Russell might have gone further and said that if the ligaments of the knee were pulled upon and loosened after partial union, they very quickly took up the slack during convalescence. (Fig. 5.)

In high-up fractures of the shaft the upper fragment is usually flexed and abducted; the lower fragment is drawn up and adducted. A long-axis pull will correct the shortening, and simultaneously with the pull the limb must be brought into abduction to get proper alignment. These fractures do well in a Thomas splint slung by pulleys to a Balkan frame, with either fixed extension, as recommended by Jones, or a 10 to 15 lb. weight-and-pulley extension attached to the end of the Thomas splint (Fig. 6). The sound leg is kept in slight abduction with sandbags (or slung in a Thomas splint) to prevent tilting of the pelvis, and the foot of the bed should be raised. The foot should be maintained straight, as the temporary rotation outwards of the upper fragment need not be considered.

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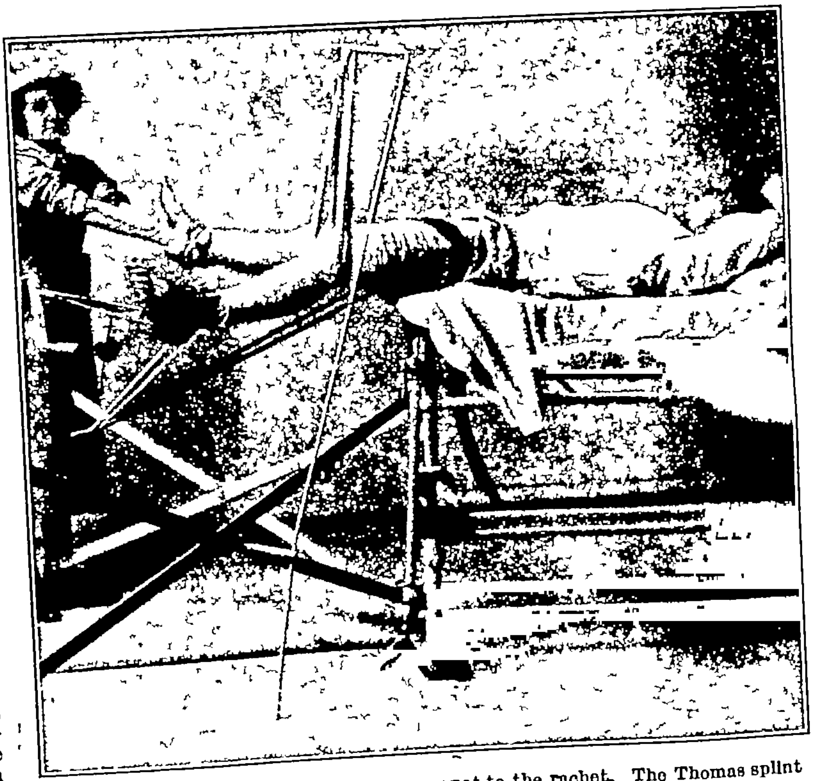
[1] Brit. Jour. of Surg., January, 1924.

We must not think too seriously about the displacement of fragments of the shaft by muscular action. It was pointed out by Lucas-Championnière, more recently by Sir Robert Jones, and again by Mr. Russell, that the displacement caused by muscular spasm is only a transient phenomenon tending to disappear when the fracture is reduced and the limb placed in a comfortable position free from pain, but if shortening is not reduced and the extension apparatus is inefficient, progressive contraction of the muscles is to be expected. The temporary nature of muscle spasm is particularly noticeable in fractures of the lower third. Much attention is drawn to the fact that the lower fragment is displaced backwards by the gastrocnemius muscle in dangerous relationship to the popliteal vessels. It is taught that these muscles must be relaxed in the treatment of such fractures, but numbers of surgeons, including myself, reduce them with strong extension without any misgivings whatever. The action of gravity or the tendency to fall backwards, obliterating the natural convexity forwards of the femur, with perhaps resultant genu recurvatum, is easily countered by a sling behind the point of fracture. So much attention has been paid to this in my own cases that many times I have obtained a slight increase of the natural bowing of the femur forwards, but without any undesirable after-effects as regards function.

Fig. 7.



Powerful extension can be applied from a spat to the rachet. The Thomas splint is then fixed in position, the tapes tied, and the spat removed.

We should remember that comfort is an essential in the treatment of a fracture. Spasms and counter-spasms occur in the search for relief and the muscles are never at rest, the fragments are disturbed and displacements result.

Treatment of Fracture of the Upper Third of the Shaft.

If the shortening can be reduced by manual extension and abduction under anæsthesia, a Thomas splint is applied and the extension tapes secured to the end of the splint while traction is maintained. If there is difficulty in overcoming the shortening at the first try, it is probable that with sufficient and continuous extension the proper length will be obtained within the first week. The Thomas splint is slung over the side of the bed on a Balkan frame in a position of abduction with the sound leg slung or ported by sandbags. (Fig. 6.) In some cases reliance ll be placed on fixed extension—i.e., tightening up tapes frequently as the muscles relax, in others weight-and-pulley attachment is fastened to the d of the splint. If the strapping tends to slip during the first 10 to 14 days, an assistant grasps the ankle and extends while new strapping is applied. I have had no trouble in obtaining union without shortening by these simple means.

Fractures of the Middle of the Shaft.

There should be no difficulty in the treatment of these cases with a Thomas splint, slightly bent at the level of the knee. The shortening is reduced, or as nearly reduced as possible, under anæsthesia, and fixed extension is rigidly maintained to the end of the Thomas by means of the orthodox strapping and tapes (Fig. 7). It is in this position that the action of gravity, causing sagging backward of the fragments and bowing of the femur, must be countered. In rare cases shortening may still persist at the end of a week, and powerful stretching with pulleys or special appliances may be required. To prevent bowing backwards, a tight strip of bandage is clipped to the bars of the Thomas splint directly behind the fracture point; nothing more is necessary, but this band throughout the treatment must be kept tight. If an X ray photograph shows some lateral deviation of fragments, a pull may be exerted from one bar to the other by a loop of bandage round the limb, above or below the fractured bone according to the amount of displacement. Some Thomas's splints are fitted with lateral pressure pads adjusted by a screw arrangement attached to the bars by means of which lateral deviations can be controlled.

Sir Robert Jones recommends that for further control a gutter-shaped sheet metal splint, extending from the buttock fold to the lower third of the leg with a good wool pad in the hollow of the knee, should be applied. Another grooved splint on the front of the thigh, stopping short above the patella, gives further support. Instead of fixed traction, in certain cases it may be more convenient to apply a weight and pulley of from 15 lb. to 20 lb. attached to the end of the splint.

Fractures of the Lower Third of the Shaft.

The interest in connexion with the treatment of these fractures is owing to the displacement of the lower fragment backwards as a result of the spasm of the gastrocnemii muscles. The upper fragment is usually adducted.

Again it must be pointed out that muscular spasm is only transitory, and Sir Robert Jones quotes an interesting case of compound fracture in which the limb was put in comfortable straight extension, and the spasm was actually seen to pass off with the gradual disappearance of the flexion deformity of the lower fragment. Nevertheless, when the shortening has been reduced under an anæsthetic, by full extension, the Thomas splint should be bent to half a right angle at the knee before the tapes are secured at the end. A strip of bandage is kept tightly applied under the lower fragment to ensure gradual restoration of alignment. If backward displacement persists, which is unlikely, division of the tendo Achillis is indicated. When reducing the fracture I do not believe there is any real danger in applying full extension without flexing the knee (Fig. 7).

Fracture of the Shaft of the Femur in Children.

I have most experience in the oblique or spiral fractures of the shaft in children, and I was surprised to find in how many cases it was difficult to maintain a good reduction of the fragments. Whatever methods were employed, immediate X ray photographs showed a disappointing result; the final result was all that could be desired.

The Bryant suspension frame is not satisfactory in children over the age of 6 years, as the weight of the body tends to tear off the extension straps and frequent reapplication is necessary. When used in young children more traction will be obtained when only one limb is suspended, but the patient is more uncomfortable and the nursing is more difficult.

In a large series of cases described by Burdick and Siris [*] the favourite method was a plaster spica and traction—118 cases treated Bryant's frame and suspension was next in popularity—90 treated. Fourteen were treated with a Thomas splint and traction, and two with a Hodgen splint and traction. It was necessary in a few cases to resort to operation.

In my early days I operated on these cases, but subsequent experience showed that in the case of children an apparently bad primary result was followed by an extremely good final result, and X ray photographs taken a year or two afterwards barely indicated the line of the original injury. Not infrequently a child who was discharged from hospital with shortening ultimately presented itself with slight lengthening of the injured limb. In children, more than in others, it is necessary to emphasise the fact that perfect anatomical reduction is not essential for perfect functional recovery. There appears to be a stimulation of the growth of bone in its longitudinal direction, irrespective of the location of the fracture in the shaft.

One of the best methods of treatment is to place the child across a perineal prop, reduce the shortening, apply plaster strapping for subsequent extension, and over this a plaster spica from the malleoli to the ribs with the limb in moderate abduction. A weight-and-pulley extension of 10–15 lb. is employed. The plaster is removed in about six weeks. The continuous skin traction is used not so much to reduce shortening but to try and prevent any change in the relative position of the fragments. In children under 6 years of age extension of the leg in a vertical position to a horizontal bar over the bed is better than the method just described A small Thomas splint—even small enough to fit a new-born child suffering from obstetrical fracture—also gives good results. A simpler method in infants is to bind the thigh and the extended leg to the front of the abdomen with a bandage. In the process of growth faulty alignment becomes corrected. Union is very rapid in these cases, and all fixation methods may be abandoned in less than three weeks.

A boy, aged 11, was admitted to hospital in 1921 with a transverse fracture of the humerus and a transverse fracture of the femur. Perfect alignment was obtained in the first instance with ease, by means of a Thomas splint, but later lateral displacement of the fragments occurred with ¼ in. shortening. The mother wrote to me in January, 1925, as follows: "He has had no trouble of any kind from it, and now plays football at school. There is no shortening or defect."

This is another illustration showing how absolute anatomical position is not necessary for perfect function; and displacements, when the alignment is correct, may be ignored even more so in children than in adults.

QUANTITATIVE DATA IN TISSUE REACTIONS TO ULTRA-VIOLET RADIATIONS.[*]

BY P. R. PEACOCK, M.R.C.S. ENG.,
VAUGHAN MORGAN SCHOLAR AND MARGARET BUTCHER SCHOLAR, MIDDLESEX HOSPITAL.

ON the purely physical side, the subject of ultra-violet radiation has been very thoroughly investigated, and a logical explanation is available for the behaviour of many inert substances under the influence of the rays. The same cannot be said of the physiological and therapeutic aspects of the subject, for, although certain striking effects are produced on living organisms as a result of exposure to the rays, there are still many processes of whose mechanism we have no exact knowledge.

It is well known, for example, that exposure to the rays frequently results in bronzing of the skin, due to increase of melanin granules in the basal cells of the epidermis. This fact has been associated with a coincident improvement of bodily fitness, and advantage has been taken of it in heliotherapy. At the same time, it is generally admitted by those who have studied a great number of cases that there are unaccountable variations in the response of different individuals to the action of the rays. Some patients pigment well and benefit greatly by treatment; some merely freckle and may not do so well; others again pigment not at all or only slightly, deriving but little benefit from the treatment, though this is by no means invariably true.

If investigation is carried out with a pure beam of ultra-violet rays, instead of employing the full solar spectrum, certain effects are rendered striking which would otherwise be masked.

Fluorescence Under Ultra-violet Rays.

Dr. Mottram and Prof. Russ [1] described in 1920, before this society, the curious appearances seen when objects are examined in a beam of rays from which the visible wave-lengths have been filtered off by means of Wood's glass. The following is a brief quotation from their paper:—

> "The skin presents a generalised violet fluorescence, but, over the face and, to a less extent, over the rest of the body, dark non-fluorescent spots are seen, numerous in some individuals, almost absent in others. Freckled persons are usually thickly spotted, but, on the other hand, perfectly clear complexions may present a similar appearance. There are also to be seen, especially on the face, minute brightly fluorescent spots, having the appearance of stars."

Examination, in this way, of different skins under the ultra-violet beam revealed the fact that fair skins fluoresce more brightly than dark, and that the skins of dark races do not show a general fluorescence, but only over certain special regions. (The same applies to areas of artificially increased pigmentation, such areas being no longer as brightly fluorescent as before.) Thus, the same brightly fluorescent spots are to be seen on the face as in fair races, and the palms of the hands also present a fair degree of fluorescence.

Examination of the skin structures and derivatives shows that they may be divided into two groups—fluorescent and non-fluorescent.

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[*] Annals of Surgery, June, 1923.

[*] Read before the Section of Electro-Therapeutics of the Royal Society of Medicine, April 17th, 1925.

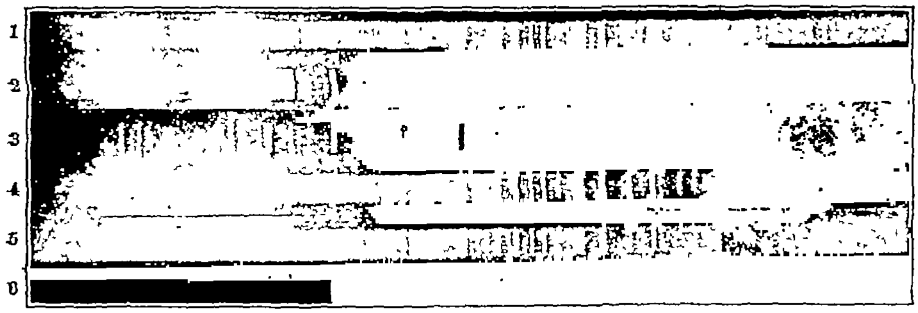
[1] Mottram, J. C., and Russ, S.: Proc. Roy. Soc. Med., 1920, vol. xiii. (Section of Electro-Therapeutics), pp. 143–145.

The *fluorescent structures* are the following: (1) The keratinised layer of the epidermis; (2) the nails (or non-pigmented claws in animals); (3) white hair (or white fur in animals); and (4) the cornea and lens (derived from skin structures). Of the skin secretions, the sebum, the cerumen, and the vernix caseosa of new-born infants. Milk is also fluorescent.

The *non-fluorescent structures* are: (1) The pigment and pigmented epidermis; (2) pigmented claws (in animals); and (3) pigmented hair (or fur in animals). Of the secretions, the sweat is non-fluorescent. The blood is also non-fluorescent.

Of the above-mentioned constituents of the skin the sebum is the most brilliantly fluorescent, and its presence in the sebaceous glands probably accounts for the brilliant spots seen in the ultra-violet beam. Melanin in a state of purity and all melanotic tissues examined are completely non-fluorescent. Both melanin and sebum prove, on spectrum analysis, to be powerfully absorbent of the ultra-violet rays. When a body is said to fluoresce in a beam of pure ultra-violet, it means that a certain amount of the incident invisible beam is being converted into rays of longer and visible wave-length, and that the intensity of ultra-violet is reduced by this amount at least.

FIG. 1.



Absorption spectra, mercury-vapour lamp: 1. Unscreened. 2. Vaseline screened. 3. Lanoline screened. 4. Lard screened. 5. Empty cell. 6. Wood's glass, plus vaseline screen.

Fluorescence a Protective Phenomenon.

Fluorescence must, then, from the ultra-violet point of view, be a protective phenomenon. The following experiments were performed to substantiate this.

From a number of substances examined, three were selected: lard, lanoline, and vaseline (yellow). Lard is non-fluorescent. Lanoline fluoresces very like human sebum. Vaseline fluoresces very brilliantly. Absorption spectra were taken through 0·1 mm. thickness of each of these substances (Fig. 1).

It will be seen from these spectra that lard does not absorb the rays at all. Lanoline absorbs wave-lengths shorter than 2900 Å.U. Vaseline absorbs the whole ultra-violet spectrum, with the exception of the small band of wave-lengths from 3800–3050 Å.U.

The skin of the forearm was then examined by ultra-violet and an area of even fluorescence was selected. This area was covered by a perforated shield by means of which a series of small areas could be exposed to the rays. Over one area lard was smeared; over a second, lanoline; and over a third, vaseline. Two similar untreated areas were used as controls.

The arm was then fixed in position, 15 cm. from the centre of a Cowper-Hewitt mercury-vapour lamp, consuming 203 watts, and all areas were exposed simultaneously for five minutes. In one hour from the end of exposure erythema had developed over all areas except that smeared with vaseline. The vaselined area showed no sign of reaction, though the other areas developed pigmentation within a week, [illegible] marked in the control areas and in that smeared with lard. The method of smearing the skin was in each case to apply a small trace of the substance to the area and rub it in gently, removing all excess by wiping dry with a clean towel.

Following this experiment, the protective power of vaseline was further investigated on similar lines. It was found that skin treated in this way by smearing with yellow vaseline is capable of standing three and a half times the length of exposure necessary to produce the same degree of erythema on normal skin. White vaseline is less protective than yellow, and shows less absorption spectrographically.

Skin Reactions in Relation to Intensity of Radiation.

The next series of experiments was undertaken with the object of seeing whether skin reactions run pari passu with physical measurements of the intensity.

The intensity of radiation from the mercury-vapour lamp is determined by the power consumption expressed in watts (obtained by the product of the current in amps. flowing through the lamp and the potential difference in volts between its terminals). When the power remains constant dosage depends on the time of exposure and the distance of the patient or object from the lamp.

Measurements of variation of the intensity of radiation with distance were made with a Furstenau (selenium) intensimeter, the power consumption of the lamp being kept constant at 300 watts. In this way the points on the full line curve in Fig. 2 were obtained. The thin dotted curves show the ordinary inverse and inverse square law curves, and it will be seen that, owing to the size of the lamp, the actual variation is not so rapid as from a point source.

Experiments were next made by exposing portions of normal human skin to the radiation at different distances ranging from 20 to 100 cm. The time of exposure for each distance was calculated from the data just mentioned, so that each corresponded to 1·5 E. (1 E = exposure at 30 cm. distance for two minutes with lamp consuming 310 watts and results in slight erythema in two hours and slight pigmentation in one week.)

The main result of these observations, given in detail in the table, was that, within the limits of error of observation, the skin reactions were identical until the intensity was reduced to about 8 per cent., provided the time of exposure was correspondingly prolonged. Beyond this the effect was slightly less marked. The exposures were, of course, made on the same individual.

Table Showing Results of Detailed Observations.

Intensity (per cent.).	Watts.	Time.	Distance in cms.	Dose.	Erythema.	Pigmentation.
100	451	1′	20	1·5 E	+ + +	+ + +
67	,,	1′ 30″	30	,,	,,	,,
43	,,	2′ 10″	40	,,	,,	,,
27·8	,,	3′ 30″	50	,,	,,	,,
18	,,	5′ 37″	60	,,	,,	,,
12·3	,,	8′ 11″	70	,,	,,	,,
10	,,	10′	80	,,	,,	,,
7·3	,,	13′ 45″	90	,,	+ +	+ +
6·7	,,	15′	100	,,	,,	,,

1 E results in + + erythema in 24 hours and + + pigmentation in one week.

An attempt was made to obtain a direct skin reaction with rays of a particular wave-length by employing filters. A combination of Wood's glass and a vaseline cell showing spectroscopically absorption of all wave-lengths but a short band from 3800–3650 Å.U. was used (Fig. 1, No. 6). With this filter it was necessary to give 20 times the control exposure in order to get a faint transient erythema. It is possible that, in spite of the spectrographic evidence of the predominance of line 3650 Å.U., some shorter wave-length rays may have penetrated the screen and caused this effect.

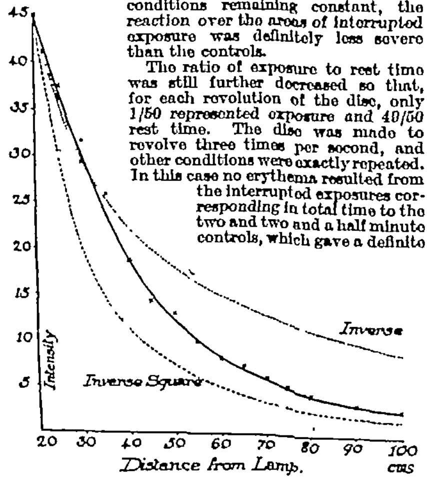
Cumulative Effect of Repeated Small Doses.

The next thing investigated was the cumulative effect of repeated small doses. The method of investigation was to interpose a revolving disc between the source of radiation and the skin under examination. By variation of an aperture in the disc, different ratios of "exposure" to "rest" interval can be obtained and the frequency of exposure varied by the rate of revolution of the disc.

It was found that, with a ratio of exposure to rest interval of 1 to 1 a purely cumulative effect is produced. With 1/10 exposure to 9/10 rest, when the revolutions were increased to three per second, other conditions remaining constant, the reaction over the areas of interrupted exposure was definitely less severe than the controls.

The ratio of exposure to rest time was still further decreased so that, for each revolution of the disc, only 1/50 represented exposure and 49/50 rest time. The disc was made to revolve three times per second, and other conditions were exactly repeated. In this case no erythema resulted from the interrupted exposures corresponding in total time to the two and two and a half minute controls, which gave a definite erythema within a few hours. The interrupted exposure corresponding to the three-minute control showed an erythema corresponding to the two-minute control. A further interrupted exposure of total time equal to a control of three and a half minutes resulted in an erythema corresponding to that of the two and a half minute control.

FIG. 2.



Thus it appears that, for the shorter exposures (two and two and a half minutes total time) a ratio of "exposure" to "rest" time of 1 to 50 does not result in a cumulative effect as far as erythema reaction and subsequent pigmentation is concerned; but the tissues have had the same actual exposure to the rays as would result in a definite burn if given as a continuous exposure. A continuation of observations with still further reduction of the momentary exposures is being made, but the times of exposure are necessarily very prolonged. Perthes[2] has shown that, when two doses of U.V. radiation are given to the skin with a long time-interval between them, less reaction is produced than if the whole dose is given at one time.

The possibility of a constitutional effect of repeated exposure of rats to ultra-violet rays was investigated on the following lines:—

A group of 40 animals of similar age, size, weight, and colour was selected and divided into two subgroups, 20 for experiment (Group I.) and the remaining 20 for control examination (Group II.). The males and females were segregated in each instance. The hair over the backs of the Group I. animals was cut short so as to obviate the dissipation of ultra-violet rays by fluorescence or heat production in the hair. These animals were exposed to the full radiation from the mercury-vapour lamp for five minutes daily at 50 cm. distance for 30 days. The power consumption of the lamp was 180 watts, giving a daily dose of ¼ E and a total dose of 7·5 E.

The animals in both Groups I. and II. received similar food and were housed under the same conditions as regards temperature, &c. Bi-weekly weight measurements show about 10 per cent. slower rate of growth in Group I. animals. At the end of one month the exposures were stopped, and one week later all the animals of both groups were inoculated with Jensen's rat sarcoma (J.R.S.) on the right side and with slow sarcoma on the left. Tumour measurements over a period of six weeks showed no appreciable difference between Groups I. and II. Thus it appears that, within the limits of the experiment, there was no constitutional effect calculated either to resist or favour tumour growth. A second series on similar lines gave the same result.

An attempt was made to find the lethal dose of ultra-violet rays for J.R.S. in vitro.

In view of the rapid absorption of the rays by the tissue, the sections of tumour must be very thin. To obtain a sufficiently thin uniform section to allow the rays to penetrate effectively, two razor blades were soldered to a metal handle so that the cutting edges were 0·5 mm. apart. With this double razor, sections were cut from actively growing tumours, care being taken to avoid any necrotic areas. The sections were laid flat, and, with due aseptic precautions, were treated as follows:—

Sections (*a*) were exposed to the full radiation from the mercury-vapour lamp.

Sections (*b*) were screened by 1·5 mm. of glass, to exclude the majority of the U.V. rays.

Sections (*c*) were set aside during the exposure and were used as controls.

A range of doses from 0·6 to 6 E was employed, the material being subsequently inoculated into batches of animals. When 6 E was reached all the (*a*) *inoculations either failed to grow at all or grew* small tumours for about ten days and then disappeared (0 per cent. growth). The (*b*) inoculations showed 33⅓ per cent. of growth, while the controls (*c*) gave 66⅔ per cent. growth. The lesser doses of U.V. rays allowed some growth in an appreciable number of cases, but 6 E was found to correspond to the lethal dose.

Conclusions.

From the foregoing experiments, it is, I think, possible to draw certain conclusions.

1. Since the skin surface is rendered visible by fluorescence, when only the invisible ultra-violet rays fall upon it, it is obvious that a greater or less amount of the incident rays is being dissipated at the skin surface as light and is consequently incapable of acting on any deeper structures.

2. Since fluorescence commences directly the skin is exposed to ultra-violet rays, whereas pigmentation only occurs as a result of considerable exposure, it is logical to suppose that, in fluorescence, we have a more immediate protection from excessive radiation, as far as ultra-violet is concerned, than in pigmentation.

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[2] Perthes, G.: Münch. Med. Wochenschrift, Sept. 19th, 1924, p. 1301.

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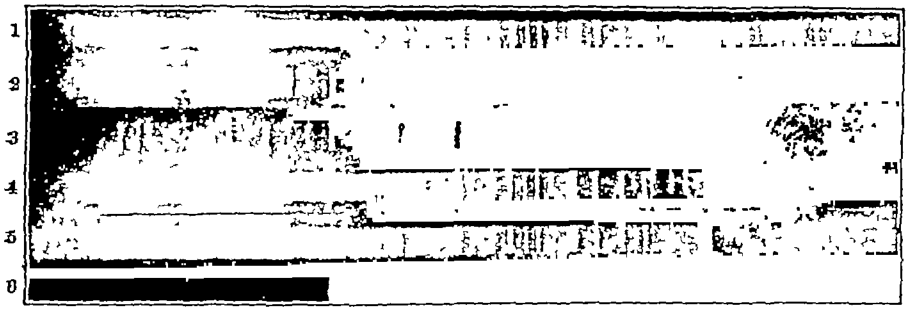

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Measurements of variation of the intensity of radiation with distance were made with a Furstenau (selenium) intensimeter, the power consumption of the lamp being kept constant at 300 watts. In this way the points on the full line curve in Fig. 2 were obtained. The thin dotted curves show the ordinary inverse and inverse square law curves, and it will be seen that, owing to the size of the lamp, the actual variation is not so rapid as from a point source.

Experiments were next made by exposing portions of normal human skin to the radiation at different distances ranging from 20 to 100 cm. The time of exposure for each distance was calculated from the data just mentioned, so that each corresponded to 1·5 E. (1 E = exposure at 30 cm. distance for two minutes with lamp consuming 310 watts and results in slight erythema in two hours and slight pigmentation in one week.)

The main result of these observations, given in detail in the table, was that, within the limits of error of observation, the skin reactions were identical until the intensity was reduced to about 8 per cent., provided the time of exposure was correspondingly prolonged. Beyond this the effect was slightly less marked. The exposures were, of course, made on the same individual.

Table Showing Results of Detailed Observations.

Intensity (per cent.).	Watts.	Time.	Distance in cms.	Dose.	Ery-thema.	Pigmen-tation.
100	451	1′	20	1·5 E	+ + +	+ + +
67	,,	1′ 30″	30	,,	,,	,,
43	,,	2′ 19″	40	,,	,,	,,
27·8	,,	3′ 36″	50	,,	,,	,,
18	,,	5′ 37″	60	,,	,,	,,
12·3	,,	8′ 11″	70	,,	,,	,,
10	,,	10′	80	,,	,,	,,
7·3	,,	13′ 45″	90	,,	+ +	+ +
6·7	,,	15′	100	,,	,,	,,

1 E results in + + erythema in 24 hours and + + pigmentation in one week.

An attempt was made to obtain a direct skin reaction with rays of a particular wave-length by employing filters. A combination of Wood's glass and a vaseline cell showing spectroscopically absorption of all wave-lengths but a short band from 3800–3650 Å.U. was used (Fig. 1, No. 6). With this filter it was necessary to give 20 times the control exposure in order to get a faint transient erythema. It is possible that, in spite of the spectrographic evidence of the predominance of line 3650 Å.U., some shorter wave-length rays may have penetrated the screen and caused this effect.

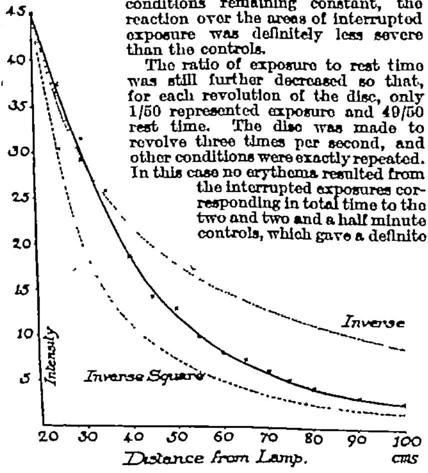
Cumulative Effect of Repeated Small Doses.

The next thing investigated was the cumulative effect of repeated small doses. The method of investigation was to interpose a revolving disc between the source of radiation and the skin under examination. By variation of an aperture in the disc, different ratios of "exposure" to "rest" interval can be obtained and the frequency of exposure varied by the rate of revolution of the disc.

It was found that, with a ratio of exposure to rest interval of 1 to 1 a purely cumulative effect is produced. With 1/10 exposure to 9/10 rest, when the revolutions were increased to three per second, other conditions remaining constant, the reaction over the areas of interrupted exposure was definitely less severe than the controls.

The ratio of exposure to rest time was still further decreased so that, for each revolution of the disc, only 1/50 represented exposure and 49/50 rest time. The disc was made to revolve three times per second, and other conditions were exactly repeated. In this case no erythema resulted from the interrupted exposures corresponding in total time to the two and two and a half minute controls, which gave a definite erythema within a few hours. The interrupted exposure corresponding to the three-minute control showed an erythema corresponding to the two-minute control. A further interrupted exposure of total time equal to a control of three and a half minutes resulted in an erythema corresponding to that of the two and a half minute control.

FIG. 2.



Thus it appears that, for the shorter exposures (two and two and a half minutes total time) a ratio of "exposure" to "rest" time of 1 to 50 does not result in a cumulative effect as far as erythema reaction and subsequent pigmentation is concerned; but the tissues have had the same actual exposure to the rays as would result in a definite burn if given as a continuous exposure. A continuation of observations with still further reduction of the momentary exposures is being made, but the times of exposure are necessarily very prolonged. Perthes[3] has shown that, when two doses of U.V. radiation are given to the skin with a long time-interval between them, less reaction is produced than if the whole dose is given at one time.

The possibility of a constitutional effect of repeated exposure of rats to ultra-violet rays was investigated on the following lines:—

A group of 40 animals of similar age, size, weight, and colour was selected and divided into two subgroups, 20 for experiment (Group I.) and the remaining 20 for control examination (Group II.). The males and females were segregated in each instance. The hair over the backs of the Group I. animals was cut short so as to obviate the dissipation of ultra-violet rays by fluorescence or heat production in the hair. These animals were exposed to the full radiation from the mercury-vapour lamp for five minutes daily at 50 cm. distance for 30 days. The power consumption of the lamp was 180 watts, giving a daily dose of ¼ E and a total dose of 7·5 E.

The animals in both Groups I. and II. received similar food and were housed under the same conditions as regards temperature, &c. Bi-weekly weight measurements show about 10 per cent. slower rate of growth in Group I. animals. At the end of one month the exposures were stopped, and one week later all the animals of both groups were inoculated with Jensen's rat sarcoma (J.R.S.) on the right side and with slow sarcoma on the left. Tumour measurements over a period of six weeks showed no appreciable difference between Groups I. and II. Thus it appears that, within the limits of the experiment, there was no constitutional effect calculated either to resist or favour tumour growth. A second series on similar lines gave the same result.

An attempt was made to find the lethal dose of ultra-violet rays for J.R.S. in vitro.

In view of the rapid absorption of the rays by the tissue, the sections of tumour must be very thin. To obtain a sufficiently thin uniform section to allow the rays to penetrate effectively, two razor blades were soldered to a metal handle so that the cutting edges were 0·5 mm. apart. With this double razor, sections were cut from actively growing tumours, care being taken to avoid any necrotic areas. The sections were laid flat, and, with due aseptic precautions, were treated as follows:—

Sections (*a*) were exposed to the full radiation from the mercury-vapour lamp.

Sections (*b*) were screened by 1·5 mm. of glass, to exclude the majority of the U.V. rays.

Sections (*c*) were set aside during the exposure and were used as controls.

A range of doses from 0·6 to 6 E was employed, the material being subsequently inoculated into batches of animals. When 6 E was reached all the (*a*) inoculations either failed to grow at all or grew small tumours for about ten days and then disappeared (0 per cent. growth). The (*b*) inoculations showed 33⅓ per cent. of growth, while the controls (*c*) gave 66⅔ per cent. growth. The lesser doses of U.V. rays allowed some growth in an appreciable number of cases, but 6 E was found to correspond to the lethal dose.

Conclusions.

From the foregoing experiments, it is, I think, possible to draw certain conclusions.

1. Since the skin surface is rendered visible by fluorescence, when only the invisible ultra-violet rays fall upon it, it is obvious that a greater or less amount of the incident rays is being dissipated at the skin surface as light and is consequently incapable of acting on any deeper structures.

2. Since fluorescence commences directly the skin is exposed to ultra-violet rays, whereas pigmentation only occurs as a result of considerable exposure, it is logical to suppose that, in fluorescence, we have a more immediate protection from excessive radiation, as far as ultra-violet is concerned, than in pigmentation.

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[3] Perthes, G.: Münch. Med. Wochenschrift, Sept. 19th, 1924, p. 1301.

3. Since all the fluorescent substances examined, as well as the melanin which causes pigmentation, show marked absorption of ultra-violet rays, and since fluorescence and pigmentation always seem to vary inversely as each other, it might be interpreted that pigmentation marks the failure of fluorescence to protect the structures of the cutis vera from excessive radiation. This is substantiated by the experiments on artificially increased fluorescence, where no pigmentation followed exposure.

4. If pigmentation of the patient is aimed at as a standard of successful treatment, this is tantamount to producing deliberately in the patient a natural and efficient protection against the very source of treatment employed.

5. The pigmentation must be regarded as an indication that the penetration of the rays has not been prevented by fluorescence at the skin surface. If pigmentation could be avoided without hindering the penetration of the rays to the cutis vera it might prove more beneficial.

6. By employing the maximum dose which will on each application just fail to produce pigmentation, and, by separating the exposures by the minimum time-interval necessary to avoid the cumulative effect referred to, it should be possible to get equally good, if not better, therapeutic results in a shorter time.

I wish to thank Prof. Russ for his criticism and advice over many points in connexion with this paper, and Mr. D. B. Watters for assistance in measurements of intensity of radiation. My thanks are also due to Mr. S. J. Graham who kindly volunteered to submit to skin exposures in the majority of the experimental work.

SPIROCHÆTAL JAUNDICE IN GREAT BRITAIN.

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ALTHOUGH epidemics of spirochætal jaundice or Weil's disease seem to have been known from early times, especially during the Napoleonic and other wars, it was not until the discovery of the causative organism, *Leptospira icterohæmorrhagiæ*, by Inada and his fellow workers (1916) that the disease could be distinguished with certainty from allied conditions. During the great war the occurrence of considerable outbreaks attended by a mortality varying in different localities from 4 to 10 per cent. brought this disease into prominence,[1] and the works on the subject, such as those of Dawson, Hume, and Bedson (1917), and Martin and Pettit (1919), have considerably added to our knowledge. It seems to have been generally assumed that this was essentially a war disease and, as far as we are aware, its presence amongst the civil population in this country has only been proved on three occasions.

The first case was that described by Manson-Bahr, Wenyon, and Brown (1922) of a bargee who apparently became infected as the result of having swallowed large quantities of Thames water. The first appreciable epidemic in this country which was proved pathologically was that which occurred amongst the Lothian miners described by Buchanan (1924). Finally Lyon and Buchanan recorded a small outbreak in children in Edinburgh which, in their opinion, was the result of infection being introduced by a child from the Malay States.

In spite of the foregoing observations being the only proved cases recorded in this country, we strongly suspect that the disease is much more prevalent than is commonly supposed. Cases of slight jaundice, especially in children, preceded by febrile symptoms are well known. The common diagnosis is influenza followed by jaundice, but in view of the results of the case which we have examined, we suggest the probability of these being mild cases of spirochætal jaundice.

We have recently had the opportunity of examining two cases of this nature, in one of which we were able to demonstrate the presence of the very characteristic leptospira in the patient's urine. These cases are particularly interesting, inasmuch as they were undoubtedly linked up with a small outbreak in a school in the Midlands.

Clinical Records.

The clinical course of the disease in these two patients was as follows.

Case A, a boy of 12 years, returned from school for the holidays early in April. Fifteen days later he complained of headache, and for two days his temperature was raised, on the third day there was no fever, but on the fourth day the temperature again rose to 101° F.; this was accompanied by persistent vomiting, marked distaste for any sweetened articles of diet, distinct smell of acetone in the breath, and the urine contained considerable amounts of acetone as evidenced by Rothera's test. The vomiting persisted for four days, then during the second week of the disease jaundice was well marked; this was accompanied by pain over the region of the right kidney, and on examination of the urine a heavy cloud of albumin and red blood cells were present; the nature of the disease was not suspected and no examination of the urine was made for the presence of leptospira. The treatment was entirely symptomatic, the acidosis being combated by rectal injections of glucose and bicarbonate of soda. During the second week epistaxis was a marked symptom. The symptoms gradually cleared up, and the patient made an uninterrupted but somewhat tardy recovery and returned to school.

It was then ascertained that several other cases of jaundice, 14 in all, had occurred amongst the boys from the school.

Case B, sister of the above, aged 8, who had been in close contact with the previous case, showed febrile symptoms exactly 30 days after Case A first became ill. There was three days' high fever during which marked photophobia and conjunctival congestion was present; jaundice appeared during the second week of the disease. From the eighth to the seventeenth day careful daily examination was made for the presence of leptospira in the urine. They were only once found—namely, on the ninth day; but on this occasion they were present in very considerable numbers, there being as many as three in a field of the centrifuged deposit.

The other significant symptoms in this case were as follows. Epistaxis occurred at intervals during the second week. There was, however, no vomiting and no hæmaturia, and although acetone was present from the third to the tenth day in large amounts in the urine, the albuminuria was very slight, only amounting to a distinct trace, and even that was not always present.

Animal Experiments.

Although certain of the guinea-pigs inoculated with the deposit from the centrifuged urine showed febrile reactions indistinguishable from those occurring in typical cases of this infection, we have not yet been able to recover the leptospira from the inoculated guinea-pigs.

Three guinea-pigs were inoculated with centrifuged urine on the eighth day of disease; one of these, which showed marked febrile reaction, was killed on the sixth day after the inoculation. Portions of the liver and kidney were macerated in normal saline solution, and two more guinea-pigs were inoculated with this suspension. Cultures from the heart blood, and from the saline suspension, were taken into Wenyon-Noguchi medium, but no growth of leptospira occurred. Two more guinea-pigs were inoculated with centrifuged urine on the eleventh day of disease; one of these showed a febrile reaction indistinguishable from a typical case of spirochætal jaundice in this animal. This was killed on the seventh day, and the kidney-liver suspension inoculated into two more animals.

Unfortunately no animals were inoculated on the ninth day of disease. Of the three which had been inoculated on the previous day, one was showing a marked febrile reaction, and it was not then considered that the excretion of leptospira would prove to be such a transitory phenomenon in this case.

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[1] In Japan a mortality of 57 per cent. has been recorded, but this seems to be very exceptional.

Source of the Infection.

It was found that four boys were admitted to the school sanatorium during the last week in March with symptoms very similar to those already described; also during the Easter holidays ten more boys suffered from a slight febrile condition, accompanied with jaundice in varying intensity and duration. Further, in addition to Case B, the sister of one of the infected boys also developed fever and jaundice. We therefore paid a visit to the school with the object of trying to discover some focus of infection. A similar outbreak in a school near Magdeburg (Körner, 1925) having been traced to infection through bathing, this possibility naturally occurred to us, but it was found that the school swimming tank had not been used by any of the boys during the last term.

Samples of water were taken from the storage tanks and also from the main water-supply, but in no case were leptospira found by direct examination of the centrifuged deposit. The cultures of the water from two storage tanks, however, revealed the presence of typical leptospira, but as these organisms have been found by one of us (E. H.) in water from many different sources, including London tap-water, its presence in this connexion does not necessarily throw any further light on the origin of this epidemic. The possibility of rats serving as a source of infection seems to be eliminated, as there was no record of any ever having been seen in the school buildings.

It is interesting to note that the four boys who first became ill during the term all occupied separate dormitories, and not one of the four was in the same form as the others. It would therefore appear that food or water was the most probable source of infection. As regards the chance of infection by food, there was a history of ambulatory indisposition in the case of one of the kitchen staff shortly before the boys became ill, but as 2½ months had elapsed before our visit, we were unable to obtain any more definite information on the nature of the illness.

Discussion of Results.

There can be no doubt that the cases which we have observed formed part of the general outbreak which originated at the school. We are led to this conclusion from the study of the history and clinical aspect. The incubation period in Case A was clearly a fortnight or more, a period which is considerably in excess of that usually observed in ordinary outbreaks of the disease. A similarly prolonged incubation period was also noticed in the case of some of the other boys, and this indicates that in mild epidemics, to which children seem to be specially liable, the incubation period may be as much as a fortnight or longer.

The clinical symptoms of both the cases observed by us closely resemble those described by Lyon (1925) in the Edinburgh epidemic last year. Acetonuria, epistaxis, and hæmaturia accompanied the jaundice and, in Case B, the conjunctival congestion mentioned by Stokes and Ryle (1916) and Martin and Pettit (1919) as being a feature of this disease.

The discovery of typical *Leptospira icterohæmorrhagiæ* in the urine of Case B on the ninth day of the disease leaves no doubt regarding the diagnosis. We are well aware that spirochætes of the *refringens* type have been found in the urine of normal individuals, but these bear no resemblance whatever to leptospira; with regard to *Spirochæta lorient* described by Pettit (1917) and Cristau (1917), which is apparently the cause of a very contagious spirochætosis, the high incidence of jaundice in the epidemic which we have described seems to distinguish it from the epidemic at Lorient.

From the figures given by Pettit (1917) it is impossible to distinguish these two species on morphological grounds. The fact that we have been unable up to the present to recover the organism from inoculated guinea-pigs does not in any way negative the diagnosis, for it is well known that when one is dealing with a comparatively non-virulent strain the chance of animal infection is remote. In the Edinburgh outbreak Buchanan (1925) only obtained one definitely positive result out of 44 animal experiments.

The main object of this paper is to emphasise the necessity of repeated examination of the urine for leptospira in all cases of undiagnosed fever followed by jaundice. This, however, can only be undertaken in a well-equipped laboratory, as a high-speed centrifuge and dark-ground illumination are essential. Finally, attention should be drawn to the infectious nature of the disease, and we suggest the advisability of adding it to the list of notifiable diseases, as from what we have heard recently there is some evidence that a mild form of this disease is widespread in this country.

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THE CHAULMOOGRA TREATMENT OF LEPROSY

AT THE HOSPITAL FOR LEPERS, DICHPALLI, HYDERABAD STATE.

BY ISABEL KERR, M.B., CH.B. ABERD.

FOR the past four and a half years we have been giving the more recent preparations of chaulmoogra and hydnocarpus oil at this hospital, a mission institution which, in its erection and maintenance, owes very much to the enlightened generous policy of H.E.H. the Nizam and his Government.

Before the present treatment was adopted our inmates were mostly very advanced cases—men and women who, because of the deformity caused by the disease, were unwelcome in their homes. We could give them very little beyond general care, food, and clothing. They were unhappy because of their disease and we because of our ignorance of it. Such an institution achieves little or nothing in the prevention of the spread of leprosy, since most of the cases are past the infectious stages of the disease.

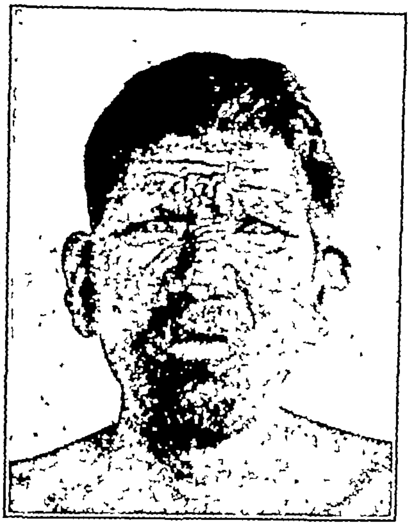
Methods of Treatment.

Early in 1921 we began the use of the ethyl ester of the fatty acids of hydnocarpus wightiana oil with creosote, camphor, and olive oil (E.C.C.O.), given under the skin or into the muscles. Of all the cases treated charts showing the condition of the patients were prepared—anæsthesia, nodules, discoloration, bacterial examination being recorded previous to treatment. Progress also was noted on successive similar charts. These were submitted to Dr. E. Muir, leprosy research worker of the Indian Government, Calcutta, with whom we have always worked in unison.

With the above preparation recent patches improved and nodules disappeared, but it was the general effect of this mixture which was most marked. It contained only a small percentage of ethyl ester. The exact composition was: Ester 1 part, camphor 1 part, creosote 1 part, olive oil 2½ parts, and the maximum dose, 5 c.cm. Previous to its administration our inmates were dull and apathetic, few of them slept, few had any appetite, and all were lethargic. The change was very marked; sleep and appetite returned and there was a general desire to move about and share in the normal activities of life. Both they and we felt we had come to the end of the dark tunnel in which we had been living, and had begun to see light.

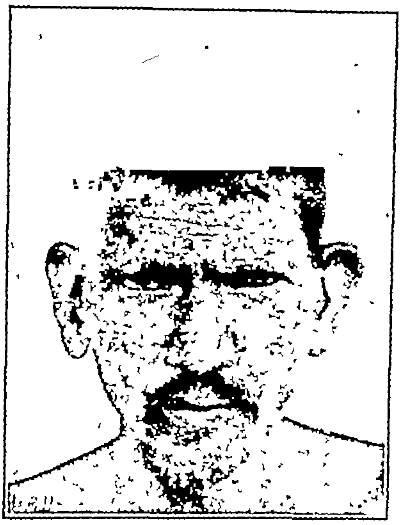
In order to check how much of the improvement was due to the creosote and olive oil we carried out a control treatment at the same time with a 2 per cent. mixture of creosote and olive oil. With this, sensation returned in non-sensitive areas of not too long-standing, but positive lesions did not show improvement as they did with E.C.O.O.

FIG. 1.



Before treatment.

FIG. 2.



After treatment.

From E.C.O.O. we passed to more intensive treatment, giving the pure ester combined with creosote and iodine intramuscularly, and with iodine alone intravenously. In this way we could give up to 16 c.cm. a week. By this time, too, we had begun to get a better class of patients; the Railway Medical Service of the State and our mission hospitals throughout the district combed out from their employees and their schools infected people. As many of these were early cases, we had just the sort of patient who responded to treatment in a comparatively short time. The intravenous method, though more speedy in its result, was not popular with a few of the patients, since it caused a good deal of nocturnal coughing. It did so also during injection if not given very, very slowly. In some of the acute skin ("nodular") cases it was difficult to give in small enough dose to avoid aggravating the disease, but the skin cases who could take the large doses, either intravenously or intramuscularly or both, did very well. The lepra bacilli, lying as they do as emboli in the fine capillaries, can be reached through the blood-stream. In nerve cases the organisms are more difficult to reach. With them results were not so marked. However, of the reports and charts we submitted to the Leprosy Research Department, Calcutta, 66 per cent. of our cases showed "very much improvement," and of these 12 per cent. had become symptom-free.

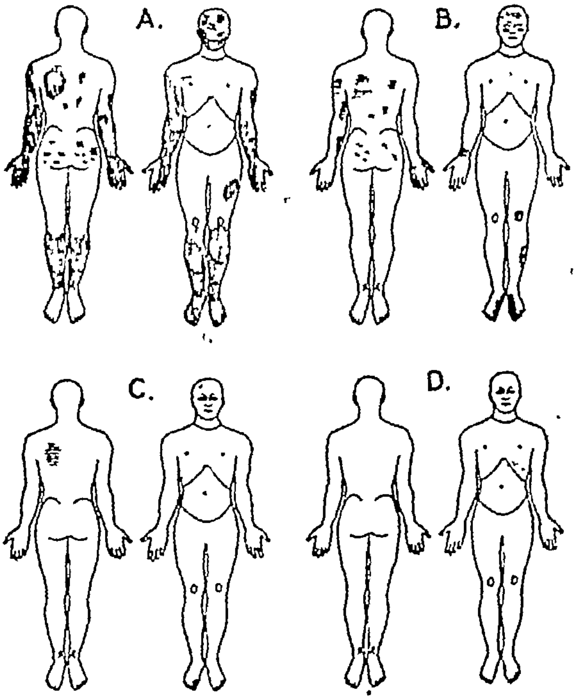
I may say at this point we accelerated the effect of the ester by the use of Kedrowsky vaccine. Dr. Muir kindly supplied us with slants of the "lepra bacilli" from which we had vaccines prepared. This started cases reacting (i.e., getting evening temperature) after they had seemed callous to the ester.

Occasionally one finds a case which cannot take this treatment. One we had was a young man of 25 who had suffered from constipation from his childhood, had hæmorrhoids, and a liver which refused to function. Under such conditions it was impossible to coax even the beginnings of immunity without causing a violent reaction which was difficult to stop. We like to keep our patients, when we can, just on the point of reacting, even although we find that a reaction of 48 hours can bring about a great deal of improvement. Invariably we find that minimum doses of the E.C.O.O. 0·25 c.cm. brings down the temperature. For this it is a valuable asset as well as for infiltrating old bone lesions which cause perforating ulcers.

Of course to achieve success we have been careful to get our cases uncomplicated. Concurrent disease, such as intestinal worms, malaria, syphilis, chronic gastric trouble, hinder the patient acquiring immunity. A quantity of medicine is wasted and prolonged inconvenience to the patient caused if these are not dealt with.

The more recent method of infiltrating the skin with the ester combined with creosote or thymol has given the quickest results with us at Dichpalli and, I believe, elsewhere. No inconvenience beyond a burning sensation for a few minutes at the points of injection is felt, and thus the patients are very keen about it. We infiltrate the lesions with the drug and paint over the surface with trichloracetic acid. Early cases show improvement within a few weeks; older lesions naturally need longer time. Very old nerve lesions, where the nerve-endings are dead, cannot improve. The scars may disfigure the patient, but, being non-infective, they can no more

FIG. 3.



Effects of modern treatment in an early case of leprosy.

A, on admission (1/6/21). Showing erythematous patches of imperfect sensation; lepra bacilli in nasal discharge. B (1/2/22). Showing discoloration of old patches and some small insensitive areas. C (30/3/22). Discoloured patch on back and small insensitive patch on toe. Nose shows broken-up bacilli. D (10/8/22). Patient symptom-free. Wassermann test negative.

convey leprosy than, as Dr. Muir has put it, can small-pox pitting convey small-pox.

When a lesion is infiltrated we find that not only is there improvement locally, but also in the distant lesions. The irritation caused by the drug breaks up the bacilli which throw out their toxins. Those again make antitoxins which break down bacilli elsewhere. By infiltration we can give whatever amount of the ester a patient can take. As much as 20 c.cm. can be given a week and even more. We generally give part of a large injection into a muscle.

This short article would be incomplete without reference to a control treatment we carried out for two years with the esters of linseed and olive oil. This was done at the suggestion of the Calcutta leprologists. With a few cases—mostly nerve leprosy—improvement followed, but not so marked as with the chaulmoogra series. All these oils are unsaturated, but linseed and olive oils do not belong to the carbon ring series as do the latter. As leprologists tell us, we need both qualities in then treatment of leprosy, and our control treatment bears this out.

Results.

Out of 180 patients treated with hydnocarpus ester during 1923 and 1924 the following statistics were drawn up: 17 per cent. symptom-free; 45 per cent. very much improved, most of them likely to become symptom-free; 35 per cent. improved; 3 per cent. worse or dead. Of infective cases 63 per cent. have become non-infective.

In all skin cases the effects of treatment are gauged by microscopic examination of skin and nose. It is important with such patients that the treatment should be as intensive as possible. If it is slow the nerves may become affected, and the treatment would be unnecessarily prolonged.

On admission a number of our patients suffer from acute toxæmic symptoms—temperature and pain along the nerve trunks. This is especially marked if the disease is not advanced. Even with the minimal doses, which one has to give to avoid aggravating the temperature, the neuralgic symptoms disappear almost as if a dose of morphia had been given. When the progress of the disease has been stayed the patient's immunity increases and we are able to give larger amounts of the drug. The results then depend on patience, care, and time. Two complications for which we have to be on the look-out are tuberculosis and nephritis. The symptoms of tubercle are often so completely masked by those of leprosy that the first announcement of its presence may be acute tuberculosis of the intestinal or meningeal type.

The series of diagrams, A to D, show what may be expected in an early case of leprosy which had just passed into the infective stage. There was obstruction of the right nostril, occasional bleeding, and acid-fast bacilli in smear. The symptoms appeared concurrently with an attack of syphilis. The longitudinal shading represents loss of sensation; horizontal shading discoloration. The patient was under intensive treatment for 15 months. Then he returned to normal life and work, coming to us for a time for weekly injections. He has kept perfect health for three years.

LECTURES ON CHILD WELFARE.—The National Association for the Prevention of Infant Mortality and for the Welfare of Infancy has arranged a special course of lectures for health visitors, voluntary workers, teachers, nurses, &c., to be held at University College, Nottingham, from Sept. 21st to 25th. The syllabus includes such lectures as the Nervous Child, by Dr. Eric Pritchard; the Care of the Adolescent Girl and the Home Care of the Mentally Deficient, by Dr. Letitia Fairfield; the Prevention of Difficulty in Labour, by Dr. J. S. Fairbairn; Ductless Glands and Vitamins, by Dr. J. Stanley White; and Warnings of the Abnormal in Labour, by Lady Barrett. Visits to clinics, sanatoriums, and dwellings will also be included. Full particulars may be obtained from the Honorary Secretary, 117, Piccadilly, W. 1. Early application is advisable.

TWO CASES OF CYSTINURIA IN CHILDREN,

WITH RENAL AND VESICAL CYSTIN CALCULI RESPECTIVELY.

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CYSTINURIA is a rare family and hereditary abnormality in the metabolism of proteins,[1] in which the sulphur-containing amino-acid, cystin, a normal product of the hydrolysis of proteins, is excreted in the urine to the extent of half a gramme in the 24 hours. It is found in the child, and persists throughout life.[2] Cystin may give rise to urinary deposits in acid urine in the form of colourless hexagonal plates and may form calculi. The deposit alone, however, will not form calculi, but is only a factor in their formation.[3] Apart from the liability to form calculi, the excretion of cystin has apparently no ill-effect; thus Abderhalden[4] says: "The metabolism of a cystinuria patient is always normal, and urinary stones are frequently found in the disease." Macalpine,[5] who removed six cystin calculi from the kidney of a boy aged 8 years, noted that the urine of cystinurics on decomposition had a foul odour, possibly due to the sulphuretted hydrogen produced during the decomposition of the cystin, which contains practically all the sulphur of proteins.

The calculi are of a yellow appearance, and assume a greenish waxy appearance after removal. They are often multiple and bilateral, and may be found either in the kidneys or bladder, and are prone to occur in several members of the same family. They usually cast a fairly dense shadow with the X rays. Case 1, here reported, gave excellent shadows. Graves,[6] however, reported a case in an obese woman of 26 with unmistakable clinical signs of calculus in the kidney, which failed to reveal a shadow on two occasions. It was finally shown by a pyelogram. He points out that cystin, being an amino-solid, would not be expected to give a shadow unless mixed with inorganic substances. Thomson-Walker[6] says that "cystin and xanthin calculi cast a shadow only slightly less dense" than oxalate of lime calculi. Graves, however, admits that the general opinion of most writers is that they readily give a shadow, and quotes Müller,[7] who reported a case of a man, aged 21, who persistently formed cystin calculi which gave shadows with the X rays. He also refers to Morris's[8] paper on the X Ray Shadows of Cystic and Xanthic Oxide Calculi. Morris said that many cystin calculi contain phosphate of lime and traces of magnesium and ammonium phosphate, but what was more to the point, cystin contains 25·58 or 25·81 per cent. of sulphur, and therefore it was improbable that they could fail to cast a very deep shadow. He reports a case in a patient, and refers to specimens in the Museum of the Royal College of Surgeons of England.

Frequency of Occurrence.

As regards the frequency of occurrence of cystin calculi, Tennant,[9] in his paper on cystin calculi, says that until 1882 only 50 cases had been reported. He refers to Kretschmer's[10] comprehensive study on cystinuria and cystin calculi in 1916. He (the latter) found 107 cases of stones, including two of his own in twin boys aged 9 years. Vesical calculi were present in both the twins and were diagnosed before operation. Tennant also refers to Watson and Cunningham,[11] who reported one case in 32 cases of cystinuria, to Morris[12] two in 77, and to Sir Henry Thompson three in 114. Calculi, therefore, occur in about 2–3 per cent. of cystinurics. Although rarely, calculi may occur in old age. Mörner[13] reported a vesical cystin stone successfully removed from a man aged 69.

As regards the families of the two cases here recorded, a baby sister of Case 1 is cystinuric, but other members of the family, including both parents, are free from this anomaly. A brother of Case 2 passes urine containing cystin, but the urine of the mother (father deceased) contains none. It may be noted [14] that the urine must be acid for the deposition of the crystals, and if not acid must be rendered so by the addition of a few drops of acetic acid.

Cystinuria is of interest to the surgeon on account of the complex surgical problem that is presented so frequently by the multiplicity of the calculi and by the persistence of their re-formation after removal. These two factors are responsible for serious damage to the renal function, and establish thereby a grave operative risk. Thus Tennant,[9] in his paper referred to above, reported a case of multiple cystin calculi in a woman aged 21, on whom he performed three major operations, removing 15 large stones of an aggregate weight of 73 g., and involving both kidneys and one ureter. There were two in the right kidney, one in the left, and a series of 12 in the right ureter. The function of the right kidney was low, as shown by the phenolsulphonephthalein test. She recovered, but continued to deposit cystin crystals in the urine. Müller,[7] in his paper already quoted, gives the history of a young man of 21, who formed cystin calculi with ungovernable persistence.

CASE 1.

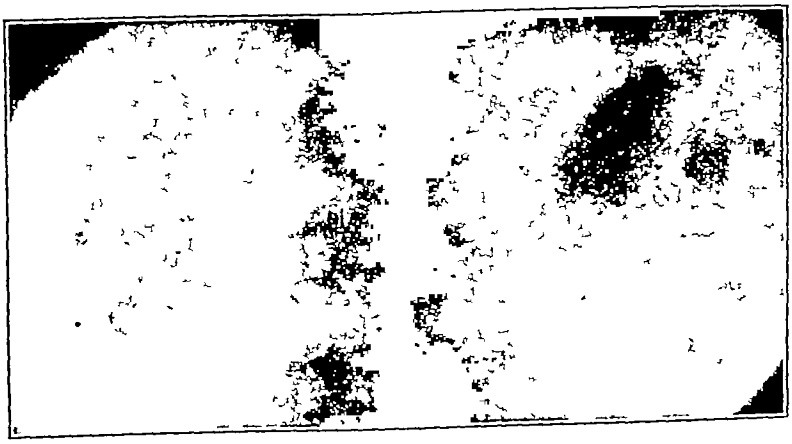
Case 1 is an illustration of the surgical problem with which the surgeon may be faced. This case was under the care of Mr. George E. Waugh at the Hospital for Sick Children, Great Ormond-street, to whom I am indebted for permission to publish it, and whom I have to thank for many suggestions and much helpful criticism in the preparation of this paper.

CASE 1.—K. H., girl, aged 9⁹/₁₂ years, was admitted to hospital on March 20th, 1922, with a history of pain in the right side for about a year, and occasional hæmaturia after running about.

Past and Family Histories—Nothing of note, but subsequently in February, 1924, a baby sister was found to be passing cystin.

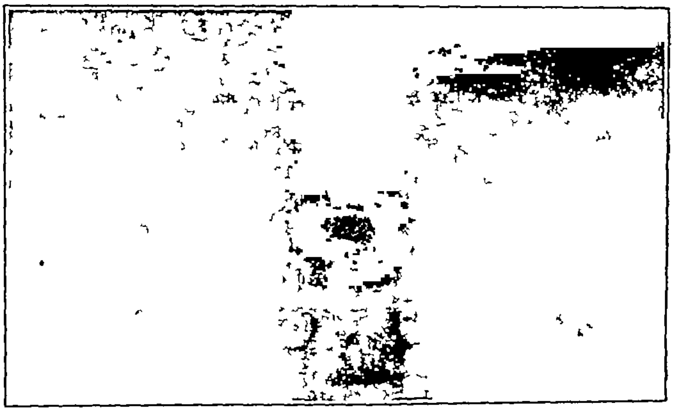
Condition on Admission.—She was a pale but well-nourished child. Right kidney easily palpable. No œdema of the extremities or puffiness under the eyes. Urine: Pale, turbid, acid; sp. gr. 1012; albumin, slight cloud; no sugar. Blood cells, occasional pus cells, and granular casts present. Blood pressure. 123 mm. Hg. Wassermann reaction: negative. No retinitis. Skiagram: One large calculus and several smaller ones in the pelvis of each kidney (Fig. 1). Urea-concentration test (March 24th, 1922): Maximum urea concentration of 1·7 per cent. Cystoscopy (March 31st): Nothing abnormal. Ureters catheterised. 2 P.M., 4 c.cm. of 4 per cent. indigo-carmine given intramuscularly. 3.40 P.M., coloured urine from right kidney. 6 P.M., tinge of colour from left kidney. Segregated urines: Urine from right kidney, urea present in considerable quantity; urine from left kidney, urea present in minute quantity. Conclusion: Right kidney, fair efficiency, 60 per cent. of normal; left kidney, poor efficiency, 10 per cent. of normal.

FIG. 1.



Case 1.—Skiagram, March, 1922. Calculi before operation

FIG. 2.



Case 1.—Skiagram, July, 1922. Calculi remaining after both operations, and before administration of sod. bicarbonate. (Cf. Fig. 3.)

First operation (April 7th): Left kidney (more damaged one). Usual lumbar incision. One large branched calculus, about five or six smaller ones, and many minute calculi were removed from the pelvis of the kidney, which was considerably dilated, the amount of kidney substance being considerably reduced. Difficulty was experienced in removing the smaller stones from the dilated calyces. The pelvis contained purulent urine and was irrigated with 2 per cent. chloramine in saline and closed with drainage. During the operation the parietal wound was protected with gauze wrung out in 1 in 40 carbolic acid to avoid infection.

Pathological report on calculi: Cystin calculi; the large branched one weighed 15·50 g. Urine: Cystin crystals found in the deposit.

Urea-concentration test (April 24th):—

	Patient.	Control.
24-hours specimen ..	0 6 per cent. urea	1 8 per cent. urea.
Grammes vi. urea given :—		
6 A.M...	1·7 " " "	2 9 " " "
7 A.M...	1 4 " " "	3·1 " " "
8 A.M...	1·3 " " "	3 2 " " "

Skiagram (May 18th): Several small stones still remain in the pelvis of the left kidney

Second operation (May 10th): Right kidney. A similar operation was performed, and the same condition found as in the left kidney; but the kidney was not so dilated. Large branched calculus, weighed 6 40 g. After both operations there was considerable hæmaturia for some days, which, however, cleared up without trouble, and the wounds healed soundly after removal of the drainage-tubes, without becoming infected. July 5th, numerous minute calculi passed during the last month. Skiagram: Several small calculi remain in the pelves of both kidneys. Ureters and bladder free. (Fig. 2.) Urea-concentration test: 24 hours specimen, 1 1 per cent. urea; 4 A.M., 1·4 per cent. urea; 5 A.M., 1·8 per cent. urea; 6 A.M., 1 8 per cent. urea. Oct. 9th, passing small stones at intervals, sometimes hæmaturia. Skiagram: No change since July. Urea-concentration test: Maximum urea-concentration, 1 8 per cent. Diet: Fish; sod. bicarb., gr. 120 daily

February, 1923: Occasional severe headache, occasionally passes a small stone. Urea-concentration test: 24 hours specimen, 1·75 per cent. urea; 6 A.M., 1·45 per cent. urea; 7 A.M., 1 70 per cent. urea; 8 A.M., 1 80 per cent. urea.

February, 1924: General condition improved, and she is growing. She attends school, but still has severe headaches which keep her away on occasions. Has not passed any stones for fully six months.

Urea-concentration test:—

	Urea per cent.	Urine.
Twenty-four hours urine	1·31	508 c.cm.
First hour	1·50	90 ,,
Second hour	1·40	150 ,,
Third hour	1·58	90 ,,

Urine contains cystin crystals, no casts; cultures sterile. Skiagram: Now remaining, one large and one small calculus in the left kidney. (Fig. 3.)

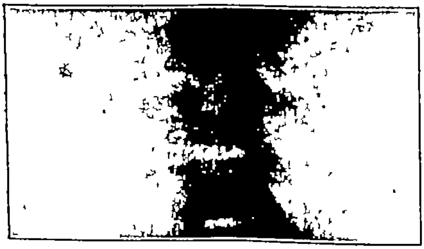
December, 1924: Condition excellent, attends school regularly. Cystin crystals still present, but as precipitation. Diet restricted still and 120 gr. sod. bicarb. daily.

Comment.

The urea-concentration test, the indigo-carmine test, and the analysis of the segregated urines, showed a low renal efficiency and therefore a bad operative risk. It was, however, essential to attempt removal of the stones, the alternative being inevitable death within a comparatively short period.

The surgical problem presented was the question as to which kidney to operate on first. To operate upon the more efficient kidney first with a view to arresting further damage to the renal structure as quickly as possible, would appear to have been the operation of choice. But the fear that suppression of urine might follow the first operation was responsible for the decision to deal with the less efficient kidney first, thus leaving the more actively functioning kidney to bear the brunt of a possible post-operative complication. The subsequent after-course of the patient threw no light upon the wisdom of this decision. She did remarkably well after both operations; at no time did her condition give rise to anxiety, neither were there any signs of impending uræmia. No doubt this favourable result was largely due to careful nursing and dieting.

FIG. 3.



Case 1.—Skiagram, February, 1924, showing effect of administration of sod. bicarbonate. (Cf. Fig. 2.)

There was a measure of doubt as to whether the stones in the left kidney shown by the skiagram taken in May, 1922, just before the second operation, and in both kidneys in July and October, 1922, had been left behind at the operations, or had re-formed in the meantime. The skiagram in May was taken about six weeks after the first operation, and that in July about two months after the second, which seems a very short time for the calculi to have re-formed. But she was not put upon large doses of sod. bicarbonate daily until October, 1923, which is said to increase the solubility of cystin. It seems hard to confess that any stones had been left behind after the very thorough manner in which the calyces had been explored and irrigated. The skiagram taken in February, 1924, shows that she has been passing these stones, so that the sod. bicarbonate appears to have been of considerable value. The urine, however, still contains cystin crystals.

Prognosis.

Although the patient is lucky to have recovered from two severe major operations on such damaged kidneys (Kürster gives the mortality for double calculi as 35 per cent.), the ultimate prognosis cannot be very favourable. The urea-concentration test in February, 1923, shows very little improvement indeed in renal efficiency, while that of February, 1924, is distinctly disappointing; considering she has passed the majority of the stones remaining in the kidneys, one had hoped for an improvement in renal efficiency, more particularly as she has improved in general health, and is growing.

Apart from her renal efficiency, her present condition is encouraging, but the restricted diet and sod. bicarbonate must be continued. Should she form any calculi of such a size as to call for removal, operations on such damaged kidneys would be attended with very grave risks indeed.

The mother gives the following history of a sister of this patient:—

M. H., girl aged $1^{9}/_{12}$ years. Since July, 1923, has had attacks of abdominal pain accompanied by profuse sweats. She doubles herself up and presses the hands over the pubes. Each pain lasts from three to four minutes, and may occur several times daily. The relation to micturition has not been noted, and no blood in the urine has been seen. While under observation in the ward for a week in February, 1924, the attacks of pain were not noticed, but she appeared to have some retention on occasions. The urine was acid, contained an abundance of cystin crystals, and *Staphylococcus albus* was grown from a catheter specimen. A skiagram of the urinary tract was negative.

CASE 2.

Case 2 is that of a boy who was under the care of Mr. O. L. Addison at the Hospital for Sick Children, to whom I am indebted for permission to publish it.

C. H., boy aged $2^{7}/_{12}$ years, was admitted to the Hospital for Sick Children on Sept. 15th, 1922.

History.—Twenty-one months ago he started screaming when passing water; attacks of pain came on every two weeks at first, more frequently lately. He was always soaking his napkin. He passed a very little bright blood on two occasions in March or April, 1922, and for six weeks during March and April he had a urethral discharge. He was circumcised when six weeks old.

Family History.—Brother, E. H., aged 9, has had an operation for stone in the bladder elsewhere, which was not chemically examined. Father died from heart failure. Skiagram: Large vesical calculus. Cystoscopy (Sept. 21st, 1922): Stone seen, also two ulcers. Œdematous and inflamed mucous membrane. Bladder contracted. Suprapubic lithotomy: Stone size of a pigeon's egg removed. Drainage-tube inserted. Pathologist's report: Cystin calculus weighing 8 g. The drainage-tube was removed on Sept. 28th, and the boy discharged with the wound healed on Oct. 17th.

Readmitted on Oct. 28th, 1923, for "inability to pass water." Since discharged last year has been quite well, but recently has been wetting himself more than previously, having frequency at least every hour by day. Stream has always been good. Oct. 27th, 1923: Only a drop or two of urine would come away. A doctor passed a catheter and sent him to hospital. While being carried to hospital he had an attack of screaming. Mother examined him and found that two small stones had been passed. In the ward he appeared to be quite comfortable. Bladder was not distended. The stones were the size of a split pea, hard, and brittle. Skiagram (Oct. 3rd, 1923): Bladder and kidneys—no abnormality, ? doubtful shadows left kidney region. Passing urine freely. Urine: culture from deposit: first day, streptococci isolated; second day, few colonies. *B. proteus* grown. Report on calculi: Calcium oxalate and triple phosphate, trace of alkaline earths. No cystin. Cystoscopy (Nov. 1st): Slight cystitis. Area of left ureteric orifice inflamed. No stones seen. Skiagram (Nov. 5th): Very small shadows in left kidney region. January, 1924: Still has frequency, wets himself often. Urine deposit: Chiefly oxalate crystals, few cystin crystals. February: Put on sod. bicarb., gr. 45 daily. March: Has passed two more small calculi which the mother did not keep. Skiagram (March 22nd): Fairly large calculus in left kidney. December: Still wets himself. Passed some "sand" in

September last. Calculus little larger but still of a size possible of being passed. Still on sod. bicarb., gr. 45 daily.

Comment.

This case is remarkable in that the boy forms oxalate calculi as well as cystin, and that the urinary deposit contains chiefly oxalate crystals, only a few cystin crystals being found. In the literature I have searched, I have not found a case in which other calculi as well as cystin calculi have been formed.

Prognosis.

Unless this patient succeeds in passing the calculi now in his left kidney, it is evident that sooner or later they will have to be removed. Being a boy, he is less likely to pass them as the girl has done. Moreover, his bladder is infected, and, with the calculi, progressive loss of renal efficiency will ensue. That he forms two different sorts of calculi also complicates matters. But he has come under treatment before serious damage to his renal function has occurred, and so his outlook in life is considerably better than the girl's. E., the brother of this patient, who had a vesical calculus removed elsewhere four years ago, has no symptoms now, and a skiagram of his urinary tract is negative. His urine, however, contains cystin crystals. I think it, therefore, justifiable to assume that his calculus was of this composition. He has now been placed on sod. bicarbonate gr. 45 daily, with a view to preventing, if possible, any re-formation of cystin calculi.

SUMMARY.

Cystinuria, when complicated by the formation of calculi, is undoubtedly a very serious disease, both on account of the multiplicity of the stones and the serious damage to renal function caused thereby, and also on account of the persistence with which they continue to be formed. Their formation can evidently be controlled to a certain extent by the administration of large doses of sodium bicarbonate; but it is said to be largely independent of diet. Since only 2 to 3 per cent. of cystinurics form calculi, cystinuria cannot be looked upon as a very serious potential danger to life, and apparently 97–98 per cent. of these individuals go through life without suffering any disability at all from their abnormality in protein metabolism. It is possible, on the other hand, that, with the increase of biochemical investigations carried on in this branch of medicine, more unsuspected cases of cystin calculi may be discovered, since calculi have not always been subjected to analysis and the yellow appearance of cystin calculi at the time of removal may suggest a uric acid or urate composition. It is not until after exposure for some time to the air that they assume their characteristic greenish waxy appearance.

Since writing this paper Edwards[15] has published an interesting case of cystinuria with calculous formation, in whom the passage of cystin crystals was *intermittent*. Repeated specimens of urine gave no deposit of crystals after acidifying with acetic acid and acetone, and the chemical reactions of cystin were absent. The specimen containing crystals was darker and more oily than those without the crystals and yielded a heavy deposit. The familial nature of the disorder is also strongly brought out in his case, and a study of the family further emphasises the serious damage that can be done to the kidneys as well as the multiplicity of the stones that may be formed—over 200 having been found in the enormously enlarged kidney removed from one sister.

As regards the density of the X ray shadows of cystin calculi being dependent on the sulphur they contain, Winsbury White[16] states in a recent paper that cystin and xanthin calculi give poor shadows when in the pure state, but of slightly more opacity than those of urates, uric acid, and triple phosphate owing to the sulphur they contain.

Edwards also makes some suggestions as to treatment. He says that choleic acid may be given on the hypothesis that endogenous cystin is excreted because of the lack of choleic acid with which it should normally conjugate to become the taurin of the bile-salts. Intestinal and urinary antiseptics, he says, should be given to allay the pelvic infection which furnishes the irreversible colloid that glues the crystals into calculi. Vaccines prepared from fæcal strains for this purpose he did not find of much benefit. He also refers to Klemperer and Jacoby, who state that the administration of 6–10 g. of sodium bicarbonate causes the complete cessation of cystinuria. Where stones have already been formed this is of no value, but in the two cases here described the large doses given seem to have been of distinct value, in any case in controlling the formation of calculi.

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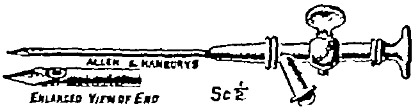
New Inventions.

AN IMPROVED REFILL NEEDLE FOR ARTIFICIAL PNEUMOTHORAX.

THERE are certain disadvantages in the refill needles commonly used in cases of artificial pneumothorax. The Lillingston needle is difficult to push through the skin. The Saugman needle is very apt to punch out a piece of skin. This can easily be cleared by squeezing the tube, or inserting the stilette through a stuffing box, but it is a *nuisance*, and theoretically it is wrong to push the piece of punched-out skin into the pleural space. I have, *therefore*, asked Messrs. Allen and Hanburys to make for me the needle herewith illustrated. It works extremely well. The point is an ordinary sharp-cutting trocar point; the outlet hole is situated laterally. It can only be used, of course, when there is an appreciable pneumothorax.



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BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT BATH.

SECTION OF SURGERY.

WEDNESDAY, JULY 22ND.

CARCINOMA OF THE STOMACH.

IN opening a discussion on this subject Sir William I. de Courcy Wheeler reminded the meeting that 10,000 people died annually in the British Isles from this condition. He proceeded with a destructive criticism of the method of diagnosis by analysis of the gastric contents which, in his opinion, did not lead to any definite goal, nor did he consider the fractional test-meal productive of encouraging results. The greatest advance in diagnosis lay, he said, in accurate X ray examinations; though even here one must not expect the miraculous. He referred to the occurrence of venous thrombosis as a valuable sign of early carcinoma of the stomach (Prof. T. G. Moorhead), and cited four cases where its value was illustrated. The speaker was of the opinion that if there was no gain in weight, or at least maintenance of weight, after efficient medical treatment, malignant disease should be suspected and exploration was then more than justified. He recognised a definite "pernicious anæmia type" of carcinoma of the stomach, and held that should such cases not respond very rapidly to treatment by arsenic, malignant disease should be suspected. In dealing with the differential diagnosis, syphilis and gastric disturbances in pulmonary tuberculosis, diabetes and actinomycosis, were described as conditions likely to be confused with malignant disease of the stomach.

Proceeding to the question as to whether gastric ulcer was or was not a precursor of carcinoma, the speaker instanced several cases of undoubted implantation of carcinoma on a chronic ulcer, but admitted that most cases of carcinoma on which he had operated arose without symptoms which would suggest the presence of a previous ulcer. He did not believe that palliative operations were of much value. The value of radium in the treatment of carcinoma was undoubted. The two-stage operation for removal of the carcinoma was seldom, if ever, necessary, and he found the shock from gastrectomy of the Mayo-Moynihan-Polya type to be surprisingly small. Sir William Wheeler then described a very interesting case, in which he had removed, apparently, the whole stomach for a non-malignant ulcer. His address was illustrated by slides and X ray photographs.

Dr. E. I. Spriggs spoke of the

Clinical Manifestations and Early Diagnosis

of cancer of the stomach, excluding the use of laboratory methods. He first gave an account of the classical symptoms—vague discomfort occurring in elderly men, with gastric flatulence and loss of appetite gradually developing into nausea, eructation merging into vomiting, pain either in the pit of the stomach, the small of the back, or between the shoulders; then later, a tumour, loss of weight, colour, and vigour; and finally, ulceration, coffee-ground vomit, mild irregular fever, involvement of other structures, and death in two years. He compared these symptoms with those described in 25 chosen cases, in which a very full history was obtained. In 17 the history was recent; in four it was long. The history of old indigestion, he pointed out, must not be allowed to obscure the diagnosis. Dr. Spriggs compared the symptoms according to the part of the stomach involved. In cases where the carcinoma was situated at the cardiac end, eructation was more common than in other types. After a time the symptoms gradually merged into those of œsophageal obstruction. In cases of the "leather bottle" type, the patient early complained of an aversion to food. When the neoplasm was situated at the pyloric end of the stomach, there was always pain after food, which might, or might not, be relieved by more food. The history was never clear-cut. Vomiting of large quantities of food at intervals of two or three days, he considered, was a very rare sign in cases of malignant disease. In three of his cases hæmatemesis was the first evidence of the presence of malignant disease. An anxious expression was sometimes present, and, if present, was sufficiently characteristic to be an aid to diagnosis. Finally, the speaker expressed his opinion that the first most vital step towards a diagnosis of carcinoma was not the clinical study of the patient. He believed that investigation should be carried out at once—that there should be no "watching"—and that carcinoma should be excluded at the earliest possible moment. X ray examination he considered the most important. All examinations should be very complete, and if the diagnosis was still in doubt an exploratory operation should be performed.

Dr. A. F. Hurst dealt mainly with the methods of investigation of the patient. He strongly urged that doctors should send their pat'ents early to the radiographer, and that patients should be encouraged to come early to their doctors, even for vague pain. He discussed the methods of examination of the stomach content, chemical and microscopical. With reference to the examination for pus, he recommended routine examination of the "spittle." He considered that the presence of blood in every part of a fractional test-meal was evidence of malignant disease unless there had been a recent hæmorrhage from an ulcer. He was of the opinion that a skilled radiographer could show an abnormality of the stomach in 100 per cent. of cases of malignant disease. A fallacy was present if the stomach was not empty when the examination was made, for the barium might then appear low down, because it had sunk to the bottom of a full stomach. Occult blood was present in 100 per cent. of cases and the examination for its presence was of the utmost importance. It was never present in normal people, and although it was found in patients suffering from a gastric ulcer that condition could be distinguished by X ray examination. Examination of the blood for megalocytosis was important in the differential diagnosis of pernicious anæmia. Dr. Hurst showed slides illustrating this point and described a method of measuring the cells.

Pathology of Gastric Carcinoma.

Prof. M. J. Stewart dealt with the pathology of carcinoma of the stomach, the relation of ulcer to carcinoma, the mode of spread of the carcinoma, and the frequency of secondary deposits in the liver. He presented an analysis of 105 cases examined in the post-mortem room. Of these, 82 per cent. were between the ages of 40 and 70, and the proportion of males to females was 2 to 1. His address was illustrated by a series of microscopical specimens showing sections of chronic ulcer and of malignant disease. In a series of 216 clinical specimens of gastric ulcer and carcinoma 9 5 per cent. showed carcinoma implanted on a chronic ulcer.

Dr. Gregory Cole (New York) said that five years ago it was taught in America that 68 per cent. of cases of gastric ulcer became malignant. In one-tenth of the ulcer cases he had seen in the last ten years he could not say whether they were malignant or not, in the remaining 90 per cent. he had only seen one in which carcinoma developed in the neighbourhood of a chronic ulcer.

Mr. John Morley, although he considered the idea that carcinoma was often implanted on a chronic ulcer attractive and that it would lend point to the advice to patients to be investigated early, nevertheless doubted its truth. He drew attention to the possibility of a mistake in microscopical diagnosis in those cases where, as had been pointed out by Sir Bernard Spilsbury, there might be proliferation of cells at the edge of an ulcer. Where the history of indigestion was recent—under 12 months' duration—there was a strong likelihood of the presence of malignant disease. He was of the opinion that carcinoma originating in a chronic ulcer was rare.

Dr. W. D. Haggard (Tennessee) said that in dealing with ulcers the operation of wide excision with the cautery and subsequent examination was of great value. He believed in the two-stage operation in late cases. He said that in America they were still looking "like the wise men towards the East for inspiration."

Mr. A. H. Burgess (Manchester) considered early diagnosis of penultimate importance. Surgical treatment must, as always, aim at radical extirpation. He instanced ascites, secondary deposits in the liver or the peritoneum (which might be felt in Douglas's pouch by rectal examination) as contra-indications to radical operation. Fixity to the liver or to the pancreas were not necessarily contra-indications. If the middle colic artery was certain to be damaged, owing to extent of growth to be removed, he thought the case should be left alone. He considered palliative gastro-jejunostomy was indicated only if there was obstruction. He then dealt with the operative details and demonstrated a stomach clamp.

Dr. C. L. Starr (Toronto) emphasised the importance of not "watching." If glands were enlarged, cure was impossible. He did not believe in exploratory operations, except in a limited number of cases.

Mr. Garnet Wright considered that clinical evidence was mainly against the probability of the development of carcinoma on top of a chronic ulcer.

Mr. R. P. Rowlands described a case of primary tuberculous ulcer, which he had treated by resection. He did not consider exploration dangerous in early cases, nor did he think that damage to the middle colic artery was a serious matter.

Mr. H. S. Souttar described two "ludicrously" inoperable cases with which he had dealt, doing a gastro-jejunostomy in the one and a resection in the other, and had succeeded in giving both of them several months of comfortable life. He described and eulogised Schumacher's clamp.

Sir Berkeley Moynihan (President of the Section) stated that surgery had out-paced medicine in the treatment of carcinoma of the stomach. There was very little chance of improvement under medical treatment, but there must always be a certain mortality in cases operated upon. He did not consider that the omentum need be removed—in fact, he left it and used it as a cover for the field of operation. Operations of the type Billroth No. 1 were only suitable for ulcer cases. Examination should be made as often and as fully as possible. There were many methods of operation—each useful. Patients must always be made fit for their operation; there was no great hurry and time spent in transfusion of blood, glucose injections, artificial and real sunlight was time well spent indeed. The President considered that the profession should teach the public about carcinoma, and he put forward the suggestion that the Ministry of Health should send out doctors to preach the gospel of health. If it was suspected that a patient was threatened with carcinoma, the experts should be gathered around him at once.

The openers then briefly replied.

THURSDAY, JULY 23RD.

Treatment of Primary Acute Intestinal Obstruction.

A discussion on this subject was opened by Sir William Taylor (Regius Professor of Surgery, Dublin University). He stated that the surgery of the acute abdomen had advanced so satisfactorily during the past 25 years, with the sole exception of acute intestinal obstruction, that one was compelled to ask why the mortality from that condition was to-day no better than it was at the beginning of the century. He attributed this appalling state of affairs to the ignorance and carelessness, both inexcusable and nothing short of criminal, of the general practitioners and physicians, who see these unfortunate patients in the earlierst ages of their illness. Instead of realising that purgatives and enemata could do no good, but, on the other hand, might do infinite harm—apart from the delay in surgical treatment their administration entailed—these practitioners were continually laying themselves open to an action at law for malpractice or, worse still, they ran the risk of being placed in the dock for manslaughter. The speaker estimated the true mortality of acute intestinal obstruction as nearer 60 per cent. than the figure usually given (35–40 per cent.)—an alarming state of affairs. It was a mystery to him, he said, that general practitioners and physicians, all of whom had come to recognise that the only satisfactory treatment for all other acute intra-abdominal conditions was early surgical interference, could not come to the same conclusion with regard to acute intestinal obstruction. Apart from acute intussusception, the speaker recognised three stages of obstruction: (1) Where (within 24 hours of onset) the patient's general condition was good and there was little or no distension; (2) where (within the second, third, or fourth day) the patient's general condition was still good, but there was considerable distension and the vomiting was severe; and (3) where the general condition was bad: pulse feeble, vomiting continuous and stercoraceous, abdomen distended, and the patient profoundly poisoned. Treatment in the first stage consisted in washing out the stomach with sodium bicarbonate solution and free opening of the abdomen under a general anæsthetic. When the obstruction had been dealt with the stomach was again washed out. In the second stage, the obstruction was similarly dealt with and removed, but, in addition to this, a separate incision was made through the left rectus above the umbilicus and a high loop of jejunum was brought out. A tube of 7 or 8 mm. diameter was fastened into this, after the method of Senn's gastrostomy, and by means of which the jejunum was drained and irrigated with sodium bicarbonate solution. Later the patient might be supplied with sodium bicarbonate and glucose by the same means. In the third stage, Sir William Taylor advised local infiltration of the abdominal wall and withdrawal of a loop of jejunum as above. Should the patient survive, the obstruction might be dealt with later. The washing out of the stomach in these cases is of paramount importance. In obstruction of the large bowel, cæcostomy after the manner of Sir Harold Stiles gave the best results so far as tiding the patient over his immediate dangers was concerned. The speaker then dealt with the condition of acute intussusception, and stated that in his practice it was the most common cause of acute intestinal obstruction. In these cases there could be no excuse for failing to make a diagnosis. He himself had had a total of 81 cases with only three deaths. In cases of obstruction of the adynamic type, Mr. Sampson Handley's method left little to be said on the subject, but Sir William Taylor was of opinion that in very severe cases jejunostomy with siphonage and gastric lavage, combined with morphia, might help the patient for a few days. Finally, he said, until physicians and general practitioners realised that there was only one legitimate treatment for acute intestinal obstruction—namely, early operation—we could not hope to improve our results.

Mr. Sampson Handley considered that the high mortality in obstruction cases was, at least in part, due to the fact that these operations were frequently done by medical men whose skill and training did not justify them in undertaking such a serious responsibility. He also blamed the authors of surgical text-books, whose description of the signs and symptoms of acute intestinal obstruction was often lamentably vague and confused. Mr. Handley insisted on the great value of the "two-enema" test—on the failure of the second enema the diagnosis might be considered as settled. He then dealt at length with the operation of precautionary lateral anastomosis and illustrated his points with diagrams. Death in general peritonitis was usually due to obstruction and not to the peritonitis as such, and the speaker believed that the recovery-rate, even in cases after obstruction had supervened, amounted to 75 per cent., if treatment was prompt.

Prof. D. P. D. Wilkie (Edinburgh) considered that the drainage and washing out of upper coils of intestine in late cases was of the utmost importance. He differentiated various forms of acute intestinal obstruction—such as the "closed-loop" obstruction and the "strangulation" type with its severe degree of shock. In cases of carcinoma causing obstruction, drainage of the bowel above without treating the carcinoma in the first instance was indicated. He considered that in old people with obstruction, the operation of bringing the loop outside, leaving it outside, and then excising it later, was a good one. He referred to operations for the drainage of the lymphatic system and emphasised the great importance of giving enormous quantities of fluid to patients with obstruction, as the chloride deficiency was made good by the fluid.

Mr. Ernest Cowell dealt with cases of acute intestinal obstruction occurring in elderly people and due to causes other than carcinoma. He summarised the notes of nine cases that he had met with and insisted on the importance of the early admission of doubtful cases for treatment.

Mr. Rowlands reported the statistics from Guy's Hospital for the years 1920–24. He considered that some deaths were undoubtedly due to errors of technique, and that though in early cases the operations were easy, in late cases they were very difficult. He believed in jejunostomy with drainage and siphonage in the late cases, and was of opinion that in cases of carcinoma a rapid examination of the abdomen should be carried out at the time of the drainage operation.

Mr. Max Page presented the statistics from St. Thomas's Hospital for the years 1920–24. He also showed a set of charts, comparing in a most interesting way the results of operations in 1900 to 1910.

Colonel Primrose (Toronto) spoke briefly of the operation for drainage of the lymphatic system. He considered the administration of sodium chloride intravenously as of great value in severe cases. Where the efficiency of the ileo-cæcal valve was destroyed, the seriousness of the prognosis, he said, was much increased.

Mr. Reginald Vick presented the statistics from St. Bartholomew's Hospital for the years 1920–24. He pointed out that the doctor was so often sent for only in the late stages, and that this was due to the disappearance of all pain, when gangrene had set in. He advocated the system of observation beds to which patients could be admitted before the *diagnosis* was certain, and described the working of this system at St. Bartholomew's Hospital.

Mr. Grey Turner presented the statistics from Newcastle Infirmary. The mortality for the radical cure of external hernia was ½ per cent.; for the cases with strangulation it was 20 per cent. The moral, he said, was obvious. He had seen little improvement in results in cases where toxæmia was established. Mr. Turner emphasised the fact that, in his opinion, fæcal vomiting was not a sign of intestinal obstruction but of impending death. He believed in the enema test and the calomel test, consisting in small doses of calomel at short intervals, the administration of which would either relieve the condition or complete the picture. The education of the public had its dangers, but he thought that the circulation of leaflets giving the considered opinions of experts might well be circulated to the profession.

Mr. Burgess said he did not see how Sir William Taylor could claim that he was called in late to cases of acute intestinal obstruction and yet was able to show a series of 81 cases of intussusception with only three deaths. He considered distension to be a most valuable early sign of intestinal obstruction, and that it was very important to distinguish, as far as possible before operation, between obstruction *in the large* and the small intestine. Blind cæcostomy was indicated in cases with obstruction due to malignant disease. The speaker also drew attention to the very high mortality in cases due to obstruction by gall-stones, and asserted that, in some cases, the obstruction *was undoubtedly due to the presence of two* stones, one of which was missed.

Mr. Souttar presented the statistics of intestinal obstruction for the years 1920–24 for seven hospitals. The total was 3064. He dealt at some length with the various points and demonstrated them by means of graphs. The very great frequency of intussusception as a cause of intestinal obstruction—second only to femoral hernia—was shown, and its incidence was almost entirely in the first year of life. The analysis of the mortality among the 3064 cases was as follows:—

Cause of obstruction.	Per cent.	Cause of obstruction.	Per cent.
Gall-stones	60·0	Intussusception with tumour	35·0
Carcinoma	43·5	Volvulus	61·0
Adhesions . ..	31·0	Inguinal hernia ..	10·0
Internal strangulation	33·0	Femoral hernia ..	20·0
Intussusception (idiopathic)	22·0	Umbilical hernia ..	35·0

Reply.

The *President* briefly replied, and stated that his good results in cases of intussusception were undoubtedly due to the fact that he had preached its signs, symptoms, and treatment at all times and in all places. He said that he was prepared to bear any amount of censure for *his* opening remarks, provided that they secured the result he aimed at—namely, the early operation in all cases of acute intestinal obstruction.

JOINT MEETING OF THE SECTIONS OF SURGERY AND ORTHOPÆDICS.

FRIDAY, JULY 24TH.

TREATMENT OF FRACTURES.

AT the joint meeting of these sections a discussion was held upon the treatment of fractures with special reference to its organisation and teaching. The Presidents of the two Sections, Sir Berkeley Moynihan (Surgery) and Prof. E. W. Hey Groves (Orthopædics), occupied the chair in the earlier and later parts of the meeting respectively.

Prof. G. E. Gask (London) held that although the plan of the segregation of fractures in special wards and under a *special staff*, advocated by Sir Robert Jones, might be of service to an occasional individual patient, it would involve such great difficulties in a teaching hospital that a change from the present organisation was not advisable. He professed himself *opposed to the growing tide of specialism which first* began when surgery was divorced from medicine by an edict of Pope Alexander III. in 1163. He shared the view of the late Sir Clifford Allbutt that this artificial separation of the two great branches of the healing art was the greatest blow that *had befallen* the profession and still constituted a weakness. Any further separation was to be deprecated and our efforts should rather be towards fusion. While it was obvious that those who specialised in a small subject could and did attain a higher degree of skill in that branch and had been the authors of many advances, such an argument could not be applied to the education of medical students, whose chief need was a firm grounding of the fundamental principles which were applicable to all types of injury and disease. The present medical curriculum was overloaded with special subjects, such as diseases of the eye; of the ear, nose, and throat; lunacy; fevers, and so forth; and there was a danger that in the desire to teach a smattering of everything the main principles of medicine would be forgotten. His own hospital recognised this danger when, after long discussion, they decided not to establish a separate department of urology. Certain of the younger members of the staff were, however, encouraged to take up and teach *this specialty in conjunction with their ordinary* work as general surgeons. Thus the student was enabled to start his professional work with the knowledge that there was no mystery about the use of the cystoscope and that with practice he might attain sufficient skill in handling it to make it a valuable addition to his armament as a general practitioner. Sir Robert Jones's recommendation, if carried into effect, would establish a fresh department and still further subdivide the student's education. It was his belief that any defects in the treatment of fractures at the great centres of medical education would speedily be remedied without recourse to such a step. Medical schools were very sensitive to public opinion, and the fact that it had been thought necessary to hold such a discussion and the publicity given to it would, in itself, be sufficient to stimulate them to make any essential reforms in that branch of their work.

Sir Robert Jones (Liverpool) held that the treatment of fractures was not as good as it should be and that the great teaching hospitals should give a lead to better things. Fractures were regarded as an incubus in most of the general surgical wards; they were of little interest to the majority of general surgeons, whose house surgeons were encouraged to discharge them at the earliest possible moment to make room for patients who needed some form of operative treatment. And the treatment of out-patient fracture cases, which was left almost entirely to the inexpert resident staff without any supervision by the surgeons themselves, was even worse. One very frequently saw lamentable deformities, which should not have arisen, follow fractures treated at teaching hospitals. He maintained that the treatment of the patient should be the first consideration at all hospitals and that the training of medical students even at the teaching hospitals was a secondary matter, although he did not admit that the segregation of fractures, which he advocated, need involve any insuperable difficulty in medical education. The "segregation scheme" was already in successful operation in many teaching hospitals in America and in several in this country with marked benefit to the patients and no ill-effect upon medical education. The results which might be achieved by his scheme were illustrated by those obtained in the cases of fractured femur during the latter part of the war (when specially trained staffs were available) which were better than any ever attained before. The lesson which should have been learnt then was already being forgotten, and again one saw gross errors in the treatment of common fractures which arose, he thought, from lack of interest on the part of many of those who held the responsibility for treatment. His scheme of segregation of all fractures in one department, not necessarily under an orthopædic surgeon or indeed under any one surgeon, would lead to comparison of results and a healthy rivalry between those in charge, with resulting benefit to both patient and surgeon. Only those surgeons who took an interest in this work need participate in it, and others would be glad to be relieved of the responsibility and freer to carry on the work in which they were more especially concerned.

Mr. S. W. Daw gave details of the working of a special fracture department under his charge at Leeds. He emphasised the teaching value of a resident orthopædic officer working under the general or orthopædic surgeons. This officer did a daily teaching round and gave demonstrations of details of splintage and the many items that needed daily supervision in a manner that the heads of departments had neither the time nor the patience to do.

Dr. R. Osgood (Boston, Mass., U.S.A.) said that a scheme of the type advocated by Sir Robert Jones had been in operation in his hospital for some years. Prior to this some fractures—in particular the not uncommon compression fracture of the spine—were not recognised, and others had resulted in unnecessary crippling of patients. As a result the great industrial concerns had been forced to form their own fracture clinics and this had stimulated the medical profession in America to take a greater interest in fractures. At a conference between surgeons from all parts of the United States a syllabus of standardised treatment of fractures was agreed upon and published. Dr. Osgood gave details of the intensive teaching of students, at the fracture service, which appeared to be very thorough.

Mr. Henry Wade (Edinburgh) commented upon the general agreement that the treatment of fractures was at present unsatisfactory, and pointed out the heavy financial cost of failures to the employer of labour. One employer had told him that a case of malunited fracture of the femur cost from £500 to £1000. No argument as to the interests of the medical student was admissible when those of the patient were compromised by the present system. But in point of fact segregation gave opportunities for that hour-to-hour teaching by a whole-time officer which was so necessary in this special department.

Mr. H. Platt (Manchester) had had charge of a fracture service for 12 years, during which 40 residents had passed through the department, the majority of whom were now in general practice. These men were able to deal with fractures in their own practices with confidence and ability.

Mr. H. A. T. Fairbank (London) had charge of a fracture service and found that it possessed many advantages from the teaching point of view, since in one hour many types of fracture could be seen and demonstrated, and the apparatus used could be standardised so as to combine simplicity with efficiency. He admitted, however, the difficulty of getting the student to attend a fresh department, and suggested a revision of the curriculum to enable more time to be devoted to this important branch.

Mr. H. H. Sampson (Birmingham) was averse to segregation from the teaching point of view. He pointed out that to be efficient the fracture service would have to be a night-and-day one, since the ultimate result depended largely on the officer (usually the casualty house surgeon) who first saw the case and splinted it. Should a separate department be established the problem of the allocation of the student's time, already overburdened, would be reopened, and, finally, the ordinary house surgeon would lose the benefit of having handled these cases which were so instructive to him in general practice later.

Mr. Max Page (London) did not approve of the creation of a new specialty. For the general practitioner in the country and for the doctors in the services and abroad it was essential that instruction in the treatment of fractures should be a part of the ordinary surgical curriculum, and not regarded as a specialist's department. If segregation were adopted it must fulfil this condition.

Prof. A. W. Sheen (Cardiff) was also averse to making a new specialty. He pointed out that in many emergency conditions, particularly those arising from motor accidents, the fractures played but a small part in the condition, which might call for the excision of wounds, blood transfusion, and other measures directed against shock which would not come within the province of a fracture specialist. He advocated instead the establishment at the teaching hospitals of one or more large surgical teams which should include one member with a special training in fracture work as well as experts in other departments. He agreed, however, on the advisability of establishing a special fracture out-patient department. The student could not be expected to become expert or even familiar with all fractures, but should have his teaching concentrated upon the commoner ones. A "follow-up" of fracture cases showed that many results were much worse than they should be.

Mr. Gwynne Williams (London) remarked that the active treatment of a fracture only ceased when the patient was restored to full activity, whereas, for example, in the average case of appendicitis the treatment was practically concluded at the operation. For this reason he made one student responsible for each fracture case, who should as far as possible see the case through to a conclusion. It was very important that if any change was to be made the ordinary residents should still have opportunities of handling fracture cases.

Mr. McAdam Eccles (London) was against segregation, mainly because of the difficulties it would involve in teaching. To establish a fracture ward would also entail a large increase in beds devoted to this service with a consequent reduction of those available for general surgical work. Already the establishment of separate departments for venereal disease and tuberculosis had resulted in a reduction of the opportunities afforded the student of studying these cases. He maintained that the present system at St. Bartholomew's, while not the ideal one for every fracture case, was the best possible in the long run for the average fracture.

Mr. R. C. Elmslie (London) pointed out that over 100 years ago St. Bartholomew's Hospital had appointed two surgeons specially to deal with fractures, although the office had been allowed to lapse. He complained of the lack of proportion in the allotment of the student's time, and that much of it was wasted in watching operations and writing them up which might more usefully be employed in learning more of the subject under discussion. A fracture ward, the beds of which were open to all the surgeons, would promote rivalry while leading to *standardisation of apparatus so that the student* might have a clear-cut picture of one treatment for each fracture instead of a confused picture of many. It would be easy to arrange space in the student's curriculum (at least at his own hospital) to carry out the reform.

Prof. A. Fullerton (Belfast) did not consider a separate fracture service necessary at his hospital. Though his beds were limited he never refused a fracture case and devoted much time to them with gratifying results. His house surgeons, who were taught to regard shortening of one inch or a stiff knee after fracture of the femur as a disgrace, shared his enthusiasm. As a result, the average shortening in his last 40 cases of fracture of the shaft of the femur was under one-quarter of an inch. Many fractures must of necessity be treated in small cottage hospitals or even in their own homes by ex-dressers; he therefore felt that it was important that instruction in fractures *should be a part of* the student's general surgical training and not handed over to a special department.

Mr. W. R. Bristow (London) urged that the example of gynæcology, with its separate staff, residents, nurses, and wards, proved that teaching need not suffer by the establishment of a separate department. He supported the suggestion that the student's time-table should be reorganised, and maintained that the proper teaching of fractures could only be obtained by segregation.

Mr. R. C. Affleck made a plea for greater simplicity. The late Prof. Lucas-Championnière was not ashamed to exhibit to the world the results he was able to attain without any apparatus at all. The speaker maintained that the proper place to treat any fracture was in the nearest bed. He had recently been in an operating theatre where fractures were treated, and a list of the instruments kept there contained over 1000 items.

Dr. A. T. Bazin (Montreal) said that at his hospital there was a fracture department under his charge, but not all fractures came to the department. In over 2000 cases they had no case where amputation had to be performed, although one or two came into the department with a recent amputation. There were three cases of delayed union, no cases of non-union, and no operations for plating were performed; but three plates were removed from cases transferred from elsewhere. It was acknowledged that the results obtained in the fracture clinic were better than those of the general surgical wards in the same hospital. Students received tuition in the clinic and, indeed, the teaching had proved so successful that they were now asked to extend their work in that direction.

Prof. Hey Groves remarked, from the chair, on the virtual unanimity of all the speakers that there was room for improvement in the present treatment of fractures in general surgical wards. War experience had made us unsatisfied with present results. It should not be thought that the discussion exhibited a gulf between the general and the orthopædic surgeons; Major M. Sinclair's work in connexion with fractures of the femur was sufficient to show what could be done by the general surgeon in the treatment of fractures when his interest was stimulated.

SECTION OF ORTHOPÆDICS.

THURSDAY, JULY 23RD.

TUBERCULOUS DISEASE OF THE SPINE.

Under the presidency of Prof. E. W. Hey Groves (Bristol), Sir Henry Gauvain, in the unavoidable absence of Dr. J. Calvé (Berck), opened a discussion on this subject. He commented on the great improvement in the treatment of Pott's disease which had taken place during the last 20 years. The severe deformities—so common years ago—were now comparatively rare. Bacteriological investigations conducted by Dr. Stanley Griffith (Cambridge) suggested that the number of cases of Pott's disease due to the bovine bacillus was on the increase, so that the *problem was intimately concerned with the* campaign for the provision of a pure milk-supply. In the therapeutics of this condition the value of general measures and adjuvant treatment, such as heliotherapy and artificial light, was universally accepted. He believed that the general mortality of Pott's disease had been reduced considerably by the introduction and adoption of the aspiration of abscesses. Calvé's intraspinal tapping of an abscess producing paraplegia was a valuable addition to our treatment methods. With Calvé and others the speaker deprecated the performance of any of the ankylosing operations—e.g., Albee bone-graft or Hibbs's operation—in children. In the adult, however, such operations were founded on sound principles. The mechanical methods used at the Treloar Hospital, Alton, were next described and illustrated by lantern slides.

Mr. G. R. Girdleston (Oxford) believed that the ankylosing o*perations had a certain rôle in the* treatment of children with Pott's disease. It was not unusual to find that the deformity increased in ambulatory patients who had had efficient early treatment. In such cases a spinal fusion was an added safeguard. The technique he adopted was that of Hibbs, with the addition of osteo-periosteal grafts laid on each side of the spinous processes. The problem of Pott's disease in the adult was much more formidable, and especially where sinuses had developed. In his own hospital out of a consecutive series of 80 adult cases, 9 were admitted with sinuses—of the latter, 8 died after varying periods. Mr. Girdlestone advocated very free operative drainage in all such infected cases.

Dr. W. T. Pugh (Carshalton) declared himself as an uncompromising opponent of spinal fusion operations in children. He emphasised the potential dangers of hyperextending the spine at the level *of the disease during the period of recumbency on* a frame. He chose a suitable level of the spine at which to produce a compensatory lordosis, and hyperextended the frame accordingly. It was necessary in the ambulatory stage to use a jacket which controlled the spine and allowed for growth; otherwise late deformity would develop.

Mr. D. McCrae Aitken (London) said he was in favour of complete and uninterrupted immobilisation during the stage of recumbency. He carried out spinal fusion by operation almost as a routine, but with no neglect of adequate splinting. The operation was not suitable for young children and should only be performed after deformity had been corrected. It was especially successful in the cervical and lumbar regions.

Mr. F. C. Pybus (Newcastle) emphasised the necessity for a prolonged period of after-care. The criteria of cure were not easy to define although valuable information was gained from a scrutiny of successive radiograms. In his hands the treatment of cold abscesses by open evacuation with careful sponging and subsequent closure had given excellent results.

Mr. S. Alwyn Smith (Cardiff) condemned wholeheartedly open operations for cold abscesses. He deprecated the tendency to cut down the period of recumbency.

Mr. R. C. Elmslie (London) referred to his surveys of crippled children in the London County Council schools, which had shown in a most striking manner the value of the provision of country hospitals. He did not consider that it was always advisable to attempt to correct an established kyphus; in any case correction was apparent only and was gained by providing compensatory curves. In his opinion the ankylosing operations had come to stay. He operated on patients over the age of 14 years at a stage when the disease was becoming quiescent. Adequate post-operative treatment was, of course, an essential.

Mr. H. A. T. Fairbank (London) dealt with the difficulties in diagnosis. Developmental anomalies of the spine and new growths might simulate Pott's disease. A number of radiograms illustrating such cases were exhibited. He practised spinal fusion operations in patients over 14 years, and he believed it was better to ankylose a less limited area of the spine than was generally taught. He had met with a few cases where there were two foci of spinal disease at different levels. He agreed with Mr. Girdlestone that very free drainage should be established in all sinus cases.

Mr. T. P. McMurray (Liverpool) considered that patients with sinuses did much better when allowed to walk about wearing a suitable spinal brace. In his opinion the ankylosing operations should be reserved for adults.

Prof. R. B. Osgood (Boston) quoted his impression of Scandinavian clinics, which he had recently visited, and said that one was bound to recognise that with what might be termed partial immobilisation very perfect results were obtained. The findings of the Commission of the American Orthopædic Association on the value of the spinal fusion operations were quoted—namely, that such operations did not, in themselves, control the advance of the disease or deformity. In his own clinic an operation of the Hibbs's type combined with osteo-periosteal "ribbon" grafts was practised; he did not consider the Hibbs's operation as inherently difficult. In adult patients it was evident that multiple foci of disease at different levels were not infrequently seen. Difficulty in diagnosis arose and, in adults, in the early stages syphilis, malignant disease, and multiple myelomatosis must always be borne in mind.

Mr. S. W. Daw (Leeds) thought it was wise to avoid too great a degree of hyperextension of the spine during the recumbency stage. He had experienced very good results from spinal fusion, but he did not do the operation in children.

Dr. T. Hartley Martin (Leasowe) had employed Calvé's method of intraspinal aspiration in a number of cases, and he did not think the method had any special dangers. It was not difficult if one practised first on the cadaver. It must be recognised that relief from paraplegic symptoms could only follow in cases where the compression was due to the presence of an abscess sufficiently liquid to be tapped.

Sir William de Courcy Wheeler regarded the operation of spinal fusion as a valuable addition to recognised conservative methods. His method was to implant a graft on the rawed surfaces of the laminæ.

The discussion closed with the reply of Sir Henry Gauvain.

OSGOOD-SCHLATTER DISEASE.

Mr. R. Ollerenshaw (Manchester), in a short paper illustrated by radiograms, presented an analysis of 32 cases he had dealt with personally. He considered that in childhood two lesions occurred consequent upon sudden traction on the lower quadriceps mechanism, (*a*) a traction-fracture of the tip of the upper tibial epiphysis (Osgood-Schlatter disease), or (*b*) a fracture of the lower end of the patella. In three cases where both knees were simultaneously injured one side showed the first type of lesion and the other the second type. Both types were therefore representative of the common fractures of the patella in adults. The treatment advised was complete immobilisation for one month, followed by a period of six weeks, during which the range of knee flexion was restricted.

Prof. Osgood referred to the effects of traction by such a strong tendon on an actively growing epiphysis. He agreed that although the earlier cases he described had all occurred in boys, it had since been found that girls were equally liable. In some cases it was possible to obtain a cure by simple strapping down of the patella.

SECTION OF DISEASES OF CHILDREN.

THURSDAY, JULY 23RD.

Treatment of Empyema.

Dr. Carey F. Coombs, who presided in the absence of Dr. Robert Hutchison, said that the subject of empyema had made considerable progress of recent years, but it was time that we discovered the effect of war surgery on its treatment; whether, for instance, primary suture had been found to answer in civil life. An increased sense of responsibility towards cases of empyema had arisen in the medical profession. It was no longer regarded as something to be dealt with by telling the house physician to make an incision. Its treatment required the coöperation of physician and surgeon.

Dr. Hector C. Cameron, in opening the discussion, confined himself to the medical aspects of empyema. In infants the condition had a very high mortality: 75 per cent. in the first year and 50 per cent. in the second year of life. In the third year the figure dropped to 18 per cent. and thereafter remained at about 6 per cent. The high mortality of the first two years of life was due to the long duration of pneumonia at that age. It was always a favourable feature when the rise of temperature due to the pneumonia was separated from that due to the empyema by an interval of time (metapneumonic empyema). If the empyema developed when the pneumonic condition was still active (synpneumonic empyema) the prognosis was not so good. Empyema in young children was generally synpneumonic owing to the duration of the attack of pneumonia. In the third year of life the short-lived lobar type of pneumonia became the rule, and empyema was of the metapneumonic type with corresponding improvement in the prognosis. Among adults and older children synpneumonic empyema hardly ever occurred except with influenzal pneumonia. The distinction between synpneumonic and metapneumonic empyema was important from the point of view of treatment. Rib resection was apt to be fatal in the former type though followed with most satisfactory results in the latter. The best results in synpneumonic empyema were obtained by aspirating the pus until the lung condition had improved, when an operation might be performed. But successful treatment was not concerned merely with saving life. It was necessary to restore the function of the lung. Expansion of the lung was most often prevented by thickened pleura and the formation of fibrous tissue around the cavity. This result was due to delay in the establishment of satisfactory drainage, insufficient drainage, or to secondary infection, presence of a bronchial or pulmonary fistula, or of a foreign body in the cavity. Early diagnosis and operation at the right moment were of the greatest importance in preventing chronic empyema. Once the lung was bound down by rigid fibrous tissue decortication alone would release it.

Mr. Henry S. Souttar analysed the cases treated in the London Hospital for the last 15 years. Half the cases occurred under the age of 10, and 70 per cent.

of these were between the ages of 1 and 6. The mortality was highest in the first year, 73 per cent., but the number of cases was small. In the second, third, and fourth years the number of cases was larger and the death-rate was from 40 to 60 per cent. The mode of onset was important in prognosis and treatment. When empyema occurred as one feature of a general infection it was often fatal, and any attempt at radical treatment would lead to disaster. When it followed a subsiding pneumonia operation was indicated and the outlook was good. Probably empyema of itself was never fatal. Death was due to accompanying disease of which empyema was only a particular manifestation. The type of infecting organism was important. The mortality in pneumococcal infection was 6 per cent., in streptococcal 24 per cent. In pneumococcal empyema massive adhesions formed, limiting the disease and preventing gross collapse of the lung. Ultimately the adhesions might delay recovery and lead to chronic empyema, but in the acute stage they were of service. In this type the best treatment was to open the cavity freely, evacuate the pus, clear out all solid masses of fibrin, and drain the cavity by a closed method. In young children an intercostal incision would give sufficient access, but in older children rib resection was more satisfactory. The pus must be evacuated slowly.

In the non-adherent form of empyema repeated aspiration was indicated for perhaps five or six days. The form of operation then undertaken would depend on the patient's condition. The post-operative treatment was most important. Sterilisation of the cavity and expansion of the lung were the objects to be achieved. Siphon drainage, and in some cases injection of saline or Dakin's solution, were the best means to this end. Local anæsthesia was contraindicated in children. Ether or chloroform might be used, but the speaker preferred gas and oxygen as an anæsthetic for this operation.

Dr. F. G. Chandler, from the point of view of treatment, classified empyema into four groups: Ordinary (occurring after or during pneumonia), acute fulminating, chronic, and tuberculous. Rib resection was introduced by Arbuthnot Lane in 1882, and as a result mortality diminished considerably. At the same time our conceptions of disease were advancing and the importance of early diagnosis was being recognised. It was wrong, however, to employ rib resection as a routine in young children. Under the age of 4 it should never be necessary. He had seen cases end disastrously which might have been saved if preliminary aspiration or treatment by simple incision and drainage had been employed instead of resection. In the treatment of empyema four things had to be considered: The evacuation of pus, the expansion of the lung, the speediest convalescence, and the comfort of the patient. Suction drainage had been employed to bring about expansion of the lung, but in the speaker's opinion this was tackling the problem from the wrong aspect. If the lung did not expand it was because there was disease within it or because it was held prisoner by thickened pleura and adhesions. The latter could be dealt with mechanically or by irrigation with Dakin's solution. Fulminating empyema was usually due to a streptococcal infection. The only treatment was repeated gentle aspiration until the patient could support operation. It was important to aspirate slowly, replacing the fluid with air if the patient showed signs of cyanosis or collapse.

Mr. W. H. C. Romanis, while agreeing cordially with those speakers who laid stress on the mortality of empyema in young children, wished to call attention to the serious sequelæ of sinus formation, fibrosis of the lung, and bronchiectasis in patients who recovered. Surgically speaking, there were four chief kinds of empyema: those due to the pneumococcus, those due to the streptococcus and other organisms, those which were early, and those which were late. It was of the greatest importance to ascertain the nature of the organism before operation. The masses of fibrin formed in pneumococcal empyema often caused an alteration in the physical signs. In adults it was essential to remove the fibrin at operation as it would interfere with the healing of the wound and the expansion of the lung. But in children, although removal of solid masses of fibrin was important, everything had to be done to minimise shock, and therefore repeated aspiration should be tried before resorting to operation. There was no urgency about operating in pneumococcal empyema, in contradistinction to the streptococcal variety, in which some method of removing the pus should be proceeded with immediately. Aspiration might be practised at first; but if the patient did not improve in a day or two either operation or the insertion of a large cannula must be resorted to.

Mr. T. Twistington Higgins said he had no panacea to bring forward. Success in dealing with empyema depended on early and accurate diagnosis and efficient operative and post-operative treatment. The operative procedure employed would depend on the age and condition of the child, the character of the pus, and the size of the empyema. In his experience a knowledge of the bacteriology of the pus did not assist much in treatment. He had not found it possible to say that all pneumococcal cases should be opened and all streptococcal cases aspirated. Some indications of the patient's resistance might be obtained from noting the characters of the white cells and the extent of phagocytosis exhibited by them. Dr. Hugh Thursfield was endeavouring in this way to sort out cases which might have the chest wall closed after evacuation of the cavity. The closed system of drainage was best. Continuous aspiration was useful in some cases and could be carried out by the method of Poynton and Reynolds. Breathing exercises were of great benefit in promoting re-expansion of the lung.

Dr. Clarke gave his experience of primary closure in empyema. The type of case suitable for primary closure was the chronic case which gave so much trouble when dealt with by other methods. Out of 21 cases two healed by first intention. In the others the wound broke down, but all did well. Primary suture was worth trying because, even if the wound broke down, the patient was no worse off than if a tube had been inserted in the first place.

Dr. L. A. Parry said that happily there was agreement between the speakers on main points. He thought, however, that a piece of rib should be excised in all cases even in young children, though not more than 1 in. to 1½ in. was necessary. The game of soap-bubbles was excellent as an exercise for re-expansion of the lung.

Mr. R. A. Ramsay considered that the objection to rib resection in young children was that it made the operation longer and more severe. In infants all operative measures should be reduced to the shortest time. The difficulty that the incision was not large enough could be overcome by using two moderate-sized tubes side by side. After 24 hours a large tube could generally be inserted. When pus was evacuated from an empyema the diaphragm rose and the chest wall tended to fall in, thus obliterating the lower part of the cavity. It was therefore necessary to drain not at the lowest but at the highest point of the abscess. As the patient was in bed drainage would be equally efficient.

Dr. Wilkie Scott pointed out the difficulties encountered in dealing with very chronic cases of empyema. He raised the question whether in such cases it was not best to aspirate or to close the cavity by primary suture.

Mr. P. T. Crymble agreed with Mr. Ramsay that the incision should be made in the region of the fourth rib. He found treatment of chronic empyema most unsatisfactory. The cases relapsed constantly. Decortication was a dangerous operation.

Reply.

Dr. Cameron said in reply that the discussion clearly showed that in the details of surgical procedure—the site and the extent of the incision, the character of the drainage, and so forth—there was very great divergence of opinion. It seemed to him that the prognosis was mainly determined by one consideration only, whether or not intervention was made at the right moment. He thought the same was true in pneumococcal peritonitis. The evacuation of a residual collection of pus gave brilliant results. The high mortality of pneumonia in young children limited the opportunities of securing this result.

Mr. Romanis replied for Mr. Souttar. He said that the details of technique had been thoroughly discussed. Primary closure was not an unreasonable procedure in adults, but it was open to objection in children. Resection of a rib added to the gravity of the operation in young children. A rib-spreader was necessary for exploration, for with it good access could be obtained. He agreed with the speakers who advocated high incision.

In our issue of August 8th, p. 286, in reference to the display at the exhibition at Bath, we alluded to the drugs S.U.P. 36 and S.U.M. 36, prepared by the British Dyestuffs Corporation, Ltd., as arseno-benzene preparations. We are informed by the Fine Chemicals Department of the Company that these products contain no arsenic in the molecule, and we are happy to correct the erroneous impression given by the note.

Reviews and Notices of Books.

MALARIA INOCULATION IN G.P.I.

Die Malariabehandlung der Progressiven Paralyse. By Dr. JOSEPH GERSTMANN. With a Foreword by Prof. J. WAGNER-JAUREGG. 1925. Pp. 229. G.M.12.

THE treatment of general paralysis of the insane by means of the inoculation of malaria has recently aroused considerable interest. This empirical method has been used in many countries during the last few years, and this book is a detailed account of its history and technique, and of the results obtained both by its pioneers and those who have followed them. We will not trace here the very interesting story in detail, but will leave that for readers of the book. It is sufficient to say now that, for some reason unknown, a succession of any febrile attacks will apparently counteract the disease; and the malarial excitant is chosen because it is very safe, is easily controlled with quinine, and is not communicable even by the anopheles mosquito. The account of the experiments which have established this last fact forms one of the most interesting side-issues in the book.

The author takes blood from an approved tertian malarial patient who has not had quinine and injects subcutaneously 1 c.cm. into the back, pricking deeply and distributing the injection over the different skin layers. The blood should come direct from the donor without delay. The incubation period is from 4 to 8 days normally and can be shortened by using intravenous instead of subcutaneous injection, but this is not recommended. Attacks of fever then proceed at regular intervals, and after 8 to 12, according to the condition of the patient, they are stopped with quinine, of which the usual dose is 8 gr. of the bisulphate twice a day for three days and then once a day for the next four. The exact dose is varied to suit the individual. The condition of the cardiovascular system is ascertained before injection, but the risk of the treatment is slight. Ten minims of the tr. strophanthus are given at the height of each malarial attack, and digitalis may be used throughout if the heart is weak. Treatment must be interrupted for a sudden drop in strength or for alarming heart or gastric symptoms, but not for anæmia or jaundice unless the anæmia be pernicious in type. If necessary, a small dose of quinine will hold up the fever for a few days, and 10 c.cm. of a 10 per cent. solution of sodium nucleinate given intravenously will restart it.

The indications depend on the age and general condition of the patient and on the form and duration of the paresis. The pyrexia is not dangerous, but if it be interrupted too soon the paresis is not affected. The author places the age-limit between 9 and 68 years, and his oldest case (of 62) is still enjoying a complete remission. Any patient of average strength and stamina can be treated, and aortitis in syphilitics does not counter-indicate treatment unless there is an aneurysm or evidence of myocardial degeneration. Active tuberculosis of the lungs has not been stimulated in the cases under the author's care, though others have reported to the contrary, while healed tubercle has never been lit up. The patient must be quinine-tolerant and not resistant, but quinine idiosyncrasy is a rare thing. The treatment is not suitable for private practice and should not be used in institutions unless the malarial infection is properly understood. Dr. Wagner-Jauregg once lost three patients out of four through the error of a military hospital in sending him a culture of malaria which was not tertian.

Dr. Gerstmann gives a very full statement of the results obtained both in the university clinic where he works in Vienna and in other institutions. He defines a "full" remission as a return to full working efficiency with a disappearance of all but the slightest psychic symptoms, and a "partial" remission as either good or slight. "Good" is a return to social life and light work, and "slight" is a slackening of acute symptoms with improvement enough to allow the patient to return home. Out of 1000 cases only 400 are quoted who have been kept under observation for two years, and of these 33 per cent. show lasting and complete remissions; 14 to 25 per cent. show good partial remissions, while the proportion of cases in which there has been minor improvement with arrest of the disease amounts to about 30 per cent. The symptomatic improvement was in many cases followed by a return to a negative Wassermann reaction in the cerebro-spinal fluid and a disappearance of cells, though the globulin reaction tended to persist. The simple dementing and maniacal forms of paresis are the most amenable to treatment, next come the periodic, and then the tabo-paretic varieties. The best prospects are afforded, naturally, where the condition is caught at an early stage. The method has been tried, but without success, in non-syphilitic paralyses.

Dr. Wagner-Jauregg and Dr. Gerstmann are still busy with the research which they hope will issue in establishing the malarial treatment as a specific remedy. Their book is extremely comprehensive and well arranged, and contains several good microphotographs of brain tissue. Every angle of the subject is explored and discussed with thoroughness, and although the language is quite intelligible even to a moderate German scholar, it will be a great pity if an English translation is not published at once.

TREATMENT OF INTERSTITIAL KERATITIS.

A Preliminary Report. By R. LINDSAY REA, M.D., F.R.C.S., Ophthalmic Surgeon to West End Hospital for Nervous Diseases; Assistant Surgeon to Western Ophthalmic Hospital. London: H. K. Lewis. 1925. With three plates. Pp. 32. 2*s.* 6*d.*

THIS is a paper that was recently read before the Ophthalmological Section of the Royal Society of Medicine and covers much the same ground as an address on the same subject read by the author at the Bath meeting of the British Medical Association this year. Its interest lies first in relation to the diagnosis. The author apparently does not believe that any typical case of interstitial keratitis is non-syphilitic. Recent cases give a positive reaction to the Wassermann test, while those old cases which do not still give evidence of syphilis by a positive luetic curve with Lange's colloid gold test. Such has been Mr. Rea's experience, which is very different from that of some other authors, who attribute from 10 to 30 per cent. of the cases to tuberculosis. The other main point in this essay is the importance attributed to active treatment, and especially to arsenical injections—preferably of novarsenobillon. Tables are appended contrasting the results of cases treated with those untreated, or treated only by atropin, or in which treatment was deferred till too late. There is a possible fallacy in this comparison in that the class of untreated or badly treated cases would naturally include many "chronics" who spend their lives in going from hospital to hospital without much material benefit. Allowing for this, however, the contrast is sufficiently striking.

This little volume is important in that it constitutes a definite challenge to those who still maintain that in interstitial keratitis the specific treatment for syphilis is of no effect. In Mr. Rea's view it is urgent.

BLOOD TRANSFUSION.

La Transfusion du Sang. Étude Biologique et Clinique. Par P. EMILE WEIL et PAUL ISCH-WALL. Paris: Masson et Cie. 1925. Pp. 247. Fr.20.

THE recent publication at Paris of a work on blood transfusion by Drs. Pauchet and Bécart has been followed after the lapse of only a few months by the appearance of a second work on the same subject by Drs. Emile Weil and Isch-Wall, which is the subject of the present review. Two books covering so nearly the same ground and published almost at the same time can only be regarded as rivals, and it may be stated at the outset that the book which is second in time of publication is easily first in merit. It is a book of greater authority than its predecessor, having been produced by two writers who have already made numerous contributions to the literature of transfusion, and shows evidence of a more thorough knowledge of the ramifications of the subject.

An interesting account of the history of transfusion is followed by chapters on the "biology" of transfusion in general and of citrated blood in particular. It is apparent from this section that the authors are convinced followers of the school of Lewisohn, and they advocate the use of citrated blood as opposed to the use of so-called "whole blood." They lay emphasis on the fact that citrated blood is to be regarded not as "modified blood," but as "stabilised blood," its general biological characters remaining unaltered. The calcium ions of the blood are inactivated by the addition of sodium citrate but are not destroyed, and are capable of regaining their activity when the citrate has been removed, as happens in the body of the recipient soon after the injection of the blood. Sodium citrate the authors believe also to be non-toxic in the quantities usually administered in the course of a transfusion.

Even at the present time surgeons can be found who regard the group reactions as being of theoretical interest but of no practical importance, this opinion being based on a happy immunity from "accidents" in performing transfusions with untested donors during the late war. It is instructive, therefore, to find in the present work an account of 12 transfusions performed by the authors before the group test had been introduced. Even in this short series of cases they experienced three serious "accidents," and no more conclusive evidence as to the practical importance of the test could be desired. First-hand information concerning these reactions is not usually found in works on transfusion, most writers having used only tested donors.

A section on the technique of transfusion is devoted largely to the description of a simple method of injecting citrated blood with a syringe as used by the authors. The employment of oxygenated blood described by Pauchet and Bécart is justly dismissed as a device which may satisfy the operator's complaisance without conferring any benefit on the patient. The authors claim, however, that the administration of forced oxygen through the patient's lungs during the transfusion is an additional measure of real value. The sections on the indications for transfusion are comprehensive, covering surgery, medicine, and obstetrics. The authors perhaps exaggerate the value of transfusion in the treatment of ruptured ectopic gestation when they state that some patients may be saved thereby from certain death. General experience goes to show that the hæmorrhage in this condition is seldom or never fatal, and that routine transfusion in treating it is unnecessary. Each chapter is provided with an adequate bibliography and there are a number of figures in the text.

The book may be recommended as an excellent and up-to-date monograph on an important subject. At the present rate of exchange it is very cheap.

THE EXTRA PHARMACOPŒIA.

Eighteenth edition. In two volumes. Vol. II. Revised by W. HARRISON MARTINDALE, Ph.Ch., F.C.S.; and W. WYNN WESTCOTT, M.B. Lond., D.P.H. Lond. London: H. K. Lewis and Co., Ltd. 1925. Pp. 728+xiii. 20s.

THIS volume constitutes an addendum to the first volume of the eighteenth edition, issued in October, 1924, but in many respects its compilation must have proved as strenuous a task as that of the main volume. The second volume provides a review of reviews (coupled with the authors' well-known laboratory notes) on analytical, experimental, and research work, covering with remarkable completeness the ever-multiplying specialities in these fields. The compilers are to be congratulated on their efforts in incorporating in this volume such very recent work as Gye and Barnard's researches on the filterable cancer virus, the use of the halogenised phenolphthalein compounds intravenously and per os as liver function tests and for gall-bladder visualisation, and induced malaria as a treatment for general paralysis. In the domain of chemistry a practically complete organic analysis chart, arranged in groups, is included, and an account is given of the investigations of flour and bread sold in London shops made as recently as May of this year. It is safe to say that there is no text-book at present on the market wherein these features are to be found. The chapter on radium and its congeners has been fully revised and several important alterations made in such factors as atomic weights, radio-active constants, &c., in the light of the 1923 International Table of Radio-active Elements. The (London) Radium Institute Reports up to 1925 are added.

In this volume the compilers have stolen a march on themselves by incorporating a good deal of material which they might have reserved for the next issue of Vol. I.; they are to be congratulated on their generosity, which has resulted in greatly enhancing the value of the present volume. Instances in point may be mentioned regarding treatment with organic antimony compounds, carbon tetrachloride, gentian violet, mercurochrome, and similar items which have lately been brought into prominence.

We trust that this invaluable work—indeed it is one of the few compilations that merit this adjective—will go on from strength to strength.

The death on July 30th of Dr. W. Wynn Westcott, an original joint compiler of the work, was noted in THE LANCET recently.

PHARMACEUTICAL POCKET-BOOK, 1925.

Eleventh edition. London: Pharmaceutical Press, Bloomsbury-square, W.C. Pp. 438. 3s. 6d.

THIS is a direct descendant of the Pharmacy Students' Pocket Note-Book which first appeared in 1906 and was then edited by Mr. John Humphrey. Now, with its new title, and under the guiding care of the Science Committee of the Pharmaceutical Society, it contains much new information of an extraordinarily varied character; in fact, it contains so much that in many directions it supplements usefully the text-books on the subject. In its routine pharmaceutical information it forms a summary for these text-books, which will be useful in revision for the pharmacy student. For the medical student who needs less of the knowledge of the ways of pharmacy, it forms an ample stand-by.

But apart from the portion which touches on straightforward pharmacy there are many tables and sections useful to many folk. The dictionary of synonyms is extremely full, and will help the reader of ancient and modern books on medicines. The section on homœopathic pharmacy is all the more useful in so far as it is now so rarely found. "How to Make an Herbarium" is unexpected, but is interesting. The sections on sale of poisons and the Dangerous Drugs Acts, which end the book, are again of the greatest interest to the doctor and a perusal of them may save him much trouble.

PEDIATRICS.

By Various Authors. Edited by ISAAC A. ABT, M.D., Professor of Diseases of Children, North-western University Medical School, Chicago. London and Philadelphia: W. B. Saunders Company. Vols. IV.–VI. In eight volumes. £18 per set.

THESE three volumes maintain the standard of thoroughness and exhaustive detail found in the previous instalment. Vol. IV. opens with diseases of the pleura and lung, followed by a most valuable section on the physiology of the circulation, congenital heart disease, and the electro-cardiogram in childhood. Acquired heart disease is also fully dealt with. The account of blood diseases by Dr. W. Palmer Lucas is well written and balanced. On the other hand, the sections on infantilism and Mongolian idiocy are left unillustrated, and the latter, a comparatively common condition, is passed over with less than a page in a volume containing 1271. The section on enuresis by Dr. Wilburt C. Davison is admirable. The volume concludes with diseases of the kidneys, bladder, and genital organs.

Vol. V. contains diseases of the face and jaws, with a chapter on orthopædic surgery. The pathology of the bones is ably written by Dr. D. B. Phemister. Tuberculous disease, syphilis, dislocations, congenital and traumatic, of the bones and joints, are well illustrated and complete, and conform in the main to the teaching in this country. The chapter on surgery of infantile paralysis is one of the best. The volume concludes with chapters on tuberculosis and syphilis, malaria, and infection and immunity.

The greater part of Vol. VI. is devoted to the acute infections of childhood and infectious disease in general. Typhoid fever is given in great detail. Under acute rheumatism authors from this country are freely quoted. The treatment of whooping-cough with vaccines and X rays has evidently found more success in America than it has here. Influenza, scarlet fever, measles, and cerebro-spinal fever are dealt with in great detail. The volume concludes with chapters on anæsthesia in childhood, the peculiarities of surgery in childhood, and fœtal malformations. The chapter by Dr. Albert H. Byfield on arthritis deformans, which concludes the volume, is a satisfactory contribution.

THE STORY OF A CITY HOSPITAL, 1848–1925.

Published by the Hospital, Victoria Park. 1925.

NOT long ago the City of London Hospital for Diseases of the Chest changed its name by substituting "Heart and Lungs" for "Chest," but no matter what its official title may be, it will still remain to the medical as well as the lay public "Victoria Park Hospital." Its story has been pleasantly told by Lady Butterworth in a small book which the hospital authorities have just published as an appeal for funds, the whole cost of the publication being borne by certain supporters of the charity. The foundation of the charity was brought about on the familiar and simple lines of 70 years ago, when the need for special institutions was beginning to be obvious to broad-minded people. In 1848 "several gentlemen met at the London Tavern"—long famous, but now gone, and like to be forgotten—in Bishopsgate-street. The object of the meeting was to discuss measures to meet the wants of the poor of the East End suffering from chest disease, especially from consumption. The Brompton Hospital had been founded six years before, in what was then a semi-rural district, and the City-road Hospital was some 14 years older, but neither of these institutions supplied the wants of the East of London. The outcome of the meeting at the London Tavern was a dispensary in Liverpool-street, which was superseded in 1855 by the hospital near Victoria Park. The Society of Friends has ever been noted for its philanthropy, so that it does not surprise us to be told by Lady Butterworth that two-thirds of the members of the original committee of the Victoria Park Hospital were Quakers, as have been some members of its medical staff. Conspicuous among these latter was that kindly autocrat, Dr. Thomas Bevill Peacock, for many years, as Lady Butterworth says, "the guiding spirit of the Institution and almost its ruler," whose memory is perpetuated by the Peacock Ward. Dr. Peacock was also physician to St. Thomas's Hospital, where he died suddenly in 1882, while showing some friends round the building on the Embankment.

These facts and a quantity of others concerning the staff are to be found in an appendix, headed "Personal," which contains brief notes on the physicians and surgeons to the institutions—namely, Henry Jeaffreson, Guy Babington, Aston Key, Erichsen, *Hilton*, *Risdon Bennett*, *Andrew Clark*, James Andrew, Henry Gawen Sutton, and Lord Lister. Of the lay supporters the most outstanding name is that of Mr. Henry Edmund Gurney, who was chairman of the original meeting and treasurer for 18 years, until the failure of the great bank of Overend and Gurney brought him and many others to financial ruin. In Appendix V. a most interesting account of the historical associations of Bethnal Green and Victoria Park is given, for which most of the facts of antiquarian interest have been supplied, as we learn from a footnote, by Mr. A. Forbes Sieveking, the well-known antiquarian, whose father was the famous Sir Edward Sieveking. In 1848 the 200 acres of Victoria Park had recently been dedicated to the public before the neighbourhood had been built over, and when, indeed, it was suburban in character. Adjoining the boundary of the park was a triangular piece of ground of four acres, a part of Bonner's Fields, which the committee of the hospital leased from the Crown, and on which the hospital was built. The Bishops of London had long been connected with Bethnal Green, and Bishop Bonner, of heretic-burning notoriety, had his country house here. Tradition has for long asserted that a house in the neighbourhood of the hospital occupied the site of the palace of the "Blind Beggar of Bethnal Green," whose story is supported by tradition and the well-known ballad, but has no better basis. But Bethnal House, of which the position is indicated on the maps reproduced in this booklet, has an interesting history. Built in the reign of Queen Elizabeth as a country residence, Pepys tells us how he went to dinner there with Sir W. Rider, of his "merry walk with the ladies alone after dinner in the garden; the greatest quantity of strawberries I ever saw, and good." The house was afterwards for many years used as a lunatic asylum, and as Bethnal House it was well known, especially to students of the London Hospital, some of whom still living have studied psychiatry there. It was pulled down in 1921 and its site is now occupied by a public library.

This book is very attractive in appearance and illustrated by maps and photographs, and a facsimile of the scroll commemorating the laying of the first stone of the hospital in 1851. As a frontispiece it has a pleasing colour print of the hospital showing the main entrance and the balconies on the south wing. We cordially share the hope expressed by Sir Alexander K. Butterworth in the preface that its sale may be large and that the charity may benefit substantially thereby.

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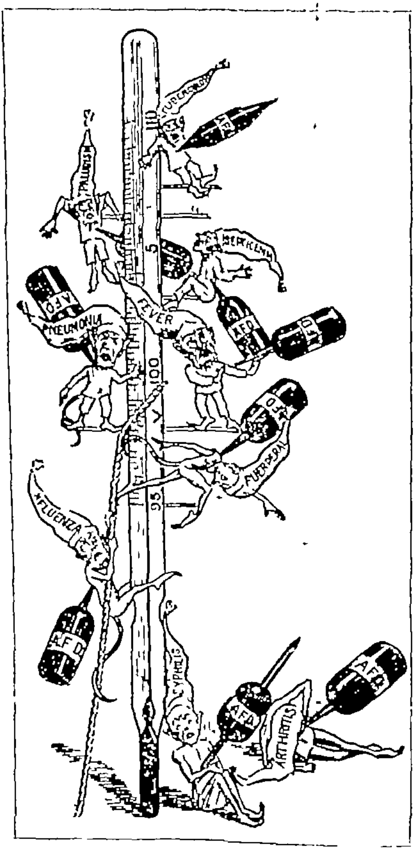

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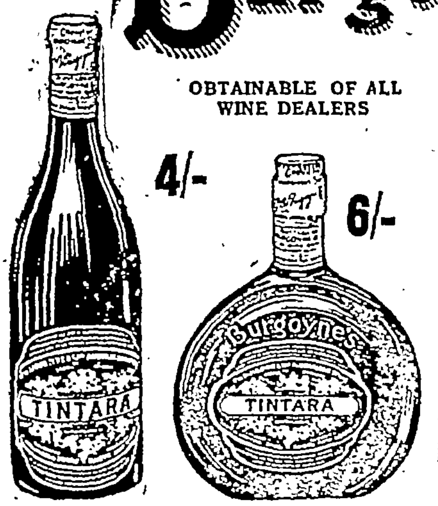

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THE LANCET.

LONDON: SATURDAY, AUGUST 22, 1925.

MEDICAL SERVICES OF THE MINISTRY OF PENSIONS.

SUCH a war as that from which we emerged some five years ago has ploughed deep furrows into the social and moral conduct of the whole world. The story of the medical services of the Ministry of Pensions, which, as far as it covers that period, is set out by Dr. ALEXANDER SANDISON in THE LANCET this week, is illustrative of the tremendous energies that sprang into being in the days of trial, as of the ghastly situations that had to be faced; and we find the lessons to be drawn from the chronicle of events and from the results of remedial measures to be of good omen along all lines of national endeavour. For in respect of the care and amelioration of our sick and our wounded the objects of the Government, through its differently named ministries, have been attained in a very considerable manner. Aided no doubt by the passage of time and the forces of nature, the widespread alleviation of misery of our injured and disabled has been followed by sound remedial efforts; and in a country where this can take place over one great field of endeavour it is not too optimistic to suppose that similar lifting of post-war clouds will occur over other sections of national endeavour.

Those in charge of the men of our fighting or auxiliary forces throughout the war are now able to look back upon an immensely improved state of things. At the present time the conditions still requiring treatment on any extensive scale at the hands of the medical boards are tuberculosis, insanity and psychical manifestations, and certain general medical and surgical diseases of a chronic type. The victims of tropical diseases have almost disappeared from the lists, while the cardiac subjects have become much more tractable by classification, functional cases being separated from organic, and organic being themselves arranged in manageable categories. Insulin treatment, discovered since the cessation of hostilities, arrived in time to be used to the advantage of the diabetic subjects, while epileptics have been more accurately diagnosed with a view to appropriate treatment. But here, while the task of classification has been carried through successfully, the appropriate institutional accommodation remains to be found. The Ministry of Pensions has no establishment of its own for the colony treatment of epilepsy, and the existing colonies are full, with suitable applicants remaining outside. Here, and elsewhere, things remain to be done, but the whole statement of what has been accomplished shows good results, brought about by steady and unceasing work along intelligent lines; and brilliant as the assistance of specialists in every direction has been, it is particularly gratifying to the medical profession as a whole to know that the principles and problems of the diagnosis and treatment, in reference to the medical charges laid upon the country by the war, have been defined and solved, and the bases of pensions assessments arrived at, in accordance with the average medical opinion of the country. While whole-time officers were appointed to ensure adherence to needful standards and regulations, the claimants for pensions appeared before medical men, usually ex-Service men, whose judgments were arrived at on independent grounds.

During the war the primary object of all treatment was the splendid but horrible one of restoring the disabled man with the greatest rapidity to be an efficient unit in the fighting lines. As the war spread, so the boundaries of the contest came to include territories with a vast variety of diseases associated with their geography, which exacted an immense toll from the forces. Then science entered into hideous coöperation with nature and devised intense methods of warfare previously undreamt of, so that in a short space of time the number of men, whose disabilities obviously precluded them from ever again fighting, mounted up until they became a huge population. Their plight had to be met upon the immediate grounds of compassion and gratitude, and always with the reflection that their futures in civil life were to be secured as far as possible from dependency. At the end of the first year in the war it was clear to everybody that medical treatment must be provided in bulk along many special lines for the benefit of those to whom the nation owed the most poignant gratitude, and thus the Medical Services of the Ministry of Pensions developed out of the responsibility of the fighting Services for their suffering personnel. The Medical Boards, established in the first instance to decide on the physical fitness of recruits, were accordingly so coördinated that they could be adapted to deal with the claims of the seriously or permanently unfit men, and from these were developed the boards of the Ministry of Pensions. Dr. SANDISON's account of the work of these boards is studiously short, but it conveys a vivid general impression of what has been done, and what remains for doing. The figures confirm the tale, showing graphically the steady rise and gradual decline in number of patients, and of institutions designed to meet their circumstances. While many specialised diseases have been appropriately dealt with, a great assortment of miscellaneous disabilities, chronic or recurring, still require special attention. The victims of bronchitis and rheumatism, for example, need greater facilities for institutional treatment at clinics or out-patient departments, and this is especially important because in such conditions the tendency is towards retrogression as time goes on, while it is often particularly important to cut short the development of sequelæ. Much yet remains to be done, but there is no doubt that under the Ministry of Pensions the medical profession as a whole have fought a hard fight strenuously and with fine results.

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THE MALARIAL TREATMENT OF GENERAL PARALYSIS.

WE publish in this issue a review of Dr. GERSTMANN's comprehensive account of the treatment of general paralysis by malarial inoculation. The good effects of fever on psychoses has been known certainly for 2000 years, but it was not until 1887 that Dr. WAGNER-JAUREGG, of the University of Vienna, turned his attention to the possibility of curing paralysis by artificially induced fever. He tried and discarded several methods before he decided on the subcutaneous injection of tertian malaria blood; erysipelas, tuberculin, dead streptococci, and proteids were all exhaustively tested. Dr. GERSTMANN gives a synoptic account of 400 cases (those of whom accurate after-histories had been kept) out of a total of 1000, and claims a very high percentage of complete recoveries—about 30 per cent.—with a further 14 per cent. of partial recoveries in which the patients regained a fair measure of social capacity.

The British psychiatrist will want to know how far the malaria treatment has been tried in this country and with what outcome. It must be admitted that the results obtained here have been very disappointing. Dr. GERSTMANN says as much himself in his chapter on the results obtained by other authors, and on turning over the recent reports from a number of our larger mental hospitals (some of which are noted in this issue, p. 405), we find that only a dozen or so have tried the treatment on a few patients, with results so meagre as to be almost inconsiderable. Leicester reports that out of 23 patients 5 fully recovered, 3 were considerably improved, 3 died, and 12 were unaffected. At Chartham Downs one case has been discharged and several benefited, but the medical superintendent feels it is too early to express any definite opinion on the treatment. The one case treated at Barnwood is now free from any abnormal manifestations. Possible reasons for these scanty statistics are (1) this new unspecific treatment may be more likely to succeed in the clinic where it was invented and where everything possible is known about it than it is when adopted by strangers; (2) nowhere in Great Britain could anything like 1000 general paralytics come under treatment in the five years covered by Dr. GERSTMANN'S report; (3) British psychiatrists are still rather suspicious of a method so drastic and empirical and perhaps do not give it frequent trial. A correspondent in our columns this week suggests a milder form of irritant—namely, colloidal sulphur—which might certainly be tried, although the opinion of the original investigators is that the malarial parasite has some specific action. The Viennese experts admit having selected the more promising subjects from their great mass of material during the last two years, and would certainly avoid cases that through age, duration of the paresis, or intolerance of fever would be unlikely to profit by treatment. Certainly it is unfair to condemn a method that has only been tried here and there on batches of three or four patients taken at random. But whatever the reasons for our comparative failure, it would be a great pity if we allowed these results to deter us from testing the malarial treatment on a reasonably large scale. Desperate ills demand desperate remedies; there is very little danger in the treatment to patients of ordinary stamina, and so far no other means has been offered of countering one of the most distressing and hopeless illnesses of our age.

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THE IRISH FREE STATE AND THE MEDICAL REGISTER.

THE announcement made on August 15th by the President of the Irish Free State, Mr. COSGRAVE, that the Executive Council of his Government had decided "not to seek the continuance of the United Kingdom arrangement, whereby the medical profession of Ireland, with certain representation, was controlled by the British General Medical Council," has been received with profound apprehension among the ranks as well as in the high places of Irish medicine. Three years ago there was in Ireland a body of medical opinion definitely in favour of the ultimate pronouncement of such a decision, while in our columns in 1922 our Dublin correspondent wrote as follows: "It is suitable that the Irish Government should take under its supervision the keeping of the medical register of Ireland, for it could hardly permit so important a matter to remain in the hands of a body which is departmentally subordinate to the English Privy Council." There is no doubt that our correspondent expressed the attitude of leaders of medicine in Dublin when he wrote, but the probability of a change of opinion was already foreseen. For three and a half years the Government of the Free State has been in communication with the General Medical Council on the matter, leaving the impression of hesitancy throughout, now seeming to regard the functioning of the Council in Ireland as interference, and now viewing it in the light of a useful protection. From the story of the position it will be clear that either view has reason behind it, while the holding of both views simultaneously seems due to that desire "to have it both ways" which is so commonly cherished and so seldom accomplished.

When the autonomous Free State was set up in January, 1922, it was, of course, realised by the medical profession of the State that their whole status might be affected. Those whose eyes were fixed more particularly on the dawn of national existence saw in the opportunity that was thus given to break away from the jurisdiction of the General Medical Council the beginnings of a new and presumably freer era. Others, again, less concerned perhaps with national statesmanship than with the field of medicine within the Empire, foresaw that separation from the British Medical Register, save under the conditions of a Dominion, might imply an economic tragedy for the ancient medical schools of the young Free State. The disaster might be only temporary, but it was difficult to dispute its probability. This latter view has grown to be the predominant, if not universal, one in the medical profession. Further, and apart from purely economic considerations, it is possible that not a few Irish medical men may have felt some damping of their hopes for the future of medicine in the Free State when none of the persons recommended by the Royal Colleges to the President of the Free State Executive as suitable for nomination to the Senate was selected by him for that dignity. At any rate, the change of heart appears to have become manifest soon after this rebuff. It was settled quite early in the history of negotiations between the Provisional Government of Ireland and the British Ministry of Health that the constitutional arrangements then in force as to the Medical Acts would continue unaltered unless and until the Parliament of the Irish Free State saw fit to legislate for practitioners within its own area. And so up to the beginning of 1924 the old way continued unchanged and undisturbed, nor was any voice of complaint uplifted; the understanding being, on the part of the Free State, that should they at any time desire to "cut the painter," they were at full liberty to do so. But following the Irish Free State (Consequential Adaptation of Enactments) Act of 1923, wherein no mention was made of the Medical Act continuing to be in force in the Free State, the General Medical Council indicated that the separation would occur unless the Free State Government explicitly stated that they wished the connexion to be preserved. This brought action from the Free State, and in July, 1924, a Bill was introduced authorising the General Medical Council to continue its jurisdiction for a period of one year. This Bill was passed by the Senate on Feb. 23rd, 1925, from which date it became effective, and the Free State Government was given the opportunity of extending the interim measure for further definite periods.

While professional fears were thus allayed for the moment, the licensing bodies and professional organisations in the State bestirred themselves to find a more stable basis for the future control, educational and disciplinary, of the medical profession in the country. At a conference held in April of this year between the Minister of Local Government and Public Health in the Free State, in whose department the matter lay, and representatives of the medical profession, it was unanimously urged that the existing status should not be disturbed, and that the Government of the Free State should exert itself to ensure that a common register for Great Britain and Ireland should be maintained as hitherto. Our Dublin correspondent says that the Minister agreed with the medical representatives, whom he invited to form a committee with which he might consult as occasion arose. No occasion had arisen before the decision was announced last week to establish a separate Medical Register for the Irish Free State.

Annotations.

"Ne quid nimis."

THE NATURE OF LIGHT.

WHAT life is to the biologist, so is radiation to the physicist, the quickening impulse that sets matter vibrating, not only matter but electricity, electrons, the electrical atoms. These are set vibrating by radiation, and in turn give out radiation and the two processes are linked in some obscure way. The nature of light is, of course, only part of the greater question of the nature of radiation, yet familiarity with the term induces the more frequent reference to it. Newton gave the first connected theory as to the nature of light. His amazing genius coupled experimental inventiveness with a surpassing imagination. The corpuscular theory which he imagined held its own against the undulatory theory for about a century and a half, until the work of another genius, scientist, *doctor*, and Egyptologist, Thomas Young, overthrew it by showing that two beams of light could, under certain circumstances, interfere with one another, and as it were, cancel each other's effects. There was no room for such a *phenomenon* in the theory that light consisted of minute corpuscles ejected from a luminous source. The wave theory of light then held the field for about a century, an enhanced prestige devolving upon it as a result of the work of still one more genius, Clerk Maxwell, whose electro-magnetic theory of radiation retained the conception of undulations, but replaced the mechanical basis of such action by one entirely electro-magnetic in nature. It is probably true to say that Maxwell's electro-magnetic theory of light was held to be true by physicists all over the world at the close of last century, just as the permanence of atoms was by chemists. The discoveries of X rays and radio-activity have modified both of these conceptions. On several occasions Sir J. J. Thomson has pointed out the difficulty of explaining certain phenomena on the wave theory of light, and he has now developed a new theory which attempts to reconcile the two opposing theories, the corpuscular and the undulatory.

It was a happy idea of the Fison Memorial Committee to institute a lectureship to commemorate the life and work of Dr. Alfred Henry Fison, who was associated with the work of the physics department of Guy's Hospital since 1900. The Committee invited our foremost British physicist to give the first of these lectures, and the subject was the Structure of Light. This has recently been published as a small brochure by the Cambridge University Press (2*s.* 6*d.*), the account of the lecture being preceded by an interesting and sympathetic account of the life and work of Fison, a man who endeared himself to mankind generally. Sir J. J. Thomson puts the difficulty of the position in a nutshell when he says: "In all forms of the undulatory theory of light the energy is supposed to be diffused throughout the whole of the space through which the light is passing, and not, as in the Newtonian theory, concentrated in small patches; it is this uniform distribution of energy which has proved the most serious difficulty in the way of the undulatory theory." This difficulty is, perhaps, shown more clearly in what is called gaseous ionisation. It is known that X rays eject electrons from bodies upon which they fall, and it is found that when X rays pass through a gas only a very small fraction of the molecules of the gas so lose electrons; it requires a long exposure to an intense beam of X rays to get one electron out of one molecule in a billion. This is not what we should expect to happen if X rays consist of waves whose energy is spread continuously through space. The same sort of thing happens with gamma rays or ultra-violet rays, but it is rather unusual to get this sort of electron emission by means of ordinary light. In his address on the Structure of Light, which will no doubt become one of the classics of scientific literature, Sir J. J. Thomson develops a theory which is, as he says, a combination of the two older theories. Light is to him partly corpuscular and partly undulatory, a sort of meshwork consisting of active centres on a ground-work of wave-motion. What of these active centres? Herein lies the most imaginative part of the theory, and we read: "The mental picture I draw of the light given out by an atom or molecule is *that it consists* of lines of electric force distributed in two ways. The distribution in one part which we may call the corpuscular and which corresponds to the quantum is, as I shall explain afterwards, an anchor-ring formed of closed lines of electric force; this ring *moves* forward at right angles to its plane with the velocity of light, and this movement does not change its size or shape. The anchor-ring can vibrate, the time of vibration being the time light takes to travel round the circumference of the ring; thus the frequency of its vibration is inversely proportional to its circumference. While it is ejected from the atom it is in vigorous vibration and starts a system of ordinary Maxwellian waves." Further details of this mechanism are elaborated in the text and may be left to the reader. Submitted to experimental test the new theory is likely to fare better than its predecessors, for it reconciles Newton with Young, while paying tribute to the imaginative insight of Faraday, Maxwell, Kelvin, and Rayleigh. Like peaks in a mountain range these names stand out supreme among the British physicists who have brought the study of radiation to its present summit.

ADENOIDS AMONG SCHOOL-CHILDREN.

IN reading Dr. H. P. Newsholme's report on the prevalence of adenoids among Croydon school-children, it is well to bear in mind that this disease, which now bulks so largely in the reports of school medical officers as a cause of widespread damage to health, was only discovered 40 years ago. Thus *in* the eighth edition of Erichsen's "Surgery," published in 1884, we read: "Meyer of Copenhagen has described a condition occasionally met with in strumous children, in which there is a general overgrowth of the closed lymphatic follicles situated about the posterior nares and upper part of the pharynx. It leads to more or less complete obstruction of the posterior nares, and is often accompanied by deafness." The Croydon inquiry was conducted in all the departments of 31 out of the 33 elementary schools, and the survey covered *some 18,000 children*, about 900 of whom had indications of definite adenoids.

Provision of treatment for these children by the Education Committee has altered the normal prevalence of adenoids, and, but for this, Dr. Newsholme estimates that 5 per cent. of the school-children would be suffering from symptoms calling for operative interference, whereas under existing circumstances about 2 per cent. require it. This is a strikingly small percentage; Gradenigo found in Turin that adenoids were present in one out of every three children coming to his clinic, and Dan McKenzie estimates that over 30 per cent. of all children in Britain suffer from adenoids and require operation. The work of the throat clinic now makes adenoids most prominent in early school life, whereas, apart from surgical interference, this disease, high at the entrance age, would increase to a maximum at the age-group 9 to 11. At almost every age-period there is a clear excess among boys as compared with girls. Some 7 per cent. of boys and 6 per cent. of girls have, or have had, definite adenoids during school life. There is some evidence also that the disease reaches a given degree of severity somewhat later in school life among girls than among boys. A comparison between schools receiving children from the more prosperous and the poorer districts respectively suggests a greater prevalence among the latter. Thus 4995 scholars at six schools serving prosperous districts furnished 60 cases of severe adenoids, 47 cases of slight adenoids, and 128 cases which had been operated upon; whereas 4534 scholars in seven schools serving the poorer districts furnished 90 cases of severe adenoids, 69 of slighter adenoids, and 163 cases in which an operation had been performed during school life. There are no data available to check whether the smaller proportion of adenoids among the entrants to the "prosperous" schools is due to more ready recourse to operative treatment during the pre-school age. Among the "prosperous" children aged 5 years, numbering 237, there were seven cases of severe adenoids, three of slighter adenoids, and two where operation was performed during school life; whereas among the 245 "poorer" children aged 5 there were four cases of severe adenoids, thirteen of slighter adenoids, and six cases where operation was performed during school life.

An endeavour was made in the case of 156 unselected cases of well-marked adenoids to ascertain the date of onset. Where a definite history was obtainable from the parents, it was found that half of the cases who were mouth-breathers, one-third of those who were deaf, and one-quarter of those with enlarged tonsils had developed these defects before admission to school. The available data yielded no evidence of any relation between adenoids and bottle-feeding or prolonged breast-feeding, nor did they support the theory that the use of a comforter favoured the development of adenoids. No connexion could be traced between the sanitary condition of the home and the prevalence of adenoids, apart from the fact that the increased aggregation of persons per room appeared to have an influence. It was clear that adenoids cause a school child to lag behind his fellows in educational level, the effect becoming particularly serious in the upper standards of the school.

We hope that this portion of Dr. Newsholme's report will be widely circulated and lead to similar inquiries in other populous districts. One thing is abundantly clear, that we must not be content with moving the maximum incidence from the age of 10 to the age of 5, but that serious efforts will have to be made to tackle the toddler through the child welfare clinics so as to cut off the supply of damaged school entrants. Probably a considerable number of children, both of the poorer and more prosperous classes, have had their adenoids removed before entering school; but it is certain that many children still suffer because the operation has been delayed too long, and that a large proportion of cases of deafness and chronic otorrhœa, as well as of acute aural suppuration and mastoiditis, could be prevented by more timely removal of adenoids. Although some children first develop symptoms of adenoid hypertrophy later in life, the most suitable age for their removal is usually about 4 or 5 years, and in a considerable number of children the naso-pharyngeal tonsil is sufficiently enlarged to cause serious symptoms at a far earlier age than this. A test of the efficiency of the service would be the average age of the patients operated on; it would be interesting to have statistics on this point from some of our public clinics. Croydon should be in an ideal position to do this, as owing to the wise coöperation of the Health and Education Committees the child is supervised, as from September, 1924, by the same medical and health nurse staff from infancy to school-leaving age.

THE THERAPEUTIC USES OF SILICA.

In this country silicic acid and the silicates are generally considered unsuitable for administration per os, although the sodium salt is used in powdered form in France. In a recent article in the *Wiener Klinische Wochenschrift* (No. 27, 1925) Prof. Friedrich Luithlen points out that silica is the foundation of the elasticity of living tissues and that healthy activity depends on the maintenance of a proper balance between the calcium and silica constituents of the body. In youth the silica content is at its highest, decreasing with maturity until in age there is a deficiency, with a corresponding preponderance of chalk. Hence the altered biological processes, the diminished pliability of the tissues, and the liability to fractures. Arguing from these facts, Prof. Luithlen has tried the use of silica in certain senile and other conditions attributable to silica deficiency. The best results have been obtained in cases of pruritus senilis where there is no definite metabolic cause for the irritation and the superficial layers of the epidermis are dry and brittle. In many instances where colloid treatment, hypotonic solutions, and organotherapy had been tried in vain, intravenous injections of silicic acid rendered the skin soft and supple and restored the circulation. Good results have also been obtained in all kinds of senile skin disorders such as psoriasis, furunculosis, and acute weeping eczema in the aged, as well as the further advantage of increased immunity and better conditions of life resulting from the restoration of chemical balance in the tissues. The method has also been applied with satisfactory results to cases of arterio-sclerosis, stenosis of the cardiac valves, and tuberculosis of the lungs. The drug may be administered hypodermically or per os in youthful cases where the power to re-absorb silica has not been lost. For this purpose a "silicic acid tea" or the organic preparations can be used. For older people it is best given intravenously, in the form of a 1 per cent. watery solution of sodium silicatum purissimum. The phials should be well shaken, as sedimentation is likely to take place, and 1 c.cm. may be given on alternate days up to 15 or 20 doses. If the claims of Prof. Luithlen are substantiated by further observations we shall have in silicic acid a most valuable therapeutic weapon against a series of trying and obstinate conditions.

CAVERNOUS OPTIC ATROPHY.

A theory of chronic glaucoma which is associated with the name of Schnabel holds that it is caused not by pressure on the optic nerve, but by primary atrophy of that structure. The theory was long ago discredited, but has lately been revived in a somewhat different form. Mr. Ransom Pickard[1] holds that "cavernous atrophy" is a distinct entity, that it has no necessary relation to glaucoma, but that in some cases the two conditions may be associated. According to this writer, "cavernous atrophy" is characterised by a cupping of the disc which may or may not extend to the margin all round, an absence of tension, which remains within normal limits, and retinal vessels of normal size. The persistence of a normal tension at once separates these cases from those of glaucoma. The fields for colour are characteristic. In ordinary glaucoma they are diminished in the same proportion as the field for white. In cavernous atrophy the colour fields, and especially the field for red, are diminished far more in proportion than the field for white. It follows that in cases suspected to be chronic glaucoma without any demonstrable rise of intra-ocular tension, the colour fields as well as the fields for white should always be carefully taken. From the point of view of prognosis the distinction between the two diseases is, according to the writer of the paper, most important. Several of his cases of "cavernous atrophy" were kept under observation for considerable periods—one case for 14 years—during which time very little progress in the disease took place, and it is his opinion that the case is typical. The subject is controversial and the number of cases from which Mr. Pickard's conclusions are reached is not large, but seeing that cases of cupped discs resembling glaucoma but with normal tension are by no means unknown, it should not be long before further evidence bearing on the subject is forthcoming.

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[1] British Journal of Ophthalmology, August, 1925.

THE PINEAL GLAND AS A LOCALISER.

Radiology may have found a use for the pineal gland. The fact that in about 50 per cent. of all skulls the pineal gland is calcified, and can be demonstrated by skiagraphy, has been utilised by Dr. H. C. Naffziger,[1] of San Francisco, for determining on which side of the brain a tumour is situated. In cerebral tumour the portion of brain affected increases in size and pushes to the opposite side the falx and all mid-line structures, including the pineal gland. This displacement of the gland is termed by Naffziger "the pineal shift." The amount of the displacement varies from 1 to 3 cm. A special X ray technique is described. The "pineal shift" occurs whether the tumour be frontal, parietal, or occipital. Lesions of the base, or of the posterior fossa (subtentorial) cause internal hydrocephalus, and both lateral ventricles being equally distended, no "pineal shift" occurs. The two essentials for this method of diagnosis are a calcified pineal gland and an increase in intracranial pressure. Displacement of the gland to the right of the mid-saggittal plane indicates a left-sided lesion and vice versa. In the presence of intracranial pressure a mid-line position of the gland indicates equal pressure on the two sides. In the chronic form of intracranial pressure, due to tumour or abscess, the medial position of the gland means internal hydrocephalus, which occurs in lesions of the posterior fossa and in distortion of the third and fourth ventricles. In 15 cases the X ray findings have been confirmed either by operation or autopsy.

SAMARITAN FUNDS AND SOCIAL SERVICE DEPARTMENTS.

Reports of the Samaritan funds and social service departments continue each year to provide valuable sociological material of which we do not yet take full advantage. In the report of St. Thomas's Hospital the almoner points out that coöperation between the medical, nursing, and sociological units of the hospital is steadily bearing fruit, and that this coöperation is in turn reacting on the patient. To quote from the report "a new spirit seems to be growing, a desire on the patient's part to be a shareholder, a partner in the fortunes of the hospital; those who contribute a weekly sum from their wages for its upkeep show a more unselfish interest and pride in the good of the whole institution than formerly." The report affords an indication of some of the changes which are taking place year by year in sociological conditions of the hospital patient. For example, a new problem is being raised at the moment in the after-care of the extremely baffling and almost hopeless cases of encephalitis lethargica, and the special departments are receiving patients who, before the war, would not have sought help from hospitals. The rheumatism clinic affords another instance of the value of sociological inquiry and after-care, and it is not too much to believe that this work may be partly responsible for the reduction in the number of cases of chorea which now require treatment in hospital. The over-open door of the casualty department still continues to admit some of the most difficult cases for inquiry, and there is an illuminating passage in the report giving details of the variety of questions which may be presented by one day's casualty work. The almoner comments also on the tasks of daily occurrence which arise in connexion with the patients of no fixed abode who live by casual labour, and states that the number of these patients is tending to increase, a fact which is not surprising in view of the increasing amount of unemployment.

The report of Moorfields Eye Hospital discusses the value of the social service department as a clearing house and a means of putting patients in touch with the various organisations which deal with the blind. Throughout England the Blind Association has visitors who are in communication with their central office, and the social service department of the hospital is thus enabled to coöperate effectively. Patients are frequently ignorant of the provision which has been made for them in various ways by the public authorities, and not the least of the almoner's duties is to help the patient to understand and apply to himself those particular laws and regulations relating to social welfare which have been made for his assistance and not from a desire to interfere with his liberty.

In the report of the Victoria Park Hospital almoner's department emphasis is laid on the housing question. There is little doubt that this outstanding problem remains the chief difficulty in all tuberculosis work. "Patient after patient tells the same tale of ill-health due to being forced to live in over-crowded insanitary houses, and often out-patient treatment in such conditions seems time thrown away." The almoner can only hope to assist certain individuals by repeatedly calling the attention of the appropriate authorities to particularly bad instances. Moreover, the housing problem has a bearing on after-care, which is an important feature of the work in an institution where the question of the return of a tuberculous patient to his own environment is an ever-present difficulty.

The report of Westminster Hospital emphasises similar difficulties. Bad housing again presents one of the greatest hindrances to effective effort; it is almost incredible that in twentieth century England there should be cases of five persons living in one room. The "down and outs," especially among the male patients, also continue to give anxiety. In the case of the older men this may be an unsolvable problem, but in the younger—frequently boys who have wandered to London from the farthest corners of England—some solution should be forthcoming, for it seems impossible to ask the hospital to shoulder the whole burden just because these lads happen to have fallen sick.

The almoner of the Brompton Hospital points out that the coöperation of the social service department of a chest hospital with the medical staff falls largely into two categories—preventive and alleviative; the latter operating indirectly in enabling the patient to obtain and benefit by such means of treatment as are indicated by the physician or surgeon. How wide a field these categories cover may to some extent be imagined when it is realised that patients are taken from all over the British Isles and often from outside them, and that the "coöperation" needed through the social worker may consist of anything from a grant of a daily pint of milk for a few weeks to the removal of a whole family with their Lares et Penates from an East End slum to a Sussex hamlet where house and work have first been found; or again from providing instruction in embroidery to a boy with congenital heart disease, to turning an indolent wife into the family bread-winner. At this hospital the whole ground is covered by the social service department, which deals separately with in-patients, out-patients, and those at the hospital's sanatorium at Frimley. With the latter, every effort is made to keep in touch for an unlimited time, the after-histories thus obtained providing not only opportunities to lend a helping hand, but also a mass of information which has proved extremely useful in various investigations into the results and value of sanatorium treatment. The patients, with few exceptions, respond gladly to requests for yearly reports. All the sanatorium patients are interviewed on their admission by the almoner, who also visits Frimley once a fortnight and makes it her business to smooth away the home and financial difficulties which would otherwise necessitate self discharges before the maximum benefit had been obtained from treatment. A special effort is made to minimise the strain of readjustment to economic and social conditions on discharge. Other inquiries into after-histories are undertaken at the request of members of the visiting medical staff, in which work there would seem to be great latent possibilities. On the preventive side a point is made of arranging prolonged convalescent treatment for debilitated children, especially where there is a family history of tuberculosis or when the children are contacts of definite cases. The hospital possesses, through the generosity of friends, two open-air huts at a convalescent home at Hayling Island, and it is hoped to add to their number in the future. Arrested cases of pulmonary tuberculosis are often boarded out to prevent breakdown.

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[1] Surgery, Gynecology, and Obstetrics, April, 1925, p. 481.

Even a brief perusal of some of the reports of hospital almoners' departments brings out therefore the outstanding fact that inquiry and after-care are enabling the medical staff to get the treatment recommended carried out.

THE birth-rate of England and Wales for the second quarter of the present year is only 19·4 per 1000, equalling the lowest record of any second quarter of any year excepting during part of the war period. The death-rate for the same quarter is only 11·7, the London death-rate being still lower, and standing at 10·1.

SIR JOHN MACALISTER MEMORIAL FUND.

THE second list of subscribers to the Fund opened by the Council of the Royal Society of Medicine to commemorate the 38 years of service of Sir John MacAlister as Secretary is as follows:—

Dr. W. Seaman Bainbridge, Dr. A. J. Ballantyne, Mr. A. S. Blundell Bankart, Dr. H. W. Barber, Surg.-Comdr. K. Digby Bell, Dr. H. Beckett-Overy, Dr. Arthur F. Blagg, Dr. Thos. William Blake, Dr. P. Brooke Bland, Dr. C. Hubert Bond, Dr. Helen Boyle, Mr. Henry Briggs.

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Dr. Alfred C. Warren, Dr. A. Mercer Watson, Dr. Wm. Hy. White, Dr. Robert B. Wild, Mr. F. A. Williamson-Noble, Dr. J. F. Woods.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXXXVI.—TREATMENT OF FLATULENCE.

II.*—INTESTINAL FLATULENCE.

INTESTINAL flatulence gives rise to a sensation of fullness or colicky pain in the abdomen which is due to the presence of gas under tension and is relieved by its expulsion. At times the frequent passage of flatus itself may cause considerable inconvenience. Though the discomfort is felt mainly in the lower abdomen, gas occasionally accumulates at the splenic flexure in such quantity that it may be mistaken for gastric flatulence and an attempt made to relieve it by eructation. If the flatulence be gastric in origin, relief will follow, but if intestinal, there will be increasing discomfort from aerophagy. The differential diagnosis may be readily confirmed by X ray examination.

The intestinal gases arise from two main sources: air swallowed with the food and saliva, and gas evolved from the bacterial decomposition of carbohydrates and proteins. Whilst, under normal conditions, either a small quantity of gas only is formed or a large quantity absorbed so that the amount passing out with the fæces is small, flatulence may occur under the following conditions: 1. Increased formation of gas by (*a*) excessive aerophagy, (*b*) decomposition of carbohydrates and proteins. 2. Deficient absorption of gas. 3. As a result of obstruction. 4. As a result of increased peristalsis.

Increased Production of Gas.

(*a*) Excessive aerophagy may result in intestinal flatulence and the passage of large quantities of odourless flatus.

(*b*) Although a rare occurrence in the stomach, the fermentation of carbohydrates and to a much smaller extent the putrefaction of proteins are common causes of intestinal flatulence. These conditions, though favoured to some extent by constipation, are more usually associated with diarrhœa, and have their origins in a variety of causes of which the following are the most important: (1) Dietetic excesses. The ingestion of large quantities of carbohydrate or protein will tend to produce fermentation and putrefaction from the residue which escapes digestion and absorption. The flatulence which results from the high cellulose dietary often given in habitual constipation is an example of this. (2) *Deficiency in digestive ferments* in the upper alimentary tract. The absence of hydrochloric acid in the various forms of achylia gastrica, and diseases of the pancreas leading to deficiency of its external secretion, will promote conditions favourable to intestinal decomposition. (3) Intestinal infections, whether as a result of infection from the food, from oral or naso-pharyngeal sepsis, or more rarely from chronic appendicitis, may lead to a condition of catarrhal entero-colitis, and by producing intestinal hurry will tend to prevent normal digestion and absorption and lead to fermentation and putrefaction.

Treatment.—The successful treatment of intestinal decomposition depends on the removal of the primary cause and the recognition of the associated disturbance of intestinal function. The stools are often characteristic; in fermentative cases they tend to be acid in reaction, frothy, somewhat sour-smelling, and microscopically show undigested starch granules, whereas in protein putrefaction they are alkaline, have a putrid odour, and microscopically show undigested meat fibre and an excess of Gram-positive organisms.

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* An article on Gastric Flatulence appeared in this series ast week.

A full consideration of the treatment of these types of diarrhœa is outside the scope of this article, which is concerned with one symptom only—namely, flatulence. This may or may not be of importance, but its efficient control will depend on (*a*) regulation of the diet, and (*b*) use of drugs.

(*a*) *Regulation of the Diet.*—As a means of controlling fermentation and putrefaction much greater reliance can be placed on suitable dietetic modifications than on the exhibition of the so-called intestinal antiseptics which are at best very uncertain in their results.

In *carbohydrate fermentation* the chief source of the flatulence is marsh gas derived from the break-down of cellulose. Green vegetables and uncooked fruits must, therefore, be strictly forbidden, and in some cases the total exclusion of carbohydrates from the dietary may be necessary. Generally, however, sugar, malted foods, milk, purée of potato and celery may be allowed in moderation. Cammidge[1] gives the following diet table for intestinal flatulence:—

The patient may have: White meat, lean red meat, sweetbread, tripe, calves' head, chicken, pheasant, partridge, tongue, lightly boiled or poached eggs, fresh butter, a little sweet cream, toast or old bread, crusts, wholemeal bread, light farinaceous food with fruit juices, spinach, celery, asparagus, a little potato, unsweetened stewed apples or plums, raw apples not too sour, almonds, Brazil nuts, cocoa essence, meat extracts. One ounce of whisky in four ounces of hot water with two meals.

The patient must avoid: Green vegetables (especially cabbage, radishes, peas, beans, lentils, salads), pears, raw plums, mayonnaise, oily or greasy foods, milk, cheese, excess of sweets, pastry, fresh bread, pork, veal, venison, sausages, hare, goose, duck, pigeon, curries, re-cooked meats, smoked fish, eels, salmon, herrings, mackerel, tea, coffee, wine, malt liquors, soup, broth.

In very intractable cases a diet of cooked minced meat and water, the well-known Salisbury cure, may be tried, but it is very irksome and should be limited to a period of six weeks.

In *protein putrefaction* a strict lacto-vegetarian diet is more suitable at first. Chicken, game, and fish may be added later, but mutton, beef, and veal should be withheld for some time after the diarrhœa has ceased. Sour milk is worth a trial in these cases with the object of replacing an abnormal intestinal flora with one inimical to putrefaction. The milk should be sterilised by boiling and then allowed to cool to a temperature of 120° F. A fresh culture of the *Bacillus bulgaricus* (tablets are too uncertain in their action to be reliable) is then added to the milk in a thermos flask and the whole incubated for 18 hours. It is then ready for use and may be taken in quantities starting with half a pint a day and gradually increasing until one and a half pints a day are taken. Better results are claimed by certain American writers, Rettger and Cheplin[2] and Kopeloff[3] by the use of the *Bacillus acidophilus* as the souring agent. They use at least 1000 c.cm. of the freshly inoculated milk and combine it with the administration of lactose, which promotes the growth of the bacilli. The method does not appear to have received an extended trial in this country and there are technical difficulties in the way of its general adoption.

(*b*) *Use of Drugs.*—Drugs are administered with three objects, to aid digestion, to control bacterial decomposition, and to relieve flatulence. In cases associated with achylia hydrochloric acid should be given in the full doses recommended by Hurst, not less than 1 drachm of the dilute acid in a tumbler of water flavoured with orange being sipped during and for a short time after each meal. In pancreatic deficiency various preparations such as pankreon, holadin, and taka-diastase may be tried *after meals*, but are not very satisfactory. Intestinal antiseptics for the control of putrefaction and fermentation are legion, but the evidence of their value is somewhat unconvincing as a satisfactory clinical assay is well-nigh impossible. The best appear to be calomel, especially in divided doses, benzo-naphthol (10 to 15 gr. t.i.d. in tabloid or in cachet), and dimol (2 to 4 gr. t.i.d. after meals). Colloidal kaolin is an efficient absorbent of bacterial toxins and may be given in half-ounce doses in water t.i.d. For the immediate relief of flatulence the essential oils are distinctly valuable, the best perhaps being oil of cajuput (minims 2 on a lump of sugar) and oil of turpentine (minims 15 in capsules or cachets). A tablespoonful of charcoal taken once or twice daily is also useful and helps to render the flatus odourless.

Deficient Absorption of Gas.

As in the case of gastric flatulence, this occurs but rarely, and then as a result of chronic venous congestion in heart failure and hepatic cirrhosis. The main lines of treatment have been sufficiently indicated in the previous article in THE LANCET. Inflammatory conditions of the colon may also interfere with the normal absorption of gases and account, in part at least, for the flatulence complained of in these cases.

As a Result of Obstruction.

Flatulence may occur as a result of organic obstruction or in cases of constipation when the intestine contracts on a fæcal mass and thus imprisons flatus. Treatment is directed to the relief of the obstruction.

As a Result of Increase of Peristalsis.

Apart from the causes already discussed, great inconvenience and distress may be caused by the frequent passage of flatus from causes purely emotional. The condition is analogous to nervous diarrhœa and is liable to be a very distressing symptom in moments of great mental strain. Diet is ineffectual in cases of this type unless, as sometimes happens, there is an associated intestinal catarrh, and treatment should be directed towards lessening the excitability of the gastro-colic reflex by a full dose of bromides combined with belladonna given at a suitable interval before the symptom is liable to occur.

Acute Flatulence or Meteorism.

Acute gaseous distension of the intestines occurs in certain severe abdominal conditions such as intestinal obstruction, acute general peritonitis, and acute pancreatitis. It is met with also as an important complication in certain infective fevers, notably enterica and pneumonia.

Treatment.—Acute abdominal conditions require surgical treatment, but in the absence of intestinal obstruction, or following its relief, the general principles of the treatment of meteorism are applicable to all cases. All food should be withheld with the exception of small quantities of whey and albumin water. Local applications to the abdomen such as turpentine stupes or hot fomentations are valuable, particularly for the relief of pain. Enemata of turpentine (½ to 2 drachms to a pint of soapy water) should be given and oil of turpentine, 15 minims in capsules taken by mouth every three hours, is useful. In severe cases the hypodermic injection of pituitrin 1 c.cm., or eserine 1/50th gr., may be tried in the absence of obstruction. The danger of perforation in typhoid should be remembered and these powerful drugs used with great caution, and only as an extreme measure.

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[1] Cammidge, P. J.: Fæces of Adults and Children, 1914.

[2] Rettger, L. F., and Cheplin, H. A.: Arch. Int. Med., xxix., 1922, 357.

[3] Kopeloff, N.: Arch. Int. Med., xxxiii., 1924, 47.

GOVERNMENT LUNCHEON TO STATISTICIANS.—The medical statisticians visiting this country under the auspices of the League of Nations were entertained to luncheon by His Majesty's Government on August 13th. Sir Kingsley Wood presided and extended a very hearty welcome to the visitors. Among the prominent medical men invited to meet the statisticians were Sir Humphry Rolleston, Sir Arthur Newsholme, Dr. H. Robinson, Lieut.-Colonel W. Butler, Dr. Percy Stocks, Dr. J. Brownlee, Dr. Norman White, Dr. J. C. McVail, and Dr. J. Fenton.

Special Articles.

THE MEDICAL SERVICES OF THE MINISTRY OF PENSIONS.

BY ALEX. SANDISON, M.B., B.C. CAMB., B.SC. LOND.,
A PRINCIPAL MEDICAL OFFICER OF THE MINISTRY OF PENSIONS.

THE PRIMARY OBJECT.

THE primary object of army medical treatment was the speedy restoration of the disabled man to be an efficient unit in the fighting or auxiliary services. As the war widened in scope and intensity the number of seriously and permanently disabled men became so large that attention had soon to be directed to the problem of their future in civil life. Thus, early in the war, there was need to consider the provision of medical treatment to those who were *never likely to* return to the forces but for whom the nation began to realise a peculiar responsibility. The restoration of their capacity for civil employment, or failing that the provision of the medical care necessitated by their permanently disabled condition, became a function of the State. Thereafter the medical services of the Ministry of Pensions developed out of the existing but limited responsibilities of the fighting services for the discharged disabled man.

Attributability, Aggravation, and Entitlement.

To medical science the war was as revolutionary an experience as it was to the science of warfare. Fresh problems of diagnosis, treatment, and administration arose on a scale previously unknown. Surgeons had to deal with appalling complexities in septic wounds, physicians were faced with an influx of tropical diseases, and with the novel sequelæ of "gas" and "shell-shock," administrators had to evolve hospital accommodation on a gigantic scale. Latterly there was imposed a new responsibility, novel in principle to normal medical practice, that of determining to what extent the total disabilities of the disabled soldier were due to the stress and shocks of war, and how far, therefore, the State could admit responsibility for them. The word "entitlement" took on a new and technical meaning and with it were joined "attributability" and "aggravation," a trinity of mighty import. "Entitlement" was the foundation-stone on which the structure of the Ministry must rest. Its implications, as defined in the Royal Warrants, depended upon the existence of medical unfitness consequent upon service with the forces. The fundamental decision in entitlement is, therefore, a matter of medical judgment—namely, the confirmation or otherwise of an alleged physical impairment.

ESTABLISHMENT OF MEDICAL BOARDS.

The medical boards established to decide on the physical fitness of individuals for military service were eventually, as part of the Ministry of National Service, so coördinated that they could readily be adapted to deal with the claims of unfit men. From them developed the boards of the Ministry of Pensions with the accessory service of the assessors.

In the Ministry of National Service boards the members of the board were general medical practitioners (assisted as required by specialists) working on a sessional part-time basis, so that the judgments of the boards were unfettered and not open to an accusation of bureaucracy. This principle was maintained in the boards of the Ministry of Pensions. The claimant for pension thus appeared before doctors, usually ex-Service men themselves, whose medical judgment was subservient to no over-riding authority, medical or lay. To function with equity and uniformity, however, the boards required guidance. Whole-time medical officers were, therefore, appointed to coördinate and advise the boards and to ensure an adherence to the technical regulations inseparable from the administration of a large organisation deriving its authority from specific warrants and Acts.

Average Medical Opinion of Country as Basis of Assessment.

Arising directly from a decision that a particular disability was consequent upon war service came the question of the degree of disablement caused thereby. Questions of this kind were new to the majority of the profession. Such assessment, moreover, is by no means easy and affords opportunity for considerable legitimate divergence of opinion. The experience of former wars gave only limited assistance and it was necessary to consider the whole problem largely de novo. Appropriate guidance was therefore given as to the principles on which assessment must be based, with indications of what might be considered an equitable range of assessment for the main types of disabilities and their complications. Except for the assessments fixed by the schedule of the Royal Warrant, these suggestions were based on a standardisation of the assessments which were being made throughout the country by the boards themselves. Thus the main basis of assessment was the average of the general medical opinion of the country. To secure uniformity and equity a special branch of whole-time medical officers, the assessors, was formed to oversee the assessments and discuss with individual boards any instances where their assessments and verdicts on entitlement were out of harmony with that which experience had shown to be appropriate, the final decision, however, resting with the board.

The final development of the boarding and assessing medical services thus resulted in a harmonious combination of the medical experience of the independent general practitioner, the specialist, and the administrator. On the one hand the pensioner was assured of the primary consideration of his case by independent medical men, and on the other of general uniformity and equity of treatment.

Ministry of Pensions Disability Committee.

The Minister, in 1919, appointed the Ministry of Pensions, Disability Committee. This Committee had as its members the Presidents of the Royal Colleges of Physicians and Surgeons, the secretary of the Medical Research Council, and other eminent medical men, who, with the Director-General of Medical Services as chairman and in conjunction with senior officials of the Ministry, medical and lay, considered in detail the medical aspect of the existing principles and regulations. The Committee, with its specialist subcommittees, held frequent meetings throughout 1920, 1921, and 1922. As the outcome of its labours the practice of the Ministry in entitlement and assessment became based upon the highest medical authority. The Committee remains in being and is available when required for consultation on medical problems.

The boards, initiated to deal with applicants for pensions, are now chiefly concerned with renewals and reassessments, although there still occur a considerable number of fresh applications—e.g., for the year ending March 31st, 1924, Article 9 claims averaged 600 a week, and for the year ending March 31st, 1925, there were 23,846 Article 9 boards, of which 730 were for officers. Their work in renewal and reassessment has been further added to by the institution of special boards for final awards. Further, it was inevitable that appeals should be made for reconsideration of the findings of the boards, and in October, 1919, appeal boards were constituted. Their constitution and procedure were on similar lines to the primary boards. It is remarkable that since their commencement the number of claims to these appeal boards has maintained a steady average of but 5 to 7 per cent. of the total cases boarded and that about 60 per cent. of these appeals have resulted in a confirmation of the original finding.

So small a proportion of appeals is a good indication of the efficiency with which the primary boarding and assessing procedure has been conducted.

The magnitude of the boarding work since its commencement is at once apparent in the figures given in Table I.

TABLE I.—*Medical Board Examinations.*

A = Officers. B = Other ranks.

Financial year	Resurveys.		Appeals.		Final awards.	
	A.	B.	A.	B.	A.	B.
1919–20	29,380	1,000,525	No record	12,107	Not in operation.	
1920–21	47,028	1,120,578	3,008	97,604	"	"
1921–22	31,951	791,105	2,244	42,516	"	"
1922–23	22,810	346,049	3,050	20,372	2,101	196,510
1923–24	12,575	100,050	1,521	12,716	10,210	319,814
1924–25	3,640	47,227	741	8,922	15,208	212,014

Treatment.

The pensioner having received entitlement and assessment often required medical treatment, but prior to March, 1917, little provision for this had been made. Military hospitals were available if the pensioner liked to apply, but otherwise nothing very definite was done. Article 6 of the Royal Warrant and Order of Council of 1917 completely changed the situation, for, as stated in the Minister's first annual report, "its terms are wide enough to allow of the use of all forms of medical treatment," and "by it the entire direction of medical treatment of discharged men came under the control of the Ministry." From August, 1917, full use was made of these powers.

The facilities immediately available for treatment were military and civil hospitals, but the existing demand on these institutions by men still on the active list and the increasing number of pensioners suffering from special disabilities necessitated the securing of institutions to be controlled by or on behalf of the Ministry itself. The treatment needs of the Ministry increased at a rapid rate, especially on general demobilisation. Table II. shows the development of treatment.

TABLE II.

Date.	Total under treatment.			Special institutions for treatment of war disabilities.
	Institutional.	Otherwise.	Total.	
3/4/1918	10,743	1,824	12,567	—
31/3/1919	35,048	26,605	61,653	46
31/3/1920	24,007	138,629	162,636	72
31/3/1921	26,342	122,476	148,818	113
31/3/1922	28,894	105,600	119,494	95
31/3/1923	18,402	50,788	69,190	73
31/3/1924	16,046	37,719	51,675	70
31/3/1925	10,081	29,991	40,072	70

These figures do not include cases of insanity (about a constant 6000) nor officers and nurses. A detailed analysis of these figures is given below (Table II.A).

PROBLEMS AND PRINCIPLES OF DIAGNOSIS AND TREATMENT.

The problems of diagnosis and treatment were specialised and numerous. The limbless needed limbs, face wounds required plastic surgery, "shell-shocks" demanded a remedy for their multifarious complexes and complications. The insane needed mental institutions and the tuberculous sanatoriums. Men from the East brought with them malaria, dysentery, and bilharziasis. The blind sought training, the paraplegic a home. Trench fever and D.A.H. abounded. The situation was without precedent and analogies were few. Doctors, whether clinicians or administrators, found themselves launched on a little-charted sea.

Guiding principles soon emerged, and before considering in any detail the special forms of treatment provided, it is desirable to outline the course of the provisions of treatment as a whole.

The main divisions of treatment were and are: (1) in-patient, (2) out-patient, and (3) home. Accessory to these came a combination of treatment and training, and the special requirements of limb-fitting.

The use of civil hospitals for in-patient treatment was often handicapped by the difficulty of maintaining effective coördination, and of obtaining regular reports, together with at times a lack of facilities for dealing with the specialised diseases of pensioners. The Ministry therefore, though making extensive use of civil hospitals at the same time, found it necessary to establish institutions of its own. Thus the Ministry has itself been able to develop new methods of treatment, to keep in continuous touch with the progress of the pensioner, and to maintain an adequate provision of the essential forms of treatment required. Out-patient treatment has followed the same general lines and Ministry clinics have come to form the effective basis of such treatment. Home treatment, however, naturally blended with the existing provisions for the treatment of insured persons, and has been in the hands of the local general practitioner, assisted as required by the specialist facilities at the Ministry's disposal.

Such have been the general principles and procedure of treatment provision. The details are best considered according to the types of disability treated. At the present time the conditions still requiring treatment on an extensive scale are tuberculosis, insanity, psychasthenias, and general medical and surgical diseases of a chronic type. Tropical diseases have been almost extinguished. Cardiac diseases have been more precisely diagnosed, the functional being separated from the organic. Diabetics have been given full advantage of insulin treatment, epileptics have been more accurately diagnosed.

Thus the present problems and provision of treatment differ considerably in type and extent from those of 1920. Disease as a whole is characterised by an initial acute phase, followed by a period of subsidence of activity often complicated by expected or unexpected sequelæ, and finally terminating apart from death either in cure or in chronic disability of varying degree. The treatment requirements of the Ministry have necessarily followed this general rule. The acute phase has passed, activity has subsided, and the chief need of to-day is provision for the consequential and chronic terminal manifestations.

1. *Tuberculosis.*

Pensioners of non-commissioned army rank, with few exceptions, were of the "insured persons" class and thus were eligible for "sanatorium benefit." Their treatment for tuberculosis was therefore already provided for through the schemes of local health authorities under the general control of the Ministry of Health. Pensioners, however, have not only been given the full advantage of the existing tuberculosis schemes of local authorities, but in several directions those schemes have been supplemented by the Ministry itself. For example:—

(1) *Treatment for Officers and Nurses.*—Arrangements have been made with sanatoriums at Matlock, Woking, Midhurst, and elsewhere for special accommodation. At Matlock and Nayland sanatoriums provision has been made for vocational training.

(2) *Surgical Tuberculosis.*—The facilities for institutional treatment for adult surgical tuberculosis under local tuberculosis schemes are somewhat limited. The Ministry has, therefore, concentrated many such cases at its own hospital at Orpington where facilities for light treatment have recently been installed and the services of specialist surgeons secured.

(3) *Observation.*—To secure accuracy in the diagnosis of tuberculosis, wards have been set apart in Ministry hospitals throughout the country for the purpose of observation by specialist Ministry medical officers, using the latest methods of diagnosis. Until recently a total of some 200 beds were so occupied, but the need for such observation is now rapidly

TABLE IIA.

TREATMENT STATISTICS, 1918–1925.

1. *Under Treatment (Other Ranks).*

Date.		*Wounds and injuries.*		*Neurasthenia.*		*Paraplegic.*		*Epilepsy.*		*Tuberculosis.*				*Others.*									
On 3/1/18		4,583		424		136		133		1,011				5,680									
„ 31/3/19		23,716		2,932		326		540		6,622				28,417									
		Orthopædic.										*Convalescent.*		*General Medical and Surgical.*		*Tropical diseases.*		*Treatment and training.*		*Aural.*		*Ophthalmic.*	
„ 31/3/20	I.P.	3,796	32,363	2,497	5,810	231	480	308	865	5,002	15,137	2,040	2,040	9,331	54,381	722	7,027						
	O.P.	28,567		3,313		249		557		10,135		—		45,050		6,305							
„ 31/3/21	I.P.	7,025	28,605	2,951	9,926	260	491	597	1141	4,563	16,608	1,048	1,048	9,762	51,260	807	20,669	2329	2599				
	O.P.	21,580		6,975		231		544		12,045		—		41,498		19,862		270					
„ 31/3/22	I.P.	3,876	22,672	3,265	10,982	212	387	555	1114	3,025	12,019	748	748	8,223	39,806	740	15,646	3250	3251				
	O.P.	18,796		7,717		175		559		8,994		—		31,583		14,906		1					
„ 31/3/23	I.P.	4,610	18,447	5,531	7,126	184	288	502	896	4,887	14,387	196	196	3,459	16,181	316	4,675	3340	3353	135	3693	69	770
	O.P.	13,127		1,367		85		316		5,620		—		10,596		4,266		13		3517		695	
	H.T.	710		228		19		78		3,880		—		2,126		93		—		41		6	
„ 31/3/24	I.P.	3,067	12,234	2,216	5,539	172	237	442	658	2,416	9,991	80	80	3,060	12,090	264	2,156	3039	3039	135	3480	49	742
	O.P.	8,560		3,199		59		204		2,727		—		7,060		1,822		—		3328		689	
	H.T.	607		124		6		12		4,848		—		1,970		70		—		17		4	
„ 31/3/25	I.P.	2,422	9,305	2,449	4,676	255	312	387	600	2,061	8,845	50	50	2,565	10,457	178	1,221	467	467	92	3068	55	668
	O.P.	6,239		2,148		55		206		2,029		—		5,816		996		—		2964		605	
	H.T.	644		79		2		7		4,755		—		2,076		47		—		12		8	

2. *Discharges from Treatment (Other Ranks).*

		Wounds and injuries.												*Others.*									
Up to 3/1/18		4,231		603		29		18		1,889				4,327									
„ 31/3/19		26,174		3,580		306		721		8,969				29,734									
		Orthopædic.												*General Medical and Surgical.*									
Year ending: 31/3/20	I.P.	11,392	42,689	4,882	8,459	286	552	583	1064	10,731	17,116	9,428	9,428	33,588	90,988	1,932	6,106						
	O.P.	31,297		3,577		266		481		6,385		—		57,400		4,174							
Year ending: 31/3/21	I.P.	17,536	59,804	4,119	14,128	358	727	1051	2102	13,058	24,446	10,113	10,113	49,244	137,479	5,560	26,101	334	377				
	O.P.	42,268		10,009		369		1051		11,388		—		88,235		20,541		43					
Year ending: 31/3/22	I.P.	16,806	56,995	7,517	22,679	334	632	1192	2173	10,714	22,222	5,630	5,630	42,937	116,474	4,572	35,469	2847	3142				
	O.P.	40,189		15,162		298		981		11,508		—		73,537		30,897		295					
Year ending: 31/3/23	I.P.	25,434	78,996	6,508	21,203	262	539	1273	2541	10,094	27,460	3,267	3,267	21,020	72,348	2,843	19,563	3989	3989	1239	9492	632	2600
	O.P.	45,033		12,485		205		911		10,313		—		32,969		15,055		—		8033		1828	
	H.T.	8,529		2,210		72		357		7,053		—		18,359		1,665		—		220		140	
Year ending: 31/3/24	I.P.	19,128	57,521	5,381	15,220	188	325	1053	1852	7,701	20,993	1,160	1,160	14,831	28,185	1,824	9,870	1144	1144	986	5818	490	2148
	O.P.	32,615		8,663		104		561		7,081		—		1,852		7,217		—		4708		1575	
	H.T.	5,778		1,176		33		238		6,211		—		11,502		829		—		124		83	
Year ending: 31/3/25	I.P.	13,910	41,804	4,838	12,651	128	198	825	1166	6,486	16,382	571	571	13,090	37,179	1,494	6,089	3666	3666	935	4945	403	1809
	O.P.	22,623		6,619		52		240		3,796		—		12,969		3,776		—		3885		1327	
	H.T.	5,271		1,194		18		101		6,100		—		11,120		819		—		125		79	

Note.—Insanity (about 6000 at each period) and officers and nurses *not* included.

I.P. = In-patient. O.P. = Out-patient. H.T. = Home treatment. Prior to 31/3/22 Aural and Ophthalmic cases were included in "General Medical and Surgical."

decreasing. The work done has been unique in scale and comprehensiveness. A full account of it has been already published in THE LANCET, 1924, i., 1105.

(4) *Treatment Abroad.*—Certain institutions in Switzerland and on the Riviera have been inspected and approved for the treatment of tuberculosis when treatment abroad was deemed essential.

(5) *Special Forms of Treatment.*—(*a*) *Dreyer treatment* was given by arrangement with the Medical Research Council to surgical tuberculosis cases at Orpington and to pulmonary cases at Woking Sanatorium. (*b*) *Light.* The recent advances in treatment by artificial light are being fully utilised and developed.

(6) *Vocational Training.*—In conjunction with the Ministry of Health extensive provision was made for vocational training, and approximately 700 pensioners have completed satisfactorily their courses in various trades and occupations.

(7) *Special diet, overcoats,* and *blankets* have been supplied to cases for which they were specially requisite.

As regards tuberculosis the Ministry has thus fully carried out its responsibility to secure for the pensioner the full use of existing treatment facilities and to supplement them as and when required.

2. *Mental Diseases.*

Under the Lunacy Acts the responsibility for the care of the certified insane rests with local authorities, with the general supervision of the Board of Control. Early in its history the Ministry made arrangements whereby any stigma of pauperism attachable to the admission of a pensioner to a county or borough asylum was removed, and "Service patients," including all those whose mental disease could be associated with the war, were given defined privileges.

The next step was to establish further the liaison with the Board of Control and to secure the regular examination by Ministry specialists of pensioners in mental hospitals. Specialist medical inspectors were appointed to conduct a systematic visitation. The discharged man pensioned for mental disease is thus very carefully looked after and his interests secured. The establishment of mental hospitals for pensioners alone was fully considered, and, although it was not found practicable to make general provision of such hospitals, arrangements have been made with two institutions—the Old Manor, Salisbury, in the south, and Storthes Hall, West Riding, in the north—for the allocation of separate wings (150 and 200 beds respectively) for the exclusive use of "Service patients." The cases selected for admission thereto are those whose mental state allows them to appreciate the advantages of such special accommodation and the scheme has proved very successful. The Storthes Hall wing is under direct Ministry control.

Arrangements have also been made for the accommodation in Ministry hospitals of suitable cases discharged "on trial" from asylums so that the difficulties inherent in sudden change from asylum to ordinary civil life might be minimised.

3. *Neurasthenia.*

The word "neurasthenia" has been widely used to include a large variety of conditions ranging from genuine "shell-shock" ("commotio cerebri") to functional neurosis ("emotio cerebri") and including the minor degrees of neurosis associated with the ordinary ailments and difficulties of life. Cases of true mental deficiency and inherent inability to withstand ordinary stress and strain have also been grouped in this miscellaneous class. The sorting out of this conglomeration of disabilities required time and patience. Moreover, the more acute forms of war neurosis presented novelties of aspects for which at the outset the best form of treatment was a matter of argument and indeed largely empirical. When from the mass provisionally diagnosed as "neurasthenics" those had been weeded out in whom the neurosis was merely superimposed on some definite organic condition such as gunshot wounds, heart disease, or tuberculosis, there yet remained a very large number, broadly divisible as follows:—

(1) *Borderline Cases Verging on Certifiable Insanity.*—It was the aim of the Ministry to avoid certification as long as possible. No adequate provision for the treatment of such cases existed, though it was foreshadowed at Maudsley Hospital, and the Ministry therefore established special institutions of its own, both for officers and other ranks, where every method could be employed to cure the case, or, if cure was impossible, to postpone certification until it could by no means be avoided. Considerable success attended these efforts and the problem of the borderline case is now much less acute. To-day the hospital devoted to such cases is *Ewell* (400 beds), which now serves as the centre to which all such cases in "other ranks" are deflected. For officers, *Latchmere* (58 beds) serves a similar purpose.

(2) *True Neurasthenics.*—Numerous special hospitals and clinics were established to treat these cases, and arrangements were made for the training of doctors in the technique of psychotherapy. Psychotherapy by itself, however, in a considerable number of cases did not produce more than "alleviation," and the reputedly cured neurasthenic was very apt to relapse seriously so soon as he had to face for himself the full stress of life, especially when associated with unemployment or domestic worries. Neurasthenia, moreover, was a too easy refuge for the work-shy and pessimist. Substantial progress in diminishing the numbers of neurasthenics requiring treatment was attained by combining definite *occupational treatment* with psychotherapy. Workshops, with workshop officers, were attached to the neurasthenia hospitals and efforts were made to secure suitable employment for the pensioner on discharge. Prolonged clinic treatment was discouraged and the chronic case was brought into hospital for occupational treatment. These measures not only produced cures, but also enabled the specialists to identify more accurately the different types of neurasthenics and to separate out the mentally defective, the epileptic, and the man who was making the most of his disability. Specialist medical inspectors constantly visited the hospitals and aided in this classification.

The number of true neurasthenics still under treatment is now less, as is also the number of hospitals, beds, and clinics allocated to them There still remains, however, a need for further "vetting' and final decision as to future treatment and pension in many cases.

(3) *Mental Defectives.*—The frequency of this type became very obvious in the progress of the eliminative processes described above. These cases failed to react effectively to any form of treatment and deteriorated on return to the unsheltered conditions of home life. Many caused and got into trouble by their generally irresponsible conduct and habits. Others, whilst proving tractable patients in an institution, had not the stamina to maintain them in home conditions. In short, it became apparent that the only adequate treatment was the provision of shelter from the stress of life, a shelter necessary both in the man's interests and in those of his family and associates.

In 1923 Saltash, no longer needed as a convalescent centre, was adapted as an institution for the reception of cases from groups (2) and (3) above, in whom experience had shown to exist a complete incapacity to maintain even relative normality save under institutional conditions. Occupational treatment was fully developed; and the scheme proved so successful and necessary that in 1924 Harrowby Camp, previously a general neurasthenia hospital, was transformed to the Saltash type. A total of 650 beds is now available for this type of case. This provision by the Ministry is unique and, indeed, epoch-making as a practical effort to deal with a problem which is a national one and not solely one affecting pensioners. The time is now approaching when, apart from institutions of the borderline and Saltash types, there will be no need of special neurasthenia hospitals, adequate accommodation being obtainable by the use of separate wards in general hospitals. The need for neurological clinics is also less, but there will remain for a long time the necessity for a limited number of such clinics.

A large proportion of neurasthenics have been eventually disposed of by transfer to treatment and training centres, such procedure consolidating the improvement produced by occupational treatment in hospital. The in-patient figures for past treatment indicate that there have been over 50,000 separate admissions for courses of in-patient treatment for "neurasthenia."

4. *Epilepsy.*

A primary difficulty has been accurate diagnosis. Many cases so labelled proved to be, in fact, suffering from other organic diseases or to be truly functional. Maghull Hospital (300 beds) has been largely devoted to the precise diagnosis of "epileptics," and following this appropriate treatment has been given. The

Ministry has, however, had no institution of its own for colony treatment of epilepsy, and the demands on existing colonies—e.g., Lingfield and Chalfont—have been so heavy as until recently to entail long waiting lists. The task of diagnosis has, however, now been largely concluded, and Maghull is being used to a greater extent for prolonged treatment as well as observation.

5. *Paraplegics.*

These unfortunate men require institutional treatment of a type as home-like as possible, and for this purpose various small institutions have been used, where every comfort is provided for the pensioner fated, probably, to spend the rest of his days in a paralysed condition. With the opening last year of the Star and Garter Hospital, Richmond, additional accommodation has become available.

6. *Organic Nerve Diseases.*

This term is used to include traumatic injuries of nerves as well as general nerve degenerations. Mention must be made of the surgical skill which has been expended on the suture of nerves followed by re-educative exercises and massage, in many cases with gratifying success.

7. *Facial Wounds.*

Perhaps in no department of war and post-war surgery have such amazing results been obtained as in the treatment of facial injuries. Men with jaws and face smashed to shapeless pulp have been re-created in human form. Infinite patience, the most delicate technique, and sheer genius for this special task were happily at the disposal of the Ministry in the services of its facial surgeons, and the special hospital at Sidcup is world-renowned for the work done under its auspices. Happily the need for such work is now slight, and the Sidcup hospital has changed in function. Since March, 1920, however, 2944 facial operations have been performed there, of which 1156 were specialised jaw and dental work. The value and wonder of this work cannot be expressed in words. It can only be fully appreciated by those who have actually seen the miracle performed, the building up of a human countenance out of a repulsive mass of flesh. For the patients themselves, doomed as they thought to mere existence, shunning the ways of men, their distorted lips and eyes unable to express their human emotions, it has meant rescue from a living death.

8. *Diabetes.*

In 1923 the value of insulin for this disease became well established. The Ministry at once arranged for its provision at Orpington to all suitable cases. In the promptitude and extent to which insulin was used the Ministry was well in the forefront. Between June, 1923, and April, 1925, 215 cases (30 officers, 185 other ranks) diagnosed diabetes were sent to Orpington, and 178 given insulin treatment; 23 were found to be suffering from a less severe though analogous condition, but for which insulin was unsuitable. In a large number of cases definite success has followed the treatment, symptoms have disappeared, and the pre-diabetic body-weight has been regained. Each man, before discharge, has been carefully educated in the technique of continuing insulin treatment at home under the care of his doctor and the doctor fully informed of the treatment already given.

In this, as in other directions, the Ministry medical services have secured promptly for the pensioner the full value of the latest medical research. A further example may be cited in the speedy and universal use by the Ministry of the recently developed technique in the estimation of nephritis.

9. *Tropical Diseases.*

In its early history the Ministry's medical services had to deal with very large numbers of malarias, dysenteries, and other tropical diseases. Malaria was treated by intensive methods and is now rarely met with in active form. Pioneer and successful work was done in the pathology and treatment of dysentery, though there is still need for allocation of about 140 beds in Ministry hospitals for the treatment of intractable chronic dysenterics.

Startling success followed the introduction of the treatment of bilharziasis by antimony tartrate. As far as war pensioners are concerned bilharziasis has been extinguished. Pensioners of former wars have also been treated with equal success. The present need for tropical disease treatment is now very slight—a testimony to the efficiency employed in dealing with them.

10. *Wounds and Injuries.*

Enormous numbers of these required treatment, and special surgical hospitals were required on an extensive scale.

Operative procedure has been supplemented by *massage* and *electrical treatment*, a special Ministry *massage service* being established in January, 1920, and speedily numbering 500 members. Specialised *gymnastic treatment* has been given and the X rays utilised in all their latest developments.

The treatment of *penetrating wounds of the skull and brain*, a branch of surgery peculiarly the province of the Ministry, has been greatly advanced and many cases have, through specialised operations, regained a surprising degree of physical and mental fitness.

Gunshot wounds of the chest, often with foreign bodies retained in the lung, have also been treated with surprising success. At Shepherd's Bush Hospital some 250 cases have been operated on with uniformly satisfactory results, and not a single fatality.

The serious and often novel disabling results of the persistent rain of high explosives during the war have thus been largely counteracted, and wounds of head and chest which in pre-war days would have been considered beyond surgical skill have been repaired and remedied to an unlooked-for extent. Certain wounds, apparently soundly healed, but with bullets or other foreign bodies unremoved, have, however, from time to time suddenly "flared" up into serious activity necessitating further surgical interference, sometimes to an extensive degree. The need for surgical beds has thus not diminished so speedily as had reasonably been expected, and there also still remains a considerable number of chronic surgical conditions of a type very resistant to treatment.

Linked closely with the primary treatment of wounds has been treatment combined with training in trades practicable for disabled men, and a large proportion of the wounded have been passed through the treatment and training centres or referred direct to the training centres of the Ministry of Labour.

The extent of the work of a special surgical hospital is shown in the fact that Shepherd's Bush Hospital from August 1st, 1919, to its closure in March, 1925, dealt with 22,641 other ranks and 771 officers as in-patients.

11. *Limbs and Appliances.*

"Go to the wars would you," says Boult in Shakespeare's *Pericles*, "where a man may serve seven years for the loss of a leg, and have not money enough in the end to buy him a wooden one?" The Great War limbless pensioner has been given not a wooden leg but the latest product of the artificial limb-maker's art and a duplicate as well. Witness these figures as to limbs and appliances (Table III.).

TABLE III.

Year ending March 31st.	Limbs supplied.		Repairs to limbs.
	Legs.	Arms.	
1920	15,621	3,456	12,556
1921	15,391	4,746	19,901
1922	9,469	3,937	26,616
1923	7,589	1,230	33,459
1924	9,257	1,291	31,438
1925	11,102	1,289	31,013

At the end of March, 1925, the Ministry was responsible for artificial limbs in 37,178 pensioners, of whom 1782 were officers. In the year ending March 31st, 1925, 18,470 pairs of *surgical boots* were issued, 1180 being first issues, and 18,817 pairs were repaired. Other *surgical appliances*—e.g., belts, trusses, spinal supports—were supplied in 16,053 cases, 3070 being first issues. *Artificial eyes* were fitted to 3880 pensioners and *spectacles* to 733, in many cases special types of eye or spectacle being necessary. Up to March 31st, 1925, 4878 *hand propelled tricycles* and *invalid chairs* had been issued.

The Ministry, by constant conference and experiment, has given the most careful and specialised attention to discovering a fully effective form of artificial limb and has provided the improved types of light metal limbs. Most leg amputations can now be fitted with an artificial limb weighing not more than 4–5 lb. in place of a previous average of about 7 lb. The mechanical facilities developed in the artificial arms supplied are surprisingly effective. Efficient arrangements have been made for the renewal and repair of artificial limbs, and limb-fitting centres have been so established that such renewal or repair is assured with a minimum of inconvenience to the pensioner.

12. *Cardiac Diseases.*

Here again precise diagnosis was urgently necessary to separate out cases with definite structural lesions from those with functional, non-structural (often neurasthenic) conditions. Eminent cardiac consultants gave their assistance in this process. The treatment of both types has been made more effective, especially by means of graduated physical exercises, and the majority of cardiac cases still under treatment are of the chronic and advanced class for which alleviation rather than remedy is alone possible.

13. *Other Special Conditions.*

Mention must be made of the extensive treatment facilities, in-patient and out-patient, provided for *eye and ear diseases*. Numerous courses of lip-reading for the deaf have been given, and for the blind a close association has been maintained with St. Dunstan's.

Dental defects attributable to war service or closely correlated with pensioned disabilities, such as gastritis and rheumatoid arthritis, have been extensively remedied. Five whole-time specialist dentists have been appointed to coördinate and supervise the work carried out by a large panel of practising dentists. By this supervision great economy and efficiency have been attained.

Convalescent homes have been utilised as required. For *rheumatic* conditions spa treatment has been fully employed in suitable cases.

14. *General Medical Disabilities.*

The more specialised diseases having been appropriately dealt with, there yet remains a medley of miscellaneous disabilities of a chronic or recurrent character, such as bronchitis, asthma, myalgia, and rheumatism, for which definite facilities for more than home treatment are still required at hospitals of a general type, at general clinics, and out-patient departments. These conditions by their nature will continue to require special attention, the more so through their tendency slowly to deteriorate from year to year, or to develop sequelæ demanding more urgent treatment.

15. *Treatment Combined with Training.*

The extensive provision of this has been already mentioned in reference to neurasthenia, tuberculosis, and surgical disabilities. The *object* was to meet the need of pensioners whose disabilities prevented them resuming their pre-war employment, and who required training in a new occupation concurrently with the treatment of their disabilities. Close liaison has been maintained with the Ministry of Labour. At the present time the work is nearly finished, only one Ministry centre (Rednal, Birmingham) remaining open. In the past five years, however, treatment and training has been provided to about 12,000 pensioners, and in addition about 5000 have been transferred direct to the training schemes of the Ministry of Labour. The courses provided have included engineering, carpentry and joinery, french polishing, upholstery, painting and decorating, tailoring, watch and clock repairing, market gardening, commercial subjects, &c. The results in general have been good, but the persistent congestion of the labour market has not made it easy for the disabled man, however well trained, to compete with the physically fit civilian. At one time 3300 beds were available in a total of five Ministry centres.

16. *Laboratory Investigations.*

Modern diagnosis and treatment rest on accurate pathological and bacteriological investigations. Pathological laboratories were established at various centres, but this work has been increasingly concentrated at the Ministry Laboratory in London (recently at Cheltenham-terrace, now at Bulinga-street). This central laboratory is as finely equipped as any in the country, and has performed an amount of work which measured by figures is enormous and in practical value inestimable. The medical staff there has kept in touch with all the latest research. Improvements in technique have been introduced and advances in knowledge made which entitle the Ministry to claim that its pathological services are second to none.

17. *Medical Stores and Supplies to Hospitals.*

Efficiency and economy have followed the conduct of these essential services by a special branch established in 1919.

18. *Nursing.*

With the development of Ministry hospitals a Ministry nursing service became necessary and was instituted in June, 1919, the staff at the end of that year numbering 28 *matrons*, 212 charge sisters, 208 nursing sisters, and 214 assistant nurses. The present staff is 30 matrons, 12 assistant matrons, 216 charge sisters, 206 nursing sisters, and 70 assistant nurses.

19. *Miscellaneous.*

Many accessory items in the general work deserve mention. The introduction and development of *record cards*, whereby a continuous account of the pensioner's medical history is made available for all directly concerned with his treatment or boarding; the grants of *constant attendance allowance* for blinded and other pensioners so seriously disabled as to be unable themselves to perform without aid the common functions of life; the arrangements with the *colonies* and with *consuls* in foreign countries for the provision of boarding and treatment facilities abroad as nearly equivalent as possible to those provided in this country.

20. *Officers and nurses* have been dealt with broadly on the same lines as "other ranks" except that separate institutional accommodation has been provided for them. A considerable number of officers' hospitals or officers' wards have thus been necessary, but at the present time only two Ministry hospitals (Rotherfield Court and Latchmere), both for neurasthenics, are solely devoted to officers, and one (The Spring, Hanwell) to nurses. As few officers come within the provisions of the Insurance Act the arrangements for their home treatment have been a direct concern of the Ministry involving much personal communication with doctors and officers. At the present time over 3000 officers and about 330 nurses are in receipt of treatment from the Ministry. The total other ranks now under treatment is approximately 47,000.

CONCLUSION.

Any condensed account of the work and scope of medical services inevitably resembles a catalogue embellished with statistics. A recital of facts and figures can convey but a general impression of the work done and that yet to be accomplished. The war with its aftermath of sick and wounded was a direct challenge to medical science. The challenge was gladly taken up, and under the ægis of the Ministry of Pensions the clinicians, surgeons, and administrators of the profession have united to exercise and develop to the utmost the resources of their art. The victory has not rested with, but has been wrested from, disease.

I am indebted to Major the Rt. Hon. G. C. Tryon, M.P., Minister of Pensions, for permission to publish this article.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.[*]

(Continued from p. 360.)

CHARTERED SOCIETY OF MASSAGE AND MEDICAL GYMNASTICS.

(App. LXVII. and Q. 18437–18518.)

THIS Society submitted proposals for the inclusion of massage and electrical treatment as an additional benefit to be provided by approved societies, when prescribed by a medical practitioner, for persons insured under the National Health Insurance Scheme. Evidence was given by Sir Cooper Perry and Dr. James Mennell.

The rules of the Society provide that its members are not to undertake any cases of massage except under the direction of a registered medical practitioner; not to advertise except in recognised medical and nursing papers; not to sell goods to patients in a professional capacity, and not to accept secret commissions on the sale of goods. Over 5400 masseuses and masseurs are now registered with the Society, and the majority are qualified to administer, under medical directions, the treatments by massage, remedial exercises, and medical electricity now so generally ordered for a variety of medical and surgical conditions.

The certificates granted by the Society are recognised by Government departments and the medical profession generally. Written evidence of the value of the treatment, and the increasing recognition of it, was submitted from Mr. R. C. Elmslie, orthopædic surgeon to St. Bartholomew's Hospital, and from Sir Robert Jones, who said :—

> There are many conditions of which it must be said that physical treatment offers, if not the only hope of cure, at any rate, the only hope of saving prolonged and tedious convalescence. . . . It is not infrequently possible by the use of physical treatment to reduce the duration of disability by anything from a half to two-thirds, while at the same time rendering the liability to recurrence comparatively small.

The witnesses estimated that 2 per cent. of the insured population would require physical treatment annually—that is, 300,000—and the average cost per patient would be £5 10s. This would mean a total yearly expenditure of £1,650,000, or rather more than 2s. per head of the insured population.

Massage treatment would probably best be administered as part of a hospital service. There is, in any case, probably a higher percentage of insured persons receiving massage treatment in hospitals than at home from their panel doctors, mainly because the accident cases usually go to hospital. There is, however, more medical than fracture work amongst hospital cases, roughly two-thirds medical and one-third surgical.

Sir Cooper Perry agreed with Sir Humphry Rolleston's suggestion that there might be a progressive increase in the use of massage amongst the general population, so that the 2 per cent. estimate might prove to be a considerable underestimate in a few years' time.

IVORY CROSS.

(App. LXVIII. and Q. 18519–18657.)

The evidence on behalf of the Council of the Ivory Cross was submitted by Mr. Charles Davis, Mr. H. D. Grant, Mr. John Hale, and Miss A. E. Fletcher.

This Society began by providing dental treatment for soldiers and sailors, and then went on to pensions, but lately have been providing for the population at large. Their income varies from £5000 to £27,000 a year, and it is their practice to require patients who can afford to pay something towards the cost of treatment to do so, as they appreciate it so much more. About 25 per cent. get free treatment; about 6 per cent. give from 6*d.* to 10*s.*; about 10 per cent. give £1; about 30 per cent. give £2; and about 8½ per cent. give £3.

The witnesses said that they objected very strongly to clinics, and they try to provide that in the service, which is always given at a private surgery, there is no distinction between patients.

> (Q. 18643.) Taking your organisation, is there not a taint of charity about it?—There is in the name only, but not in the way the patient is treated. That is the whole secret of the Ivory Cross. The patient comes to me by appointment made by me to see me. He or she comes to my house. The maid who opens the door does not know that she is not a private patient. She enters my surgery. My nurse-secretary tells me who she is and produces her chart, and that is the first time that it is known that she is from the Ivory Cross. There is nobody outside my surgery knows, and she is treated in every way as a private patient. There is no question of charity thrust at her or thrown at her in any way.

The Society is in favour of dental benefit being made a statutory benefit available for all insured persons, if it can be done without creating a state of affairs disadvantageous to the profession. Payment, it was considered, must be on a case basis and not a capitation basis, and it was recognised that there would have to be a scaling down of bills as in the system of payment of panel doctors in force in Manchester and Salford.

SCOTTISH PANEL CHEMISTS.

(App. LXIX. and Q. 18658–18802.)

The General Council of Panel Chemists, Scotland, whose secretary, Mr. J. Rutherford Hill, gave evidence, is of opinion that medical benefit administration through insurance committees and under the panel system should be continued.

> Prescribing by panel practitioners in Scotland, as a whole is on a very high level, and the relationship between practitioners and pharmacists is one of mutual respect and confidence and helpful coöperation. The matters referred to as needing amendment are comparatively few and are mentioned with a view to their elimination, so that a service already on the whole satisfactory may be brought still nearer to the ultimate ideal. These remarks apply equally to the pharmaceutical service.

There is a difference in the way in which the drug tariff is prepared in Scotland as compared with England and Wales. In Scotland the chemist has a commercial profit on the drug supplied and a professional fee for dispensing it. In England the chemist gets the net wholesale cost of the drug plus a flat rate for establishment charges, plus a dispensing fee. Notwithstanding the lower tariff charge for each item in England the cost per head is greater than in Scotland. As an explanation of this Mr. Hill suggested :—

> (Q. 18729.) As a rule the medicines are more concentrated. The dosage is small, and where a bottle of medicine

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[*] References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1369.

would require to be repeated probably three or four times in England, one bottle would do for that patient under the Scottish system.

Mr. Hill said that from the beginning there has in practice been ample freedom in the choice of medicines, and it has never been suggested or admitted for a moment that the cost of medical treatment should be allowed to debar any sick insured person from receiving first-class treatment or the use in ample amount of any drug however costly it might be. On this the witness was asked:—

(Q. 18678.) One sometimes hears it said that it is true in theory but not in practice. What do you say to that? That while a doctor may in theory prescribe anything he likes, in actual practice he is constantly being badgered about the expense of drugs, and told to keep it down?—That is, I would say, a misunderstanding in some quarters. It is not true so far as my experience goes. No doctor has ever been challenged on the cost of his drugs as a question by itself. . . . It is discovered sometimes that a practitioner in a district in treating his patients spends three or four times as much money as his neighbour practising in the same district among the same class of people, and that is inquired into.

As regards the arrangements for securing proper economy it was thought that the responsibility for initiating action should be vested in some competent central authority, and the invidious onus of so doing thus removed from the local committee.

Another suggestion put forward was that there should be prohibited the prescribing under a proprietary name of medicines which are well-known definite chemical substances, and the prescribing of secret remedies the composition of which is not adequately disclosed.

Generally speaking, it would be a distinct advantage if the prescribing of proprietary medicines was discouraged and sanctioned only in the case of some new medicament which is a new remedy and for which there is no equivalent non-monopoly substitute.

PRACTICE AMONG THE HIGHLAND CROFTERS.

(App. LXX. and Q. 18803–19171.)

Dr. Alexander Asher, who is a general practitioner in Thurso, Caithness, and in a wide surrounding area, gave an account of his practice, which includes a large number of crofters, small farmers, and fishermen. He said that he sent his operation cases to Inverness and Edinburgh, and that urgent cases were usually admitted at once; his patients generally preferred to go to Edinburgh. Notwithstanding his wide and scattered district, he did not do any dispensing himself excepting in emergencies; the prescriptions were generally taken to Thurso by carrier, &c., and dispensed there.

Dr. Asher thought that compulsory health insurance for crofters and share-fishermen, who are at present outside the Act, would prove a great boon. He suggested that local administration of money insurance benefits in the Highlands and Islands should be in the hands of the clerk to the parish council, and that a county rate not exceeding 2*d.* in the £ should be raised for the purpose of providing hospital, nursing, and specialist services.

NATIONAL FARMERS' UNION OF SCOTLAND.

(App. LXXI. and Q. 19172–19300.)

The evidence in this case was given by Mr. J. C. Henderson, whose principal contention was that the agricultural industry had been paying an undue share of the burden of National Health Insurance, because agricultural work was a healthy occupation, as shown by the large surplus of the Rural Workers' Friendly Society. It was the contention of the Farmers' Union that contributions should be levied on the different industries according to their claims experience, as in ordinary insurance practice, and the greater part of the examination of the witness was devoted, without apparently much success, to trying to get him to recognise that his proposal would involve insuperable administrative difficulties.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

The Irish Free State and the Medical Register.

THE medical profession of the Irish Free State has been taken aback by the sudden announcement made last week by the Executive Council that the Government had decided to establish an independent Medical Register for the State. Last April the Government asked for the views of the medical profession through its several organisations and corporations, and the medical faculties of the universities. The unanimous opinion of the representatives of these bodies was in favour of maintaining the present system of registration in common with Great Britain. Mr. James Burke, Minister of Local Government and Public Health, whose department dealt with the question, expressed his agreement with the opinion of the medical profession, as put before him, and stated that it was the intention of the Government to pass into law a measure establishing the existent system on a permanent basis. He invited the medical representatives to nominate a small committee with whom he could consult from time to time as occasion might arise. No further consultation took place, and last week this committee was summoned, not to consult with the Minister, but to hear the announcement that the Executive Council had decided to establish a Medical Register for the Free State.

If the decision to establish a separate Register for the Free State is carried out, it can hardly fail to affect the medical schools of Ireland adversely, at any rate for a time. What rights or privileges medical men educated in Ireland may in future be given as regards admission to the General Register must remain uncertain for the present. More than half the graduates and licentiates of the Irish schools practise outside the Free State, and until new arrangements are complete students are unlikely to enter the Irish schools; while they cannot ascertain what may be their future prospects, they will go where they can gain access to the wider Register. In fact, the immediate result will almost certainly be that Irish medical students will seek their education outside the Free State. Unfortunately, the medical schools of the Free State, in Dublin, Cork, and Galway, possess very little endowment, and are almost entirely dependent on the fees of their pupils for ability to carry on. Even a temporary absence of students will mean a severe crisis, and it is hardly too much to say that extinction may follow for some of them. The position is a serious one, and requires very careful handling both on the part of the Free State Government and of those who will have the responsibility of presenting the position from the standpoint of the medical profession. It is to be hoped that the decision of the Executive Council is not irrevocable.

Free State Army Medical Service.

A revision has been made in the scale of salaries of the medical officers of the Irish Free State Army Medical Service. The positions of Major-General and chief sanitary officer, which carried salaries of £1500 and £1250 a year respectively, have been abolished, the highest rank now being that of Colonel, with a salary of £1400 a year. The other ranks in future will be Lieutenant, Captain, and Commandant. The initial salaries in each rank will be 12*s.* a day, £1 0*s.* a day, and £1 17*s.* a day, with periodic increase of salary, rising after five years' service to maxima in each rank of £1 5*s.*, £1 15*s.*, and £2 7*s.*, respectively. As compared with the previous scale the initial salaries are lower, but certain officers after five years' service will receive higher pay than under the old scale.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

Medical Qualification in Transylvania: a Harsh Position.

THE peace of Trianon has created a curious situation for our medical students. Nominally, before dissolution of the Empire, Hungary had two universities with medical faculties, one at Budapest, the capital, and the other at Kolozsvár, the capital of Transylvania. While the Budapest University had from 4000 to 4500 medical students, the Kolozsvár University modestly provided for between 400 and 500 students. This was due to the fact that the Budapest medical faculty had the best possible equipment, its members in the years immediately preceding the outbreak of the war having been sent to Vienna, Berlin, Paris, and London to study medical institutions and to copy what was best. The Government did not spare money, and the clinics of the Budapest University inspire the greatest enthusiasm among those who see them. Foreign visitors to the International Medical Congress of 1909 held in Budapest retain a vivid memory of the Budapest clinics; in fact, numerous English and American physicians later came to Budapest for post-graduate medical study. Even Transylvanian students preferred to go to Budapest, not excepting students from Kolozsvár itself. These Transylvanian students, having begun their studies in Budapest, finished in Budapest when Transylvania was torn away from Hungary. When the Roumanian Government took over the Kolozsvár University they employed Roumanian professors and the language of the University was changed to Roumanian, which was a foreign tongue and is still almost foreign to most of the Transylvanian students. As Transylvania is a large territory the number of medical students who were nearing the completion of their studies in Hungary amounted to about 1000. These students, not speaking the Roumanian language, preferred to finish their studies in Budapest, Szeged, Pécs, and Debretzen (the four universities of Hungary) and pass the final examination in the language with which they were familiar. However, when they received their diploma in Budapest or in one of the other three universities, and came home to Transylvania, they received the surprising news that they were not allowed to practise in their own land with Hungarian diplomas unless they passed the final examination in Roumanian. This entailed new work for the students, and it meant at least a year's loss to them. This regulation hurt them the more in that the whole administration of Transylvania remains at present as it was under Hungarian rule.

Salzer Treatment of Stricture of Œsophagus.

Prof. János Bokay, of the Pædiatric Clinic of Budapest University, has made experiments with the Salzer method of treatment for cases of caustic poisoning followed by stricture of the œsophagus. Swallowing potassium hydroxide is a frequent accident in Hungary. Owing to the great economic hardships the wives, even in the middle classes, are now forced to work in offices, millineries, and such like places, leaving the supervision of their children in the hands of the oldest child or of neighbours. Such families live in one room, which, of course, serves as the kitchen, and children have access to bottles containing the alkali. The Salzer method of treatment consists in applying the No. 30 Bass sound, which is a heavy œsophageal sound filled with small shot and soaked in warm water to make it flexible. The treatment is begun from the third to the sixth day following the accident. The sound is left in the œsophagus for half an hour and is reapplied every three or four days for several weeks. While Salzer published accounts of 34 cases thus treated, Prof. Bokay has reported 122. In 110 of these cases no strictures developed. The results were less satisfactory in five of his cases because the treatment could not be applied regularly. There were seven fatalities; in three death was due to perforation of the œsophagus followed by mediastinitis, and in four death was due to the poison itself. Prof. Bokay strongly advises the use of this method of treatment for adults as well as children.

Large Doses of Iron in Pernicious Anæmia.

Dr. Rausch, of the Third University Clinic, Budapest, has put the Lichtenstein, Lindberg, and Barkan method of treating pernicious anæmia to the test. These workers recently recommended for anæmia doses of iron ten times as large as those in general use up to the present. They have obtained good results without any gastric troubles worth mentioning. Following their example Dr. Rausch gave reduced iron in daily doses of ½ g., to be taken in wafers, always before meals, so that any particles of iron possibly adhering to the teeth might be removed by subsequent mastication. In cases of pernicious anæmia in which other remedies had failed he tried on the first and second day 0·5 g. ferri redacti, twice daily, then for two days 0·5 g. four times daily, and then for two days or more 0·5 g. six times daily. No injuries to stomach or intestines have been observed following this therapy. Decided improvement was noted in two out of five cases and a transient improvement in two cases. This method certainly deserves a trial, as it evidently exercises a strongly stimulating effect on the blood-forming constituents of the bone-marrow in cases which are still capable of improvement.

Insurance Doctors' Fees.

The medical advisers of life insurance companies have started a movement here to induce the insurance companies to pay medical fees in proportion to the depreciation of the currency from its normal rate of exchange. The fees at present are much less than formerly. The lowest fee for an insurance certificate in pre-war times was 10 crowns (8*s.* 4*d.*); the fee at present does not amount to 5*s.* As the ratio of the face-value of the policy to the premium is the same that it was in pre-war days, the medical advisers insist on being paid on the same basis. Physicians are ready to refuse medical examinations for insurance companies if the latter are obdurate.

Appeal for Legislation to Regulate Medical Advertising.

Prominent members of the medical faculty have appealed to the authorities to amend the law regulating advertising, and provide that the editors of newspapers, journals, and other publications shall be held responsible for all advertisements or other matters published referring to the practice of medicine or dealing with secret remedies. Advertisements should be held to be of a secret character when they relate to the treatment of any disease or affection without medical confirmation, where the testimonials are not signed by physicians, and where the declarations of treatment are simply guaranteed by laymen or groups of laymen. Penalties, it is urged, should be provided for infractions of these rules.

WIGAN INFIRMARY X RAY DEPARTMENT.—The board of management of the Wigan Infirmary have decided to proceed with the erection of a new X ray department and with the necessary equipment for artificial sunlight treatment. The cost of the building and equipment will be about £9000.

MEMORIAL TO DR. MARY STURGE.—The Medical Women's Federation, of which the late Dr. Mary Darby Sturge was president from 1920 to 1922, has issued an appeal for subscriptions to a memorial fund. Dr. Sturge, who died in March last at the age of 62, was honorary physician to the Birmingham and Midland Hospital for Women and joint author with Sir Victor Horsley of "Alcohol and the Human Body." The money which is to be raised will be presented to the Taylor Memorial Home of Rest for Women at Birmingham for the dedication or endowment of a bed. Dr. Sturge was one of the founders of the home, and just before her death she inaugurated a scheme for the erection of new quarters for the nurses. These are now complete and the building has been named the "Dr. Mary Sturge Wing."

Public Health Services.

MENTAL HOSPITALS SERVICE.

Barnwood House Hospital for the Insane, near *Gloucester*, has accommodation for 150 patients, 15 of them voluntary boarders. The aim of the hospital is to admit recoverable patients and not to use the accommodation for chronic cases. The pathological work is at present dependent on Bristol University, but a pathologist has recently been appointed to the Gloucestershire Royal Infirmary and will undertake the work of this hospital. The medical superintendent calls the attention of his readers to the need for out-patient clinics for incipient cases. Such clinics do not appear to have been established in Gloucester yet. A renovation of the cowsheds of the institution has been undertaken in order to ensure milk-supply under the best conditions. The greater part of the report consists of statistical tables. A curious anomaly appears in the name of the institution, which avoids the obsolete "asylum" and yet retains the almost equally objectionable word "insane."

The Retreat, York.—The 128th annual report shows that the work there is being carried on at the previous high standard. The number of voluntary boarders reaches the high figure of two-thirds of the total inmates. The recovery-rate is 32 per cent. and the death-rate 10 per cent. The malarial treatment of general paralysis is being continued and one patient has been discharged apparently cured. Although there seems no doubt that this treatment profoundly modifies the course of the disorder, each case seems to be a law unto itself. The problem of occupation therapy is being tackled with ingenuity and perseverance, and a great deal has been done to increase output and introduce simple and attractive handicrafts. The universal sense of need for early treatment is being felt by the medical officers, and they are hoping to approach it on somewhat original lines. The report includes an outline of the history of the institution, photographs, particulars from the point of view of patient and nurse, and some useful statistical tables.

The Lady Chichester Hospital, Hove, was a pioneer among institutions for cases of early nervous breakdown. The work is being carried on to the limit of financial possibility and there is always a long waiting-list for the 40 available beds. By far the greater number of cases are able to return to normal life when they leave the hospital; a few go to convalescent homes or become daily out-patients, living outside but spending their day in the easier environment of the institution. All the usual methods of treatment are employed at discretion, particular stress being laid on fresh air and generous diet. Search is made for septic foci, and hydrotherapy and electrical treatment are applied to suitable cases. All kinds of "occupational therapy" are employed, handicrafts, gardening, housework, and work for the annual bazaar being the chief features. Old patients keep in touch by means of the "club night," a weekly entertainment or dance to which all old patients are welcomed. There is no doubt that the work carried on is invaluable for a certain class of patient, and there is scope for considerable extension of the work when funds are available.

Glamorgan County Mental Hospital, Bridgend, supports 1800 mental patients. There is a larger proportion than usual of the congenital class and of recurrences; indeed, the medical superintendent reckons that 70 per cent. of the patients under his care may reasonably be assumed to be beyond hope. The death-rate for the year was 8·4 per cent. The high incidence of tuberculosis and dysentery, partly due to the overcrowding of the premises, has been reduced. A consulting surgeon has been appointed and a local dentist attends when necessary. Every effort is made to interest the junior nursing staff in their work, and 27 have passed the junior examination for the certificate of the Medico-Psychological Institute, but the proportion of failures is very high. The new house, Glan Rhyd, for convalescent male patients on parole is proving very successful, and only eight cases have abused their parole during the year. The report includes notes by the three chaplains and full statistical tables.

The report of the *Staffordshire Mental Hospitals Board* includes the three institutions under the direction of that body. At the *Stafford Mental Hospital* over 1100 cases have been under treatment during the year, the continued steady increase making the question of additional accommodation an acute one. The death-rate has been 6·33 and the recovery-rate 20·33 per cent. among men and 37·69 per cent. among women. The medical superintendent emphasises the importance of early treatment by showing that in 60 per cent. of the recoveries the duration, prior to admission, was less than two weeks, and was over three months in 11·8 per cent. only. The very low tuberculosis death-rate is attributed to the unremitting attention given to ward hygiene and diet, in which the inclusion of "marmite" has played some part. There has been no diarrhœa or dysentery. The installation of electric light and vacuum cleaners has much improved the condition of the wards. From the pathological department two papers have been published: (1) on the production of formaldehyde by intestinal bacteria in connexion with the ætiology of nervous breakdown, and (2) observations on the types of blood-sugar curve found in different forms of insanity. The latter embodied very extensive research and suggested interesting and important differences in metabolism between the sane and insane. In addition, the histological condition of the ductless glands in mental patients has been the matter of investigation.

Burntwood Mental Hospital (Staffs. Co.) has 900 patients, and the general health has been maintained at a high standard. In addition to routine work in the laboratory Dr. G. F. Cobb has been carrying on an investigation into the chemical aspects of epilepsy. The work of the dental surgeon has been of much value.

Cheddleton Mental Hospital (Staffs. Co.) is overcrowded with 1045 patients, including cases of mental defect, and there is a shortage of nurses. Many structural renovations have been put in hand and many more are required. The arrangement of the dietary scale is made difficult by the absence of any gas-supply for cooking. Cheese and marmite are relied on for the supply of vitamins A and B respectively. Orthopædic treatment is to be commenced for suitable cases, and the nurses are to have special training in education methods for the mentally defective. In addition to routine work carried on in the laboratories Dr. F. H. Stewart has investigated the chemistry and bacteriology of intestinal toxæmia. He has found that one variety of non-lactose fermenting organism is regularly present in the fæces of chronic patients when they are undergoing acute exacerbations. The principles of parole and open-air wards are employed with success.

Carmarthen Mental Hospital has 600 patients. The work is hampered by inadequate water-supply and drainage, but a recovery-rate of 36·44 per cent. has been obtained. The cases of excitement greatly exceeded all other forms of insanity on admission. Of the 48 cases discharged as recovered 74 per cent. were in residence for less than a year. The death-rate is 7·70, the proportion attributed to tuberculosis having much diminished. It is hoped to improve the amusement facilities and dietary in the near future.

West Sussex County Mental Hospital, Chichester.—The report records a successful year of work. The 760 patients include private and ex-Service cases. There has been a recovery-rate on the admissions of 25 per cent. with a further 25 per cent. relieved. Special stress is laid on the restoration and maintenance of physical health; every new case is examined as a routine by the specialists in medicine, surgery, diseases of the eye, throat, ear, and teeth; and ten successful operations have been performed. There is complete freedom from infectious disease and only nine cases of tuberculosis are under treatment. Occupational treatment is provided in the farm, grounds, and workshops, and in the domestic departments for women. Parole is given wherever possible. The medical records have been supplemented by nursing report sheets, which have been most carefully kept and have proved a valuable and illuminating addition to the records. A large proportion of the nurses hold the certificate of the Medico-Psychological Association.

Hertfordshire County Mental Hospital, St. Albans, accommodating 1180 patients, shows a recovery-rate of 33·8 per cent. and a death-rate of 6·11 per cent. Extensive use is made of the parole and discharge-on-trial systems and the provision of money grants where needful. Several major operations have been performed and 110 patients have received attention from the dental surgeon. Clinical rooms have been provided in connexion with the admission and infirmary wards, affording opportunity for valuable private interviews. Many of the nurses hold, or are training for their certificates, and the nursing of sick male patients by women has proved satisfactory.

Brighton County Borough Mental Hospital, Haywards Heath, supports 820 cases. Parole has been introduced and four of the female wards have open doors into the garden throughout the year. The dental surgeon has attended 435 patients during the year. Clinical rooms have been provided for three wards, and the provision of verandahs and admission wards for recent and recoverable cases is under consideration. Patients are encouraged to wear their own clothes. A large proportion of the nurses hold the M.P.A. certificate.

Kent County Mental Hospitals Service maintains two hospitals. 1750 patients, including 70 "Service" cases, are accommodated at *Barming Heath, Maidstone*. There is a recovery-rate of 39·6 per cent.; 65·7 per cent. of these taking place within a year of the onset of illness. The death-rate touched the remarkably low figure of 5·6 per cent.; post-mortem examinations were carried out in 84·8 per cent. of fatal cases. Occupational therapeusis is organised under a special officer and the patients are classed in three groups: (1) those able to work by themselves; (2) those able to work in parties; and (3) those requiring individual attention. It is hoped to develop the third class further. Many patients have been sent out on trial, several of them with a money allowance. Most of the nurses hold the M.P.A. certificate.

At *Chartham Downs* (*Kent Co.*) there are 1150 patients, four of whom have been in the hospital since its opening in 1875. Benefit has been obtained in cases of general paralysis by the malarial treatment. As in so many mental hospitals, there is a large number of senile cases which could more happily be nursed in infirmary wards. There have been mild epidemics of influenza and dysentery. The death-rate is 7 per cent. and the recovery-rate 30·7 per cent. Two new blocks for male patients are in course of construction. Many patients have been allowed out on trial, short leave, and parole, although these privileges have not yet been granted extensively on the female side.

The *City of Birmingham* maintains two institutions: *Winson Green* and *Rubery Hill and Hollymoor*, accommodating some 2500 patients. At the former there has been a recovery-rate of 45 per cent. on the direct admissions. The majority of these cases had a stay of from 4 to 12 months in hospital. The death-rate was 8·38 per cent., a drop from the previous year, and the lowest since 1861; post-mortem examinations were made in 79 per cent. The general health has been good except for an epidemic of influenza. Six cases of general paralysis have been treated by malarial injection with resulting improvement, but no complete recovery so far. Some 70 per cent. of the patients are kept occupied about the grounds, workshops, and wards, and there is ample provision of entertainments and sports. Parole and short leave have been extensively granted. At *Rubery Hill* the death-rate has been 6·78 and the recovery-rate 48·6 per cent., with a further 15·8 per cent. "relieved." Special attention has been paid to the discovery and elimination of chronic septic foci, and a staff of consultants and specialists has been gathered as well as a radiographic equipment. The figures given suggest that this method of approach is of the greatest value. The hospital is approved as a training school for mental nurses. The Birmingham hospitals are fortunate in the help they can obtain from the excellently equipped laboratories under the honorary directorship of Sir Frederick Mott.

SCHOOL MEDICAL SERVICE.

Name of district.	No. on roll.	Average elementary school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.§
Bootle ..	12,297	11,126	3778	10,812	31·7
Margate ..	3,255	2,910	1074	847	12·0
Macclesfield .	4,441	—*	1281	784	47·5
Blackburn ..	17,522	15,110	5088† 1284‡	5,450	24·1
Wigan ..	13,575	11,035	3750	7,060	24·0

—* Not given. † Routine. ‡ Fourteen-year-old group.
§ Excluding dental defects and uncleanliness.

Bootle.

THIS report presents a number of features calling for comment. In it is given the actual cost of medical inspection, which is in Bootle 4*s.* 7½*d.* gross and 2*s.* 3¼*d.* net for every child on the school roll. The ratepayers can see that this figure is reasonable considering the district, and compares well with the rest of the country. The work of past years is shown in a table enumerating routine and special examinations from the year 1908 up to the present date; the total of inspections in 1908 was 1565, against 15,048 in 1924. The next paragraph shows some of the results obtained—e.g., malnutrition has fallen from 14·3 to 5·9 per cent. and enlarged tonsils from 11·2 to 7·6 per cent. The number of barefooted children is put down at 2·7 per cent.—they may be better off than others with badly fitting and defective footwear. Bootle is fortunate in having clubs which distribute clogs to suitable and deserving cases.

It was not found necessary to close any school or department for infectious disease during the year. The town is abreast of the times in having zinc ionisation at its aural clinics, a method which seems likely to repay its cost to the community—cutting short cases of otorrhœa which would otherwise proceed to deafness and other grave complications. The treatment is carried out by passing an electric current of 3 milliamps. for ten minutes through the ionising fluid (5 gr. of zinc sulphate to 1000 c.cm. of water) contained in the external ear channel. Dr. F. T. H. Wood considers that in cases of double otorrhœa it is better to restrict ionisation to one ear at a time, while the other ear receives cleansing treatment There are no special schools in Bootle. Arrangements for the treatment of crippling defects include the provision of special hospital beds and the conduct of a remedial exercises clinic. This clinic is staffed by a qualified masseur and his assistant and is supervised by the school medical officer with the coöperation of a consulting orthopædic surgeon. The payment by parents for treatment amounted only to £56 7*s.*, of which £39 19*s.* represented payment for dental treatment.

Margate.

Intimate coördination is maintained between the various health services, as Dr. Rowan McCombe himself carries on the duties of school medical officer, and medical adviser to the medical officer of health, and medical adviser to the infant welfare centre. Commenting on the 75 per cent. reduction in the numbers of unclean children during the past few years, Dr. McCombo draws attention to the increasing practice at some schools, especially among the girls, of wearing a simple tunic uniform—an excellent practice which makes for tidiness and cleanliness and inspires the wish to "live up to the uniform." Goitre is of rare occurrence; only one case, with mild enlargement, was seen in the district. Fifty-eight operations for tonsils and adenoids took place at the school clinic, the children being kept at the clinic for one night following the operation and seen the following morning by the surgeon and again inspected in a week's time. Adequate arrangements are made for the treatment of mentally defective children and deaf-mutes, and severe cases of epilepsy, and a strong plea is put forward for an open-air school to ensure treatment for the anæmic and pre-tuberculous children.

Macclesfield.

The school medical officer, Dr. J. Hedley Marsh, who is also medical officer of health, issues a brief report, much of which is only of local interest. Tonsils and adenoids seem to receive thorough treatment and after operation are carefully followed up, while the parents are advised to see that the children carry out the after-treatment which is clearly described on printed cards. Visual defects rarely fail to secure treatment and dental inspection is well carried out, nearly 90 per cent. of all the children in the schools being inspected by one of the three dentists. Dr. Marsh records, however, that only 31 per cent. of those requiring treatment receive it, and this, as he says, is not satisfactory. There are no special schools in the area, and Dr. Marsh stresses the necessity for a mentally defective school and hopes that one may be established. An orthopædic clinic is carried on at the general hospital and good work is evidently done at the general school clinic.

Blackburn.

Dr. W. Allen Daley reports progress in organisation during the past five years. An additional age-group has been included—viz., the "leaver" or 14-year-old group. Almost all the clinics began within this period and lately there has been added an orthopædic clinic for early treatment. He regrets the delay that occurs in dealing with adenoids, owing to lack of accommodation. Dr. Ella Mackenzie found that of the children who should have been wearing glasses only 75 per cent. were doing so. Taking into consideration the large proportion of spectacles worn which are no longer efficient, the need for some kind of spectacle "roll call" is evident. Since the hearing of every child of 8 years has been tested by the "forced whisper" the percentage of minor defects of hearing has risen from 0·4 to 1·5 per cent. Dr. Daley hopes for an increase in the clinics and for further accommodation in the open-air school and classes, and regrets there is still no physically defective school. On the other hand, there is a good mentally defective school, and a return by the late headmistress, Miss Clayton, deals with 140 scholars since 1010 who can be traced. Of these 100, or 75 per cent., are in work. This figure shows how much such a school can do when run with zeal and ability.

Wigan.

Dr. H. Whitehead's report is a concise statement of facts with little comment, but obviously the school medical work is handicapped by inadequacy of staff. The numbers examined in the code groups are incomplete—the same lacunae have stood in the way of a thorough control of measles. Since only one half-day a week has been available for refraction, about one-third only of the cases receive prompt attention. Dental work, too, was similarly limited, but recently the dental sessions have been increased. There is a lack of special schools of all types; a few mentally defective children are attending classes for the dull and backward, but the accommodation is inadequate and such classes have not the power of salvage that belongs to good special schools. A school camp was held with beneficial results, but this is a poor substitute for a permanent open-air school. There appears to be none of the special methods of dealing with cripples by which so many children are cured or made self-supporting in other areas. Good coöperation is maintained between the various branches of the medical services, and records from the welfare centres are available in the schools.'

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED AUGUST 8TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 63; scarlet fever, 1250; diphtheria, 691; enteric fever, 85; pneumonia, 415; puerperal fever, 37; cerebro-spinal fever, 8 acute poliomyelitis, 7; encephalitis lethargica, 41; continued fever, 1; dysentery, 8; ophthalmia neonatorum, 110. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 4 deaths from enteric fever, 22 from measles, 8 from scarlet fever, 28 from whooping-cough, 18 from influenza, and 20 from diphtheria. There were 108 deaths of children under 2 years from diarrhœa and enteritis, as compared with 101, 64, 50, 44, and 20 in the preceding weeks. In London itself there were 8 deaths from diphtheria, 3 from whooping-cough, and 6 from influenza.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

J. S. Elliot is re-entered as Surg. Lt. Comdr. with seniority of Sept. 20th, 1023.

Surg. Lt. Comdr. P. W. Carruthers is placed on the Retd. List.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Sub-Lts. to be Surg. Lts.: D. R. F. Bertram and R. Wear.

ROYAL ARMY MEDICAL CORPS.

Maj. J. C. G. Carmichael retires on ret. pay and is granted the rank of Lt.-Col.

The undermentioned Capts. to be Majs.: E. W. Wade, W. K. Morrison, E. Percival (Prov.), and H. C. D. Rankin (Prov.).

ARMY RESERVE OF OFFICERS.

Capt. A. Robertson, late R.A.M.C. Spec. Res., to be Lt.

Capt. G. C. F. Roe, late temp. Capt., R.A.M.C., to be Lt.

TERRITORIAL ARMY.

Capt. A. E. L. Devonald, having attained the age limit, is retired and retains his rank.

Capt. C. A. R. McCay (late R.A.M.C.) to be Lt. and relinquishes the rank of Capt.

Lt. C. M. Bradley (late R.A.M.C.) to be Lt.

E. W. Ashworth to be Lt.

ROYAL AIR FORCE.

Flying Officer F. K. Wilson is promoted to the rank of Flight Lt.

INDIA AND THE INDIAN MEDICAL SERVICE.

The following are granted leave: Lt. F. W. Mathews, Civil Surgeon, Ghazipur; Maj. H. P. Cook, Civil Surgeon, Allahabad; Lt.-Col. F. W. Sumner, Civil Surgeon, Simla (East); Maj. T. C. Boyd, Chemical Examiner, Bengal, and Professor of Chemistry, Medical College, Calcutta; Capt. R. H. Malone, Acting Director, Bombay Bacteriological Laboratory; Major R. Knowles, Professor of Protozoology, School of Tropical Medicine and Hygiene, Calcutta; Lt.-Col. Macmillan, Civil Surgeon, Simla; Lt.-Col. A. W. Overbeck-Wright, Superintendent, Lunatic Asylum, Agra; Lt.-Colonel G. Hutchinson, officiating Inspector-General of Civil Hospitals, United Provinces; Col. A. W. R. Cochrane; Lt.-Col. I. M. Macrae, Lucknow; Lt.-Col. R. F. Baird; Maj. P. B. Mills, Civil Surgeon, Bahraich; Lt.-Col. W. S. Willmore, Civil Surgeon, Cawnpore; and Lt.-Col. T. W. Harley.

NEW MEDICAL COLLEGES IN INDIA.

The King Edward Hospital and the Gordhandas Sunderdas Medical College, fully equipped institutions established by the Bombay Municipality, were opened in July. The Medical College is the first unofficial medical institution in Bombay city and had been recognised by the University of Bombay. Last month also saw the opening of the Prince of Wales's Medical College at Patna and the laying of the foundation-stone of the Wadia Maternity Hospital in Bombay.

Correspondence.

"Audi alteram partem."

FAMILIAL ABDOMINAL LESIONS.

To the Editor of The Lancet.

Sir,—The interesting article by Mr. G. P. B. Huddy in your issue of August 8th raises once more the question of the relative importance of heredity and environment in these conditions, and whilst it might seem that Mr. Huddy favours the heredity hypothesis, a closer examination of his paper makes it clear that this is not the case. A family history of "indigestion" is by itself too nebulous to allow of any accurate deduction being made; extensive family histories of duodenal ulcer or gall-stones, such as are quoted, are very striking, though it is a little surprising if only two examples of such convincing histories occurred amidst 300 patients.

The following example recently came to my notice. The father had a gangrenous appendicitis in 1900 and a perforated duodenal ulcer in 1922. Of his three sons, the eldest had acute appendicitis in 1917, the second a gangrenous appendicitis in 1919, and the third a gangrenous appendicitis in 1914. It is dangerous to assume an hereditary factor from such data; the patients referred to have long been known to me as voracious eaters, but whether this is hereditary or environmental I would hesitate to say. Further, I know that for many years they were attended by an unqualified dentist whose technique was neither orthodox nor desirable.

One can imagine the difficulties of an Eastern physician when asked to write upon a "family history" of salpingitis in the harem of his ruler. On the whole the infective theory remains tenable.

I am, Sir, yours faithfully,

London, W., August 12th, 1925. T. Izod Bennett.

To the Editor of The Lancet.

Sir,—Two years ago, when Mr. James Sherren delivered a lecture in Dublin on Gastric Ulcers, he drew attention to the fact that these ulcers might run in families. I was very interested, as at that time my father had under his care a case of gastritis whose father had died six months previously from gastric carcinoma. I investigated their family history, and now that attention has been drawn to this point in your journal, I think the facts of interest.

The grandfather of the present patient suffered from constipation and dyspepsia. He had to walk about during his meals "to bring up wind." He died from what was diagnosed as "perforation of the intestine." In appearance he was tall, thin, and pale. He neither smoked nor drank. Of his children one showed no signs of gastric symptoms and was unmarried. The second had occasional indigestion, and died from pneumonia. The third had a typical duodenal ulcer, the clinical signs being confirmed by X ray examination. He refused an operation. His only child was healthy. The fourth, the father of the patient, died from cancer of the pylorus, and the patient, aged 21, suffers from agonising pains about one hour after food, with acid eructations. He has never vomited, and refuses to be X rayed. His sister and brother are quite healthy. The remaining two children were daughters, one of whom living abroad suffers from "indigestion, particularly after potatoes," and her eldest child, aged 15, has frequent gastric attacks. The last child when 21 suffered from a typical acute gastric ulcer, and has done so at intervals throughout life. Her eldest child when 21 developed symptoms of duodenal ulcer, with attacks that recur each Christmas. He also refuses X ray examination. Her second child at about the same age commenced to suffer from indigestion, but on rigorous dieting these attacks pass off. They have all lived normal healthy, hygienic lives, are of good physique, and the present generation possess perfect teeth, and, with one exception, are practically non-smokers and non-drinkers.

I am, Sir, yours faithfully,

Sylvia B. Wigoder, M.A., M.B., T.C.D.

Dublin, August 17th, 1925.

SUBCUTANEOUS INJECTION OF COLLOIDAL SULPHUR IN NEURITIS.

To the Editor of The Lancet.

Sir,—I will be much obliged to you if you will do me the honour of publishing the following questions as regards Wagner-Jauregg treatment of dementia paralytica. So far as my personal knowledge goes, I believe that the therapy is still empiric; I have not yet come across any scientific explanation. I assume there is nothing specific in the organism of tertian malaria, the remissions obtained, whether complete or incomplete, being in all probability due simply to the changes of the body temperature. I have obtained encouraging results in certain forms of chronic neuritis with the intramuscular injections of colloidal sulphur (sulfoidol Robin). Symptoms imitating malarial rigor followed. No new infection is introduced to call for quinine—for example, to mitigate the effects of an inoculation. The proceeding, I think, may be used as an argument to prove or disprove the specificity of the tertian plasmodium in the method of treatment, though I believe no such property is claimed.

I am sorry I have not yet met any case of dementia paralytica through eight years practice of the profession. This may be due to the fact that malaria is endemic in this country and syphilis comparatively rare. I shall be very grateful to any member of the medical profession who will test the use in appropriate cases of colloidal sulphur in this way, and will communicate the results through the pages of The Lancet.

I am, Sir, yours faithfully,

Palestine, July 23rd. Djamil F. Tutunji, M.D.

THE ÆTIOLOGY OF CANCER.

To the Editor of The Lancet.

Sir,—The reminder by Sir Charles Ballance of the views held by the late Mr. Shattock, than whom there was no one more conversant with the clinical as well as the pathological knowledge of cancer, brings into prominence the conviction of the clinician, that tubercle, a known parasitic disease, sarcoma and carcinoma in their modes of onset, in their course, in their termination, and in their curability are more or less alike. It took 40 years to discover the tubercle bacillus after tuberculosis was pronounced to be of this class, and for over 30 years the hunt for the parasite of sarcoma and carcinoma has been going on and has not yet been actually successfully finished. Indeed, there are signs that the hunt may once again be side-tracked. While the clinician has no difficulty in recognising cancer as a member of the great group of parasitic diseases, the pathologist has ever found a stumbling-block since the great advances in histological discoveries during the nineteenth century. Tubercle originates in connective tissue, so does sarcoma, but cancer begins in an epithelial covering. The parasite in tubercle makes a tubercle nodule and when that is completed it starts another, and each nodule is made for and by the parasite. The proliferation of cells is started by the parasite and food in abundance is produced by them. In carcinoma, a parasite—let it be assumed—locates itself in an epithelial cell, makes it reproduce itself and elaborate food—a special food for the parasite. The parasite by its vigour stimulates growth and the new cells thus formed make for it all it needs for propagating itself and for increasing its vigour and strength. In all subsequent growths in other parts of the body epithelial cells like those of the original growth appear. The unsolved problem is how that happens. Does the parasite carry with it an epithelial cell or a derivative which is equivalent in reproductive powers to a full-grown cell, or has the parasite power, wherever it locates itself, to induce a connective-tissue cell to become transformed into an epithelial cell, the only kind it is associated with and the only one that is capable of elaborating its special food?

The former view has held its ground for many years and the lymph and blood circulation mechanism has been considered a sufficient cause for the spread of the new growth into distant parts of the body. Often that explanation is very inadequate, and surely very untrustworthy. A parasite, like every other living thing, seeks its food, and one of the bacterial groups obtains it by creating activity in cells around and by making them elaborate what it wants. It then often kills its host by exhausting the supply of nutriment or by locating itself, perhaps accidentally, in a vital part. To attain its purpose effectively the parasite of cancer should possess the power of converting a cell of the connective tissue into an epithelial one, the only form capable of elaborating suitable food for the special parasite of cancer. Biologists may know of instances in which cells, under appropriate stimuli, become converted into other and distinct forms with different functional properties. In pathology there is not, to my knowledge, an evident example.

I am, Sir, yours faithfully,

Cambridge, August 15th, 1925. JOSEPH GRIFFITHS

To the Editor of THE LANCET.

SIR,—The letter of Sir Charles Ballance in to-day's issue of THE LANCET calls for a reply on my part.

The late Prof. Shattock was almost alone among well-known pathologists in adhering to the parasitic theory of cancer. Apart from him, pathologists in this and in other countries have been almost unanimous in rejecting the theory on the grounds that it is incompatible with the phenomena of cancer. The supporters of the theory have been almost entirely bacteriologists and clinicians, and they have never taken the trouble to meet the objections which have been brought against it by pathologists.

Prof. Shattock did not have before him the evidence that it is possible to induce cancer at will without taking the supposed parasite into consideration nor, until his later years, was he aware that it is possible to cultivate tissue cells in vitro.

The cancer germ cannot be present in the irritant used to produce cancer since this has frequently been submitted to temperatures of 800° C. or over and is thus not comparable with the tuberculous dust to which Sir Charles Ballance refers. If the parasitic theory is true the germ must therefore, as I have said, be present either in all animals or in the atmosphere. The former alternative is negatived by Dr. Gye's facts, since, if it were true, it should be possible to produce cancer by his "specific factor" alone, which is not the case. We are thus left with the conclusion that this intracellular germ is universally diffused in the atmosphere! Can any of those who support the theory suggest any other alternative?

I am, Sir, yours faithfully,

Manchester, August 15th. CHARLES POWELL WHITE.

To the Editor of THE LANCET.

SIR,—The work of Dr. A. S. Leyton and Dr. Helen G. Leyton on the streptothrix in sarcomata, to which Dr. W. M. Crofton aptly refers to your issue of August 8th, was amplified later (1917) thus: Prof. Leyton kindly showed me his microscopic preparations of the organism, and I found the appearances tallied with those I had been finding within the nuclei and cytoplasm of the blood cells in cancer subjects at the Leeds General Infirmary. When I then showed him my preparations it was arranged that he would make blood cultures by his customary technique on the next case in which I should find these structures in abundance. This was successfully carried out, and the cultures obtained agreed in type with those he had already secured from tumour filtrates.

The views in Dr. James Young's letter, so ably stated, can be quite endorsed by my own experiences since the above (and since the reference in "Medical Annual," 1921, pp. 63, 64). The fact, too, that Rickettsia bodies are so widely distributed within the bodies of invertebrate animals seems to show that they may form an essential feature of bacterial life-cycles.

The difficulty which has arisen about the "law of fixity of form" is not insoluble. It comes from supposing that all life-forms must obey it. On the other hand, it does not follow that the lowest forms which are to be found within the body of a higher organism are "normal components of the body," to use the words of THE LANCET (July 25th, p. 183). The body or cell may be providing the necessary substrate (during a varying period of time) for a separate life-cycle. This possibility, and the fact that there are ultra-microscopic phases of life, was stated as long ago as 1878 by L. S. Beale in "Microscope in Medicine" (p. 317, &c.), and he pointed out that they can withstand a temperature of 148° C. The place to which he was disposed to assign these minute bodies in the scale of life is that which they seem likely to receive now.

If the prevailing, and materially favoured, school of thought of to-day is now prepared to entertain Béchamp (THE LANCET, ibid.), surely other concessions will follow. For instance, after all, Bastian's work on heterogenesis was not all an incorrect observation. The diverse aspects of life seen by different observers are capable of harmonisation.

I am, Sir, yours faithfully,

Hartley, Longfield, Kent, August 10th. O. C. GRUNER.

DISABLEMENT FROM CHRONIC RHEUMATISM.

To the Editor of THE LANCET.

SIR,—As one of the signatories of the letter which appeared in THE LANCET under the above heading in your issue of July 11th, I have read with much pleasure Dr. Mennell's communication of August 1st.

I am entirely in accordance with Dr. Mennell's views. In the second paragraph of his letter he lays stress on the importance of increasing the fluid intake of patients who are suffering from the non-articular forms of rheumatism. This I can fully bear out as a result of my experience when practising at Harrogate. In such cases one or other of the mineral waters are prescribed practically as a routine, and I have been repeatedly struck with the improvement which quickly takes place following the increased ingestion of liquid. The reason for this is not far to seek if we can regard these non-articular forms of the condition as being due to changes in the plasma whereby the products of muscular activity are inefficiently removed or, in other words, due to an inhibition of the metabolic exchange which results from muscular action. The absorption of comparatively large quantities of fluid which is isotonic with the blood must of necessity greatly assist the removal of waste products.

I think there can be no question that endocrine disturbance plays a greater part in the production of arthritic changes than is generally realised. Attention has been repeatedly directed by many observers to the probable inter-relationship between alterations of the thyroid and arthritic affections. After all the "make up" of an individual is largely dependent on the harmonious action of his endocrine system. The variation in the train of symptoms in different people which arise from the same stimulus is quite explicable on these lines. Broadly speaking, we can classify groups of cases according to their reaction and for these groups we can revive the old name of "diathesis." We should thus define "diathesis" as a disease tendency depending on an altered blood admixture. From this point of view we are quite justified in speaking of an arthritic diathesis. Such a diathesis shows certain more or less well-defined types. We have the young nervous female with tachycardia, sweating, pigmentation, and various trophic changes with general metabolic upset who tends to develop symmetrical joint changes beginning in the smaller joints. Then we have the stout, well-nourished woman who about the time of the menopause begins to have coarse synovial changes in the hips or knees. These changes are accompanied by all the signs of mild thyroid deficiency. We have also the pale, anæmic, sweating child with a dicrotic pulse, tachycardia, arrhythmia, and a tendency to dilatation of the right ventricle. Such a child is particularly liable to attacks of pyrexia with pain and stiffness of the joints and the formation of fibrous nodules.

Space does not permit a detailed consideration of the rôle played by infective foci in the production of what we term "rheumatic disease." So far as my own experience goes I should certainly say a great deal depends on whether the "exudate" or pus from the focus is under pressure. Pus exuding from a tooth socket is not nearly so likely to cause trouble as a locked-up apical infection. The most dramatic recovery I ever saw followed the removal of an old inflamed appendix from a man who for years had never been free from attacks of arthritis affecting practically all his joints in turn. After his operation he never had the slightest sign of any joint trouble.

As stated in the concluding paragraph, it certainly is a fact that all cases of so-called rheumatism are not what they seem. In this connexion I would say that one should never diagnose a non-articular case as "rheumatic" until every other possibility has been excluded. A very large number of such cases are really due to definite injury with possibly a certain amount of subluxation. This is a veritable pitfall for the unwary, and if after a course of soothing lotions, liniments, and medicine the case falls into the hands of a bonesetter, who, recognising the condition, corrects the deformity by forcible extension and manipulation, and effects a speedy cure, the regular practitioner is apt to feel that "his eye has been badly wiped." The retention of the term "rheumatic" as a description of an ill-defined group of diseases which only agree among themselves in having no connexion with that acute and subacute infection we call rheumatic fever, requires a certain amount of justification. We can only justify it by saying that when we speak of rheumatic disease we know what we mean and that we are referring to a group of conditions whose ætiology has not been thoroughly worked out. With the advance of our knowledge the term will come to be used less and less frequently and finally only applied where it should really belong—viz., to the acute and subacute infections.

I am, Sir, yours faithfully,

MATTHEW B. RAY.

Bentinck-street, W., August 17th, 1925.

INDISCRIMINATE SALE OF POISONS.

To the Editor of THE LANCET.

SIR,—There is no record of achievement of which we as a nation have more reason to be proud than our organisation of public health, but there is at least one black patch which ought to give rise to very different feelings.

Scarcely a day passes without its tale of suicide, and in too many cases the cause of death has been found to be the taking of poison. It is not the primary poisons that are guilty (their restriction has served its purpose well) but the ordinary "household" poisons, of which spirits of salt is the chief. This can be sold by any shopkeeper as long as it is contained in a poison bottle and labelled "poisonous," and bears the name and address of the seller. These restrictions are not enforced and are consequently disregarded every day.

This indiscriminate sale of poisons, for which there must be substitutes for household use, constitutes a grave public danger, and calls for the action of the authorities in enforcing the law as it stands or restriction of the sale with the utmost stringency.

I am, Sir, yours faithfully,

J. H. WILLIAMS.

House of Commons, August 12th.

THE SUPPLY OF VACCINES TO PANEL PATIENTS.

To the Editor of THE LANCET.

SIR,—As a warning to other panel doctors, I submit my experience of trying to obtain repayment from the Middlesex Insurance Committee of the cost of a vaccine used for a panel patient.

In January last I sent the receipted pathologist's bill to the Committee with a request for repayment. Repeated applications failing to obtain the courtesy of a reply, I recently instructed my solicitors to take proceedings. Their first letter was ignored, but the threat of a writ seems to have stirred the official mind from its hebetude, and I have now, after seven months, received a cheque, without comment or explanation given. I understand from my solicitors that, in point of fact, there would be some legal doubt on whom a writ could be served in such a case.

I am not encouraged to repeat the experiment of using vaccines for panel patients, so long as the present system is in force of making the panel doctor pay the cost himself, in the first place, and getting a refund later, if he can, from the Insurance Committee.

Why cannot the pathologist's account be met by the Committee direct?

I am, Sir, yours faithfully,

C. WILLETT CUNNINGTON.

Dollis-avenue, Finchley, N., August 18th, 1925.

Obituary.

WALTER CARLESS SWAYNE, M.D., B.S. LOND., M.D., CH.B. BRISTOL,

PROFESSOR OF OBSTETRICS IN THE UNIVERSITY OF BRISTOL; CONSULTING OBSTETRICIAN AND GYNÆCOLOGIST TO THE BRISTOL ROYAL INFIRMARY.

THE sudden death of Walter Carless Swayne occurred on August 8th at the age of 63, under particularly painful circumstances, at Sellack, near Hereford, at the residence of his son-in-law, Mr. R. D. Wreford-Brown. It appears that Dr. Swayne and his son had joined the family of his daughter and son-in-law, and that about 1 o'clock in the morning Mr. Wreford-Brown, who was gassed at Cambrai when in the Welsh Guards, became suddenly demented. He roused the sleeping household by firing a revolver out of his wife's bedroom window under the delusion that the house was gassed, and then entered his father-in-law's bedroom and shot him in the abdomen. Dr. Swayne's son, groping in the darkness, disarmed the assailant, but Dr. Swayne died a few hours later. He was in the full activity of practice as the leading consulting obstetric surgeon in Bristol and the West of England, and this tragic end to his career has caused profound sorrow to the whole neighbourhood, and especially to his colleagues and patients by all of whom he was greatly esteemed.

Walter Carless Swayne, the eldest son of Mr. R. A. Swayne, of Tillington Court, Hereford, one of a family of seven sons and seven daughters, was born at Mathon, near Malvern, in 1862. He was educated at King Edward's School, Birmingham, and began his professional life by entering the Bristol University College and attending the General Hospital. He at Bristol resided with his well-known uncle, Dr. Joseph Griffiths Swayne, till in 1880 he went up to Guy's Hospital for the completion of his clinical work. After taking the double qualification of the Colleges and graduating M.B. at the University of London with honours in forensic medicine, he became resident obstetric physician under Dr. Galabin and Dr. P. Horrocks. In 1891 Swayne was appointed obstetric physician at the Bristol Royal Infirmary with the charge of six beds and an out-patient clinic. He threw himself into the work and organisation of this department with the zeal that characterised everything that he set his hands to. As time went on he so developed the restricted department till he at length evolved one of the most highly equipped obstetric and gynæcological clinics in the United Kingdom, with separate wards for lying-in cases and gynæcological operations, an extensive extern lying-in department, a large out-patient clinic, and an antenatal clinic.

He took the M.D. degree in 1894 and in the meanwhile he had been appointed Professor of Obstetrics at the University College, and was continued in this post when the University was incorporated in 1909, becoming the first professor in the chair of Obstetric Medicine. As a teacher he attracted a large following and enjoyed a high reputation as a consultant. He took the ad eundem degrees of M.D., Ch.B., and was enthusiastic in fostering a corporate spirit and in upholding the rights of graduates in Convocation, and furthermore was conspicuous in the movement to form an active graduates' association. It was largely due to his initiative that the M.Ch. is granted in obstetrics at Bristol and nothing proves more strikingly his originality than the plan of making an operation by candidates for the Mastership a part of the test for the highest degree conferred in the specialty. Without being a prolific writer he made many valuable contributions to the Bristol Medico-Chirurgical Society's Transactions and to other scientific journals. He contributed also to Latham and English's "System of Treatment," while he edited the eleventh edition of his uncle, Joseph Griffith Swayne's, well-known "Obstetrical Aphorisms." He undertook this task in response to requests so numerous as to make it clear that there was still a place which the re-issue of this popular little work could fill with advantage, and he accomplished the revision successfully, retaining the original form of the work, while rendering it valuable to modern students.

As Major Swayne, R.F.A. (T.), he will be well remembered by a very large number of those serving in the late war. When he first went to Bristol he joined the Bristol Volunteer Artillery Corps; he was nick-named "Bombardier Dick" in recognition of his military enthusiasm, and induced many other students and friends to join, and for his 20 years' steady service he was awarded the V.D. On the outbreak of war in 1914 he had much to do with the initiation of the Bristol University O.T.C., of which he was placed in command. He then threw up all professional ties and became a soldier. He raised the third line of the South Midland R.F.A., proceeding later to the camp at Churn and at Bulford. As an administrative officer he was conspicuously successful; never flinching from the hardships which he had cheerfully undertaken, he was beloved by the men under him. The refusal by the War Office to send him on service abroad was a great disappointment to him, but his none too robust health and his age made the decision reasonable and the work which he rendered at home was admirable. Towards the close of his administrative career he was appointed to the command of a battery of the New Zealand Artillery on Salisbury Plain, which he conducted overseas to France. Five years of military work away from home was a strain which told heavily but never lessened his enthusiastic activities when at the end of the war he resumed his work as professor of obstetrics and his charge of the department at the Royal Infirmary. In recognition of his self-sacrificing devotion to the military service of the country the committee of the Bristol Royal Infirmary extended the tenure of his post at the Royal Infirmary beyond the usual age-limit.

His athletic achievements in youth were considerable and he played for Guy's Hospital at Rugby football and was in the hospital rowing four. Fishing was his hobby in later years, and he was an expert with the dry fly and well known on the Monnow. He was Past Master of St. Vincent's Lodge, and had held office in the higher orders of Masonry. In 1894 he married Louisa Margaret, daughter of the late Rev. R. F. Heath, by whom he had three daughters and a son. A devoted Churchman, a loyal colleague, and ever a sympathetic friend in trouble alike to rich and poor, the death of Walter Swayne is deeply regretted by the medical profession; for his widow and children we sympathise profoundly in their grievous loss.

CHARLES LLOYD TUCKEY, M.D. ABERD.

Dr. Charles Lloyd Tuckey, who died at his house in Eastbourne on August 12th aged 70, had retired from practice and had been in poor health for the past 12 years, but continued to the end his interest in psychotherapy and in psychical research for which he was well known. His father, a medical graduate of Trinity College, Dublin, practised at Canterbury, and Lloyd Tuckey was educated at the King's School and later at King's College, London, and at the University of Aberdeen, whence he graduated M.B., C.M. in 1875, taking the M.D. in 1884. Early attracted to treatment by suggestion he studied hypnotism in 1888 under Liebault at Nancy, and may be regarded as the pioneer of hypnotic therapy in England, being closely followed by the late Dr. Milne Bramwell. Lloyd Tuckey started this work in London in 1878, and at his consulting-rooms in Green-street and Upper Brook-street, W., demonstrated his methods to medical men freely. His success in treatment was helped by his personality, for he was a man of great kindness, wide culture and literary ability, handsome presence, and sympathetic manner. He was a frequent contributor on his subjects to the medical journals and literary reviews, articles from his pen appearing in THE LANCET, *Brain*, *Practitioner*, and the *Nineteenth Century*, while his book, "Treatment by Hypnotism and Suggestion," now in the seventh edition, brought him international recognition. As the cases in this book show, he was frequently successful in the treatment of alcoholism. He was one of the founders of the Society for Psychical Research, and was for many years a member of the council of that body, of which he was afterwards elected an honorary member. His retirement from practice took place at a time when the present psychotherapeutic measures were coming before the profession, and though interested in the developments he was chary of expressing an opinion as to their remedial values after the opportunities of personal clinical trial had gone from him.

Late in life he married Beatrice Mary, daughter of the late Robert Wood Marsland, a London solicitor, who nursed him with devotion during his long illness.

DONATIONS AND BEQUESTS.—The late Mr. Walter Thomas Fremlin, of Milgate Park, Maidstone, left by will £1000 to St. Thomas's Hospital, £300 to the East Kent General Hospital, Maidstone, and £500 to the Kent County Ophthalmic Hospital.—Mr. John Douglas Oliver, of Morpeth, bequeathed £3000 to the Morpeth Cottage Hospital and District Nursing Association.—Colonel John Chadwick Barlow, M.V.O., J.P., of Bury and Darley Dale, Yorkshire, a director of the Bleachers' Association, Ltd., left the residue of his property, amounting to nearly £300,000, to be applied within 21 years of his decease for such charitable purposes within the United Kingdom of Great Britain and Ireland, India, or any British State, Colony, or Dependency as his executors in their absolute discretion should think fit, stating "my desire being that the same shall not be utilised for sectarian or party political purposes, and that they shall have regard to such charitable purposes as I have been interested during my lifetime."—The £600 damages recently awarded to them in the High Court for libel and slander has been awarded by Messrs. J. Lyons and Co., Ltd., to the following charities: the London Hospital £200, Paddington Green Children's Hospital £200, West London Hospital £150, and £50 to the Parent Hospitals of Shropshire and the Border Counties.—On "Alexandra Day" in Liverpool the total sum realised on June 20th was £5670, and of this sum the Liverpool Child Welfare Association received £1596, the Royal Liverpool Children's Hospital £1111, and the Royal Liverpool Children's Hospital, Heswall Branch, £489.—Mrs. Ada Ellen Robertson, of Kensington, W., who left £15,020, apart from a small annuity, practically gave all other of her property to the Hospital for Sick Children, Great Ormond-street.

Medical News.

Post-Graduate Courses in Tuberculosis.—The following courses have been arranged by the Joint Tuberculosis Council: (1) A fortnight's course in the pathology and bacteriology of tuberculosis, conducted by Dr. Roodhouse Gloyne at the City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, from Monday, Sept. 21st, to Saturday, Oct. 3rd. The class will meet in the mornings or in the afternoons according to arrangement. Class limited to six members. (2) A course in non-pulmonary tuberculosis beginning Monday, Sept. 28th, ending Saturday, Oct. 3rd. Monday, Sept. 28th, at Heatherwood Hospital, Ascot (charabancs from and to London arranged).. Tuesday, Sept. 29th, at Queen Mary's Hospital, Carshalton. Wednesday, Sept. 30th: Morning, diseases of the skin department, London Hospital; afternoon, the Royal College of Surgeons, Lincoln's Inn-fields. Thursday, Oct. 1st: Morning, diseases of the skin department, London Hospital; afternoon, All Saints Hospital for Genito-Urinary Diseases. Friday, Oct. 2nd, and Saturday, Oct. 3rd, the Wingfield Orthopædic Hospital, Oxford. The class will be limited to 30 members. Early application should be made to William Brand, acting Hon. Secretary, 19, Brunswick-square, Camberwell, S.E. 5, who will supply all further particulars.

The Spahlinger Treatment.—Mr. Spahlinger has returned to Geneva to prepare a sufficient quantity of vaccine and serum to immunise a number of calves, as arranged with the Committee of Agriculturists and Veterinary Surgeons which has been formed at Crewe. These tests and controls are to take place in October. The animals are already being selected, and it is expected that Mr. Spahlinger will come to Crewe to make the injections. The results will be observed by a committee of agriculturists and veterinary surgeons, with whom will be associated the Agricultural Committee of the House of Commons, and a representative of the Minister of Agriculture. In the meantime the production of further supplies of vaccine and serum for human beings will be temporarily suspended.

Middlesex Hospital.—The recently issued report for 1924 records that owing to the closing of two wards there was a diminution of 364 in the number of in-patients admitted. Nevertheless, 5188 in-patients were treated. Their average weekly cost was £4 1*s.* 1*d.*, an increase of 2*s.* 3*d.* upon the preceding year. At 38,259 there was an increase of 2440 in the total of in-patients. Grateful note is made of the steady growth of the St. Marylebone Associated Hospitals' League, with a membership of about 20,000, which yielded during the year a total of £2748. A warm tribute is paid to the services of Dr. Campbell Thompson, physician to the department of nervous diseases and lecturer in neurology, upon his resignation from the active staff after an association of 36 years as house physician, dean of the medical school, and in the department of nervous diseases. Attention is drawn to the importance of endowing the professorial chairs attached to the hospital's medical school; of these seven chairs only three have yet been endowed. The period of training for nurses and probationers has been increased from three to four years, but the question of establishing a nurses' preliminary training school has been postponed pending the provision of permanent accommodation. The report of the Cancer Charity of the hospital shows that 712 patients were admitted, an increase of 79, and that the percentage of occupied to available beds was very nearly 95 per cent. There is thus practically no bed-wastage. The rebuilding fund now exceeds £200,000.

Harrogate Royal Bath Hospital.—At this hospital of 150 beds, also styled the National Hospital for Rheumatic Diseases, a new laboratory was opened by Princess Mary, Viscountess Lascelles, on August 10th, when Lord Harewood, the patron, presided over a large meeting in the main hall of the hospital, and pointed out that £5500 were still required to make up the £12,000 appealed for last year. That appeal was for a centenary fund for further equipment of the hospital with adequate accommodation—e.g., for additional nursing staff, surgical, radiological, and dental departments. The new laboratory, which cost £3500, may demand an additional £1000 for equipment, towards which £500 has been subscribed by Sir Edward Brotherton, Bart., while £1000 has been presented by the hon. treasurer of the hospital, Mr. Walter Freeman, as the nucleus of an endowment fund for laboratory purposes.

After Princess Mary had declared the new laboratory open, a short address was given by Prof. Arthur Hall, in which the necessity in medicine for distant vision was emphasised, an important feature of such vision being the furnishing of adequate facilities for laboratory work. After the votes of thanks to Her Royal Highness, Dr. G. L. Kerr Pringle, senior physician to the hospital, drew the attention of the audience to the widespread crippling caused by the group of chronic rheumatic diseases, and the justification for more determined efforts in research.

Princess Mary then inspected the new building, where various aspects of the work of the laboratory were demonstrated by Dr. Sinclair Miller and Dr. F. B. Smith, the pathologists to the hospital. Hitherto this branch of work has been carried on with very limited facilities and accommodation. The new building comprises a waiting-room, a consulting-room, four workrooms for bacteriology and chemistry, a preparation-room, and a cleansing-room, and represents the first step in materialisation of a scheme of development which should make the equipment of the hospital as adequate as that of any hospital in the kingdom. There is now at this hospital ample opportunity both for routine investigation of individual patients and for organised research into the problems involved in the ætiology and treatment of chronic arthritis and allied conditions which still remain obscure.

Death of a South African Practitioner.—The death on July 19th is announced of Dr. Peter Christian de Wet, of Cradock, Cape Province, where he had practised for 34 years. He was the local medical officer of health and had been largely concerned with the establishment of the Cradock Hospital 25 years ago.

Keighley's New Water-supply.—The Marquess of Hartington on August 11th performed the inauguration ceremony of the Keighley Corporation's new Sladen Valley waterworks. The scheme was begun in 1910, and has cost £570,000. The new waterworks will add an available supply of a million gallons a day in addition to the existing 1,600,000 gallons a day from the Watersheddles reservoir. The gathering-ground of the new supply comprises an area of 1080 acres.

The late Dr. A. W. Atkinson.—Arthur William Atkinson, M.B., Ch.B. Edin., died at his residence in Crewe on August 6th from pneumonia. Born in Crewe in 1881, he was the youngest son of the late Dr. James Atkinson, first mayor of Crewe. He studied at the University of Edinburgh and at Heidelberg, graduating M.B., Ch.B. Edin. in 1906, and later obtained the certificate with distinction of the London School of Tropical Medicine. He served with great credit in the Boer War, and for some time was medical officer on the West African Medical Staff on the Gold Coast. On the death of his brother, Dr. J. R. Atkinson, he gave up his Government appointment to take up practice in Crewe. A keen lover of sport, he was also a prominent Freemason. Dr. Atkinson, who leaves a widow and a daughter, was highly appreciated as a family physician.

Manchester's Sewage Disposal.—On August 12th a Ministry of Health inquiry was held in the Manchester Town Hall into the application of the corporation to borrow £465,000 for an extension of the sewage disposal scheme. The cost of the extension will be equal to 2¼*d.* in the rates. The proposed improvements are designed to meet drainage demands for the next 50 years. Additional facilities will be provided for the disposal of sludge, which at present is taken by boat down the Ship Canal and dumped into the sea, and over 200,000 tons a year are disposed of in this way. It was stated that later it was hoped that the sludge would be so treated as to form a product for agricultural purposes.

Appointments.

Mortis, R. H., M.R.C.S., L.R.C.P. Lond., has been appointed House Surgeon, Hertford County Hospital.

Muir, T. J., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg., Certifying Surgeon under the Factory and Workshop Acts for the Pickering District (North Riding).

Vacancies.

For further information refer to the advertisement columns.

Birmingham University.—Lecturer in Bacteriology. £450.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. £120.

Bootle Borough Hospital.—H.S. At rate of £125.

Brighton, New Sussex Hospital.—H.S. £50.

Bristol General Hospital.—H.P.'s, H.S., &c. Each at rate of £80.

Bristol Royal Infirmary.—Sen. Res. M.O. At rate of £200. H.P.'s, H.S.'s, &c. At rate of £80. Dental S. At rate of £116.

Canterbury, Kent and Canterbury Hospital.—Hon. S. to Ear, Nose, and Throat Dept. Also Third Res M.O. At rate of £125.
Devonport, Royal Albert Hospital.—H.S. £150.
Dumfries, Crichton Royal Mental Hospital.—Asst. P. £350.
Glamorgan County Mental Hospital, Bridgend.—Temp. Asst. M.O. At rate of £300.
Gloucester Institution and Infirmary, Great Western-road.—M.O. £150.
Hertford County Hospital.—H.P. At rate of £160.
Jersey General Hospital and Poor-law Infirmary.—Res. M.O. £200.
Liverpool, Royal Southern Hospital.—Hon. Asst. P.
Manchester, Monsall Hospital for Infectious Diseases.—Second Asst. M.O. £275.
Manchester Royal Children's Hospital, Pendlebury.—Asst. M.O. At rate of £150. Res. Surg. O. At rate of £80.
Manchester Royal Eye Hospital.—Jun. H.S. £120.
Medical Society of London.—Secretary.
Plymouth Borough.—Asst. M.O.H. £600.
Poplar Hospital for Accidents, East India Dock road, Poplar, E.—Sen. Res. O. £200.
Preston County Borough.—Asst. Sch. M.O. £600.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Asst. Res. M.O. At rate of £80.
Royal Eye Hospital, St. George's Circus, S.E.—H.S.
Royal Free Hospital, Gray's Inn-road, W.C.—Obstet. Asst. At rate of £100.
Salop County Council.—Asst. M.O. £600.
Southampton, Borough Isolation Hospital.—Res. M.O. £300.
Staffordshire Mental Hospital, Cheddleton, Leek.—Jun. Asst. M.O. £350.
Stockport Infirmary.—Two Res. H.S.'s. Each £175.
Sudan Government, Wellcome Tropical Research Laboratories, Khartoum.—Asst. Bacteriologist. £E.720.
Ventnor, Isle of Wight, Royal National Hospital for Consumption and Diseases of Chest.—Jun. Res. M.O. At rate of £250.
West London Hospital, Hammersmith-road, W.—H.P. and Two H.S.'s. Each at rate of £100.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments for Certifying Factory Surgeons: East Grinstead, Sussex; Petersfield, Hants; Colwyn Bay, Denbigh.

Births, Marriages, and Deaths.

BIRTHS.

DE MOWBRAY.—On August 15th, at Grosvenor House, Lymington, Hants, the wife of Ralph M. de Mowbray, F.R.C.S., of a son.
EVANS.—On August 13th, at Glanfraed, Brundall, Norwich, the wife of Dr. Henry W. Evans, of a son.
FRASER.—On August 9th, at Garlands, Redhill, the wife of Dr. M. W. Fraser, W.A.M.S., of a daughter.
WOOLER.—On August 8th, at St. John's House, Cleckheaton, Yorks, the wife of Dr. E. W. Nowell Wooler, of a daughter.

MARRIAGES.

CHARLES—FISHER.—On August 6th, at St. Michael and All Angels' Church, Butcombe, Somerset, John Roger Charles, M.D., F.R.C.P., to Hilda Mary Fisher.
KITCHIN—LANDER.—On August 12th, in London, Derek Harcourt Kitchin to Mary Kathleen Forsaith Lander, M.Sc., M.B., B.S.

DEATHS.

ALEXANDER.—On August 19th, at Kingsdown-road, Epsom, Thomas Anderson Alexander, M.D., in his 67th year.
HULKE.—On August 15th, at Admiralty House, Deal, Frederick Backhouse Hulke, J.P., M.R.C.S., L.R.C.P., aged 65 years.
WARNER.—On August 15th, at Clacton-on-Sea, after a long illness contracted during the war, Cuthbert Warner, B.A., M.B., B.Ch., late surgeon in the Royal Navy.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

THE FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, August 24th, to SATURDAY, August 29th.—ALL SAINTS HOSPITAL, Vauxhall Bridge-road, S.W. Clinical demonstrations Wednesday evening, Thursday afternoon and evening, and Saturday afternoon. Wed., 2 P.M., Mr. J. C. Ainsworth Davis on Tuberculin in the Treatment of Urological Tuberculosis.—QUEEN MARY'S HOSPITAL, Stratford, E. Intensive Course in General Medicine, Surgery, and the Special Departments. First week as per syllabus. Morning and afternoon sessions. Fee £2 2s. for week or £3 3s. for two weeks.

Notes, Comments, and Abstracts.

NEW REGULATIONS FOR PRESERVATIVES IN FOOD.

CERTAIN new regulations under the Sale of Food and Drugs Acts have been laid down and circulated to town clerks, clerks to councils, and port sanitary authorities, based on the recommendations of the Departmental Committee on the *Use of Preservatives and Colouring Matters in Food.* The Regulations provide for the prohibition of the importation and sale of articles of food to which preservatives and other specified substances have been added, and in particular an important section deals with food importations. The enforcement of the edict with respect to meat and fish is to be left to the local authorities, who are not precluded from taking action with regard to other articles, though care has been taken in the Regulations to avoid any duplication of jurisdiction as between them and officers of Customs and Excise.

One of the recommendations of the Departmental Committee was, that any prohibitions or limitations imposed by Regulations should bind the courts in proceedings taken under the Sale of Food and Drugs Acts. In this way the Committee went on to say: "Traders and the public generally would know what was permissible and what was not, and there would be no conflict of expert evidence on the question whether the amount of preservative or colouring matter was or was not injurious to health. The only point at issue would normally be whether the preservative or colouring matter found in the food, or the amount of it, was in contravention of the Regulations." The Departmental Committee recommended a change in the law in this direction, and the Minister of Health is entirely in agreement with the view of the Committee, but it has not been found practicable to introduce legislation to give effect to the recommendation. The Minister commends the matter, however, to the consideration of local authorities and suggests that proceedings should not be taken under the Sale of Food and Drugs Acts in respect of the addition of preservatives to food except where such addition would be contrary to the provisions of the Regulations. "In this connexion," the Minister's communication runs, "local authorities will no doubt have regard to the fact that in conformity with the recommendation of the Committee, the Regulations have been framed so as to allow time for the adjustment of methods and processes and the clearance of existing stocks, before they come into operation."

No Regulation is made concerning the question which has arisen as to the power to give incriminated persons an opportunity to furnish explanations, the matter being left to the discretion of the local authorities. But the local authorities are reminded that they have power instead of, or in addition to, taking proceedings against a retailer, to take proceedings against the manufacturer or wholesaler by whom the article was previously sold. It is suggested that this provision might be used with advantage in many cases where an article of food is sold in a sealed container bearing the name and address of the manufacturer or of the wholesale dealer responsible for its distribution.

The Regulations come into force on Jan. 1st, 1927.

Appended are two schedules. The first enumerates (1) the articles of food which may contain preservative and the nature and proportion of the preservative in each case; and (2) the colouring matters which may not be added to articles of food. In these forbidden sophistications are found the colouring matters derived from antimony, arsenic, and other metals the use of whose salts is found perilous. It will be seen from the first part of this schedule that sulphurous acid and benzoic acid will be the only preservatives that can be employed legally after Jan. 1st, 1927, and undoubtedly the exclusion of boron will give rise to discussion. The Regulations must be welcome, for the simple reason that they will baffle the ingenuity of those who are still able to disguise the presence of putrefaction in our foodstuffs, and in this way to escape the necessity of cleanly storage and transport and careful handling; but it will be seen that considerable difficulty will arise unless new arrangements are made both in shops and households with respect to the protection of perishable material. Under this large abolition of chemical preservatives, though no one can regret the unqualified veto upon dangerous minerals and formaldehydes, there will be great difficulty during summer periods of protecting many articles of food from putrefaction, save in great establishments where cold-storage plants are in existence. As Mr. P. N. Panton has written in the *Times* this week, "We shall have to ensure a more rapid carriage of foodstuffs, a greater cold-storage accommodation, and an installation of refrigerators in the home as widely distributed as in the United States."

The second schedule gives instructions for the labelling of articles of food containing preservatives, and also for the labelling of the preservatives themselves.

THE FIRST SCHEDULE.

PART I.—*Articles of Food which may contain Preservative and Nature and Proportion of Preservative in each case.*

The articles of food specified in the first column of the following table may contain the preservative specified in the second column in proportions not exceeding the number of parts (estimated by weight) per million specified in the third column :—

Food.	Preservative.	Parts per million.
1. Sausages and sausage-meat containing raw meat, cereals and condiments	Sulphur dioxide	450
2. Fruit and fruit pulp, not dried :—		
(*a*) Strawberries and raspberries..	,,	2000
(*b*) Other fruit	,,	1500
3. Dried fruit :—		
(*a*) Apricots, peaches, nectarines, apples, and pears	,,	2000
(*b*) Raisins and sultanas	,,	750
4. Unfermented grape-juice and non-alcoholic wine made from such grape-juice if labelled in accordance with the rules contained in the Second Schedule to these Regulations	Benzoic acid	2000
5. Other non-alcoholic wines, cordials, and fruit juices, sweetened or unsweetened	Either sulphur dioxide or benzoic acid	350 600
6. Jam (including fruit jelly prepared in the way in which jam is prepared, but not including marmalade made from citrous fruits) ..	Sulphur dioxide	40
7. Candied peel	,,	100
8. Sugar (including solid glucose) ..	,,	70
9. Corn syrup (liquid glucose) ..	,,	450
10. Gelatine	,,	1000
11. Beer	,,	70
12. Cider	,,	200
13. Alcoholic wines	,,	450
14. Sweetened mineral waters	Either sulphur dioxide or benzoic acid	70 120
15. Brewed ginger beer	Benzoic acid	120
16. Coffee extract	,,	450
17. Pickles and sauces made from fruit or vegetables	,,	250

PART II.—*Colouring Matters which may not be added to Articles of Food.*

1. *Metallic Colouring Matters.*—Compounds of any of the following metals : Antimony, arsenic, cadmium, chromium, copper, mercury, lead, and zinc.

2. *Vegetable Colouring Matter.*—Gamboge.

3. *Coal Tar Colours.*

Number in colour index of Society of Dyers and Colourists, 1924.	Name.	Synonyms.
7	Picric acid.	Carbazotic acid.
8	Victoria yellow.	Saffron substitute ; dinitrocresol.
9	Manchester yellow.	Naphthol yellow ; martius yellow.
12	Aurantia.	Imperial yellow.
724	Aurine.	Rosolic acid ; yellow coralline.

THE SECOND SCHEDULE.

Labelling of Articles of Food containing Preservative and of Preservatives.

1. The articles of food containing preservative to which the Rules as to labelling set out in this Schedule apply are sausages, sausage-meat, coffee extract, pickles and sauces, and (where the proportion of benzoic acid exceeds 600 parts per million) grape-juice and wine.

2. (1) Where any of the said articles of food contains preservative it shall bear a label on which is printed the following declaration or such other declaration substantially to the like effect as may be allowed by the Minister:—

> (a) CONTAIN(S)
> PRESERVATIVE.

(2) The declaration shall be completed by inserting at (*a*) the word "This" or "These," followed by the name of the food as used in paragraph 1 of this Schedule.

(3) In the case of grape-juice or wine to which these Rules apply there shall be added to the declaration the words "*and is not intended for use as a beverage.*"

3. (1) An article sold as a preservative shall bear a label on which is printed the following declaration or such other declaration substantially to the like effect as may be allowed by the Minister :—

> THIS PRESERVATIVE CONTAINS
> (a) PER CENT. OF SULPHUR DIOXIDE.

(2) Where the article contains benzoic acid the words "Benzoic Acid" shall be substituted for the words "Sulphur Dioxide."

(3) The declaration shall be completed by inserting at (*a*) in words and figures, excluding fractions (e.g., "seventy (70)"), the true percentage of the sulphur dioxide or benzoic acid present in the article.

4. The prescribed declaration shall in each case be printed in dark block type upon a light coloured ground within a surrounding line and no other matter shall be printed within such surrounding line. The type used shall be not less than one-eighth of an inch in height, or, in the case of grape-juice or wine to which these Rules apply, one-sixteenth of an inch in height.

5. The label shall be securely affixed to the article or be part of or securely affixed to the wrapper or container, and in any case shall be so placed as to be clearly visible. If the article bears a label containing the name, trade mark, or design representing the brand of the article or the name and address of the manufacturer or dealer the prescribed declaration shall be printed as part of such label.

6. No comment on or explanation of the prescribed declaration (other than any direction as to use in the case of a preservative) shall be placed on the label or on the wrapper or container.

THE PREVALENCE OF VENEREAL DISEASE.

THERE is no compulsory notification of venereal cases, so that the figures recently circulated as to the numbers of cases of venereal disease dealt with for the first time at treatment centres in England and Wales during each of the years from 1919 to 1924 are of interest.

Year.	Cases.*	Attendances.†	Year.	Cases.*	Attendances.†
1919	82,797	1,002,791	1922	56,347	1,500,568
1920	85,531	1,488,514	1923	55,945	1,605,617
1921	66,820	1,612,592	1924	54,380	1,645,416

* No. of cases dealt with for the first time at treatment centres in England and Wales during the year and found to be suffering from venereal disease.

† Total No. of attendances at treatment centres during the year.

The total number of attendances at the centres during each of those years does not bear out the pessimistic estimates that have been very usual.

CRESER'S PATENT DEODORISER AND DISINFECTANT CONTAINER.

WE have received from Mr. A. T. Creser, of 3, Manor Park, Richmond, Surrey, an apparatus designed for use in deodorising and disinfecting w.c.'s, which seems to possess decided advantages both of efficiency and economy. It consists of a perforated non-rustable metal cylinder containing a disinfectant in a solid but soluble form. The cylinder is simply and easily fixed under the rim of the w.c. pan, and in the track of the high-velocity water which washes out a certain amount of the disinfectant contained in the cylinder. On the rush of water ceasing, the drainage of the container automatically gives to the water in the pan, after the valve is closed, a strong solution of the disinfectant, which remains in the pan until the water is again set flowing. The apparatus can be refilled in less than 15 seconds, each refill will last from two to three months, and the cost of usage is approximately ½*d.* a week.

AFTER 50 years at 1, Fenchurch-avenue, E.C. 3, Messrs. F. W. Berk and Co., Ltd., the well-known chemical manufacturers, are removing their head offices on Monday, August 24th, to larger premises at 100, Fenchurch-street, London, E.C. 3.

STUDENTS' GUIDE—SESSION 1925-1926.

The scheme upon which the Students' Number of The Lancet is constructed will make it easy, we hope, for all who consult it to find what they seek. The General Council of Medical Education and Registration *is the controlling authority of all the medical and dental education of the country, and its responsibility for* the upkeep of the Medical Register and for the maintenance of the examination standard is first explained.

But the student has to be taught as well as examined, and as the systems under which instruction can be obtained do not conform to one pattern, the various curricula are described in detail, and under their respective headings the necessary information will be found concerning the facilities for medical study offered at the different teaching centres of the United Kingdom. The regulations for the examinations, both *preliminary and professional, at these centres are set out so that the student desiring to obtain a* medical degree from any university, or a diploma from any medical corporation, may ascertain the course of clinical instruction and the conditions under which submission for examination has to take place. The metropolitan medical schools and hospitals are grouped under the University of London, of which they are constituent bodies, although their educational opportunities are offered to students of other universities as well as to those seeking the qualifications of the medical corporations. A similar plan is adopted in dealing with the provincial universities, the hospitals in direct connexion with which are described with the universities; the hospitals may not be official schools of the universities, but they supply an integral section of the teaching required.

Upon securing degrees or diplomas admission to the Register follows, and greater education begins. The prudent young doctor already knows what he or she desires to make the next step, and there is a large range of choice displayed. The inducements to enter one of the Services should prevail more than they have done of recent years. An account is given of the conditions under which commissions can be obtained in the Navy, Army, Indian, and Air Force Medical Services, and in the Colonial and other Medical Services.

GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION OF THE UNITED KINGDOM.

Powers, Duties, and Constitution of the General Medical Council.

The powers and duties of the *General Medical Council*, or "General Council of Medical Education and Registration of the United Kingdom" to give the Council its full title, have been set out in detail in many previous Students' Numbers of The Lancet. It is first a registering body: no person, even though his qualifications have been obtained by *examination*, is a legally qualified medical practitioner until his name appears on the Medical Register. Secondly, it is a standardising body, ensuring that medical education reaches an efficient standard by scientific examination. Thirdly, it is a penal and disciplinary body, having power to remove from the Register any practitioner adjudged guilty of conduct "infamous in a professional respect." Fourthly, to the Council is committed the codification of pharmaceutical remedies. The duties of the Council are thus primarily of a public nature, and its construction shows its fitness for its fourfold responsibilities.

The Council at present consists of 38 members, of whom, as will be seen by the annexed list, all but 11 are official representatives of some corporate body. Five members are chosen by the Crown on the advice of the Privy Council, and six others are elected by the members of the medical profession as Direct Representatives. There are also three additional members appointed by the Privy Council under the Dentists Act, 1921, under which the powers and duties of the General Medical Council with regard to the keeping of the Dentists Register and the administration of the Dentists Acts were largely transferred to the Dental Board of the United Kingdom (see p. 470).

The President of the General Council is Sir Donald MacAlister, and the sitting members of the Council are enumerated in the Medical Register.

The Educational Curriculum.

Professional Education.—The course of professional study after registration occupies at least five years. The Final Examination in Medicine, Surgery, and Midwifery must not be passed before the close of the fifth academic year of medical study.

The following are the General Medical Council's Regulations in regard to the registration of medical students which came into force on Jan. 1st, 1923.

Registration of Medical Students.

1. Subject to such exceptions as the Council may from time to time allow, every medical student, at the commencement of his studies, should be registered under the conditions hereinafter set forth.

2. Before registration every candidate should produce evidence that he has attained the age of 17 years.

3. The minimum standard of General Education required is that of University matriculation or entrance examination in the Faculties of Arts or Pure Science.

4. Before registration as a student every applicant should be required to have passed an approved examination in general education, and, in addition thereto, an examination in elementary physics and elementary chemistry conducted or recognised by one of the licensing bodies.

5. A student who has diligently attended an approved course of instruction in elementary biology at a secondary school or other teaching institution recognised by a licensing body may be admitted to the professional examination in elementary biology immediately after his registration as a student.

6. The commencement of the course of professional study recognised by any of the licensing bodies should not be reckoned as dating earlier than 15 days before the date of registration.

7. Every person desirous of being registered as a medical student should apply to the registrar of the division of the United Kingdom in which he is residing, according to a prescribed form, copies of which may be had on application to the several licensing bodies, medical schools, and hospitals, or at the offices of the Medical Council; and should produce or forward to the registrar evidence that he has attained the age of 17 years, that he has passed a preliminary examination in general education recognised by the General Medical Council, and, in addition, an examination in elementary physics and elementary chemistry conducted or recognised by one of the licensing bodies, and that he has commenced medical study.

Regulations which the Council has prescribed for the maintenance of the register of medical students:—

1. It shall be delegated to the Education Committee to prepare and issue from time to time a list of examining bodies whose examinations in general education fulfil the conditions of, and are specially recognised by, the General Medical Council.

2. The Council has recognised the undernoted university examinations, subject to the conditions specified below: viz., at Oxford University, Responsions; at Cambridge University, the Previous Examination; at the Scottish Universities, the Preliminary Examination; and the Matriculation Examination at the Universities of Birmingham,

Bristol, Durham, Leeds, Liverpool, London, Manchester, Sheffield, and Wales.

3. The conditions prescribed by the Council are:—(1) The standard of the examination shall not be lower than that of the University Matriculation Examinations in the Faculties of Arts and Pure Science. (2) The certificate shall bear evidence that the candidate has passed in the following subjects, viz.:—(*a*) English. (*b*) Mathematics, Elementary. (*c*) A language other than English. (*d*) An additional subject or subjects, as required by the regulations of the particular examination, to be chosen from the subjoined list, viz.: History, Geography, Physical Science, Natural Science, Latin, Greek, Hebrew, French, German, or other language accepted by the University for the purpose.

4. Subject to the conditions specified above (Section 3, Subsection (2)), the Council will recognise all examinations conducted by recognised authorities in Great Britain accepted by one or more of the above-named Universities as equivalent for purposes of Matriculation to an examination named in the preceding list (Section 2). Bristol University: Higher School Certificate Examination; Schools Certificate Examination. Cambridge Local Examinations and Lectures Syndicate: Higher School Certificate Examination; School Certificate Examination. Central Welsh Examination Board: Senior Certificate Examination. Durham University: Higher Certificate Examination; School Certificate Examination. London University: General School Examination; Higher School Certificate Examination. Northern Universities Joint Matriculation Board: Higher Certificate Examination; School Certificate Examination. Oxford and Cambridge Schools Examination Board: Higher Certificate Examination; School Certificate Examination. Oxford Delegacy for Local Examinations: Higher School Certificate Examination; School Certificate Examination. Scottish Education Department: Leaving Certificate Examination.

5. The Council will continue to recognise examinations conducted by educational bodies other than those (referred to in Section 4) directly recognised by the Universities of Great Britain. Recognition will not be extended under this section to any examination unless the Council is satisfied (1) that in scope and standard it is equivalent to a recognised Matriculation Examination of a British University, and (2) that it fulfils the conditions specified by the Council (Section 3, Sub-section (2)). Such examinations are:—The College of Preceptors (England): Senior Certificate. The Educational Institute of Scotland: Preliminary Medical Certificate.

Examinations in Ireland.—6. Subject to the specified conditions (Section 3, Sub-section (2)), the Council will recognise the Entrance Examination to the School of Physic of the University of Dublin, the Matriculation Examinations of the National University of Ireland and the Queen's University of Belfast, the Preliminary Examination of the Irish Royal Colleges of Physicians and Surgeons, the Leaving Certificate of the Intermediate Education Board of the Irish Free State, and the Senior Leaving Certificate of the Ministry of Education of Northern Ireland, and all examinations accepted by one or more of the Universities as equivalent for purposes of entrance or Matriculation, to the above-named examinations.

7. The Council will recognise the Final Examinations for Degrees in Arts and Science of any University of the United Kingdom or of the British Dominions.

Colonial Examinations.—8. Subject to the specified conditions (Section 3, Sub-section (2)), the Council will recognise all examinations of Colonial Universities which are accepted by one or more of the British Universities as equivalent, for purposes of Matriculation, to an examination named in the list of examinations recognised by the Council (Section 2).

A copy of the Medical Students Register prepared by each of the Branch Registrars is transmitted, on or before Dec. 31st in each year, to the Registrar of the General Council, who supplies an alphabetical list of all students registered in the preceding year to each of the licensing bodies in the United Kingdom, and to each of the several medical schools and hospitals.

All applications for special exceptions to the foregoing regulations as to registration should be addressed to the Registrar of the General Council.

Lists of Universities (including their Colleges and Medical Schools) and Schools of Medicine at which Medical Study may be Commenced in the United Kingdom.—1. Universities (including their colleges): Aberdeen University; Belfast, Queen's University; Birmingham University; Bristol University; Cambridge University; Dublin University (including Trinity College); Durham University (including the Durham College of Medicine); Edinburgh University; Glasgow University (including Queen Margaret College); Ireland, National University (including University College, Cork; University College, Dublin; University College, Galway); Leeds University; Liverpool University; London University (including the following Schools and Colleges: St. Bartholomew's Hospital, Charing Cross Hospital, St. George's Hospital, Guy's Hospital, King's College, King's College Hospital, London Hospital, St. Mary's Hospital, Middlesex Hospital, St. Thomas's Hospital, University College, Westminster Hospital, London (Royal Free Hospital) School of Medicine for Women; Bedford College, Royal Holloway College; Manchester, Victoria University; Oxford University; St. Andrews University (including University College, Dundee); Sheffield University; Wales, University of (including University College of Wales, Aberystwyth); University College of North Wales, Bangor; University College of South Wales and Monmouthshire, Cardiff; Welsh National School of Medicine, Cardiff; University College, Swansea. 2. Schools of Medicine Recognised by the Licensing Bodies:—Dublin: Royal College of Surgeons, Schools of Surgery; Edinburgh: School of Medicine of the Royal Colleges; Glasgow: Anderson's College, St. Mungo's College.

The address of the Registrar, to whom further communications should be addressed, is as follows: The Registrar of the General Medical Council, 44, Hallam-street, Portland-place, London, W. 1.

THE IRISH FREE STATE AND THE GENERAL MEDICAL COUNCIL.

On August 15th the announcement was made by the Government of the Irish Free State that the Executive Council had decided "not to seek the continuation of the United Kingdom arrangement whereby the medical profession in Ireland with certain representations is controlled by the British General Medical Council."

When the autonomous Free State was set up in January, 1922, early negotiations with the Provisional Government procured the remaining in force of the existing arrangement as to the Medical Acts, unless and until the Irish Free State saw fit to legislate for practitioners within its own area. But the Free State making no move, it was indicated from the General Medical Council that this should be done explicitly if it was wished to preserve the connexion. Last year a Bill was introduced into the Free State Parliament authorising the General Medical Council to continue jurisdiction for a period of one year. This Bill was passed by the Senate of the Free State on Feb. 23rd, 1925, from which date it became effective for the indicated period, but there was opportunity given for extension of the interim measure. At a conference held in April of this year in Dublin, the Minister of Local Government and Public Health of the Free State, in whose department the matter lay, met representatives of the medical profession in the State, when it was urged by the representatives that the existing status should not be disturbed; but the recent decision of the Government of the State is to set up a separate medical register.

If the intention of the Government of the Free State proceeds to action a new Act of Parliament will be required.

THE MEDICAL EXAMINING BODIES AND SCHOOLS OF THE UNITED KINGDOM.

A GUIDE TO THE FACILITIES FOR OBTAINING THE VARIOUS MEDICAL DEGREES AND OTHER QUALIFICATIONS FOR THE BRITISH MEDICAL REGISTER.

I.—ENGLAND AND WALES.

THE UNIVERSITIES.

UNIVERSITY OF OXFORD.

THIS University confers two degrees in Medicine, those of *B.M.* and *D.M.*, two in Surgery, *B.Ch.* and *M.Ch.*, and diplomas in *Public Health and Ophthalmology.*

Only Graduates in Arts of the University are eligible for the Medical and Surgical degrees. The most convenient course for the B.A. degree for intending graduates in Medicine is to take Responsions, the Preliminary Science Examinations mentioned below, and the Final Honour School of Physiology. To obtain the degrees of B.M. and B.Ch. the following examinations must be passed: 1. Preliminary subjects: Physics and Chemistry, Zoology, and Botany. 2. *Professional.* (*a*) *First Examination:* Subjects—Organic Chemistry, unless the candidate has satisfied the examiners in Part I. Chemistry in the Honour School of Natural Science; Human Physiology, unless he has obtained a First or Second Class in Animal Physiology in the Honour School of Natural Science: Human Anatomy. (*b*) Second Examination: Subjects—Medicine, Surgery, Midwifery, Pathology, Forensic Medicine with Hygiene, Materia Medica and Pharmacology. The First and Second Professional examinations are held in June and December. The first B.M. examination may be passed at any time after the Preliminary Scientific examinations. Anatomy and Physiology must be passed at the same time—Organic Chemistry may be taken separately.

At any time after passing the First Examination, the candidate can, on producing certificates, present himself for examination in the subjects of Pathology, Forensic Medicine with Hygiene, Materia Medica and Pharmacology; but cannot enter for examination in Medicine, Surgery and Midwifery until the eighteenth term from his matriculation, nor until a *period of at* least thirty-three months has elapsed from the date of passing the First B.M. Examination. He must pass in Medicine, Surgery and Midwifery at one and the same time.

Before admission to the Second B.M. Examination, the student must produce certificates of having attended laboratory courses in Pathology, Bacteriology and Pharmacology either in Oxford or in a recognised medical school. He must also produce certificates of having acted as Clinical Clerk and Dresser, each for six months, in a medical school approved by the University, of post-mortem clerking, of attendance on Labours, of instruction in Infectious Diseases and Ophthalmology, of proficiency in vaccination and the administration of anæsthetics, and of three academic years of Hospital Practice.

The degree of B.Ch. is granted with that of B.M. after passing the above examinations. The degree of D.M. is granted to Bachelors of Medicine of the University who have entered upon their thirtieth term from Matriculation, and have submitted a dissertation which is approved by the examiners for the B.M. degree whose subjects are dealt with therein and by Professors in the Faculty of Medicine. The degree of M.Ch. is granted after examination to Bachelors of Surgery in the University who have entered upon their twenty-first term, and who are Members of the Surgical Staff of a recognised hospital, or have acted as Dresser or House Surgeon in such a hospital for a period of six months. The examination, which includes Surgery, Surgical Anatomy and Pathology and Surgical Operations, is held annually in June, after the Second B.M. examination.

The examinations for the Diploma in Public Health (see p. 474) in two parts are held in Trinity and Michaelmas terms; that for the Diploma in Ophthalmology (see p. 473) is held annually in July.

Travelling Fellowship, Scholarships, and Prizes.—A Radcliffe Travelling Fellowship is awarded annually after an examination held in February. It is tenable for two years and of the annual value of £300. The examination is in Physiology, Pathology, and Hygiene, and is partly "practical." Candidates must be graduates in Medicine of the University. The holder must travel abroad for the purpose of medical study. Application should be made to the Radcliffe Examiners, Department of Medicine, University Museum. A Christopher Welch Scholarship of £100, tenable for four years, is awarded annually after examination. Candidates must be men undergraduate members of the University, who have not exceeded the twelfth term from their matriculation, or been admitted to any degree in the University. They may offer any one of the subjects, Animal Physiology, Botany, Zoology. A Rolleston Memorial Prize is awarded once in two years to members of the Universities of Oxford and Cambridge of not more than ten years' standing for an original research in some Biological subject, including Physiology or Pathology. The Radcliffe Prize, founded by University College (1907), is of the value of £50 and is awarded biennially (alternating with the Rolleston Memorial Prize) for research in some branch of medical science. The Theodore Williams Scholarships, each of the value of £50 a year for two years, are awarded annually in the subjects of Anatomy, Physiology, and Pathology. A Radcliffe Scholarship in Pharmacology, of the value of £50 for one year, is awarded annually by the Master and Fellows of University College. A King's College Hospital Burney Yeo Scholarship of £80 is awarded each year on the nomination of the Regius Professor of Medicine. The Scholarships and Exhibitions in Science which are offered by most Colleges are open to those who intend to pursue Medicine. The value of these scholarships is usually £80 a year for four years; the exhibitions vary in value from £30 to £90 per annum. The number of scholarships and exhibitions in Science offered annually is about forty. There are also Medical Scholarships of the value of £100 a year at University College and at Pembroke College. The Welsh Memorial Prize for Anatomical drawing is awarded annually, and is of the value of about £10.

In addition to the University Lectures and classes the several Colleges provide their undergraduates with tuition *for all examinations* up to the B.A. degree.

In the Radcliffe Infirmary and County Hospital elementary clinical instruction is given by the Regius Professor of Medicine, the Litchfield Lecturers in Medicine and Surgery, and the other physicians and surgeons. Instruction is also given in post-mortem work and Clinical Pathology in connexion with the courses in Pathology. Post-graduate courses are held at the beginning of October.

More detailed information may be obtained from the University Calendar; from the Examination Statutes, 1923 (both of which are published by the Clarendon Press); from the Regius Professor of Medicine; from the Professors in the several departments of medical science; and from the Dean of the School of Medicine, Department of Medicine, Museum, Oxford.

UNIVERSITY OF OXFORD: RADCLIFFE INFIRMARY *AND COUNTY HOSPITAL.*—*Courses* of *instruction* are given in connexion with the Oxford University Medical School. These include (1) a course in Practical Medicine by the Regius Professor of Medicine; (2) Clinical lectures by the Litchfield Lecturers in Medicine and Surgery; and (3) tutorial instruction and demonstrations in special Regional Anatomy (medical and surgical), methods of Medical and Surgical Diagnosis, and Surgical Manipulation. (4) Pathological demonstrations and *instruction* in post-mortem work are given by the Assistant Pathologist. Opportunities are offered to students who wish to act as surgical dressers and clerks. The hospital contains 225 beds.

UNIVERSITY OF CAMBRIDGE.

The student must enter at one of the Colleges, or as a non-collegiate student, and keep nine terms (three years) by residence in the University. He must pass the Previous Examination in Classics, Mathematics, &c., if possible, before he comes into residence in October, or he may obtain exemption through the Oxford and Cambridge Schools Examination Board, the Oxford or Cambridge Senior Local Examinations, the London Matriculation Examination, the Scotch Education Department, Responsions at Oxford, and the Joint Matriculation Board of the Universities of Manchester, Liverpool, Leeds, and Sheffield, the Matriculation Examination of the University of Birmingham, or by being a graduate of certain other Universities in the United Kingdom. He may then devote himself to medical study in the University, &c. Or he may, as nearly all students now do, proceed to take a degree in Arts by passing the Examinations for the ordinary B.A. degree, or an Honours degree by passing a Tripos Examination. The Natural Sciences Tripos is taken most frequently by medical students, as some of the subjects are practically the same as those for the first and second M.B.

For the degree of *Bachelor of Medicine* (*M.B.*) five years of medical study are required either in Cambridge or at one of the recognised Schools of Medicine. The first three or four years are usually spent in Cambridge till the student has passed the examination for Part I. of the Natural Sciences Tripos and the first and second examinations for M.B. Hospital practice and many of the requisite lectures may be attended in Cambridge, and some students remain to attend lectures and hospital practice until they have passed the second part of the second examination for M.B. The laboratories for Botany, Chemistry, Physics, Biology, Zoology, Human Anatomy, Physiology, Biochemistry, Pathology, Bacteriology, Pharmacology, Psychology, and Public Health are well equipped. Addenbrooke's Hospital, the Infectious Diseases Hospital, the Cambridge Research Hospital, and the Field Laboratories are utilised for study and research.

There are three examinations for M.B. The *first* includes (1) General and Chemistry, (2) Mechanics, (3) Physics, and (4) Elementary Biology. These parts may be taken together or separately. The *second* is divided into three parts—viz., (1) Organic Chemistry, (2) Human Anatomy and Physiology; and (3) Pharmacology and General Pathology. The *third* is divided into two parts: (1) Principles and Practice of Surgery (including Special Pathology and Midwifery and Diseases Peculiar to Women); and (2) Principles and Practice of Physic (including Diseases of Children, Mental Diseases, Medical Jurisprudence), Pathology (including Hygiene and Preventive Medicine), and Pharmacology (including Therapeutics and Toxicology). The examinations are partly in writing, partly oral, and partly practical, in the hospital, in the dissecting room, and in the laboratories. An Act has then to be kept in the Public Schools, by the candidate reading an original dissertation composed by himself and being examined orally on some subject approved by the Regius Professor of Physic. Candidates who have passed both parts of the *third* M.B. examination are admitted to the registrable degree of *Bachelor of Surgery* (*B.Chir.*) without separate examination and without keeping an Act.

The degree of *Doctor of Medicine* (*M.D.*) may be taken three years after that of M.B. or four years after that of M.A. The candidate is required to produce certificates of having been engaged in Medical Study for five years, and if an M.A., to pass the same examinations as are required for the degree of M.B. An Act has to be kept, consisting of an original Thesis sustained in the Public Schools with *vivâ voce* examination; and a short extempore essay has to be written on a topic taken from the general subject of his thesis, whether it be Physiology, Pathology, Pharmacology, the Practice of Medicine, State Medicine, or the History of Medicine.

For the degree of *Master of Surgery* (*M.Chir.*) the candidate must have passed all the examinations for B.Chir., or, if he is an M.A., have obtained some other registrable qualification in surgery. He is required to pass an examination in Principles and Practice of Surgery, Surgical Anatomy and Surgical Operations, and Pathology, and to write an extempore essay on a Surgical Subject. Before he can be admitted to the examination two years at least must have elapsed from the time when he completed all required for the degree of B.Chir.

Diplomas are granted in Public Health, in Hygiene, in Tropical Medicine and Hygiene, in Medical Radiology and Electrology, and in Psychological Medicine. Candidates must hold a recognised medical qualification. (See p. 472.)

Women Students.—Increased facilities have been offered to students of Girton and Newnham Colleges, and they are admitted to the M.B. Examinations.

University Prize in Medicine.—The one University Prize in Medicine, the *Raymond Horton Smith Prize* (value £19), is awarded to that candidate for the degree of *M.D.* who presents the best thesis for the degree during the academical year, provided that he has taken honours in a tripos examination. Medical studies are endowed by the numerous Natural Science scholarships at the various colleges, information about which can be obtained from the respective Tutors.

An abstract of the Regulations and Schedules of the range of the examinations in Chemistry, Physics, Biology, Pharmacology, and General Pathology may be obtained upon sending a stamped directed envelope to the Registrar, The Registry, Cambridge.

ADDENBROOKE'S HOSPITAL.—Clinical Lectures in Medicine and Surgery, in connexion with Cambridge University Medical School, are given at this hospital twice a week during the academical year; and practical instruction in Medicine and Surgery is given in the wards and out-patients' rooms by the physicians and surgeons daily during the term time and vacations. The fee for pupilship is 3 guineas a term, 9 guineas a year, 12 guineas perpetual. Further information may be obtained from Dr. Aldren Wright.

UNIVERSITY OF LONDON.

The University of London was established by Royal Charter in 1836 as an examining and degree-conferring body with affiliated colleges but no direct teaching functions. In 1900 it was reconstituted under the Act of Parliament, 1898, and became a teaching as well as an examining body. Many schools already existing became constituent colleges, including all the metropolitan medical schools. Lecturers were also appointed in special subjects.

Teaching Staff.—The teaching staff of the University is organised under two heads: 1. Appointed teachers—i.e., such as are appointed by the University. 2. Recognised teachers—i.e., those who have been appointed and are paid by the several schools of the University and other institutions at which instruction is given under the auspices of the University, and who have been recognised by the Senate as conducting work of University standard. Courses by non-recognised teachers may also be approved in schools of the University. The lecturers in the Medical Sciences and the professors in the Faculties of Medicine in University College, London, and King's College, London, will be found enumerated under their respective schools.

Internal and External Students.—All the examinations of this University are open to men and women alike. Matriculated students of the University may be either internal or external. Internal students of the University are students who have matriculated at the University and who are pursuing a course of study approved by the University, either (*a*) under the direct control of the University or a committee appointed thereby; or (*b*) under one or more of the appointed or recognised teachers of the University.

Centres for preliminary and intermediate medical studies have been established by the University at University and King's Colleges. Internal students must pursue their studies at one of the above centres, or at one of the medical schools connected with the University. These are St. Bartholomew's Hospital, Charing Cross Hospital, St. George's Hospital, Guy's Hospital, King's College Hospital, the London Hospital, St. Mary's Hospital, the Middlesex Hospital, St. Thomas's Hospital, University College Hospital, Westminster Hospital, and the London (Royal Free Hospital) School of Medicine for Women. The London School of Tropical Medicine, the Lister Institute of Preventive Medicine, the Maudsley and Bethlem Royal Hospitals are also recognised as schools of the University in special departments. External students are all other matriculated students, and may pursue their studies at other approved universities and medical schools, presenting themselves for examination at the University.

Faculty of Medicine.—The Faculty of Medicine grants the joint degrees of M.B., B.S. (*Bachelor of Medicine and Surgery*), the higher separate degrees of M.D. (*Doctor of Medicine*) and M.S. (*Master of Surgery*), and the degree of B.D.S. (*Bachelor of Dental Surgery*); the two higher degrees being open only to candidates holding the M.B., B.S. degrees of the University.

The curriculum for the M.B., B.S. degrees is five and a half years from the time of matriculation, with certain exceptions which must be looked for in the official regulations of the University, to be obtained from the Principal Officer, University of London, South Kensington, S.W. 7.

A. *Internal Students.*—For the Bachelor's degrees in Medicine and Surgery a student must normally, after registration as an internal student, have: (1) *Attended* prescribed courses of study for five and a half years in one or more schools of the University. (2) Passed the following examinations, under the conditions mentioned below: (*a*) The First Examination for Medical Degrees in Inorganic Chemistry, Physics, including Mechanics, and General Biology; (*b*) the Second Examination for Medical Degrees: Part I., Organic Chemistry; Part II., Anatomy, Physiology, and Pharmacology; (*c*) the Third Examination for Medical Degrees, or M.B., B.S. Examination in Medicine, Surgery, Obstetrics and Gynæcology, Pathology, Forensic Medicine, and Hygiene.

B. *External Students.*—For the Bachelor's degrees in Medicine and Surgery an external student must (1) have passed the Matriculation examination or have been exempted therefrom under Statute 116 not less than five and a half years previously; (2) have passed subsequent examinations similar to those required of an internal student; and (3) have been engaged in professional studies during the five and a half years subsequently to Matriculation and four and a half years subsequently to passing the First Examination for Medical Degrees at one or more of the medical institutions or schools recognised by this University for the purpose, one year at least of the four and a half years to have been spent in one or more recognised institutions or schools.

The First Examination for Medical Degrees (Inorganic Chemistry, Physics, including Mechanics, and General Biology) will take place twice in each year, commencing on the Monday following Dec. 7th and on the first Monday in July. It must be passed not less than nine months after matriculation.

The Second Examination for Medical Degrees (Part I.): Organic Chemistry.—This examination will take place twice in each year, commencing on the Tuesday following the third Monday in March and on the second Monday in July. No candidate will be admitted to this examination until he has completed the First Examination.

The Second Examination for Medical Degrees (Part II.) takes place twice in every year, commencing on the Tuesday following the third Monday in March and on the Tuesday following the first Monday in July. No candidate shall be admitted to the examination unless he has passed the First Examination for Medical Degrees at least 18 months previously, and has passed Part I. of the Second Examination for Medical Degrees.

The Third or M.B., B.S. Examination.—The M.B., B.S. examination takes place twice in each year, commencing on the second Monday in November and on the first Monday in May. No candidate will be admitted to this examination unless he has completed the Second Examination for Medical Degrees, *together* with a course of study summarised below, nor within three years from the date of passing the Second Examination, Part II., in Anatomy and Physiology. The course of study comprises introductory course in (1) Clinical Medicine; (2) Clinical Surgery; and (3) Clinical Pathology; (4) Experience as Clinical Clerk; (5) Clinical Medicine; (6) (*a*) Fevers, (*b*) Children's Diseases, (*c*) Venereal Diseases, (*d*) Mental Diseases (at a recognised Asylum), (*e*) Dermatology, (*f*) Vaccination, (*g*) Materia Medica and Pharmacy; (7) Experience as a Surgical Dresser; (8) Clinical Surgery; (9) Ophthalmology; (10) Oto-Rhino-Laryngology; (11) (*a*) Operative Surgery, (*b*) Applied Anatomy, (*c*) Administration of Anæsthetics, (*d*) Dental Surgery, (*e*) Orthopædic Surgery; (*f*) Mechano-therapeutics; (12) Obstetrics and Gynæcology; (13) Lying-in Hospital; (14) The conduct of at least 20 Labours; (15) Antenatal Clinic; (16) Experience as a Clinical Clerk in Gynæcological Work; (17) General Pathology, Morbid Anatomy, Bacteriology, and Chemical Pathology; (18) Work in the Post-Mortem Room; (19) Clinical Laboratory; (20) Forensic Medicine; (21) Hygiene. He must have attended the Medical and Surgical Practice of a recognised hospital for two years, and have held the posts of clinical clerk and surgical dresser for periods of six months each. Candidates will be examined in Medicine, Pathology, Forensic Medicine and Hygiene, Surgery, Obstetrics and Gynæcology. The subjects may be divided into two groups—namely: (1) Medicine, Pathology, Forensic Medicine, and Hygiene; and (2) Surgery, Obstetrics, and Gynæcology. These groups may be taken either separately or together. The list of candidates who have passed will be published in two parts—namely, an Honours list and a Pass list. Bachelors of Medicine of this University who graduated in or before May, 1904, may obtain the B.S. degree by passing the Surgical part of the M.B., B.S. examination.

Doctor of Medicine.—The examination for this degree takes place twice in each year, commencing on the second Monday in December and on the first Monday in July. Candidates may present themselves for examination in one of the following branches—namely: (1) Medicine; (2) Pathology; (3) Psychological Medicine; (4) Midwifery and Diseases of Women; (5) State Medicine; and (6) Tropical Medicine. Any candidate for the degree of M.D. (except in branch 5) may transmit to the Registrar a thesis or published work having definite relation to the branch of Medicine in which he is a candidate, and if the thesis be approved by the examiners the candidate may be exempted from a part or from the whole of the written examination in that subject.

Master of Surgery.—The examination for the degree of Master of Surgery takes place twice in each year and commences on the second Monday in December and on the first Monday in July. Candidates may present themselves for examination in one of the following branches: (1) Surgery; (2) Dental Surgery; (3) Ophthalmology; (4) Laryngology, Otology and Rhinology. A thesis may be submitted as for M.D.

Bachelor of Pharmacy.—The Senate has approved the institution of the Degree of Bachelor of Pharmacy (B. Pharm.). The course for this Degree *extends over* three years.

Fees.—Matriculation £2 12*s.* 0*d.* for each entry; at provincial examinations an additional local fee is charged. First examination for Medical Degrees: *£9 9s. for each entry to the entire examination.* For re-examination in one subject the fee is £2 2*s.* Second examination, Part I. £3 3*s.*, repeated on each subsequent entry; Part II. £9 9*s.* for the whole examination. Third examination: £12 12*s.* for each entry to the whole examination. M.D. Examination: £21; for re-examination £10 10*s.* M.S. Examination: As for M.D.

Full details of the prescribed curricula of study and the names of the recognised Internal and External Schools of the University, can be obtained free on application to the Principal Officer, University of London, South Kensington, S.W. 7.

MEDICAL SCHOOLS OF THE UNIVERSITY OF LONDON.[1]

ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE.—The hospital contains 757 beds, of which 687 are for patients in the hospital at Smithfield and 70 at the Alexandra Hospital, Swanley. It receives over 9000 in-patients annually and its out-patients and casualties amount to more than 75,000 annually. Special departments have been organised for Diseases of Women and Children, the Eye, Ear, Larynx, and Skin, as well as for Orthopædic and Dental Surgery, and for Electro-therapeutics and X Ray work. Surgical operations take place every day, except Saturdays, at 1.30 P.M., and Surgical consultations are held on Thursdays at the same hour. Medical consultations are held on Thursdays at 3.15 P.M. The physicians and surgeons deliver clinical lectures weekly during both the winter and the summer sessions. Clinical lectures on all special subjects are also given. Wholetime Clinical Units under Professors of Medicine and Surgery have been established.

Ten house physicians and ten house surgeons are appointed annually, and are provided with rooms and board by the hospital authorities and receive £80 a year as salary. A resident midwifery assistant, an ophthalmic house surgeon, and a house surgeon for diseases of the throat, nose, and ear are appointed every six months, and are provided with rooms and board, and receive a salary of £80 a year. Three resident administrators of anæsthetics are appointed, the senior for one year at a salary of £150, and two juniors for six months with a salary at the rate of £80 per annum, with board and rooms. An extern midwifery assistant is appointed every three months, and receives a salary of £80 a year. The clinical clerks, the obstetric clerks, the clerks to the medical out-patients, the dressers to the surgical in-patients and to the out-patients, and the dressers in the special departments, are chosen from the students. A residential college is attached to the hospital.

There are quarters for the resident staff, casualty, medical, surgical, and special out-patient departments, casualty wards, dispensary, and clinical lecture theatre. There is a chemical laboratory attached to the Medical College as well as a laboratory devoted to instruction in Public Health. A block is devoted to Pathology, and contains the post-mortem room as well as extensive laboratories for bacteriology, clinical pathology, and pathological chemistry. *The Medical School Buildings* include three large lecture theatres, a large dissecting room, laboratories for chemistry, biology, morbid anatomy and histology, and public health, as well as a spacious library (containing 14,500 volumes), a well-appointed museum of anatomy, physiology, comparative anatomy, materia medica, botany, and pathological anatomy. The pathological museum is the most complete in the kingdom. A new block in Giltspur-street has recently been acquired and has been fitted up as lecture theatres and laboratories for physics, chemical physiology, experimental physiology, histology, and pharmacology.

Special Classes for the Primary and Final F.R.C.S. are held twice yearly. *Instruction in Preliminary Science* is given to University of London students in chemistry, biology, and physics throughout the year. *Laboratory Instruction for the D.P.H.* is provided during the winter and summer sessions. Facilities for research work are afforded in the Clinical Units and the Laboratories of the pathological and other departments. *A Vacation Post-graduate Course*, adapted to the needs of general practitioners, is given annually. The recreation ground of 10 acres is at Winchmore Hill for the use of the members of the Students' Union, which all students are expected to join. The Students' Union contains a large reading and smoking room, a committee and writing room, luncheon and dining hall, and a miniature rifle range.

Scholarships given in aid of Medical Study.—At this school various Scholarships, prizes, &c., are given. For five of the Scholarships and the Exhibition—namely, (*a*), (*b*), two Entrance Scholarships in Science of the respective values of £75 and £100; (*c*) Entrance Scholarship in Arts, £100; (*d*) Jeaffreson Exhibition, £50; and (*e*) Shuter Scholarship, £50—a full or University course at St. Bartholomew's Hospital is required. The awards of (*a*) and (*b*) are made after examination in selections from the subjects of Chemistry, Physics, Zoology, Botany, Physiology, and Anatomy; (*c*) and (*d*) are awarded after examination in Latin, Mathematics, and Greek or French or German; (*e*) is awarded after competitive examination among Cambridge Graduates in Anatomy and Physiology. The more important of the other Scholarships and prizes are as follows:—Four Junior Scholarships—(*f*) No. 1, £30, Anatomy and Physiology; (*g*) No. 2, £20, Anatomy and Physiology; (*h*) No. 3, £25, Chemistry, Physics, and Biology; (*i*) No. 4, £15, Chemistry, Physics, and Biology; (*j*) Senior Scholarship, £50, Anatomy, Physiology, and Chemistry; (*k*) Kirkes Scholarship, £30 and medal, Clinical Medicine; (*l*) and (*m*) two Brackenbury Scholarships, £30 each, one in Medicine and one in Surgery; (*n*) Sir G. Burrows Prize, 10 guineas, Pathology; (*o*) Skynner Prize, 13 guineas, Regional and Morbid Anatomy; (*p*) Matthews Duncan Medal and Prize, £20, Midwifery and Gynæcology; (*q*) Luther Holden Research Scholarship in Surgery, awarded by election, £105; (*r*) Lawrence Research Scholarship and Gold Medal in Pathology, awarded by election, £115; and (*s*) Baly Scholarship in Clinical Medicine, £75, awarded by examination.

Information may be obtained on application to the Dean of the Medical College: Dr. T. W. Shore. The Warden of the Residential College is Mr. R. M. Vick.

CHARING CROSS HOSPITAL.—The Hospital, to which the School is attached, contains 300 beds. Over 3000 cases pass through its wards each year, and some 24,000 out-patients and casualties are treated. There are special departments for Mental Diseases, Midwifery, Diseases of Women, of Children, of the Skin, Ear, Throat, Nose, and Teeth, for Orthopædic Cases, X Ray work, and for Electrical Treatment.

Appointments.—In the Medical School Demonstratorships and Assistant Demonstratorships are open to students of the School. Medical, Surgical, and Obstetric Registrars to the Hospital are appointed annually. Six House Physicians, six House Surgeons, and two Resident Obstetric Officers are appointed each year.

Primary and Intermediate Studies.—By an agreement with the University of London the School sends its Primary and Intermediate Students to receive their lectures and practical work at King's College, which is situated within four minutes' walk.

Final Studies.—These are taken in the school and hospital, where systematic lectures, demonstrations, and tutorial classes are arranged to cover all the subjects necessary for qualifying examinations. Departments are also available for other final subjects of Materia Medica and Operative Surgery.

An Institute of Pathology with a whole-time staff of scientific workers and fully equipped Laboratories has been established in the School. Students receive their training in Preventive Medicine, Pathology, Bacteriology, and Biochemistry here, and are encouraged to undertake Research. Special facilities are available for Post-graduate Research and Study.

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[1] For Ancillary Metropolitan Medical Schools see p. 437.

The course in Ophthalmology is given in the Royal Westminster Ophthalmic Hospital adjoining. Special demonstrations are arranged for Post-graduates.

The *Museum* contains over 4000 specimens, including a notable collection of over 800 gynæcological specimens, "The Cuthbert Lockyer Collection."

Students' Club.—The social comfort and convenience of students are met by library, reading, and smoking-rooms, refreshment-room, &c. The Club, which is under the control of a Committee of Students, provides needful athletic recreation, and includes the Medical Society. An athletic ground, comprising six acres, has recently been acquired and is now in use.

Women Students.—Women students are admitted to the School and Hospital upon the same terms and conditions as men, and after qualification are eligible for resident Hospital appointments.

Fees.—Entrance: Primary and Intermediate, 10 guineas; Final, 8 guineas; Annual, £12.

Further information may be obtained on application to the Dean, Dr. W. J. Fenton, Medical School, Charing Cross Hospital, London, W.C.

ST. GEORGE'S HOSPITAL.—This hospital has a service of 430 beds, of which 180 are allotted to surgical, 150 to medical cases, and 100 are at the Convalescent Hospital at Wimbledon. One ward is set apart for Diseases Peculiar to Women, and there is a Maternity Ward of 11 beds. Children's beds are placed in the women's wards. Two wards are allotted to ophthalmic cases.

Entrance Scholarships and Endowed Prizes of a total value of £700 are awarded annually; a detailed list is placed below. The entire teaching and laboratories are now devoted to purely clinical subjects, and arrangements have been made with the authorities of King's College for students who enter the first, second, or third year of the curriculum as students of St. George's to carry out the necessary courses of instruction at that College. Students then complete their course, without payment of any entrance fee, in a school entirely devoted to clinical work.

Twelve house physicians, 12 house surgeons, and 12 casualty officers are appointed annually. Special attention is directed to the following paid appointments, among others, which are open to students after they have held house office:—Resident Assistant Physician and Resident Assistant Surgeon, at £350 per annum each; Medical Officer to the Atkinson-Morley Convalescent Hospital, at £300 per annum; Medical Registrarship at £200 per annum; Surgical Registrarship at £200; Assistant Curatorship of the Museum at £100; Obstetric Assistantship (Resident) at £50; the post of Resident Anæsthetist at £100; the posts (2) of Junior Anæsthetists, each at £30. The St. George's Hospital Club, with smoking- and luncheon-rooms on the hospital premises, and an athletic ground at Wimbledon, is an amalgamation of the Hunterian Society, the *Gazette*, and the Rugby football, cricket, lawn tennis, boxing, rifle, and golf clubs. Students have the advantage of a library of medical and scientific books which is kept up to date.

Scholarships and Prizes.—At this school five entrance scholarships are given, the money value and the subjects of examination being as follows: (*a*) and (*b*) two William Brown Exhibitions, £120 and £80 respectively; (*c*) and (*d*) two University Entrance Scholarships, 90 guineas and £70 respectively; (*e*) Devitt-Pendlebury Scholarship, £50, Anatomy and Physiology. This year, in addition to these Scholarships, Exhibitions, each of the value of £10 and up to six in number, will be awarded to candidates of approved merit in the Entrance Scholarships Examination. The others are as follows: (*f*) Allingham Scholarship in Surgery for Students qualified not more than two years, £85; (*g*) and (*h*) two Brackenbury Prizes, one in Medicine and one in Surgery, £33 each, open to students of not more than five years' standing; (*i*) H. C Johnson Memorial Prize, £19, Practical Anatomy; (*j*) Pollock Prize, £23, Physiology, Physiological Chemistry, and Histology; (*k*) Clarke Prize, £5; (*l*) Thompson Medal, £9, Clinical Reports; (*m*) Brodie Prize, £8, Clinical Reports; (*n*) Webb Prize, open to perpetual pupils, £34, Bacteriology; (*o*) Sir Francis Laking Memorial Prize, £65, open to students having registrable qualifications.

Further information may be obtained from the Dean of the Medical School, Dr. J. A. Torrens.

GUY'S HOSPITAL.—This hospital, founded by Thomas Guy in 1724 for the reception of 400 patients, and enlarged through the aid of a large bequest from the late William Hunt, contains at the present time 616 beds. The whole of the medical school has been rebuilt during the last 27 years. It provides ample accommodation, with modern equipment, for all the non-clinical subjects of the medical curriculum. Within the grounds of the hospital are situated the residential college, with accommodation for 86 students, the students' club, with reading, smoking, luncheon, and dining-rooms, a fives court, and swimming bath. The athletic ground and club house is situated at Honor Oak Park, and can be reached in 20 minutes from the hospital.

House physicians, house surgeons, out-patient officers and assistant house surgeons, obstetric residents, house surgeons in the departments of ophthalmology and genito-urinary diseases, house physician in the department for diseases of children, clinical assistants, clerks to anæsthetists, surgeons' dressers, clerks to medical units, post-mortem clerks, extern obstetric dressers, and dressers and clerks in the special departments are appointed from among the students upon the recommendation of the Medical Council according to merit. There is a Venereal Clinic, in accordance with the Scheme of the Local Government Board and London County Council. Lectures and clinical instruction are given, to which Medical Students and Practitioners are admitted without fee.

The following special departments are attached to the hospital: Departments of ophthalmology, laryngology, gynæcology, diseases of children, diseases of the nervous system, dermatology, otology, actinotherapeutics, anæsthetics, dentistry, orthopædics, vaccine, tuberculosis, genito-urinary and venereal diseases, *Salomon's Welfare Centre* (for Maternity and Children).

Scholarships.—Six entrance scholarships are awarded annually as follows:—(*a*) one War Memorial scholarship, providing a free Medical Education for five years of the value of £200, to be awarded alternately in Arts and Science (next award, July, 1926); (*b*) one Open Arts Scholarship of £100 for students under 21 years of age, Latin, English, Greek, or French or German, Arithmetic, Euclid, and Algebra; (*c*) one Open Junior Science scholarship for students under 21 years, £100; subjects, any two of the following: Inorganic Chemistry, Physics, and Biology; (*d*) a confined Junior Science scholarship of the value of £100 is offered for competition, annually in July, to candidates who have attended the Preliminary Science Classes at this School (*e*) two open Science scholarships: (1) a War Memorial scholarship of the value of £80, awarded annually in September; (2) an open scholarship of the value of £80, awarded annually in September, for students under 25 years of age who have completed the curriculum for, or passed the examination in, Anatomy and Physiology for a medical degree in any University of the British Empire, and have not entered as students in any Metropolitan Medical School; subjects, any two of the following: Anatomy, Physiology, Organic Chemistry, Pharmacology, General Pathology.

In agreement with the practice of the Universities, an allowance will be made (1) for Military Service performed by candidates, the term "military service" meaning service in the Naval or Military Forces of His Majesty or of His Majesty's Allies during the war; or (2) in respect of other approved duties in connexion with national defence.

The Dean of the Medical School is Professor T. B. Johnston, from whom information may be obtained.

UNIVERSITY OF LONDON: KING'S COLLEGE.—The medical department (Faculty of Medical Science) at this College only deals with Preliminary and Intermediate subjects, and instruction in these subjects is given in the College laboratories by university professors and their assistants to students entering the College directly and also to students of the following four hospital schools which prepare only for the final examinations—viz., King's College Hospital, Westminster Hospital, St. George's Hospital, and Charing Cross Hospital. The department is open to both men and women.

Scholarships.—(*a*) Two Warneford Entrance Scholarships of £30 each for four years. Examination in July, subjects selected from Divinity, Classics, Science. (*b*) Sambrooke Scholarship of £30 for three years. Examination in April or May, subjects selected from Classics, Science. (*c*) Worsley Scholarships: £100 in five annual instalments of £20. (*d*) Rabbeth Scholarship of £20 for best work in first year. (*e*) Second Year Scholarship of £20 tenable for one year. (*f*) Daniell Scholarship of £40 for one year. Awarded on University Honours Examination.

Fees.—Tuition fee of 35 guineas for the first year, £42 per annum for the second and third years, with a materials fee of 4 guineas in the first year, 6 guineas in the second year, 4 guineas in the third year. For prospectus and further information application should be made to the Dean of the Medical Faculty (Professor E. Barclay-Smith), King's College, Strand, W.C. 2.

Dental Course.—The College, in association with King's College Hospital, has instituted courses for the Degree in Dental Surgery of the University of London and for the Dental Diploma of the Conjoint Board.

Fees.—First year (Chemistry and Physics), 20 guineas; second and third years (Anatomy, Physiology, Dental Mechanics, and Dental Metallurgy), 52 guineas per annum. Fourth and fifth years (Hospital), 60 guineas per annum. For prospectus and further information application should be made to the Secretary, King's College Hospital Medical School, Denmark Hill, S.E.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL.—The advanced subjects in the curriculum are taught at the Medical School of King's College Hospital, which is situated at Denmark Hill, S.E. 5. The hospital stands in the midst of a large South London population, from which an immense amount of clinical material is forthcoming. During the past year there were 196,211 attendances in the out-patient and casualty departments. Accommodation for 400 beds for in-patients has been built, and provision will ultimately be made for 600 beds. There are special departments for Bacteriology, Children, Clinical Pathology, Dermatology, Gynæcology and Obstetrics, Laryngology, Massage, Neurology, Odontology, Ophthalmology, Orthopædics, Otology, Physicotherapy, Psychological Medicine, Radiology, Rhinology, and Urology, each in charge of a specialist and his staff. Clinics are also held in applied pharmacology, cardiology, and medical chemistry. The appointments open to students are those of clinical assistant to the special departments; medical, surgical, obstetric, and pathological tutorships; resident casualty officers, house physicians and house surgeons; resident anæsthetist; resident radiologist; bacteriologist; clinical pathologist; pathological registrar; and medical, surgical, and obstetric registrarships. Sixteen resident medical and surgical officers are appointed half-yearly.

Scholarships and Prizes.—(*a*) Warneford Scholarships, (*b*) Sambrooke Scholarship, (*c*) Rabbeth Scholarship, £20; (*d*) Medical Entrance Scholarships, £50 (Anatomy and Physiology), and £50 (Pathology and Pharmacology) open to students who (1) propose to take a degree at any British University, and have passed their University examination in Biology, Chemistry, and Physics, and who (2) will become students at King's College Hospital from date of entering upon Scholarship; (*e*) A Medical Entrance Scholarship in Science, value £50, tenable for five years, successful candidates to study at King's College and King's College Hospital; (*f*) Three Medical Scholarships, £40 for fifth-year students, £20 for third-year students, and £20 for second-year students; (*g*) Three Sambrooke Registrarships, open to matriculated students who have filled certain appointments in hospital; (*h*) Carter Prize, £15, Botany; (*i*) Tanner Prize, £10, Obstetrics and Diseases of Women; (*j*) Todd Prize, £4 4s. and medal, Clinical Medicine; (*k*) Two Burney Yeo Entrance Scholarships, £80 each, open to students of Oxford and Cambridge on the nomination of the Regius Professors; (*l*) two Raymond Gooch Scholarships, £120 each, open to students of British Universities on certain conditions; (*m*) an Epsom College Scholarship, value £50, offered annually to a student of Epsom College who has taken the first part of the courses for Medical Degrees at the Universities of Oxford, Cambridge, or London. The Warneford and Sambrooke Scholars are required to take the subjects of the preliminary and Intermediate examinations at King's College, and the final subjects at King's College Hospital.

Dental School.—When the Hospital was built accommodation was provided for a Dental Department. Arrangements have been made for the use of this section, together with additional rooms for Dental Metallurgy, by the Dental School, which was opened in November, 1923, under the direction of Mr. A. Livingston, M.B., Ch.B., Mast. Dent. Surg. A full course is given in coöperation with King's College, and includes arrangements for students who desire to avail themselves of the special provisions of the Dentists Act.

Athletics.—The King's College Hospital Clubs and Societies Union was formed in 1908, and consists of the Listerian and Musical Societies, the Students' Common Rooms, and the various athletic and sports clubs. An athletic ground, over six acres in extent, has been provided for the use of the students on Dog Kennel Hill, about ten minutes' walk from the hospital. There are also Tennis Courts in the grounds of the Hospital and of "The Platanes"—a hall of residence available for students belonging to the hospital.

Fees.—The composition fee for Hospital work and Final Medical subjects of the curriculum is 93 guineas if paid in one sum, or 95 guineas if paid in two instalments, in addition to the Entrance Fee of 10 guineas. The Calendar of the School will be sent on application to either of the following: Dr. H. Willoughby Lyle, *Dean;* Mr. S. C. Ranner, *Secretary of the Medical School*, King's College Hospital, Denmark Hill, S.E. 5.

LONDON HOSPITAL.—The hospital, with its Medical College and Dental School, is situated in the Mile End-road, E. The hospital contains 950 beds, which are in constant use, and is the only general hospital for East London. During last year 17,975 in-patients and 131,969 out-patients received treatment, while 7656 major operations were performed. 36,023 out-patients attended the special departments for diseases of the Eye, Ear, Nose and Throat, Skin, Teeth, &c., and the Pediatric, Orthopædic, Venereal, Radiological, Electro- and Physico-Therapeutical and Inoculation Departments. The hospital presents, therefore, a large field for clinical instruction, and in its Wards and Out-patient Departments exceptional opportunities are afforded for acquiring an extensive and practical experience in all phases of disease.

A Clinical Unit in Medicine, under the charge of a whole-time director, provides for the more elaborate methods of diagnosis and treatment, and takes a leading part in the initiation and coördination of medical research.

To each medical and surgical firm throughout the hospital there is attached a First Assistant, who is responsible for instructing the clerks or dressers of the firm in elementary medicine and surgery, and who assists the honorary members of the firm in the preparation of their demonstrations. Special courses of lectures and demonstrations are arranged in Medicine and Surgery and their ancillary subjects. Opportunities for research are provided under the supervision of the staff.

Owing to the large number of patients more appointments are open to students before and after qualification than at any other hospital. Holders of resident appointments have free board. Special classes are held for the examinations of the University of London, for the Fellowship of the Royal College of Surgeons, for the Membership of the Royal College of Physicians, and for other higher examinations. Special entries for medical and surgical practice can be made. A residential Hostel on hospital grounds is provided for the convenience of students. The Union Athletic Ground, 13 acres, is within easy reach of the hospital.

Scholarships and Prizes.—The following is a list of the Scholarships and Prizes:—Price Scholarship £100, and one Entrance Scholarship of £50, subjects of First Medical Examination at the University of London; Epsom College Scholarship, free education, subjects of First Medical Examination as above; Price Scholarship, open to students of Oxford and Cambridge Universities, £75, Human Anatomy and Physiology; Buxton Prize, £40, subjects of Anatomy and Physiology; three Prizes for Clinical Work, £20 each, Medicine, Surgery, and Obstetrics and Gynæcology; Sutton Prize, £20, Pathology; Duckworth Nelson Prize, biennial, £10, Practical Medicine, and Surgery; Letheby Prizes (2), £26, Chemistry and Chemical Pathology; eight Dressers' Prizes, amounting to £40, zeal, efficiency, and knowledge of Elementary Clinical and Minor Surgery; Hutchinson Prize, triennial, £60, Clinical Surgery; Treves Prize, £15, Clinical Surgery; two Practical Anatomy Prizes, £6 and £4 respectively; Andrew Clark Prize, biennial, £20, Clinical Medicine and Pathology; James Anderson Prizes (4), £20, Elementary Clinical Medicine; Arnold Thompson Prize, £15, Diseases of Children; K. E. D. Payne Prize, £20, Pathology; and Liddle Prize, triennial, £120.

Medical Research Funds.—Funds to the value of approximately £40,000 permit of financial assistance being given to students and graduates engaged in Medical Research.

Dean: Professor William Wright, London Hospital Medical College, E. 1.

ST. MARY'S HOSPITAL MEDICAL SCHOOL.—The Hospital and Medical School are situated close to Paddington station (G.W.R.) having on one side a poor district of 500,000 persons, and on the other side the residential districts of Kensington and Bayswater. The hospital contains 288 beds and, by a scheme of affiliation, for teaching purposes, of certain neighbouring hospitals, the teaching facilities extend over 1000 beds. The Athletic ground (10 acres) is situated at Wembley and can be reached in 20 minutes by a constant service of trains. A large pavilion has recently been added.

Clinical Facilities.—Clinical Units in Medicine and Surgery were established in 1920, and have now been formally recognised by the University Grants Committee, St. Mary's being one of the six Medical Schools in London which enjoy this privilege. Lying-in beds have recently been added, and, in addition to this, arrangements have been made by which all students take out a short course of instruction in Practical Midwifery at Queen Charlotte's Hospital without additional fee.

Institute of Pathology and Research.—Students specially interested in Pathology and Bacteriology have singular advantages at St. Mary's. The institute comprises seven special departments, the whole being under the personal direction of Sir Almroth Wright, F.R.S.

Appointments.—Research Scholarships of £200 each are awarded annually to students working in the departments of the institute; and research beds have been instituted. Clerkships in Pathology, Bacteriology, and Chemical Pathology, lasting for a period of three months, are open to students of the fifth year, and enable them to carry out the Pathological and Bacteriological investigations of the wards, and learn the necessary technique under supervision. Seventy-two of these posts are available annually. Numerous appointments are open to newly-qualified members of the Medical School, including ten salaried posts with salaries varying from £200 to £750 per annum.

Complete Curriculum.—The Medical School provides complete courses of instruction, and students can join at once on passing a Preliminary Examination in Arts. Terms begin in October, January, and April.

Entrance Scholarships.—Three Entrance Scholarships of the value of £210 each are awarded annually, and two University Scholarships of £200.

Fees.—Composition Fee for entire curriculum (5½ years) £200 in one sum, or £210 by four annual instalments. Composition Fee for Clinical curriculum (2½ years) 90 guineas in one sum, or 95 guineas by two annual instalments. As an alternative, students may pay an annual fee of 40 guineas with an entrance fee of 10 guineas.

MIDDLESEX HOSPITAL.—The hospital contains over 450 beds, with special wards for Cancer, Maternity and Gynæcological and Ophthalmological cases, and for Diseases of Children. Other special departments include those for Diseases of the Eye, Ear, Nose and Throat, and Skin; Nervous diseases, Orthopædic cases, Diseases of the Rectum and Venereal Diseases. There is also an Electro-Therapeutic department. The Cancer Charity, containing 92 beds and Special Investigation Laboratories, offers unrivalled opportunities for the study of Cancer, both in its clinical and pathological aspects. In the Electro-Therapeutic Department, students obtain instruction in the Treatment of Lupus and Cancer by the X ray method of treatment.

The Medical School, which includes the Bland-Sutton Institute of Pathology and the Cancer Research Laboratories is fully equipped for the theoretical and practical teaching of all the subjects of the medical curriculum, and for the Diplomas in Public Health, for which two courses are held yearly, commencing in April and October. Ample laboratory and class-room accommodation is provided. The teaching staff includes 6 Professors, 80 recognised Teachers, 8 Demonstrators, 4 tutors. The Bland-Sutton Institute of Pathology is completely equipped for routine hospital investigations, teaching and research work, and contains a new lecture theatre and large pathological, bacteriological, and clinical laboratories, also smaller laboratories for individual research work. A well-equipped Anatomical and Pathological Museum and Reference Library offer every facility.

Other features of interest are: the institution of a course in Medical Radiology and Electrology, under the direction of the "Joel" Professor of Physics; D.P.H. course, under the direction of Dr. Charles Porter, M.O.H., St. Marylebone. Primary F.R.C.S. class will resume in July.

Special classes are held to prepare students for the Intermediate Examinations of the Universities.

Hospital Appointments.—All appointments are made without fee of any kind, and the following are appointed at intervals annually: six house physicians, eight house surgeons, two obstetric and gynæcological house surgeons, two casualty medical officers, two casualty surgical officers, one resident anæsthetist, and two resident officers to the special departments. The medical and surgical casualty officers are appointed twice a year. Eight registrars are appointed annually. Non-resident qualified clinical assistants are appointed to assist in the various out-patient departments. Clinical clerks and surgical dressers are also appointed in every department.

Scholarships, Prizes, &c.—Two Entrance Scholarships, value £100 each, and two University Scholarships, value £90 and £60, are awarded annually in September. The successful candidates are required to become general students of the school. A Freer Lucas Scholarship for Foundationers or Council Exhibitioners of Epsom College is awarded annually on the nomination of the Headmaster. There are also two Broderip Scholarships, value £60 and £40 respectively; the Lyell Gold Medal and Scholarship, value £55 5s.; the John Murray Medal and Scholarship, value £25 (awarded every third year); the Freeman Scholarship, value £30; the Hetley Clinical Prize, value £25; the Leopold Hudson Prize, value 11 guineas; and the Second Year's Exhibition, value 10 guineas. There are also numerous class prizes.

Fees.—The fees are arranged on a basis of an annual payment of approximately £45 for the six years of the curriculum. After six years, if the student is not qualified, the annual fee is £23.

The Amalgamated Students' Club includes the following: the Medical Society, the Common Room Society, Musical Society, the cricket club, the football clubs, the athletic club, the rowing club, the musical society, the chess club, the lawn tennis club, and the hockey club. There are a restaurant and gymnasium in the school buildings, and large athletic grounds at Wembley, with new pavilion. The subscription to the Amalgamated Students' Club is included in the above fees. Full particulars on application to the Dean, Middlesex Hospital Medical School, W. 1.

ST. THOMAS'S HOSPITAL.—This Hospital received its present charter from King Edward VI., but as a monastic institution was in existence prior to the year 1207. The building occupies a unique position by the river, opposite the Houses of Parliament, and contains 644 beds. The in-patients last year numbered 10,139, whilst the number of attendances as out-patients, including the casualty and light departments, was 488,600. There are special departments for the treatment of women, children, diseases of the eye, ear, nose and throat, skin, teeth, and for orthopædics. Nervous and mental diseases are treated in special departments. An electro-cardiograph has been installed for the investigation of diseases of the heart. The Tuberculosis Department forms a part of the Lambeth scheme for treatment of patients and for instruction. The Venereal Department has been established as part of the London County Council scheme. Departments for Radiology, Electro-therapy, Phototherapy, Massage and Remedial Physical Exercises are also special features. A speech clinic has been inaugurated in connexion with the Children's Department. Exceptional facilities are offered in the hospital laboratories for the study of General Pathology, Clinical Pathology, Chemical Pathology, and of Treatment by Serums and Vaccines. Surgical operations take place in the main theatres every day, except Saturdays, at 2 P.M. Clinical teaching in the wards, out-patients' and special departments, is available every day of the week. Clinical lectures are delivered every Wednesday during the sessions. All appointments in the hospital are open to students without extra fee. Clinical clerks and dressers for in- and out-patients are selected from students who have completed their third years' work. Every student acts as clerk in the post-mortem room and in one of the pathological laboratories, takes his turn on maternity duty under proper supervision in the maternity Ward and district, thus obviating any necessity for seeking instruction elsewhere. Students are instructed in the administration of anæsthetics by the hospital anæsthetists. The Students' Club comprises a spacious restaurant and smoking and reading room. There is no occasion for students to leave the hospital buildings during working hours. The curriculum is arranged to meet the requirements of all the Examining Bodies. Special classes are held for the examinations at the University of London and for the First and Final Fellowship Examinations of the Royal College of Surgeons of England. Tutorial classes in all subjects precede the various examinations. The hospital is easily accessible from all parts.

Appointments Open to Students after Qualification.—A Resident Assistant Physician, a Resident Assistant Surgeon, and a Resident Anæsthetist are appointed annually at a salary of £200 each per annum. Two Hospital Registrars, Medical and Surgical, at an annual salary of £250 each are appointed yearly. The tenure of these offices may be renewed for a term not exceeding two years. An Obstetric Tutor and Registrar, an Ophthalmic Registrar (at an annual salary of £50 each), and an Orthopædic Registrar (unpaid) are appointed yearly. Two Senior Resident Casualty Officers (Medical and Surgical) are appointed yearly. Eight Resident Casualty Officers and Anæsthetists are appointed every six months. Seven House Physicians (including two Obstetric House Physicians, and one House Physician to the Department of Diseases of Children), nine House Surgeons (including two Ophthalmic House Surgeons, one Orthopædic House Surgeon, and two House Surgeons to the Ear, Nose and Throat Department) are appointed every six months. Clinical Assistants in the Special Departments are appointed every three months, and hold office for six months if recommended for re-election. There are three Assistants in the Department of Pathology; the Senior receives £600 a year, and the two Juniors £450 each.

Fees.—The annual fees are: For each year of study £50. These fees cover all tutorial classes, but do not include instruction in infectious fevers, pharmacy, and vaccination. Qualified practitioners are permitted to attend the hospital practice on terms which may be ascertained from the Medical Secretary.

Scholarships and Prizes.—At this school there are five Entrance Scholarships—namely, two in Arts, equivalent to the tuition fees for the first year of study; two in Natural Science, of the value of £150 and £60 respectively; and the University Scholarship of £100 in any two of the following subjects: Anatomy, Physiology, and Chemistry. The value of all entrance scholarships must be taken out in tuition fees. The money value and subjects of examination of the remainder are as follows: (*a*) William Tite Scholarship for second-year students, £25; (*b*) and (*c*) Musgrove Scholarship or (alternately) Peacock Scholarship, each for third-year students and tenable for two years, £35 each; (*d*) Mead Medal, Medicine, Pathology and Hygiene; (*e*) Wainwright Prize, Medicine; (*f*) Toller Prize, Medicine; (*g*) Cheselden Medal, Surgery and Anatomy; (*h*) Clutton Memorial Medal in Clinical Surgery, biennial; (*i*) Beaney Scholarship, £50, biennially, Surgery and Surgical Pathology; (*j*) Solly Medal and Prize, biennial, Reports of Cases; (*k*) Sutton Sams Prize, biennial, Report of Cases; (*l*) Bristowe Medal, Pathology and Morbid Anatomy; (*m*) Hadden Prize, Pathology; (*n*) Grainger Testimonial Prize, £31 10s., Anatomy and Physiology; (*o*) Louis Jenner Research Scholarship, tenable for two years, £60 annually, Pathology.

The Dean of the Medical School is Sir Cuthbert S. Wallace, and the Medical Secretary Dr. A. Elliot, from whom any further information may be obtained.

UNIVERSITY OF LONDON, UNIVERSITY COLLEGE.—University College has been constituted a University centre for the teaching of medical sciences. The College Faculty of Medical Sciences comprises the Departments of Physics, Chemistry, Botany, and Zoology (the Preliminary Medical Sciences); also the Departments of Anatomy, Histology, Physiology, Biochemistry, and Pharmacology (the Intermediate Medical Sciences), and the Department of Hygiene and Public Health. Research work is undertaken in all departments. The completion of the Institute of Medical Sciences, which the generosity of the Rockefeller Foundation made possible, provides exceptional facilities for research and post-graduate study in anatomy, physiology, and pharmacology. In particular might be specified the opportunities for investigation in human and comparative embryology and neurology, in histology, radiology, anthropology, biochemistry, and experimental physiology and experimental embryology. Arrangements exist for the close correlation of work in the Institute with University College Hospital and Medical School.

Faculty of Medical Sciences.—Composition Fees.—For the courses required by the University of London. 1. For the First Medical Course, 35 guineas, entitling to one attendance and to the privileges of the Union Society for one session. 2. For the Second Medical (Intermediate) Course 80 guineas, payable in two instalments of 40 guineas each. This fee entitles to attendance at Anatomy and Physiology during three years and to one attendance at Organic and Applied Chemistry, and Pharmacology, and to the privileges of the Union Society or the Women's Union Society for two sessions.

For the medical education required by the Examining Board in England: (i) For the course for the Premedical Examination, 35 guineas, entitling to attendance and to the privileges of the Union Society for one session. (ii) For the course for the First Examination, 80 guineas, payable in two instalments of 40 guineas each. This fee entitles to attendance during three years (including one attendance at each Practical Course in Physiology) in all subjects except Practical Pharmacy. It also entitles to the privileges of the Union Society for two sessions.

Scholarships and Prizes.—The first three items on the present list require a complete intermediate course at University College. The money value and subjects at examinations are as follows: (*a*) The Bucknill Scholarship, 160 guineas; (*b*) and (*c*) two Entrance Exhibitions, 55 guineas each, Chemistry, Physics, Botany, and Zoology; (*d*) Cluff Memorial Prize, £16 biennially, Anatomy, Physiology, Pharmacology, and Chemistry; (*e*) Schafer Prize in Physiology, £18 triennially; (*f*) Sharpey Physiological Scholarship, £200, Biological Sciences; (*g*) Morris Bursary for sons of deceased professional men, by nomination, tenable for two years, £10 a year; and (*h*) five Gold and five Silver Medals awarded annually in various departments.

Women students are admitted.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL. Dean: Sir George Blacker. Vice-Dean: Mr. Gwynne Williams. Secretary: Mr. G. E. Adams. Open to men and a limited number of women students. Fees for Preliminary and Intermediate Course: See under University College. For the Final M.B., B.S. (London) Course, 112 guineas if paid in one sum, 115 guineas if paid in two instalments, as follows—first year, 70 guineas; second year, 45 guineas. This fee entitles to attendance on lectures and hospital Practice during three years and to one attendance on Practical Pathology and Practical Surgery. Vaccination and attendance at a Fever Hospital are not included. This course of instruction is also suitable for the corresponding examinations at the Universities of Oxford, Cambridge, Durham, and other British Universities, and for the medical education required by the Examining Board in England and the Society of Apothecaries. There are over 300 beds in the hospital.

Clinical Units in Medicine and Surgery are now in operation. The whole-time Directors of the Units are concerned with the organisation of the teaching generally, but the honorary staff are responsible for the largest share of the teaching in the wards and Out-patient Department of the hospital. A Unit in Obstetric Medicine will be established as soon as the new Obstetric Hospital is finished.

The new buildings of the Obstetric Hospital of 60 beds (rendered possible by the Rockefeller Benefaction), the new Residents' House (with accommodation for 30 residents and students), the extension to the Nurses' Home, and the new research laboratories for the Medical School, are well under way, and these buildings should be ready for occupation in the coming winter session.

Special Departments, Clinical and Laboratory Facilities.—Those who are desirous of carrying out original research in Pathology, including Morbid Anatomy, Bacteriology, Experimental Pathology, and Chemical Pathology, are admitted to work in the laboratories of the school by the Professor of Pathology, and under certain conditions can receive grants from the Charles Graham Medical Research Fund. A special course of instruction is given in conjunction with University College for preparation for the examinations for Diplomas in Public Health of the various universities and examining bodies. In the Dental School in Great Portland-street, formerly known as the National Dental Hospital, there is afforded the opportunity for attending lectures and practical instruction in diseases of the mouth and teeth.

Appointments tenable by Students.—Clerkships and dresserships to the physicians, surgeons, anæsthetist, and pathologist are allotted amongst the students of the hospital. Maternity students are appointed each month and reside in the Students' House connected with the Medical School and Hospital. Twelve house physicians, eight house surgeons, four senior and four junior obstetric assistants (of the total number of resident officers not more than three may be held by women students at any one time) are selected annually by examination from among the senior students who have a medical qualification. The house physicians and house surgeons reside free in the hospital for six months, and the senior obstetric assistants for three months. In addition to these posts there are certain special appointments which are vacant from time to time and are filled by senior students of the hospital: Resident Medical Officer, Surgical Registrar, Medical Registrar, Obstetric Registrar, Harker-Smith Cancer Registrar, Casualty Medical Officer and a Casualty Surgical Officer, Assistants in Ear and Throat, Ophthalmic, Skin and Venereal Diseases Departments, and House Anæsthetist.

Museum of Pathological Anatomy.—The Museum is open for study from 9 A.M. to 5 P.M. Microscopic sections of most of the specimens in the Museum have been prepared and are available for the use of students on application to the Curator. The Museum contains 1100 admirable paintings by Sir Robert Carswell and Sir Charles Bell and a collection of instruments formerly belonging to Robert Liston.

The Anatomical Museum of the University of London, University College, is open to all students of University College Hospital and Medical School on the recommendation of the School Committee.

The Medical Library is open daily for the purposes of study to every student of the Medical School from 9 A.M. to 5 P.M., Saturdays 9 A.M. to 1 P.M. It contains about 13,500 works on medical subjects, including all the current text-books and works of reference required for study or research.

The Medical Society of University College Hospital Medical School exists for the dual purpose (1) of promoting the study of medical and surgical science, and (2) of promoting social intercourse among its members. All male students of the Medical School are required to become members. Meetings are held once a fortnight for the purpose of discussing subjects connected with the study of medicine. In its social aspect the society includes various athletic clubs and superintends the gymnasium and squash racquet court in the Medical School. The Athletic Ground, which is used in conjunction with the Union Society of the University of London, University College, is near the G.W.R. Perivale station.

Scholarships and Prizes.—At this School the first two Scholarships (*a*) and (*b*) entitle the holder to a complete course at University College and University College Hospital Medical School; the second two (*c*) and (*d*) entitle to a final course at the Medical School. The money value and subjects of examination are as follows:—(*a*) Entrance Scholarship, Bucknill, 135 guineas, Chemistry, Physics, Botany, and Zoology; (*b*) Epsom Free Medical Scholarship, subjects of Preliminary Scientific Examination and Nomination by Epsom College; (*c*) and (*d*) two Goldsmid Entrance Exhibitions, 112 guineas each, Anatomy and Physiology; (*e*) Graham Scholarship in Pathology, £300 per annum for two years, awarded by the Senate of the University of London; (*f*) Atkinson Morley

Scholarship, tenable for three years, £45 per annum, Surgery; (*g*) Atchison Scholarship, tenable for two years, £55 per annum, General Proficiency in Medical Studies; (*h*) Magrath Clinical Scholarship, about £100, Clinical Cases; (*i*) Percival Alleyn Scholarship, about £60, Surgery; (*j*) Filliter Exhibition, £30, Pathology; (*k*) Erichsen Prize, £10 10*s*., Practical Surgery; (*l*) two Senior and two Junior Fellowes Clinical Medals for Clinical Medicine; (*m*) two Liston Gold Medals for Clinical Surgery; (*n*) Alexander Bruce Gold Medal for Pathology and Surgery; and (*o*) Tuke Silver and Bronze Medals for Pathology. (*p*) Radcliffe Crocker Travelling Scholarship for Dermatology. (*q*) Leslie Pearce Gould Travelling Scholarship for Surgery.

Residence of Students.—University College Hall, Ealing, is recognised by the Medical School authorities as a residential hostel. The Students' House in University-street contains large and comfortable rooms. The Maternity Students occupy them on payment of a moderate charge. Gentlemen who desire assistance in their studies should consult the Dean or Lecturers.

WESTMINSTER HOSPITAL.—The hospital contains 236 beds and affords relief to upwards of 2500 in-patients and 25,000 out-patients annually. There are separate departments for Diseases of the Eye, Skin, Teeth, Ear, Nose, and Throat, for Orthopædic practice, for Diseases of Women, for Diseases of Children, for Radiography, for Venereal Diseases, and for Massage, Electrical and Light Treatment. The Anatomical, Pathological, and Materia Medica Museums are open to all students of the school.

The usual registrarships and house appointments are open to male and female students.

By a scheme for the concentration of the teaching of the preliminary and intermediate subjects of the curriculum, which has the support of the London University, an arrangement has been made by the Westminster School for the teaching of these subjects at King's College. Students, however, may join the Westminster Medical School as formerly and may compete for Entrance Scholarships as heretofore.

Scholarships and Prizes.—The following Entrance Scholarships are offered for competition: Winter Session: Two Scholarships in Anatomy and Physiology, £70 each. Summer Session: Two Scholarships in Anatomy and Physiology, £70 each. A certain number of Scholarships have been allotted to Universities of England, Wales, and the Colonies, and to Public Schools. These Scholarships are awarded entirely on the nomination of the principal of the university or school. During the period of study the following prizes may be competed for: Sturges Prize in Clinical Medicine, about £6, Reports on Cases; Clinical Surgery Prize, £5, Reports on Cases; Chadwick Prize, £21 in books or instruments—Medicine and Surgery, including Pathology and Applied Anatomy and Physiology; Frederic Bird Medal and Prize, open to Fourth-year Students, £14 in medal and books or instruments—Midwifery, Diseases of Women, Medicine, Pathology, Forensic Medicine and Bacteriology, and Public Health and Toxicology; Abrahams Prize in Clinical Pathology, 5 guineas, a Paper and Tests in Practical Work; Alfred Hughes Memorial Prize, open to Second-year Students, about £5 in books or instruments—Anatomy; Huxley Memorial Prize, 3 guineas in books or cash, open to Second-year Students—Physiology; Carter Gold Medal and Prize for Botany, open to Students of not more than three years' attendance, gold medal and books of the joint value of £15; Jelf Medal awarded to Third-year Students; Second-year Scholarship £20, Elementary Anatomy, Physiology, Histology, and Organic Chemistry; Daniell Scholarship, tenable for two years, £20, Chemistry; Rabbeth Scholarship, open to First-year Students, £20; Class Examinations in the Preliminary Scientific Course; and the Sambrooke King's College Scholarship in Science, value £25. Inquiries may be addressed to the Dean, Dr. A. S. Woodwark.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN, 8, Hunter-street, Brunswick-square, W.C.—The fee for the medical course for the degrees of the University of London and for the diplomas of the Royal Colleges of England and for other qualifications is £240 in five instalments. This sum includes library and laboratory fees. Arrangements are made for pre-medical courses in Chemistry and Physics, which are included in these fees.

The Royal Free Hospital contains 240 beds. The Hospital also has large Casualty and Out-patient Departments, and Departments for Special Diseases. A new and specially equipped block contains the Obstetrical and Gynæcological Unit, which controls 68 beds. Two Research Fellows and a Research worker are engaged on work connected with the Unit. Maternity Districts are attached to the Unit operating in the Gray's Inn-road and Essex-road areas. A new Maternity Hostel has been acquired at 434, Essex-road. Students also attend the in-patient and out-patient practice of the Elizabeth Garrett Anderson Hospital, Cancer Hospital, Hospital for Sick Children, Great Ormond-street, National Hospital for Paralysed and Epileptic, South London Hospital, and Royal London Ophthalmic Hospital.

Courses are arranged for the Primary Fellowship Examination of the College of Surgeons; also for dental students in conjunction with the Royal London Dental Hospital, Leicester-square.

Students after qualification can hold the posts of house physicians, house surgeons, obstetric assistants, clinical assistants, assistant anæsthetist, medical, gynæcological, and surgical registrars, and assistant pathologist; and at the Medical School the posts of demonstrators in the departments of Anatomy, Physiology, Pharmacology, Biology, Chemistry, and Physics. Many other resident posts in London and elsewhere are also open to them.

The School buildings have been entirely rebuilt in recent years, and there are spacious, well-equipped laboratories, which afford every facility for efficiency of teaching and practical work in all departments.

There are residential chambers at 8, Hunter-street, 25, Gordon-square, 16, Brunswick-square, 5, Mecklenburgh-square, and 36, Tavistock-square, and the Warden can be consulted on the subject of other residences for students. The Students' Union arranges the social, athletic, and other clubs and societies. The School sports ground, consisting of 6½ acres of freehold land, is situated at Sudbury (easily reached from Euston Station), and is being developed for tennis, hockey, lacrosse, and cricket.

Scholarships and Prizes.—(*a*) Isabel Thorne Scholarship, £30. (*b*) St. Dunstan's Medical Exhibition, £60 a year, tenable for three or five years. (*c*) Mrs. George M. Smith Scholarship, £50 a year, tenable for three or five years, and next to be awarded in 1927. (*d*) Bostock Scholarship, tenable for two or four years, and next to be awarded in June, 1927, £90. (*e*) Mabel Sharman-Crawford Scholarship, tenable for four years, £20 a year. (*f*) Sir Owen Roberts Scholarship, £75 a year for four years. (*g*) Mabel Webb Research Scholarship, tenable for one year and renewable, £30, Physiology, Chemistry, or Pathology. (*h*) Fanny Butler Scholarship, tenable for four years; next award in July, 1926, £14 10*s*. (*i*) John Byron Bursary, tenable for two years, for students already in the School requiring assistance for the prosecution of their medical studies, application to the Secretary by March 31st, £20. (*k*) Helen Prideaux Prize, awarded every second year to a student who has become qualified during the two years immediately preceding the award, and to be spent in assisting the holder to further study, £60. (*l*) Dr. Edith Pechey Phipson Post-graduate Scholarship of the value of £100, awarded annually in June. It is open to all medical women, preferably coming from India, or going to work in India, for assistance in Post-graduate study. (*m*) Sarah Holborn Scholarship, value £20 a year for three or five years, awarded every alternate year; next award in 1927. (*n*) Dr. Margaret Todd Scholarship, tenable for four years, £37 10*s*. a year, awarded in alternate years; next award in July, 1927. (*o*) Lieutenant Edmund Lewis and Lieutenant Alan Lewis Memorial Scholarship, tenable for four years, awarded every four years; next award in July, 1928. (*p*) Alfred Langton Scholarships, tenable two years, one awarded annually, £50 a year. (*q*) School Jubilee Bursary, *tenable for three years*, £50 a year. (*r*) Flora Murray Bursary, awarded every year to a fifth-year student, £50. The Dorothy Chick Gift, £20, is awarded annually for efficiency in Practical Midwifery. Two Richardson-Kuhlmann Prizes are given each year, value £12, for proficiency in Clinical Obstetrics, value £8, for proficiency in senior subjects respectively. Two Evans Prizes of £2 2*s.* and £1 1*s.* are given each year on the results of the class examination in Midwifery. The Evans Prize for Operative Midwifery, value £5 5*s.*, is awarded yearly. The Edith Pechey Phipson Prize in Pharmacology, value £3 3*s.*, is awarded annually.

The Dean of the Medical School is Dame Louisa Aldrich-Blake, D.B.E., M.D., M.S.; the Honorary Secretary, Dr. May Thorne; and the Warden and Secretary, Miss L. M. Brooks, to whom inquiries may be addressed.

UNIVERSITY OF DURHAM.

To return to the curriculums of the Universities, there are six English provincial universities providing a full course for the medical student.

Nine degrees, two Diplomas, and one Licence are conferred—viz., the degrees of Bachelor of Medicine, Bachelor of Surgery, Doctor of Medicine, Master of Surgery, Doctor of Surgery, Bachelor of Hygiene, Doctor of Hygiene, Bachelor of Dental Surgery, and Master of Dental Surgery, the Diploma in Public Health, Diploma in Psychiatry, and the Licence in Dental Surgery.

For the degrees of *Bachelor of Medicine* and *Bachelor of Surgery* there are four professional examinations. The subjects of the First Examination are—Elementary Biology and Organic Chemistry. The subjects of the Second Examination are—Anatomy and Physiology. The subjects for the Third Examination are—Materia Medica, Pharmacology, Therapeutics and Pharmacy, Medical Jurisprudence, Public Health, and Pathology and Bacteriology. The subjects of the Fourth Examination are—Medicine, Clinical Medicine, Surgery, Clinical Surgery, Operative Surgery, Midwifery and Gynæcology, Psychological Medicine, and Diseases of the Skin, of the Throat, Nose, and Ear, and of Children, and Ophthalmology. It is required that at least one of the five years of professional education shall be spent at the University College of Medicine, Newcastle-upon-Tyne.

For the degrees of *Doctor of Medicine* and *Master of Surgery* a candidate must not be less than 24 years of age. He must also have obtained the degrees of Bachelor of Medicine and Surgery of the University of Durham and must have been engaged for at least two years subsequently to the date of admission to these degrees in research work, or in attendance on the practice of a recognised hospital, or in the naval or military services, or in medical or surgical practice. The candidate for the M.D. degree may present an essay or undergo a special clinical examination in the Theory and Practice of Medicine. The subjects of examination for the M.S. are:—Principles and Practice of Surgery, Surgical Pathology, Surgical Anatomy, Surgical Operations, Clinical Surgery.

Doctor of Medicine (without residence).—The University of Durham has instituted a special examination whereby the degree of Doctor of Medicine may be obtained without residence. Candidates must not be under 40 years of age and must have been in active practice for 15 years as registered medical practitioners. They must also produce certificates of moral character from three registered members of the medical profession. The fee is 50 guineas (including the degree fee), of which 20 guineas is retained if the candidate fails to satisfy the examiners.

Doctor of Surgery.—The University of Durham grants the Degree of Doctor of Surgery. Candidates for this degree must be registered medical practitioners, and not less than 24 years of age. They must devote three years, subsequently to obtaining a registrable qualification, to the study of Surgery and ancillary subjects. One at least of the three years must be spent in the University. The candidate must submit to the Professor of Surgery the course of study he proposes to follow, and this course must be approved by the Board of the Faculty of Medicine. One year shall be devoted mainly to work in the departments of Anatomy, Physiology, Pathology and Bacteriology, *and the candidate must* submit evidence of having so worked. Not less than six months of another year must be spent as resident surgeon in a recognised teaching hospital, and the rest of the year in the study of surgery in a recognised medical centre. Not less than six months of one of the three years must be spent in surgical study abroad. The fee for the examination is £20, and the *fee for the degree is £10.*

Candidates for any of the above degrees, diplomas, or licence, must give at least 28 days' notice to Professor Howden, Registrar, College of Medicine, Newcastle-upon-Tyne. *In the case of the M.D.* (essay) examination candidates must send in their essays before the 1st of April.

Scholarships and Prizes.—In connexion with this University the following Scholarships and prizes are awarded:—University of Durham Entrance Scholarship, £25 *a year for four years*; Pears' Entrance Scholarship, £10 a year for three years (awarded every third year); Province of Durham Masonic (Entrance) Scholarship, £60; Heath Scholarship for Surgery, £200, available every second year.

The following Scholarships are tenable *for one year*, namely:—Tulloch Scholarship for Elementary Biology and Organic Chemistry, £20; Dickinson Scholarship for Medicine, Surgery, Midwifery, and Pathology; Gold Medal and £20; Charlton Scholarship for Medicine, £25; Gibb Scholarship for Pathology, £28; Luke Armstrong Scholarship for Comparative Pathology, £25; Stephen Scott Scholarship for Surgery, £40; Philipson Scholarships for highest marks in Final M.B., B.S. Examinations, two of £48 each; Goyder Memorial Scholarship for Clinical Medicine and Clinical Surgery, interest on £825; Gibson Prize for Midwifery and Diseases of Women and Children, £10; Turnbull Prize and Silver Medal for Surface Anatomy; and Outterson Wood Prize for Psychological Medicine, £10. At the end of each session a Prize of Books is awarded in each of the regular classes. For further information apply to Professor R. Howden, Registrar of the College.

COLLEGE OF MEDICINE, Newcastle-upon-Tyne.—*Clinical instruction is* given at the Royal Victoria Infirmary, containing about 550 beds. In it adequate accommodation is provided for the study of the various special subjects, in addition to the ordinary clinical work. Students do midwifery at the Princess Mary Maternity Hospital.

Post-graduate Instruction.—A comprehensive series of post-graduate courses has been arranged to enable practitioners to take advantage of the facilities for laboratory work and clinical study which are afforded by the College, the Royal Victoria Infirmary and other associated hospitals, and in order to meet the varied requirements of practitioners there are general and special courses in the *winter and summer* session as well as an intensive course in the summer vacation.

The Bacteriological Laboratory.—The Bacteriological Laboratory is adjacent to Armstrong College.

Students' Union Buildings have been erected and furnished at a cost of over £10,000, and are now in daily use.

Princess Mary Maternity Hospital. — The new Maternity Hospital was opened by H.R.H. Princess Mary Viscountess Lascelles in November, 1923. The hospital is thoroughly up to date, excellently equipped, and there is an annual indoor and outdoor attendance of nearly 3000 cases.

NEWCASTLE-UPON-TYNE ROYAL VICTORIA INFIRMARY.—The Infirmary was founded in 1751, but has been entirely rebuilt, the new hospital being opened by His late Majesty King Edward VII. in 1906. The number of beds is 550. The number of in-patients annually is 12,000 and out-patients' attendances 297,000. The medical students of the University of Durham attend the practice of this hospital. Clinical Lectures are delivered by the Physicians and Surgeons weekly and ward demonstrations are given daily. Tutorial classes are held by the Assistant Physicians and Assistant Surgeons, and demonstrations are given in the several out-patient departments daily. Pathological demonstrations are given by the Pathologist daily or as opportunity occurs, and in the new buildings nothing has been spared in perfecting scientific equipment. In addition to medical and surgical in-patient and out-patient departments the following special departments are fully equipped for teaching students: Ophthalmic, Throat, Nose, and Ear, Skin, Gynæcological, and Electrical. The hospital building contains the following laboratories: 1. Special Pathological Laboratory, attached to the post-mortem rooms. 2. Bacteriological Laboratory, in which all clinical bacteriological investigations are carried out—opsonic indices estimated with a view to treatment by vaccines and serums, &c. 3. There is in addition a Clinical Laboratory attached to each ward and to the out-patient department. There are five operating theatres in use in the hospital. The winter session of 1925 opens on Oct. 1st and the summer session of 1926 on April 13th. Applications for detailed information should be made to the Dean, Dr. Horsley Drummond, at the hospital.

There are other institutions in addition to the Royal Victoria Infirmary at which the student of medicine of the University of Durham can receive clinical instruction. Practical Midwifery can be studied at the Princess Mary Maternity Hospital, Newcastle-upon-Tyne, which contains 65 beds, with an annual indoor and outdoor attendance on 3000 cases. Instruction is given in Psychological Medicine at the City of Newcastle Mental Hospital. A special course of instruction is given in the City Hospital for Infectious Diseases by the City Officer of Health. Ophthalmology is taught at the Northumberland, Durham, and Newcastle Infirmary for Diseases of the Eye.

Post-Graduate Instruction.—For the year 1925–1926 the following post-graduate courses have been arranged:—1. General courses in Clinical Medicine, Surgery, and Pathology at the Royal Victoria Infirmary, meeting once weekly for ten weeks. One course will be held from October to December and one from April to June. 2. Special courses of clinical instruction, meeting once weekly for ten weeks, in the following subjects: Gynæcology; Diseases of the Eye; Diseases of the Throat, Nose and Ear; Diseases of the Skin; Venereal Diseases; Neurology. Special courses in Midwifery will be held at the Princess Mary Maternity Hospital. 3. An intensive course of 14 days' duration in the early part of the Summer Vacation, 1926. 4. In addition to the regular post-graduate courses practitioners may attend the ordinary medical and surgical practice of the Royal Victoria Infirmary for specified periods.

UNIVERSITY OF BIRMINGHAM.

The University of Birmingham grants the degrees of M.B., Ch.B., M.D., Ch.M., and Ph.D. (for Research Study), and also a degree and a diploma in Public Health. The course for the Bachelors' degrees extends over five years from the date of commencement of professional study. As a rule the first four of these years must be spent in the University, but the Senate has power of recognising attendance at another University as part of the attendance qualifying for these degrees and of recognising examinations passed at such other Universities as exempting from the examinations in Biology and Organic Chemistry. In the case of such students at least three years must be spent in attendance upon classes at the University. The fifth year may be spent at any other medical school recognised by the University.

Degrees of Bachelor of Medicine and Bachelor of Surgery.—The student must have passed the Matriculation Examination of the Joint Board or an examination accepted in lieu thereof, and a recognised Pre-Medical Examination in Chemistry and Physics. All communications respecting the Matriculation Examination, and examinations accepted in lieu thereof, must be sent to the Secretary, Joint Matriculation Board, 315, Oxford-road, Manchester. First Examination.—Part I., Elementary Biology and Organic Chemistry.—Part II., Anatomy and Physiology. Second Examination.—General Pathology and Bacteriology, Materia Medica, and Pharmacy. Third Examinations (at the end of the fourth year).—Forensic Medicine, Toxicology, Public Health, Therapeutics, and Special Pathology. Two years' hospital work must have been accomplished. Final Examination.—Medicine, Surgery, Midwifery, Diseases of Women, Mental Diseases, and Ophthalmology. Attendance at a general hospital for a year after the passing of the fourth examination will be required, also attendance at a fever hospital three months, maternity hospital one month, and mental hospital three months. Vaccination instruction must be taken out and courses of Ophthalmology, Venereal and Skin Diseases, and Diseases of Ear, Nose, and Throat, Medical and Surgical Anatomy, and Operative Surgery.

Degrees of Doctor of Medicine and Master of Surgery. At the end of one year from the date of having passed the final M.B., Ch.B. examination the candidate will be eligible to present himself for the higher degrees of either Doctor of Medicine or Master of Surgery or both. Candidates have to present a thesis on some subject embraced in the medical curriculum, and pass a general examination in Principles and Practice of Medicine for the M.D., and one in Principles and Practice of Surgery, including operations on the cadaver, for the M.Ch. A thesis of exceptional merit may exempt from any part of these examinations.

Degree of Ph.D.—The Degree of Doctor of Philosophy is conferred upon candidates who possess a medical degree of a British, Colonial, or other university approved of by the Senate of the University, and who have been engaged, to the satisfaction of the Medical Faculty, in advanced study and research for a period of not less than two years, either in a laboratory of the University or in one or more of the hospitals associated with the University. After the first year of the course candidates may carry on research elsewhere, under approved conditions, and on completing the course present an original thesis on the subject and to submit themselves for oral and possibly written examination.

Fees.—Matriculation, £2; First Examination, Part I., £2 10*s.*; First Examination, Part II., £2 10*s.*; Second Examination, £2 10*s.*; Third Examination, £2 10*s.*; Final Examination. £10; M.D. or Ch.M., £12 10s.

At the University of Birmingham the following Scholarships are awarded:—(*a*) Myers Travelling Studentship of £300, tenable for one year, offered in alternate years, awarded by vote of committee to M.B., Ch.B. candidates, tenable at some University or Hospital not in Great Britain or Ireland (available for year 1925–26); (*b*) two Ingleby Scholarships of £10 each awarded to the candidate at Final Examination obtaining highest "first-class" marks in the subjects of Midwifery and Diseases of Women; (*c*) Sydenham Scholarship of £42, tenable for three years, award of Council to orphan sons of medical practitioners; (*d*) Sands Cox Scholarship of £21 per annum during two years, awarded to the candidate, not being more than 19 years of age, taking the highest marks at the Higher School Certificate Examination of the Joint Matriculation Board; (e) Dental Scholarship of £37 10s., Open Competitive Examination in subjects learned during apprenticeship; (f), (g), (h), and (i) Four Queen's Scholarships of £10 10s. each. In the Second and Fourth Examinations the Scholarship is awarded respectively to the student taking the first place and obtaining "first-class" marks. In the Third Examination the Scholarship is awarded to the student obtaining the highest "first-class" marks in Pathology and Bacteriology, provided that such student passes at the same examination in the subjects of Materia Medica and Practical Pharmacy. In the Final Examination the Scholarship is awarded to the candidate taking the first place in the examination—that is, obtaining the greatest aggregate number of marks—provided that in each of the subjects of Medicine, Surgery, and Midwifery he gains not less than 60 per cent. of the total available marks; (j) George Henry Marshall Scholarship of £10, awarded annually, for the encouragement of Research Work in Ophthalmology; and (k) Russell Memorial Prize, a prize of books, value about £2, awarded annually to the student who, not being of more than six years' standing as a student of the School of Medicine of the University, shall pass the best examination in the subject of Nervous Diseases. The "Arthur Foxwell Memorial Medal" (Gold Medal) is awarded annually to the candidate passing the Final M.B., Ch.B. in June, who obtains the highest marks in Clinical Medicine, provided the marks so gained be not less than 60 per cent. The University Clinical Board awards Gold and Silver Medals on examinations in Medicine, Surgery, and Midwifery, respectively, in the fourth and fifth years (open to all students).

Post-graduate Courses.—A Lectureship in Morbid Psychology was established in 1910 in the University, and courses of lectures are given annually by specialists in the subject. The Ingleby Lectures on some subject in connexion with Diseases of Women and Children are given annually by specially appointed lecturers. Post-graduate Courses of Clinical Demonstrations (for General Practitioners) at the Birmingham General and Queen's Hospitals are arranged annually (April to July).

Clinical Instruction.—The medical students of the University receive their clinical instruction by attending the amalgamated practice of the General Hospital and the Queen's Hospital under the direction of the University Clinical Board. Appointments are open to students varying from £10 to £200 a year.

BIRMINGHAM GENERAL HOSPITAL.—370 beds are in daily use, 6000 in-patients per annum. Special wards for Children, Gynæcological, Ear and Throat, Venereal, Maternity, Septic and Infectious cases; special beds for Eye and Skin cases. About 50,000 out-patients per annum. Laboratories for Bacteriology and Morbid Histology. Separate rooms adjoin the medical and surgical wards for clinical pathology. Five operating theatres (one for out-patients), all designed and fitted on modern lines. In addition to clinical teaching given in the wards and out-patient department by the honorary staff, medical and surgical tutorial classes are held for senior and junior students. Clinical instruction in all the special departments, which include those for Radium, Electro-therapy, Extern Midwifery, and Venereal Diseases. Post-graduate classes in every branch of medicine and surgery. The Jaffray Branch Hospital contains 50 beds.

QUEEN'S HOSPITAL (Beds 224).—Similar arrangements for clinical teaching are made here, and the material also is excellent. Ward and tutorial classes and post-graduate courses are regularly conducted by the staff, there are daily clinics in the out-patient department, while teaching duties are definitely assigned to the house physicians and house surgeons. There are also special departments for gynæcology and ophthalmology, dentistry, radiography, pathology, bacteriology, massage, electricity, whirlpool baths, electro-cardiograph, &c.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street, Birmingham.—This hospital possesses 120 beds, and there is an average daily attendance of out-patients of over 250. Students attending for a period of three months will be granted certificates which will qualify for the University and Conjoint Board examinations. Post-graduate courses are available on various subjects when a sufficient number of graduates are present. A limited number of Non-Resident Clinical Assistants posts are available to qualified practitioners, particulars of which can be had on application to the General Superintendent.

UNIVERSITY OF LIVERPOOL.

The degrees in the Faculty of Medicine are Bachelor of Medicine and Bachelor of Surgery (M.B. and Ch.B.), Doctor of Medicine (M.D.), Doctor in Philosophy (Ph.D.), Master of Surgery (Ch.M.), Master of Hygiene (M.H.), and Master of Orthopædic Surgery (M.Ch.Orth.).

Degrees of Bachelor of Medicine and Bachelor of Surgery.—Candidates for the degrees of Bachelor of Medicine and of Surgery must have attained the age of 22 years on the day of graduation. At least two of the five years of medical study must have been passed in the University, and one year at least must have been passed in the University subsequently to the date of passing the First Examination. The other three years may be passed at any college or medical school recognised for this purpose by the University. Candidates must pass three examinations entitled respectively: the First Examination, the Second Examination, and the Final Examination. The fee is £5 for each examination. The subjects of the First Examination are: (1) Chemistry; (2) Physics; (3) Biology (Zoology and Botany). The subjects of the Second Examination are (a) (1) Anatomy; (2) Physiology (including Physiological Chemistry and Histology); and (b) (3) Elementary Bacteriology, (4) Clinical Chemistry, (5) General Pathology. Candidates may present themselves in (a) or (b) separately. The subjects for the Final Examination are: (a) (1) Special Pathology and Morbid Anatomy; (2) Forensic Medicine and Toxicology; (3) Public Health; (4) Pharmacology and General Therapeutics; (b) (5) Obstetrics and Diseases of Women; (6) Surgery, Systematic, Clinical, Operative and Practical, including Ophthalmology; (7) Medicine, Systematic and Clinical, including Therapeutics, Mental Diseases, and Diseases of Children. Candidates may present themselves in Parts (a) and (b) separately, but candidates must have completed the fifth year of medical study before taking Part (b).

Degrees of Doctor of Medicine and Master of Surgery.—No candidate will be admitted to the degree of Doctor of Medicine or Master of Surgery unless he has previously received the Degrees of Bachelor of Medicine and Bachelor of Surgery, and at least two years have elapsed since he passed the examinations for those degrees, or, in the case of the degree of Doctor, unless, having obtained substantially equivalent degrees in an approved University, he has subsequently spent two years in the University or in the Clinical School in the performance of research or the conduct of systematic clinical observations. Candidates for the degree of Doctor of Medicine are required to present a thesis together with, if desired, published original work relative to medical science. An examination is required if the work submitted is not of special merit. If the work submitted is of special merit, but extremely specialised, a candidate may be asked to submit a reasoned report on a subject set by the examiners.

The University has recently established a Diploma in Medical Radiology and Electrology—Part I., Physics; Part II., Radiology and Electrology. The parts may be taken at one examination or separately.

At this University the following Scholarships and Fellowships and Prizes are awarded:—(*a*) Robert Gee Entrance Scholarship, annually, of £40, tenable for four years; (*b*) Lyon Jones Scholarship, No. 1, of £21 per annum, tenable for two years, Competitive Examination among Junior Students in First M.B. Subjects; (*c*) Lyon Jones Scholarship, No. 2, of £21, Competitive Examination among Senior Students in Anatomy, Physiology, Pharmacology, and Materia Medica; (*d*) Derby Exhibition of £15, Competitive Examination among Fourth- or Fifth-year Students in Clinical Subjects, and (*e*) Clinical School Exhibition of £15 annually for Fourth- or Fifth-year students; (*f*) University Scholarship of £50 for one year, awarded on results of Second Examination for the degrees; (*g*) Holt Fellowships, Physiology and Pathology, of £150 each, for one year; (*h*) Gee Fellowship, Anatomy, of £100, for one year; (*i*) John Rankin Fellowships in Anatomy, two, each of the value of £120, tenable for two years; (*j*) Johnston Colonial Fellowship, Bio-Chemistry, of £100, for one year; (*k*) John W. Garrett International Fellowship, Bacteriology, of £100, for one year; (*l*) Thelwall Thomas Fellowship, Surgical Pathology, of £150, for one year; (*m*) Ethel Boyce Fellowship in Gynæcological Pathology, of £100, for one year; (*n*) Mary Birrell Davies Memorial Fund Scholarship, of the value of £60, tenable for four years, offered for competition in alternate years; open only to women students who will have attained the age of 19 on the first day of October next following the award; (*o*) Rankin Exhibition in Practical Anatomy, of £25, for one year; (*p*) Lady Jones Research Fellowship in Orthopædic Surgery, £200; (*q*) Samuels Memorial Scholarships, three at £20; numerous prizes and medals.

Medical School Buildings.—Medical research has also been endowed with several new laboratories in which students can pursue research work after graduation. All the laboratories and class-rooms are situated close together, communicating with one another, and are made up of four large blocks of buildings which form one side of the College quadrangle. There are the Johnston Laboratories for Experimental Medicine and Biochemistry; the Medical School for Anatomy, Surgery, Toxicology, and Ophthalmology; and the Thompson-Yates Laboratories for Physiology and Pathology. A new building for Tropical Medicine has been opened.

Clinical Instruction.—The Clinical School of the University consists of four general hospitals—the ROYAL INFIRMARY, the DAVID LEWIS NORTHERN HOSPITAL, the ROYAL SOUTHERN HOSPITAL, and the STANLEY HOSPITAL; and of six special hospitals—the Eye and Ear Infirmary, the Hospital for Women (with the Samaritan Hospital), Liverpool Maternity Hospital and Ladies' Charity, the Royal Liverpool Children's Hospital, St. Paul's Eye Hospital, and St. George's Hospital for Skin Diseases. These hospitals contain in all a total of about 1445 beds. The organisation of these hospitals to form one teaching institution provides the medical student and the medical practitioner with a field for clinical education and study which is unrivalled in extent in the United Kingdom. All the hospitals are within easy access of the University. There are a large number of appointments to house physicianships and surgeonships both at the general and special hospitals which are open to qualified students of the school.

Public Health Department.—This is located in a separate building, in which full courses of instruction are given to students for the Diplomas and Degrees of the University and of other Examining Boards.

Prospectuses and further information may be had on application to the Dean of the Faculty of Medicine, University of Liverpool.

VICTORIA UNIVERSITY OF MANCHESTER.

Four degrees in Medicine and Surgery are conferred by the University—viz., Bachelor of Medicine and Bachelor of Surgery (M.B. and Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.). A Diploma in Psychological Medicine is awarded by examination to registered medical practitioners.

Degrees of Bachelor of Medicine and Bachelor of Surgery.—Before admission to the degree of M.B. or Ch.B. candidates are required to present certificates that they will have attained the age of 21 years on the day of graduation and that they have pursued the courses of study required by the University Regulations during a period of not less than five and a half years subsequently to the date of their registration by the General Medical Council, two of such years having been passed in the University subsequently to the date of passing the first M.B. Examination.

The First Examination.—(1) Chemistry and Physics; (2) Biology. Candidates must have attended during at least one year courses both of lectures and of laboratory work in each of the above-named subjects. The Examination is divided into two parts: Part 1, Inorganic and Elementary Organic Chemistry and Physics; Part 2, Biology. The candidates sit for these parts separately.

The Second Examination. — (1) Anatomy and Histology; (2) Physiology, including Physiological Chemistry.

The Third Examination.—(1) Pharmacology and Therapeutics; (2) Pathology.

The Final Examination.—(1) Medicine, Systematic and Clinical (including Mental Diseases and Diseases of Children); (2) Surgery, Systematic, Clinical, and Practical; (3) Obstetrics and Gynæcology (including Clinical and Practical); (4) Forensic Medicine (including an Oral Examination); (5) Hygiene and Preventive Medicine. The Final Examination is divided into two parts. Candidates for the Second Part must complete the sixth year of medical study.

Degree of Doctor of Medicine.—Candidates are not eligible for the degree of Doctor of Medicine unless they have previously received the degrees of Bachelor of Medicine and Bachelor of Surgery and at least one year has elapsed since they passed the examination for those degrees. Candidates may elect either (1) to present an original dissertation; or (2) to undergo an examination. The dissertation must embody the results of personal observation or original research, either in some department of medicine or of some science directly relative to medicine. The examination, which will be written and practical, is in the Principles and Practice of Medicine, in Pathology, and in some other subject to be selected by the candidate.

Degree of Master of Surgery.—Candidates are not eligible for the degree of Master of Surgery unless they have previously received the degrees of Bachelor of Medicine and Bachelor of Surgery and at least one year has elapsed since they passed the examination for those degrees. The degree is conferred in the following branches: Surgery (*Branch I.*), Gynæcology (Branch II.), Ophthalmology (*Branch III.*), *Laryngology*, Otology, and Rhinology (Branch IV.).

Scholarships, Fellowships, and Prizes.—The following are offered in connexion with medical study at this University:—Scholarships: Dreschfeld Entrance (triennial), £20; Sam Gamble Entrance for Women; two Graduate Entrance (fees up to 100 guineas); two Dauntesey Medical Junior, £50 *each*; Dauntesey Medical Senior, £50; Professor Tom Jones Exhibition in Anatomy, £25; Dickenson Trust Scholarships in Anatomy and Pathology; Platt Physiological, £90; Graduate Research Scholarship, £70; Dickenson Trust Travelling Scholarships in Medicine and Surgery; Ashby Memorial in Diseases of Children (triennial), £100. Fellowships: Leech Research, £70; Professor Tom Jones Surgical, £105; Morrison Watson in Anatomy, £150; Délépine in Preventive Medicine (biennial), £300; Honorary Research Fellowships. Prizes: Sidney Renshaw in Physiology, £15; Turner Medical, £20; John Henry Agnew in Diseases of Children, £30; Dumville Surgical, £15; Knight Prize in Psychological Medicine, £50; Graduate Prizes, £5 each. There are many general entrance scholarships, in addition to those already mentioned, open for competition, the examinations for which are held in the month of May. Full particulars can be obtained from the Registrar.

The Medical School.—This school, largely extended in 1920, is provided with dissecting-rooms, X ray rooms, physiological laboratories, private laboratories, and work-rooms, besides lecture-rooms, museums, and general and departmental libraries. A special laboratory is equipped for experimental work on the central nervous system. In the pathological laboratories ample provision is made for the teaching of pathology and bacteriology and for the prosecution of original research. The Helen Swindells Laboratory is specially equipped for cancer research and investigation in general pathology. Ample facilities for investigation are provided in Anatomy, Physiology, and Materia Medica. In the public health department, which is lodged in a separate institute in York Place, near the Royal Infirmary, suitable laboratory accommodation is provided for the study of sanitary chemistry, physics, and practical bacteriology in the departments of chemistry and physics and in that of pathology.

Clinical Studies.—The clinical and practical departments of medical study are taught partly in the Medical School and partly in the Royal Infirmary and St. Mary's Hospitals for Women and Children, a fever hospital, a lunatic asylum, and a convalescent home, and other special hospitals. Medical and Surgical Clinical Classes are conducted in the Infirmary, and separate instruction is afforded in the elements of Medical and Surgical Physical Diagnosis, in Obstetric Medicine, Ophthalmic Surgery, and Pathological Anatomy by the different members of the staff of the Medical School and Infirmary.

Clinical Instruction.—MANCHESTER ROYAL INFIRMARY.—The Royal Infirmary is built on the pavilion system, near the University, and has accommodation for 668 patients (including 54 beds at the Central Branch). The medical side consists of five units, each unit having a testing-room for the scientific investigation of morbid products and a class-room. The surgical beds are also arranged in five units, each unit having its own operation theatre, with anæsthetising, recovery, sterilising, testing and apparatus rooms, and its own class-room attached. All of these units are occupied. In the educational block is a large lecture theatre and a museum. In the same building is housed the X ray department, which has nine separate X ray outfits for different purposes, and in which one large room is put aside specially for X ray demonstrations and teaching purposes. A large massage school is also connected with this department.

The number of patients treated during the year 1924 was 10,814 in-patients and 42,348 out-patients; of the latter figure 10,058 were treated in the accident room of the Infirmary. About 9000 operations are performed annually in the operation theatres.

Associated with the Infirmary are: (1) the Convalescent Hospital at Cheadle, containing 132 beds; (2) the Royal Lunatic Hospital at Cheadle, accommodating with its branches 430 patients; and (3) the Central Branch in the City, which has now accommodation for 51 patients. The Associated Hospitals thus contain 1230 beds and are under the same management. Women students are admitted on the same terms as men.

Fees.—Medical Practice: Three months, 7½ guineas; six months, 12 guineas; twelve months, 18 guineas; full period required by the Examining Bodies, 60 guineas.

Two Entrance Scholarships in Medicine of the value of £100 each are offered annually by the Council of the Manchester University and the Medical Board of the Manchester Royal Infirmary for proficiency in Arts and Science subjects respectively. Other scholarships and prizes are mentioned in the College syllabus. Numerous annual appointments and junior appointments may be held by those who have attended the practice of the Infirmary.

Post-Graduate Courses.—Post-graduate Lectures open to all medical men and women are given by members of the staff and others from the last week in September until Christmas, and from the beginning of March until Whit-week. These take place at 4.15 P.M. on Tuesdays and Fridays, and are free. Information can be obtained from the Secretary of the Post-Graduate Committee, Royal Infirmary, Manchester.

The Dean of Clinical Instruction is Dr. T. H. Oliver.

ROYAL MANCHESTER CHILDREN'S HOSPITAL, Pendlebury, Gartside-street, Manchester, and Lytham St. Anne's.—The hospital contains 190 beds and 80 in the Convalescent Home, Lytham St. Anne's. The medical staff visit the hospital daily at 10 A.M. Clinical instruction is given by the medical staff at the Hospital and Dispensary. There is a new Massage and Electro-therapeutic Department. Four Clinical Assistants are appointed for periods of six months. In throwing open these appointments to qualified medical men and women, the Board is actuated by the desire to aid those qualified medical men and women who wish to have opportunities for the further study of disease in children, or who wish to fit themselves for posts as Medical Officers to Children's Hospitals, to Child Welfare Centres, or for School Medical Officer appointments. There is a new Orthopædic Department.—A special out-patients' day is held on Tuesday mornings at Gartside-street, and a ward at Pendlebury is devoted to cases needing operative treatment. Out-patients are seen daily at 9 A.M. at the Out-patient Department, Gartside-street, Manchester. Secretary: Mr. W. M. Humphry.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road, Manchester.—The hospital contains 72 beds. Out-patients are seen daily from 8.30 to 10 A.M.

UNIVERSITY OF LEEDS.

Four degrees in Medicine and Surgery are conferred—viz.: Bachelor of Medicine and Bachelor of Surgery (M.B. and Ch.B.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), also Degrees and Diplomas in Dental Surgery and Diplomas in Public Health and in Psychological Medicine.

Degrees of Bachelor of Medicine and Bachelor of Surgery.—Candidates for these degrees are required to present certificates showing that they will have attained the age of 21 years on the day of graduation, and have attended courses approved by the University extending over not less than five years, two of such years at least having been passed in the University, one of which must be subsequent to the date of passing the First Examination. Candidates must also satisfy the examiners in the several subjects of the following examinations, entitled respectively: the Matriculation Examination, or such other examination as may have been recognised by the Joint Matriculation Board in its stead; the First Examination; the Second Examination; and the Final Examination.

The First Examination.—The First Examination consists of: Part I., Physics and Chemistry; Part II., Zoology and Botany. Candidates will be allowed to pass the two parts separately.

The Second Examination.—The Second Examination consists of: Part I., Anatomy and Physiology; Part II., Materia Medica and Pharmacy. Candidates will be allowed to pass the two parts separately.

The Final Examination.—The Final Examination consists of: Part I., Pathology and Bacteriology. Part II., Forensic Medicine and Public Health. Part III., Medicine: Systematic and Clinical, including Mental Disease and Diseases of Children; Surgery—Systematic, Clinical, and Practical; Obstetrics and Gynæcology—Systematic, Clinical, and Practical; Pharmacology and Therapeutics. Candidates will be allowed to pass Parts II. and III. separately or together, and they may present themselves for examination in Part I. at the end of the tenth term.

Degree of Doctor of Medicine.—Candidates are not eligible for the degree of Doctor of Medicine or Master of Surgery unless they have previously received the degrees of Bachelor of Medicine and Bachelor of Surgery of the University (or of Victoria prior to December, 1904) and at least one year has elapsed since they passed the examination for those degrees. Candidates for the degree of Doctor of Medicine are required to present a dissertation and, if the dissertation be accepted, may be required to pass an examination.

The first term commences on Oct. 1st. Prospectus can be obtained from the Academic Sub-Dean.

Post-graduate work.—Practitioners wishing to attend Infirmary practice during short periods, or post-graduate classes held by members of the clinical staff, may do so on application to the Clinical Sub-Dean, from whom particulars may be obtained.

Clinical Instruction.—The Leeds General Infirmary, in connexion with this medical faculty, has accommodation for 630 in-patients, including 88 beds at branch hospitals in the country. During 1924 11,738 in-patients and 50,777 new out-patients were treated. Clinical teaching takes place daily in the wards, and Clinical lectures are given in Medicine and Surgery by the Physicians and Surgeons. There are Medical, Surgical, Ophthalmic, Aural, Electro-therapeutic, and Radiographic Departments, in each of which special instruction is imparted to students. Gynæcological and Children's Departments, together with Laryngeal, Venereal, and Skin Clinics, are in operation, and there is a special ward for cases of nutritional disorders of children. Several valuable prizes are given at the end of each session. Numerous appointments at the Infirmary are annually open to students after qualification. Further particulars may be obtained from the General Manager.

In addition to work in the General Infirmary, clinical instruction in obstetrics is given in the Leeds Maternity Hospital and in mental and infectious diseases in the Wakefield (W.R.) Mental Hospital and Leeds City Fever Hospital respectively.

UNIVERSITY OF SHEFFIELD.

The Degrees in the Faculty of Medicine are Bachelor of Medicine and Bachelor of Surgery (M.B., Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.), Bachelor of Dental Surgery (B.D.S.), and Master of Dental Surgery (M.D.S.). There is also a Diploma of Licentiate in Dental Surgery. The courses and degrees in the Faculty of Medicine are open to men and women alike. Candidates must matriculate in the University or pass such other examination as may be recognised for this purpose by the University and sanctioned by the Joint Matriculation Board, and must pass also the further examination in Chemistry and Physics.

Degrees of Bachelor of Medicine and Bachelor of Surgery.—A candidate must have attained the age of 22 years on the day of graduation and have pursued the courses of study required by the University regulations during a period of not less than five years subsequently to the date of his matriculation and the passing of the further examination in Chemistry and Physics, three of such years at least having been passed in the University, one at least being subsequent to the passing of the First Examination.

The First Examination.—The subjects of the examination are Chemistry, Physics, and Biology. The Intermediate B.Sc. Examination in these subjects will, on payment of the required additional fee, be accepted instead of this examination. Candidates must, after matriculation and the passing of the further examination in Physics and Chemistry, and registration as medical students, have attended courses of instruction (lectures and laboratory work) in chemistry, physics, and biology for one year each.

The Second Examination.—The subjects are Anatomy and Physiology. Candidates must have completed the second year of professional study.

The Third Examination.—The subjects are Pathology, Pharmacology, Anatomy, and Physiology. Candidates must have completed the Lent Term of the fourth year of professional study.

The Final Examination.—The subjects of the examination are:—Part I.—Forensic Medicine and Public Health; Part II.—Medicine (including Mental Diseases and Diseases of Children), Surgery, Obstetrics (including Gynæcology). Candidates for Part I. must have completed the Michaelmas Term of the fifth year of professional study; candidates for Part II. must have completed the fifth year of professional study.

Degree of Doctor of Medicine.—Candidates for the degree of Doctor of Medicine must have passed the examination for the degrees of M.B., Ch.B. at least one year previously, must present a thesis embodying observations in some subject approved by the professor of medicine, and must pass an examination in the Principles and Practice of Medicine.

Degree of Master of Surgery.—Candidates must have taken the M.B., Ch.B. at least one year previously, and must since have held for not less than six months a surgical appointment in a public hospital.

The subjects of examination are Systematic, Clinical, and Operative Surgery, Surgical Anatomy, Surgical Pathology, and Bacteriology.

Scholarships, &c.—At this University, in addition to six Edgar Allen scholarships of £125 a year for three years, holders of which can take the courses in the Faculty of Medicine, there are 11 scholarships tenable in the Faculty of Medicine. Full particulars as to curriculum, scholarships, &c., may be had on application to the Registrar or to the Dean of the Medical Faculty.

The Medical School.—The new buildings of the University opened in 1905 are situated at the west end of the city, adjoining Weston Park, and the Medical Department occupies the entire north wing of the University quadrangle. The various athletic and other students' societies are under the management of the Union Representative Council, elected annually. There are large and comfortable common rooms both for men and women students, and two Students' Unions, one for men and one for women. A refectory is open daily at the University where students may obtain refreshments, lunch, dinner, &c., at extremely moderate prices. The University journal, *Floreamus*, edited by a committee of staff and students, is published each term. The University Halls, "Tapton Cliffe," "Oakholme," Clarkehouse-road; "Endcliffe House," Endcliffe Fulwood-road, and "Endcliffe House," Endcliffe Vale-road, are recognised by the Senate as halls of residence for women students; full particulars may be obtained of the tutor for women students. Stephenson Hall is a hall of residence for men students; particulars may be obtained from the Warden.

Clinical Instruction.—The University is within easy reach of the various hospitals with which it is connected for clinical purposes. These are as follows: The Royal Infirmary (Secretary, Mr. J. W. Barnes), containing 502 beds, with an annual average number of over 5400 in-patients, over 16,000 out-patients, and over 19,000 casualties; the Royal Hospital (Sec., Mr. W. H. Booth), with 316 beds, and an annual number of 3600 in-patients, over 30,000 out-patients, and over 16,000 casualties; and the Jessop Hospital for Diseases of Women, with 91 beds, over 1000 in-patients, and over 2300 out-patients; also a Maternity department, with about 700 in-patients per annum and about 250 out-patient cases attended. Special courses on Fevers are held at the City Fever Hospitals (690 beds) and on Mental Diseases at the South Yorkshire Asylum (1740 beds). For purposes of clinical practice the practices of the Royal Infirmary and Royal Hospital are amalgamated, giving a total of 818 beds for the treatment of medical, surgical, and special cases. There are special departments for the treatment of Diseases of the Eye at each institution, with wards assigned to them. In addition to these the Royal Infirmary has special departments for the treatment of Diseases of the Skin and Ear, with beds assigned to them, whilst at the Royal Hospital there are special out-patient departments for Diseases of the Throat, Ear, Skin, Orthopædics, and Mental Diseases. Instruction is also given at the South Yorkshire Asylum (1740 beds). The department of Pathology and Bacteriology in the University is fitted with every requirement for the most advanced work in these subjects.

Fees.—The Medical Composition Fee is £38 a year for each of the five years.

UNIVERSITY OF BRISTOL.

In the Faculty of Medicine there are the following degrees:—Bachelor of Medicine and Bachelor of Surgery (M.B. and Ch.B.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), Bachelor of Dental Surgery (B.D.S.), and Master of Dental Surgery (M.D.S.) There are also the following diplomas: Diploma in Public Health (D.P.H.), Diploma in Dental Surgery (L.D.S.), and Diploma in Veterinary State Medicine.

All candidates for degrees in Medicine, Surgery, and Dentistry are required to pass an examination called the School Certificate Examination, or to pass such examination as may be regarded as equivalent by the Senate. All courses, degrees, and diplomas are open to men and women alike.

Conjoined Degrees of Bachelor of Medicine and Bachelor of Surgery.—Candidates shall be not less than 21 years of age and shall have pursued the courses prescribed by University Regulations during not less than five years after passing the first examination in Chemistry and Physics, of which three shall have been passed in the University, and two of these three subsequent to passing the second examination. All candidates for the degrees of M.B., Ch.B., are required to satisfy the examiners in the several subjects of three examinations.

The First Examination.—The subjects of examination are: Chemistry (Inorganic), Physics, and Biology, the courses pursued being those for the time being approved for the intermediate part of the B.Sc. curriculum. This part of the curriculum shall extend over one year. (Candidates who have passed the Higher School Certificate approved by the Board of Education in these subjects will not be required to sit for the first examination and will be regarded as having completed one year of study.)

The Second Examination.—The subjects of examination are: Organic Chemistry and Elementary Anatomy (Part I.) and Advanced Anatomy and Physiology (Part II.). Parts I. and II. may be passed separately or together.

The Final Examination.—The subjects of examination are: Materia Medica and Pharmacy, Pharmacology and Therapeutics, General Pathology, Morbid Anatomy, and Bacteriology (Part I.); Special Pathology, Forensic Medicine, Toxicology, and Public Health, Obstetrics (including Diseases of Women), Surgery (Systematic, Clinical, Practical, and Operative), Medicine (Systematic, Clinical, and Practical, including Mental Diseases) (Part II.). The subjects included in Part II. may be taken in two groups—viz., Group I., Surgery and Obstetrics; Group II., Medicine, Public Health, Special Pathology, Forensic Medicine, and Toxicology. Candidates may pass Parts I. and II. together, or separately, and the two groups of Part II. may be taken together or separately. Forensic Medicine and Toxicology may be taken with Part I., or with Group II. of Part II.

Degree of Doctor of Medicine.—Candidates shall be Bachelors of the University of not less than two years' standing as such and may elect either (1) to pass an examination in General Medicine, or (2) to pass an examination in State Medicine, or (3) to present a Dissertation. The candidate who elects to pass the examination in State Medicine must hold a diploma in Public Health of some University or College, and the candidate who elects to present a Dissertation may be examined in the subject thereof.

Degree of Master of Surgery.—Candidates shall be Bachelors of not less than two years as such, during which period they shall have attended the Surgical Practice of an institution approved for the purpose. They shall pass an examination in Surgical Anatomy, Pathology, and Bacteriology, and Operative, Clinical, and General Surgery, and present to the University a Dissertation on some subject of Surgery. The degree may be taken also in General Surgery, and a Special Subject—e.g., Oto-Rhino-Laryngology, Ophthalmology, and Gynæcology.

Clinical Instruction.—The allied hospitals (BRISTOL ROYAL INFIRMARY and BRISTOL GENERAL HOSPITAL) have between them about 600 beds and extensive out-patient departments, special clinics for Diseases of Women and Children and those of the Eye Throat, and Ear, in addition to large and well-equipped departments for Dental work and large outdoor Maternity Departments.

At each of these institutions there are well-arranged pathological museums, post-mortem rooms, and laboratories for Morbid Anatomy. There are also laboratories for work in Clinical Pathology, Bacteriology, and Cytology, in which special instruction is given in those subjects. Departments are provided and well equipped for X ray work, both for diagnosis and treatment, the various forms of Electrical treatment, including High Frequency Currents, Electric Baths, Finsen Light treatment, and Massage.

The students of the school also attend the practice of the Royal Hospital for Sick Children and Women, containing 140 beds, and that of the Bristol Eye Hospital, with 40 beds. The total number of beds available for clinical instruction is therefore about 750.

Appointments.—(1) Undergraduate: Clinical clerkships, dresserships, also ophthalmic, obstetric, pathological and ear, nose, and throat clerkships, are tenable at the Bristol Royal Infirmary and the Bristol General Hospital. In these institutions the dressers reside in rotation free of charge. (2) Post-graduate: At the Bristol Royal Infirmary: Four house surgeons, £80 each per annum; two house physicians, £80; two resident obstetric officers, one of whom is also ophthalmic house surgeon, £100 and £80; ear, nose, and throat house surgeon, £80; dental house surgeon, £80. All these appointments are made for six months. From the resident officers a senior resident officer is appointed at a salary of £200. At the Bristol General Hospital: Senior resident medical officer, £250 per annum; casualty house surgeon, £80 per annum; two house physicians, £80 per annum; house surgeon, £80 per annum; special obstetric physician, £80 per annum; house surgeon to special departments, £80 per annum; dental house surgeon, £300 per annum. Appointments are for six months, except that of senior resident medical officer, which is for two years.

Scholarships.—The following are among the scholarships and other awards open to students of the school: The Ashworth Hallett Scholarship, value £45, open to women only; Two Martin Memorial Pathological Scholarships of £10 each; the Tibbits Memorial Prize, value 6 guineas, for proficiency in practical surgery; the Committee's Gold and Silver Medals for fifth-year students for general proficiency; the Augustin Prichard Prize, value about 6 guineas, for proficiency in anatomy; the Henry Clark Prize, value 11 guineas, for proficiency in gynæcology; the Crosby Leonard Prize, value 7 guineas, for proficiency in surgery; the Suple Surgical Prize, a gold medal and 7 guineas; the Suple Medical Prize, a gold medal and 7 guineas; the Henry Marshall Prize, value £12, for dressers; the H. M. Clarke Scholarship, value £15, for proficiency in surgery; the Sanders Scholarship, value £22 10s., for general proficiency; the Barrett-Roué Scholarship for proficiency in diseases of the eye, ear, nose, and throat, value £14; Lady Haberfield Scholarship, value about 25 guineas; Phyllis Siepman Prize, for proficiency in Diseases of Children, value £50.

Bristol City Senior Scholarships and those offered by the counties of Gloucestershire, Somerset, Wilts, and Devon, are tenable in the University.

Some of the Fellowships awarded by the Colston Research Society for research in the University are allotted to the Faculty of Medicine.

Daily Post-graduate Study.—For those who are able to devote several hours each day to hospital practice the University offers special facilities for Post-graduate work. Qualified medical practitioners may be appointed as Clinical Assistants for a period of one or more months. They may act as Assistants, if times permit, in more than one department and in any of the hospitals during their period of study. They will be entitled to the use of the clinical laboratories and medical library, and have the right to attend in all departments, including operations, post-graduate and ordinary clinical demonstrations, and post-mortem examinations. Fee, £3 3s. per month.

Post-graduate Clinical Work. — Demonstration courses with weekly lectures are held during May, June, and July. Fee, £2 2s. All inquiries and applications for admission should be addressed to the Director of Post-graduate Studies (Clinical Section), Pathological Department, University of Bristol, who can be seen on any day by appointment.

Further information as to scholarships, curricula, and fees can be obtained from the Dean of the Faculty of Medicine or the Registrar of the University.

UNIVERSITY OF WALES.

This University has, inter alia, the privilege of granting Degrees in Medicine, and Diplomas in Public Health and Tuberculous Diseases. Preliminary courses of study for the Degrees in Medicine may be pursued at any of the constituent Colleges of the University—viz., at Aberystwyth, Bangor, Cardiff, or Swansea. The Welsh National School of Medicine is situated in Cardiff and is an integral part of the University College of South Wales and Monmouthshire there.

University College of South Wales and Monmouthshire, Cardiff. Welsh National School of Medicine.—This School is staffed on the Unit System, and its Courses of Instruction are open to both men and women students. Students can complete the whole of their curriculum in the School. The courses of instruction qualify for degrees in Medicine and Surgery of the University of Wales, and for the Degrees and Diplomas of other examining bodies. Hospital instruction is given at the Cardiff Royal Infirmary, at the City Lodge Hospital, and at other recognised Institutions. The attention of students about to matriculate is drawn to the numerous entrance scholarships offered for competition at the University College, Cardiff, many of which may be held by medical students. Full particulars of the examination for these may be obtained by application to the Registrar. Medical practitioners wishing to prepare for the Diploma in Public Health or for the Tuberculous Diseases Diploma of the University of Wales can attend complete courses of instruction in the School. Prospectuses can be obtained on application to the Dean of the Faculty of Medicine, or to the Secretary. Welsh National School of Medicine.

Clinical Instruction.—CARDIFF ROYAL INFIRMARY: Founded 1837. 450 beds.—There are out-patient departments for Dermatology, Diseases of Children, and Dental Cases, and a Maternity Hospital.—SWANSEA GENERAL AND EYE HOSPITAL: Hospital, 262 beds. Departments: Pathological Laboratory; Venereal Diseases Department; Ophthalmic; Ear, Nose and Throat; Women; X Ray and Massage. Convalescent Home, 26 beds.

ENGLISH MEDICAL CORPORATIONS GRANTING DIPLOMAS.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGE OF PHYSICIANS OF LONDON AND THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Under this heading we give the regulations for the examinations enjoined by the Conjoint Examining Board of the Royal Colleges of Physicians of London and Surgeons of England and of the Society of Apothecaries upon students desiring their respective diplomas of qualification. We do not give any list of schools recognised by these bodies as eligible to prepare students for their examinations beyond mentioning that all the schools which we have already described (under the heading of the Universities to which they are attached) are recognised as suitable places of instruction by the corporations granting medical diplomas. The courses of study at the principal colonial medical schools are also recognised as qualifying for the examinations of these corporations.

1. *Regulations applying to all candidates who passed the required Preliminary Examination in General Education before Jan. 1st*, 1923.

Professional Examinations.—There are three Examinations, called herein the First Examination, the Second Examination, and the Third or Final Examination, each being partly written, partly oral and partly practical. These examinations will be held in the months of January, April, July, and September or October unless otherwise appointed. Every candidate must give notice in writing to Mr. F. G. Hallett, O.B.E., Secretary of the Examining Board, Examination Hall, Queen-square, Bloomsbury, W.C.1, 14 clear days before the day of the examination, transmitting at the same time the required certificates.

The subjects of the *First Examination* are—Chemistry, Physics, and Elementary Biology. A candidate may take this examination in two parts at different times (Chemistry and Physics must be taken together until the required standard is reached in both or in one of these subjects, but a candidate will not be allowed to pass in one without obtaining at the same time at least half the number of marks required to pass in the other). A candidate will be admitted to examination in Chemistry and Physics, and in Elementary Biology on producing evidence of having passed the required Preliminary Examination and of having received instruction in these subjects at a recognised institution. A candidate rejected in one part or more of the First Examination will not be admitted to re-examination until after the lapse of a period of not less than three months from the date of rejection, and he will be re-examined in the subject or subjects in which he has been rejected. If referred in Chemistry, Physics, or Biology he must produce evidence of further instruction at a recognised institution. Any candidate who shall produce satisfactory evidence of having passed an examination for a degree in Medicine in any of the subjects of this examination conducted at a university in the United Kingdom, in India, or in a British colony will be exempt from examination in those subjects.

The fees for admission to the *First Examination* are as follows: For the whole examination, First Admission, £10 10s.; re-examination in Chemistry, £3 3s.; re-examination in Physics, £2 2s.; re-examination in Biology, £3 3s. *Second Conjoint*: This examination is in two parts—viz.: Part I., Anatomy and Physiology; Part II., Materia Medica and Pharmacology. A candidate must have attended at a recognised medical school, lectures on Anatomy, Physiology, and a course of Practical Physiology and Histology, and have dissected for twelve months during the ordinary sessions. He must also attend three months' lectures or demonstrations in Practical Pharmacology and receive instruction in Practical

Pharmacy. Part II. may be passed at the same time as Part I., or before or after that part. The study of Anatomy and Physiology before passing in two of the three subjects of the first examination is not recognised. If rejected, a candidate before being admitted to re-examination must continue his studies at a recognised medical school for not less than three months.

Second Examination: £10 10*s.*; re-examination in Part I., £6 6*s.*; re-examination in Part II., £3 3*s.*

The subjects of the *Third* or *Final Examination* are: Part I., Medicine, including Medical Anatomy, Pathology, Therapeutics, Forensic Medicine, and Public Health. Part II., Surgery, including Pathology, Surgical Anatomy, and the use of Surgical Appliances. Part III., Midwifery and Diseases Peculiar to Women. Candidates may present themselves for Parts I., II., and III. of the examination separately or together at the expiration of not less than two years (24 months) from the date of passing the Second Examination on production of the certificates of study required for the respective parts, provided that the examination is not completed before the expiration of five years from the date of passing the Preliminary Examination.

The fees for admission to the *Third or Final Examination* are as follows: *Third Examination:* £21; re-examination in Part I., Medicine, £6 6*s.*; Part II., Surgery, £6 6*s.*; Part III., Midwifery and Diseases of Women, £4 4*s.* Members of English, Scotch, or Irish Universities £5 5*s.* for first admission to the examination and £36 15*s.* for the diplomas.

A candidate referred on the *Third or Final Examination* will not be admitted to re-examination until after the lapse of a period of not less than three months from the date of rejection and will be required, before being admitted to re-examination, to produce a certificate, in regard to Medicine and Surgery, of having attended the Medical and Surgical Practice, or the Medical or Surgical Practice, as the case may be, during the period of his reference; and in regard to Midwifery and Diseases Peculiar to Women a certificate of having received, subsequently to the date of his reference, not less than three months' instruction in that subject by a recognised teacher.

2. *Regulations applicable to candidates who passed the required Preliminary Examination in General Education on or after Jan. 1st, 1923.*

Students are required to pass a *Pre-Medical Examination* in Chemistry and Physics conducted by the Conjoint Examining Board before commencing the five years curriculum of professional study or some other examination recognised by the Board—namely, the examination in Chemistry and Physics for the degree in Medicine of any University recognised by the Board; a Pre-Medical Examination conducted by any of the Qualifying Bodies whose Degrees or Diplomas are registrable on the Medical Register; the Higher School Certificates of Oxford and Cambridge Universities, and the Oxford and Cambridge Schools Examination Board; the Higher Certificates of London, Bristol, Durham Universities, the Joint Matriculation Board of the Northern Universities, and the Central Welsh Board Higher Certificate. A candidate must enter for Chemistry and Physics together, and he will not be *allowed to* pass in one without obtaining at the same time at least half the number of marks required to pass in the other subject. He will be admitted to the examination on producing evidence of having passed the required Preliminary Examination in General Education and of having received instruction during 180 hours in Chemistry and 120 hours in Physics to the satisfaction of his teachers. These courses may be commenced or attended before the required Preliminary Examination in General Education is passed. The examination is partly written, partly oral and partly practical. A candidate rejected in one or both subjects of the examination will not be admitted to re-examination until after the lapse of a period of not less than three months and he must produce evidence of further instruction in the subject or subjects of failure. The fee for the examination is £3 3*s.*, for re-examination in Chemistry £2 2*s.*, and for re-examination in Physics £1 1*s.*

There are two Professional examinations called the *First* and *Final Examinations.* The courses of study for these examinations must not be commenced until the Pre-Medical examination in Chemistry and Physics or some equivalent examination has been passed.

The subjects of the First Professional Examination are: Section I. (*a*) Anatomy, including Histology and Embryology. (*b*) Physiology, including Bio-Chemistry. Section II. Pharmacology, Practical Pharmacy and Materia Medica. A candidate must have attended at a recognised Medical School courses of instruction in Anatomy, including Embryology during five terms, during which he must have dissected the whole body, courses of instruction in Physiology, including General Biology, Bio-Chemistry and Bio-Physics during five terms, courses of instruction in Pharmacology, Practical Pharmacy and Materia Medica. A candidate may present himself for the two Sections together or separately, but he must take parts (*a*) and (*b*) of Section I. together until he has passed in one or both parts, but a candidate will not be allowed to pass in one part unless he obtains at the same time at least half the number of marks required to pass in the other part.

Section II. of the examination may be passed at any time before the candidate enters for the Final Professional Examination. The fee for the First Professional Examination is £10 10*s.*, for re-examination after rejection in Section I. £6 6*s.*, for re-examination, after rejection in either part of Section I. £3 3*s.*, for re-examination after rejection in Section II. £3 3*s.* A candidate who produces satisfactory evidence of having passed an examination in the subjects of Section I. or of either part of Section I. and of Section II. in the examination for the degree in Medicine conducted at a University recognised by the Board will be exempted from further examination in such subjects.

Final Professional Examination.—The subjects of the Final Professional Examination are: Section I. (*a*) Pathology, including Morbid Anatomy, Morbid Histology and Clinical Pathology. (*b*) Bacteriology. Section II. Part I. Medicine, including Medical Anatomy, Forensic Medicine and Public Health. Part II. Surgery, including Surgical Anatomy and the use of Surgical Appliances. Part III. Midwifery and Gynæcology. The examination is partly written, partly practical, partly clinical and partly oral. A candidate may take Sections I. and II. and the three parts of Section II. of the Final Examination separately or may take the whole examination together. He will be required to produce the certificates required by the regulations before being admitted to the respective parts of the examination. A candidate who produces evidence of having passed an examination for a degree in medicine in the subjects of Pathology and Bacteriology at a University recognised by the Board is exempted from Section I. The fee for admission to Section I. is £4 4*s.*; for admission to Section II., Part I., £10 10*s.*; Part II., £10 10*s.*; Part III., £6 6*s.*; and the re-examination fees are respectively £3 3*s.*, £6 6*s.*, £6 6*s.*, and £4 4*s.*

Students of recognised universities in England, Scotland, and Ireland, who have passed examinations for a degree in Medicine at their universities in the subjects of the First and Second Examinations of the Examining Board, may enter for the Final Examination at the expiration of two years from the date of passing in Anatomy and Physiology on production of the required certificates.

Members of certain recognised Indian, Colonial, and Foreign universities who have passed examinations for the Degree of Doctor or Bachelor of Medicine or Surgery in the subjects of the First and Second

Examinations of the Examining Board under the old Regulations, or of the First Examination and Section I. of the Final Examination under the new Regulations may present themselves for the Final Examination under special conditions. The Board also grants Diplomas in Public Health, in Psychological Medicine, in Ophthalmic Medicine and Surgery, in Tropical Medicine and Hygiene, and in Laryngology and Otology. Candidates must hold a Medical qualification registrable in the United Kingdom or be Graduates in Medicine of a recognised Indian, Colonial, or Foreign University. Particulars and conditions of admission to all examinations, fees, &c., may be obtained from the Secretary of the Examining Board, Examination Hall, Queen-square, Bloomsbury, London, W.C. 1.

ROYAL COLLEGE OF PHYSICIANS OF LONDON:

THE MEMBERSHIP AND FELLOWSHIP.

The College confers two separate diplomas—the *Fellowship*, a purely honorary distinction, and the *Membership*, obtained by examination.

Membership.—The age for admission to this diploma, it will be noticed, has been changed from 25 to 23 years. The alteration in the by-law of the College is designed to enable men who have just finished house appointments to sit for an examination for which their recent clinical experience has exactly fitted them. The candidate must either have passed the examinations for the licence of the College, or else be a registered medical practitioner who has obtained the degree of Doctor or Bachelor of Medicine at a University recognised by the Censors Board. The examination is directed partly to pathology and partly to the practice of medicine. Credit is also given to candidates who show a knowledge of Latin, Greek, French, or German. Further information may be obtained from the *Registrar* at the College. The fee for admission as a Member of the College is 40 guineas, except when the candidate for membership is a licentiate of the College, in which case the fee already paid for the licence is deducted from the 40 guineas. The fee for the examination is 6 guineas, which is reckoned as part of the fee for admission in the case of success.

Fellowship.—The *Fellows* are selected annually from the ranks of the *Members* by the Comitia of the College.

ROYAL COLLEGE OF SURGEONS OF ENGLAND:

THE FELLOWSHIP.

The *Royal College of Surgeons* of England confers its diploma of Fellow upon a few distinguished persons in an honorary capacity. Two Members of long standing may also be elected to the Fellowship annually. But the bulk of the Fellows obtain the diploma as the result of examination.

Fellowship.—The examination for the Fellowship is divided into two parts—viz., the First Examination and the Second Examination. The subjects of the First Examination are Anatomy and Physiology, and those of the Second Examination are Surgery, including Surgical Anatomy and Pathology. The examinations are partly written and partly vivâ voce and include the examination of patients and the performance of operations on the dead body. The *First Examination* will in future years be held in June and December and the Second Examination in May and November.

The fees for examination are:—First Examination, first admission 8 guineas, and for each re-admission 5 guineas. Second Examination, each admission, 12 guineas. Of such examination fees 20 guineas will be reckoned as part of the fee payable upon admission to the Fellowship. The fee to be paid upon admission to the Fellowship is 30 guineas, except when the candidate is a Member of the College, in which case the fee is 20 guineas.

A Member of the College is admissible to the First Examination at any time after receiving his Diploma of Membership. A candidate who is not a Member is admissible after passing the First and Second Examinations of the English Conjoint Board, of the equivalent examinations in his University, on the production of certificates of attendance upon prescribed courses.

A Member of the College is admissible to the Second Examination at any time after having passed the First Examination, on producing evidence of having been engaged not less than six years in the study (or study and practice) of the profession.

A candidate who is not a Member of the College must possess the registrable surgical and medical degrees of universities recognised by the Council and must have been engaged in the study (or study and practice) of the profession for not less than four years subsequent to the date of obtaining the recognised qualification, one year of which shall have been spent in attendance on the Surgical Practice of a recognised hospital. The diploma of Fellow is not conferred upon successful candidates until they have attained the age of 25 years.

The Regulations may be obtained on application to the Director of Examinations, Examination Hall, Queen-square, Bloomsbury, London, W.C. 1.

SOCIETY OF APOTHECARIES OF LONDON.

The Primary examination is held quarterly. Part I. Chemistry, Chemical Physics; Practical Chemistry; Biology, Materia Medica and Pharmacy. Part II. includes Anatomy, Physiology, and Histology. This examination cannot be passed before the completion of twelve months Practical Anatomy with Demonstrations, and these subjects cannot be taken separately except in the event of the candidate having previously passed in one.

The Final examination is held monthly except in September. Part I. Clinical Surgery: Principles and Practice of Surgery, Surgical Pathology, and Surgical Anatomy, Operative Manipulation, Instruments, and Appliances. Part II. Clinical Medicine: Medicine, Pharmacology, Pathology, and Morbid Histology; Forensic Medicine, Hygiene, Theory and Practice of Vaccination; and Mental Diseases. *Part III. includes* Midwifery, Gynæcology, and Diseases of New-born Children and the Use of Obstetric Instruments.

The course of study for the *Final examination* includes attendance on the Surgical and Medical Practice, with Post-mortem Examinations, at a hospital connected with a medical school for a period of two winter and two summer sessions, including a course of Practical Midwifery, with attendance on 20 Midwifery cases. The course of medical study must extend over five years, and the offices of dresser or clinical clerk must be held at a hospital or other institution recognised by the *Society*. Two years must elapse after a candidate has passed the examination in Anatomy and Physiology before sitting for any part of the Final examination.

Evidence shall also be given of practical instruction in Infectious Diseases and in Mental Diseases (at a lunatic asylum or in the wards of an institution containing a special ward set apart for the treatment of mental diseases), and in any two of the following subjects: Ophthalmic Surgery, Laryngology with Rhinology and Otology, Dermatology, and Diseases of Children. Candidates intending to present themselves for examination are required to give 14 days' notice. The fee for the Licence is 20 guineas. Female candidates are admitted to examinations. The examination offices are open from 10 A.M. to 4 P.M.; on Saturdays from 10 A.M. to 1 P.M. All letters should be addressed to the Secretary, Court of Examiners, Society of Apothecaries of London, Blackfriars, E.C. 4.

METROPOLITAN ANCILLARY SCHOOLS AND HOSPITALS AFFORDING FACILITIES FOR CLINICAL OBSERVATION.

The institutions which follow provide to the medical student and medical graduate facilities for different forms of instruction and clinical observation. In each case further information can be obtained from the secretary of the hospital.

THE SEAMEN'S HOSPITAL SOCIETY possesses four hospitals—the *Dreadnought* Hospital at Greenwich, 250 beds, and the Branch Hospital in the Royal Victoria and Albert Docks, E., 50 beds; the Hospital for Tropical Diseases, Endsleigh-gardens, 58 beds, London, N.W. 1; Tilbury Hospital, Tilbury Docks, Essex, 52 beds; King George's Sanatorium for Sailors, Bramshott, Hants, 80 beds, and the Angas Home, Cudham, 30 beds. Total, 520 beds. It has also a Dispensary in the East India Dock-road from which patients are transferred to the hospitals.

In conjunction with the Fellowship of Medicine arrangements have been made for a course of operative surgery. Secretary: Sir P. J. Michelli, C.M.G.

WEST LONDON HOSPITAL, Hammersmith, W. 6.—This hospital has 210 beds, all of which are constantly in use. 2531 in-patients and 40,029 out-patients, whose attendances numbered 108,041, were treated last year. Attached to the hospital is the West London Post-Graduate College. The practice of the hospital is reserved exclusively for qualified men, no junior students being admitted. Instruction is given in the medical and surgical out-patient rooms and demonstrations are given in the wards. Clinical assistantships are obtainable in the various general and special out-patient departments. Special classes are held in Diseases of the Throat and Nose, Skin, and Eye, and in Gynæcology, Medical Electricity, Operative Surgery, Bacteriology, Anæsthetics, Intestinal Surgery, Medical and Surgical Diseases of Children, Blood and Urine, Clinical Microscopy, Cystoscopy, Venereal Diseases, and Operative Ophthalmology, Radiography, X Ray Therapy. The accommodation for post-graduates consists of a lecture room, together with reading, writing, and class rooms, &c. The hospital has a fully equipped pathological laboratory at which instruction is given in elementary bacteriology. The fees for hospital practice, including lectures, are £4 4*s.* for one month, £9 9*s.* for three months, or £22 1*s.* for one year. The certificate of the hospital is accepted by the Admiralty, War Office, Colonial Office, and India Office in cases of study leave. Further information can be obtained on application to the Dean, Sir Henry Simson, at the Hospital. Secretary of the Post-graduate College Mr. C. Cole, and of the Hospital Mr. H. A. Madge.

ROYAL NORTHERN GROUP OF HOSPITALS.—The Royal Northern Hospital, Holloway, London, N. 7, is the main institution of the Royal Northern Group of Hospitals, which includes the Royal Chest Hospital, City-road, E.C., Hospital of Recovery, Southgate, and the Reckitt Convalescent Home, Clacton-on-Sea. The total number of beds in the group is 394. The Royal Northern Hospital is recognised by the Examining Board in England of the Royal Colleges of Physicians and Surgeons as a place of study during the fifth year of the medical curriculum. Besides the honorary staff there are six anæsthetists, three pathologists, resident medical officer, resident house physician, three resident house surgeons, two resident casualty officers, and one resident obstetric surgeon. The large rectangular and circular wards, each of which contains 25 beds, the children's ward for children under 5 years of age, the observation wards in the new Casualty Department, the two operation theatres, and out-patient department are designed with a view of offering the greatest facilities for clinical work. Special departments include the following: Fracture, genito-urinary and neurological, physico-therapeutic, pathological (under a director of clinical pathology), tuberculosis, and venereal diseases. Patients are removed to the Hospital of Recovery by ambulance a few days after operation. Medical practitioners are cordially invited to see the general and special practice of the Hospital. Demonstrations are given daily in the wards and out-patient departments. Clinical assistants (qualified), clinical clerks, and pathological clerks are appointed in the general and special departments and may receive certificates at the end of their terms of office.

Special Departments.—A new maternity department has been opened, and the light department has been re-equipped.

Post-Graduate Facilities.—In association with the Fellowship of Medicine, two-week "refresher" courses have been arranged for March, July, and November. These will include teaching in general medicine and surgery, and special lectures and demonstrations in special subjects at the Royal Northern and Royal Chest Hospitals.

Further particulars can be obtained from the Secretary of the Medical Committee of the Hospital.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N. 15.—This hospital is in the midst of a densely populated neighbourhood and contains medical, surgical, gynæcological, and children's wards, having 200 beds. There are special departments for gynæcological cases, diseases of the eye, ear, throat, and nose, skin diseases, plastic surgery, medical electricity, radiography, and dentistry. Operations are performed every afternoon of the week (except Saturday) at 2.30 P.M. Clinical instruction, ordinarily including laboratory classes, and lectures are given in the wards and out-patient departments, laboratories, and lecture hall in connexion with the North-East London Post-Graduate College attached. There are five resident medical officers, and clinical assistants are appointed under certain conditions. Special intensive post-graduate courses are also held at intervals throughout the year. Further particulars in regard to the hospital may be obtained from Dr. C. S. Shanks, Secretary to the Medical Committee, 24, Weymouth-street, W. 1; or from Dr. A. J. Whiting, Dean of the College, 19A, Cavendish-square, W. 1.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W. (Established 1873; Incorporated 1917).—The hospital contains 135 beds. The in-patients in 1924 were 1002, and the out-patients and casualties numbered 12,006 new cases. The medical and surgical practice of the hospital is open to students and practitioners. Operations: Monday, 1.30 P.M., Tuesday, 2.30 P.M., Wednesday, 9 A.M. and 1 P.M., Thursday, 8 A.M., Friday, 10 A.M. and 3 P.M., and Saturday, 9 A.M. New Out-patient Departments for special diseases have been opened: Neurology, Diseases of the Stomach and Disorders of Digestion, Diseases of Women, Genito-Urinary Diseases, Diseases of the Rectum, and Dermatology.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.—The Hampstead General Hospital (Haverstock-hill) and the North-West London Hospital (formerly at Kentish Town) have been amalgamated since 1907. The Hampstead General Hospital (128 beds—viz., 100 free, 8 isolation and observation, &c., and 20 paying or contributory) accommodates the in-patients from the districts hitherto served by both hospitals. The out-patients, with the exception of Hampstead casualty and emergency cases, attend exclusively at the Out-patients' Department, Bayham-street, Camden Town. Further particulars from the Secretary at the hospital. Post-graduate work is in connexion with the Fellowship of Medicine.

SOUTH LONDON HOSPITAL FOR WOMEN, South Side, Clapham Common, S.W.; Out-patient Department: 88-90, Newington Causeway, S.E.—This hospital, officered entirely by medical women, is a general hospital for women, girls, and small children of both sexes, and provides accommodation for 113 patients. All diseases are treated with the exception of acute infectious fevers and mental disease. There are Ophthalmic, Urological, X ray and Electrical, Pathological, Physio-Therapeutic, and Dental Departments. The hospital is a centre for the treatment of venereal diseases under the Public Health (Venereal Diseases) Regulations, 1916. The provision of additional facilities for post-graduate training for medical women is one of the special objects of the hospital. The number of in-patients treated during the year 1924 was 1618 At the Out-patient Department in Newington Causeway 9134 new cases were treated during the past year, the total number of out-patient attendances amounting to 36,193. Clinical assistants (qualified women only) are from time to time appointed in the Out-patient Department. Two resident students act as clinical clerks in the surgical wards. Secretary: Miss M. E. Ridler.

French Hospital and Dispensary, Shaftesbury-avenue, W.C.—This hospital, which was founded in 1867 to afford medical treatment for poor foreigners who speak the French language, has 74 beds. The Convalescent Home and Retreat for Aged French People at Brighton contains 61 beds. Secretary: Mr. J. Knecht.

Italian Hospital, Queen-square, W.C.—This institution was established in 1884 for the maintenance and medical treatment of Italian and Italian-speaking people, irrespective of their religious and political opinions, who may be suffering from sickness or bodily infirmity, but the sick poor of any nationality are also admitted for treatment. The institution also provides surgical and medical relief to Italians and others not being inmates of the hospital. It has 50 beds.

German Hospital, Dalston, E. 8.—This hospital was founded in 1845 with the object of supplying medical aid to poor people speaking the German language and for others in cases of emergency and accident. It has 154 beds and a sanatorium with 10 beds: also a Convalescent Home at Hitchin.

National Hospital for the Paralysed and Epileptic (Albany Memorial), Queen-square, Bloomsbury, W.C.—The hospital, with the Convalescent Home at East Finchley and branch at Clapham Park, contains 265 beds and cots. The out-patient physicians attend every Monday, Tuesday, Thursday, and Friday at 2 P.M., and the physicians daily. Clinical clerks are appointed under physicians and clinical assistants to out-patient physicians. Post-graduate Courses of Lectures and Demonstrations are held three times every year, usually commencing in January, May, and October and lasting eight weeks. Special Courses in Neurological Ophthalmology, Neuro-Pathology, and the Anatomy and Physiology of the Nervous System are given. The Pathological Laboratory is available for special work under the Pathologist. The hospital has been recognised by the Conjoint Board of England as a place where part of the fifth year may be devoted to clinical work. All communications concerning clinical appointments, lectures, hospital practice, and fees should be addressed to the Secretary.

Hospital for Epilepsy and Paralysis, &c., Maida Vale, W. (85 beds).—Both in-patient and out-patient departments of this hospital are open free to students as well as to medical graduates. Secretary and General Superintendent: Mr. H. W. Burleigh. The out-patient department is open every week-day except Saturday at 2 P.M.

West End Hospital for Nervous Diseases.—Out-patient Department, Welbeck-street, W.; In-patient Department, Gloucester Gate, Regent's Park, N.W.; 76 beds, over 48,500 out-patient attendances. Complete reconstruction has recently been effected and the hospital offers all facilities for instruction in Neurological subjects. A series of clinical demonstrations, apart from the general practice of the hospital, is held regularly each session, and the hospital is coöperating with the Fellowship of Medicine in the programme of special post-graduate teaching organised by the Association. The Savill Memorial Prize (value £15) and Medal are offered biennially for competition among post-graduate students who have attended at the hospital. For further particulars apply to C. C. Worster-Drought, M.D. (Dean), or to J. P. Wetenhall, B.A., Secretary, 73, Welbeck-street, W. 1.

Bethlem Royal Hospital, St. George's-road, S.E. This hospital is open for the admission of two Resident House Physicians who have recently obtained their diplomas to practise Medicine and Surgery. They are permitted to reside in the hospital for a term generally not exceeding six months, commencing May 1st and Nov. 1st, and are provided with apartments, complete board, attendance, laundry, and a salary at the rate of £100 per annum. They are under the direction of the Physician Superintendent and are elected by the Committee from candidates whose testimonials appear to be most satisfactory. The students of certain specified London Medical Schools receive clinical instruction in the wards of the hospital and qualified practitioners and other students may attend for a period of three months on payment of a fee. A Department for Nervous Diseases has been instituted in a building quite apart from the main hospital. Neurological and early mental cases are dealt with. A Course of Lectures and Practical Instruction for the Diploma in Psychological Medicine granted by the various Universities, will commence in the middle of September. For particulars apply to the Physician Superintendent.

Hospital for Consumption and Diseases of the Chest, Brompton.—The hospital contains 333 beds. The Sanatorium at Frimley contains 100 beds and 50 beds for paying patients. Six house physicians reside in the hospital for a term of six months; their duties include attendance in the out-patient department. An additional month may be spent at the Sanatorium. Pupils are admitted to the practice of the hospital: terms £1 1*s.* for one month; three months, £2 2*s.* Clinical Demonstrations are given throughout the year by members of the medical staff. Clinical assistants are appointed to the physicians in the out-patient department and clinical clerks to the physicians in the wards. The hospital has been recognised by the Conjoint Board for England as a place where six months of the fifth year may be spent in clinical work. The medical practice of the hospital is also recognised by the University of London, the Apothecaries' Society, and the Army and Navy and Indian Medical Boards. The hospital is open to post-graduates and students. During the month previous to each conjoint examination the teaching will be as far as possible for students about to enter for the final examination. Dean of the Medical School: Dr. L. S. Burrell, from whom all particulars can be obtained.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E. 2.—During the past year 1186 in-patients have been treated in the wards. The out-patients treated during 1924 numbered 8331. Special Departments: Surgical, Laryngological, Radiological, Pathological, Electro-Cardiographic. Assistants are appointed to the Clinics, and a limited number of research workers to the Pathological Department. The In-patient staff visit generally in the afternoon; Out-patients at 2 P.M. The Post-Graduate Association is open to graduates on payment of fee of 1 guinea per annum, which entitles them to attendance at clinics, post-mortem demonstrations, and operations. Special demonstration and lecture courses are provided, particulars of fees for which can be obtained from the Dean. A club room is also provided. Application for prospectus, &c., should be made to the Dean. Graduates desiring Assistantships in any department should apply to the head of the Department. Physicians to In-patients: E. H. Colbeck, Clive Riviere, A. G. Levy, A. J. Scott-Pinchin, F. G. Chandler, Sir Percy Bassett-Smith; Surgeon: W. H. C. Romanis; Laryngologist: W. G. Howarth; Physicians to Out-patients: J. B. Alexander, J. B. Christopherson, V. S. Hodson; Electro-Cardiographic Department: A. J. Scott-Pinchin; Radiologists: B. J. Leggett, J. V. Sparks; Pathologist: S. R

Gloyne; Assistant Pathologist: D. S. Page; Dental Surgeon: W. Elder. Tuberculosis Dispensary (Boroughs of Bethnal Green and part Hackney). Tuberculosis Officers: H. T. Howell and F. W. Hamilton. Other information from the Secretary.

ROYAL CHEST HOSPITAL (for all affections of the heart and lungs), City-road, E.C. (85 beds). Branch of the Royal Northern Hospital, Holloway.—This hospital provides accommodation for 85 in-patients. Expenditure for 1924, *£14,508 10s. 8d.*; income, £14,168 7s. *11d.* The attendance of out-patients 80,000 annually. Secretary: Mr. G. G. Panter.

MOUNT VERNON HOSPITAL (INCORPORATED) FOR TUBERCULOSIS AND DISEASES OF THE LUNGS AND HEART, Northwood; CENTRAL OUT-PATIENT DEPARTMENT, Fitzroy-square, W.—The *hospital contains* 150 beds, Medical and Surgical; 50 beds reserved for children requiring surgical aid. Number of in-patients, 476; out-patients, 13,880. Resident Medical Staff. Clinical Demonstrations are given by the Visiting Medical Staff at the hospital at Northwood. New departments for artificial light treatment have been opened both in the hospital and the *out-patient* department. Clinical assistants are appointed to physicians in the wards and in the out-patient department. Secretary: Mr. W. J. Morton.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL (formerly QUEEN CHARLOTTE'S LYING-IN HOSPITAL) AND MIDWIFERY TRAINING SCHOOL, Marylebone-road, N.W.—This hospital receives about 2000 patients annually, besides having a large out-patient department. Medical pupils are received at all times of the year. Pupils have unusual opportunities of seeing obstetric complications and operative *midwifery*, on account of the very large number of primiparous cases—nearly one-half of the total admissions. Clinical instruction is given on the more important cases which present themselves. They also receive valuable *instruction in the Antenatal* Department, where over 4000 patients attend yearly. Special Lecture-demonstrations are given by members of the staff. Certificates of attendance at this hospital are recognised by all the Universities, Colleges, and licensing bodies. Pupil midwives and maternity nurses are received and specially trained. A Residential College provides accommodation for five men and two women at a time, students and qualified practitioners, and is opposite the hospital, with which it is in telephonic communication. Arrangements have been made for Medical Students to receive the preliminary instruction in Practical Midwifery recommended by the General Medical Council. For further particulars application should be made to Mr. Arthur Watts, Secretary.

HOSPITAL FOR WOMEN, Soho-square, W.—The teaching in connexion with the above hospital has been greatly extended, and is available for Post-Graduates only, in limited numbers. Every facility is afforded them, by the teaching staff, of obtaining experience in diagnosis and treatment of Gynæcological diseases. The hospital contains 68 beds, and the out-patient attendances are over 14,000 per annum. Operations take place daily at 2 o'clock except on Saturdays. The X ray department is supplied with the latest installation both for diagnosis and treatment, and experience can *also* be gained in the treatment of malignant disease by means of radium. Incorporated is the London School of *Gynæcology*, comprising attendance in Out-patient department, operating theatre, clinical lectures, and X ray treatment. *For further particulars* apply to the Secretary.

SAMARITAN FREE HOSPITAL FOR WOMEN, Marylebone-road, N.W.—Qualified practitioners are admitted as clinical assistants to both the in- and out-patient departments. The *fees, payable* in advance, are £3 3s. for three months. Full particulars may be obtained on application to the Secretary at the hospital. There are 70 beds. Secretary: Mr. G. H. Hawkins.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Glamis-road, Shadwell, E.—The hospital maintains 180 cots, and on an average 245 out-patients are seen daily. Clinical instruction is given by the physicians and surgeons to the hospital, which is recognised by the Conjoint Board for England as a school of medical teaching for students in the fifth year of the curriculum. All *particulars may* be obtained on application to the Secretary. Two clinical clerkships for qualified or unqualified students are open every three months subject to reappointment if desired. Clinical assistants (qualified men only) are from time to time appointed in the out-patient department. Any additional information may be *obtained on applying to* Mr. W. M. Wilcox, the Secretary.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.1 (contains 214 beds).—The hospital having been recognised by the Conjoint Board for England as a place where, under the new curriculum, six months *of the fifth year may be spent in clinical* work, the practice is arranged to meet this need and is open to students of both sexes who have completed four years of medical study and also to qualified medical men and women. The medical staff are recognised by the University of London as teachers in Diseases of Children. Arrangements have also been made with University College Hospital and the *London School* of Medicine for Women for the routine admission of their students of both sexes to clerkships and dresserships in the wards. Appointments are made every three months to eight medical clerkships, which are open to students of the hospital. Clinical instruction is given daily by members of the visiting staff. Fees for hospital practice, one month, 2 guineas; *three months*, 5 guineas; perpetual ticket, 10 guineas. Clinical Clerks, 1 guinea for one month. Ophthalmological Clerkships.—Clinical Clerks are appointed once a month. Fees £1 1s. for one month's attendance. *Pathological Clerkships.—Facilities are afforded* for obtaining theoretical and practical instruction in Clinical Pathology and Bacteriology in the Pathological Laboratories. Clerks attend for about four hours daily. Fees: For one month, £3 3s.; for two months, £5 5s.; for three months, £6 6s. A reduction is made in the case of those already holding tickets for general attendance at the hospital. Time so spent in clerking and dressing is recognised by the Universities of London, Oxford, and Cambridge, and by the Conjoint Board for England as part of the approved curriculum for students entering for a final examination. These *appointments are open to students* of all recognised medical schools. In addition, special lectures in post-graduate work are held throughout each term of the year, as well as routine post-graduate instruction daily. Details may be obtained by application *to the Dean or* Secretary at the hospital. The medical school is a constituent part of the London Post-Graduate Association. *Secretary*: Mr. James McKay.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark Bridge-road, S.E.—This hospital contains 70 cots and a very extensive Out-*patient* Department. Clinical assistants (either sex), to work with the Honorary Medical Staff for Out-patients, may be appointed quarterly for a period of three months; there is no salary attached to these posts; but, on the other hand, no fees *are charged*.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—The hospital contains 130 beds and has a large out-patient department (over 1400 weekly); the home at Broadstairs has *50* beds. *Out-patients* are seen as under:—Diseases of the Eye: Thursday, 2 P.M. Diseases of the Skin: Monday, 1.30 P.M. Whooping-cough Cases: Friday, 2 P.M. Dental Cases: Tuesday, 1.30 P.M. Medical and Surgical Cases: Mornings at 9.30 and 11.30. *Accidents and* urgent cases are admitted at any time. Secretary: Mr. D. St. John Bamford.

A Private Nursing Home for Children is now open at 29, Tite-street, in connexion with and adjacent to the hospital. Terms: £1 1s. per day or £5 5s. per week. Application for admission should be made to the Secretary. Patients must be under the care of a consultant of one of the hospitals of London, and the question of payment for his fees is a matter of arrangement between him and the child's parents.

Queen's Hospital for Children (*late North-Eastern Hospital for Children*), Hackney-road, Bethnal Green, E. 2. (Telephone 305 and 534 Clissold.) For the sick children of the poor under 14 years of age. Established 1867. 134 beds in London and 36 at the seaside branch, "Little Folks" Home, Bexhill.—During the past year 1627 in-patients and 38,779 out-patients (attendance 145,097) were received. The surgeons attend on Monday, Wednesday, and Friday at 9 A.M., and on Thursday at 1.30 P.M.; the physicians daily at 1.45 P.M., except Saturday, and also Wednesday and Friday, 9.30 A.M., as well as 1.45 P.M. Whooping-cough Physician: Saturday, 9.30 A.M. Skin Physician: Friday, 1.30 P.M. Ear, Nose, and Throat Surgeons: Monday, Tuesday, and Thursday, 9.30 A.M. Eye Surgeon: Wednesday, 1.30 P.M. X ray department open every day. Radiologist attends Monday, Tuesday, Wednesday, and Friday, 2 P.M. Dental department every morning, 9.30, except Saturday; also on Tuesday and Friday, 2 P.M. Massage department daily, morning and afternoon (except Saturday afternoon). The practice of the hospital is open to students by arrangement with the medical staff. Post-Graduate instruction in Children's Diseases, Lectures and Demonstrations at times that will be notified by the Fellowship of Medicine. Applications should be made to the Secretary, Mr. T. Glenton-Kerr.

Belgrave Hospital for Children, Clapham-road, S.W.—Clinical Assistants (men or women) are from time to time appointed to the members of the Visiting Staff attending in the Out-patient Department at this hospital, and facilities are given for attendance in the wards.

Alexandra Hospital for Children with Hip Disease (late of Queen-square, W.C.), Kettlewell Home, Swanley, Kent (in connexion with St. Bartholomew's Hospital).—At this hospital cases of hip-disease, spinal caries, and tuberculous diseases of other bones and joints are treated. Students who have obtained a recommendation from their teachers can attend to see the practice. In-patients, Swanley, Kent; Out-patients, St. Bartholomew's Hospital; Fridays, 1.30 P.M. Apply for particulars to the Dean of the Medical College, St. Bartholomew's Hospital, E.C. 1.

Royal London Ophthalmic Hospital (Moorfields, 1804–1899), City-road, E.C. 138 beds.—This hospital, known as Moorfields Eye Hospital, was moved in 1899 to larger buildings in City-road. Last year there were 2458 in-patients, the out-patients were 49,932, of whom 43,435 were new out-patients, and the attendances were 116,687. Operations are performed daily from 10 A.M. to 1 P.M., and four surgeons attend on each day. Students are admitted to the practice of the hospital. Fee for six months, £3 3s.; perpetual, £5 5s. Special courses of instruction, which extend over a period of five months, are given by members of the Surgical Staff; beginning in October and March. A composition fee of 24 guineas (£25 4s.) will entitle students to a perpetual ticket, and will admit them once to all the lectures and classes and to the examination for the hospital's full certificate. A special course is also held in the preliminary subjects (Anatomy, Physiology, and Optics) for the various degrees in Ophthalmology. The fee for this course is 12 guineas. Students of the hospital are eligible for the offices of house surgeon or clinical and junior assistants. Junior assistants are appointed every three months. Any further information will be furnished by Mr. A. J. M. Tarrant, Secretary.

Royal Westminster Ophthalmic Hospital, King William-street (next door to Charing Cross Hospital), Strand, W.C. 2.—The hospital contains 42 beds. Out-patients, who number over 14,000 annually, are seen daily at 1 P.M., and operations are performed in the theatre at 3 P.M. The practice of the hospital is open to both men and women practitioners and students. Clinical evenings, at which interesting cases are shown and discussed, are held twice each term at 8 P.M. on the second Tuesday of the month. In addition to the ordinary clinical instruction, a systematic course of Lectures and Practical Classes commences in October and May. Lectures in this course are given daily (except on Saturday) at 4.30 P.M., including all subjects required by candidates for the D.O.M.S., R.C.P. & S. Eng., Part II., and practical instruction is given in Operative Surgery and Ophthalmic Pathology and Bacteriology. A corneal microscope has been purchased and instruction in the Microscopy of the Living Eye can now be obtained. Fees: One month, £1 1s.; three months, £2 2s.; six months, £3 3s.; perpetual, £5 5s.; composition fee for perpetual ticket and attendance at classes (except Operative Surgery and Pathology, for which fee in each case is £2 2s. per course), £10 10s. Students of the hospital are eligible for appointment as house surgeon, assistant house surgeon, refraction assistant, and senior or junior clinical assistant. Full details can be obtained on application to the Dean.

Royal Eye Hospital, St. George's-circus, Southwark, S.E. 1.—There are 40 beds and 2 cots. In 1924 there were 51,206 attendances in the Out-patient Department, the new patients being 22,218. The daily average of attendances was 173 patients. In-patient admissions numbered 755. Clinical instruction is given to students and post-graduates daily at 2.30 P.M., and Lectures, Demonstrations, and Laboratory Classes are arranged in preparation for examinations in Ophthalmology. Apparatus has been installed for the Microscopy of the Living Eye. Post-graduate students are eligible for appointment as Clinical Assistants and as Refraction Officers. Dean: Mr. A. D. Griffith.

Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—This hospital has 40 beds and clinical teaching is given daily. Classes of instruction in the use of the ophthalmoscope, with demonstrations on cases, and also classes on refraction and other subjects, to meet the requirements of the Conjoint Board for the D.O.M.S., and of the University of London for the M.S. in Ophthalmology, are given during the winter months, commencing in October. The out-patient work begins at 1 o'clock, and operations are performed daily between 2 and 4 o'clock. This school is recognised as a teaching institution by the Universities of London and Oxford, and the Conjoint Board of the Royal Colleges of Surgeons and Physicians. The school has also undertaken to receive a portion of the pupils of the University College Hospital for the purposes of ophthalmic training. The Pathological and Bacteriological Laboratories have been rendered available for the use of any ophthalmic surgeons who desire to send specimens for examination. A small fee is charged for a report. Secretary: H. R. S. Druce.

Western Ophthalmic Hospital, Marylebone-road, N.W.—18 beds. Out-patient attendances, 30,024. Both In-patient and Out-patient Departments of this Hospital are open to medical graduates. Fees £1 1s. per three months. Honorary Secretary: H. W. Burleigh.

National Hospital for Diseases of the Heart, Westmoreland-street, London, W. (founded 1857).—The practice of the hospital, both in the wards and out-patient department, is open daily to post-graduates and others, and will be found valuable by those seeking the higher qualifications—e.g., M.D., M.R.C.P., &c. Systematic courses of instruction, with lectures and clinical demonstrations, are arranged during the winter and summer sessions; in addition an intensive course, of a fortnight's duration, takes place in January, July, and October of each year. The hospital is fully equipped with all the modern instruments for the investigation of the diseases of the Cardio-Vascular system, and facilities exist for those requiring practical instruction in Electro-cardiography, X Rays, and other graphic methods. Clinical Assistants in the Out-patient Department are appointed from time to time. For further particulars apply to the Dean of the Medical School (Dr. Parsons-Smith), or to the Secretary, at the hospital.

HOSPITAL FOR DISEASES OF THE THROAT, Golden-square, W. (with which is amalgamated the London Throat Hospital, Great Portland-street).—Clinical instruction in the diagnosis and treatment of disease is given daily in the out-patient department from 2 to 5 P.M., and on Tuesdays and Fridays from 6.30 to 9 P.M. There is an annual out-patient attendance of over 60,000. Minor operations are performed on Tuesdays, Wednesdays, and Thursdays, at 9.30 A.M. The hospital has been partially closed for some time owing to rebuilding operations. The new wards and in-patient operating theatres are expected to re-open in October. When completed the hospital will contain some 80 beds. Practitioners and medical students are admitted to the practice of the hospital at a fee of £5 5*s*. for three months, £7 7*s*. for six months, or £10 10*s*. for perpetual studentship. From amongst the students junior clinical assistants are appointed periodically. For terms and further information apply to the Dean, Mr. Gilbert Chubb.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.—The practice of the hospital is largely consultative. The hospital is open daily to all qualified medical practitioners on presentation of their visiting cards. Demonstrations of the cases and clinical instruction are given daily by the chief surgeon of each clinique. An Intensive Course of Lectures with Operative Surgery Class is given twice yearly—in May and October. Consultations on interesting cases take place on the second Wednesday in each month at 4 P.M. Clinical Assistants are appointed and are expected to hold office for at least three months. They are required to attend twice weekly at 1.30 o'clock for the afternoon, and at 4.30 o'clock for the evening Clinics. Full syllabus can be obtained on application to the Dean.

METROPOLITAN EAR, NOSE, AND THROAT HOSPITAL.—The hospital is in Fitzroy-square, W. The Out-patient Department is opened daily (Saturdays excepted) at 2.30 P.M. to all medical practitioners and senior students for acquiring clinical instruction and technical knowledge. Operations upon in-patients are performed on Tuesdays, Wednesdays, and Thursdays at 10 A.M. Fee for one month's attendance at the hospital £3 3*s*., and for three months £5 5*s*. Clinical Assistants are appointed as vacancies occur, and have responsible duties. Applications should be made to the Secretary, L. L. Phillips.

ROYAL EAR HOSPITAL.—This hospital is now the Ear, Nose and Throat Department of University College Hospital. All out-patient clinics are now held at University College Hospital in Gower-street, but ward visits and operations by the staff take place each afternoon (except Fridays and Saturdays) at Dean-street.

ST. MARK'S HOSPITAL FOR CANCER, FISTULA, AND OTHER DISEASES OF THE RECTUM, City-road, E.C. 1. (Founded 1835.)—The hospital contains for men and women 54 beds. Operations are performed on Mondays, Wednesdays, and Thursdays at 2.30 P.M. Medical practitioners and students are invited to the operations and to the clinical instruction in the wards and in the out-patient department. Two fortnightly courses held during year in coöperation with the Fellowship of Medicine and Post-Graduate Medical Association. Average out-patient attendances, 4000 per year. Average in-patients, 675 per year.

ST. PETER'S HOSPITAL FOR STONE AND OTHER URINARY DISEASES, *Henrietta-street, Covent Garden.* Established 1860. New Hospital opened 1882.—The hospital contains 30 beds for men and 2 beds for women and children. Medical practitioners and students are invited to the clinical instructions which are given in the wards and out-patient department daily, excepting that the only out-patient clinic open to medical women is that held at 2 P.M. Fridays for women and children, and to the operations in the theatre on Mondays at 2.30 P.M., and Wednesdays and Fridays at 2 P.M. Average beds occupied daily, 30; average out-patients seen daily, 80. Post-graduate Courses of Lectures are arranged through the Fellowship of Medicine from time to time.

LONDON SCHOOL OF DERMATOLOGY, ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C. 2. In-patient Department (34 beds) at 262, Uxbridge-road, W. 12.—Out-patient Clinics are held daily at 2 and 6 P.M. (Saturdays 2 P.M. only), when demonstrations are given on the cases presenting themselves. The Chesterfield Lectures, constituting a systematic course in dermatology, are given on Tuesdays and Thursdays at 5 P.M., from October to March, by the hon. medical staff of St. John's Hospital and the physicians in charge of the Dermatological Departments of the London Teaching Hospitals. The lectures are free to those attending the practice of the hospital and to registered medical students. At the end of the course an examination is held for the Chesterfield Medal in Dermatology and is open to those who have attended three-quarters of the lectures. The Electrical Department is open daily from 2 to 4 P.M., except on Thursdays and Saturdays. Laboratory Courses in the Pathology and Bacteriology of the Skin can be arranged. For further particulars and fees apply to the Dean. Dr. A. C. Roxburgh.

LONDON LOCK HOSPITAL AND HOME (Founded 1746).—In the Institution at Harrow-road, W. 9, there are 202 beds, and 664 in-patients and 10,958 (attendances) out-patients were dealt with in 1924. In the Male Department and Out-patient Department in Dean-street, Soho, W., there are 40 beds, which during 1924 accommodated 822 patients. 90,881 out-patient attendances were made in the various departments. 8064 injections of substitutes for salvarsan, &c., were made in 1924. Male patients are seen at 91, Dean-street on Mondays and Tuesdays from 1 to 2 P.M., and from 6 to 8 P.M.; on Wednesdays from 6 to 8 P.M.; on Wednesdays at 1 P.M. (female patients); on Thursdays, 1 P.M. (male out-patients), 5 P.M. (female patients); on Fridays from 5 to 7 P.M. (male patients); and on Saturdays from 2 to 4 P.M. (males). Pathological Department, daily at 6.30 P.M. Intravenous injections are given at every clinic. Female clinics are held at 283, Harrow-road, Paddington, on Mondays at 10 A.M., Tuesdays, Wednesdays, and Thursdays at 2 P.M. to 3 P.M., and Saturdays at 2 P.M. The new female out-patient department is open all day long from 9 A.M. to 8 P.M. Irrigations for males are given daily 8 A.M. to 10 P.M. For females Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays at 11 A.M. to 1 P.M., at 91, Dean-street. The Hospital is linked up with the Fellowship of Medicine, and special courses of lectures are held in February, May, and November each year. Application for tickets should be made direct to the Secretary. Only a limited number of practitioners and students are permitted to attend the Female Lock Hospital, and application should first be made to Major Corbett (Dean) at the Male Lock Hospital; or to the Secretary, Hy. J. Eason, at the Chief Offices, 283, Harrow-road, W. 9.

ENGLISH PROVINCIAL ANCILLARY SCHOOLS AND HOSPITALS.

Under this heading we include all the hospitals which are recognised by the English Royal Colleges for a part of the required attendance on medical and surgical practice, for medical clerkships, and surgical dresserships. The list includes nearly every hospital of a general character in the country having more than 150 beds, though occasionally a large hospital is omitted because equally good opportunities are afforded to students at other institutions in its neighbourhood, while a small hospital may be included because no such facilities for study are present elsewhere. The list is arranged alphabetically as to the town where the hospital is located. Most of the larger general hospitals of the kingdom have already been noticed in connexion with the Universities.

BATH ROYAL UNITED HOSPITAL, Bath.—This hospital contains 206 beds, 72 of which are situated in Combe Park, Bath, and are for *paying patients* only, and possesses X ray, Massage, Bacteriological Departments, a new Pathological Laboratory, and a fine library. Secretary: Mr. J. M. Sheppard. V.D. Clinics are held on Tuesdays (for women), and on Fridays and Saturdays (for men), from 5 to 6.30 P.M., and Ear, Throat, and Nose Clinics on Thursdays, at 4 P.M.

BEDFORD COUNTY HOSPITAL, Bedford.—This hospital has 109 beds, including 15 beds in the paying wards, X ray and Pathological Departments. There is in connexion with the institution a convalescent home (20 beds) at Aspley Heath, nr. Woburn Sands. The hospital is approved by the University of London for the purposes of the M.D. and M.S. Examinations. Secretary: Mr. Beauchamp Wadmore.

BRADFORD ROYAL INFIRMARY, Bradford. — This hospital contains 215 beds. The material passing through the surgical wards consists of major operations, chiefly abdominal, and gynæcological work, and affords excellent facilities for either students or post-graduates. There are special clinics for Orthopædic cases. Plans for a new hospital of 300 beds have been adopted, and building operations will be commenced as soon as funds will allow.

ROYAL SUSSEX COUNTY HOSPITAL, Brighton (225 beds).—This hospital affords ample facilities for students, possessing a large out-patient department, including Ophthalmic, Dental, Dermatological, Gynæcological, X ray, and Orthopædic sections, and a well-appointed clinical research and bacteriological department. The hospital does not take resident pupils, but out-pupils may attend the practice of the hospital for any period not exceeding two years, on payment in advance of a fee, not exceeding 20 guineas, as the Board of Management shall direct.

KENT AND CANTERBURY GENERAL HOSPITAL, Canterbury.—The hospital contains 116 beds. Pupils of the staff are admitted to the practice of the hospital. Operations four days of the week. There is an Ophthalmic Department with two wards for in-patients, a Venereal Clinic, an Orthopædic Department, &c. Secretary, Mr. F. P. Carroll.

COVENTRY AND WARWICKSHIRE HOSPITAL, Coventry (established 1840).—This hospital contains 241 beds. Special clinics are held for diseases of the Eyes, Ears, Nose and Throat; Gynæcology; X ray and Electrical Treatment. There are also V.D. Clinics. A Pathological Department has recently been started. Clinical students are received, and there are paying wards. Secretary: Miss R. Hooper.

DERBYSHIRE ROYAL INFIRMARY, Derby.—This hospital contains 320 beds. It was founded in 1810, and was entirely rebuilt and enlarged 1892–1915 on the most modern lines at a cost of over £144,000. There is a separate ophthalmic block of 33 beds, a separate children's block of 34 beds, and a special department for gynæcological cases. There are four resident house surgeons, a resident house physician, and an assistant house surgeon and casualty officer. There are also well-equipped orthopædic, X ray, electrical, and venereal diseases departments. Registered medical students are admitted to witness the medical and surgical practice on payment of such fees as the Board may determine.

ROYAL DEVON AND EXETER HOSPITAL, Exeter.—The hospital contains 225 beds (including special children's wards) and has a good library, museum, post-mortem room, and pathological laboratory. Attendance on the practice of this hospital qualifies for all the examining boards. There is also a Private Nursing Staff attached to the hospital. For particulars as to fees, &c., apply to the Matron. A new wing was added in 1897 and the "Victory" wing for the treatment of discharged disabled soldiers and sailors completed and opened in 1922. Arrangements may be made by which gentlemen in practice desiring to increase their qualifications may have the use of the museum and library and other facilities and by which students may attend midwifery. A new Operating Theatre was opened in 1906 (the gift of Mrs. Nosworthy of Newlands, Dawlish, Devon). The Electrical Treatment Department (the gift of Mrs. M. A. Sanders) was opened in 1907 by Lady Duckworth-King. This department is now enlarged to meet the ever-increasing work, and now forms one of the most important sections of the hospital. A department was opened in 1917 for the treatment of genito-urinary diseases; there are three sessions per week, two for men at 3 P.M. and 7 P.M., and one for women at 3 P.M.

WEST OF ENGLAND EYE INFIRMARY, Exeter.—Secretary: Mr. W. W. Beer. The infirmary contains 64 beds. Students of the Exeter Hospital can attend the practice of the Eye Infirmary. Patients for the year ending Michaelmas, 1924, 3452. A ward is set aside for newly-born babies suffering from infectious eye diseases. Mothers are accommodated with their babies.

GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION, Gloucester.—This hospital, which was granted the title of "Royal" on the occasion of King Edward VII.'s visit to Gloucester in the year 1909, has 140 beds. Secretary: G. Hurford. In-patients, 1986; out-patients, 10,600. An electrical and massage department has been established and venereal clinic opened. Also ear, nose and throat department, X ray department, dental department, and pathological laboratory.

NORTH STAFFORDSHIRE ROYAL INFIRMARY, Hartshill, Stoke-on-Trent.—The New Infirmary, opened in 1869, is built on the pavilion plan, has accommodation for about 304 patients, including Children's wards, a Bacteriological and Pathological department, and a department for the treatment of Diseases of the Eye, X Ray and Electrical department, a department for the treatment of Diseases of the Ear, Nose, and Throat, an Orthopædic department, and Venereal Diseases clinics; so that there are excellent facilities for acquiring a practical knowledge of the profession. During the last six years the sum of £35,000 has been spent on new buildings and alterations. A new Out-patient department, costing £12,000, a new Children's ward of 30 beds, a new Pathological department, and a second large Operation Theatre are amongst the structural improvements already completed. The whole institution is now equipped in a thoroughly up-to-date manner. An Electrocardiograph has been recently installed. H.M. King George V. laid the foundation-stone of a new Ward block on June 5th. Secretary and House Governor: Mr. W. Stevenson.

HULL ROYAL INFIRMARY, Hull.—This hospital contains 207 beds, and since its establishment in 1782 until the erection of the circular wards in 1907 has undergone steady additions and improvements, including an up-to-date pathological department recently added. A branch convalescent home at Withernsea, with accommodation for 30 patients, is a special feature of the charity.

LEICESTER ROYAL INFIRMARY, Leicester.—Instruction in the Infirmary for medical students is duly recognised by the various examining bodies. At the General Infirmary there are 338 beds, and at the Children's Hospital in connexion 70; venereal diseases, 17; total 420 beds. A reconstruction scheme has been carried out, and £250,000 spent on bringing the accommodation of the institution to a modern standard of efficiency. This scheme has included the provision of two modern operating theatres, two new wings, and self-contained out-patients' department. The Children's Hospital has been reconstructed and enlarged by the addition of a third ward at a cost of £14,500. Open-air balconies on all three floors are a feature. A central sterilising department has been provided. Pathological Laboratories and post-mortem rooms were rebuilt at a cost of £11,000, also an orthopædic out-patient department at a cost of £9500, £5000 of which was provided by the Freemasons of the province as their war memorial. The Nurses' Home has recently undergone enlargement by 60 bedrooms, and now provides for 100 nurses and staff. The 150th anniversary of the Institution has recently passed and a sum of £100,000 was raised in commemoration. Funds are being raised for the foundation of a City University, and a splendid site was presented by the late Mr. T. Fielding Johnson, J.P., an ex-chairman of the Royal Infirmary. There are ten resident salaried medical officers at the Infirmary —viz., four house surgeons, two house physicians, two anæsthetists, and two dressers. Most of the posts are filled half-yearly and afford exceptional opportunities for post-graduate experience and senior students. Dressers are given an honorarium. Students are encouraged to make full use of the facilities which exist to gain clinical knowledge in the wards. The hon. medical and surgical staff are willing to afford instruction in a variety of conditions which an active and well-equipped general hospital in a large commercial centre is called upon to treat. A post-graduate course of lectures is arranged annually by the Leicester Medical Association and also clinical classes are held for graduates preparing for the M.D. and M.R.C.P. New accommodation for resident medical officers has been erected. Chairman of the Board: Mr. J. G. Pickard. Deputy Chairman of the Board: Lieut.-Col. C. F. Oliver, D.L., V.D. House Governor and Secretary: Mr. Harry Johnson, from whom information as to prospective vacancies on the Resident Staff may be obtained.

A private hospital has been presented to the City by Mr. Thomas Fielding Johnson, J.P., son of the donor of the University site. This magnificent gift comprises three large dwelling-houses on an admirable site, which have been reconstructed and re-equipped as a private hospital for the reception of paying patients.

NORTHAMPTON GENERAL HOSPITAL, Northampton. Two new wings were opened in 1904 and the old buildings entirely renovated and rearranged. The number of beds is 100. Non-resident pupils receive and have every opportunity of acquiring a practical knowledge of their profession. The fee is £10 10s. Pupils can be received at any time. There is an up-to-date Pathological Laboratory; also X Ray and Therapeutic Department and V.D. Clinic.

NORFOLK AND NORWICH HOSPITAL, Norwich.—This hospital has at present 300 beds. There is a convalescent home at Cromer. Students are admitted to the practice of the hospital for a fee of £5 5s. for six months. Secretary: Mr. Frank Inch.

NOTTINGHAM GENERAL HOSPITAL.—There are at this hospital 317 beds available for medical and surgical patients, and 45 beds are in the detached branch known as "The Cedars" Convalescent Hospital, Woodthorpe. The Medical and Surgical Staffs consist of 2 Honorary Consulting Physicians, 3 Honorary Consulting Surgeons, 1 Honorary Consulting Physician in Venereal Diseases, 3 Honorary Physicians, 4 Honorary Surgeons, 2 Honorary Assistant Physicians, 2 Honorary Assistant Surgeons, 2 Honorary Aural Surgeons, 1 Honorary Dermatologist, 2 Honorary Anæsthetists, 1 Honorary Surgeon Dentist, 1 Honorary Medical Officer in Charge of X ray and Electro-therapeutic department, and 1 Pathologist. The Resident Medical Staff consists of 2 House Physicians, 4 House Surgeons, 1 Aural House Surgeon, and 1 Casualty Officer. The special departments are the Ear, Nose and Throat, Skin, Dental, Massage and Exercise, X ray, Orthopædic, Electro-therapeutic. House Governor and Secretary: Mr. P. M. MacColl.

SOUTH DEVON AND EAST CORNWALL HOSPITAL, Plymouth.—This hospital contains 195 beds (14 of which are for Venereal Diseases in a separate building). There are three Pathological Laboratories, special Departments for X Ray, including Deep Therapy, Ultra-violet Rays, and Electro-therapeutics, and a large Orthopædic Department. Pensioners are received as in-patients. The hospital is a centre for the treatment of Tropical Diseases. A building with 25 additional beds is in course of erection.

ROYAL HOSPITAL, Portsmouth (founded 1847).—The number of beds is 160. There are X ray and Massage Departments. The hospital is a preparatory school of Medicine and Surgery; the attendance of pupils is recognised by the Examining Boards. Particulars of the Secretary at the hospital.

ROYAL BERKSHIRE HOSPITAL, Reading.—This hospital, which contains 220 beds, was enlarged in 1912, and includes an Out patient Department, a Casualty Department, an X ray Department, Electro-therapeutic and Massage Department, a V.D. clinic, a Laboratory, an Eye Theatre, Eye Wards, and Motor and Horse ambulances. The hospital is approved by the General Nursing Council as a Training School for Nurses. Post-Graduate Lectures are given.

SALISBURY GENERAL INFIRMARY, Salisbury.—This hospital contains 145 beds. The daily average number of in-patients is 127; number of new out-patients, 4266; number of out-patient attendances, 20,116, including 8577 casualties, 1221 medical and surgical out-patients, 738 ear, nose and throat cases, 840 ophthalmic cases, 723 dental cases, 3484 venereal cases, 754 X ray cases, and 6089 massage and electrical cases. Special features: Maternity and antenatal, ophthalmic and private wards; maternity and child welfare clinic. House Governor and Secretary: John S. Birbeck.

ROYAL SALOP INFIRMARY, Shrewsbury.—This hospital has 180 beds. In-patients, 1575; out-patients, 1000; out-patients' attendances, 16,410; accidents and casualties, 2524; dental cases, 380. A site has been purchased adjoining the present Infirmary structure, and it is proposed to erect an annexe for women and children thereon. Secretary: Mr. Alfred Suglen.

ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL, Southampton.—This hospital contains 130 beds. In-patients 3006; out-patients, 13,100. Secretary: Mr. T. A. Fisher Hall.

STAFFORDSHIRE GENERAL INFIRMARY, Stafford (established 1766).—This hospital has 87 beds. In-patients, 1139; out-patients, 3190. Secretary: Lieut. A. E. Collins.

ROYAL HANTS COUNTY HOSPITAL, Winchester.—This hospital has 158 civilian beds. Secretary: Mr. Herbert Maslen.

WOLVERHAMPTON AND STAFFORDSHIRE HOSPITAL, Wolverhampton.—There are 210 beds. Special departments for Children, Infectious cases, Gynæcology, Ear, Throat, and Nose Diseases, Electrotherapeutic and X ray, Venereal Disease, Pathological Laboratory, Dentistry, and Electro-cardiographic Installation. There is an excellent library. The resident officers are a resident surgical officer, resident medical officer, and two house surgeons. Pupils are allowed to witness the whole of the practice of the hospital and to be present at operations and have every opportunity of acquiring a practical knowledge of their profession. A course of Practical Pharmacy is given by the dispenser. Fees on application. Applications should be made to the Honorary Secretary of the Medical Committee. In 1924, 3567 in-patients and 28,290 out-patients were treated; 3721 operations were performed in the theatres.

WORCESTER GENERAL INFIRMARY, Worcester.—This hospital has 132 beds. Pupils are taken by members of the Honorary Medical and Surgical Staff. Number of operations last year 1009. New X ray and Electrical and Wolfram Arc Light, Ear, Nose and Throat, and Orthopædic Departments have been erected and are now in use. Additional accommodation for the Honorary Staff and Out-patients and also an Outdoor Shelter in connexion with the Children's Ward have been built as a memorial to King Edward VII., and fire-escape staircases recently erected. In-patients, 1360; out-patients, 4397. Secretary: Mr. E. J. Holland.

YORK COUNTY HOSPITAL, York.—This hospital contains 180 beds. There are balconies for outdoor treatment, two installations of X ray apparatus, electro-therapeutic and massage department, and clinical laboratory. A Venereal Diseases Clinic is held.

SCHOOL OF THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN (recognised by the UNIVERSITY OF LONDON).—The subjects of the qualifying examination of the Pharmaceutical Society are:—Part 1: (*a*) Chemistry; (*b*) Physics; (*c*) Botany. Part 2: (*a*) Materia Medica; (*b*) Pharmacy, including Posology and the Translation and Dispensing of Prescriptions; (*c*) the law relating to the keeping, selling, and dispensing of poisons and poisonous substances. Fee, 12 guineas; for each subsequent examination after failure, 3 guineas. The advanced or Major examination (for registration as "pharmaceutical chemist") includes botany, chemistry, physics, practical chemistry, and materia medica. Fee, 3 guineas. Courses of instruction are given for Part 2 and for the Major Examination (but not for Part 1). An Intercollegiate, two years' course for the Final examination for the degree of B.Pharm. of the University of London is also given in conjunction with University College. Medical students are admitted to the lectures and laboratory work in any or all the courses. Certificates of instruction in the School are received by the Conjoint Board of the Royal Colleges and by the University of London. Graduates in Science may carry out the research work necessary for the thesis for the Ph.D. of the University of London in the Society's Research Laboratories. Application for admission to the school, or for further information, may be made to the Dean, Prof. Greenish, 17, Bloomsbury-square, London, W.C. 1.

II.—SCOTLAND.

THE UNIVERSITIES.

UNIVERSITY OF EDINBURGH.

Four Degrees in Medicine and Surgery are conferred by the University of Edinburgh—viz., Bachelor of Medicine (M.B.), Bachelor of Surgery (Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.). The degree of Bachelor of Surgery cannot be conferred on any person who does not at the same time obtain the degree of Bachelor of Medicine, and similarly the degree of Bachelor of Medicine is not conferred on any person who does not at the same time obtain the degree of Bachelor of Surgery.

No one is admitted to the degrees of *Bachelor of Medicine* and *Bachelor of Surgery* who has not been engaged in Medical and Surgical study for five years.

Candidates for the degrees of M.B. and Ch.B. must have attended for at least three academic years the medical and surgical practice either of the Royal Infirmary, Edinburgh, or of a general hospital elsewhere which accommodates not fewer than 80 patients and possesses a distinct staff of physicians and surgeons. They must have attended courses of instruction in Clinical Surgery and Clinical Medicine each of nine months, and courses of instruction in all the subsidiary subjects. They must have attended a course of instruction in Clinical and Practical Midwifery and have personally conducted 12 cases of labour.

With respect to the places and institutions at which the studies of the candidate may be prosecuted the following regulations have effect:—Three of the five years of medical study must be spent in the University of Edinburgh. The remaining two years may be spent in any University of the United Kingdom, or in any Indian, Colonial, or Foreign University recognised for the purpose by the University Court, or in such medical schools or under such teacher as may be recognised for the purpose by the University Court.

Women are admitted to graduation in medicine under the same conditions as men.

The fee to be paid for the degrees of Bachelor of Medicine and Bachelor of Surgery is £34 13*s*., and the proportion of this sum to be paid by a candidate at each division of the examination shall be as follows—viz.: For the First Division of the Examination (Botany, Zoology, Physics, and Chemistry), £9 9*s*.; for the Second Division (Anatomy and Physiology), £7 7*s*.; for the Third Division (Pathology and Materia Medica and Therapeutics), £6 6*s*.; and for the Final Division (Surgery and Clinical Surgery, Medicine and Clinical Medicine, Midwifery, Clinical Midwifery, Clinical Gynæcology, and Forensic Medicine and Public Health), £11 11*s*.

Bachelors of Medicine and *Bachelors of Surgery* may proceed to the degrees of *Doctor of Medicine* and *Master of Surgery* after they have spent one year in the medical or surgical wards respectively of a hospital, or the Military or Naval Medical Services, or in scientific work bearing directly on their profession, or two years in practice. In each case an examination must be passed and a thesis submitted for approval of the Faculty. The fee to be paid for the degree of M.D. is £21, and the fee to be paid for the degree of Ch.M. is £21.

Post-Graduate Instruction.—Courses of instruction are given for the Degrees of B.Sc. and D.Sc. in Public Health and for the University *Diplomas* in Public Health, Tropical Medicine and Hygiene, and Psychiatry. These Diplomas are open to approved registered practitioners as well as to graduates in Medicine and Surgery of the University. The University also takes part in the Courses given under the auspices of the Edinburgh Post-Graduate Courses in Medicine. In the departments of the Faculty of Medicine provision is made for research by students of graduate standing. In the University laboratories facilities will be provided for candidates for the Degree of Ph.D. whose applications to engage in research have been accepted by the Senatus.

The University of Edinburgh is especially rich in scholarships and prizes in medical subjects. Full particulars can be obtained from the Dean of the Medical Faculty.

SCHOOL OF MEDICINE OF THE ROYAL COLLEGES, Edinburgh.—The number of students varies much in the classes and subjects. It is within the limit to say that about 1000 students avail themselves each session of the opportunity of attending the school. The lectures qualify for the University of Edinburgh and other Universities, the Royal Colleges of Physicians and Surgeons of London, Edinburgh, and Dublin, the Faculty of Physicians and Surgeons of Glasgow, and other Medical and Surgical and Public Boards.

The practical classes and laboratories will open and the lectures commence on Oct. 14th.

In accordance with the statutes of the University of Edinburgh one-half of the qualifying classes required for graduation may be attended in this school. The regulations require that the fee for any class taken for graduation in Edinburgh shall be the same as that for the corresponding class in the University. The whole education required for graduation at the University of London may be taken in this school.

Special courses of instruction for dental students are also included in the curriculum of this school.

The minimum cost of the education in this School of Medicine for the Triple Qualification of Physician and Surgeon from the Royal Colleges of Physicians and Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow, including the fees for the Joint Examinations, is about £170, payment of which is distributed over the period of study.

Post-graduate Courses are conducted in conjunction with the University.

Further particulars regarding the school, also its calendar (price 6*d.*) may be had on application to the Dean of the School, 11, Bristo-place, Edinburgh.

In connexion with the University and Royal Colleges Post-Graduate Instruction is given each year, chiefly in the Summer Vacation (July–September). Special Courses are arranged for, and particulars may be had on application to the Hon. Secretary, Post-Graduate Courses in Medicine, University New Buildings, Edinburgh.

Clinical Instruction.—ROYAL INFIRMARY, Edinburgh.—This hospital has 921 beds and 42 cots for children. Courses of Clinical Medicine and Surgery are given by the physicians and surgeons to male and female students. Special instruction is given on Diseases of Women, Physical Diagnosis, Diseases of the Skin, Diseases of the Eye, the Ear, the Larynx, and the Teeth. Separate wards are devoted to Venereal Diseases, Diseases of Women, Diseases of the Eye, the Ear, Throat and Nose, and the Skin, and also to cases of Incidental Delirium or Insanity. There are also large and complete Medico-Electrical and X Ray Departments. Post-mortem examinations are conducted in the anatomical theatre by the pathologist and his assistants, who also give practical instruction in Pathological Anatomy and Histology. The fees for hospital attendance are as follows—viz.: Perpetual ticket, in one payment, £12; annual ticket, £6 6*s.*; six months, £4 4*s.*; three months, £2 2*s.*; monthly, £1 1*s.* Separate payments amounting to £12 12*s.* entitle the student to a life ticket. The appointments are as follows: 1. Resident physicians and surgeons are appointed and live in the house free of charge. The appointment is for six months, but may be renewed at the end of that period by special recommendation. 2. Non-resident house physicians and surgeons and clinical assistants are appointed for six months. The appointment may be renewed for a like period by special recommendation. 3. Clerks and dressers are appointed by the physicians and surgeons. These appointments are open to all students and junior practitioners holding hospital tickets. 4. Assistants in the Pathological Department are appointed by the pathologist.

Facilities are given in connexion with the Post-graduate Courses arranged by the Edinburgh University and the two Royal Colleges jointly.

ROYAL HOSPITAL FOR SICK CHILDREN, Sciennes-road, Edinburgh.—This hospital contains 120 beds, and is fitted with every modern improvement. A fully equipped out-patient department (medical and surgical) is conducted daily in a building adjoining the hospital. Systematic courses of instruction, which qualify for graduation in the Edinburgh University and elsewhere, are given from time to time throughout the year by the staff. Students may enter at any time. Post-graduate Courses of Lectures are held during the year. Full particulars can be obtained from the Registrar at the hospital.

EYE, EAR, AND THROAT INFIRMARY OF EDINBURGH (with which is incorporated the Edinburgh Eye Dispensary), 6, Cambridge-street, Lothian-road.—Clinical Lectures and Instruction are given in this institution, which is open at 1 o'clock daily for outdoor patients for Eye Diseases; Mondays, Thursdays, and Saturdays at 12 noon, and Tuesdays and Fridays at 4 P.M. for outdoor Ear, Nose, and Throat Patients. Patients whose diseases require operations or more than ordinary care are accommodated in the house. Practical Ophthalmoscopic Classes may be arranged, and Clinical Assistants are appointed from time to time. A post-graduate course in Diseases of the Ear, Nose, and Throat is held each academic term, commencing in May, October and January, and continuing for six weeks. The next course commences on Oct. 13th, 1925. The class meets at 5 P.M. Tuesdays and Fridays, and the instruction, which is practical, is supplemented by lantern demonstrations. Secretary: Mr. J. P. Watson, W.S., 32, Charlotte-square.

UNIVERSITY OF GLASGOW.

The University of Glasgow is both a teaching and a degree-granting body, but admits to graduation only candidates whose preliminary examination and course of study conform to its own regulations. Within certain limits instruction given by recognised medical schools and teachers may be accepted, but not less than one-half of the subjects other than clinical must be taken in this or some other recognised university, and at least two years of the course must be taken in Glasgow University. Seven degrees, open both to men and women, are conferred: M.B. and Ch.B. (always conjointly), M.D. and Ch.M.; B.Sc. in Public Health; D.Sc. in Public Health; B.Sc. in Pharmacy; and Ph.D. in the Faculty of Medicine. A Diploma in Public Health (D.P.H.) is also granted.

All information as regards the extent and standard of the Preliminary Examination may be obtained by application to the Secretary, Scottish Universities Entrance Board, 81, North-street, St. Andrews.

For the degrees of M.B. and Ch.B. a curriculum of five years is required after registration as a medical student in the books of the General Medical Council. The candidate must, during his curriculum, have attended a course or courses of instruction in each of the following subjects of study, extending over not less than the number of terms *specified* in each case, and including such class examinations as may be prescribed in connexion with the several courses:—Chemistry (including Organic Chemistry), two terms; with Practical Chemistry, one term; Physics (with practical work), one term; Botany (with practical work), one term; Zoology (with practical work), one term; Anatomy and Practical Anatomy, five terms; Physiology and Practical Physiology, three terms; Materia Medica and Therapeutics (together or separately), each subject, one term; Pathology and Practical Pathology, three terms; Medical Jurisprudence and Public Health (together or separately), each subject, one term; Midwifery and Diseases peculiar to Women and to Infants, two terms; Surgery, two terms; Medicine, two terms. Candidates must attend for at least three years the Medical and Surgical Practice of a recognised hospital accommodating at least 80 patients and having a distinct staff of physicians and surgeons. At least nine months' hospital attendance is required on both Clinical Surgery and Clinical Medicine, and the student must have acted for six months as clerk in medical and dresser in surgical wards, and must have had six months' outdoor practice; he must also have attended a course of Mental Diseases and of Practical Pharmacy (25 meetings), must have been properly instructed in Vaccination at a public vaccination station, and must have attended at least 20 cases of labour and the Practice of a Lying-in Hospital. The University also requires further study in various special subjects.

There are four Professional Examinations, the first comprising Botany, Zoology, Physics, and Chemistry; the second comprising Anatomy and Physiology; the third comprising Materia Medica and Therapeutics and Pathology; and the fourth or final, comprising Medical Jurisprudence and Public Health, Surgery and Clinical Surgery, Practice of Medicine and Clinical Medicine, and Midwifery and the Diseases Peculiar to Women and to Infants.

The degrees of M.D. (Doctor of Medicine) and Ch.M. (Master of Surgery) are higher degrees in Medicine and Surgery respectively, and candidates (not under 24 years of age) who have previously obtained the double bachelorship may be admitted to either M.D. or Ch.M. on completing the after course prescribed, including an examination in Clinical Medicine for M.D. and an examination in Surgical Anatomy, operations on the dead body, and Clinical Surgery for Ch.M.

The higher degree of Doctor of Philosophy (Ph.D.) is also conferred in the Faculty of Medicine. Candidates must already have obtained a degree (or equivalent diploma) from an approved University or College and must prosecute a course of special study or research for two or three years and give evidence of satisfactory progress. A thesis must be presented for approval by the Senate on the recommendation of a Special Committee. The candidate may be required to undergo an oral or other examination on the subject-matter of the thesis.

Fees.—The Fees for M.B. and Ch.B. are £34 13s. The class fee in each subject of the curriculum for M.B. and Ch.B. is £3 3s., £4 4s., or £6 6s., and the present fee for hospital attendance is £7. The fee for M.D. is £21, and for Ch.M. £21.

The great majority of the students take their hospital course at the Western, Royal, and Victoria Infirmary, and at the district hospitals of the Glasgow Parish Council, where clinical instruction is given by professors of the University and others. Clinical instruction on Fevers is given at Ruchill and Belvidere Hospitals, while special courses, largely of a practical nature and embracing work in Hospital or Asylum wards, are conducted by University Lecturers on the Ear, the Throat and Nose, Dermatology, Ophthalmology, Venereal Diseases, Tuberculosis, Insanity, and Electro-diagnosis and Therapeutics. Queen Margaret College, sometime conducted as a separate institution for the higher education of women, was made over to the University in 1892, and in it certain medical classes for women are conducted under lecturers appointed by the University Court.

Post-graduate Medical Teaching.—Organised Post-graduate Medical Teaching is available in Glasgow under the auspices of Glasgow Post-Graduate Medical Association. This Association is representative of practically all the Teaching Institutions in Glasgow, and its business is managed by a Board of which the chairman is Principal Sir Donald MacAlister, and the vice-chairman Sir Hector C. Cameron. Weekly demonstrations for practitioners are given throughout the winter and spring, and comprehensive courses of instruction during the summer and autumn. There is a General Medical and Surgical Course, during the last two weeks of August and the first two weeks of September. This is a whole-time course and includes most of the subjects of interest to the general practitioner. The forenoons are occupied with General Medicine and Surgical Diagnosis and Minor Surgery in the Royal Infirmary and in the Victoria Infirmary. In the afternoons special subjects are dealt with in some of the special hospitals or in the special departments of the general hospitals—two subjects each afternoon. On the four Saturday forenoons Tuberculosis and Infectious Fevers are demonstrated at Ruchill Fever Hospital. Arrangements have also been made whereby a limited number of graduates may become attached to wards or out-patient departments nominally as clinical assistants for definite periods throughout the year. As such they work under the direct supervision of the physician or surgeon in charge, and carry out such detailed investigations as directed. Further information may be obtained from Dr. James Carslaw, Secretary.

In this University Bursaries and Prizes to the annual amount of over £1000 are appropriated to students in the Medical Faculty, and there are also several Scholarships and Fellowships which may be held by medical students who have gone through the Arts course. A full list will be found in the Calendar.

THE ANDERSON COLLEGE OF MEDICINE, Dumbarton-road, Glasgow, W.—Courses are given which qualify for all the licensing boards and for the Universities of Oxford, Cambridge, London, Durham, Edinburgh, and Glasgow (the latter two under certain conditions). Candidates for the Licence in Dental Surgery can obtain the full medical curriculum in Anatomy, Chemistry, Physiology, Surgery, Practice of Medicine, and Materia Medica. The courses special to Dentistry are conducted at the Dental Hospital, Glasgow.

The buildings are situated in Dumbarton-road, immediately to the west of the entrance to the Western Infirmary, and adjoining the University. Extensive accommodation is provided for Practical Anatomy, Practical Chemistry, Practical Botany, Practical Zoology, Practical Physiology, Practical Pharmacy, Operative Surgery, and Public Health. Ample provision has also been made for the comfort of students.

Women students are admitted on the same terms as men, and the Carnegie Trust extends its benefactions to students of the College. Full particulars may be obtained from Sir W. S. McCormick, the Carnegie Trust Offices, Merchants' Hall, Edinburgh.

Communications relating to the College to be addressed to the Secretary of the Medical Faculty, The Anderson College of Medicine, Glasgow, W. Communications relating to the Preliminary Examination in General Education to be addressed to Mr. George C. Pringle, M.A., Educational Institute Office, 47, Moray-place, Edinburgh. Communications relating to the Triple Qualification to be addressed to Mr. Walter Hurst, Royal Faculty Hall, 242, St. Vincent-street, Glasgow.

The Winter Session will open on Oct. 12th, 1925.

ST. MUNGO'S COLLEGE AND GLASGOW ROYAL INFIRMARY.—The classes in St. Mungo's College qualify for the medical qualifications of the English. Scotch, and Irish Conjoint Boards, for the dental diplomas of the English, Irish, and Scottish Boards and, under certain conditions, for the various universities, including the University of London. Students who have fulfilled the conditions of the Carnegie Trust as regards Scottish birth or extraction, age (16 years), and Preliminary Examination, are eligible for the benefits of this Trust during the whole course of their studies at St. Mungo's College. The classes are open to male and female students equally.

The minimum fees for all the lectures, including hospital attendance, necessary for candidates for the Diplomas of the English or Scotch Colleges of Physicians and Surgeons, amount to £120. Further particulars can be obtained from a syllabus which may be procured free on application to the Secretary of the Medical Faculty, 86, Castle-street, Glasgow.

QUEEN MARGARET COLLEGE (Women's Department of the University).—This is an integral part of the University of Glasgow. The classes are taught by professors of the University and other lecturers appointed by the University Court, and it is governed by the University Court and Senate. The curricula, regulations, and fees are the same as those of the male students, and the University degrees are open to women on the same conditions as to men. They have access to the University Museum and can borrow books from the University Library, besides having a library of reference in Queen Margaret College. The School of Medicine is a special feature of the College, and gives full preparation for the medical degrees of the University. In July, 1894, for the first time in the history of any Scottish University, women students graduated in medicine in Glasgow University; 683 women have now taken the degree of M.B., C.M., or M.B., Ch.B. of the University of Glasgow and 35 the degree of M.D. The women students attend classes in the various University Buildings at Gilmore-hill and Queen Margaret College, the Royal Infirmary, the Western Infirmary, and the Victoria Infirmary. Facilities for clinical work are given in the Royal, Western and Victoria Infirmaries, in the Maternity, Royal Sick Children's, and other hospitals. The Arthur Scholarship is open every third year to students of first year; other Bursaries are open in Arts and Medicine, and women are admitted to certain University bursaries and fellowships. The Winter Session will open on Oct. 12th.

ROYAL INFIRMARY, Glasgow.—The ancient connexion between the University of Glasgow and the Royal Infirmary was revived in 1911, when four University Chairs and several University Lectureships were established at the infirmary. St. Mungo's College is situated in the infirmary grounds. The infirmary has, including the Ophthalmic Department, 700 beds. There are special beds and wards for diseases of women, of the throat, nose, and ear, skin, venereal diseases, burns and septic cases. The wards are open to Women Students. At the Outdoor Department the attendances numbered over 200,000. In addition to the large medical and surgical departments there are departments for special diseases—viz., diseases of women, of the throat and nose, of the ear, of the eye, of the skin, and of the teeth. Five house physicians and 10 house surgeons, who board in the hospital free of charge, are appointed every six months. Clerks and dressers are appointed by the physicians and surgeons. As a large number of cases of acute diseases and accidents of a varied character are received these appointments are very valuable and desirable. There is a modern and fully equipped Electrical Pavilion, and year by year the latest and most approved apparatus for diagnosis and treatment has been added. Post-graduate Classes are held during September in Clinical Medicine, Clinical Surgery, Clinical Gynæcology, Diseases of the Skin, Venereal Disease in the Male, Diseases of the Throat, Nose and Ear, and in Diseases of the Eye. For information regarding fees and other particulars, application should be made to the Superintendent.

GLASGOW WESTERN INFIRMARY.—This hospital adjoins the University of Glasgow. Number of beds 600. Special wards are set apart for Diseases of Women, Throat, Nose, and Ear, and for Affections of the Skin. In the out-patient department there are special clinics for Diseases of Women and for Diseases of the Throat, Ear, Teeth, Skin, Venereal Disease, and Electro-Therapeutics. The Clinical Courses are given by the physicians and surgeons, each of whom conducts a separate class, and students require to enter their names at the beginning of the session for the class which they propose to attend. Special instruction is given to junior students by tutors or assistants, and clinical clerks and dressers are selected from the members of the class. All the courses of clinical instruction are recognised by the University of Glasgow and the other boards in the kingdom. In the Pathological Department the course is both systematic and practical, also post-graduate courses, and extends through the winter and following summer; these are likewise recognised by the University for graduation. Eighteen resident assistants are appointed annually, without salary, from those who have completed their course. The fees are as follows:—For Infirmary Attendance: (*a*) For Perpetual Ticket, £12 12*s.*; (*b*) for Single Term Ticket, £1 11*s.* 6*d.* For Courses of Instruction: (*a*) Six Months or Two Terms, £5 5*s.*; (*b*) Three Months or One Term, £2 12*s.* 6*d.* A Clinical Laboratory has been opened, and students receive laboratory instruction from the lecturer on clinical methods. Secretary: J. Matheson Johnston, C.A., 87, Union-street.

A School of Massage, Medical Electricity, and Swedish Remedial Exercises has been established to qualify for the Certificate of the Chartered Society of Massage and Medical Gymnastics.

ROYAL HOSPITAL FOR SICK CHILDREN, Glasgow.—This institution, which was founded in 1882, consists of: (1) a hospital at Yorkhill containing 270 cots built on an elevated and central site close to the University and opened in July, 1914; (2) a Dispensary, or Out-patient Department, in West Graham-street, opened in October, 1888; and (3) a country branch at Drumchapel, Dumbartonshire, containing 30 cots, opened in 1903. Children treated must not be over 13 years of age, nor suffer from infectious diseases. In 1924 there were 6050 in-patients treated, and there were 78,585 attendances of out-patients. There are one professorship and two lectureships in the University of Glasgow in connexion with the hospital, one professorship and one lectureship on the Medical Diseases of Infancy and Childhood, and one lectureship on Surgery and Orthopædics in Relation to Infancy and Childhood. The Professorship is held by Prof. Leonard Findlay, the Visiting Physician, and the lectureships are held one by Dr. Geoffrey B. Fleming, Assistant Visiting Physician, and the other by one of the Visiting Surgeons, Mr. Alex. MacLennan. The lectures are both systematic and clinical, but particularly and chiefly the latter. In addition special facilities are given for post-graduate study. Information with regard to clinical instruction, lectures, and post-graduate study may be obtained from the Medical Superintendent.

GLASGOW ROYAL MATERNITY AND WOMEN'S HOSPITAL, Rottenrow.—The new hospital, which was opened in 1908, is in point of size the largest of its kind in Britain and has accommodation for 114 patients. A Maternity and Child Welfare Centre has been established in connexion with the hospital, consisting of a complete In-door and Out-door Ante-natal Department and an Infant Consultation Clinic. In 1924 4071 normal cases and 2088 abnormal cases were treated by the hospital in the In-door and Out-door Departments. Secretary: Mr. William Guy, 146, Buchanan-street. Full particulars as to fees and accommodation may be obtained from the House Superintendent at the hospital.

ROYAL SAMARITAN HOSPITAL FOR WOMEN, Glasgow.—This hospital, founded in 1886, is the largest purely gynæcological hospital in Great Britain, possessing as it does, 90 beds, which will be increased to 160 when building extensions are completed. It offers excellent facilities for clinical instruction in the diseases peculiar to women, treating in the wards and in the out-patient department from 5000 to 6000 cases per annum. Lectures and clinical demonstrations are given by members of the surgical staff to students and to post-graduates; and the hospital is represented on the Board of the Glasgow Post-Graduate Medical Association formed for co-ordinating post-graduate medical teaching in all the hospitals. For further information application may be made at the Hospital, or to T. Mason Macquaker, M.A., B.L., Secretary, 149, St. Vincent-street, Glasgow.

GLASGOW LOCK HOSPITAL, 41, Rottenrow, Glasgow. This hospital was founded in 1805 for the treatment of females suffering from Venereal Diseases. It contains 80 beds. There is also a Labour Ward, and a well-equipped Dispensary for out-patient attendances. There is now a Lecture Room and Laboratory, equipped with the most modern appliances, which has been building during the past year, and has just been completed for the accommodation of Students who receive their clinical instruction there. The number of students attending these classes in 1924 was 176; Post-graduate classes are also held. During the course of the past year the hospital has been completely renovated and modernised. In 1924 there were 424 in-patients, and 17,698 attendances were made by out-patients at the Dispensary. The Secretary and Treasurer is Mr. J. Neilson Gray, LL.B., 65, Bath-street, Glasgow.

GLASGOW OPHTHALMIC INSTITUTION, 126, West Regent-street, and 131, Wellington-street (30 beds and six cots).—Clinical and systematic course of lectures for students during the winter and summer sessions. In-patients, 919; out- or dispensary patients, 15,424; daily average of attendances, 147; total attendances, 44,988. Operations on Wednesdays and Fridays. This institution is administered by the Royal Infirmary. Secretary and Cashier: R. Morrison Smith, C.A., 135, Buchanan-street, Glasgow.

GLASGOW EYE INFIRMARY, Berkeley-street and Charlotte-street.—This institution, the largest of its kind in Scotland, was founded in 1824. The average number of new patients for the last ten years has been 26,010 and the total number of cases in 1924 was 65,566. The wards and dispensary are recognised by the University of Glasgow for the purpose of instruction in ophthalmology for graduation in medicine, and by the Royal Colleges of Physicians and Surgeons of England for the Diploma in Ophthalmic Medicine and Surgery. A Venereal Centre has been established, and a Branch Dispensary has been opened in Clydebank. Secretary and Acting Treasurer: Harold John Black, 88, West Regent-street, Glasgow. The medical session opens in October. Post-graduate Classes are being held.

GLASGOW HOSPITAL FOR DISEASES OF THE EAR, NOSE, AND THROAT, 27 and 28, Elmbank-crescent.—15 beds. New patients, 6732. Attendances at out-patient department, 21,550. Admitted to in-door department, 433. Clinical instruction is given in connexion with Dr. Connal's course on Diseases of the Ear at Anderson's College and Dr. Syme's course on Diseases of the Throat and Nose at the Western Medical School. Secretary: D. N. Mackay, 144, St. Vincent-street, Glasgow.

UNIVERSITY OF ST. ANDREWS (UNITED COLLEGE ST. ANDREWS AND UNIVERSITY COLLEGE, DUNDEE).

Four Degrees in Medicine and Surgery are conferred by the University of St. Andrews—viz., Bachelor of Medicine (M.B.), Bachelor of Surgery (Ch.B.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), a Diploma in Public Health, and Diploma in Dental Surgery (L.D.S.).

The Preliminary Examination includes (a) English, (b) Latin, (c) Elementary Mathematics, and (d) one of the following optional subjects: (α) Greek, (β) French, (γ) German, (δ) Italian, (ε) any other approved modern language. A degree in Arts or in Science in any of the Universities of the United Kingdom and in some colonial and foreign universities shall exempt from the Preliminary Examination. The Preliminary Examination for graduation in Medicine and Surgery, Arts or Science, of the University of St. Andrews is accepted as equivalent to the Registration Examination required by the General Medical Council (the certificate to include the required subjects). Also the Final Examination for a degree in Arts or Science and the Final Examination for the Diploma of L.L.A.

Degree of Bachelor of Medicine and Bachelor of Surgery.—A pre-registration examination is held in Physics and Chemistry. Candidates must have been engaged in medical study for at least five years after registering as a medical student. In each of the first four years the candidate must have attended at least two courses of instruction in one or more of the subjects of study specified below, each course extending over a session of not less than five months, either continuous or divided into two terms, or, alternatively, one such course along with two courses, each extending over a session of not less than two and a half months. During the fifth or final year the candidate shall be engaged in clinical study for at least nine months at the Infirmary of Dundee or at one or more of such public hospitals or dispensaries, British or foreign, as may be recognised for the purpose by the University Court. The candidate must have received instruction in each of the following subjects of study, including such examinations as may be prescribed in the various classes—viz.: Anatomy, Practical Anatomy, Chemistry, Materia Medica, Physiology, or Institutes of Medicine, Practice of Medicine, Surgery, Midwifery and the Diseases peculiar to Women and Infants, Pathology, Bacteriology, Practical Chemistry, Physics (including the Dynamics of Solids, Liquids, and Gases, and the Rudiments of Sound, Heat, Light, and Electricity), Elementary Botany, Elementary Zoology, Practical Physiology, Practical Pathology, Forensic Medicine, and Public Health. The candidate must have attended for at least three years the Medical and Surgical Practice either of the Infirmary of Dundee or of a General Hospital elsewhere which accommodates not fewer than 80 patients and possesses a distinct staff of physicians and surgeons and is recognised for the purpose by the University Court. Additional subjects of study are Practical Pharmacy, Mental Diseases, Practical Midwifery, Operative Surgery, Vaccination, Children's Diseases, Fevers, Ophthalmology, Diseases of the Ear, Throat, and Nose, Anæsthetics, Dermatology and Post-mortem Examinations.

With respect to the places and institutions at which the studies of the candidate may be prosecuted the following regulations shall have effect:—1. Two of the five years of medical study must be spent in the University of St. Andrews. 2. The remaining three years may be spent in any University of the United Kingdom or in any Indian, Colonial, or Foreign University recognised for the purpose by the University Court, or in such medical schools or under such teachers as may be recognised for the purpose by the University Court. Women are admitted to graduation in Medicine, subject to certain provisions.

Professional Examinations for the Degrees of Bachelor of Medicine and Bachelor of Surgery.—Each candidate will be examined both in writing and orally, and also clinically where the nature of the subject admits, in the following divisions—viz., first, in Botany, Zoology, Physics, and Chemistry; second, in Anatomy and Physiology; third, in Materia Medica, Pathology and Bacteriology, Forensic Medicine and Public Health; and fourth, in Surgery, Clinical and Operative Surgery, Practice of Medicine and Clinical Medicine, and Midwifery and Gynæcology (Systematic and Clinical). The combined fee for tuition and clinical tuition is £182, payable in five annual instalments. Additional fees are required for hospital ticket, midwifery cases, laboratory apparatus.

The fee to be paid for the degrees of Bachelor of Medicine and Bachelor of Surgery shall be 33 guineas, and the proportion of this sum to be paid by a candidate at each division of the examination shall be regulated from time to time by the University

Court. The fee to be paid for the degree of Doctor of Medicine shall be 20 guineas, and for the degree of Master of Surgery 20 guineas. The whole medical curriculum can be taken in University College, Dundee, or the first two years in United College, St. Andrews. For further particulars and details as to scholarships and bursaries application should be made to Prof. Charteris, Dean of the Medical Faculty, University College, Dundee.

UNIVERSITY COLLEGE, Dundee.—This College is one of the constituent colleges of the University of St. Andrews. In the medical buildings there are spacious and well-equipped laboratories. The complete medical curriculum can be taken in Dundee. For classes, fees, &c., see under University of St. Andrews.

ROYAL INFIRMARY, Dundee.—The Infirmary contains 401 beds. In addition to the ordinary Medical and Surgical Wards, there are special departments for Midwifery (In- and Out-door), for Diseases of Women, of Children, of the Eye, of the Ear, Nose and Throat, and of the Skin; and for Clinical Pathology, Radiology, Electro-therapeusis, and Electro-cardiography. An extension providing for new X Ray and Massage Departments and for additional Operation Theatre accommodation has been opened this year at a cost of £25,000. Clinical teaching is given to male and female Students by the Honorary Staff; post-mortem examinations are conducted by the pathologists. All courses of instruction are recognised by the University of St. Andrews and the other Boards of the United Kingdom. Nine Resident Medical Officers are appointed every six months. Clinical clerks and dressers are attached to the Physicians and Surgeons; and Students are appointed as assistants in the pathological department. The fees for Hospital attendance are as follows: For Perpetual Ticket, £12, or if paid in instalments, £12 12*s.*; Ticket for 12 Months, £4 4*s.*; Ticket for 3 Months, £1 11*s.* 6*d.* Further information may be obtained from the Medical Superintendent.

UNIVERSITY OF ABERDEEN.

The University of Aberdeen grants four degrees in Medicine and Surgery—viz., Doctor of Medicine (M.D.), *Master of Surgery* (Ch.M.), Bachelor of Medicine (M.B.), and Bachelor of Surgery (Ch.B.). The Degree of Doctor of Philosophy (Ph.D.) is also granted in the Faculty of Medicine.

Degrees of M.B. and Ch.B.—Before commencing his medical studies each student must comply with the following regulations: (1) Every Candidate desiring admission to the Faculty of Medicine must be in possession of the necessary "Certificate of Fitness" issued and attested by the Scottish Universities Entrance Board, 81, North-street, St. Andrews. Forms on which to make application for this Certificate may be obtained from the Secretary to the University of Aberdeen. From and after Jan. 1st, 1921, the Regulations contained in the Ordinances for Degrees in Medicine are revoked, and the following General Regulation made by the Entrance Board is substituted therefor, namely: "That (*a*) the Group Certificates of the Scottish Education Department, or (*b*) the evidence of satisfactory completion in Schools in Scotland of a curriculum of Secondary Education, as attested by the said Group Certificates or otherwise, or (*c*) the Leaving or other Certificates accepted as qualifying for admission to the Universities in the case of applicants for admission from outside Scotland, which shall be deemed to entitle applicants for admission to the Universities to enter upon a course of study qualifying for graduation in the Faculty of Medicine, shall be the same as those which, under the Regulations for the time being in force, are deemed to entitle applicants for admission to the Universities to enter upon a course of study qualifying for graduation in the Faculty of Arts or, alternatively, in the Faculty of Science, for Degrees in Pure Science."

Candidates, therefore, before entering on the curriculum for the Degree must: (1) have passed (*a*) the Arts Preliminary Examination, or (*b*) the Science Preliminary Examination, or (2) hold a qualification recognised as exempting from such examination. (3) Have attained the age of 17 years. (4) That they have passed the Pre-registration Examination in Physics and Chemistry.

Regulations for Pre-registration Courses in Physics and Chemistry have been made by the University in accordance with which the appropriate exemptions can be granted to students.

The curriculum for the degrees extends over a period of five years, during which attendance is required in the following subjects: Botany, Zoology, Physics, Chemistry (Systematic and Practical), Anatomy (Systematic and Practical), Physiology (Systematic and Practical), Materia Medica and Therapeutics, Practical Pharmacy, Pathology (Systematic and Practical), Medical Jurisprudence, Public Health, Surgery, Medicine, and Midwifery.

Candidates must attend for at least three years the medical and surgical practice of a recognised hospital; they must have attended courses of at least nine months in clinical medicine and clinical surgery, and have acted as clerk in the medical and dresser in the surgical wards of a hospital. Attendance is required on the practice of a dispensary or the out-practice of a hospital and also on courses in Mental Diseases, Fevers, Ophthalmology, Post-mortem Examinations, Venereal Diseases, Tuberculosis, and other special subjects. The candidate is also required to have been properly instructed in Vaccination and to have attended at least 20 Midwifery cases.

The cost, including Matriculation, Class, Degree, and Hospital Fees, for the whole curriculum leading to the Degrees of M.B. and Ch.B. is approximately £240.

Besides the Royal Infirmary, students have the opportunity of attending the following institutions: City Fever Hospital, Sick Children's Hospital, General Dispensary, and Lying-in and Vaccine Institutions, Royal Lunatic Asylum, Ophthalmic Institutions, &c.

Degrees of M.D. and Ch.M.—Candidates for either of these degrees must already hold the degrees of M.B. and Ch.B. of Aberdeen. A thesis has to be presented and an examination has to be passed in Clinical Medicine (or in some special Department of Medical Science) or Clinical Surgery, as the case may be.

Degree of Ph.D.—For this degree candidates must pursue a course of special study or research during a period of nine academical terms as Research Students in the University of Aberdeen or in any College or Institution that may be affiliated thereto. A Thesis must be presented for approval. The fee is £10 10*s.*

A diploma in Public Health is granted by the University to graduates in Medicine of a University in the United Kingdom, after a special examination.

Application for further information should be addressed to the Secretary of the Medical Faculty.

Scholarships and Prizes.—In the Faculty of Medicine of the University of Aberdeen there are the following Bursaries, Scholarships, and Prizes:—Bursaries: about 15 Bursaries (competition and presentation) are open each year, of £15 to £30 per annum in value, most of them being tenable for three years. Scholarships: five Post-Graduate Scholarships, value £36 to £160 per annum. Prizes and Medals: 18 Gold Medals and Prizes for proficiency in special departments, &c.

Clinical Instruction is given in the Aberdeen Royal Infirmary (270 beds) by the physicians and surgeons on the staff.

ABERDEEN ROYAL MENTAL HOSPITAL.—Contains, with hospital attached to main institution and agricultural branch, about 950 beds. Clinical instruction is given to students during three months in summer. Clerk and Treasurer, Mr. A. Scott Finnie, 318, Union-street, Aberdeen.

SCOTTISH MEDICAL CORPORATIONS GRANTING DIPLOMAS.

SCOTTISH CONJOINT BOARD.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

These Colleges have made arrangements by which, after one series of examinations, held in Edinburgh or Glasgow, or both, the student may obtain the diplomas of the three Bodies.

The three Bodies grant their Single Licences only to candidates who already possess legal qualifications in Medicine or Surgery. Copies of the Regulations for the Single Licence of any of the Bodies may be had on application to the respective secretaries.

Professional Education.—The candidate must produce certificates or other satisfactory evidence of having attended the following separate and distinct courses of instruction: Physics, three months; Elementary Biology, three months; Chemistry, six months; Practical or Analytical Chemistry, three months; Anatomy, during at least six months; Practical Anatomy, twelve months; Physiology, six months; Practical Physiology, three months; Materia Medica, three months; Pathology (including Practical Pathology), nine months; Practice of Medicine, six months; Clinical Medicine, nine months; Principles and Practice of Surgery, six months; Clinical Surgery, nine months; Midwifery, three months; Gynæcology, one course of not less than 13 meetings; Diseases of Children, one course of not less than 13 meetings; Medical Jurisprudence and Public Health, three months. The certified attendance on lectures, demonstrations, and practical work must not be less than three-fourths of the total number of roll-calls. Every student undergoes a course of Practical Midwifery, but before attending at labours he is required to attend a course of lectures on Surgery and Midwifery and to hold the offices of Clinical Medical Clerk and Surgical Dresser. He must also attend for two and a half months instruction in Practical Pharmacy; the certificate to be signed by the teacher, who must be a member of the Pharmaceutical Society of Great Britain, or the superintendent of the laboratory of a public hospital or dispensary, or a registered practitioner who dispenses medicines to his patients, or a teacher of Practical Pharmacy.

The student must attend for 27 months the Medical and Surgical practice of a public general hospital containing on an average at least 80 patients available for clinical instruction and possessing distinct staffs of physicians and of surgeons. He must act as Surgical Dresser and Medical Clinical Clerk for not less than six months in the wards in each case, and receive practical instruction in administration of anæsthetics. He must attend for six months the practice of a public dispensary especially recognised by any of the above authorities, or the out-patient practice of a recognised general hospital. This attendance should be made after the student has passed the First and Second examinations.

Candidates are also required to attend the following courses: Diseases and Injuries of the Eye, three months; Insanity, three months; Infectious Diseases, three months: Gynæcology, three months; Diseases of Children, three months.

The curriculum lasts for five years, the fifth year being devoted to clinical work.

There are four professional examinations:—

First Examination includes Physics, Chemistry, and Elementary Biology.

Second Examination includes Anatomy and Physiology and Histology; and candidates may be admitted to this examination at the end of the second year of medical study.

Third Examination includes Pathology and Materia Medica with Pharmacology.

Final Examination.—The Final examination shall not be taken earlier than the end of the fifth year of study and shall embrace the following subjects:—Medicine, including Therapeutics, Medical Anatomy, and Clinical Medicine; Surgery, including Surgical Anatomy, Clinical Surgery, and Diseases and Injuries of the Eye; Midwifery and Diseases of Women; and, if not passed previously, Medical Jurisprudence and Public Health, but it is optional to candidates who have passed the Third Examination to be admitted to the subject of Medical Jurisprudence and Public Health on lodging certificates of having attended the necessary course in that subject at any time; but the subjects of Medicine, Surgery, and Midwifery shall be taken together at any time after the end of the fifth Winter Session, provided that a period of 24 months has elapsed since passing the Second Examination. All candidates shall be subjected, in addition to the written and oral examinations, to clinical examinations in Medicine and Surgery, which shall include the Examination of Patients, Physical Diagnosis, the Clinical use of the Microscope, Examination of the Urine and Urinary Deposits, Surgical Appliances, Bandages, Surface Markings, &c. The fees payable for the Final Examination shall be—for the whole examination, £15, for re-entry after rejection, £5, and for the subjects of Medical Jurisprudence and Public Health when taken separately, £5, with £3 for re-entry in that subject.

There are four periods of examination annually: During the ensuing period twice in Edinburgh and twice in Glasgow, in 1925–26. The Registrar in Edinburgh is Mr. D. L. Eadie, 49, Lauriston-place, and the Registrar in Glasgow, Mr. Walter Hurst, 242, St. Vincent-street, to whom fees and certificates must be sent for the respective examinations, and from whom particulars of fees can be obtained.

For students registered with the General Medical Council after Jan. 1st, 1923, more extensive Regulations are in force, and candidates applying for Regulations should state date of registration.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH: THE MEMBERSHIP AND FELLOWSHIP.

In addition to the diplomas granted by the Scottish Conjoint Board the Royal College of Physicians grants its Single Licence to candidates already possessing legal qualifications for professional practice.

The Royal College of Physicians of Edinburgh grants a *Membership* and a *Fellowship.*

Membership.—A candidate, who must be a Licentiate of a British or Irish College of Physicians, or a graduate in medicine of a University, approved by the Council, and 24 years of age, is examined in medicine, therapeutics, and in any branch of the departments of medicine specially professed, such as general pathology, psychology, public health, obstetrics, gynæcology, diseases of children, tropical medicine, or medical jurisprudence. The fee for the Membership is £36 15*s*., 15 guineas of which will be returned to any successful candidate who was already a Licentiate of the College at the time of qualifying for the Membership.

Fellowship.—The Fellows are selected from the ranks of the *Members.* The fee is £64 18*s*.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH: THE FELLOWSHIP.

The Royal College of Surgeons of Edinburgh also admits to the examination for its Single Licence any candidates who hold a Diploma in Medicine of any British, Indian, or Foreign university or of any British College of Physicians, or of the Society of

Apothecaries of London or Apothecaries' Hall, Dublin, granted under the provisions of the Medical Act, 1886, whose preliminary examination and course of professional study is proved to be sufficient to fulfil the requirements of the College, or to those who have passed a full examination for any of the above. Female practitioners are admitted to the Licence of the College and also to the Fellowship, and the regulations apply to practitioners of either sex.

The Royal College of Surgeons of Edinburgh grants a diploma of Fellowship after examination to the holders of the surgical degrees or diplomas of such British examining bodies, as well as of the holders of such surgical degrees of the Universities of Canada, Australia, New Zealand, and the Indian Empire as are recognised by the College.

The Fellowship.—Candidates for the examination must be 25 years of age and must have been engaged in practice for at least two years. The examination is of a practical nature, partly written and partly vivâ voce, and must include surgery and surgical anatomy, operative surgery, and clinical practice. One optional subject must also be taken, the range of these specialisms covering nearly every branch of medicine. The fee to be paid on entering for examination for Fellowship is £45, £10 of which is remitted to those who already hold the Licentiateship of the College. Candidates rejected at the examination obtain repayment of fee less £10 retained for examination expenses. One month's notice of intention to appear for examination must be given by the candidate to Mr. D. L. Eadie, 49, Lauriston-place, Edinburgh, clerk to the College, together with credentials signed by two Fellows of the College, one of whom must be a resident in Edinburgh, otherwise a special application, with six testimonials, must be made to the President and the Council of the College.

THE ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

Like the preceding corporations, the Royal Faculty of Physicians and Surgeons of Glasgow grants a Fellowship and a Licence to be held separately.

Fellowship.—The Fellowship of the Faculty is granted after examination in medicine or surgery, together with an optional subject, which may be anatomy or physiology or be selected from any special branch of medicine or surgery. Fourteen days' notice must be given by the candidate of his intention to present himself to Mr. Walter Hurst, the Faculty Hall, 242, St. Vincent-street, Glasgow. The fee for the Fellowship is £50, £10 of which sum is returned to any successful candidate who already holds the Licence of the Faculty. In certain circumstances Fellows may be elected as a mark of distinction.

Licence.—The Licence of the Royal Faculty is granted as a separate qualification to qualified practitioners in Medicine after examination in surgery, including surgical anatomy and clinical surgery. The fee is 15 guineas.

SCOTTISH PROVINCIAL ANCILLARY SCHOOLS AND HOSPITALS.

The hospitals which are recognised by the Scottish Conjoint Board as places where professional study for their diplomas can be pursued are all those institutions which feed the medical faculties of the universities. In addition the Scottish Boards recognise all the places which are recognised by the English Conjoint Board (see p. 431) and the Irish Conjoint Board (see p. 455).

III.—IRELAND.

THE UNIVERSITIES.

UNIVERSITY OF DUBLIN, TRINITY COLLEGE (SCHOOL OF PHYSIC).

Matriculation.—In order to join the School of Physic students pass a matriculation examination. University students take the Entrance of Trinity College and a Junior Freshman Term or a special Medical Preliminary; Extern Students, any examination recognised by the General Medical Council. The winter courses begin on Oct. 1st.

Pre-registration Examination in Elementary Physics and Chemistry.—Before beginning the five years' Medical curriculum students must pass an examination in elementary Physics and Chemistry. This examination is held at the end of September, in January, in March, and in June. Courses in preparation for it may be taken in the School of Physic. On passing this examination Medical students should register as such with the General Medical Council.

Degrees in Medicine (M.B.), Surgery (B.Ch.), and Midwifery (B.A.O.).—Candidates for these degrees must be of B.A. standing and must be for at least five academic years on the books of the Medical School, reckoned from the date of registration. The Arts course may be taken concurrently with the Medical course, and the B.A. degree need not be taken before the final medical examinations, but the Medical degrees are not conferred without the Arts degree. The following courses must be attended:—(1) Lectures—Botany, Zoology, Physics and Practical Physics; Systematic, Descriptive and Applied Anatomy; Chemistry and Practical Chemistry; Histology, Physiology, Practical and Applied Physiology; Practice of Medicine; Midwifery and Gynæcology, Pathology and Bacteriology; Materia Medica and Therapeutics; Medical Jurisprudence and Hygiene; Surgery and Operative Surgery; (2) three courses of nine months' attendance on the Clinical Lectures of Sir Patrick Dun's or other recognised Hospital; (3) Practical Vaccination, one month's instruction; (4) Mental Disease, three months; (5) Practical Midwifery with Clinical Lectures, including not less than 20 personally conducted cases, six months; (6) Ophthalmic Surgery, three months. Three groups of examinations have to be passed. Preliminary Scientific Examination, including Physics and Chemistry, Botany, and Zoology. The Intermediate Medical, Part I., including Anatomy, Physiology, and Organic Chemistry; and Part II., including Applied Anatomy and Applied Physiology; and the Final Examination, which is divided into Part I., Materia Medica and Therapeutics, Hygiene and Jurisprudence, Pathology and Bacteriology; and Part II., Medicine, including Clinical Medicine and Mental Diseases; Surgery, including Operative and Ophthalmic Surgery; Midwifery and Gynæcology. Part I. may be passed in the fourth year and Part II. completed at the end of the fifth.

Doctor in Medicine.—A Doctor in Medicine must have passed all the qualifying examinations and must be a B.A. of three years' standing. He must also submit a thesis and pass an Examination before the Regius Professor of Physic.

Master in Surgery.—A Master in Surgery must be a Bachelor in Surgery of the University of Dublin of not less than three years' standing, and must produce satisfactory evidence of having been engaged for not less than two years from the date of his registration in the study, or study and practice, of his profession. He must then pass a special examination.

Master in Obstetric Science.—A Master in Obstetric Science must be a Bachelor in Obstetric Science of two years' standing and must produce evidence of having been engaged in the study of Obstetric Medicine and Surgery during two years. He is then required to pass a special examination.

Diploma in Gynæcology and Obstetrics.—A post-graduate diploma is conferred upon registered medical practitioners who take a six months' course at the Rotunda Hospital or other recognised institution, a six months' course in Trinity College, and then pass a special examination. Three months of these courses may be taken concurrently.

Bachelor in Dental Science and Master in Dental Science.—The regulations under which these degrees are awarded can be obtained by application to the Registrar of the School of Physic.

All Degrees and Courses of Instruction are open to women students.

Post-graduate Instruction.—Arrangements have been made, with the approval of the Board of Trinity College, for a post-graduate course of instruction at the School of Physic during the autumn from Monday, Sept. 14th, to Saturday, Oct. 3rd. Members of the class can reside in college rooms and dine on commons.

Clinical Instruction.—The hospital facilities for clinical instruction available in Dublin will be described below.

NATIONAL UNIVERSITY OF IRELAND.

Matriculation.—All students intending to proceed to the medical degree of the University of Ireland must pass a matriculation examination, the examination taking place in June and September in Dublin and at certain local centres. All students must pass in five subjects (three of which must be Irish, English, and mathematics). All students must pass in Irish except students not born in Ireland, and other students whose home residence shall have been outside Ireland during the three years immediately preceding their matriculation; but all such students will be expected to attend a course of instruction in Irish Literature and History prior to obtaining any degree in the University. The following are the subjects for examination:—1. Irish. 2. Latin or Greek. 3. French, German, Italian, Spanish, Portuguese, Welsh, or any other modern language approved by the Senate. 4. English. 5. Mathematics. 6. Latin, Greek, French, German, Welsh, Spanish, Italian, Portuguese, or any other modern language approved by the Senate, History, Geography, Applied Mathematics, or Physics as an alternative, Chemistry, Botany, and for women candidates only, Physiology and Hygiene. Candidates who under the regulations are exempted from the necessity of presenting Irish as one of their subjects, may present as their fifth subject either a second language or a second science subject. Students entering for degrees in Medicine or Dentistry, if already registered by the General Medical Council, may be accepted as matriculated students of the Faculty of Medicine on passing the matriculation examination in any faculty.

The medical degrees granted are:—

M.B., B.Ch., and B.A.O.; and M.D., M.Ch., and M.A.O., Ph.D.—Printed forms of application for admission to any medical examination may be had from "The Registrar, The National University of Ireland, Dublin."

The Constituent Colleges of the National University of Ireland at which the full curriculum for medical degrees can be obtained are University College, Dublin; University College, Cork; and University College, Galway.

UNIVERSITY COLLEGE, DUBLIN.—The University and the College were created by the Irish University Act, 1908, and by Charters issued in December, 1908. Former students of the Cecilia-street School of Medicine who graduated in the Royal University may become graduate members of the new College. The constitution of the College, like that of the Constituent Colleges of Cork and Galway, provides for a governing body, an academic council consisting of professors and coöpted lecturers, a body of graduate members, and a body of student members matriculated in the University. The first professors were appointed by the Dublin Commissioners Irish Universities Act, 1908.

Matriculation.—Almost all the students of the College are matriculated students of the National University of Ireland.

Universities Examinations in Medicine.—The First Examination includes Applied Physics, Applied Chemistry, Botany, Zoology, and Applied Biology. The examination may be taken in two parts: Part I., Physics and Chemistry; Part II., Botany and Zoology. Honours may be obtained only when both parts are taken as one examination. The Second Examination includes Anatomy and Physiology. Both must be passed at the same time. The Third Examination includes Pathology, Medical Jurisprudence and Hygiene, and Materia Medica.

Degrees of M.B., B.Ch., and B.A.O.—The Examination in Medicine, Midwifery, Surgery, and Ophthalmology includes both the theoretical and the clinical branches. No student can enter for the M.B., B.Ch., or B.A.O. until the end of the fifth year when the curriculum has been completed. The course of study is as follows:—First year.—Winter: Anatomy and Practical Anatomy (required for the Second Examination), Applied Chemistry, Materia Medica and Pharmacology, Applied Anatomy and Physiology, Practical and Applied Physics (with Laboratory Course). Summer: In addition, Applied Biology, Anatomy, and Physiology. Second Year.—Winter: Anatomy, Practical Anatomy, Physiology, and Practical Physiology (physical and chemical). Summer: Anatomy, Practical Anatomy, Physiology, and Practical Histology. Third year.—Winter: Pathology, Surgery, Materia Medica and Pharmacology, Applied Anatomy and Physiology, and Pharmacy. Summer: Materia Medica and Therapeutics, and Practical Pathology. Candidates are also required to attend a General Hospital for nine months (winter and summer). Fourth year, or fourth and fifth years.—Medicine, Medical Jurisprudence and Hygiene, Midwifery and Gynæcology, Operative Surgery, Therapeutics, Applied Anatomy, and Ophthalmology and Otology. Candidates are also required to attend a General Hospital for nine months (winter and summer), to take instruction in Vaccination, and three months Fever Hospital. Fifth year.—If the Academic (Collegiate) Courses are taken as above, the Courses of the fifth year will be the following: Hospital Attendance, General Hospital, nine months; Clinical Ophthalmology and Otology, three months; Practical Midwifery and Gynæcology, six months; Mental Diseases, to be attended at a Lunatic Asylum, three months. (*Note.*—Practical Midwifery and Gynæcology may be taken in the fourth year after the Systematic Course of Midwifery, but it must not be taken concurrently with the period of attendance at Fever Hospital.) Hospital attendance on Diseases of the Skin, Children's Diseases, Diseases of the Ear, Throat and Nose, Venereal Diseases, and instruction in Radiology are also included in the new curriculum. The degree of M.D. may be obtained either by examination or on published work.

Fees.—The fees for Courses may be obtained on application to the Registrar for the College publications. Information concerning these, and the scholarships and exhibitions of the College can be obtained from the Dean of the Faculty, Prof. E. P. McLoughlin.

UNIVERSITY COLLEGE, CORK: THE SCHOOL OF MEDICINE.—The building is provided with a very large, well-ventilated dissecting room supplied with electric light, with physiological, toxicological, pathological and pharmaceutical laboratories, materia medica, anatomical and pathological museums, as well as a collection of surgical and obstetrical instruments and appliances. There are well-appointed physical, chemical, and biological laboratories, a large natural history museum in the adjoining building, and part of the College ground is laid out as a botanical garden. The plant houses are well filled with plants and are open to the students in the class of Botany. The Library contains about 70,000 volumes and is open daily during term time to students. The Medical Museum occupies a large room erected at the northern end of the medical buildings. There are Students' Clubs for men and women students of the College and various athletic clubs, the last of these holding a public meeting yearly in the Mardyke grounds.

All students who have been admitted as matriculated students are required to attend before the President and sign the Roll of Matriculated Students. Students who are candidates for degrees in the National University of Ireland must have passed the Matriculation Examination of that University or other recognised examination, and medical students must have passed a preliminary examination recognised by the General Medical Council. For information as to the conditions and courses of the Matriculation Examination application may be made to the Registrar, National University, Dublin.

Admission of Medical Students.—Students in the Faculty of Medicine who have passed the First Professional Examination of the Conjoint Examinations of the Royal College of Physicians and the Royal College of Surgeons in Ireland, or of the Royal College of Physicians and Royal College of Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow, or of the Royal College of Physicians, London, and Royal College of Surgeons, England, may be admitted to the rank of second-year students on making application to the Council and submitting a certificate of having passed the examination. Similarly, students who have passed the Second Professional Examination of the same Colleges may be admitted to the rank of third-year students; and those who have passed the Third Professional Examination of the Dublin Colleges, or of the Edinburgh Colleges and Glasgow Faculties, may rank as fourth-year.

Residence of Students.—There is no accommodation for the residence of students within the College, but students not living at home, or with relatives or friends, sanctioned by their parents or guardians, are required to live in a hostel or in recognised lodgings, a list of which can be obtained from the Secretary. All students are required to register their addresses each session in the book kept for that purpose in the hall porter's office, and to notify immediately to the Registrar any change of address during the session. The Honan Hostel, adjoining the College, is equipped by private endowment. A number of sets of rooms, together with recreation and common rooms, are provided for lay students who may desire to live there. For full particulars apply to the Warden. The Ursuline Convent, Blackrock, has a house of residence, quite separate from their Secondary School, for Catholic women students.

Clinical Instruction.—Students may attend the South Infirmary, Cork North Charitable Infirmary, the Mercy Hospital, the Cork District Lunatic Asylum, the Victoria Hospital for Diseases of Women and Children, the County Lying-in Hospital, the Cork Maternity, Fever, the District, and Ear, Eye, and Throat Hospitals.

Complete information with regard to class fees, scholarships, and prizes can be obtained from the Dean of the Medical Faculty, Professor A. E. Moore.

*South Charitable Infirmary and County of Cork General Hospital** (100 beds).—Clinical instruction is given daily in the wards. Special instruction on Diseases of Women and Children will be given in the special wards for such cases. Fee for nine months, £12 12*s.*; for six months, £8 8*s.*; for three months, £4 4*s.* Two resident pupils will be appointed by competitive examination.

Cork North Charitable Infirmary and County and City of Cork General Hospital (112 beds).—Clinical instruction is given daily in the wards by the physicians and surgeons. Special instruction is given to Junior students on two days weekly. Fee for 12 or nine months, £12; for six months, £8; and for three months, £4. Three resident pupils are appointed quarterly by the medical staff. All resident pupils are required to be registered pupils of the hospital. There is a special department for treatment of the eye, ear, throat, and nose, and a special dental department. The hospital contains a fully equipped Pathological Department, and a large and extensive X ray Department has recently been added.

Mercy Hospital.—Clinical hospital recognised by the General Nursing Council for Ireland. This hospital contains 130 beds for medical and surgical cases. There is also a daily extern for medical and surgical cases, as well as for diseases of the eye, ear, and throat. Extern medical and surgical, also eye, ear, and throat attendances for 1924, 20,217; intern patients, 1924, 1604. Daily average, 87. Two resident students. Honorary Secretary to the Staff: Dr. D. J. O'Connor. Special apartments for nurses and nuns under training.

Cork Mental Hospital (Psychological Medicine).—A course of Clinical Lectures on Mental Diseases and Allied Neuroses will be delivered by the Resident Medical Superintendent in the Cork Mental Hospital as soon as possible after the opening of the Trinity Term. The lectures will comprise: Normal Psychology; Psychology of the Insane; Psychoses, Statistics, Classification, Ætiology, Symptomatology, Diagnosis, Prognosis, Pathology and Treatment; Psychoneuroses; Neuroses; Psycho-Analysis. The course will be illustrated by typical cases. For further particulars apply to Dr. Owen F. McCarthy, Resident Medical Superintendent.

Victoria Hospital (Incorporated) (Cork).—There are 75 beds. Clinical instruction on Diseases Peculiar to Children is given. The extern department is open daily at 9.30.

County and City of Cork Lying-in Hospital (Erinville, Western-road; founded 1798).—This hospital contains 22 beds, an Extern Midwifery Department, Gynæcological Department, Extern Department for Women, and Child Welfare Centre. Training Centre for Midwives, preparing for C.M.B. examinations. Fee for six months' attendance, including clinical lectures, £5 5*s.* For further particulars apply to Lucy E. Smith, M.D., secretary to staff.

Cork Maternity (Batchelor's Quay).—Three resident pupils are taken into the Maternity. Poor women are attended at their own homes and there are 8 intern beds. A Child Welfare Centre and Clinic was established in 1919. Clinical lectures are delivered during the session. There is an extern department for the treatment of women's and children's diseases. Fee for attendance at clinical lectures and certificate £5 5*s.* Honorary secretary to staff (*vacant*).

Cork Fever Hospital.—Upwards of 500 cases of various forms of fever and zymotic disease are treated yearly in this hospital. The Resident Medical Officer gives instruction in Practical Pharmacy, a certificate of which is necessary for the National University and Colleges of Physicians and Surgeons of Edinburgh.

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* No returns.

*Cork District Hospital** (Douglas-road: 1200 beds). This hospital includes special buildings for fever and other infectious diseases (100 beds); for children's diseases (100 beds); and a Lock hospital, the only one in the South of Ireland (80 beds). It affords an extensive field for the study of all classes of diseases, acute and chronic, including special departments for gynæcology and diseases of the skin and nervous system. The physicians and surgeons visit the hospitals every morning at 10 o'clock. Lectures and clinical instruction are given daily in the wards by the physicians and surgeons. Further particulars may be obtained from Dr. D. Morrissy, 88, South Mall, Cork, honorary secretary, medical staff.

Cork Eye, Ear, and Throat Hospital (Western-road). This hospital is open to students attending the University College and others. Certificates of attendance for three or six months can be obtained. The hospital contains 35 beds. Over 3000 cases are treated during the year. A course of lectures is delivered during the session; also a post-graduate course of instruction. For further information apply to Dr. Arthur Sandford, Eye, Ear and Throat Hospital.

University College, Galway: School of Medicine.—The College contains a well-lighted and ventilated dissecting room and an anatomical lecture theatre; physiological, pathological, pharmaceutical, chemical, and physical laboratories; anatomical, pathological, gynæcological, and materia medica museums; as well as large natural history and geological museums and an extensive library in which students can read and from which they can borrow books. There are 12 Entrance Scholarships, value £20 each, for which Medical Students compete with other students on the Entrance Course. In the Second, Third, and Fourth years three Scholarships in each year, value £20 each, are reserved for Medical Students. H. H. Stewart Scholarships (£10 a year for three years) are awarded by the University in Anatomy and Physiology at Second Medical Examination amongst Students of the three constituent Colleges. Travelling Studentships (£200 a year for two years) are offered by the University for competition amongst Medical Graduates of the three Colleges of not more than two years' standing. Women students are eligible for all College and University Degrees, Distinctions, and Prizes. There are extensive grounds, a portion of which is occupied by a Botanic Garden and a portion is at the disposal of the College Athletic Union. There are several student societies in the College, including a Biological Society. There are abundant facilities for research and Post-graduate work in the Chemistry, Physiology, and Pathology departments. There are ample facilities for Women Students. Further information can be obtained from the Registrar of the College.

Clinical Instruction is given in the Galway Central Tuberculosis Hospital and in the Galway Central and Fever Hospitals, containing on an average 270 patients.

Central Hospital, Galway. 300 beds.—This Hospital has been completely built and in working condition. In addition to the Surgical and Medical Departments there are now available: Eye and Ear, Throat and Nose, Gynæcological and Obstetrical, Pathological, X ray and Electrical and Massage Departments as well. Students attend from University College, Galway. Medical and Surgical Clinics are held on alternate days during term. One Resident Physician and one Resident Surgeon are appointed every six months. Four resident students are appointed every quarter. The Hospital is open to qualified medical men for Post-graduate work.

QUEEN'S UNIVERSITY OF BELFAST.

There are six degrees in the Faculty of Medicine of the University—viz., Bachelor of Medicine (M.B.), Bachelor of Surgery (B.Ch.), Bachelor of Obstetrics (B.A.O.), Doctor of Medicine (M.D.), Master of Surgery (M.Ch.), and Master of Obstetrics (M.A.O.). The University also grants a Diploma in Public Health, particulars of which will be found in the University Calendar. The degrees of M.B., B.Ch., and B.A.O. are the primary degrees in the Faculty of Medicine, and are conferred at the same time and after the same course of study. No student is admitted to the final examination for these degrees until he has shown: (1) that he is a matriculated student of the University; (2) that he has completed the prescribed course of study in the Faculty of Medicine extending over a period of not less than five academic years from the date of his registration as a student of Medicine by the General Council of Medical Education and Registration of the United Kingdom; (3) that he has passed the several examinations prescribed; (4) that he has attended in the University during three academic years at least the courses of study prescribed for such degrees (the Senate may accept, for not more than two academic years of the required five, courses of study pursued in any other University or School of Medicine approved by the Senate); and (5) that he has attained the age of 21 years. Every candidate for admission as a matriculated student of the University shall pass such Matriculation Examination or fulfil such other test of fitness as may be prescribed by the Senate, which may prescribe the conditions under which students who have passed the Matriculation or Entrance Examination of any other University or College approved for that purpose (or who have fulfilled such other test of fitness as may be prescribed) may be exempted from passing the Matriculation Examination of the University. For information as to Scholarships and Prizes inquiry should be made of the Secretary of the University.

Primary Degrees of M.B., B.Ch., B.A.O.—All candidates for these degrees must satisfy the examiners in the subjects of four examinations.

The First Medical Examination.—The subjects of this examination are Chemistry (Inorganic and Organic), Experimental Physics, Botany and Zoology. The examination will be divided into two parts which may be taken separately: I., Chemistry and Physics; II., Botany and Zoology.

The Second Medical Examination.—The subjects are Anatomy and Practical Anatomy, Physiology and Practical Physiology. Candidates who have previously passed the First Medical Examination may present themselves for this examination at the close of their second year.

The Third Medical Examination.—The subjects are: (1) Pathology and Practical Pathology; (2) Materia Medica, Pharmacology and Therapeutics; (3) Medical Jurisprudence; (4) Hygiene. Candidates who have previously passed the Second Medical Examination may present themselves for this examination at the close of the third year. Attendance on a course in any subject of the Third Medical Examination shall not entitle a student to a certificate of attendance unless he has previously passed in all the subjects of the First Medical Examination.

The Fourth Medical Examination.—The subjects are: (1) Medicine; (2) Surgery; (3) Midwifery; (4) Ophthalmology and Otology. This examination may be taken in two parts: I., Systematic; II., Clinical, Practical and Oral. Candidates who have previously passed the Third Examination may present themselves for Part I. of the Fourth Examination at the close of the fourth year, provided that they have fulfilled the necessary requirements as to attendance, &c., on the courses of instruction in the subjects of examination. Candidates who have passed Part I. of this examination may present themselves for

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* No returns.

Part II. at the close of the fifth year, provided that they have fulfilled the necessary requirements as to hospital attendance on the various clinical courses in the subjects of examination. Parts I. and II. may be taken together at the close of the fifth year. Attendance on a course in any subject of the Fourth Medical Examination shall not entitle a student to a certificate of attendance unless he has passed in the subjects of the Second Medical Examination.

Degrees of M.D., M.Ch., and M.A.O.—These degrees are not conferred until the expiration of at least three academic years, or in the case of graduates of the University in Arts or Science of at least two academic years, after admission to the primary degrees in the Faculty of Medicine. Every candidate must show that in the interval he has pursued such courses of study, or been engaged in such practical work as may be prescribed. These degrees may be conferred by the Senate either (*a*) after an examination, which includes written, oral, clinical, and practical examinations; or (*b*) on the submission of a thesis or other evidence of original study or research, to be approved by the Faculty of Medicine after an oral or other examination of the candidate on the subject.

The Medical School.—The Donald Currie Chemical Buildings contain a lecture theatre, a preparation room, a chemical museum, a large class-room for elementary practical chemistry, laboratories for qualitative and quantitative analysis, rooms for water and gas analysis, dark room for photographic purposes and balance room, provided with all modern appliances. The Anatomical Department contains a large and well-lighted dissecting-room, a lecture-room, a professor's and demonstrator's room, a bone-room, and a laboratory for microscopic and photographic work. The Medical Museum is in the same building. The Jaffé Laboratories for Physiology comprise a lecture theatre, laboratories for practical work in chemical physiology, histology, and experimental physiology, and in addition small private research rooms, including balance, galvanometer, and centrifuge rooms. The Musgrave Pathological Laboratory. —In this department opportunity is afforded for research in pathology and bacteriology. The department is in touch with most of the hospitals in Belfast, and there is an ample supply of material for investigation by graduates in morbid histology, clinical pathology, and the bacteriology of infectious diseases. A course in pathology or bacteriology is given to graduates, and members of this class have an opportunity of seeing the methods employed in the various investigations carried out in the department for the Public Health Committee of the corporation in connexion with water-supply, sewage disposal, meat- and milk-supply, the diagnosis of cases of infectious diseases, &c. The certificate issued to members of the class in bacteriology qualifies for the D.P.H. degree. The Pharmaceutical Laboratory is fitted and equipped for the work of practically instructing students in the compounding and dispensing of medicines.

Clinical Instruction.—The following institutions are recognised by the University as affording proper opportunities for clinical instruction: the Royal Victoria Hospital, the Mater Infirmorum Hospital, the Union Hospitals, the Belfast Hospital for Sick Children, the Belfast Maternity, the Ulster Hospital for Women and Children, the Ulster Eye, Ear, and Throat Hospital, the Belfast Ophthalmic Hospital, the Purdysburn Fever Hospital, and the Belfast District Lunatic Asylum.

Royal Victoria Hospital, Belfast (850 beds).—Students eligible for McGrath, McQuitty, Malcolm, Coulter and Smyth Scholarships aggregate annual value £185. Ten House Surgeons and House Physicians. 30 resident pupilships, three months each, annually for Senior Students, of which a proportion is allotted to Women Students. Special Departments for Radiology, Clinical Pathology, V.D., Dermatology, Gynæcology, Vaccine Therapy, Electrocardiography, Dentistry.

Mater Infirmorum Hospital[*] (270 beds).

Belfast Infirmary and Hospital (1600 beds).—Clinical courses are given quarterly, and a course for D.P.H. in Hospital. Intern Venereal Clinic in Infirmary under Corporation scheme. Maternity Hospital recognised for Practical Midwifery training. Particulars may be obtained on application, as to classes, to Dr. McLiesh. Certificate of vaccination class recognised by Local Government Board. A new department for Cancer with 32 beds has been opened.

Belfast Hospital for Sick Children, Queen-street.—Clinical instruction is given in this hospital. During the Winter Session two Courses of Lectures are delivered on the Medical and Surgical Diseases incidental to Infancy and Childhood. Demonstrations in Ophthalmology and Pathology are given, and ample opportunities are afforded in the wards (which contain 45 beds), and in the Out-patient Department, which is largely attended, for gaining a practical and theoretical knowledge of the diseases of Infancy and Childhood. This Hospital grants Certificates in Diseases of Children, which are recognised by the various Examining Bodies. A Gold Medal is offered for competition at the close of the session. Fee for the session—2 guineas. For re-attendance—1 guinea. Hon. Secretary to the Medical Staff, Dr. Rowland Hill.

Maternity Hospital, Townsend-street, Belfast.—Twenty-five beds in constant occupation, and exclusively devoted to Midwifery and Antenatal conditions. There is also a large district. The Queen's University of Belfast have erected a Students' Hostel in connexion with the Hospital where six Students and Post-graduates are received each month. The University Tutor in Obstetrics resides in the Hostel and Students conduct their cases under his supervision. There is a large Antenatal Department and a Department for Venereal Diseases. The Hon. Secretary of the Medical Staff is T. S. S. Holmes, F.R.C.S.

Ulster Hospital for Children and Women, Templemore-avenue, Belfast (52 beds).—Clinical instruction to students in Diseases of Children, Gynæcology and Obstetrics. Special departments: Radiology, Eye, Ear, and Throat, and V.D. Clinic. Gold Medal awarded annually. One House Surgeon appointed from students of hospital.

Benn Ulster Eye, Ear and Throat Hospital, Incorporated, Clifton-street, Belfast (30 beds).

Belfast Ophthalmic Hospital, Great Victoria-street (30 beds).—Practical demonstrations by the staff and occasional clinical lectures in the subjects of Ophthalmology, Otology, and Laryngology. Clinical instruction is given daily.

Belfast Fever Hospitals.—City Fever Hospital, Purdysburn (300 beds); Union Fever Hospital (200 beds). Clinical Classes are held during the winter and summer sessions. Post-Graduate (D.P.H.) Classes are also held. Lecturer: A. Gardner Robb, M.B., D.P.H.

Belfast Mental Hospital (*Purdysburn Villa Colony*) (1000 beds).

IRISH MEDICAL CORPORATIONS GRANTING DIPLOMAS.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

The College issues its Licences in Medicine and in Midwifery to practitioners whose names appear on the Medical Register of the United Kingdom.

The Licence in Medicine.—The subjects of examination are: Practice of Medicine, Clinical Medicine, Pathology, Medical Jurisprudence, Midwifery, Hygiene, and Therapeutics.

The Licence in Midwifery.—Candidates must produce certificates of registration. A registered medical practitioner of five years' standing may be exempted from the examination by printed questions.

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[*] No returns.

The Membership.—Examinations for Membership are held in February, June, and November. The fee for the examination is £21 to Licentiates of the College, or £36 15*s.* to non-Licentiates.

The Fellowship.—Fellows are elected by ballot. Applicants must have been a Member of the College for at least one year and must have attained the age of 27 years. There is a fee of £35 in addition to a stamp duty of £25.

Further particulars can be obtained from the Registrar of the Royal College of Physicians of Ireland, 6, Kildare-street, Dublin.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

The Licence in Surgery.—A candidate whose name is entered either on the Medical Register for the United Kingdom, the Colonial Medical Register, or the Foreign Medical Register of the year in which he presents himself for examination, and who satisfies the Council that he has passed through a course of study and Examinations equivalent to those required by the Regulations of the Conjoint Board of the Royal College of Physicians of Ireland and the Royal College of Surgeons in Ireland, preceded by the passing of an Examination in Arts recognised by the General Medical Council, may, at the discretion of the Council, be admitted to the Examination.

Candidates are examined in Surgery, Clinical Surgery, Operative Surgery on the subject, Surgical Appliances, and Ophthalmic Surgery.

Diploma in Midwifery.—A diploma in Midwifery is granted after examination to persons possessing a registrable qualification.

Fellowship Examinations.—Candidates for the Fellowship shall make application to the President and Council to be admitted to examination. They are required to pass two examinations—Primary and Final. Candidates may present themselves for the Final Examination immediately after passing the Primary part, provided they have complied with the necessary regulations. The subjects for the Primary Examination are (*a*) Anatomy, including Dissections; and (*b*) Physiology and Histology. The subjects for the Final Examination are Surgery, including Surgical Anatomy and Pathology. For admission to the Final Examination the candidate must have passed the Primary Examination, and must be a Licentiate or Graduate in Surgery of a university or licensing body recognised by the General Medical Council; all such candidates must not be less than 25 years of age.

Further particulars as to fees and conditions of examination can be obtained from the Registrar of the College, Stephen's-green West, Dublin.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND AND ROYAL COLLEGE OF SURGEONS IN IRELAND.

This body requires of candidates the passage either of its own preliminary examination in the subjects of general education or proof that the candidate has passed one of the tests accepted by the General Medical Council as well as passing in the Pre-Registration Examinations in Chemistry and Physics and Biology.

Professional Examinations.—There are three professional examinations, the first of which cannot be passed earlier than the end of the second winter session, nor the final before the conclusion of full five years of medical study. Before being admitted to any of them the candidate must show that he has studied the different subjects in practice and theory for the requisite periods, certificates to this effect being accepted from the authorities of most of the recognised medical schools at home and abroad. The first examination deals with (*a*) Anatomy, and (*b*) Physiology and Histology. The second examination deals with (*a*) Pathology, (*b*) Materia Medica, Pharmacy, and Therapeutics and Ophthalmology, and may be taken separately.

Final Examination.—This is divided into three divisions, which cannot be completed until at least five years have passed in medical studies other than those for the Pre-Registration Examinations, and five years at least since the beginning of the curriculum. The divisions are (*a*) Medicine, including Fevers, Mental Diseases, and Diseases of Children; (*b*) Surgery, including Operative Surgery; (*c*) Midwifery, including Diseases of Women and Children, and the Practice of Vaccination.

Fees.—Preliminary Examination, £2 2*s.*; Re-examination, £2 2*s.* Pre-Registration Examination, £3 3*s.* Re-examination in Chemistry, £2 2*s.*; in Physics, £1 1*s.* First Professional Examination, £15 15*s.*; Second, £15 15*s.*; Final, £6 6*s.* Re-examination fee is £2 2*s.* for each division.

Diploma in Psychological Medicine.—There are two examinations in connexion with this Diploma: Part I. consists of (*a*) Anatomy and Physiology of the Nervous System; (*b*) Psychology. Part II.: (*a*) Neurology, including Clinical and Pathological Neurology; (*b*) Psychological Medicine, including its legal relationships.

Fees.—£3 3*s.* for each part.

Further information can be obtained from Mr. Alfred Miller, Secretary of the Committee of Management, Royal College of Surgeons, St. Stephen's Green.

ROYAL COLLEGE OF SURGEONS IN IRELAND (SCHOOLS OF SURGERY).—The schools of surgery are attached by Charter to the Royal College of Surgeons and have existed as a department of the College for over a century. They are carried on within the College buildings and are specially subject to the supervision and control of the Council, who are empowered to appoint and remove the professors and to regulate the methods of teaching pursued. The buildings have been reconstructed, the capacity of the dissecting-room nearly trebled, and special pathological, bacteriological, public health, and pharmaceutical laboratories fitted with the most approved appliances in order that students may have the advantage of the most modern methods of instruction. The entire building is heated by hot-water pipes and lighted throughout by the electric light. Winter Session commences in October; Summer Session in April. Scholarships and Prizes: Carmichael Scholarship, £15; Mayne Scholarship, £8; Stoney Memorial gold medal; Operative Surgery, gold and silver medals; Barker Prize, £26 5*s.*; H. Macnaughton-Jones gold medal in Obstetrics and Gynæcology; and class prizes and medals. Prospectuses and guide for medical students can be obtained post free on written application to the Registrar, Royal College of Surgeons, Stephen's-green W., Dublin.

APOTHECARIES' HALL OF IRELAND.

The Licence of this Hall is granted to students who present certificates of having fully completed the course of study as laid down in the curriculum and who pass the necessary examinations. The diploma of the Hall entitles the holder to be registered as a practitioner in medicine, surgery, and midwifery, with also the privileges of the Apothecary's Licence.

Candidates must pass two Professional Examinations, called the *Primary Examination and* the Final Examination, which are conducted at separate times, partly in writing, and partly practically and orally. The Primary and Final Professional Examinations are held twice a year—viz., in June and November, or such other dates as may be determined. The Fees payable for each Examination are as follows: Primary Professional, £21; Final Examination, £21.

Candidates who produce satisfactory evidence of having passed an examination for a Degree or *Licence* in Medicine, conducted by any University in the British Empire, or by the Royal *Colleges of Physicians* and Surgeons of Ireland or Great Britain, or by any Foreign University whose Degrees are recognised by the General Medical Council for purposes of Regulation in the Foreign List of the Medical Register, will be exempted from further examination in such subject or subjects of the Primary Examination.

The subjects for Part I. of the Primary Examination are: Anatomy, Physiology and Histology, including Bio-Chemistry; and for Part II., Materia Medica and Pharmacy, Pathology, and Medical Jurisprudence and Hygiene.

For the Final Examination the subjects are: (a) Medicine and Clinical Medicine and Clinical Methods. (b) Surgery—Clinical, Ophthalmic and Operative; and Surgical Anatomy. (c) Midwifery and Gynæcology, and Practical Pharmacy and Materia Medica (if not taken at Intermediate Examination).

Each candidate before receiving his diploma must produce evidence that he has attained the age of 21 years. The details of the course of education required and syllabus of the examinations will be supplied by the Registrar at 96, Merrion-square, Dublin.

HOSPITALS AFFORDING PRACTICE RECOGNISED BY THE IRISH UNIVERSITIES AND CORPORATIONS.[1]

SIR PATRICK DUN'S HOSPITAL, Grand Canal-street Dublin.—Classes both in Medicine and Surgery are held each morning from 9 o'clock from Oct. 1st till the end of June. Special classes for junior students will be held in the wards during the months of October, November, and December. A Resident Surgeon, with salary, is appointed annually. Ten Resident Pupils are appointed every four months. Twelve surgical Dressers and twelve Clinical Clerks are appointed each month. There are facilities for women students.

Prizes and Medals.—Clinical medals and prizes amounting to about £21 each will be awarded in Medicine and in Surgery respectively in accordance with the will of the late Rev. Samuel Haughton, M.D., S.F.T.C.D. Candidates who fail to obtain these medals and prizes will be awarded special certificates in Medicine and in Surgery provided they show sufficient merit.

Fees.—Winter and summer session, £12 12s.; winter session (six months), £8 8s.; and summer session (three months), £5 5s. Special certificate in anæsthetics, £1 1s. The practice of this hospital is open to all students, and the certificates are recognised by Dublin University, the National University and Royal Colleges of Surgeons of England, Ireland, and Scotland.

The Hospital is an official "Treatment Centre" for venereal diseases.

Further information will be supplied by the Hon. Secretary to the Medical Board.

COOMBE LYING-IN HOSPITAL AND GUINNESS DISPENSARY FOR THE TREATMENT OF DISEASES PECULIAR TO WOMEN, Dublin.—This hospital contains 70 beds and consists of two divisions, one of which is devoted to lying-in cases and the other to the treatment of diseases peculiar to women. The practice of this hospital is one of the largest in Ireland. Lectures are delivered, practical instruction given, and gynæcological operations are performed in the theatres daily. There is a general dispensary held daily, at which instruction is given on the Diseases of Women and Children. There is a special afternoon dispensary held by the Master and his assistants, at which practical instruction in gynæcology is given. There is no extra charge for attendance at this Dispensary. A deep therapy X ray apparatus has been installed for the treatment of malignant cases. There is accommodation for intern pupils who enjoy exceptional advantages of acquiring a thorough knowledge of this branch of their profession. Lady medical students can reside in the hospital. The residents' quarters are comfortable. Clinical assistants are appointed from amongst the pupils as vacancies occur. Certificates of attendance at this hospital are accepted by all licensing bodies. Fees: Extern pupils for full course of six months, £8 8s.; three months, £4 4s. Intern pupils, one month, £4 4s.; each consecutive month, £3 3s.; six months, £18 18s. Registration fee, in advance, 10s. 6d. Students can enter for attendance at any time, but preference is given to those entering from the first day of the month. Further particulars may be had on application to the Master or the Registrar at the Hospital.

ADELAIDE HOSPITAL, Peter-street, Dublin.—Fee for nine months' hospital attendance, £12 12s.; six months, £8 8s. Summer, three months, £5 5s.[2] Two resident surgeons are elected half-yearly and four or more resident pupils every four months. At the termination of the session prizes in Clinical Medicine, in Surgery, in Gynæcology, and in Dermatology will be awarded.

Wallace Beatty Memorial bursaries will be awarded at the commencement of the winter session.

Hudson Scholarship.—In addition to the junior prizes the Hudson Scholarship, £30 and a gold medal, as well as a prize of £10, together with a silver medal, will be awarded at the end of the session for proficiency in medicine, surgery, gynæcology, and pathology.

The certificates of attendance are recognised by all the Universities and licensing bodies in the United Kingdom. Further particulars may be obtained from Dr. L. G. Gunn.

JERVIS-STREET HOSPITAL, Dublin.—Founded 1718; rebuilt 1886. 130 beds. The operation theatre contains all modern requirements.

MATER MISERICORDIÆ HOSPITAL, Dublin. (Under the care of the Sisters of Mercy.)—This Hospital was founded in 1861 by the Sisters of Mercy. It is the largest in Ireland, containing 382 beds, is open at all hours for the reception of accidents and urgent cases. Clinical instruction will be given by the Physicians and Surgeons at 9 A.M. daily. Ophthalmic Surgery will be taught in the Special Wards and in the Dispensary. Surgical operations will be performed daily. Connected with the hospital are extensive Dispensaries, which afford valuable opportunities for the study of general Medical and Surgical Diseases, and Accidents; a fully-equipped Biochemical Laboratory, a modern Electro-Massage Department, and Electro-cardiograph room. Instruction will be given on Pathology and Bacteriology. Three House Physicians, eight House Surgeons, and 27 resident pupils will be elected annually. Dressers and Clinical Clerks will also be appointed, and certificates will be given to those who perform their duties to the satisfaction of the staff. Leonard Prizes will be offered for competition annually. For further particulars see prospectus. Certificates of attendance upon this hospital are recognised by all the Universities and licensing bodies in the United Kingdom. There is a Private Hospital for the reception of Medical and Surgical cases; also a Training School and a Home for Trained Nurses in connexion with the Hospital. Trained and experienced Nurses who have passed a qualifying examination in nursing can be obtained on application to the Lady Superior, Mater Misericordiæ Hospital.

Terms of attendance.—Nine months, £12 12s.; six winter months, £8 8s.; three summer months, £5 5s. Entries can be made with any of the physicians or surgeons, or with the Registrar, Dr. John O'Donnell, 3, Merrion-square. A prospectus containing in detail the arrangements for Clinical Instruction, Prizes, &c., may be obtained from the Secretary, Medical Board, Mr. H. Barniville, 9, Merrion-square.

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[1] This list of the institutions recognised by the Conjoint Board of Ireland is supplemented in the regulations of the Colleges by those hospitals mentioned as recognised institutions in Scotland and England. The recognised facilities for clinical instruction in some of the Irish centres have been described.

[2] Special Lectures in Dermatology are given weekly; also practical demonstrations on the treatment of fractures from time to time.

Meath Hospital and County Dublin Infirmary. This hospital was founded in 1753 and now contains 150 beds available for clinical teaching. A building containing 40 beds for the isolated treatment of fevers is attached to the hospital. The certificates of this hospital are recognised by all the universities and licensing bodies of the United Kingdom. Medical Clinical Clerks and Surgical Resident Pupils and Dressers are appointed every three months, and two House Surgeons and a Resident Casualty Officer are elected twice annually. Apply to Hon. Secretary and Treasurer of the Medical Board.

Mercer's Hospital.—This hospital, founded in 1734, is situated in the centre of Dublin, in the immediate vicinity of the Schools of Surgery of the Royal College of Surgeons, the Catholic University School of Medicine, and within five minutes' walk of Trinity College. It contains 120 beds for medical and surgical cases, and arrangements have been made with the medical officers of Cork-street Fever Hospital whereby all students of this hospital are entitled to attend the clinical instruction of that institution and become eligible for the posts of Resident Pupil, &c. There is a large dispensary for out-patients and a modern X ray department. An electro-cardiograph has been installed. Students of the hospital are permitted to attend the gynæcological department, where they receive practical instruction. There are special wards for the treatment and study of children's diseases. A gold medal is awarded annually to the best student. During the past few years the hospital has undergone extensive alterations in order to bring it up to modern requirements.

Appointments.—A House Surgeon is appointed annually. There are six men and two women Resident Pupils, and Clinical Clerks and Dressers are appointed from amongst deserving members of the class.

Fees.—Winter, six months, £8 8*s.*; Summer, three months, £5 5*s.*; nine months, £12 12*s.*

For further particulars apply to Dr. Bethel Solomons, Hon. Sec., Medical Board, 42, Fitzwilliam-square.

National Maternity Hospital, Holles-street, Dublin.—Established 1894. The hospital consists of an Intern and Extern Maternity, Gynæcological Wards, and a Dispensary for the treatment of Diseases of Women and Children. During the year 1924–25, 1306 cases were admitted; 791 confinements took place in the hospital, and 349 gynæcological operations were performed. 4436 applied for treatment at the Dispensary. Every facility is given for the carrying out of practical work. Post-graduate and special courses are arranged for at any time. Certificates of attendance at this hospital are recognised by all the licensing bodies. Terms.—Intern Pupils: Six months, 10 guineas; three months, 9 guineas; two months, 6 guineas; one month, 3 guineas. Extern Pupils: Certified Courses (three months), 6 guineas; Post-graduate Courses by special arrangement. Clinical Lectures are given daily and Oral Lectures four times per week. During the past year over 90 Post-graduate students were admitted. The L.M. Diploma is given by special examination, which is held three times a year. Further particulars can be obtained from the Master, Dr. Patrick McArdle, 27, Merrion-square; or from the Secretary, Holles-street, Dublin.

Richmond, Whitworth, and Hardwicke Hospitals (House of Industry Hospitals), Dublin.*—These hospitals contain 330 beds—130 for Surgical cases, 80 for Medical cases, 78 for Fever and other Epidemic Diseases, and an Auxiliary Wing of 42 beds. A Resident Physician and a Resident Surgeon are appointed each half year and are paid for their services. 20 Resident Clinical Clerks are appointed each quarter and provided with furnished apartments, fuel, &c. These appointments are open not only to advanced students but also to those who are qualified in Medicine and Surgery. The Dressers are selected from among the best qualified of the pupils without the payment of any additional fee. Women students are eligible for election as residents and special apartments are reserved for their use. For prospectuses apply to Mr. Adams McConnell, F.R.C.S.I., Hon. Secretary, 69, Fitzwilliam-square, Dublin.

Rotunda Hospital, Dublin.—This institution is the largest combined gynæcological and maternity hospital in the British Empire. Over 4000 confinements are attended annually and 500 gynæcological patients admitted. Students can take out their necessary gynæcological and midwifery practical courses. The work of the hospital is carried on continuously through the year and consists of daily clinical instruction in the maternity department and examination and operations in the gynæcological department. Qualified students are given facilities for studying and assisting in the management of all abnormal cases so far as is practical. The appointments on the staff of the hospital are given to qualified past students of the hospital who have taken the L.M. and consist of Extern Assistants for six months, one being appointed every three months. From these the Assistants to the Master are appointed. Women students can reside in the hospital on the same terms as men. The L.M. is granted by examination after a six months' course. Fees for Intern students: one month £6 6*s.*, months other than the first £4 4*s.*, three months £12 12*s.*, six months £21. For further particulars apply to the Master, Dr. Gibbon FitzGibbon.

Royal City of Dublin Hospital.—Founded 1832; enlarged 1851; rebuilt 1893. 135 beds. There is a special wing for the treatment of fevers and contagious diseases founded by the late Mr. Drummond. Secretary: W. H. Leadbeater.

Royal Victoria Eye and Ear Hospital, Dublin. —Established 1844. Incorporated 1897. 102 beds. In-patients, 1499; out-patients, 8492.

Dr. Steevens' Hospital, Dublin (Kingsbridge).—Established 1720. 250 beds, only 150 now in use. Patients, intern, 1300; extern dispensary attendances, including special V.D. Clinic, 38,470. There is accommodation for 12 Resident Pupils, each of whom is provided with a separate bedroom, and board is supplied by the Hospital, at a reasonable rate. All information with regard to the terms for such residency can be had from the Resident Surgeon at the Hospital. Secretary: E. D. F. Banks.

St. Vincent's Hospital and Dispensary, *Dublin.** —Established 1834. 200 beds. *Clinical Lectures* in Medicine and Surgery are held from October to June. Special classes for Juniors from October to December. Pathological and Bacteriological Demonstrations are given every Thursday, and instructions in the use of Laryngoscope and Otoscope for Senior students every Saturday. Medals and Prizes: the Bellingham gold medal in Medicine and the O'Farrell gold medal in Surgery are offered for competition at the end of the summer session, as well as junior prizes, also the Surgeon McArdle Prize, value £20. In the coming term there will be opened a New Extern Department and a New Pathological Laboratory. Dr. Meenan, hon. secretary, 28, Fitzwilliam-square.

* No returns.

We take this opportunity of thanking the officials of Government Departments and the Deans and Secretaries of the various institutions for their kind coöperation in enabling us to bring the information contained in our Students' Number up to date.

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* No returns.

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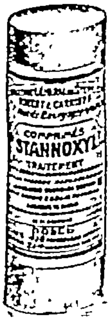

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LONDON: SATURDAY, AUGUST 29, 1925.

MEDICINE AND THE BUSINESS ASPECT.

THE medical schools throughout the kingdom will be starting the new professional year within the next few weeks, and our present issue, as has been usual at this season, gives a description of these schools, as well as a summary of the curriculum which takes into consideration the various university faculties and corporations entrusted by law with the examination of the students. The number of new students, it would seem, is quite adequate, neither is there any difficulty being experienced in the obtaining of recruits, nor is there now the risk that the medical profession may become overcrowded, as the figures of some five years ago certainly suggested. A dramatic rearrangement of entries, however, is being prophesied from Ireland in response to the action of the Government of the Free State, from whom an unexpected decision has been announced that a separate medical register for the State will be set up. The position was outlined in brief last week, and the suggestion that the move would be unpopular with the medical profession, and especially with the educational authorities in the Free State, has received ample confirmation. From one point of view the action of the Irish Free State is logical. The ideal of the State is independence wherever possible, and the appearance of allegiance to the General Medical Council, whose sessions take place in London, seemed to conflict with the ideal. To those, however, who appreciate the all-embracing hopes of modern medicine, an ideal founded even on such broad grounds as national aspirations will never seem sufficient. There is no possibility of limiting the influence of disease, save in matters of detail, by race or geography, and similarly there is no possibility of adjusting the pattern of medical education or the standards of ethical conduct in accordance with a colour scheme on a map. There is no reason why the Government of the Free State should not be able to evolve an adequate scheme of registration for their country, under which educational facilities are properly coded and bad manners or morals are duly penalised. When this position is reached reciprocity in a certain measure with other countries will follow, but it cannot be reached in a few weeks in response to legislative enactment. Meantime South Irish students may be seeking to obtain their training and their professional qualifications at centres where passing the tests will result in their names being placed on the general Medical Register.

When the schools are formally opened in October the students will in many places be addressed by some person in a position of authority upon the prospects that open out before them. The time has gone by when these introductory addresses were always delivered by a senior member of the teaching staff, and along one line—that of exhortation to the student, who was congratulated upon his choice of a career, to be industrious and enthusiastic in his studies, and to expect to receive material rewards little proportionate to the virtues expended. Such addresses conveyed some truth but concealed one fallacy. Looking steadily at the noble side of our calling, the orators would omit to take notice of the fact that that calling has also its business aspect, for hardly one of them was ever found mentioning that in the successful conduct of a business life it is as well to understand the relations in which that life stands to the social scheme in general. The matter is brought forward now in the hope that it may inspire some of those who are to address the students at the opening of the forthcoming session to remind the audiences that their professional duties will have always to be conducted with reference to the public; their responsibilities will be immediately towards their patients, but these responsibilities will entail upon them others in which the whole of society is interested. No better illustration of this can be found than a consideration of the necessity for the union of medical men in defence of their conduct when it is assailed, and the student can hardly be told too early in his career that personal insurance against perils of professional life will be a needful protection. In the work of their calling the risk to which doctors may be exposed is frequently exemplified in the lay press, and more particularly in our own columns, and a perusal of the annual reports of the Medical Defence Union and of the London and Counties Medical Protection Society reveals many cases, which have not been made public, where had it not been for the intervention of these societies serious consequences might have resulted for the medical practitioner, as the victim either of ignorance or blackmail. Further, it sometimes happens that a medical man is inequitably dealt with by a public body in whose service he is, and here again the intervention of one of the medical defence societies may save him from injustice, inconvenience, or expense. The past year has afforded striking examples of the dangers to which medical men are subjected in the exercise of their professional duties, the details of which must be fresh in the memory of all. It may be some years before the need will arise for the student of to-day to take advantage of the defence agencies, but the sooner he gets the impression that he will need protection the better.

The necessity to provide for individual defence, however, is but one subject, though an appealing one, of the many that should be brought to the attention of the medical student. All the matters where medicine, which more and more is permeating the general affairs of society, comes into direct contact with local government, and especially with health organisation, are subjects for exposition to those who are in training for our calling. Intensely individual as the practitioner must be in the conduct of his practice as between his patient and himself, in public affairs he has to coördinate his views with those of others who are regarding these affairs in a different way, and his value as a doctor as well as a citizen will be enhanced by his comprehension of the situations in which he will find himself in any intimate dealings with health authorities or the administration of National Insurance. It used to be urged that the medical schools should provide instruction upon the vaguely defined code of mutual good manners called medical ethics. But this medical etiquette was apt to degenerate into a formulary, in which the public interest, though at the bottom of the rules, was not prominently presented to the students. What would be of the greatest value to them is an orderly presentation, especially when their pupillage is drawing to a close, of the position of the doctor in the machinery of society, so that they could appreciate the lines which they must follow when they have to stand up rigidly for the medical view, supporting the attitude in the only proper way—namely, by the arguments proving desire for the public weal.

NAVAL MEDICAL SERVICE.

THE life offered to officers of the Royal Naval Medical Service is one that ought to appeal to a large section of recently qualified medical men. There is no intention in what follows, under this or the subsequent headings, to pit one Service against the other or to recruit in one direction more than in another. The particular regulations for each Service should suffice to give each man the necessary impetus for a decision.

In our notes upon the Service in the Students' Number last year we found it useless to disguise the fact that the attitude of the authorities in respect to the compulsory retirement at the age of 50 of a group of surgeon commanders who were under contract to be employed until the age of 55 had produced an unfortunate impression, and we stated the difficulties created. It is good, therefore, to be able to report that efforts made by the British Medical Association through Sir Richard Luce, M.P., chairman of the Naval and Military Committee, have been successful, and that an increase in the amount paid to senior surgeon commanders on compulsory retirement has been secured. The Admiralty has raised its offer by £50—that is to say, instead of £250, these officers will now be offered £300, on a sliding scale, on their compulsory retirement before the normal expectation under the 1920 regulations. The recompense seems hardly adequate, but as nothing better seems likely to be secured, the Naval and Military Committee of the Association have recommended the acceptance of the offer. Sir Percy Bassett-Smith, the representative of the Service on the Council of the B.M.A., has expressed the view that the relations between the Association and the Admiralty can start again with a clean sheet, the attitude of advising young members of the medical profession to look askance at the chances of a medical career with the Royal Navy being discontinued.

In the Navy the young medical officer sees the world in congenial company and with an assured position, the pay is good, the pensions are commensurate, and the opportunities offered now for scientific work are real, while, if they are taken, promotion awaits the officer on grounds of professional merit.

Rank of Surgeon Lieutenant-Commander will be granted to surgeons at the expiration of six years from date of entry, and the point upon which stress should be laid is that special promotion can be made in cases of conspicuous professional merit, which is thus placed on a par with general service. Six years later the period of promotion to Surgeon Commander is reached, after the qualifying examination has been passed, when again special promotions can be made for conspicuous professional merit as well as for distinguished service; but promotions are limited in number, save, of course, for gallantry in action. This recognition of professional attainment should prove a very real incentive to progressive scientific work. The same principle prevails in the higher ranks. Promotions to Surgeon Captain and later to Surgeon Rear-Admiral are made strictly by selection, but are confined to officers who prove fitted, both professionally and as administrators, for this rank.

Naval life may lead to opportunities for putting into practice much of what has been learned in the clinical wards of a hospital. Further, the opening for preventive medicine is large and many-sided, while appointments to the large shore establishments enable medical officers to keep their work modern.

New chemical explosives, as well as the extraordinary behaviour of common articles under extraordinary conditions of stowage, furnish perpetual problems and surprises for the medical officer on board ship, and bring him into intimate connexion with his charges in a way that is particularly necessary considering the conditions of life. No medical officer can expect to succeed unless he secures the confidence of those committed to his charge, and the health lectures which he is bound to deliver will be much more fruitful if they are delivered to an audience which trusts him. Moreover, the delivery of official lectures does not end this side of the medical officer's duties. He must be ready to answer questions, sometimes of real acuteness, which are put to him by the modern blue-jacket, and he will find that his lectures will often afford a starting point of work that may develop into great professional interest. Thus, without his being necessarily a psychologist, his influence will be felt by both officers and men, until the well-being of the ship may be profoundly affected by the extent of his tact and skill; for example, small matters assume undue proportion under stress of confinement, and the medical officer should be quick to detect danger signs and warn his commanding officer. Numerous changes have been introduced during the last 20 years into the naval dietary, many of which were the outcome of representations and research by naval medical officers. The work wants carrying on, for much of it has gone to show that the food problem is very complicated. Every medical officer on board ship should make himself acquainted with food values and the human powers of assimilation under varying conditions of work and climate, and here there is ample scope for research. The modern requirements of gunnery and navigation necessitate precision in their use and have made ophthalmology a valuable subject for study in the Navy. The physical training of both officers and men is based on physiological axioms which are peculiarly the field of the medical officer; this training should be the subject of a watchful eye. There is no lack of scope here for professional work without making any reference to the vast problems which have to be faced when the medical officer has to arrange his particular department to the best advantage during or after an action. It is certain that he will not be able to do this unless in times of peace he gets himself ready by study. Lastly, there is the whole field of venereal and tropical disease.

The young medical officer need not be afraid that his work will be without scientific interest if he takes the opportunities offered him.

Conditions of Service.

The rates of pay of the Medical Service are subject to periodical revision in the light of the cost of living, and it is necessary to indicate as closely as practicable the extent and methods of the periodical revision.

In order that students may be under no misapprehension regarding their remuneration should they decide to join the Naval Medical Service, it should be clearly understood that when the pay of naval officers was revised in 1919 it was definitely laid down that 20 per cent. of the rates of full pay, unemployed pay, half pay, and retired pay was to be considered as due to the high cost of living in 1919, and that it should be subject to change periodically either upwards or downwards according as the cost of living rose or fell. The first revision took place in July, 1924, when all the rates were reduced by approximately 5½ per cent., and further revisions (not necessarily reductions) are due every three years—i.e., in July, 1927, July, 1930, and so on.

The pay of the Naval Medical Service is shown in two tables, one showing the scale introduced in 1919, which is described as the standard rates and of which 20 per cent. is variable, and the other showing the actual scale in force from July 1st, 1924, to June 30th, 1927.

For the time being the regulations for entry by examination into the permanent service are in abeyance, but a short-service scheme providing for transfer to the permanent service has been inaugurated. The regulations for the entry of surgeon lieutenants under this scheme provide for the usual qualifications of registration, good character, physical fitness, and age—the age not to exceed 30 years. The conditions of service are a three years' engagement with an option of a further year, to serve when and where required under the general rules of the service as regards discipline, and to rank with, but after, surgeon lieutenants in the permanent service, and to receive two calendar months' notice of services being no longer required.

As from July 1st, 1924, the pay is £1 5*s.* (standard rate £1 6*s.* 0*d.*) per day or £456 5*s.* (standard rate £183 12*s.* 6*d.*) per annum, while there is a gratuity, not subject to variation with the cost of living, on discharge of £8 6*s.* 8*d.* for each completed month of service. All officers during service are accommodated and victualled on the usual service scale or receive lodging money and provision allowance in lieu, at rates subject to periodical revision. The present rates of lodging money and provision allowance are £80 and £55 a year respectively. Unlike permanent officers, medical officers entered for short service are not liable to periods of unemployment on unemployed or half pay or eligible for retired pay in respect of service. If, however, such an officer were invalided for a cause certified by the competent naval medical authority as attributable to the conditions of service, he would be eligible for disability retired pay in lieu of the gratuity on discharge referred to above. Similarly, in the event of his death from a cause attributable to the service his widow and children would be treated in the same manner as the widow and children of an officer on the permanent list. There is an equipment allowance for ordinary uniform of £50, but the officer provides himself with a pocket case of instruments and a stethoscope.

A short-service surgeon lieutenant after six months' service, on application to the Secretary of the Admiralty, may be considered for transfer to the permanent service on a satisfactory report being received from the senior medical officer of the Squadron, Hospital or Depôt in which he has served or is serving as to his professional ability, and a favourable report from his commanding officer as to conduct. Such candidates must have been under the age of 28 on joining for short service, and officers so transferred will not be eligible for the gratuities provided. They will be permitted to count their seniority from date of entry for short service for purposes of promotion and for increment of full pay, and similarly they will be permitted to count their service from the date of entry for purposes of retired pay, but for purposes of retiring gratuity on the permanent officers' scale their services will be reckoned only from the date of transfer to the permanent list, this date being that of receipt in the ship or establishment in which the officer is serving of the order for his transfer to the permanent list. Until that date he will retain his temporary rate of pay.

If a short-service lieutenant transfers to the permanent service he will then come under the following conditions of pay and pensions:—

Standard and Present Rates of Pay.

Rank.	Standard rate.						Rate from July 1st, 1924.					
	Year of 365 days.			One day.			Year of 365 days.			One day.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Surg.-Lieut. on entry . .	438	0	0	1	4	0	413	13	4	1	2	8
After 3 years	529	5	0	1	9	0	498	16	8	1	7	4
Surg. Lieut.-Comdr. on promotion	638	15	0	1	15	0	602	5	0	1	13	0
After 3 years . .	675	5	0	1	17	0	638	15	0	1	15	0
Surg.-Comdr. on promotion	821	5	0	2	5	0	775	12	6	2	2	6
After 3 years	894	5	0	2	9	0	845	11	8	2	6	4
" 6 "	967	5	0	2	13	0	915	10	10	2	10	2
" 9 "	1040	5	0	2	17	0	982	9	2	2	13	10
Surg.-Capt. on promotion	1186	5	0	3	5	0	1122	7	6	3	1	6
After 3 years	1277	10	0	3	10	0	1207	10	10	3	6	2
" 6 "	1368	15	0	3	15	0	1292	14	2	3	10	10
" 9 "	1460	0	0	4	0	0	1380	18	4	3	15	8
Surg. Rear-Admiral . .	1916	5	0	5	5	0	1809	15	10	4	19	2

On first appointment to the service, medical officers will receive full pay from date of appointment, but subject to the provisions of Article 1347 of the King's Regulations.

Officers of the permanent service are eligible during periods of unemployment for unemployed pay and half pay. The rates of unemployed pay and half pay, and the conditions under which they are granted, are the same as in the dental branch and are set forth in detail later in this article.

Flag Allowances.

An allowance of 5*s.* a day in addition to full pay is granted to the Senior Medical Officer of a flagship bearing the flag of a Commander-in-Chief. An allowance of 2*s.* 6*d.* a day is granted to the Senior Medical Officer of a ship bearing other flags or broad pendants.

Standard Rates of Retired Pay.

Compulsory retirement will be as follows:—

(i) Surgeon Rear-Admirals retire at the age of 60 with retired pay at the rate of £900 per annum plus £22 per annum for each year's service over 27 years counting for retired pay, subject to a maximum rate of £1010 per annum. If, however, less than 27 years' service counting towards retired pay is rendered, a deduction of £22 per annum is made for each full year wanting to complete that period, subject to a minimum of £790 per annum.

(ii) Surgeon Captains retire at the age of 55. Maximum retired pay, £900.

(iii) Surgeon Commanders retire at the age of 50. Maximum retired pay, £600.

(iv) Surgeon Lieutenant-Commanders and Lieutenants retire at the age of 45. Maximum retired pay, £450.

Subject to these maxima, the rates of retired pay for Surgeon Captains, Surgeon Commanders, Surgeon Lieutenant-Commanders, and Surgeon Lieutenants are as follows:—

Age on retirement.	Retired pay.	Period of service (years) counting towards retired pay.	(A)		Age on retirement.	Retired pay.	Period of service (years) counting towards retired pay.	(A)	
			Addition.	Deduction.				Addition.	Deduction.
	£ (p.a.)		£ (p.a.)	£ (p.a.)		£ (p.a.)		£ (p.a.)	£ (p.a.)
55	790	24	22	15	47	562	20	15	15
54	765	24	22	15	46	525	20	15	15
53	743	23	22	15	45	487	19	15	15
52	720	23	22	15	44	450	19	15	15
51	697	22	22	15	43	412	18	15	15
50	675	22	15	15	42	375	18	15	15
49	637	21	15	15	41	337	17	15	15
48	600	21	15	15	40	300	17	15	15

(p.a.) = per annum.

(A) Addition for each full year's service in excess of that specified in column 3 or deduction for each full year wanting to complete that period of service—addition or deduction limited to five years in each case.

Twenty per cent. of all the rates of retired pay referred to above is variable with the cost of living, and the rates at present in course of payment are approximately 5½ per cent. below those given above.

DENTAL BRANCH.

The Naval Dental Service offers similar opportunities to qualified dental surgeons except that higher rank than that of Surgeon Commander (D) is not open to them. They are provided with suitable surgery accommodation equipped with modern appliances and supplied with all material required for their work, and there is every opportunity for them to maintain a high standard of professional skill.

Entry is by competition, the Competitive Entrance Examination being similar in scope to the Final Qualifying Examination. Candidates are required to produce the usual certificates of birth, registration and of character, and must be physically fit for service anywhere. They must not be more than 28 years of age on the day of commencement of the entrance examination. An outfit allowance of £50 is payable to officers finally entered and commissioned.

Provision has been made for candidates who, at the time of passing the examination, hold or are about to hold an appointment as Dental Officer in a recognised Civil Hospital. The time concerned, provided it does not exceed six months, may reckon for increase of full pay while on the active list. It is also proposed to allow a three months' Post-graduate Course to Surgeon Lieutenant Commanders (D) of over two years' seniority.

As in the case of the medical branch, 20 per cent. of the rates of full pay, unemployed pay, half pay, and retired pay introduced in 1919 is considered as due to the high cost of living in 1919 and subject to change periodically either upwards or downwards according as the cost of living rises or falls. The first revision took place in July, 1924, when all the rates were reduced by approximately 5½ per cent., and further revisions are due every three years—i.e., in July, 1927, July, 1930, and so on. The following table and paragraphs show the standard rates introduced in 1919, of which 20 per cent. is variable and the present rates which will operate from July 1st, 1924, to June 30th, 1927. The rates of full pay are as follows:—

Full Pay.

Rank.	Standard rate.		Rate from *July 1st, 1924.*	
	Year of 365 days.	One day.	Year of 365 days.	One day.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Surg.-Lieut. (D) on entry..	401 10 0	1 2 0	380 4 2	1 0 10
After 3 years	492 15 0	1 7 0	465 7 6	1 5 6
Surg. Lieut.-Comdr. (D) on promotion	593 2 6	1 12 6	559 13 4	1 10 8
After 3 years	629 12 6	1 14 6	596 3 4	1 12 8
„ 6 „	666 2 6	1 16 6	629 12 0	1 14 6
„ 9 „	730 0 0	2 0 0	690 9 2	1 17 10
Surg.-Comdr. (D) on promotion	775 12 6	2 2 6	733 0 10	2 0 2
After 3 years	848 12 6	2 6 6	803 0 0	2 4 0
„ 6 „	921 12 6	2 10 6	869 18 4	2 7 8
„ 9 „	994 12 6	2 14 6	939 17 6	2 11 6

On first appointment to the Service, Dental Officers will receive full pay from the date of appointment, but subject to the provisions of Article 1347 of the King's Regulations, 1913.

Dental Officers are eligible for the same rates of lodging and provision allowances as other officers of equivalent rank and are entitled to the same privileges. The rates of half-pay are:—

Unemployed Pay and Half Pay.—A distinction is to be drawn between—

(*a*) Officers awaiting employment.

(*b*) Those who are permitted for private reasons which the Admiralty regard as satisfactory to refuse an appointment or to have their appointment cancelled or who are unemployed at their own request or in consequence of misconduct.

In the former case—

(*a*) Officers are to receive unemployed pay as follows:—

For the first six calendar months full pay of rank (without allowances).

For the next six calendar months:—

Rank.	Standard rate per diem.	Rate per diem from July 1st, 1924.
	£ s. d.	£ s. d.
Surgeon Lieutenants (D)	0 17 0	0 16 0
Surgeon Lieutenant Commanders (D) ..	1 2 6	1 1 3
Surgeon Commanders (D)	1 7 6	1 6 0

Thereafter:—Half the full pay of their rank and seniority on the Executive Officers' scale, namely:—

Surgeon Lieutenant (D)	0 8 6	0 8 0
„ „ of 4 years' seniority	0 10 0	0 9 5
Surgeon Lieutenant Commander (D).. ..	0 15 0	0 14 2
„ „ of 3 years' seniority	0 16 0	0 15 0
„ „ of 6 years' seniority	0 17 0	0 16 1
Surgeon Commander (D)	1 0 0	0 18 11
„ „ of 3 years' seniority	1 2 0	1 0 9
„ „ 6 „ „	1 4 0	1 2 8
„ „ 9 „ „	1 6 0	1 4 7

Unemployed pay will not, however, be granted in cases where an officer is undertaking continuous professional work for which payment is made.

In the latter case, (*b*), Officers may receive half the full pay of their rank and seniority on the Executive Officers' scale.

Periods during which unemployed Full Pay or Unemployed Pay are received will only count as half-pay time—that is, as one-third of full service.

An Officer who is permitted, for private reasons, to decline an appointment, or to have his appointment cancelled will not be entitled to any Unemployed Pay. In such cases, Officers may be placed on Half-Pay.

The conditions of retirement, Widows' Pensions, Leave, &c., are the same as for medical officers of equivalent rank and seniority.

Arrangements are also made whereby officers may be allowed to withdraw from the Service after four years' service and receive gratuities on the following scale:—

Gratuities will be awarded on retirement and withdrawal on the undermentioned scale.

Rank.	Gratuity.
	£ s. d.
Surgeon Lieutenant (D), Surgeon Lieutenant-Commander (*D*), and Surgeon Commander (D):	
After 4 years' full-pay service	500 0 0
„ 8 „ „ } including service allowed by paragraph 3	1000 0 0
„ 12 „ „ } including service allowed by paragraph 3	1500 0 0
„ 16 „ „ } including service allowed by paragraph 3	2250 0 0

ARMY MEDICAL SERVICE.

Competitive examinations for commissions are held twice a year, usually in January and July. The Regulations for admission to the Royal Army Medical Corps should be obtained from the Army Medical Department, War Office, London, S.W. 1, and carefully studied.

The recent alterations in the conditions of service in the Royal Army Medical Corps, which constituted, as we said at the time, the greatest reform that has taken place in that Service for a generation, have fulfilled much of their promise. For many reasons which are obvious and have been detailed on previous occasions, the Service can be recommended to young medical practitioners. But there are things which the man who contemplates joining the Service should bear in mind.

The rates of pay and allowance are good; the chances of seeing the world and the opportunities for post-graduate study are generous, and the work is nowadays varied, responsible, and interesting. At certain periods the officer is relieved from all other duties for five months for the purpose of post-graduate study. During this period he is on full pay and the fees for his courses of instruction are paid by the State. His time is devoted to post-graduate work, and the leading clinical and scientific institutions are coöperating to secure that this post-graduate work shall be real and fruitful. Officers who show a marked aptitude for special subjects and have had previous practical experience in them are now selected to undergo a specialist course lasting for a further four months, thus giving these officers a post-graduate course of nine months. At the same time, in districts where the privilege would be of the most practical value, opportunities are forthcoming for young officers to attend the clinical practice of large local general hospitals.

By a Royal Warrant issued in September, 1919, medical and combatant officers were placed on the same footing as regards retired pay, and the fact that medical officers enter the Service after a long and expensive training some five years later in life than combatant officers was overlooked. This inequality of treatment has since been rectified, with the result that a medical officer of 20 years' service gets approximately £70 per annum more pension than a combatant officer with the same number of years' service.

ROYAL ARMY MEDICAL CORPS: PAY AND ALLOWANCES.

Rank.	Pay per diem.*	Rations†	Servant. †	Married.			Unmarried.		Approximate yearly total.	
				Lodging.	Fuel and light† (average)	Furniture allowance.	Lodging†	Fuel and light (average)	Married.	Unmarried.
	£ s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	£	£
Lieutenant	1 0 10	1 8	2 0	3 6	1 7	2 0	2 3	1 4	676	613
Captain	1 5 6	1 8	2 0	4 0	3 3	2 0	3 0	1 0	710	619
Captain, after 6 years ..	1 0 6	1 8	2 0	4 0	3 3	2 0	3 0	1 9	728	637
Captain, after 10 years..	1 9 4	1 8	2 0	4 6	3 3	2 0	3 0	1 9	780	680
Major	1 13 0	1 8	2 0	4 0	3 3	2 0	4 0	2 6	847	768
Major, after 15 years ..	1 17 10	1 8	2 0	4 6	3 3	2 0	4 0	2 6	935	876
Lieutenant-Colonel ..	2 7 4	1 8	2 0	4 0	3 3	2 0	4 0	2 6	1108	1058
Lt.-Colonel, after 20 years	2 9 8	1 8	2 0	4 0	3 3	2 0	4 0	2 6	1151	1101
Lt.-Colonel, after 25 years	2 13 0	1 8	2 0	4 0	3 3	2 0	4 6	2 6	1193	1144
Colonel	3 1 6	1 8	2 0	5 6	4 0	2 0	5 0	3 0	1408	1344
Major-General	4 0 10	1 8	4 0	11 0	5 7	2 0	11 0	4 0	2082	2017

* Pay Warrant rates less 5½ per cent. from July 1st, 1924, vide A.O. 93 and 201 of 1924. The Pay Warrant rates when granted were made subject to revision to an extent not exceeding 20 per cent., according to variation in the cost of living. The next revision takes place from July 1st, 1927.

† Rates of allowances vary from time to time and issues are subject to conditions laid down in the Allowance Regulations.

Dissatisfaction, however, has been expressed on the subject of pensions under the 1919 Warrant for majors retiring after 20 years' service. The matter was brought up at the recent annual meeting of the British Medical Association in Bath, when, on the motion of Sir Richard Luce, speaking on behalf of the Naval and Military Committee, a resolution was carried indicating the strong disapproval on the part of the Association of the treatment of these officers. Sir Richard Luce explained that the pre-war retired pay of a major after 20 years' service was £1 a day, and following the 1919 Warrant the amount was increased to £300 a year, but that reductions made in accordance with the cost of living might bring the pension to less than £1 per diem—that is to say, a smaller sum than was provided by the Warrant under which the officer joined. An additional grievance was that, irrespective of subsequent possible deductions, the increase granted to majors under the 1919 Warrant was proportionately less than most of the pension increases to other ranks. The Secretary of State for War in an interview with the Committee made an offer which might have proved acceptable, but this offer has subsequently been opposed by the Treasury.

The Directorates in Pathology and Hygiene have proved a marked success. The scheme permits specially selected men to rise from all ranks to Major-General on the strength of their scientific work, whereas formerly, whatever a man's qualifications or abilities, on attaining the rank of Lieutenant-Colonel, he went off into administrative work, leaving his scientific duties to his juniors. If he preferred to remain working in bacteriology, in preventive medicine and hygiene, or in tropical diseases, it is true he could do so, but, except in extraordinarily fortunate circumstances for himself, he would find that his devotion to science had cost him all chances of further rise in his Service, promotion being reserved for the administrative billets. This now has all been changed, and the change has its expression in these Directorates. All ranks up to and including the rank of Lieutenant-Colonel can draw specialist pay and hold appointments carrying charge pay. The following is the scale of additional pay and charge pay:—

Additional Pay and Charge Pay for Officers of the R.A.M.C.

(1) Officer not above the rank of lieutenant-colonel, while acting as specialist in a post considered by Our Army Council to merit the grant of additional pay, according to subjects or groups of subjects as under, within a limit of 5s. a day:—

Operative Surgery, advanced; Medicine; Ophthalmology; Gynæcology and Midwifery; Dermatology, including Venereal Disease, 5s. daily.

Otology, Laryngology, and Rhinology; Radiology; Anæsthetics; Mental Diseases; Hygiene; Pathology; subjects other than above, at the discretion of Our Army Council, 2s. 6d. daily.

Officers granted temporary higher rank while holding appointments in the services of hygiene and pathology will not be eligible for additional pay as specialists while holding such temporary rank.

(2) (a) Officer in charge of a hospital.—If the number of equipped beds, as certified by the Deputy Director of Medical Services, exceeds—

50 beds ..	2s. 6d. daily.	300 beds ..	7s. 6d. daily.
150 ,, ..	5s. 0d. ,,	500 ,, ..	10s. 0d. ,,

Officer in charge of a medical or surgical division of a general hospital with not less than 300 beds—half the above rates.

	Daily. s. d.
(b) Senior medical officer, Royal Arsenal not exceeding	10 0
(c) Officer in command of the depôt, Royal Army Medical Corps	5 0
(d) The senior officer of Our Army Medical Service with an army in the field: A rate to be fixed by Our Army Council according to the magnitude of the charge.	
(e) The officer, if under the substantive rank of colonel, holding the appointment of senior medical officer in a command abroad, or of assistant director of medical services, if the number of soldiers is 1500 or upwards	5 0
(f) Adjutant R.A.M.C. Depôt	5 0
(g) Adjutant R.A.M.C. (Territorial Army)	2 6

Further, an officer, graded as a specialist, and appointed to the charge of a medical or surgical division of a general hospital may be allowed to retain his additional pay and to draw the rate of charge pay laid down for the officer in charge of a medical or surgical division of a general hospital, provided that the total of additional and charge pay so drawn does not exceed the rate of charge pay drawn by the officer in charge of the hospital. With this exception charge pay and additional pay as specialist will not be issuable concurrently. It may be here pointed out that the distinction between scientific and administrative work is largely verbal. Take the conduct of a large hospital—is it possible to separate the scientific routine which is designed to ensure progressive therapeutics from the administrative work which provides and maintains the premises and service, and selects and oversees the personnel?

Under the conditions enumerated the possibilities for good workers is very great in the R.A.M.C.; they will attain to positions of proper trust and emolument by scientific work. This should much improve recruiting among the officers of the R.A.M.C. But there will almost certainly follow arrangements by which all special medical service will receive higher consideration in the Corps. Not only is there in the work of the Army Medical Department scope for original labour and research in tropical disease, in preventive medicine, and in bacteriology, as well as in the vast clinical field open to the specialist in medicine, surgery, or gynæcology, in venereal disease, in ophthalmology, and so on, but it is proposed to develop a scheme whereby child welfare shall be undertaken systematically by the R.A.M.C. A scheme of this sort is already running successfully at Aldershot, and we see in this direction a fine opening for preventive medicine, and one which should bring the officers of the R.A.M.C. into touch with the soldiers in a valuable and intimate manner.

The above schemes for the stimulation of purely professional work among officers of the Corps must not be taken to imply that instruction in administrative work has been overlooked. One of the lessons of the war was that good administration must exist for the fullest benefit to be obtained from the professional talent available. The necessity of training officers who may display capacity for organisation and administration has not been lost sight of, and there are many appointments of varying degrees of importance and responsibility open to officers who desire to take up this side of the Corps' duties.

Retirement and Retired Pay.

The following are the rates of pension and retired pay:—

1. Retired pay will consist of two parts: (*a*) a service element based on the officer's total service; (*b*) a rank element for the rank from which the officer retires. An officer with less than 20 complete years' service will not be eligible for retired pay.

2. The scale will be as follows, subject to the reduction of 5½ per cent. referred to below:—

(*a*) Service element.—£15 a year for each completed year of service as a medical officer.

(*b*) Rank element.—

Rank from which retired.	After completing 1 year's service in the rank.	After completing each additional year's service.	Maximum rank element.
	£	£	£
Major	12	12	120
Lieutenant - Colonel	150	30	240
Colonel	290	50	390
Major-General ..	440	50	540
Lieutenant - General	590	50	690

The retired pay of an officer retiring with less than one complete year's service in the rank from which he retires will be assessed as though he had retired from the rank below.

Maximum rates of retired pay (*a*) and (*b*) together:—

	£		£
Captain and Subaltern ..	300	Colonel	800
Major	450	Major-General ..	1000
Lieutenant-Colonel ..	600	Lieutenant-General	1200

The above rates are those laid down in the Pay Warrant. They have been reduced by 5½ per cent. as from July 1st, 1924. (See footnote,* p. 463, and A.O. 205/24.)

3. Officers with 8½ and less than 20 years' service as medical officers may be permitted to retire with a gratuity varying from £1000 to £2500.

Arrangements have been made for the appointment of Consultants in both Medicine and Surgery and the ranks of Colonel and Major-General will now be open to such Officers. The duties of these Officers are to visit all Commands and advise the Director-General, as the result of their inspections on the spot, with regard to the professional work being carried on in the hospitals, and the degree of efficiency attained by the personnel with whom they are respectively concerned. This should ensure a high standard of performance if only because of the satisfactory feeling that good work will not by accident remain unnoticed.

The present holders of these posts are Consultant in Surgery, Colonel J. W. West, late Professor of Surgery at the Royal Army Medical College; Consultant in Medicine, Colonel J. C. Kennedy, late Professor of Tropical Medicine at the Royal Army Medical College.

THE ARMY DENTAL CORPS.

The Corps is administered by the Director-General, Army Medical Services. It is a joint service for the Army and Royal Air Force and personnel is required to serve under either force and be interchangeable. Officers and other ranks posted for duty with the Royal Air Force will perform their duties under the Regulations of the Royal Air Force for the employment of dental personnel, but the conditions in the following tables apply equally in either force. Promotion is carried out on one general list. The regulations for admission to the Army Dental Corps should be obtained from the Secretary, War Office, and carefully studied.

OFFICERS: *Appointment and Promotion.*

1. Commissions as lieutenants in the Army Dental Corps may be given to persons duly qualified under regulations approved by the Army Council.

2. An officer shall be eligible for promotion to the rank of captain on completion of three and a half years' service in the Corps provided he has previously qualified in such manner as may be prescribed by the Army Council.

3. Promotion to the rank of major and lieutenant-colonel to fill the establishments laid down from time to time for those ranks, shall be made by selection of the Army Council, provided the officer has previously qualified for promotion to those ranks in such manner as may be prescribed by the Army Council.

4. Certain appointments in the rank of lieutenant-colonel and major have been approved to fill the establishment. The remainder of the appointments are in the rank of lieutenant, except in cases where service of three and a half years or more has been given as a temporary dental officer when the rank of captain will be given. Service as a temporary dental officer will count towards the three and a half years for promotion to captain.

Pay.

The following are the rates for officers of the Army Dental Corps:—

	Per diem. £	s.	d.
Lieutenant	0	18	10
Captain	1	3	8
Captain { after 6 years' total service ..	1	5	0
„ 10 „ „ „	1	7	0
Major	1	11	3
Major, after 15 years' total service	1	15	10
Lieut.-Colonel	2	4	10
Lieut.-Colonel { after 20 years' total service ..	2	7	4
„ 25 „ „ „ ..	2	9	8

These rates are 5½ per cent. below those shown in the Pay Warrant, 1922. The latter, when granted, were made subject to revision to an extent not exceeding 20 per cent., according to variation in the cost of living. The next revision takes place on July 1st, 1927.

Allowances.

The allowances for officers of the Army Dental Corps are at the same rates as for officers of the R.A.M.C.

Retirement and Retired Pay or Gratuity.

(1) The rates of retired pay will be the same as for officers of the Royal Army Medical Corps.

(2) Voluntary retirement on retired pay will not be allowed until after twenty years' service.

(3) Earlier retirement on gratuity may be allowed:—

After 8½ years' service in the Corps, gratuity of £1000.
„ 15 „ „ „ £1800.
„ 18 „ „ „ £2500.

(4) Retirement will be compulsory at the age of 55 years.

(5) A lieutenant who does not qualify for promotion within three and a half years' service in the Corps will be retired; and a captain who fails to qualify for promotion to major within twelve years' service in the Corps will be retired on any gratuity for which he may be eligible under paragraph 3.

Other Ranks.

The rates of pay of warrant officers, non-commissioned officers and men are those provided in the Warrant of Sept. 13th, 1919, *vide* A.O. 325/19.

The aim of the Corps is the prevention of wastage of man power on account of dental disease or dental deficiency, and, to enable this to be carried out, every recruit is inspected by a dental officer immediately after joining and all necessary treatment carried out. The soldier will be re-inspected at least once a year and his dental efficiency maintained at the best standard possible. As recruits are not now enlisted unless they have sufficient natural teeth to enable them to masticate efficiently it is hoped that the conservative nature of the treatment they will receive will reduce considerably the percentage of artificial dentures required.

The "other ranks" of the Corps consist of dental mechanics and clerk orderlies. Training of dental mechanics has been proceeding for some time at the Central Dental Laboratory, Aldershot, and it is not proposed to open recruiting at present for this section. A limited number of clerk-orderlies is now being enlisted, and these men receive their training at the Royal Army Medical Corps Depôt.

INDIAN MEDICAL SERVICE.

WE cannot yet foretell how and to what extent the Indian Medical Service will be affected by the report of the Royal Commission on the Superior Civil Services in India. The report is the outcome of the Indian reform scheme, the essence of which is an increasing participation by Indians in the government of the country, and as far as the Indian Medical Service is concerned, the recommendations of the Commission can be summarised with fair accuracy.

Contrary to the recommendation of the Verney-Lovett Committee, the Commission has recognised that the medical needs of both the British and Indian armies in India should be provided for in future by the Royal Army Medical Corps (India) which should absorb the Indian Medical Service, no attempt being made to perpetuate that service as at present constituted. This recommendation is in accordance with the scheme elaborated by Sir Charles Burtchaell in 1919, and printed at length as an appendix to the Commission's report. At the same time, a new civil medical service is to be constituted in each province recruited by competitive examinations held both in England and India. To meet the medical needs of British officers in the Civil Service and their families a minimum number of British officers is to be maintained in this civil medical service, the limit to be prescribed for each province by the Secretary of State, on whom in the last resort is to rest the responsibility for their maintenance. Of this British element, one half, or the number required for the military reserve (whichever is the larger), is to be ear-marked for British officers seconded from the R.A.M.C., the remainder being those succeeding in competitive examination. It is further recommended that, subject to the existing rights of present members of the Indian Medical Service, all scientific chairs in Government colleges and hospitals shall be thrown open to all candidates, the clinical chairs alone being reserved for members of the civil medical services so far as suitable candidates are available.

Whatever the ultimate arrangements may be, the necessity will remain to provide a European medical service in India so long as Europeans are employed in the various departments of the Civil Service.

It would be idle to pretend that the I.M.S. is in a happy plight at the present time. The announcement of terms for special recruitment which was published in THE LANCET of March 14th this year showed not only that the future is unsettled, but also, by implication at any rate, that the ordinary methods of replenishing the cadre by the medium of competitive examination have failed. Complete grounds on which to form a definite estimate of the attractions of the service are lacking, but even in the present state of flux we must consider here the past and present conditions, and try to come to some such provisional conclusion with regard to the future as may help to guide possible candidates in deciding whether to apply or not when vacancies are again advertised.

There is, of course, a general feeling of malaise and uncertainty, not only in the I.M.S., but in other Indian services, though there are causes of dissatisfaction special to the I.M.S. Together with the I.C.S., the police, and other departments, the officers of the I.M.S. suffer from increased cost of living, the diminution of social amenities in the smaller stations which are rapidly becoming Indianised, and restricted opportunities for sport. There is also, in many cases, a feeling of not being wanted, and in some districts the attitude, even of the rural population, is neither so helpful nor so friendly as it was. With the contraction of the cadre consequent on the reduction in the number of the posts reserved for the I.M.S., more time will necessarily elapse before men can hope to get into civil employ. Then, with the increase of Indian private practitioners, some of whom have obtained the highest British qualifications, opportunities for private work are diminishing, while there will be with many a reluctance to serve under Indian superiors.

It has thus to be admitted that in many ways the conditions of service have considerably deteriorated, but there is another side to the picture, and the changes are by no means all on the debit side. While various general considerations affect the service—like the other services, the work is of a highly technical nature, so that the executive cannot be much subject to interference, whether from European or Indian superiors, and the social effect of Indianisation will be less, for the reason that European I.M.S. officers will no doubt be mostly utilised for stations with considerable European communities. Thus adverse popular sentiment should affect the I.M.S. but slightly, and there will be little change in the work, while the alterations should be largely for the better with the progressive improvements in the equipment and organisation of hospitals. There are not so many efficient surgeons in the provinces that good men, whether European or Indian, will not make their presence felt and appreciated, and the fewer Europeans of the right type that are available the more useful their work will be individually to the country, and the more profitable to themselves. The opportunities for professional work have always been the main inducement to ambitious British medical men to take up appointments in India, and those opportunities remain as attractive as ever, except in the teaching institutions, where the indications unfortunately are that fewer posts will in future be available for officers of the I.M.S., either European or Indian.

Against the undue delay in getting civil employ, again, has to be balanced the fact that when civil posts are obtained they will be better than any man could ordinarily have expected under the former conditions, immediately after entry into the civil department. Many of the smaller and less desirable stations will have disappeared from the I.M.S. list, and in general those which remain will be not only more desirable but more remunerative. It has to be admitted, though, that the time for the accumulation of large fortunes in private practice has for the most part passed.

As regards emoluments, no doubt expenses have increased, but some years ago an all-round increment of about 50 per cent. was granted, and the concessions under the recommendations of the Lee Commission will be by no means negligible. They include, amongst other things, a reasonable number of free passages for both the officer and, if married, his family, and a considerable addition to cash receipts in the form of facilities for remission home at a specially favourable rate of exchange.

Especially with regard to the military appointments there is much to be put to the credit side in the changes which have occurred of recent years. The station hospital system, for instance, has not only rendered the position of the medical officer much more independent, but it has made team work possible, increased the opportunities for professional activity in every direction, enabling men to specialise in various departments of medicine and surgery. In both military and civil departments, again, improved travelling regulations, introduced a few years ago, have removed one very great hardship. For under the old rules transfers nearly always implied a serious loss; nowadays they are carried out under much more reasonable conditions.

It will be seen from the regulations for special recruitment, and other indications, that the future of the I.M.S. is still hanging in the balance. In any case, however, the interests of suitable men joining at the present time would presumably be properly safeguarded, and reasonable security of tenure granted. with some short-term gratuity system (such as that recently offered) and proportionate pensions to fall back upon in case of need and after a certain time of service. It appears that even in the present circumstances the service offers considerable attractions.

AIR FORCE MEDICAL SERVICE.

The Royal Air Force Medical Service offers a career for medical men which should prove both attractive and interesting. The rates of pay and allowances are good, and a new field of scientific interest is opened up by the manifold problems which the circumstances of aviation produce. The physical and mental fitness for, and reaction to, the varied conditions under which the flying personnel perform their functions provide much scope for research. As promotion to the higher ranks of the Service is by selection from officers who are eligible by reason of length of service, and as a certain proportion of the higher ranks will be reserved for purely scientific, as opposed to administrative, appointments, it will be seen that there are excellent prospects for the young medical officer who exhibits ability and energy in scientific research, as well as for those who develop a talent for administration.

The establishment will consist partly of permanent and partly of short-service officers. An officer will on first entry be granted a short-service commission for a period of three years on the active list (which may be extended to five years at the discretion of the Air Council on the recommendation of the Director of Medical Services), and of four years in the Reserve of Air Force officers. Selections for permanent commissions will be made from officers holding short-service commissions, and those who are not selected will be transferred to the Reserve at the expiration of their period of service on the active list.

Short-service officers who are approved for permanent commissions, but for whom there are not vacancies in the Royal Air Force Medical Service, may, under certain conditions, be considered for transfer to the Royal Army Medical Corps, counting their time served in the Royal Air Force towards increments of pay and retired pay in the Royal Army Medical Corps.

Officers who have been selected for permanent commissions may be permitted to attend for a period not exceeding nine months a post-graduate course in general medicine and surgery, tropical and preventive medicine, and other special subjects. Such permission may be granted during the first six years of permanent service, and when attending these courses officers will receive full pay and allowances.

New entrants for the Royal Air Force Medical Service will be commissioned as Flying Officers (Medical) and will be eligible for promotion to the rank of Flight Lieutenant (Medical) after two years' service. Officers selected for permanent commissions will normally be promoted to the rank of Squadron Leader after 10 years' total service. Accelerated promotion may be carried out, in a limited number of cases, of officers who show exceptional ability after the completion of eight years' service. Promotion within establishment to the rank of Wing Commander will be by selection at any period after 16 years' total service, and to that of Group Captain by selection at any period after 22 years' service.

There will be no competitive examination on entry; candidates must be under 28 years of age, British subjects, the sons of British subjects, and of pure European descent, be nominated by the Dean of a recognised medical school or teaching hospital, and will be interviewed personally by the Director of Medical Services, Royal Air Force, before acceptance. Each candidate must produce—

1. Birth certificate.
2. Medical registration certificate.
3. A declaration containing the following information:—

(a) Age and place of birth.

(b) That he is a British subject and the son of British subjects, and of pure European descent.

(c) That he is ready to engage for general service at home or abroad as required.

(d) The qualifications he is possessed of, and what medical or other appointments he has held (if any).

(e) That he is willing to fly whenever called upon to do so.

Each candidate will be required, before acceptance, to pass a medical examination to ensure that he labours under no constitutional or mental disease or diseases or weakness, nor any imperfection or disability which may intrefere with the efficient discharge of the duties of a medical officer in any climate, in peace or war.

An officer granted a short-service commission who, at the time of application for such commission held or was about to hold a resident appointment in a recognised civil hospital, may be seconded for the period not exceeding one year from the date of the commission during which he shall hold such appointment. Whilst seconded he will not receive pay from Air Ministry funds, but the period of secondment will otherwise count as service in the Royal Air Force, provided that he will be required to serve for a minimum period of three years on the active list from the date on which he ceases to be so seconded.

Uniform and Equipment.

Medical officers will be required to provide themselves with the uniform of their rank and with the distinguishing badge of the Royal Air Force Medical Service. They will be required to provide themselves with service dress and mess dress. The provision of full dress is entirely optional at present.

An allowance towards the cost of uniform will be made when the officer has been gazetted, as follows:—

(a) If he has had no previous service as an officer in H.M. Forces or if any such previous service was terminated more than three years before the date of joining for duty, £50.

(b) If he is commissioned within three years of the termination of any previous service as an officer in the Royal Navy, Army, Indian Army, or Royal Marines or any of the auxiliaries of those forces, but not in the Royal Air Force or its auxiliaries, £25.

(c) If he is seconded from the Royal Navy, Army, Indian Army, or Royal Marines, £25.

The rates of pay and allowances at present in force are as shown in Table I.

The standard scale of retired pay for Group Captains and lower ranks is given in Table II.

Table II.

Age on retirement.	Standard yearly rate of retired pay.	Years of service.	Addition for each extra year of service.*	Deduction for each deficient year of service.*
	£		£	£
40	300	17	15	15
41	337	17	15	15
42	375	18	15	15
43	412	18	15	15
44	450	19	15	15
45	487	19	15	15
46	525	20	15	15
47	562	20	16	15
48	600	21	16	15
49	637	21	15	15
50	675	22	15	15
51	697	22	22	15
52	720	23	22	15
53	742	23	22	15
54	765	24	22	15
55	700	24	22	15

* Limited to five years.

Group Captains retire at 55; maximum retired pay £900.
Wing Commanders retire at 51; maximum retired pay £600.
Squadron Leaders retire at 48; maximum retired pay £500.

TABLE I.—AIR FORCE MEDICAL SERVICE: RATES OF PAY AND ALLOWANCES.

1. The following is an outline of the emoluments issuable to officers of the Medical Branch of the Royal Air Force at present. Allowances are issued only when accommodation, fuel, light, rations and personal attendance are not available and the rates vary in different countries.

—	Pay.			Allowances (daily rates at home).					Total allowances at home.				Total emoluments at home.			
	Daily.		Yearly.	Lodging.	Fuel and light (average).		Ration.	Servant.	Daily.		Yearly.		Daily.		Yearly.	
	Standard rate.	Rate from July 1st, 1924.	Rate from July 1st, 1924.		Married.	Single.			Married.	Single.	Married.	Single.	Married.	Single.	Married.	Single.
	£ s. d.	£ s. d.	£ s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Flying Officer	1 4 0	1 2 8	413 13 4	3 6	1 7	0 9	1 8	2 0	8 9	7 11	159 13 9	144 9 7	1 11 5	1 10 7	573 7 1	558 2 11
Flight Lieutenant	1 6 0	1 4 6	447 2 6	4 6	3 3	0 9	1 8	2 0	11 5	8 11	208 7 1	162 14 7	1 15 11	1 13 5	635 9 7	609 17 1
" " after 2 years' service in the substantive rank..	1 8 0	1 6 6	483 12 6	4 6	3 3	0 9	1 8	2 0	11 5	8 11	208 7 1	162 14 7	1 17 11	1 15 5	691 19 7	646 7 1
" " " 4 " "	1 10 0	1 8 4	517 1 8	4 6	3 3	0 9	1 8	2 0	11 5	8 11	208 7 1	162 14 7	1 19 9	1 17 3	725 8 9	679 16 3
Squadron Leader..	1 14 0	1 12 2	587 0 10	4 6	3 3	1 5	1 8	2 0	11 5	9 7	208 7 1	174 17 11	2 3 7	2 1 9	795 7 11	761 18 9
" " after 3 years' service in the substantive rank ..	1 16 0	1 14 0	620 10 0	4 6	3 3	1 5	1 8	2 0	11 5	9 7	208 7 1	174 17 11	2 5 5	2 3 7	828 17 1	795 7 11
" " " 4 " "	1 18 0	1 15 10	653 19 2	4 6	3 3	1 5	1 8	2 0	11 5	9 7	208 7 1	174 17 11	2 7 3	2 5 5	862 6 3	828 17 1
" " " 6 " "	2 2 0	1 19 8	723 18 4	4 6	3 3	1 5	1 8	2 0	11 5	9 7	208 7 1	174 17 11	2 11 1	2 9 3	932 5 5	888 16 3
Wing Commander	2 6 0	2 3 6	793 17 6	4 6	3 3	2 1	1 8	2 0	11 5	10 3	208 7 1	187 1 3	2 14 11	2 13 9	1,002 4 7	980 18 9
" " after 2 years' service in the substantive rank .	2 10 0	2 7 4	863 16 8	4 6	3 3	2 1	1 8	2 0	11 5	10 3	208 7 1	187 1 3	2 18 9	2 17 7	1,072 3 9	1,050 17 11
" " " 4 "	2 12 0	2 9 2	897 5 10	4 6	3 3	2 1	1 8	2 0	11 5	10 3	208 7 1	187 1 3	3 0 7	2 19 5	1,105 12 11	1,084 7 1
" " " 6 " "	2 14 0	2 11 0	930 15 0	4 6	3 3	2 1	1 8	2 0	11 5	10 3	208 7 1	187 1 3	3 2 5	3 1 3	1,139 2 1	1,117 16 3
Group Captain	3 0 0	2 16 8	1034 3 4	5 6	4 6	3 0	1 8	4 0	15 8	14 2	285 18 4	258 10 10	3 12 4	3 10 10	1,320 1 8	1,292 14 2
" " after 2 years' service in the substantive rank	3 4 0	3 0 6	1104 2 6	5 6	4 6	3 0	1 8	4 0	15 8	14 2	285 18 4	258 10 10	3 16 2	3 14 8	1,390 0 10	1,362 13 4
" " " 4 " "	3 8 0	3 4 4	1174 1 8	5 6	4 6	3 0	1 8	4 0	15 8	14 2	285 18 4	258 10 10	4 0 0	3 18 6	1,460 0 0	1,432 12 6

2. The above rates of pay are liable to revision. The standard rates were drawn up in 1919 in the light of the then high cost of living, and 20 per cent. of each of the standard rates is regarded as detachable and subject to alteration, either upwards or downwards as the cost of living rises or falls. The first revision took effect from July 1st, 1924, when a reduction of approximately 5½ per cent. was made in the standard rates. Subsequent revisions will be made at intervals of three years.

3. It must, however, be clearly understood that while every consideration will be given to the reasonable and legitimate interests of individuals, it will be competent for the Air Council at any time to modify the regulations under which the emoluments of the R.A.F. are drawn, and no Officer will be entitled to claim any pay, gratuity, or other advantage conferred by a provision being at any time added to, varied, or cancelled.

4. For the purpose of the issue of allowances a "married officer" is one who is married and has attained the age of 30 or the substantive rank of Squadron Leader or who, irrespective of age and rank, was married on or before Sept. 15th, 1919, and was serving in the Royal Air Force on June 8th, 1922.

5. As allowances are given for specific purposes, the cost of which may vary at comparatively short intervals, the rates of allowances are liable to be reviewed as circumstances may require.

6. A colonial allowance is granted in certain commands abroad in aid of the expenses of living in the countries where the cost is higher than in the United Kingdom.

7. For periods of service given under Indian administration and payment, officers will come under the rates and conditions authorised from time to time by the Indian Government in so far as those rates and conditions may differ from those in this scheme. The Indian rates are at present under review.

There will be a minimum qualifying period for retired pay of 20 years.

The rates of retired pay given above (including the maximum rates) are standard rates which will be subject to revision as stated in paragraph 2 under Table I. The revision will apply to all retired pay which is being drawn at the date of revision as well as to subsequent awards.

Gratuities.

Short-service officers will be eligible for gratuities on passing to the Reserve on the scale of £100 for each of the first two complete years of service, and £150 for each of the third, fourth and fifth complete years. These gratuities will not be payable to officers granted permanent commissions, but the period of service under the short-service commission will count for retired pay.

Medical officers holding permanent commissions may, at the discretion of the Air Council, be allowed to retire voluntarily from the Service after ten years' commissioned service with a gratuity of £1250 or after 16 years with a gratuity of £2000 in lieu of retired pay.

COLONIAL MEDICAL SERVICE.

IN the self-governing dominions, Canada, Australia, New Zealand, the Union of South Africa, and Newfoundland, and territories under their control, such as Papua and the Cook Islands, medical appointments are made concerning which information can be obtained from the High Commissioners or Agents-General in London; appointments in Egypt and the Soudan are regulated from the Foreign Office; in Southern Rhodesia the appointments are made by the local Government, but the British South Africa Company, London Wall Buildings, E.C., act as their agents in this country; in North Borneo application should be made to the British North Borneo Company, 37, Threadneedle-street, E.C., for appointments; and those in Sarawak are in the hands of H.H. the Rajah. Much valuable information will be found in the "Professional Handbook," Part II., issued by the Oversea Settlement Office, 3 and 4, Clement's Inn, Strand, London, W.C. 2, price 9*d.*

As a general rule, each Colony or Protectorate has its own public service distinct from that of every other; and it is usually only the higher officers who are transferred by the Secretary of State from one Colony to another. There are three exceptions to this rule: (*a*) The West African Medical Staff, which serves Nigeria, the Gold Coast, Sierra Leone, and the Gambia, is one service. (*b*) The East African Medical Service, which serves Kenya, Uganda, Zanzibar, Nyasaland, Somaliland, and the Tanganyika Territory is one service. (*c*) In practice the medical services of the Straits Settlements and the Malay States may be regarded as one, as the officers may be and frequently are transferred from the Colony to the States or vice versa.

The Colonies, Protectorates, and Mandated Territories to which medical officers are appointed by the Secretary of State for the Colonies are (*a*) the West African—viz., Nigeria, the Gold Coast, Sierra Leone, and the Gambia; (*b*) the East African—viz., the Kenya Colony and Protectorate, the Uganda, Nyasaland, Somaliland, and Zanzibar Protectorates, the Tanganyika Territory, and Northern Rhodesia; (*c*) the Eastern—viz., Ceylon, the Straits Settlements and Malay States, Hong Kong, Mauritius, and Seychelles; (*d*) the West Indian—viz., British Guiana, Jamaica, Trinidad, the Windward Islands, the Leeward Islands, Barbados, British Honduras, and the Bahamas; (*e*) Fiji and the Western Pacific, Cyprus, Gibraltar, St. Helena, Bermuda, and the Falkland Islands; and (*f*) Palestine.

In Ceylon, Mauritius, Jamaica, Barbados, the Bahamas, and Bermuda vacancies are practically always filled locally by the appointment of qualified native candidates, or—in the case of some of the higher posts—by transfer from other Colonies. Appointments in Malta are all filled locally. Vacancies occur most regularly and frequently in the West African Medical Staff, the East African Medical Service, and the Straits Settlements and Malay States.

All applicants for medical appointments in the gift of the Secretary of State for the Colonies should be between the ages of 23 and 35,[1] and must be doubly qualified; preference will be given to those who have held hospital appointments as house physicians and house surgeons; testimonials to character and professional competence will be required, and every officer before being definitely appointed will be medically examined by one of the consulting physicians of the Colonial Office: Sir William Prout, C.M.G., O.B.E., and Dr. A. E. Horn, C.M.G., 79, Harley-street, London, W. 1; Sir J. Hawtrey Benson, 57, Fitzwilliam-square, Dublin; Dr. Foster Coates, 9, Shaftesbury-square, Belfast; Lieut.-Colonel Glen Liston, C.I.E., I.M.S., 33, Comely Bank, Edinburgh; and Dr. R. H. Kennan, 2, St. James's-road, Liverpool. Applications for such appointments must be addressed to the Private Secretary (Appointments), Colonial Office, Downing-street, S.W. 1.

EAST AFRICAN MEDICAL SERVICE.

The Medical staffs of the Kenya Colony and Protectorate, the Uganda, Nyasaland, Somaliland, and Zanzibar Protectorates, and the Tanganyika Territory form one service, the members of which are liable to be posted to any of the Dependencies as the exigencies of the service may require. The preferences of individual officers are, however, taken into consideration as far as possible.

Selected candidates are appointed as medical officers on probation in the first instance for two years, at the end of which period their appointments are made permanent if their service has been satisfactory. Unless the Secretary of State directs to the contrary, they are required to attend a course of instruction at the London or Liverpool School of Tropical Medicine before taking up their appointments. If such a course is not taken before proceeding to East Africa, they are required to take it during their first leave of absence. Medical officers (but not sanitation officers) are permitted to take private practice at some stations, on the understanding that they give precedence to their official duties. It must be understood that additions to their income from this source are not likely to be substantial.

The currency in different Dependencies in East Africa varies. In Kenya, Uganda, and the Tanganyika Territory, an East African shilling (one-twentieth of a pound sterling) is the standard coin. Salaries and sterling allowances are issued locally in respect of resident service at a fixed rate of 20 shillings to the pound sterling. A special local allowance, averaging 15 per cent. of sterling salaries and allowances is at present issued in respect of resident service. The question of the continuance or otherwise of the allowance will be subject to review on Dec. 31st, 1925. In Zanzibar and Somaliland the Indian rupee is the standard coin, and for the present sterling salaries and allowances are issued at a fixed rate of 15 rupees to the pound. No local allowance is paid. In Nyasaland sterling currency is used, and no local allowance is paid.

Officers are provided with quarters free of rent (but not of rates or other similar outgoings), if quarters are available; if quarters are not available, the Government may provide temporary accommodation or alternatively, at the discretion of the Government, an allowance in lieu of quarters calculated at 15 per cent. of the initial salary of an officer's appointment may be paid. The salary of a medical or sanitation officer is £600 per annum, rising by annual increments of £25 to £900 per annum, with efficiency bars at £700 and £800. Officers who possess the Diploma in Public Health on entering the service, or who acquire it while in the service, receive two special increments in the scale.

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[1] In the case of East Africa, preference will be given to candidates who are over 25 years of age. In the case of Fiji and the Western Pacific, preference will be given to candidates who are under 30.

Officers of the East African Medical Service are permitted to retire with gratuity, if they wish, instead of waiting to retire on pension as follows: (*a*) After nine years' service, of which at least six must have been spent in East Africa, £1000; (*b*) after 12 years' service, of which at least eight must have been spent in East Africa, £1250. If an officer elects to retire with gratuity, he thereby foregoes all claim to pension.

The grades and salaries (apart from ordinary medical and sanitation officers) in the medical departments are as follows:—

Kenya.—Director of Medical and Sanitary Services, £1200; Deputy Director of Medical Service, £1000; Deputy Director of Sanitary Service, £1000; Surgical Specialist, £900 by £50 to £1000; Director of Laboratory, £900 by £50 to £1000; Senior Medical Officers and Senior Sanitation Officers, £800 by £25 to £900.

Uganda.—As Kenya. (There are two Deputy Directors of Medical Service, one being for native services.)

Tanganyika Territory.—As Kenya, except that there is no surgical specialist.

Nyasaland.—Director of Medical and Sanitary Services, £1000; Senior Medical Officer and Senior Sanitation Officer, £800 by £25 to £900.

Zanzibar.—As Nyasaland. There is also a Surgical Specialist at £800 by £25 to £900.

Somaliland.—Principal Medical Officer, £800 by £25 to £900.

Sanitation officers are selected from the ranks of medical officers as occasion arises.

ASIA.

Straits Settlements and Federated Malay States.—European medical officers are appointed on the following scale of salaries: $440 per mensem, rising to $480 per mensem during three years' probation; then, if they are placed on the pensionable establishment, rising to $500 per mensem, and thence by annual increments of $25 per mensem to $800 per mensem, with a strict efficiency bar at $600 per mensem. This scale of salaries has been fixed on the supposition that medical officers join the service at about the age of 27. Above the concluding figure of $800 per mensem there are certain higher appointments as follows: Principal Civil Medical Officer, Straits Settlements, and Principal Medical Officer, Federated Malay States, $1200 per mensem. Class A: seven posts at $1050 per mensem. Class B: nine posts at $850, rising by $30 to $1000 per mensem.

The following temporary allowances are at present paid to all officers recruited from Europe in the Government Services of the Straits Settlements and Federated Malay States: unmarried officers, 10 per cent. of salary; married officers, 20 per cent. of salary. Private practice by Government medical officers is not allowed. They may, however, do, and receive fees for, consultative work, under conditions approved by the Government. Information about general conditions in Malaya is obtainable from the Malay States Information Agency, 88, Cannon-street, E.C. 4.

Seychelles.—The chief medical officer receives Rs.7000 and Rs.300 in fees. There are two assistant Government medical officers, one receiving Rs.6500, the other Rs.6000. One assistant medical officer is provided with free quarters in the New Hospital.

Hong-Kong.—The present establishment of the medical department is: principal civil medical officer, £1000–£50–£1200; eight medical officers, £600–£25–£1000; three port health officers, £600–£25–£1000; bacteriologist, £700–£25–£1000; two health officers, £600–£25–£1000, are also attached to the Sanitary Department. A temporary allowance on a scale varying with the sterling exchange value of the dollar is at present payable. Salaries are converted locally at the rate of 2*s.* = $1. Free quarters are not provided, but in certain instances a rent allowance is paid by the Government.

AMERICA.

British Guiana.—There are the following posts in the medical service of the Colony: one surgeon-general, £1000–£1200 per annum, with consulting practice; one bacteriologist and pathologist, £450–£700 (increment £25), with £50 allowance in lieu of fees; 31 medical officers at £500–£25–£700. Some of the senior posts also carry duty allowances (varying from £50 to £300 per annum) and quarters. All the junior appointments in which private practice is not allowed carry duty allowances. Private practice is allowed in certain cases.

Trinidad and Tobago.—In Trinidad and Tobago there are over 40 appointments. On appointment Government medical officers, who are provided with free unfurnished quarters, receive salary at the rate of £400 per annum with annual increments of £25 accruing from the date of first appointment as supernumerary medical officers, until reaching the maximum of £600. An officer appointed to a district receives, in addition to his salary, a travelling allowance varying from £100 per annum in a normal district to £150 per annum, and is allowed private practice, the value of which is estimated at from £50 to £800 per annum. Officers employed in institution work receive allowances in lieu of private practice varying from £50 (and furnished quarters) to £300. Medical officers having completed 10 years' resident service are pensionable at the age of 55.

Windward Islands (Grenada, St. Lucia, St. Vincent). There are over 25 appointments. The chief medical and health officer, Grenada, receives £600–£700. The chief medical officer, St. Lucia, receives £600–£700 plus forage and subsistence allowances; the post is pensionable, but private practice is not allowed except as a consultant. Most of the remaining appointments are district appointments with the right to private practice attached; the salaries paid by Government vary from £400–£500, and with allowances in certain cases. The Governor has the power to transfer a medical officer from one island to another at his discretion. The appointments are pensionable.

Leeward Islands (Antigua, St. Christopher and Nevis, Dominica, Montserrat, Virgin Islands).—The appointments are of the same nature as in the Windward Islands and are pensionable. An officer when first sent out is not appointed to a particular island but to the service of the Leeward Islands, with a salary varying from £312 to £400, according to station, and the Governor decides as to the district which is to be allotted to him. He is liable to be transferred at the Governor's discretion to any medical district in the Leeward Islands, and in certain districts may be required to perform magisterial duties. The medical officers receive fees for successful vaccinations, post-mortem examinations, attendance and giving evidence at courts of justice, certificates of lunacy, and, in the larger islands, for burial certificates. They are also as a rule, allowed private practice. The chief medical officer, St. Kitts, receives £700–£25–£750 without private practice.

British Honduras.—There are seven medical appointments (besides the principal post of colonial surgeon) of which six are at a salary of $2430 per annum and one at $3150. Unless they already possess a diploma of public health, medical officers are liable to be required, before they join the colony, to undergo a course of instruction at a laboratory of public health or analogous institution. The value of the dollar is approximately the same as that of the United States dollar.

OTHER OVERSEAS APPOINTMENTS.

Fiji and the Western Pacific.—In Fiji the Government medical officers receive a salary of £400, rising by annual increments of £25 to £600, with partly furnished quarters, or a house allowance of £50. In some districts a medical officer is also a district commissioner, with an additional allowance of £150.

They are allowed private practice, on the understanding that their official duties are not neglected. Private practice, however, cannot be guaranteed, and in most districts it is very small in amount. Where no private practice exists, a duty allowance of £50 is granted. They are required either to take charge of hospitals or of districts, at the discretion of the authorities. The posts are pensionable.

In addition to a chief medical officer (£800 a year, rising to £1000), a medical officer of health, Suva (£750–£900, not subject to bonus addition), a medical superintendent, Colonial Hospital (£500–£750, inclusive of allowance as officer in charge of the Medical School), and a medical superintendent, Makogai Leper Asylum (£600 rising to £800), there are in Fiji 11 medical officers, five of whom are also district commissioners. The salaries in Fiji are subject to temporary increases, the rate of bonus at the present time being 15 per cent. of the salary with the addition of £22 10*s*.

The staff in the British Solomon Islands Protectorate consists of one senior medical officer (£650 rising to £750) and two medical officers (£550 rising to £650). A local allowance at the rate of £50 per annum is also paid in respect of actual resident service in the Protectorate. In the Gilbert and Ellice Islands Colony there is one medical officer in charge (£650 rising to £750). Officers may be transferred from Fiji to the Western Pacific and vice versa at the discretion of the Secretary of State.

Cyprus.—There is a chief medical officer paid at the rate of £750, rising by annual increments of £25 to £900, and three district medical officers paid at the rate of £500 a year, rising by annual increments of £20 to £600 a year, all enjoying private practice (except the chief medical officer, who is allowed consulting practice only) and receiving 2*s*. per diem forage allowance. There is also a medical officer of health on £600, rising by £20 increments to £720 without private practice; these are the only medical appointments in the island which are open to English candidates.

Gibraltar.—There is a surgeon of the Colonial Hospital receiving £750, and private practice. There are also two assistant surgeons with a salary of £720 per annum, who are allowed private consulting practice only. Free quarters, unfurnished, are provided for all three officers.

St. Helena.—The colonial surgeon at present receives £550 per annum, £20 fees as health officer, and £30 horse allowance. Private practice is allowed. The assistant colonial surgeon at present receives £500 a year and a horse allowance, and is allowed a share of the private practice. For contracts and appointments the colonial surgeon also receives about £250 a year and the assistant colonial surgeon about £150.

Falkland Islands.—There are two appointments. The colonial surgeon is paid at the rate of £600 per annum, with free furnished quarters. The assistant colonial surgeon is paid at the rate of £500 per annum, with an allowance of £50 per annum in lieu of quarters. Private practice is shared between the colonial surgeon and the assistant colonial surgeon. The office of colonial surgeon is pensionable.

Palestine.[2]—The grades and salaries of superior appointments in the Department of Health are: Director, £E1100–50–1400, plus £E100 expatriation allowance. Deputy director, senior medical officer (laboratory section), and senior medical officer (Jerusalem-Jaffa district) £E800–50–1100 plus £E100 expatriation allowance. Chemical analyst, three senior medical officers, and medical officer (Jerusalem-Jaffa district) £E550–25–750 plus £E50 expatriation allowance. The remainder of the staff is recruited locally. The salaries of the two highest grades will be reduced as vacancies occur.

LEAVE AND PENSIONS.

Leave and Passages.—Leave of absence in East Africa on full salary is granted in the normal case after a tour of residential service (of not less than 20 and not usually more than 30 months) to an amount of six days for each completed month of residence (or three days when for any reason the officer is not returning to East Africa) exclusive of the periods of the voyages to and fro, for which full pay is also given. Officers serving in certain stations in Kenya and Nyasaland, are allowed five (or two and a half) days' leave in respect of each month of service instead of six (or three) days' leave respectively. In Somaliland special leave regulations exist which provide for an officer taking leave after a shorter tour of service than in other parts of East Africa. Free first-class passages are provided for the officer on first appointment and on leave, and in certain cases assistance towards family passages is given.

In the Malay Peninsula two months' leave of absence with full salary may be granted in respect of each year's service, and this leave may be accumulated up to a maximum of eight months. Additional leave on half-pay may be granted on special grounds. Up to the end of 1928 free passages are granted on first appointment and on leave, but the continuance of this privilege beyond that date is uncertain; but free passages on first appointment or transfer are granted permanently for officers with salary under £800 per annum.

In other Colonies outside Tropical Africa, subject to the necessities of the service, leave of absence on half salary may be granted after a period of three years' resident service without any special grounds. It may be given before the expiration of that period in case of serious indisposition, or of urgent private affairs. In the absence of special grounds, the leave must not exceed one-sixth of the officer's resident service; on special grounds it may exceed that period by six months. In addition to the above, vacation leave on full pay may be granted, if no inconvenience or expense is caused thereby, not exceeding three months[3] in any two years. In British Guiana officers are allowed to accumulate full-pay leave at the rate of six weeks for each year's service up to six months, and no leave of absence may (except in very special circumstances) exceed six months in all unless the officer has served for five years or more without leave, in which case two months on half-pay leave may be taken in addition to six months' full-pay leave.

On first appointment an officer whose salary and fees together do not exceed £800 a year will, except in the case of a few Colonies possessing Representative Assemblies, be provided by the Crown Agents for the Colonies with free passages to the Colony for himself and his wife and children, if any, not exceeding four persons besides himself. The officer so appointed will be required to execute an agreement binding him to repay the cost of the passage or passages so obtained in the event of his leaving the Government service within three years. An officer taking leave out of the Colony has in most cases to provide his own passages.

Pensions.—East Africa.—Officers on the pensionable establishment retire on attaining the age of 50 years or after 20 years' East African service, whichever is earlier; but they may be retained in the service, with their own consent, for such further period as the Government may recommend. Earlier retirement in the event of ill-health is also provided for. Pension is computed at one-sixtieth of pensionable emoluments—i.e., salary and value of free quarters[4]—at the time of retirement, two years' service being reckoned as three years for this purpose, subject to an average of emoluments for the last two years before retirement instead of the actual emoluments at the time of retirement being taken as the basis for calculation in certain circumstances.

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[2] £1 Egyptian (of 100 piastres) is equivalent to £1 0*s*. 6*d*. sterling.

[3] Or, in the case of Fiji and the Western Pacific and the Falkland Islands 4½ months in any three years.

[4] The value of free quarters for pension purposes is taken as 15 per cent. of the minimum salary of the grade in which an officer is serving at the time of retirement.

Other Colonies.—In most of the other Colonies an officer holding a pensionable appointment may be allowed in the case of ill-health to retire on a pension after ten full years' resident service; otherwise he must have attained the age of 55. For ten full years' resident service fifteen-sixtieths of the average annual salary of the retiring officer's fixed appointments for three years prior to retirement may be awarded, to which one-sixtieth may be added for each additional year's service; but no addition will be made in respect of any service beyond 35 years. For pension purposes absence on vacation leave counts as full service, and leave on half-pay as half service. In a few cases the retiring age is 60 and the pension after ten years' service is ten-sixtieths instead of fifteen. In the Straits Settlements and Malay States, an officer may, with the consent of Government, retire at age 50. Pensions are calculated on a basis of length of service in months instead of years.

WEST AFRICAN MEDICAL STAFF.

Applicants for appointment as medical officers in the West African Medical Staff (the higher grades will usually be filled by promotion from the lower) must be British subjects of European parentage and between 23 and 35 years of age; preference is given to candidates who are over 25 years of age. Applicants must possess a complete double qualification, and must be on the Medical Register. Passages for wives and children are not provided by the Government, and houses for the wives of junior medical officers are rarely available. Officers are not allowed to take their wives and young children out with them until they have acquired experience of the local conditions and have obtained the sanction of the Governor; and permission to bring out young children will only be given in the most exceptional circumstances.

Candidates whom it is proposed to select for appointment will have to be medically examined by one of the medical advisers of the Colonial Office (or, in the case of those residing in a Colony, by a medical officer appointed by the Colonial Government), and no appointment will be made unless the candidate is declared to be physically fit for service in West Africa. Candidates are allowed to express a preference for any particular Colony or Protectorate, and their wishes in this respect will be borne in mind and met as far as possible, but they are liable to be posted in the first instance, or transferred afterwards if necessary to any other West African Colony or Protectorate at the discretion of the Secretary of State. Candidates who wish to be posted to the Northern Provinces of Nigeria should be able to ride. Transfers from one Colony or Protectorate to another will be made as seldom as possible. Candidates should on no account apply for, or accept, a West African appointment in the expectation of ultimately being transferred elsewhere, as the number of such transfers is exceedingly small.

Officers of the West African Medical Staff who may be transferred to pensionable appointments under the Crown elsewhere than in West Africa do not forfeit their claim to pension in respect of their West African service on final retirement, provided that they have been members of the staff for at least 12 months. Every officer selected for appointment is required to have himself revaccinated before proceeding to West Africa, unless one of the medical advisers of the Colonial Office certifies in any particular case that this is unnecessary.

Instruction in Tropical Medicine.—Every candidate selected for appointment will, unless the Secretary of State decides otherwise, be required to undergo a course of instruction for three to five months, either at the London School of Tropical Medicine, Endsleigh-gardens, Euston-square, N.W. 1, or at the Liverpool School of Tropical Medicine, University, Liverpool. The cost of tuition will be borne by the Government, but candidates must make their own arrangements for board and lodging; an allowance of £3 a week will be paid to them monthly in arrear for this purpose. A daily allowance of 5s. (but no salary) will be paid to each candidate monthly in arrear during the course, and may be continued subsequently up to the date of embarkation. He will be bound to refund them (1) if he declines to accept an appointment in any of the Colonies or Protectorates for which he may be selected by the Secretary of State; (2) if he fails to obtain a certificate in regard to progress and efficiency, or (3) if he relinquishes the West African Service for any other reason than mental or physical infirmity, or is removed for misconduct, within three years of the date of his arrival in West Africa.

If at the end of the session there exists no vacancy in the Staff to which a candidate can be appointed, he will be placed in a Reserve and granted an allowance at the rate of £200 a year until the occurrence of a vacancy.

Leave of Absence.—European officers in West Africa may be granted vacation leave on full salary not exceeding in all one week's leave in the United Kingdom for every completed calendar month of total residential service in West Africa, plus the time necessarily taken on the journey to the United Kingdom, and, if the officer is returning to West Africa for further service, the time necessarily taken on the journey from the United Kingdom to the Colony. Vacation leave may be granted without any special grounds after 18 consecutive calendar months of residential service in West Africa. An officer will not be required to serve a tour of more than 24 consecutive calendar months' residential service except in special circumstances; and the Governor may grant vacation leave to any officer at any time after he has completed 12 consecutive calendar months' residential service. Vacation leave on full salary may also be granted to an officer if he is invalided from West Africa after less than 12 consecutive calendar months' residential service, and sick leave on full salary may be granted for any period not exceeding six calendar months.

Appointments and Salaries.—The Medical Services of the West African Colonies and Protectorates—namely, the Gambia, Sierra Leone, the Gold Coast (including Ashanti and the Northern Territories), and Nigeria (Southern and Northern Provinces)—form one service under the name of the West African Medical Staff. All the medical officers for the service are selected by the Secretary of State for the Colonies, and are on one list for employment and promotion. The grades and emoluments of the Staff are at present as follows:—

The Director of the Medical and Sanitary Service, Nigeria, receives a salary of £1800 a year, with a duty allowance at the rate of £360 a year. The Director of Medical and Sanitary Service in the Gold Coast receives a salary of £1600 a year, with a duty allowance at the rate of £320 a year. The Director of Medical and Sanitary Service in Sierra Leone receives a salary of £1400 a year, with a duty allowance at the rate of £280 a year. The Deputy Director of Medical and Sanitary Service, Nigeria, and the Deputy Director of Sanitary Service, Nigeria, receive salaries of £1500 a year, with duty allowances at the rate of £300 a year. The Deputy Director of Medical and Sanitary Service, Gold Coast, receives a salary of £1400 a year, with duty allowance at the rate of £280 a year. Assistant Directors Medical Service: There are nine appointments on this grade, six in Nigeria, two in the Gold Coast, and one in Sierra Leone. The salary is at the rate of £1300 a year, with duty allowance at the rate of £200 a year. The Assistant Director of Sanitary Service, Nigeria, the Deputy Director of Sanitary Service in the Gold Coast and the Deputy Director of Sanitary Service in Sierra Leone receive salary at the rate of £1300 a year, with duty allowance at the rate of £200 a year. Specialists: The number of these appointments is not fixed, officers of outstanding professional merit being eligible for appointment. The salary is at the rate of £1300 a year, with duty allowance at the rate of £260 a year. After five years' approved service as such, the specialist officer is eligible to receive a salary at the rate of £1400 a year, with duty allowance at the rate of £280 a year. There are at present five officers appointed specialists in Nigeria and three in the Gold Coast. Senior Medical Officer: There are twenty appointments of this grade, with salary at the rate of £1000 a year, rising by annual increments of £50 to £1150 a year, and seniority allowance at the rate of £100 a year. The Senior Medical Officer, Gambia, is allowed "staff pay" of £150 a year, in addition to duty allowance, but he is debarred from private practice. Senior Sanitary Officer: There are six appointments of this grade, with salary at the rate of £1050 a year, rising by annual increments of £50 to £1200 a year, and a duty allowance at the rate of £210 a year. Medical Officer: The salary attached to this grade is at the rate of £600 a year, rising by annual increments of £30 to £720 a year. Then, if confirmed in the appointment, £720 a year, rising by annual increments of £40 to £960, with seniority allowance at the rate of £72 a year. Before passing £800, medical officers are required to take a special course of study for three months. If they obtain satisfactory certificates at the end of the course they draw their further increments up to £960 a year.

A medical officer who has served for three years on the maximum salary of this scale (£960) without obtaining promotion is eligible, if recommended by the Governor, to be placed on the scale £1000–£50–£1150, with £100 seniority allowance (as for Senior Medical Officers).

Special Appointments.—The Director of the Medical Research Institute, Lagos, and the Director of Research, Accra, receive a salary of £1300 a year, with a duty allowance of £260 a year, rising after five years' approved service to a salary at the rate of £1400 a year and duty allowance at the rate of £280 a year. Salary at the rate of £800 a year, rising by annual increments of £40 to £960 a year is attached to about 14 posts (those of assistant at the Medical Research Institute, Lagos, and medical officers of health at various places), irrespective of the seniority of the officer holding the appointment. In addition to the seniority allowance (£72 a year), staff pay at the rate of £150 a year is also attached to these posts; and the holder of the appointment draws half of the staff pay during leave of absence, the remainder being drawn by his locum tenens. The holders of these appointments are not allowed private practice.

Duty allowances, seniority allowance, and staff pay are not pensionable emoluments.

Increments.—Increments to salaries are payable only when the service of an officer during the period of employment qualifying for increment is approved.

Payment of Salaries.—Information as to the payment of officers' salaries or of monthly remittances to persons in England may be obtained from the Crown Agents for the Colonies, 4, Millbank, S.W. 1. All allowances are paid locally.

All officers of the staff, except directors, deputy directors, assistant directors, senior sanitary officers, and a few other officers holding special appointments, are at present allowed to take private practice, provided that it does not interfere with the faithful and efficient performance of their official duties, but it is within the power of the Governor to withdraw or suspend the privilege in such places and for such periods as he may consider desirable. Private practice does not exist at the majority of stations, and no guarantee can be given that an officer will be posted to a station in which he will be able to practise privately. As a general rule, and subject to the exigencies of the service, stations where there is private practice are allocated to senior members of the Staff.

Pensions and Gratuities.—Pensions and gratuities on retirement from the service are granted in accordance with the law and regulations of each individual Colony.

Fuller information can be obtained from the Private Secretary, Colonial Office, Whitehall, London, S.W. 1.

SUDAN MEDICAL SERVICE.

This service is responsible for carrying out civil medical work and public health duties in the Sudan. The staff consists of: (*a*) Director, Sudan Medical Service—pay £1500–£1800; (*b*) senior physician—pay £1200–£1750—and (*c*) senior surgeon—pay £1200–£1750—Khartoum and Omdurman Civil Hospitals; (*d*) medical officer of health, Khartoum Province and assistant director—pay £1200 (this post is of a temporary nature and the terms and nature of the duties are subject to alteration); (*e*) a number of (at present 10) senior medical inspectors and medical inspectors who are all British. Their pay commences at £720 and rises, subject to the recommendation of the director, by five biennial increases to £1080 and thence, after three years at £1080, to £1200. Senior medical inspectors are eligible for promotion by selection to the four senior posts. Every medical inspector is appointed on probation for two years. If at the expiration of this time he is taken on the permanent service of the Government, his increase of pay is subject to passing such examination in Arabic as may be required by the regulations. (*f*) A number of medical officers trained at one of the Syrian medical schools. (*g*) A number of assistant medical officers, natives of the Sudan, who have been given a purely clinical training in one of the larger Sudan hospitals.

Among the attractions of the service is the annual leave of 90 days for every year's service which under ordinary circumstances may be granted every year, study-leave for some definite purpose, and two years granted towards pension to men with higher qualifications and experience. The ordinary pension for a medical inspector retiring after 20 years' service is approximately £500 a year. Private practice is limited to a few of the larger towns, but may be carried on so long as it does not in any way interfere with official duties. These duties include the charge of the medical and sanitary work of a province; acting as a consultant to the hospitals of the province or supervising smaller hospitals or dispensaries; initiating and supervising the medical and sanitary work of a province; the medical supervision of schools; the examination of candidates for Government service and pension; and the training of assistant medical officers and native sanitary overseers.

Vacant Appointments.—At the present moment there are vacancies for medical inspectors, who must be single, under 30 years of age, and who must have held a resident appointment (preferably house surgeon) to a large general hospital. Applications in writing only, with copies of recent testimonials, should be made to Dr. T. D. Acland, 19, Bryanston-square, W. 1, from whom and from the Secretaries or Deans of the principal medical schools, further particulars can be obtained.

SPECIAL DIPLOMAS.

DIPLOMA IN TROPICAL MEDICINE.

ALTHOUGH a qualification in tropical medicine has not been made registrable by statute, a diploma is regarded as indispensable for appointments in the Colonial Medical Service and similar positions abroad. Systematic instruction for these diplomas is given at the Incorporated Liverpool School of Tropical Medicine (founded in 1898) and at the London School of Tropical Medicine, 5, Endsleigh-gardens, London, N.W. 1 (founded in 1899), which is a school of the University of London in the Faculty of Medicine.

University of Cambridge.—The examination for the Diploma in Tropical Medicine and Hygiene is divided into two parts. Part I. is held in Cambridge in April and Part II. in July in London. Candidates for Part I. are examined under the same regulations and in the same subjects as candidates for the Diploma in Public Health, but any qualification in medicine or surgery recognised by the proper authority of any country outside the British Dominions may be recognised. The subjects for Part II. are Medicine, Surgery, and Hygiene in their relation to Tropical Disease.

The examination will be partly in writing, partly oral, and partly practical or clinical (the clinical part will be conducted at a hospital for tropical diseases, at which cases will be submitted for diagnosis and comment). Every candidate who passes the examination to the satisfaction of the examiners will receive from the University a diploma (D.T.M. & H.) testifying to his knowledge and skill in tropical medicine and hygiene.

The fee for each part of the examination is £10 10s., and applications should be addressed to Mr. J. E. Purvis, Public Health Chemical Laboratory, Cambridge.

University of London.—The M.D. degree may be taken in tropical medicine at an examination held twice annually, for which a thesis may be submitted.

University of Liverpool.—The University grants a Diploma in Tropical Medicine. At the end of each full course an examination is held by the University for its Diploma of Tropical Medicine (D.T.M.), which is open only to those who have been through the course of instruction of the school. The subjects of examination are (*a*) Tropical Pathology, Parasitology and Entomology; (*b*) Tropical and Applied Bacteriology; (*c*) Tropical Hygiene and Sanitation; (*d*) Tropical Medicine, including Ætiology, Symptoms, Diagnosis, and Treatment of Tropical Diseases. The advanced course consists entirely of Practical and Clinical Laboratory Work, given at the laboratory at the University. The fee for the full course of instruction is £21, with an extra charge of 10*s.* 6*d.* for the use of a microscope if required. Applications should be made to the Dean of the Medical Faculty, University of Liverpool. A diploma in Tropical Hygiene (D.T.H.) has recently been established. The subjects of examination are bacteriology, chemistry (including meteorology and climatology), entomology, protozoology, and helminthology; tropical sanitation (including sanitary engineering); practical sanitation. Fee for the course, £15. Two University Fellowships of £100 a year each are open to students of the school, amongst others. Accommodation for research work is to be had at the University Laboratory. The Mary Kingsley Medal is awarded by the school for distinguished work in connexion with Tropical Medicine.

Conjoint Board R.C.P. Lond., R.C.S. Eng.—The diploma of D.T.M. & H. Eng. is awarded on the results of an examination held twice yearly, in February and July. Candidates must possess a registrable qualification, and produce evidence of having attended (1) practical instruction in pathology, protozoology, helminthology, entomology, bacteriology, and hygiene in relation to tropical medicine in a recognised institution during not less than five months, (2) clinical practice of a recognised hospital for the same period. Conditions of study may be modified in the case of candidates of special experience. Fee for admission to the examination, £9 9s., 14 days' notice of entry to the Secretary, Examination Hall, Queen-square, London, W.C. 1.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.

THE Universities of Cambridge, London, Durham, Leeds, Manchester, and Edinburgh, and the Conjoint Board of the R.C.P. Lond. and R.C.S. Eng. now grant diplomas in psychological medicine under conditions that are fairly comparable in the standard of the tests and in the duration of the courses; the details on these points can be obtained from the various examination bodies.

In London, courses of instruction for the Diploma in Psychological Medicine are given at the Maudsley Hospital, Denmark Hill, which has recently been definitely recognised as a school of the University of London. The course consists of two parts, and is adapted for the diploma of the Conjoint Board, the University of London, or the University of Cambridge. The fee for the whole course (Parts I. and II.) is 15 guineas, or for either part separately 10 guineas.

Appointments as clinical assistants are obtainable at the Maudsley Hospital. The holding of such appointments for varying periods satisfies the requirements of the different examining bodies in respect of practical study of mental disorders. The appointments and other facilities for clinical experience are open to qualified medical practitioners apart from the courses of instruction. Inquiries as to lectures should be addressed to the Director of the Pathological Laboratory, Maudsley Hospital, Denmark Hill, S.E. 5; and as to clinical facilities, to the Medical Superintendent at the same address.

A course of lectures and practical instruction for the Diploma in Psychological Medicine, granted by the various Universities, is held at Bethlem Royal Hospital twice annually, during the spring and autumn. The fee for the full course is 15 guineas; for Part A separately 10 guineas, and for Part B separately 10 guineas. Communications should be addressed to the Physician-Superintendent, Bethlem Royal Hospital, London, S.E. 1. In addition clinical instruction in psychological medicine is given at Bethlem Royal Hospital every morning (except Wednesdays) at 11 o'clock. The fee for post-graduates is 5 guineas for three months' attendance, but a reduction is made to those who attend the diploma course.

DIPLOMA IN OPHTHALMIC MEDICINE.

SPECIAL diplomas in ophthalmic medicine and surgery are issued by two examining bodies.

University of Oxford.—The diploma in ophthalmology (D.O.) is granted to registered medical practitioners after passing an examination, held annually in July, which is open to candidates who have pursued at Oxford a course of study in ophthalmology over a period of at least two months and who have attended a 12 months' recognised hospital course. Further information regarding these requirements may be obtained from the Dean of the School of Medicine.

Conjoint Board R.C.P. Lond., R.C.S. Eng.—The Conjoint Board grants the D.O.M.S. after an examination held in two parts, twice yearly in January and July. Part I. comprises anatomy and embryology of the visual apparatus, physiology of vision, and elementary optics. Part II. comprises optical defects, ophthalmic medicine and surgery, and pathology with special reference to ophthalmology. The examination in each case is written, oral, and practical or clinical. Candidates may only enter for Part II. on completion of a year of special study of ophthalmology after obtaining a registrable qualification. Fee for admission to each part, £6 6s.

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.

THIS Diploma is granted by the University of Cambridge. It is only open to those who hold a medical qualification, and includes a course of lectures and practical work in Physics (Part I.), and in Radiology and Electrology (Part II.). Attendances at the necessary course of lectures in both subjects and, in addition, six months' clinical experience in an adequately equipped hospital recognised by the Committee are essential. The whole course of study takes six months, the lectures, practical work, and hospital attendance running concurrently. The Courses carried out by the University of Cambridge are at present arranged to begin early in January. Three months are spent in Cambridge doing the lectures and practical work in Part I., attending the systematic lectures in Part II., and the practice of Addenbrooke's Hospital, where there is a fully equipped and up-to-date X ray and Electrological Department. The remaining three months can be completed at any recognised hospital, but special arrangements are made for students to continue their studies in London, where demonstrations at various hospitals are arranged in order to give a wide experience. In addition, an independent course is arranged by the British Association of Radiology and Physio-Therapy. This Course is held entirely in London, but is recognised by the University as qualifying for the examination, and begins early in October. Further particulars as to the Cambridge

Course can be obtained from Dr. F. Shillington Scales, Medical Schools, Cambridge, and of the London Courses from Dr. Stanley Melville, at the Offices of the B.A.R.P., 12, Stratford Place, London, W. 1.

DIPLOMA IN LARYNGOLOGY AND OTOLOGY.

THE Conjoint Board R.C.P. Lond., R.C.S. Eng., *grants the D.L.O.* after an examination held in two parts, twice yearly, in June and December. Part I. comprises anatomy, embryology, and physiology of the ear, nose, pharynx, larynx, trachea and bronchi, and œsophagus. Part II. comprises the medicine, surgery, and pathology of the ear, nose, pharynx, larynx, trachea and bronchi, and œsophagus, and the recognition and use of special instruments and appliances. The examination in each case is written, oral, and practical or clinical. Candidates may only enter for Part II. on completion of one year of special study of the diseases of the ear, nose, pharynx, and larynx, after obtaining a registrable qualification. The fee for admission to each part is 6 guineas.

DIPLOMA IN TUBERCULOUS DISEASES.

A DIPLOMA in Tuberculous Diseases is given by the University of Wales. Candidates must possess a medical qualification registrable for practice in Great Britain and Ireland, and be not less than 25 years of age, and either (Category A) have held, for a period of not less than five years, whole-time appointments for work in tuberculosis; or (Category B) have held a registrable qualification to practise for at least one year, and presented (*a*) a certificate of satisfactory pursuance of a course of consecutive post-graduate study of the clinical and epidemiological aspects of tuberculosis of six months' duration at a recognised university, medical school, or hospital where such a course is given; or, alternatively, a certificate of one year's post-graduate work as a whole-time member of the staff of a tuberculosis hospital, sanatorium, or dispensary approved by the Ministry of Health, signed by the representative of the authorities for whom the work was performed or by the administrative medical officer concerned; (*b*) a certificate of satisfactory pursuance of a course of consecutive post-graduate practical study of the Pathology and Bacteriology of Tuberculosis of three months' duration at a tuberculosis laboratory or a recognised general laboratory where such a course is given; (*c*) a certificate of three months' satisfactory attendance at a tuberculosis institute or dispensary. The courses may be taken concurrently.

The examination is divided into two parts. The fee for examination is £10 10*s*. Applications should be made to the Registrar of the University, University Registry, Cathays Park, Cardiff, not later than May 15th.

THE DEGREE OF M.D. BRUSSELS.

To obtain the degree of M.D. Brussels all foreign graduates must submit their degrees or diplomas for consideration to the Secretary of the University of Brussels. According to the standard of the qualification, a period of one, two, or three years must be spent by the candidate in attending lectures, clinics, and practical work at Brussels, in the University, before permission is given to enter for examinations. The standard of this degree, known as the "Scientific" M.D., is equivalent to that of the "legal" M.D. obtainable from the University only after seven years' residence, but it does not carry with it the right to practise in Belgium. The examinations are conducted orally in French. Further information may be obtained from the Hon. Secretary of the Brussels Medical Graduates' Association, Dr. Arthur Haydon, 10, Sussex-gardens, Talbot-square, Hyde Park, London, W. 2.

DIPLOMA IN PUBLIC HEALTH.

As usual we include in the Students' Number of THE LANCET an epitome of the instruction given at various universities and centres of medical education to medical men desiring to obtain diplomas in sanitary science, public health, hygiene or State medicine, as this discipline is variously called. Resolutions, designed with a view of ensuring "the possession of a distinctively high proficiency, scientific and practical, in all the branches of study which concern the public health," have been adopted at various times by the General Medical Council from 1902 to 1922. The new regulations, which came into force in 1923, extend the period of study and postpone the granting of a diploma until at least two years from qualification.

Conjoint Board of the R.C.P. Lond. and R.C.S. Eng.—New regulations came into force on Jan. 1st, 1924, which apply to all candidates who have not commenced bonâ-fide study of Public Health in accordance with the above regulations before that date. They are as follows: The Examination consists of two Parts. Part I. will be held in the months of January and June, and Part II. in the months of January and July in each year. Candidates may enter for Parts I. and II. separately or at the same time, but they must pass Part I. before proceeding to Part II. The Examination in each part will be written, oral, and practical. Part II. will include a practical examination in Infectious Diseases, Food Inspection, and Inspection of selected Premises. The Fee for admission to each Part of the Examination, which must be paid three days before that part commences, is £10 10*s*., except in the case of Candidates who possess the Licence, Membership, or Fellowship of the Royal College of Physicians of London, or the Membership or Fellowship of the Royal College of Surgeons of England, who will be required to pay £6 6*s*. only for each part. Candidates who fail to satisfy the Examiners in either part may present themselves again at the next Examination on payment of the same Fees. Candidates intending to present themselves for either part of the Examination must give 14 days' notice in writing to the Secretary, at the Examination Hall, Queen-square, Bloomsbury, London, W.C. 1.

Candidates will be admissible to Examination in Part I. on producing evidence:—

1. Of being in possession of a registrable qualification in Medicine, Surgery, and Midwifery.

2. Of having attended during a period of not less than five months at an Institution recognised by the Examining Board in England, practical instruction in (*a*) Bacteriology and Parasitology (including Medical Entomology) especially in their relation to diseases of man and to those diseases of the lower animals which are transmissible to man, during 180 hours, of which not less than 150 hours have been occupied in practical laboratory work. (*b*) Chemistry and Physics in relation to public health, during 90 hours, of which not less than 70 hours have been occupied in practical laboratory work. (*c*) Meteorology and Climatology in relation to public health, during not less than 10 hours.

Candidates will be admitted to Part II. of the Examination on producing evidence:—

1. Of having been in possession of a registrable qualification in Medicine, Surgery, and Midwifery during not less than two years, of being registered by the General Medical Council, and of having completed the curriculum for the Diploma extending over a period of 12 calendar months subsequent to the attainment of a registrable qualification.

2. Of having attended, after obtaining the registrable Qualification, instruction during not less than 80 hours at an Institution recognised by the Examining Board in England in the following subjects:—(*a*) The Principles of Public Health and Sanitation for not less than 30 hours; (*b*) Epidemiology and Vital Statistics for not less than 20 hours; (*c*) Sanitary Law and Administration (including Public Medical Services) during not less than 20 hours; (*d*) Sanitary Construction and Planning during not less than 10 hours.

3. Of having attended for three months the clinical practice of a hospital for infectious diseases recognised by the Examining Board in England and of having therein received instruction in the methods of administration. The Certificate

must state that the candidate has attended on one or more days in each week of the three months, that each attendance was of two hours' duration, with a total attendance of 60 hours.

4. Of having been engaged during a period of not less than six months in acquiring a practical knowledge of the duties, routine and special, of public health administration under the supervision of a Medical Officer of Health, and of having received, from such officer or other competent Medical Officer during not less than three hours on each of 60 working days, practical instruction in those duties and also those relating to: (*a*) Maternity and Child Welfare Service; (*b*) Health Service for children of school age; (*c*) Venereal Diseases Service; (*d*) Tuberculosis Service; (*e*) Industrial Hygiene; (*f*) Inspection and Control of Food, including meat and milk.

The above certificate (4) must be obtained from a Medical Officer of Health who devotes his whole time to public work, or from a Medical Officer of Health of a Sanitary Area having a population of not less than 50,000, or in Ireland the Medical Superintendent Officer of Health of a County or County Borough having a population of not less than 50,000.

University of Oxford.—An examination, conducted partly in writing, partly vivâ voce, and in each subject partly practical, is held in Michaelmas and in Trinity Term in the following subjects:—General Hygiene, General Pathology (with special relation to Infectious Diseases), the Laws relating to Public Health, Sanitary Engineering, Vital Statistics. The examination is in two parts, which may be taken together or separately; but Part I. must be passed either before or at the same examination as Part II. The fee for admission to the examination is £10 for each part. Successful candidates are entitled to receive the Diploma in Public Health.

The First Part of the examination will comprise (*a*) written papers of three hours each in (I.) Chemistry and Physics, and (II.) Pathology and Bacteriology; (*b*) a three hours' practical and vivâ voce examination in Chemistry and Physics; (*c*) a three hours' practical and vivâ voce examination in Pathology and Bacteriology.

The Second Part of the Examination will consist of the following parts:—(*a*) Two written papers, each of three hours, dealing with General Hygiene (including Sanitary Engineering, Vital Statistics, and the Laws relating to Public Health); (*b*) a practical and vivâ voce examination in General Hygiene; and (*c*) a three hours' practical and vivâ voce examination in Pathology and Bacteriology.

Candidates in Part I. of the examination will be required to produce certificates (1) of Laboratory Work in Chemistry, Physics, Meteorology, and Climatology as applied to Hygiene, and (2) of having had Practical Instruction in Bacteriology and Parasitology and the Pathology of the Diseases of Animals transmissible to Man.

Candidates in Part II. will produce the following further certificates: (3) of a Practical Knowledge of the Duties, Routine and Special, of Public Health Administration; and (4) of having attended the practice of a Hospital for Infectious Diseases at which opportunities are afforded for the study of the Methods of Administration.

All the above degrees are now open to Women Students, and particulars of Scholarships, &c., may be obtained from the Principals of the various Ladies' Colleges. The names of candidates for the Diploma in Public Health must be sent to the Assistant Registrar of the University, Clarendon Building, Oxford. Applications for any further information should be addressed to the Dean, Department of Medicine, Museum, Oxford.

University of Cambridge.—Two examinations in so much of State medicine as is comprised in the functions of medical officers of health are held during the year. The examination is divided into two parts and demands proficiency in all the branches of study which bear upon the duties of medical officers of health. The examinations in both parts will be oral and practical, as well as in writing. Candidates may present themselves for either part separately or for both together at their option; but the result of the examination in the case of any candidate will not be published until he has satisfied the examiners in both parts. Marks of distinction will be placed against the names of candidates who have specially distinguished themselves in either (1) Part I. of the examination; or (2) Part II. of the examination. Every candidate will be required to pay a fee of £10 10*s*. before admission or readmission to *either part* of the examination. Candidates must before admission to either part of the examination produce evidence of having satisfied the regulations applicable to Part I. and Part II.

For Part I. of the examination courses of lectures and laboratory instruction are given in the University on Hygiene, Chemistry, &c., and on Bacteriology and Parasitology. For Part II. the Medical Officer of Health for Cambridge gives courses on Practical Sanitary Administration and in the Administrative Methods of the Infectious Diseases Hospital, and the Medical Officer of Health to the Cambridgeshire County Council, on Sanitary Laws, School Hygiene, Epidemiology. There are also special courses in Vital Statistics, Tuberculosis Service, Venereal Diseases Service, Industrial Hygiene, Maternity and Child Welfare. These courses are open to non-members of the University.

A special Diploma in Hygiene is granted to medical graduates whose qualifications are not registrable in England.

All applications for further information respecting examinations and the courses of study should be addressed to Mr. Purvis, Public Health Chemical Laboratory, Cambridge.

University of London.—Candidates for the M.D. Degree may offer State Medicine as a subject in which to graduate. The regulations have been revised and may be obtained *on application* to the Principal Officer, University of London, South Kensington.

University of Durham.—The Degree of Bachelor of Hygiene (B.Hy.) and the Diploma in Public Health (D.P.H.).—No candidate is admitted to the final examination for the Degree of B.Hy. unless he is a Bachelor of Medicine and Surgery, of not less than two years' standing, of a recognised University, and no candidate is admitted to the final examination for the D.P.H. unless he is a registered medical practitioner, of not less than two years' standing. The course of study for the B.Hy. and D.P.H. extends over a period of not less than 12 calendar months, subsequent to the attainment of a registrable qualification. Candidates for the B.Hy. must attend this course at the University of Durham; candidates for the D.P.H. may attend it at the University of Durham, or at any medical school or institution which is recognised by the University. The examination for the diploma or degree is divided into two parts. A candidate must pass in all the subjects of Part I. before being admitted to examination for Part II. In Part I., and also in Part II., a candidate must pass in all the specified subjects at one time. The examination for Part I. is practical, written, and oral, and includes the following subjects: Bacteriology and Parasitology (including medical entomology); Chemistry and Physics, and Meteorology and Climatology, in relation to Public Health. Candidates are not admitted to examination for Part I. until after they have completed the prescribed courses of instruction in the subjects thereof. The examination for Part II. includes Hygiene and Sanitation (including sanitary construction), Epidemiology and Infectious Diseases; Sanitary Law and Vital Statistics; Public Health Administration. The examination is written and oral, and includes practical examinations in Infectious Diseases, Food Inspection, Inspection of Premises—Dwellings, Factories, Workshops, Schools, &c. Candidates are not admitted to examination for Part II. until after they have completed the prescribed courses of instruction in the subjects thereof. The fee for the examination for the degree of B.Hy. is £10 10*s*. and for the degree £6 6*s*. The fee for the examination for the Diploma in Public Health is £10 10*s*. and for the diploma £3. Doctor of Hygiene

(D.Hy.): Candidates must be Bachelors of Hygiene of two years' standing, and are required to satisfy the examiners that they have conducted original research in the subject of Public Health. The fee for the examination is £20 and for the degree £10.

Victoria University of Manchester.—An examination in Public Health is held twice yearly. The examination is in two parts and is written, oral, and practical. Candidates may present themselves for Parts I. and II. separately or at the same time provided that no candidate be admitted to Part II. unless he has already passed in Part I. No candidate's name will be published until he has satisfied the examiners in both parts of the examination. The fee for each part of the examination is £8 8*s*., and must be paid on or before July 1st in each year. For any subsequent examination in the same part the fee will be £4 4*s*. Every candidate who has passed both parts of the examination to the satisfaction of the examiners, and who is legally registered, will receive a Diploma in Public Health. The examination will begin about the middle of July and the middle of October in each year. Holders of the Diploma in Public Health are eligible for examination for the Certificates in School Hygiene and Factory Hygiene after attending the prescribed periods of study and hospital practice. An examination for a Diploma in Bacteriology is held for graduates in science or medicine who have attended prescribed courses for at least one academic year; candidates must present a satisfactory thesis on an approved subject.

University of Birmingham.—Under the revised rules and regulations of the General Medical Council the University grants a degree of B.Sc. in Public Health and also a Diploma in the same subject on the following conditions: Graduates in Medicine of this University may become candidates for the degree of Bachelor of Science in Public Health by conforming to all the requirements laid down for candidates for the Diploma in Public Health, except that after graduating in Medicine all courses of study must be taken out in the University, and they must, in addition, have attended a three months' course of Geology in the University. The examinations will be held in the months of March and June and will consist of two parts, each part being written, oral, and practical. No candidate will be allowed to pass Part II. until he has passed Part I. Candidates may enter for Parts I. and II. separately or at the same time. The fee for each part of the examination is £6 5*s*. Medical Officers of the Royal Navy who have attended courses in Hygienic Chemistry, Bacteriology, and Public Health at the Naval Medical School, Greenwich, will be admitted to Part I. examinations for the Diploma in Public Health, whether they have previously been students at the Birmingham School or not; and the same applies to officers of the Royal Army Medical Corps who have studied Chemistry and Bacteriology at the Staff College and pursued the further course of study approved by the General Medical Council.

University of Liverpool.—The University grants a Degree in Hygiene (M.H.) and a Diploma (D.P.H.), and every facility is afforded for training in Sanitary Science and State Medicine. The curriculum for the Degree extends over a period of two years, the first of which is devoted to laboratory instruction and practical classes (including those for the Diploma); the second being devoted to advanced study and research. The courses may be taken out at any time, and students are allowed to work daily in the laboratories. Composition fee for M.H. £40 a session, and D.P.H. £45 a course.

University of Leeds.—The University grants a Diploma in Public Health, and every facility is afforded for training in Sanitary Science and State Medicine. The examination, which is held twice in each year—namely, in June and December—is in two parts, and is written, oral, and practical. Candidates must pass in Part I. before being admitted to Part II. Fees.—The fee for each part is £6 6*s*., and for any subsequent examination in the same part £4 4*s*. Instruction in Entomology and Meteorology is given in the first term, and in Sanitary Chemistry and Bacteriology in the second and third terms. Practical work under arrangement with the Leeds City Council. Prospectus can be obtained from the Academic Sub-Dean of the Medical School.

University of Bristol.—Diploma in Public Health. Candidates must be at least 23 years of age, shall be fully registered medical practitioners of not less than two years' standing as such, and shall have passed the examination prescribed by regulation. The examination is divided into two parts.

University of Wales.—Candidates for the Diploma in Public Health, the curriculum for which extends over a period of not less than twelve calendar months subsequent to the attainment of a registrable qualification, must produce evidence of having attended for not less than five months at the Welsh National School of Medicine or at an institution approved by the Court, practical instruction in Bacteriology and Parasitology, Chemistry and Physics, and Meteorology and Climatology in relation to Public Health. Candidates must also satisfy the examiners that they have received instruction approved by the University in the Principles of Public Health and Sanitation, Epidemiology and Vital Statistics, Sanitary Law and Administration, and Sanitary Construction and Planning. The candidate must also produce evidence that he has attended for three months on the clinical practice of a hospital for infectious diseases containing not less than 100 beds, and has received therein instruction in the methods of administration, and that he has for a period of not less than six months been engaged in acquiring a practical knowledge of the duties, routine and special, of a public health administration under the supervision of a medical officer of health. The examination for the diploma is divided into two parts, Part I. and Part II., each of which extends over not less than two days. A candidate must pass in all the subjects of Part I. before being admitted to Part II. of the examination. In Part I., and also in Part II., a candidate must pass in all the specified subjects at one time. Part I. of the examination is practical, written and oral, and includes Bacteriology and Parasitology (including Medical Entomology); Chemistry and Physics, and Meteorology and Climatology in relation to Public Health. Candidates may not be admitted to Part I. of the examination until they have been certified as having pursued the prescribed courses of instruction in the subjects thereof. Part II. of the examination, which is written and oral, includes: Hygiene and Sanitation (including Sanitary Construction); Epidemiology and Infectious Diseases; Sanitary Law and Vital Statistics; Public Health Administration. No candidate can be admitted to Part II. of the examination until after the lapse of not less than two years from the date of his obtaining a registrable qualification in Medicine, Surgery, and Midwifery, which qualification must be registered before admission to Part II. of the examination. An examination in each part will be held annually, in June. Notice of candidature, together with the fee of six guineas for either part of the examination, must be sent to the Registrar of the University, University Registry, Cathays Park, Cardiff, not later than May 15th.

University of Edinburgh.—Two degrees in Science are conferred in the Department of Public Health by the University of Edinburgh—viz., Bachelor of Science in Public Health and Doctor of Science in Public Health. A Diploma in Tropical Medicine and Hygiene is also granted. Candidates for the degree of B.Sc. in Public Health must be graduates in Medicine of a recognised University, and must pass two examinations, for the first of which they must, after graduation in Medicine, have worked for at least 20 hours per week during a period of not less than eight months, of which at least five consecutive months must be in the Public Health Laboratory of the University of Edinburgh and the remainder either there or in a laboratory recognised by that University;

they must also have attended courses of instruction in Physics and Geology in some Scottish University. Candidates are not admitted to the Second Examination sooner than six months after having passed the First Examination, nor sooner than 18 months after having taken their degree in Medicine, and they must have attended two separate courses in Public Health in some University of the United Kingdom or in such medical school or Indian, Colonial, or Foreign University as may be approved for the purpose by Edinburgh University, each course consisting of 40 lectures at least; one of which courses shall deal with medicine and the other with engineering, each in its relation to public health. The subjects of examination include Laboratory work, Physics, Geology, Medicine in its application to Public Health, Sanitation, Sanitary Law, and Vital Statistics. Graduates who have held the degree of B.Sc. in Public Health from the University of Edinburgh for a term of five years may offer themselves for the degree of D.Sc. in Public Health in that University. They must then present a Thesis and pass an examination in Public Health. The fees are £4 4*s.* for the First and £5 5*s.* for the Second B.Sc. Examinations, and £15 15*s.* for the degree of D.Sc.

University of Aberdeen.—Every candidate for the Diploma in Public Health must be a graduate in medicine of the University of Aberdeen, or of any other University whose medical degrees are recognised as qualifying for registration by the General Medical Council of the United Kingdom. No candidate will be admitted to the Final Part of the Examination for the Diploma until after the lapse of not less than two years from the date of his obtaining a registrable qualification in Medicine, which qualification shall have been registered before such admission. The whole of the prescribed curriculum of study must be undertaken after the candidate has obtained a registrable qualification in medicine, and shall extend over not less than twelve calendar months. At least one academic term must be spent at the University of Aberdeen. Every candidate shall produce evidence of having complied with the following requirements in respect of study and training:—1. Practical instruction in the following subjects within a laboratory or laboratories approved by the University: (*a*) Bacteriology and Parasitology (including Medical Entomology), in relation to diseases of man and diseases of lower animals transmissible to man—at least 180 hours, of which not less than 150 shall be occupied in practical laboratory work; (*b*) Chemistry and Physics, in relation to Public Health—at least 90 hours, of which not less than 70 shall be occupied in practical laboratory work; (*c*) Meteorology and Climatology, in relation to Public Health—at least 10 hours; such instruction to extend over not less than five months or two academic terms. 2. A course or courses of instruction extending over not less than 80 hours dealing with: (*a*) The Principles of Public Health and Sanitation—30 hours; (*b*) Epidemiology and Vital Statistics—20 hours; (*c*) Sanitary Law and Administration (including Public Medical Services)—20 hours; (*d*) Sanitary Construction and Planning—10 hours; such course or courses to be given at an institution or by a teacher or teachers approved by the University. 3. Practical instruction, clinical and administrative, within a recognised hospital for general infectious diseases; such instruction to extend over three months, and to include 30 daily attendances of not less than two hours in each week. 4. Practical instruction and experience, during not less than six months (including attendance of at least three hours on each of sixty working days) in the duties, routine and special, of public health administration, under the supervision of a medical officer of health, who shall certify that the candidate has received from this officer or other competent medical officer, practical instruction in these duties, and also in those relating to: (*a*) Maternity and Child Welfare Service; (*b*) Health Service for Children of School Age; (*c*) Venereal Diseases Service; (*d*) Tuberculosis Service; (*e*) Industrial Hygiene; (*f*) Inspection and Control of Food, including meat and milk. The medical officers of health recognised for this purpose by the General Medical Council are: (*a*) a medical officer of health who devotes his whole time to public health work; or (*b*) the medical officer of health of a sanitary area having a population of not less than 50,000; or (*c*) in Ireland, the medical superintendent officer of health of a county or county borough having a population of not less than 50,000. The examination for the diploma is divided into two parts, each of which extends over not less than three days. The following are the fees payable for the courses of instruction given within the University: Lecture Course or Courses, £4 4*s.*; Laboratory Instruction, £14. The examination fee is £8 8*s.*, which is payable as follows:—£4 4*s.* for Part I., and £4 4*s.* for Part II. The fees for external instruction amount approximately to £11 11*s.*

University of Glasgow.—Degree of B.Sc. in Public Health.—Candidates must be graduates in Medicine of a University of the United Kingdom, or of some other University recognised for the purpose by the University Court. Candidates must produce evidence (1) that, after they have obtained a registrable Degree in Medicine, a period of not less than two years has elapsed; (2) that, after they have obtained a registrable degree in Medicine, they have, during a period of not less than 21 calendar months, pursued the course of work and instruction prescribed, and have satisfied the examiners in the prescribed examinations. There are two examinations. Part I. includes the following subjects: (i) Bacteriology and Parasitology (including Medical Entomology); (ii) Chemistry and Physics in relation to Public Health; (iii) Meteorology and Climatology in relation to Public Health; (iv) Higher Chemistry in relation to Public Health; (v) Physics and Geology. A candidate must pass in the subjects marked (i), (ii), and (iii) of Part I. at one examination. Part II. includes the following subjects: (vi) Hygiene and Sanitation (including Sanitary construction); (vii) Epidemiology and Infectious Diseases; (viii) Sanitary Law and Vital Statistics; (ix) Public Health Administration; (x) Applied Hygiene. The examination for Part II. includes practical examinations in Infectious Diseases; Food Inspection; Inspection of Premises, such as dwellings, factories, workshops, schools, and the like. The examination in Applied Hygiene may be on a selected subject professed by the candidate. A candidate must pass in the subjects marked (vi), (vii), (viii), and (ix) of Part II. at one examination. *Diploma in Public Health (D.P.H.).*—Candidates for this Diploma must be legally qualified medical practitioners who are matriculated students of the University. A period of not less than two years must elapse between the attainment by the candidate of a registrable medical qualification, and his admission to the final examination (Part II.) for the Diploma. The candidate must, during a period of not less than 12 calendar months, subsequent to his attainment of a registrable medical qualification, pursue the course of work and instruction prescribed, and pass the prescribed examinations. The examination, which is both written and oral, is divided into two parts, Part I. and Part II., each of which extends over not less than two days. No candidate is admitted to either part of the examination until he has completed the prescribed courses of instruction in the subjects of that part. No candidate is admitted to Part II. until he has passed in all the subjects of Part I., nor until after the lapse of not less than two years from the date of his obtaining a registrable medical qualification, nor unless he presents a certificate showing that his name and qualification have been duly registered in the Medical Register. Part I. includes: (i) Bacteriology and Parasitology (including Medical Entomology); (ii) Chemistry and Physics in relation to Public Health; (iii) Meteorology and Climatology in relation to Public Health. A candidate must pass in all the subjects at one examination. Part II. includes: (iv) Hygiene and Sanitation (including Sanitary Construction); (v) Epidemiology and Infectious Diseases; (vi) Sanitary Law and Vital Statistics; (vii) Public Health Administration. A candidate must pass in all the subjects at one examination. The examination for Part II. includes practical examinations in Infectious Diseases; Food Inspection; Inspection of Premises, such as dwellings, factories, workshops, schools, and the like.

University of St. Andrews.—The Diploma in Public Health is open to medical graduates of a University of the United Kingdom. The examination is in two parts. (1) (*a*) Bacteriology and Parasitology; (*b*) Chemistry and Physics; (*c*) Meteorology and Climatology. (2) Hygiene and Sanitation, Epidemiology and Infectious Diseases, Sanitary Law and Vital Statistics, Public Health Administration. Before admission to the first examination the candidate must have held his medical degree for one year, and before admission to the second examination for two years. Graduates in Medicine of the University of St. Andrews may take part of all of the qualifying classes in any University of the United Kingdom, or in any Indian, Colonial, or Foreign University or medical school recognised by the University Court, but graduates of another University must spend at least eight out of the 12 months' curriculum in St. Andrews University. A complete course is given in United College, Dundee. The examination fee for each division is £5 5*s.*

University of Dublin (Trinity College).—The Diploma in Public Health is conferred, after examination, under the following conditions. The candidate must be a registered medical practitioner and have obtained a registrable qualification at least two years before the second part of the examination. The candidate must have completed, subsequently to obtaining a registrable qualification, five months' practical instruction in a chemical and bacteriological laboratory, or laboratories, approved by the University, must have received instruction in the following subjects: The principles of public health and sanitation; epidemiology and vital statistics; sanitary law and administration (including public medical services); sanitary construction and planning, must have studied, practically, outdoor sanitary work for six months under an approved officer of health, and must have attended for three months at a fever hospital where opportunities are afforded for the study of methods of administration. A special prospectus may be obtained by application to the Registrar of the School of Physic, Trinity College, Dublin.

National University of Ireland.—At this University there is a Diploma in Public Health, a B.Sc. in Public Health, and a D.Sc. in Public Health. The Diploma may be granted to matriculated or non-matriculated students of the University who shall have completed approved courses of study and shall have passed the prescribed examinations, provided that it shall not be granted except to a registered medical practitioner. A period of not less than two years shall elapse between the attainment by a candidate of a registrable qualification and his admission to the Final Examination for the Diploma. The curriculum extends over a period of not less than 12 calendar months. Every candidate must produce a certificate that he has attended practical instruction in a laboratory, approved by the University, in Chemistry, Bacteriology, and the Pathology of the diseases of animals transmissible to man. The examination consists of two parts, which may be passed separately or together. Part I. comprises the following subjects: Chemistry, Physics, Meteorology and Climatology, and Bacteriology and Parasitology. Part II. comprises the following subjects: Hygiene and Sanitation, Sanitary Law, and Vital Statistics, Epidemiology and Infectious Diseases, Public Health Administration. The examination in each part will be oral and practical as well as written.

For the B.Sc. in Public Health a candidate shall not be admitted unless he (*a*) shall have received the degrees of M.B., B.Ch., and B.A.O. at least two years previously; (*b*) shall have pursued an approved course of study in the Faculty of Medicine; and (*c*) shall have passed the prescribed examination. In addition to D.P.H. course the candidate will be required to take up (1) a Special Course of Pathology; (2) Bacteriology; and (3) Advanced Course in Hygiene. Each of these courses lasts three months.

University of Belfast.—A Diploma in Public Health is given by examination. Every candidate must produce evidence that, after obtaining a registrable qualification, he has during six months received practical instruction in an approved laboratory in which Chemistry, Bacteriology, and the Pathology of the diseases of animals transmissible to man are taught. After obtaining a registrable qualification every candidate must produce evidence that he has attended during three months the practice of a hospital for infectious diseases at which opportunities are afforded for the study of methods of administration. The examination must have extended over not less than four days, one of which shall have been devoted to practical work in a laboratory, and one to practical examination in, and reporting on, subjects which fall within the special outdoor duties of a medical officer of health. The examination will be held in two parts, in March and in June. The first part of the examination will have reference to the general principles of sanitary science and the second part to State Medicine and to the applications of Pathology and Sanitary Science. The fee for each part is 1 guinea.

Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, Royal Faculty of Physicians and Surgeons of Glasgow.—All candidates for the Diploma in Public Health must have a qualification which has been registered under the Medical Acts. Candidates must have attended not less than four calendar months' practical instruction in Chemistry and Bacteriology in a recognised laboratory or laboratories, must have studied outdoor sanitary work for six months under a medical officer of health or other sanitary officer; and must give evidence of attendance for three months at the practice of a Hospital for Infectious Diseases, at which he has received instruction in the methods of administration. The examination consists of two parts, and candidates may enter for both at one period or for either separately. The First Part includes (*a*) Laboratory Work (Chemistry and Bacteriology), (*b*) Physics and Meteorology; and the Second Examination embraces (*a*) Report on Premises visited, (*b*) Examination at Fever Hospital, (*c*) Examination at Public Abattoir, (*d*) Written and Oral Examinations on Epidemiology and Endemiology, (*e*) Vital Statistics and Sanitary Law, and (*f*) Practical Sanitation. The fee is 12 guineas for both examinations, or 6 guineas for either of them. A fee of 3 guineas is payable by rejected candidates for either examination. The examination is held twice yearly, in May in Glasgow, and October in Edinburgh. The published regulations provide detailed synopses of the subjects of examination, *and intimation is made that the curriculum and examination will be adjusted to meet the requirements of the regulations of the General Medical Council which came into force on Jan. 1st, 1924.* Candidates applying for Regulations should state date of commencement of curriculum. The Registrar for Edinburgh is Mr. D. L. Eadie, 49, Lauriston-place, and for Glasgow Mr. Walter Hurst, 242, St. Vincent-street.

Royal College of Physicians of Ireland and Royal College of Surgeons in Ireland.—Every candidate for the Diploma in Public Health must observe the following rules: 1. A period of not less than two years shall elapse between the attainment by a candidate of a registrable qualification in Medicine, Surgery, and Midwifery and his admission to the Final Examination for a Diploma in Public Health. 2. The curriculum for a Diploma in Public Health shall extend over a period of not less than 12 calendar months subsequent to the attainment of a registrable qualification. 3. Every candidate shall produce evidence of having attended, during a period of not less than five months, at an institution approved by the Licensing Body granting the Diploma, practical instruction in—(*a*) Bacteriology and Parasitology (including Medical Entomology), especially in their relation to diseases of man, and to those diseases of the lower animals which are transmissible to man; (*b*) Chemistry and Physics in relation to Public Health; (*c*) Meteorology and Climatology in relation to Public Health. At least 180 hours must be devoted to Course (*a*), of which not less than 150 hours shall be occupied in practical Laboratory work. At least 90 hours must be devoted to Course (*b*), of which not less than 70 hours shall be occupied in practical Laboratory work. At least 10 hours must be devoted to Course (*c*). 4. Evidence of having received, during not less than 80 hours, at an institution or from teachers approved by the Licensing Body granting the Diploma, instruction in the following subjects: (*a*) The Principles of Public Health and Sanitation; (*b*) Epidemiology and Vital Statistics; (*c*) Sanitary Law and Administration (including Public Medical Services); (*d*) Sanitary Construction and Planning. 5. Evidence that he has attended for three months on the clinical practice of a recognised Hospital for Infectious Diseases. 6. Evidence that he has, during a period of not less than six months, been engaged in acquiring a practical knowledge of the duties, routine and special, of Public Health Administration under the supervision of a Medical Officer of Health. The examination for the Diploma is divided into two parts. The examination for Part I. includes Bacteriology and Parasitology (with Medical Entomology); Chemistry and Physics, and Meteorology and Climatology, in relation to Public Health. The examination for Part II. includes Hygiene and Sanitation (with Sanitary Construction); Epidemiology and Infectious Diseases; Sanitary Law and Vital Statistics; Public Health Administration. The examination, which is written and oral, includes practical examinations in Infectious Diseases; Food Inspection; Inspection of Premises—dwellings, factories, workshops, schools, &c.

DENTAL SURGERY.

ANYONE who is on the Medical Register is entitled to practise as a dentist, although he cannot register as such without degree or licence in dentistry; but it is a distinct advantage to take a special dental qualification, otherwise few dental appointments at general or special hospitals or dispensaries are available.

THE DENTAL BOARD OF THE UNITED KINGDOM.

Under the Dentists Act, 1921, the powers and duties of the General Medical Council under the Dentists Act, 1878, and under the Medical Act, 1886, which related to the keeping of the Dentists Register and the administration of the Dentists Acts were largely transferred to the then newly-constituted Dental Board of the United Kingdom. The registration of dental students at the commencement of their dental studies, and the right of erasure of a name from the Dentists Register, remain with the Council, but the duty of inquiring into disciplinary cases rests with the Board, upon whose recommendations the Council acts.

The Dental Board consists of a chairman and 12 members. The following are the names and sources of appointment of the members: Chairman of the Board, Rt. Hon. F. Dyke Acland, appointed by the Privy Council. Members of the Board: Mr. L. G. Brock, C.B., appointed by the Minister of Health; Mr. A. Young, appointed by the Scottish Board of Health; Mr. J. H. Stirling, appointed by the Governor-General of Northern Ireland; Sir Holburt Waring, M.S., F.R.C.S.; Sir James Hodsdon, K.B.E., F.R.C.S. Edin.; Mr. T. Sinclair, C.B., F.R.C.S., M.P., appointed by the General Medical Council; Mr. W. R. Ackland, M.D.S., M.R.C.S.; Mr. W. H. Dolamore, L.D.S., M.R.C.S., elected as Direct Representative by the qualified dentists practising in England and Wales; Mr. W. Guy, L.D.S., F.R.C.S., elected as a Direct Representative by the qualified dentists practising in Scotland; Mr. J. J. Andrew, L.D.S., elected as Direct Representative by the qualified dentists practising in Ireland; Mr. W. F. Bowen and Mr. F. Butterfield elected as Direct Representatives by registered dentists not being qualified dentists. Treasurers of the Board, Sir Holburt Waring and Mr. W. H. Dolamore. Registrar of the Board, Mr. N. C. King.

The offices of the Board are at 44, Hallam-street, London, W. 1, adjoining the offices of the General Medical Council.

REGISTRATION OF DENTAL STUDENTS.

The following are the General Medical Council's Regulations in regard to the registration of dental students which came into force on Jan. 1st, 1923.

The Council recommends that, subject to such exceptions as the Council may from time to time allow, every dental student at the commencement of his studentship should be registered in the manner and under the conditions hereinafter set forth.

1. The registration of dental students shall be carried on at the General Medical Council Office in London, in the same manner as that of medical students, and is subject to the same regulations as regards age and preliminary examinations; but in the case of dental students professional study may commence by pupilage with a registered dental practitioner.

2. Candidates for a diploma in dental surgery should produce certificates of having been engaged for at least four years in professional studies, and of having received during 24 calendar months instruction in mechanical dentistry (see No. 3 below).

3. It is recommended that instruction in dental mechanics be taken at a recognised dental hospital and school. If any part of such instruction be taken by the candidate as a pupil with a registered dental practitioner, the time required to be devoted to it shall be at least twice the time required for the corresponding instruction taken at a dental school.

4. Two years' bona-fide apprenticeship with a registered dental practitioner, after registration as a dental student, may be counted as one of the four years of professional study.

5. The necessary instruction in dental mechanics, or any part of it, may be taken by the dental student either before or after his registration as a student. When a student can show evidence of regular pupilage in dental mechanics to a registered practitioner, prior to the passing of the prescribed preliminary and scientific examinations, he may be allowed to antedate his registration for a period not exceeding one year prior to the passing of these examinations (see No. 3 above).

EXAMINING AND TEACHING BODIES IN DENTISTRY.

The list of the Examining Bodies in Dentistry which grant diplomas or degrees in this subject and the regulations for obtaining these qualifications will appear in a guide to teaching institutions in dentistry at a later date.

In addition to facilities provided by the various Universities, Colleges, and Faculties, a number of dental courses are available. In London at the Royal Dental Hospital (School of Dental Surgery), Leicester-square, at University College Hospital Dental School, and at the Dental Departments of Guy's Hospital and of the London Hospital. In the provinces at the Birmingham, Manchester, and Newcastle-on-Tyne dental hospitals. In Scotland at the Incorporated Edinburgh Dental Hospital, the Incorporated Glasgow Dental Hospital, and the Dental Department of Glasgow Royal Infirmary. In Ireland at the Incorporated Dental Hospital of Ireland, Dublin. Dental study may be commenced also at any of the following schools: Birmingham Dental Hospital, Bristol Royal Infirmary and General Hospital, Dundee Dental Hospital, Leeds Dental Hospital, Liverpool Dental Hospital, and Sheffield Royal Hospital.

MINISTRY OF HEALTH APPOINTMENTS.

THE Minister of Health appoints medical officers of the Ministry in various parts of England and Wales in connexion with the National Health Insurance Medical Service. The duties of these officers include those of deputy to the Regional Medical Officer in the work carried out by the latter: (*a*) As Medical Referee in cases of insured persons referred for a second medical opinion on questions of incapacity for work, or of restoration of working capacity; (*b*) in assisting in the administration of the Insurance Medical Service.

Residence.—Medical Officers are required to reside in the area from time to time assigned to them.

Remuneration.—The rate of remuneration is £800 per annum, rising by annual increments of £30 to a maximum of £1100. No cost of living bonus is payable in addition thereto, but officers appointed to this scale will be established Civil Servants with the usual pension rights.

Successful candidates, who are considered to possess exceptional or special qualifications, may be allowed to enter the scale at a commencing salary of £850 per annum. Above the grade of Deputy Regional Medical Officer, there are at present 33 posts of Regional Medical Officers (30 in England and 3 in Wales) rising to a maximum of £1400 a year inclusive, and four posts of Divisional Medical Officers rising to a maximum of £1600 a year inclusive. The above numbers are, however, subject to revision from time to time as the exigencies of the Service may determine. When vacancies are to be filled among the Regional Medical Officers, preference will be given to those who have given satisfaction as Deputy Regional Medical Officers.

In England application should be made to the Secretary, Ministry of Health, Whitehall, London, S.W. 1, and in Wales to the Secretary, Welsh Board of Health, City Hall, Cardiff. Letters of application should be marked in bold letters, "Medical Officer."

PRISON MEDICAL SERVICE.

CANDIDATES for the Prison Medical Service are approved by the Secretary of State for the Home Department on the recommendation of the Prison Commissioners. Preference is always given to candidates who have experience of lunacy. Application for employment may be made on a special form, which can be obtained from the Secretary, Prison Commission, Home Office, London, S.W. 1. In the smaller prisons the medical officership is part-time, and is usually filled by practitioners in the locality, preference being given to those who have special experience of lunacy. In the large prisons the medical staff must devote their whole time to the Service. In the case of whole-time service, the appointment is in the first instance to the post of Medical Officer, Class II., and from the seniors of this rank the Medical Officers, Class I., are selected as vacancies occur. The pay of the whole-time prison medical staff is as follows: Medical Officer, Class II., £350, rising by annual increments of £20 to £600, making the pay at present with bonus £504 14*s.* to £801 11*s.*; Medical Officer, Class I., £650, rising by annual increments of £25 to £800, plus bonus, making the pay £864 to £1023 9*s.* Unfurnished quarters are provided or an allowance in lieu is made. There are 12 full-time medical officers of Class I. and 13 Class II., and 23 part-time medical officers. The number of vacancies is never large and promotion is slow. In the case of a part-time medical officer, the population of the prison is the basis of fixing the salary, unless there are some special features justifying special consideration.

Obituary.

PERCIVAL LANGDON-DOWN, M.A., M.B., B.CH. CAMB.,

JOINT SUPERINTENDENT, NORMANSFIELD, MIDDLESEX.

Dr. Percival Langdon-Down, of Teddington-on-Thames, who died on August 19th, received his medical education at the London Hospital, proceeding to the degree of M.B., B.Ch. Camb., and holding the post of house surgeon at his hospital. He was the son of Dr. H. Langdon-Down, the founder of Normansfield, the well-known private institution for mentally defective cases. Together with his brother Reginald, Dr. Percival Langdon-Down carried on this work and was an authority on mental disorders. In addition, he took an active interest in public affairs. He first became a member of the local district council in 1900 and continued to represent the South Ward until his death. He was for several years chairman of the council and was its senior member, only four of those who were on it in 1900 being still alive. His value was early recognised and within a year of his election he was made chairman of the by-laws committee, a thorny subject on which he became a recognised authority. For many years he sat as a representative of the riparian districts of Teddington, Hampton, Hampton Wick, and Surbiton on the Thames Conservancy, and at the quarterly meetings of the representatives of these districts he was in the habit of presenting reports which were of the greatest value. He was keenly interested in the river and was a leader in the steps that were taken some years ago to obtain photographic and other records of the riverside. There were few movements set on foot for the good of Teddington which did not find in him an ardent and generous supporter. He took a great interest in the Cottage Hospital, of which his late father had been one of the medical attendants, and for some years he presided at the annual hospital meeting held at the Wesleyan Church by the brotherhood. He was one of the earliest members of the Teddington and Hampton branch of the League of Nations Union, of which he was the president. He was a vice-president of the Thames Valley Association of Cornishmen and Devonians. In his death all local interests, as well as the medical profession, have sustained a severe loss.

THE LATE DR. J. F. GORDON DILL.

WE regret to learn the death of Dr. J. F. Gordon Dill, consulting physician to the Royal Sussex County Hospital, which occurred at Hove on August 22nd last. A fuller notice will be published in an early issue of THE LANCET. He had been anxiously ill for some months and had undergone a serious operation, so that the end may have been expected by many of his numerous personal friends.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, Aug. 31st.—11 A.M., Surgical Registrar: Surgical Wards. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2 P.M., Dr. Trevor Davies: Diseases of Women.

TUESDAY, Sept. 1st.—10 A.M., Medical Registrar: Clinical Methods. 12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Sinclair: Surgical Out-patients.

WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 2 P.M., Dr. Owen: Medical Out-patients. 2 P.M., Dr. Dowling: Skin Dept.

THURSDAY.—12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Donald Armour: Operations. 2 P.M., Dr. Scott Pinchin: Medical Out-patients.

FRIDAY.—10 A.M., Mr. Dudley Buxton: Dental Dept. 12 noon, Dr. Pritchard: Modern Methods in Medicine. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.

SATURDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

THE
Physiological Basis
OF
ATHLETIC RECORDS.

Being the Presidential Address to the Section of Physiology of the British Association.

BY PROF. A. V. HILL, O.B.E., Sc.D., F.R.S.

IN the study of the physiology of muscular exercise there is a vast store of accurate information, hitherto almost unexploited, in the records of athletic sports and racing. The greatest efforts and the most intense care have been expended in making what are really experiments upon these subjects, and the results obtained represent what may justly be described as a collection of natural constants of muscular effort in the human race. It is the purpose of this address to discuss certain aspects of the data available in connexion with various forms of racing, and to see how far physiological principles at present known underlie them.

SOURCES OF INFORMATION.

The most complete set of records available, for a great variety of sports, is to be found in "The World's Almanac and Book of Facts," published by the *New York World*. Much of the information here presented was obtained from the 1925 edition of that work; similar but less extensive data can be found in our own Whitaker's Almanack. In addition, various books on horse-racing, on swimming, and on rowing have been searched for suitable material. I will not deal further with the statistical analysis of the facts, beyond referring to an extremely interesting and suggestive collection of them given in a paper by A. E. Kennelly, entitled An Approximate Law of Fatigue in the Speed of Racing Animals, published in the Proceedings of the American Academy of Arts and Sciences (vol. xlii., p. 275, 1906).

FATIGUE AS THE DETERMINING FACTOR.

An important and interesting problem for any young athlete is presented by the question "how fast can I run some given distance?" The maximum speed at which a given distance can be covered is known to vary largely with the distance. What are the factors determining the variation of speed with distance? How far, knowing a man's best times at two distances, can one interpolate between them for an intermediate distance, or extrapolate for a distance greater or less? Obviously the answer to such questions depends upon the factor which in general terms we designate fatigue. Fatigue, however, is a very indefinite and inexact expression; it is necessary to define it quantitatively before we can employ it in a quantitative discussion such as this. There are many varieties of fatigue, but of these only a few concern us now. There is that which results in a short time from extremely violent effort; there is the fatigue, which may be called exhaustion, which overcomes the body when an effort of more moderate intensity is continued for a long time. Both of these may be defined as muscular. Then there is the kind which we may describe as due to wear-and-tear of the body as a whole, to blisters, soreness, stiffness, nervous exhaustion, metabolic changes and disturbances, sleeplessness, and similar factors, which may affect an individual long before his muscular system has given out. Of these three forms of fatigue the first one only is as yet susceptible of exact measurement and description. The second type may quite possibly come within the range of experiment at no distant date. The third type is still so indefinite and complex that one cannot hope at present to define it accurately and to measure it. Undoubtedly, however, all these types of what we call "fatigue" influence—indeed, determine—the results which are to be presented.

PRESENTATION OF DATA.

The data will be exposed in graphical form, and in every case the quantities plotted are the speed as ordinate and the time, or some function of the time, as abscissa. The reason for taking the *time* occupied in a race as one of our variables is simple; the problem before us, physiologically speaking, is, clearly, *how long can a given effort be maintained?* The length of time is given by the abscissa as the independent variable; the magnitude of the effort, or some function of it, as represented by the speed (that is, by the average speed over the race considered), is given as ordinate. It will be shown below, as Kennelly indicated in his paper, that the ideal way to run a race, possibly not from the point of view of winning it, but certainly from that of breaking the record for the distance, is to run it at constant speed. In those performances which have attained to the dignity of a world's record it is unlikely that this criterion has been to any very large degree neglected. Apart, therefore, from the fact that there is no speed of which we have any record except the average speed, we are probably not far wrong in using the average speed as a fairly exact measure, or at any rate as a function of the effort involved.

In one case only (Fig. 4) the time occupied in the race has been given on a logarithmic scale; no great virtue attaches to the logarithm, but if 75 yards and 100 miles are to be shown on the same diagram in a readable form it is necessary somehow to condense the abscissæ at the longer times.

RUNNING AND SWIMMING: SHORTER TIMES.

In Fig. 1 all the important world's records are presented, average speed against time, for men and women running and for men and women swimming. The crosses representing men rowing in an 8-oar boat will be discussed later. It is obvious in all four cases that we are dealing with the same phenomena, a very high speed maintainable for short times, a speed rapidly decreasing as the time is increased and attaining practically a constant value after about 12 minutes. There are no reliable records, in the case of swimming, for times of less than about 50 seconds, so that the curves cannot be continued back as far as those for running. There can, however, be no doubt that the curves for running and swimming are essentially similar to one another and must depend upon the same factors. In running, starting inertia is the cause of the initial upward trend of the curves; a maximum average velocity is attained in the case of men for about 200 yards, of women for about 100 yards; after that a rapid decrease sets in, ending only when the time has become 10 or 15 minutes, the distance two to three miles. The phenomena shown in Fig. 1 are susceptible of a fairly exact discussion.

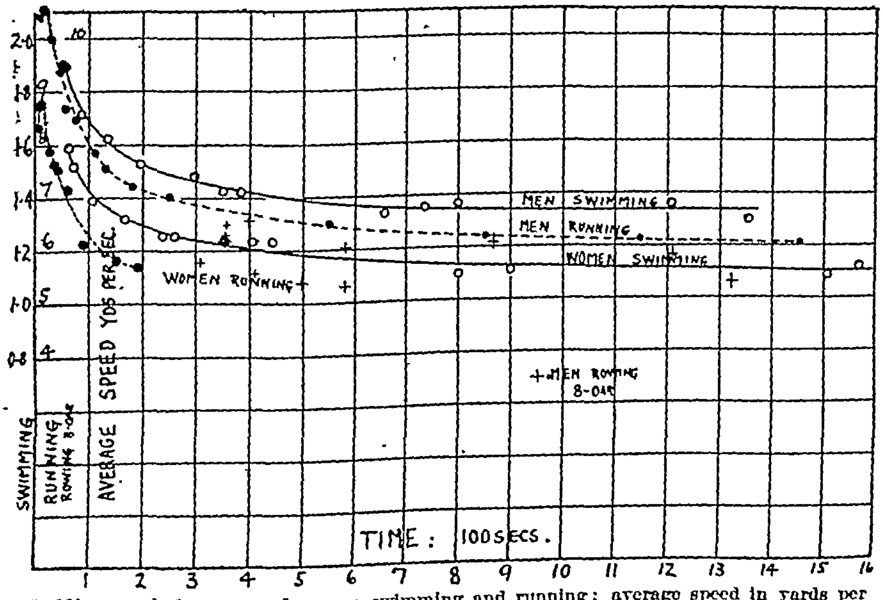
OXYGEN INTAKE, OXYGEN REQUIREMENT, AND OXYGEN DEBT.

In recent papers my colleagues and I have tried to emphasise the importance of a clear distinction between the oxygen intake and the oxygen requirement of any given type and speed of muscular effort. When exercise commences, the oxygen intake rises from a low value characteristic of rest to a high value characteristic of the effort undertaken. This rise occupies a period of about two minutes; it is nearly complete in 90 seconds. The oxygen used by the body is a measure of the amount of energy expended. One litre of oxygen consumed means about five calories of energy liberated, enough to warm 5 litres of water one degree Centigrade—expressed in mechanical energy, enough to raise about one ton seven feet into the air. It has been established, however, that the oxygen need not necessarily be used during the exertion itself. The muscles have a mechanism, depending upon the formation of lactic acid in them, by which a large amount of the oxidation may be put off to a time after the exercise has ended. The recovery process, so called, is a sign of this delayed oxidation; it is just as important to the muscle as recharging to an electrical accumulator. The degree, however, to which the body is able to run into debt for oxygen, to carry on not on present but on future supplies, is limited. When an oxygen debt of about 15 litres has been incurred the body becomes incapable of further effort; it is completely fatigued. In anything but the shortest races our record-breaking athlete should finish with something near a maximum oxygen debt, otherwise he has not employed all his available power, he has not done himself full justice. The maximum effort, therefore, which he can exert over a given interval depends upon the amount of energy available for him, upon (*a*) his maximum oxygen intake (that is, his income), and (*b*) his maximum oxygen debt (that is, the degree to which he is able to overdraw his account). These maxima are fairly well established for the case of athletic men of average size—about 4 litres per minute for the one, about 15 litres for the other.

It is possible for a man to make an effort far in excess of any contemporary supply of oxygen. This effort will require oxygen afterwards, and the total oxygen needed per minute to maintain the exercise can be measured. It is what we call the "oxygen requirement" characteristic of the effort involved. Now experiments have shown that the oxygen requirement varies very largely with the speed; it increases far more rapidly than the speed, more like the second or third power of the speed, so that high speeds and intense efforts are very wasteful. These facts enable us approximately to deduce the general form of Fig. 1.

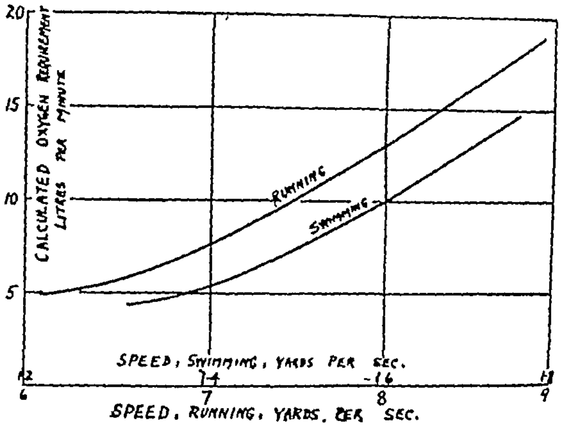
Imagine an athlete with a maximum oxygen intake of 4 litres per minute,[1] capable of running until his maximum oxygen debt has been incurred of 15 litres. If he runs for 15 minutes the total oxygen available during the exercise and in arrears is 15×4+15=75 litres; an effort can be made requiring 5 litres of oxygen per minute. Imagine, however, that he exhausts himself not in 15 but in 5 minutes; the total oxygen available during or in arrears is 5×4+15=35 litres. He may exert himself more violently, therefore, with an effort equivalent now to 7 litres per minute. Imagine next that he runs himself to exhaustion in 2 minutes: 4×2+15—i.e., 23 litres of oxygen are available, 11·5 per minute; a correspondingly greater effort can be made. By such calculations it is possible from Fig. 1 to deduce a relation between oxygen requirement and speed. Taking the case of a man swimming, the result is shown in Fig. 2 on the assumption of a maximum oxygen debt of 15 litres, a maximum oxygen intake of 3·5 litres per minute, and the supposition that at the end of the race the performer *is completely exhausted.* A similar calculated curve is given for the case of running, on the hypothesis of a maximum oxygen debt of 15 litres and a maximum oxygen intake of 4 litres per minute. There can be little doubt that the factors here described are the chief agents in determining the form of the curves given in Fig. 1.

FIG. 1.



World's records for men and women swimming and running; average speed in yards per second against time in seconds. *Note.*—The scale for swimming is five times as great as for running. The observations for men rowing an eight-oar boat are on the same scale as running and are referred to later in the text.

FIG. 2.



Oxygen requirement, running and swimming, of record-breaking athletes, calculated from curves of Fig. 1, on the assumption that at the end of a race the performer is completely exhausted, having attained his maximum oxygen debt. Maximum oxygen debt assumed = 15 litres for both. Maximum oxygen intake assumed: For running = 4 litres per minute; swimming = 3·5 litres per minute. Method of calculation described in the text.

LIMITS OF THE ARGUMENT.

It is obvious that we must not pursue the argument too far. A man cannot exhaust himself completely in a 100 or a 200 yards race; even 300 yards is not sufficient to cause an extreme degree of exhaustion, though a quarter-mile, in the case of a first-class sprinter, is enough, or almost enough, to produce complete inability to make any immediate further effort. We have found an oxygen debt of 10 litres even after a quarter-mile in 55 seconds. It is obvious, therefore, that we cannot pursue our argument below times of about 50 seconds, that the maximum speed is limited by quite other factors than the amount of energy available. It is not possible in any way to release energy explosively for very short intervals of effort; other factors determine the maximum speed, factors mechanical and nervous. Neither can the argument be applied to races, where—as we shall see below—other types of exhaustion set in.

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[1] Assumed, for the sake of simplicity in calculation, to commence as soon as the race begins. For a more accurate calculation the gradual rise of the oxygen intake at the beginning of exercise can be taken into account.

COMPARISON OF MEN AND WOMEN: SWIMMING AND RUNNING.

There are certain characteristics of these curves which are of interest. In the first place those for men and women are almost precisely similar. For a given time of swimming the maximum speed for a woman appears throughout the curves to be almost exactly 84 to 85 per cent. of that for a man. The curve relating oxygen requirement to speed, in the case of swimming, is not known from experiment, nor are the maximum oxygen debts and the maximum oxygen intakes known for women with any certainty. It would be very interesting to determine them were volunteers forthcoming. If we assume what is roughly true, that the energy expenditure rises approximately as the square of the speed, we may conclude that a woman swimming is able to exert, per kilogramme of body-weight, about 72 per cent. of the power expended by a man. Women are well adapted to swimming; their skill in swimming is presumably just as great as that of men; the difference in the maximum speed for any given time can be a matter only of the amount of power available.

In running, the same type of comparison may be made, though here not over the same range of times. For anything but the shortest races the maximum speed of a woman is almost precisely 79 per cent. of that of a man running for the same time. For very short times, 5 to 10 seconds, the ratio is greater—namely, 84 per cent. Here, again, there would seem little reason to attribute the difference of speed, at any rate for the longer races, to anything but a difference in the maximum amount of power expendible over the period in question. Assuming again, as an approximate means of calculation, that the energy used per minute varies as the square of the speed, we see that a woman running is able to liberate in a given time only about 62 per cent. of the energy expendible by a man of the same weight. It is probable that this ratio between men and women, as determined by swimming and by running respectively, is really the same in either case, and that the apparent difference depends upon an inexactness in the simple laws we have assumed for the variation of energy expended with speed. It would seem fair to take the mean of these two values, 67 per cent.—that is, about two-thirds—as the ratio of the amount of energy expendible by a woman in a given time as compared with that by a man of the same weight. It would be of great interest—and quite simple—to test this deduction by direct experiment on women athletes.

MEN AND WOMEN JUMPING.

A further interesting comparison between men and women may be found in the records of high jumps and long jumps. The world's record long jump for a man is 25 5 feet, for a woman 16 9 feet. The high jump records are respectively 6 61 feet and 5 feet. At first sight, when compared with running, these records for women seem extraordinarily poor; the high jump is only 75 5 per cent., the long jump only 66 per cent., of that for men. Such a conclusion, however, rests upon a misunderstanding, almost like that which makes many people believe that if a man could jump as well as a flea he could easily clear the top of St. Paul's Cathedral. It is a matter only of elementary mechanics to show, on the assumption that a woman can project herself vertically with a velocity proportional to that with which she can project herself horizontally, the constant of the proportion being the same as for the case of a man, that both the high jump and the long jump in the two sexes should be in the ratio *not of the velocities but of the squares of the velocities*. The maximum range and the maximum height of a projectile vary as the square of the velocity of projection. Thus it is right to compare, for men and women, not the height of the high jump or the distance of the long jump, but the square roots of these quantities, if we wish to study their relative performance in jumping as compared with running. This being so, we find that the high jump of a woman, as measured by its square root, is 87 per cent. of that of a man[*]; the long jump, measured in a similar way, is 81·5 per cent. These compare closely with their relative performances for very short times of running, where a woman, as shown above, can run 84 per cent. as fast as a man. It is amusing to find simple mechanics explaining such apparent differences between the sexes.

SKILL.

Some people are much more skilled than others. To a large degree, of course, the skill and grace associated with athletic prowess is natural and inborn; to a large degree, however, it can be produced by training and breeding. All the movements required in the violent forms of muscular exertion here discussed are rapid ones, far too rapid to be directly and continuously subject to the conscious intelligence; they are largely, indeed mainly, reflex, set going by the will but maintained by the interplay of proprioceptive nervous system and motor apparatus. The nature of muscular skill cannot be discussed here; possibly, however, above all other factors it is the foundation of athletic prowess. Such skill has a physiological basis as it has a psychological aspect. It is a fit subject for discussion alike by physiologists, psychologists, students of physical training, athletes, masters, and workmen. The further study of skill is likely to be most fruitful in many branches of human endeavour. Given incorrect adjustment due to lack of skill, given imperfect timing of the several parts of the mechanism, given unnecessary movement and vibration, the whole system will be inefficient. Fundamentally the teaching of athletics for anything but the shortest distances consists in training the performer to carry out the same movements at a given speed for a smaller expenditure of energy.

BICYCLING AND HORSE-RUNNING.

Not all forms of muscular exertion are so violent, involve so great an expenditure of energy, when carried out at the highest speed, as running and swimming. In Fig. 3 are two examples of this fact, horse-running and bicycling. For horse-running a long succession of records on American horses are plotted on the topmost curve; below are the records of men bicycling, the unpaced professional records, made not in a race but against time. Most bicycle races are useless for our purpose. The competitors proceed in groups, trying one to ride behind the other to avoid wind resistance, and the speed may be absurdly low. Paced records are of little value because the efficiency of the wind-screen provided by the pacing apparatus is not standardised. These professional records, however, made unpaced, simply with the intention of breaking the record, are probably reliable, and they form a reasonably smooth curve. Plotted on the same diagram for comparison is a curve to represent a man running, a replica of that of Fig. 1. The first two curves are on twice the scale of the third, since a running horse and a bicycling man can go about twice the speed of a running man. It is obvious at once that neither of these two curves falls anything like so rapidly as does that of a running man; fatigue does not so soon set in; the amount of energy expended at the highest speed must be much less than in a running man. This conclusion, indeed, is obvious to anyone who has tried to ride a bicycle fast. It is impossible to exhaust oneself rapidly on a bicycle; the movements are too slow, they involve too little of the musculature of the body; it would require some minutes to produce by bicycling a state of exhaustion easily attainable within a minute by running. The curve for horse-running is almost parallel to that for bicycling; presumably, therefore, the movements of a horse are so arranged that the extreme violence of effort possible in a human "sprinter" is unattainable. Possibly the movements are too infrequent, or the qualities of the horse's muscles are so different, that the kind of fatigue rapidly attainable in man is not possible in the horse; possibly the horse will not "run himself out" so completely as a man.

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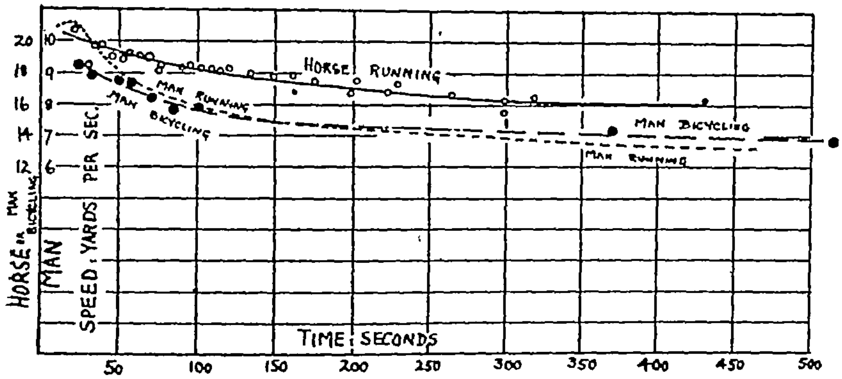
[*] It would really be fairer to compare the heights jumped, less the initial heights of the centres of gravity, say 3 1 feet and 2·8 feet respectively. This gives 2·2/3 51 = 0·63 as the ratio of the heights, of which the square root is 0·79, a close agreement with the long jump.

BICYCLE ERGOMETERS.

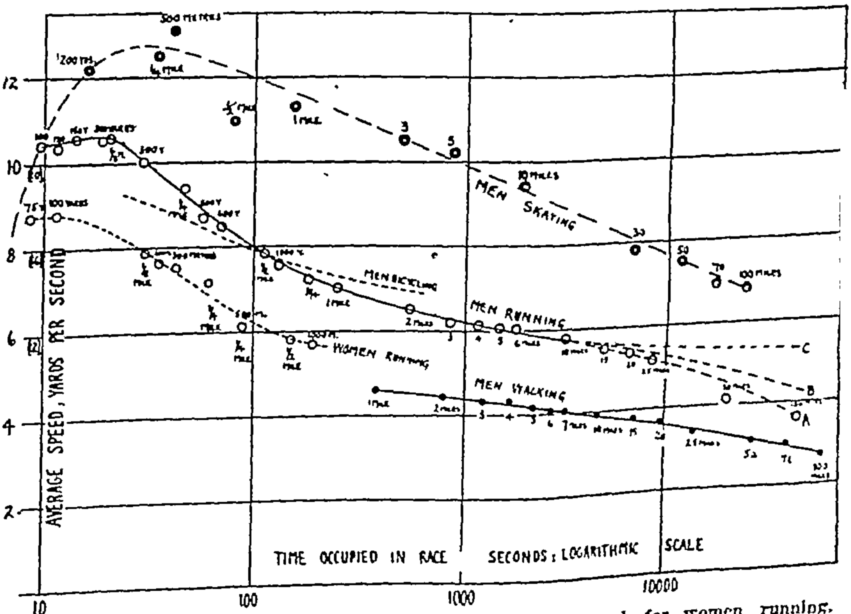
The curves of Fig. 3 are of interest in connexion with the numberless experiments which have been made with bicycle ergometers. Nearly all the laboratory observations on man, in connexion with muscular exercise, have been made with that implement. It has been obvious to my colleagues and myself during the last few years that the types of exercise chiefly adopted by us, running and standing-running, are more exhausting and require a far greater expenditure of energy than those employing the bicycle ergometer. In rowing and in pedalling a bicycle it may not be possible to attain respiratory quotients of 2 or more during or shortly after exercise. After running, or standing-running, however, very high values are attained, due to the fact that these latter forms of exercise, at the highest speeds, are so very much more energetic than the slower movements of rowing or bicycling. It is speed and frequency of movement which determine the degree of exhaustion produced by it. To exert a powerful force in a moderate rhythm is not anything like so tiring as to exert a much smaller force in a frequent rhythm; hence the reason for "gearing up," as in the bicycle and in the long oars of a rowing-boat.

FIG. 3.



Records for horse running and man bicycling; dotted curve for comparison, man running, taken from Fig. 1. Horizontally, time in seconds; vertically, average speed yards per second. *Note.*—The horse and the man bicycling are shown on half the scale of the man running. *The records for bicycling are the unpaced professional records against time.* The records for horses were made in America.

FIG. 4.



Records for men skating, bicycling, running, and walking, and for women running. Horizontally, logarithm of time occupied in race; vertically, average speed in yards per second. The same scale is used throughout, except for bicycling, where half the scale is employed, as shown in square brackets. The curve for men running appears to be somewhat doubtful beyond 10 or 15 miles, and three alternative curves are shown by broken lines.

[After a further illustration from English horse racing the lecturer proceeded to a consideration of the last diagram, Fig. 4.]

THE LOGARITHMIC GRAPH.

Where average speed in a race is plotted against the logarithm of the time occupied in it, the logarithm being employed, as stated above, for the purpose of including all records from 75 yards to 100 miles in the same picture. That people think, to some degree, in logarithms, although unconsciously, is shown by the fact that the records which men have thought it worth while to make are distributed approximately uniformly over the picture from left to right. Fig. 4 presents the data of athletics perhaps more clearly than any other. The initial rise of the curve for men running, which is due to starting inertia, is very obvious. The rapid fall beyond 220 yards is clearly seen. It is obvious that the 100 and the 220 yards (⅛ mile) records are better than those lying in their neighbourhood, that the quarter-mile record is extremely good, the 500 yards record very bad, by comparison with its neighbours. This diagram should enable any enterprising and scientific athlete to select the records most easy to break. Let him try those for 120 yards, for 500 yards, for three-quarter mile, for three miles, but not for 200 yards, quarter mile, one mile, and six miles.

LONG-DISTANCE RECORDS.

In Fig. 1 we saw that the speed fell to what seemed to be practically a constant level towards the right of the diagram; this fall represents the initial factor in fatigue. On the logarithmic scale, however, where the longer times are compressed together, the curve continues to fall throughout its length. This later fall is due to factors quite different from those discussed above. Consideration merely of oxygen intake and oxygen debt will not suffice to explain the continued fall of the curve. Actually the curve beyond 10 miles seems to some degree doubtful. Apparently the same extent of effort has not been lavished on the longer records. The greatest athletes have confined themselves to distances not greater than 10 miles. The curve A drawn through all the points has a suspicious downward bend in it, which suggests that if Alfred Shrubb or Nurmi had tried to break the longer records they would have done so very effectively. Possibly the true curve lies more like the continuation C; possibly it may be intermediate as shown at B. It would seem doubtful, indeed, whether the running curve and the walking curve are really to meet at about 150 miles. The most probable continuation of the running curve would seem to be somewhere between the lines B and C.

The continued fall in the curve, as the effort is prolonged, is probably due to the second and third types of fatigue which we discussed above, either to the exhaustion of the material of the muscle, or to the incidental disturbances which may make a man stop before his muscular system has reached its limit. A man of average size running in a race must expend about 300 g. of glycogen per hour; perhaps a half of this may be replaced by its equivalent of fat. After a very few hours, therefore, the whole glycogen supply of his body will be exhausted. The body, however, does not readily use fat alone as a source of energy; disturbances may arise in the metabolism; it will be necessary to feed a man with carbohydrate as the effort continues. Such feeding will be followed by digestion; disturbances of digestion may occur—other reactions may ensue. For very long distances the case is far more complex than for the shorter ones, and although, no doubt, the physiological principles can be ascertained, we do not know enough about them yet to be able further to analyse the curves.

Women's Running Records.

The women's curve, as far as it goes, is very similar to the men's. Some records again are better than others. An enterprising woman athlete who wants to break a record should avoid the 300 metres; she would be well advised to try the 500 metres. It would be very interesting to have an intermediate point between 100 and 200 yards.

Bicycling and Walking.

As before, the curve for men bicycling, which is drawn on twice the scale vertically of the running curves, is far less steep than they are. The conclusion from this was emphasised above. The walking curve is interesting—it is approximately straight. Physiologically speaking, there is not much interest in the shortest walking races, since here walking is artificial and extremely laborious; running at a considerably higher speed is much more easy. For longer distances, however, say from 10 miles onwards, we have probably in walking the most reliable data available for long-continued muscular effort. If we wish to study the exhaustion produced by exercise of long duration, walking-men may well provide the best subjects for our experiments.

Skating.

There remains the top curve of all, that for men skating. The initial rise of the curve, due to starting inertia, is very obvious. The fall of the curve beyond the maximum is nowhere near so rapid as for the case of running. Clearly in skating a man is not able to exert himself with the degree of ardour that is possible in the more primitive exercise of running. Skill and restraint are necessary, as they are in bicycling. There are limits to the output. Moreover, the effort can be continued for a long time at comparatively high speeds. It is interesting to note that a man can skate 100 miles at almost the same speed as another man can run one mile. The curve falls uniformly throughout as does the walking curve. Clearly the phenomena of gradual exhaustion could be well investigated in the case of skating. Here, again, it is obvious which records the aspiring athlete should attempt to break.

Rowing.

There are only a few records available, and those lying between rather narrow limits, for the case of rowing. Taking the case of an eight-oar boat, I have been able to obtain very few reliable data. Kennelly gives records of crews rowing, for times from 305 to 1210 seconds. Yandell Henderson, in the *American Journal of Physiology* (vol. lxxii., p. 264, 1925), gives five observations made upon the Yale crew of 1924. In addition there are records for the Henley course; these, however, are usually contaminated by the speed of the water. The most reliable of the data have been plotted in Fig. 1 on the same scale as the running, on five times the scale of the swimming. The observed points, shown by crosses, are somewhat scattered. As far as they go, a mean curve through them would lie practically along the curve for women swimming, but, of course, on five times the scale. The interesting part of the curve to the left is lacking; it is obviously impossible to make observations on an eight-oar boat for periods of 20 seconds, starting inertia is too great and no result of any value could be obtained. It would, however, be of interest to obtain data as far back as possible; certainly the records of crews rowing in still water for a minute and above should be ascertainable, and they would help to fit rowing into the scheme outlined by the other types of muscular effort.

Work and Stroke Frequency in Rowing.

In rowing the movements are slow; in an eight-oar boat, from 30 to 40 strokes per minute. According to observations by Lupton and myself the maximum efficiency of human muscular movement is obtained at speeds of about one maximal movement per second. In rowing, experience and tradition alike suggest that such a speed is about the optimum. In an eight-oar boat the recovery takes almost as long as the stroke, both occupying about one second. It is of interest how practical experience has gradually evolved a speed of movement which is almost exactly what a physiologist might have predicted as the most efficient. At a stroke of about 32 per minute the mechanical efficiency is apparently near its maximum. An enormous amount of work has to be done in propelling a boat at speeds like 10 to 12 miles per hour. According to Henderson, each member of the crew of an eight-oar boat must exert about 0·6 of a horse-power. Clearly if this enormous amount of external work is to be done it must be accomplished by working under efficient conditions. Those conditions necessitate a stroke of a particular frequency; only when the race is very short is it permissible, in order to obtain a greater output, to work less efficiently by adopting a more rapid stroke. The stroke may rise to 40 per minute for a short distance; in such an effort the oxygen debt is accumulating rapidly and exhaustion will soon set in. The amount of work, moreover, will not be proportionately greater, probably only slightly greater, than at the lower frequency. The conditions which determine the speed of movement, the "viscous-elastic" properties of muscle, are what ultimately decide the length of the oars and the speed of movement in a racing-boat. It is interesting to find—as, of course, was really obvious—how closely athletics is mixed with physiology.

Wastefulness of High Speeds.

This last discussion leads us to the question of what determines the great wastefulness of the higher speeds. Why does a speed of 280 steps per minute require 24 litres of oxygen per minute, while a speed of 240 steps per minute requires only eight litres of oxygen? The answer depends upon the variation of external work with speed of muscular movement. In a series of recent papers it has been shown that in a maximal muscular movement the external work decreases in a linear manner as the speed of shortening increases. At sufficiently high speeds of shortening no external work at all can be performed. In most of these athletic exercises, apart from the case of rowing, a large proportion of the mechanical work is used in overcoming the viscous resistance of the muscles themselves. At high speeds of running only a small fraction of the mechanical energy of the muscles is available to propel the body once the initial inertia has been overcome. The speed of shortening is so rapid that little external work can be done. The work is absorbed by internal friction, or by those molecular changes which, when the muscle is shortening rapidly, cause its tension to fall off. When working against an external resistance, as in rowing, there is an optimum speed. If an effort is to be long continued it must be made at a speed not far from the optimum. When, however, the whole of the resistance to movement is internal, as in running, there is no optimum speed; *the expense of the movement increases continually as the speed goes up*; the faster we move, the greater relatively the price. Our footsteps are dogged by the viscous-elastic properties of muscle, which prevent us from moving too fast, which save us from breaking *ourselves while we are attempting to break a record.*

Uniform Speed is the Optimum.

The amount of energy required per minute to run or to swim, or, indeed, to propel oneself in any way, increases more rapidly than the speed—in the cases which have been investigated, approximately as the square of the speed. This mathematical relation is not exact. From the variation of energy output as the square of the speed, we can immediately deduce that the most efficient way in which to run a race is that of a uniform speed throughout. Imagine that a man runs a mile race in 4 minutes 30 seconds at a uniform speed of 6·52 yards per second. His energy expenditure is proportional to 4½ times 6·52 squared—that is, 191·3 expressed in some arbitrary units. Imagine now that he runs it at two speeds, 6 and 7 yards per second, 780 yards at the lower, 980 at the upper speed. The total time is the same; the energy expended, however, is slightly greater, 192·3 instead of 191·3. This small variation of speed in the race has produced no serious increase in the energy expenditure. Let us imagine, however, that one portion of the race, 665 yards, is run at 5 yards per second, while another portion, 1096 yards, is run at 8 yards per second. The total time occupied in the race is still 4 minutes 30 seconds. The energy expended, however, is greater—namely, 201·5 units. Even this, however, is not a very large increase; by running about half the time at 8 yards and half the time at 5 yards per second, the energy expended has been increased only about 5 per cent., as compared with that required for running at a uniform speed of 6·5 yards per second throughout. Although, therefore, theoretically speaking, the optimum fashion in which to run a race is that of uniform velocity throughout, comparatively large variations on either side of this velocity do not appreciably increase the amount of energy expended.

Possible Advantages of a Fast Start.

There may, indeed, be advantages in starting rather faster than the average speed which it is intended to maintain. The sooner the respiration and circulation are driven up to their maximum values the greater will be the amount of oxygen taken in by the body, the greater the amount expendible during the race. It is a common practice in mile races to start very fast and to settle down later to the uniform speed. This may have a physiological basis in the quickening up of circulation and respiration achieved thereby.

The Simple Mechanics of High-Jumping.

One final point may be worthy of mention—this time connected with high-jumping and long-jumping. Recently I made a series of observations, with a stop-watch reading to 0·02 seconds, of the times occupied by a number of high-jumpers from the moment they left the ground to the moment they reached the ground again. With men jumping about 5 feet the time averaged about 0·80 second. Calculating from the formula

$$S = \tfrac{1}{2}gt^2,$$

where t is half the total time of flight, the distance through which the centre of gravity of the body was raised must have been about 2·5 feet. The men competing must have had an original height of their centre of gravity of about 2·7 feet. Thus, in the high-jump, their centres of gravity went about 5·2 feet high into the air. They cleared a height of 5 feet; they just managed to wriggle their centres over the bar. Now, paradoxical as it may seem, it is possible for an object to pass over a bar while its centre of gravity passes beneath; every particle in the object may go over the bar and yet the whole time its centre of gravity may be below. A rope running over a pulley and falling the other side is an obvious example. It is conceivable that by suitable contortions the more accomplished high-jumpers may clear the bar without getting their centres of gravity above or appreciably above it. Let us calculate, however, on the assumption that the centre of gravity of a jumper just clears the bar. The world's record high-jump is 6·61 feet, the centre of gravity of the performer being presumably about 3 feet high at rest. He raises it therefore 3·61 feet into the air, from which we may calculate that the whole time occupied in the jump is about 0·96 second. Seeing the amazing complexity of and the skill involved in the rapid movements and adjustments involved in a record high-jump, it is striking that all those events can occur within a time of less than one second. All the characteristics of the proprioceptive system must be evoked in their highest degree in carrying out such a skilled, rapid, and yet violent movement.

Long-Jumping.

It is well known to athletes that success in long-jumping consists in learning to jump high. It is not, of course, the case that a record long-jumper performs at the same moment a record high-jump. He must, however, cover a very considerable height. The world's record long-jump is 25·48 feet. With the check provided by the vertical impulse in the last step we cannot well imagine the horizontal velocity to be greater, at this moment, than that of 100 yards completed in 10 seconds—that is, than 30 feet per second. Let us assume this value. Then the performer remains in the air for $\frac{25{\cdot}48}{30}$, that is, 0·85 second. Hence we may calculate that the vertical distance covered is about 2·9 feet. Assuming the centre of gravity of the subject to have been originally 3 feet high, this means that it must have reached a height 5·9 feet in the air, enough, in a high-jump, to enable its owner to clear 5·9 feet. It is interesting to find that the simple laws of mechanics emphasise so strongly the precepts of the athletic trainer. Not only must one jump high if one wishes to break a long-jump record, but one must bring one's centre of gravity nearly 6 feet high into the air; for one must project oneself vertically, so that one may remain for 0·85 second above the ground.

Conclusion.

The practice of athletics is both a science and an art, and, just as art and science are the most potent ties tending to draw men together in a world of industrial competition, so sport and athletics, by urging men to friendly rivalry, may help to avert the bitterness resulting from less peaceful struggles. If, therefore, physiology can aid in the development of athletics as a science and an art, I think it will deserve well of mankind. As in all these things, however, the reward will be reciprocal. Obviously in the data of athletic records we have a store of information available for physiological study. Apart from its usefulness, however, I would urge that the study is amusing. Most people are interested, at any rate in England and America, in some type of sport. If they can be made to find it more interesting, as I have found it, by a scientific contemplation of the things which every sportsman knows, then that extra interest is its own defence.

SOME
Practical Considerations
IN THE CONSERVATIVE TREATMENT OF FRACTURES OF THE PELVIS AND LOWER EXTREMITY.[*]

A Course of Four Lectures delivered for the University of London at St. Bartholomew's Hospital

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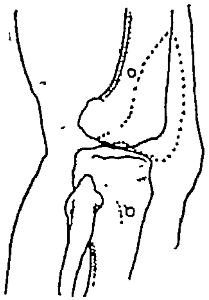
PAST PRESIDENT, ROYAL COLLEGE OF SURGEONS IN IRELAND.

LECTURE III.[*]

FRACTURES ABOUT THE KNEE-JOINT.

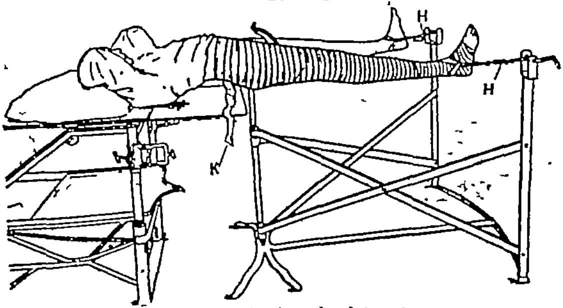
FRACTURES of the lower end of the femur into the knee-joint are not uncommon. They resemble closely articular fractures of the lower end of the humerus. The condyles may be comminuted, or there may be simple fractures through either condyle. Replacement of the fragments usually takes place under extension. A Thomas knee-splint, applied in the classical fashion, is the best apparatus for the purpose. Traction on the tibia pulls the condyles into correct position by the tension of the lateral and crucial ligaments. By separating the joint surfaces during treatment adhesions are prevented and early movements facilitated. Stretching of the ligaments during treatment *does not* produce any permanent disability.

FIG. 1.



Positions for transfixion pins.
(Hey Groves.)

FIG. 1A.



"Gate" extension apparatus (reproduced from THE LANCET, August 22nd, 1925, p. 364)

It is best for the surgeon to manipulate the condyles with his hands while the assistant is applying extension in these cases. "So long as the tibia is not allowed to bump up against them," says Sir Robert Jones, "they will not be again displaced. If immediate reduction does not occur, quite often after a 12 hours' extension on the Thomas splint the displaced fragment will find its proper position." Fractures of the tuberosities of the tibia and T-shaped fractures into the joint are dealt with in the same way. About six weeks after these injuries the patient may move about on a calliper splint.

Epiphyseal Separation.

The lower fragment is usually displaced forwards, and the ragged end of the upper fragment is pushed backwards in relation to the popliteal vessels. The injury is sometimes compound, and in many recorded cases amputation has become necessary.

Reduction is accomplished by strong flexion until the heel touches the buttock, combined with traction on the tibia and direct manipulation. In order to save the limb open reduction may become necessary. Union usually takes place by bone, and is followed by some shortening and interference with growth. The injury should be treated in full flexion, as in similar fractures involving the elbow-joint. In the latter case the triceps, with the limb in flexion, provides a nicely grooved natural splint for the prevention of backward displacement and, in the case of the knee-joint, the quadriceps extensor when the limb is flexed forms a naturally moulded anterior splint which admirably controls the fragments and prevents forward displacement.

In epiphyseal separation of the lower end of the femur the limb, after reduction, should be carefully watched lest anything in the nature of tight bandaging or tight compression produces swelling of the feet. The condition of the circulation in children, when firm fixation is required, needs strict attention. "Look well to the blood-supply of the limb below the point of injury, more especially in *all* fractures of the lower extremity," is the advice of Bryant and Buck in the "American Practice of Surgery" (Vol. III.).

Traction by Pins, Callipers, and Stirrups.

Before dealing with the treatment of mal-union and non-union after fracture of the femur, it is necessary to refer to the question of extension applied by means of metal appliances attached to, or passed through, the bone. These appliances consist of various pins, callipers, and stirrups; each surgeon has his preference for one or the other. The transfixion pin is the only one I myself employ, and quite often it takes the form of a long nail, such as is used for the temporary fixation of joints after excision. The skin is pulled upwards towards the hip to prevent subsequent traction pressure on the skin below the pin. The point of election for transfixion is just above the condyles at their junction with the shaft. If a pin is driven through the compact tissue of the femur at the point indicated, it can be left in place without inconvenience or pain for from six to eight weeks. A handle improvised from wire is attached to the pin. In the cases I have treated I have passed the pin through *the tibia*, not the femur. It is passed through the shaft of the tibia just behind and below the tubercle. In this position the bone is thick and hard, and the pin can be left in position for two or three months (Fig 1).

In the case of fractures of both bones of the leg, when this form of extension becomes *necessary*, the pin is passed by some surgeons above, but in the line of, the malleoli, well clear of the ankle-joint, about three finger breadths above the tip of the external malleolus. Personally, I prefer transfixion of the os calcis. The pin is passed one inch below and behind the tip of the external malleolus, downwards and inwards in such a way that traction produces inversion of the foot.

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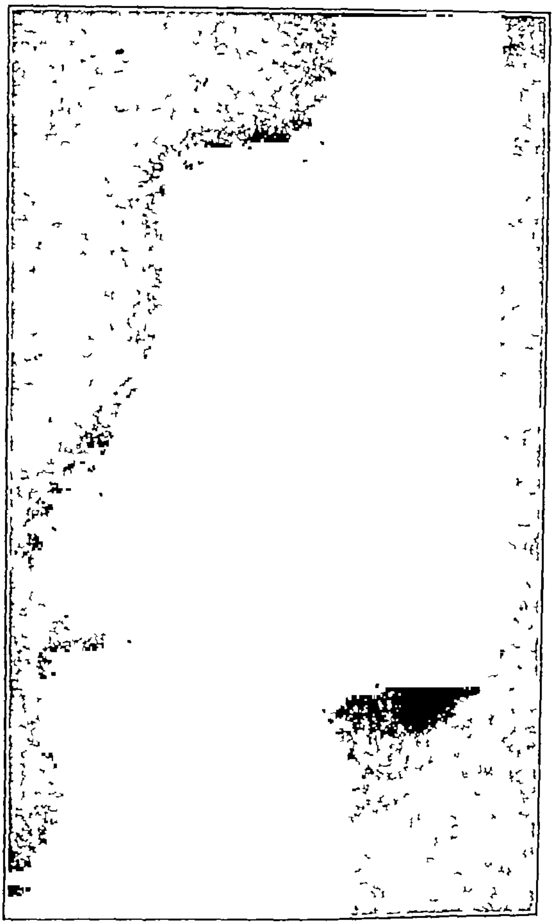
[*] Lectures I and II. appeared in THE LANCET of August 15th and 22nd respectively, and Lecture IV. will appear in a subsequent issue.

Full information on this subject is to be found in the excellent work on "Modern Methods of Treating Fractures," by Hey Groves.

FIG. 2.



Mal-union of femur (lower third) three months after the injury. 3½ inches shortening. (Lateral view.)

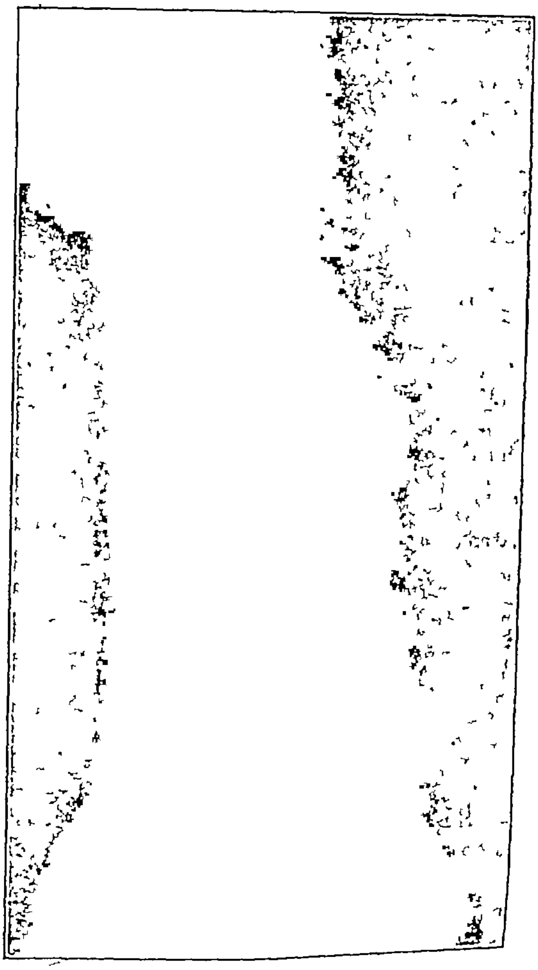
MAL-UNION AND NON-UNION.

Mal-union and non-union are due, probably in 90 per cent. of cases, to mal-treatment. They are a reproach to surgery, and can always be avoided. It is no use blaming constitutional disease, or the interposition of soft tissues between the fragments for these unpleasant sequelæ. The primary treatment is practically always at fault, and is thus the main causative factor. The primary treatment may be good, but if the patient is allowed to bear weight too early, yielding of the callus with angulation and overlapping will take place.

The time of strong union in a fractured bone varies in almost every case, and the length of time given for solid union in the text-books never errs on the safe side. In a small percentage of cases twice as much time is required as in a typical case. To allow walking without a calliper splint in the case of a fractured femur before three months have elapsed is asking for trouble, and under certain conditions a much longer period is required. Cases of non-union are often unrecognised cases of delayed union, and the dividing line between the two is very obscure. For some reason or another union is slow, and at the end of five or six weeks the surgeon becomes anxious, and moves the fragments one upon the other; in another four or five days he tries again, and, by a continuation of this process, it is made impossible for the slowly-forming permanent callus to complete the union.

The treatment of definitely ununited fractures must, of course, be operative, but the surgeon should feel morally certain that it is a case of non-union, and not delayed union, before operation is undertaken. In this matter I have tried to follow the teaching of Sir Robert Jones. His usual practice is simply to begin again and wait, and to try and induce osteogenetic activity by Thomas's so-called "percussion and dam" method. After hammering the whole region of the fracture with a padded or indiarubber mallet, a tight elastic band is applied both above and below the fracture at a distance of several inches. The limb between the tubes swells to much more than its normal girth, expanding all the capillaries and lymph paths in the fibrous tissue, and allowing a new process of repair to start. The indolent callus may thus be transformed into an osteogenetic factory. The rubber tubes can be worn only for about 20 minutes each day at first; afterwards they can be borne for several hours at a time. They should be kept tied sufficiently tightly to produce considerable swelling and stasis. Local congestion between two tubes is much more effective than when one proximal tube is used. There is no doubt that non-operative treatment should be tried in cases of apparent non-union, in the hope that they are cases of delayed union. Only when efficient

FIG. 3.



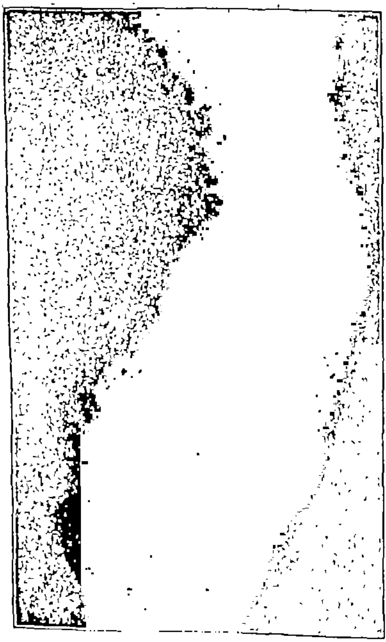
Position after two extensions on "gate" apparatus and traction from a pin through the tibia. The injured leg is now longer than normal.

conservative treatment fails should the case be condemned as one of non-union. Bone-grafting and reconstruction operations are then undertaken.

It is surprising what good results can be obtained in cases of mal-union of the femoral shaft with 3 in. or 4 in. shortening. Even after three or four months it is not difficult to re-break the fracture manually. In most of the cases I have seen the knee was stiffened by the previous treatment, and the mal-union could be broken down by forcible bending of the knee over the edge of the table. The worse the position of the bones, the less firm will be the exuberant callus. In old-standing cases of mal-union it may not be possible to re-fracture a bone, and the simplest method to employ is an oblique osteotomy through the callus between the original fragments of the shaft.

When the mal-united fracture has been re-broken and thoroughly freed manually, forcible extension by some means or another will reduce the shortening at one sitting by from 2 in. to 3 in. It has been my practice, after re-fracturing the bone, to forcibly stretch the limb for a few minutes on the gate apparatus (*Fig.* 1A), and while still stretched to apply a Thomas splint with fixed tape extension. While the limb is stretching on "the gates," and before the tapes are tied to the end of the Thomas splint, a nail or pin is passed through the tibia, as recommended by Hey Groves, just behind and below the tubercle. When the patient is back in bed a pulley is connected by a strong wire loop to the nail. When the patient returns to the ward a cord is tied to the end of the Balkan frame, is brought round this pulley, and passed over a pulley at the end of the bed; 20 lb. weight is at first employed, but with this arrangement of pulleys, apart from friction, the resultant weight is equivalent to 40 lb. This pin or calliper traction takes the place of the fixed extension. If, in a week's time, the shortening has not been completely corrected, the patient is brought to the theatre, anæsthetised, and the limb again stretched on the gate apparatus. It is seldom necessary to repeat the process more than once, and quite often the treatment will result—if not carefully watched—in the leg becoming too long (Figs. 2 and 3).

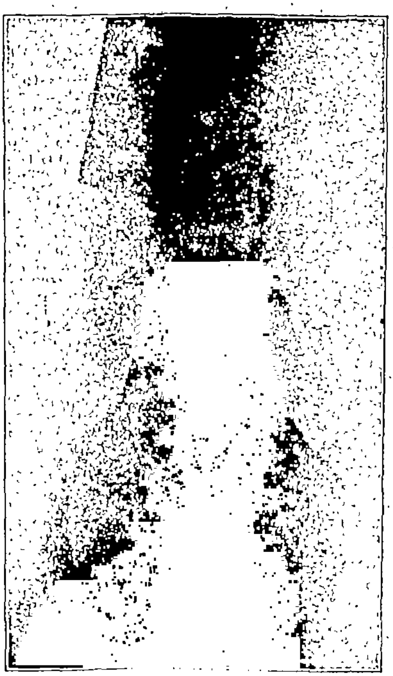
FIG. 4.



Late or secondary displacement. After six weeks the splints were removed in order to fit a calliper with the result shown. The patient never left bed.

I have had in my Private Hospital during the last year a man, aged 70, whom Mr. Hey Groves kindly saw with me. He fractured the lower third of his femur when in a state of alcoholic exuberance, and did not think seriously of treatment for three months after the accident. The lower fragment was in the usual position behind; the upper fragment impaled the soft tissues at the outer side of the patella like a bayonet, and there was over 3½ in. shortening. Three months had elapsed, but there was no difficulty in breaking down the fracture by manipulating the knee over the edge of the table. The first stretching on the gates reduced the shortening by 2 in. For a week he was treated in fixed extension in a Thomas splint. Shortening to the extent of 1½ in. persisted, and further forcible extension on the gates was employed. The shortening was this time completely reduced. With the assistance of Mr. Hey Groves, a pin was passed through the strong portion of the tibia in the region of the tubercle, and 40 lb. extension applied when the patient returned to bed. The weights were gradually reduced after the first fortnight to about 15 lb. Two months later the injured limb was found longer than the other.

FIG. 5.

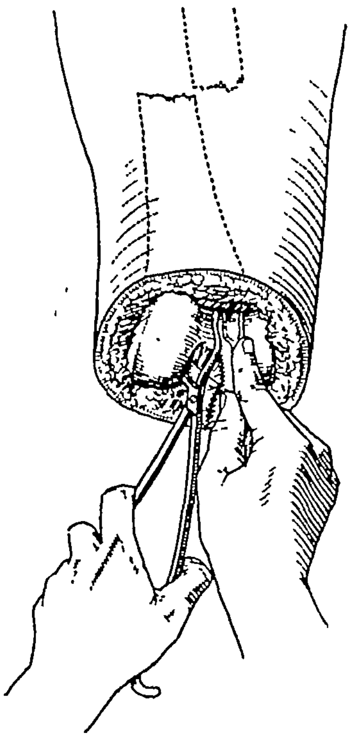


Same case as Fig. 4 showing femur ½ inch too long after "gate" extension (see Fig. 1A) and pin traction.

Late or Secondary Displacement.

With calliper or pin extension, over-lengthening of the bones may be produced more readily than when other methods are employed. Care must be taken lest deformity recur after two or three months, owing to the plastic condition of the intervening callus, even though the patient is still kept in bed. There should be no interval between the removal of the extension and the application of a calliper splint. The latter should be worn both night and day for a considerable period. In the case just mentioned, the full length obtained and the good alignment were partially lost by allowing the patient to lie for a couple of days after two months without the extension. The final result was functionally good, with about ¾ in. shortening.

FIG. 6.



Sleeve amputation. The limb is removed by circular amputation and the bone shelled out in the manner shown.

I had experience of another case, in which a transverse osteotomy was performed in the lower third in order to correct outward rotation of the foot following gunshot injury to the hip (Figs. 4 and 5). A Thomas knee-splint was used for fixation, but was removed at the end of five or six weeks in order to fit a calliper. Before the latter was completed lateral displacement and overlapping of the fragments occurred, although the patient never left bed. This was subsequently corrected by re-breaking, stretching on the gates, and pin traction. After consolidation it was found that the leg had been lengthened by ½ in. beyond normal.

This question of late or secondary displacement requires some attention. It was new to me until recently, and I used to think of it as occurring only when patients were allowed to walk too soon without support. In both the cases to which I have alluded, the broken ends were held in good alignment, but in the first there was not close apposition, and a large gap remained to be filled up with reparative material. Such repair tissues undergo ossification in the adult very slowly, and probably at the end of six or eight weeks they are quite plastic. In a day or two the muscular tension may slowly deform the seat of fracture, so that the final result is very far short of that which was promised by X rays in the course of treatment. Hey Groves comments on this, and states that late displacement is specially liable to occur in the femur of adults.

One would hardly think it possible that an interval of a few days without apparatus, while the patient is still in bed, after six or eight weeks of extension, would lead to shortening and displacement, but that such may occur—especially where the treatment was for mal-union or where too much lengthening has been produced—is beyond doubt.

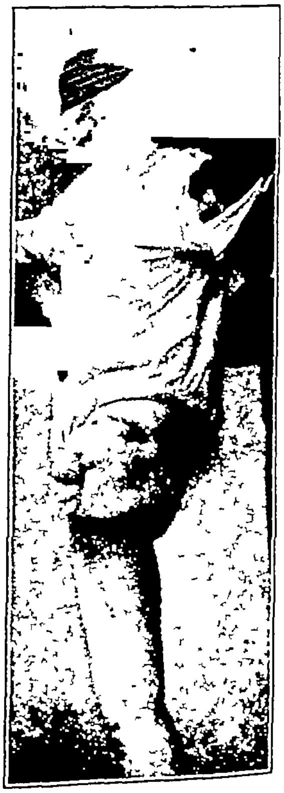
Amputation after Fracture of Femur.

Although I am dealing here with conservative treatment, I must mention that I have had four cases of fractured femur, in private practice, which ended in amputation. In three out of the four the limb was removed by a procedure I have called the "sleeve" amputation (Fig. 6). It is a modification of the discarded guillotine operation, and appears to me to be applicable to a group of cases in which orthodox methods would result in needless mutilation.

The method is designed to meet certain emergency operations with the least possible surgical risk, and with a view to the conservation of the longest possible stump. The orthodox method of obtaining healthy flaps well above the injury or disease is departed from, and the amputation is carried very much lower than most text-books would sanction.

I will quote one case by way of illustration:—

FIG 7.



Stump some years after a sleeve amputation for compound fracture of the femur in the upper third.

In 1916 a man was run over by a motor lorry and sustained a fracture about the middle of the shaft of the right femur. Ten days afterwards he was seen by me. The leg, from the foot to just below the knee, was gangrenous; the thigh was enormously swollen, red, and œdematous; the skin was mottled and vesicated, and large patches of black and purple discoloration extended over a wide area. The thigh had all the appearance of the early stages of moist gangrene which had already destroyed the leg. The œdema, vesication, and discoloration extended upward on the abdomen. A tourniquet could not be employed owing to the condition of the soft tissues, and for the same reason digital compression of the vessels was impossible.

An incision was made exposing the upper portion of the femoral artery for a length of 2 or 3 inches in order to ascertain its condition. The artery was pulsating at this level, and was held by an assistant between finger and thumb. A circular amputation was quickly performed *through* the knee-joint, just above the line of definite gangrene. The incision was carried above the margin of the patella in front, and the quadriceps extensor tendon divided. The attachments of the soft tissues to the femur were separated with knife and periosteal elevator until the lower segment could be withdrawn, like a cork from a bottle, by the rotatory movements of a heavy bone forceps. When the assistant released the femoral artery *there was no bleeding whatever at the end of the stump. At this level the vessels were thrombosed and obliterated.* The lower half of the thigh had now the appearance of the sleeve of a coat from which the hand and forearm had been removed. The sleeve was left open and lightly packed with iodoform gauze.

The man made an uninterrupted recovery, except that there was an extensive sloughing of the skin in the upper portion of the thigh. He was seen in August, 1923, seven years after operation, and was walking without pain or discomfort with his artificial leg. A scar about the size of the palm of a hand in front and above indicated where the skin sloughed and had been skin-grafted. The scar through which the femoral artery was exposed was well seen on the inner side. An X ray photograph showed irregularities about the end of the femur, and the formation of well-marked osteophytes. Owing to the adequate covering of soft tissues, these gave rise to no pain or discomfort whatever.

Fig. 7 shows the stump some years after a sleeve amputation for comminuted compound fracture of the upper third of the femur, the result of a bullet wound. Before amputation the soft tissues were riddled with discharging sinuses.

CATARACT EXTRACTION IN EGYPT.*

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IN a country such as Egypt, where trachoma is endemic and affects about 90 per cent. of the population, the preparation of cases as a preliminary to the extraction of cataract is an important matter. It is not the presence of the trachoma itself which is the danger, but the coexistence of such organisms as the pneumococcus, streptococcus, staphylococcus, Morax-Axenfeld bacillus, Koch-Weeks bacillus, and gonococcus, which has to be negatived before operation can be considered as safe.

The appropriate treatment for the particular stage of trachoma found in each case is adopted, and treatment is continued until the conjunctival secretion becomes innocuous.

Preparation of the Patient for Operation.

It is sometimes exceedingly difficult to get rid of dangerous organisms from an eye preparatory to operation. Where this is not possible after treatment as an in-patient for a fortnight, and where the conjunctiva is fairly smooth, we proceed with the operation, after having swabbed the conjunctiva with silver nitrate solution, 2 per cent., an hour previous to the operation. I have never seen any untoward occurrence after this procedure.

In order to overcome the nervousness which many patients feel when suddenly introduced into the completely strange atmosphere of the operation room, it is an invariable practice to put the patient on the operating table the day before the operation and teach him to look at his own hand, being the opposite one to the eye to be operated on, held up in front of him. At the operation a nurse holds up the patient's hand upon which the patient himself fixes his gaze. In this way we avoid telling the patient to look down to his feet, together with the consequent dangers of this procedure. The skin of the area surrounding the operation is painted with tincture of iodine; the orbicularis is then infiltrated with novocaine solution, 1 per cent., above and below the palpebral fissure; this greatly helps in keeping the patient quiet, and I have had far fewer unruly patients since I carried this out.

When the patient is placed on the table the conjunctiva is bleached with adrenalin chloride solution, and then the conjunctival sac is thoroughly flushed with lotion from an irrigator above the level of the patient's head. The fluid used in Egypt is invariably freshly prepared surgical eusol solution, made from bleaching powder which has been kept in an air-tight receptacle; unless this smells strongly of chlorine it is inert, and only useful by its mechanical effect. It is not dangerously irritating to the bleached and anæsthetic conjunctiva.

As I have been talking mainly of hospital patients I have omitted to mention the massage of the lids to get rid of excess of Meibomian secretion, which I practise for private cases a day or two before the operation. I have found it advisable but not always easy to get this carried out in hospital practice.

The Operation as Usually Performed in Egypt.

In describing to you the variety of cataract operation which is usually performed in Egypt, or was being performed while I was still Director of Ophthalmic Hospitals, I must remind you that I was invited to occupy that post in order to teach ophthalmology, including especially the operative side, to Egyptian surgeons, and not in order to perform an immense number of operations myself. It has therefore been my object to fix in the minds of my pupils, by usually practising it, what I considered to be the safest operation for the average operator. I have naturally had opportunities of performing most of the different operations, but the operation which I now do is, I consider, the safest both for myself and my pupils. I think that each operator should do that operation which suits him best, and which he can do in the least time, with the least possible damage to the tissues. Certainly since my return I have seen some beautiful operations performed by other surgeons by very different methods. In any case the surgeon must be ready to alter his procedure to suit the exigencies of the case.

I open the lens capsule with a Dalrymple's cataract needle which has a perfectly cylindrical shaft, without escape of aqueous. I make a fairly large section, including a small conjunctival flap. I then remove the speculum and deliver the lens, depressing the posterior border of the wound with a curette, and just touching the lower part of the cornea with the concavity of a strabismus hook. During this manœuvre the lids may be separated by the assistant with a strabismus hook under the upper lid, and his thumb on the lower lid. I frequently wash out the anterior chamber with normal salt solution which has been filtered and boiled immediately previous to the operation to remove soft cortex. Some years ago I had bad results after washing out the anterior chamber, but none since I have attended to the preparation of the solution myself. I use a syringe with a flat silver nozzle in preference to any apparatus which requires an assistant. A button-hole iridectomy in the periphery of the iris is then performed, the iris forceps used being straight and without teeth.

I believe that the presence of the intact iris is a great safeguard against rupture of the hyaloid membrane and consequent loss of vitreous during delivery of the lens. I prefer to make a button-hole iridectomy rather than to leave the case as a simple extraction, as I think that there is less liability to prolapse of the iris when there is an aperture in it through which aqueous can escape, in case the anterior chamber reopens. The intention to leave intact the pupillary border of the iris is also guided by the desire to prevent the possibility of the prolapse of capsule into the wound rather than by the desire to obtain a better cosmetic effect. I have no hesitation in doing a complete iridectomy if the iris does not seem to go back easily into the anterior chamber on irrigation; at all times I prefer to do this if there is a reasonable probability of prolapse occurring subsequent to the operation. A drop of atropine solution is instilled and both eyes are bandaged. A metal shield of some kind is placed over the dressing. At every dressing the strictest aseptic precautions are observed, as regards the surgeon's hands, the sterilisation of the dressings, and of the atropine drops. Carelessness in this respect is invariably punished sooner or later by signs of inflammation. I find that old patients with bronchitis or restless people usually remain much quieter if they are taken from the operating room and placed in a deck chair with a pillow under the head, than if they are put to bed and told not to stir under penalty of losing the good effect of the operation. I remove the pad from the eye unoperated on at the first dressing. I flush the conjunctival sac with antiseptic drops and after drying them up instil a drop of atropine solution daily. Dark glasses are given between the sixth and tenth days.

By whichever method the capsule is opened, whether by the point of the knife, capsule forceps, the needle, or the cystitome, a number of cases will require discission of capsule subsequently. If the membrane is really anterior lens capsule it may be needled at any time after vascular congestion has disappeared. I have made a practice of needling such capsules ten days after the operation of extraction, provided that there is no redness. It must be very distinctly stated that the needling operation which I do is a very delicate affair, and consists in a single cut or tear of the membrane with a Dalrymple's needle. If an aperture is produced all is well, but if an aperture is not produced, either through clumsiness or through the membrane being thicker than was expected, no more is done, and it is dealt with on a subsequent occasion, as soon as all redness has disappeared. I occasionally use a Zeigler's knife, or a fine Graefe's knife, or more rarely two needles.

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* Read at the Ophthalmological Section of the Royal Society of Medicine.

Sometimes one sees cases in which, owing to inflammatory conditions after the extraction, or owing to proliferation of the cells of the anterior capsule, the capsular membrane is thick and difficult to divide without causing dangerous traction on the ciliary body. I have no doubt that such cases are best dealt with by capsulotomy with de Wecker's scissors, an opening into the anterior chamber having been made with a keratome. I expect to do such operations without loss of vitreous. This operation should never be performed until a period of three months has elapsed since the last sign of inflammation in the eye disappeared.

In Egypt, where there is so much acute conjunctivitis with resultant corneal ulceration and disintegration of the globe, shrunken globes are very common, and one is frequently asked to extract a cataract in an eye which is fairly healthy otherwise, but in which the fellow eye is in a condition of phthisis bulbi. Now, as a matter of clinical experience, it is found that intra-ocular operations in a fairly good eye are frequently followed by iritis if the other eye is shrunken; also that sympathetic ophthalmia is a not unusual occurrence in a patient who has had a perforating ulcer of the cornea with prolapse of iris. I therefore invariably refuse to operate on the cataractous eye until its fellow, being in a condition of phthisis bulbi, has been removed.

I have not mentioned the importance of the routine examination carried out by the ophthalmic surgeon in charge of the hospital, all details being scheduled, including a note on the hæmoglobin percentage and the condition of the teeth. If the hæmoglobin is low, examinations are made for the ova of bilharzia, or ankylostoma, and if positive, the conditions are treated. Carious stumps are extracted by the surgeon, and if the frequent pyorrhœa alveolaris is present the gums are thoroughly swabbed daily for a period with tincture of iodine. Each cataract patient is given a toothbrush and is taught to use it with a solution of permanganate of potash. Before operation I always verify in the dark room the clinical notes made by the surgeon in charge of the hospital. My impression is that complicated cataracts are more common in Egypt, and it is easy for a surgeon of only two or three years' ophthalmic experience to miss an important sign, such as a faint tremor of the iris, which may be of the greatest importance to the operator or to the prognosis.

All cases of cataract extraction are examined and ordered appropriate glasses, if necessary at the Government expense. The fellahin, however, are usually satisfied with their unaided vision. If a patient does not come for examination he is sent for. In this way an exact record of the operative result is obtained. In order that each operator shall have a knowledge of his results it is insisted upon that he keeps a statistical record; this is also important for the purpose of clinical supervision.

Visual Acuity after Operation.

The visual acuity after cataract extraction in Egypt is usually poor as compared with that obtained in England. This is due to several reasons: First, the cornea is rarely clear, but has a leucoma, or nebula, or pannus; second, the intelligence of the patients in the country districts is frequently very undeveloped; and third, many even of the well-educated classes think it is bad luck to acknowledge how good their visual acuity after operation really is, though they may readily say that they are very pleased with the result. Also many cases of cataract in which the cornea seems to be clear when examined in the dark room before operation exhibit opalescence at the first dressing, due, as I suppose, to a refilling of old pannus vessels.

Difficulties Encountered in Egypt.

The operation of cataract extraction seems to be more difficult in Egypt than in England. The acquisition of sufficient Arabic for operative purposes is not a difficult matter, though a very necessary one, the difficulty being in the inability of the patient to sustain for the duration of the operation the required pose and immobility. On looking through my private notes I find several cases in which this is exemplified.

Case No. 13808, operated on at Asswan on March 25th, 1911, was a Berberine woman who understood no Arabic; she moaned and squeezed, and kept her eyes turned up during the whole operation. She was discharged from the hospital a month later with a clear gap in the capsule; impossible to take her vision, but she is able to get about well without glasses.

Case No. 6082, operated on at Zagazig on Feb. 14th, 1915; the patient squeezed as soon as the section was completed, the lens shot out in its capsule followed by vitreous. Iridectomy was done and the wound was sutured.

Case No. 14809, operated on at Damanhur on June 29th, 1911. After normal delivery of the lens the wound began to gape; the patient then squeezed, allowing a large escape of vitreous; the wound was closed with the ciliary body in view. Six weeks later the vision with sph. +9 and cyl. +4 was 6/36; the usual pre-existing nebula was present, and there was a fine capsular membrane.

The operation which I was in the habit of performing at this time was extraction with *iridectomy*, the capsule being opened with capsule forceps.

Case No. 8350, operated on at Medina-el-Fayum on March 16th, 1918. I failed to open the extraordinarily thick capsule of a Morgagnian cataract either with the point of the Graefe knife as it went across the A.C. in making the section, or with the cystitome. I therefore inserted the toothed iris forceps into the A.C. with the intention of tearing the capsule; however, the capsule was too tough to be lacerated, and I slowly withdrew a bladder-like Morgagnian cataract without loss of vitreous. The vision a fortnight after the operation was 6/24 with correction, the usual pannus being present.

I have notes of nine cases between 1916 and 1923 in which the lens was extracted with Macnamara's cataract spoon without losing vitreous. This was done in each case because some particular danger threatened, and not as an operation of election. A typical case was the following:—

No. 5304 was operated on at Rod-el-Farag, Cairo, on July 22nd, 1923. Extraction of cataract in a glaucomatous eye; the wound had to be enlarged, as owing to the shallow A.C. it was impossible to make the section adequately large; the capsule was opened with the cystitome. On commencing delivery of the lens the vitreous bulged; the lens was therefore scooped with Macnamara's spoon without loss of vitreous. A fortnight later the eye was quite quiet, the pupillary area being occupied with thick capsule for needling.

Another case of interest to me was No. 9901, Assiut, on which I operated on Sept. 28th, 1912. I found at the first dressing on the following day that the conjunctivo-corneal flap (at this time I was in the habit of making only a very small conjunctival flap) was anteflexed forwards on to the cornea. I therefore sutured it into position. Thick capsule was needled on Oct. 8th, or ten days after the extraction, after which the patient's vision with sph. +10 was 6/9.

It is certainly well to be prepared to suture the conjunctival flap in position if it shows signs of mal-apposition at the close of the operation. Recently I operated on a retired prize-fighter who exhibited signs of severe former injuries in a deflected nose and a pair of cauliflower ears. The cataract was about complete, while the other eye showed a posterior polar opacity, without, however, vitreous opacities. After section I opened the capsule with a cystitome and commenced delivery of the lens when vitreous protruded. I then did a complete iridectomy, and scooped the lens with slight vitreous loss. The wound gaped considerably so I put in two conjunctival sutures. At the first dressing in three days' time the eye was found to be perfectly quiet, but at the site of the wound the conjunctiva was bulging. I took a depressed view of the case, but he was discharged from the hospital within a fortnight with a perfectly flat wound, *a normal fundus as far as can be seen, and no* vitreous opacities. To me this case was interesting, as if I had not had the necessary sutures and skilled assistance I believe that the eye would have been lost.

These cases with exceptional operative conditions are not often met with, but it is as well to be prepared for the worst.

Operation in a Glaucomatous Eye.

I have already referred to a case of extraction of a cataract from a glaucomatous eye. By this I mean either as a primary operation or as a secondary operation after a previous decompression operation. In Egypt it not infrequently happens that a lens which exhibits slight opacity rapidly becomes totally opaque after a decompression operation, which, as far as can be seen, has been perfectly performed, certainly in which no injury to the capsule of the lens can be detected. I suppose that some change in the nutrition of the lens must take place as the result of the reduction of tension, causing it to become opaque. I referred to this in my report for the year 1919 of the Ophthalmic Section of the Department of Public Health. I there gave details of *ten such cases, all* those on which I operated for this condition between December, 1909, and February, 1918. In no case was vitreous lost, *and in seven of them useful* vision resulted. During the same period 59 similar cases were operated on by my assistants with loss of vitreous in 8 cases, *and resulting useful* vision in 41 cases. It therefore seems that it is worth while attempting operation in such cases provided that even a small *field only* remains.

Forms Peculiar to Egypt.

There is a form of cataract found in children in Egypt which is rarely met with in England or in Europe. It is not congenital, for there is invariably a history of previous good vision, followed by a rather rapid diminution, over a period of two to six months. The condition is usually binocular, but monocular cases are sometimes seen, in which the healthy eye shows no sign of opacity. The condition has long been known to be associated with anæmia, but was first fully described by Granville Waddy in the *Bulletin* of the Ophthalmological Society of Egypt for 1914. The principal causes of anæmia are ankylostomiasis and bilharziasis, with which the disease pellagra is in severe cases sometimes associated.

Some of these cataracts contain little more than a milky fluid, so that after opening the lens capsule the opaque matter can be evacuated by paracentesis, leaving the lens capsule to be dealt with later by needling. Other lenses consist of gelatinous material which can be easily broken up with the cataract needle, and then evacuated at the same sitting through a keratome incision. More rarely the substance of the cataract resembles that of the normal lens, and should not be evacuated until the aqueous has had time to break down the lens fibres.

A moderate degree of anæmia seems to have no adverse influence on the prognosis of intra-ocular operations. Such operation wounds heal with extraordinarily little increased vascularity, and usually without the signs of iritis. The cause of the anæmia in ankylostomiasis has not been fully worked out. It is not due to hæmorrhage from the intestine, or to ingestion of blood by the worms. It has been shown by Boycott and Haldane that the volume of the blood in ankylostomiasis is increased to double the normal, while the oxygen-absorbing power is about normal. It is probable, though it is not proved, that the worm secretes a toxin, which, being absorbed by the human host, causes inhibitory changes in the blood-formation of the red marrow. The severity of the anæmia is not always proportional to the number of worms present. The treatment of the disease has recently been revolutionised by the discovery of the vermicide properties of carbon tetrachloride.

THE INDUCTION OF PREMATURE LABOUR.*

A RECORD OF SEVENTY-TWO CONSECUTIVE CASES.

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History.

THE first record of an induction of premature labour is that by Louise Bourgeois, midwife to Marie de Médicis in 1608. In 1756 a conference was held in London to discuss the frightful mortality of Cæsarean section, when Denman suggested induction of premature labour by rupture of the membranes as a therapeutic measure. Macaulay, of London, was the first to perform the operation on the wife of a linen draper in the Strand. In 1830 Kiwisch, of Wurzburg, introduced the method of induction by repeated douches of hot or cold water. In 1852 *Barnes made use of an hourglass-shaped rubber bag* with stopcock. In 1855 Krause introduced a method of induction by the insertion of a flexible bougie *into the uterus. A few years later*, in 1888, *Champetier* de Ribes's bag was invented, but could only be used after dilatation of the cervix. Small bags of very thin indiarubber were devised by Horrocks, of Guy's Hospital. Galabin approved this method, which he considered to be the most perfect, since it has the advantage, as compared with the use of the bougie, that there is very little risk of separating the placenta. The only difficulty is to get rubber bags made thin enough to dilate easily by hydrostatic pressure and yet strong enough not to burst.

Other methods, such as ecbolic drugs, separation of membranes from lower uterine segment, massage of breast or uterus, injection of glycerine between membranes and uterine wall, electricity, cervical tampons, have also all been used, but have nearly all been discarded with the exception of the quinine and castor-oil method, which is only successful in a small proportion of cases.

Propriety of the Operation.

The question of the propriety of the operation has been much discussed, more especially in cases of minor pelvic contraction. Williams thinks it has lost popularity in America owing to the high fœtal mortality. He himself has only done one case. In 301 operations by Ahlfeld, Bar, Leopold, and Pinard the fœtal mortality was 13 to 45 per cent., though the maternal mortality was only 1·03 per cent. They therefore held that it was no longer justified, and that equally good results for the mother, and far better for the child, would be obtained by subjecting the patient to the second stage of labour and resorting, if necessary, to Cæsarean section. Kleinwachter concluded, after an exhaustive study of the subject, that 78·3 per cent. of children were born alive, but only 60·4 per cent. left hospital alive. He considered that probably half of these born alive would die during the first year owing to unfavourable environment. He thought the operation should be abandoned, except when the child is abnormally large from excessive development or undue prolongation of pregnancy. Sarwey, in *2200 cases*, found a maternal mortality of 1·4 per cent., and 0·6 per cent. of this was due to infection, not necessarily due to manipulations. The infant mortality was 30 to 60 per cent. In the Queen Charlotte Hospital records in 10,000 labours there were 200 inductions. There was no maternal mortality, but 26 infants did not survive—viz., 12·6 per cent. Von Herff records 120 consecutive prophylactic inductions by rupture of the membranes, with a fœtal and infantile mortality of 20 per cent. In four years at the Liverpool Maternity Hospital (1916 to 1919), of 169 bougie inductions with no maternal mortality 171 children were born, with 25 fœtal and neonatal deaths—viz., 14 per cent. Prof. H. Briggs recorded in 1922 a series of 159 conservative bougie inductions in minor degrees of contracted pelvis, or fœtal over size, with eight stillbirths and five neonatal deaths—viz., approximately 8 per cent. Prof. Briggs regards induction favourably.

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* A paper read at a meeting of the North of England Obstetrical and Gynæcological Society.

Most authorities, in discussing the induction of premature labour, state that the child requires greater care than a full-time child, and that the ultimate chance of life of the premature infant must be carefully considered. Prophylactic induction is most likely to be successful when pregnancy has advanced to the thirty-sixth week, and the conjugate of the brim measures at least 3½ inches. Some think labour should not be induced in a first pregnancy, but only with the history of previous difficulty or loss of child. The proper time must be determined by estimation of the relation between the size of the pelvis and that of the fœtal head, and the operation should be carried out as soon as there is difficulty in pushing the head in (to allow for the reduction for moulding). Eden advocates an examination under anæsthesia for the measurement of the diagonal conjugate, and the determination of the relative sizes of the head and pelvis.

Methods of Induction.

With any method it may be difficult to excite effective uterine contractions. There is no doubt that in some cases there is a personal idiosyncrasy, as in one of the cases included in this series, in whom, in two consecutive inductions, five days elapsed before labour pains started.

In our series of cases we chose the method considered by Galabin to be the most perfect—viz., the thin rubber bag—which we have employed in the form recommended by Prof. C. G. Lowry, of Belfast—viz., the toy balloon—distended by sterile water. With this method there is less risk of rupturing the membranes than with the bougie, the normally situated placenta is not interfered with, and there is less risk of carrying sepsis into the upper portion of the uterus. The insertion of the hydrostatic bag imitates closely the natural onset of labour and interferes little with its normal progress. The thin toy balloon is easy to insert, and there is no need for preliminary dilatation. If not more than 16 ounces of fluid are used there is no over-distension of the lower uterine segment. With the thin rubber bag there is very little displacement of the presenting part. The balloon can be boiled, so there is less risk of sepsis than with a gum elastic bougie, which cannot be so efficiently sterilised. It does not project from the vagina, so there is no ladder for the ascent of organisms.

The use of an anæsthetic is not a disadvantage. Though not essential it enables the examination to be more completely satisfactory, and a higher degree of asepsis to be attained, and it helps to remove the principal difficulties in induction of premature labour—viz., the recognition of the case requiring it, and the choice of the correct time.

Technique.

A general anæsthetic is employed. The vagina is douched with 1 in 2000 biniodide of mercury lotion and the uninflated balloon introduced with bullet forceps through the cervix, which is fixed by means of a modified Collin's lung forceps. Sixteen ounces of sterile water are introduced with a piston syringe through tubing tied on a glass tube in the neck of the balloon. The tubing is tied and a gauze pack left in the vagina to keep the tubing from projecting. The balloon and its connexions should always be previously tested.

Cases of Induction of Premature Labour.

The present investigation comprises 72 consecutive† cases, which were under observation during the years 1923 and 1924 at the Liverpool Maternity Hospital and Maternity Home.

Seventy-four infants were born, including two pairs of twins. Of the 72 inductions, 30 were primigravidæ and 42 were multigravidæ. In 65 of these cases delivery was effected per vias naturales, while seven were delivered by Cæsarean section.

In these 65 successful cases the average *period of gestation* was 38$^{1}/_{5}$th week (primigrav., 38$^{2}/_{5}$th weeks, multigrav., 38$^{1}/_{15}$th weeks).

The average *weight* of the children was 6 lb. 12 oz. (primigrav., 6 lb. 8½ oz.; multigrav., 6 lb. 14 oz.), and the average length 19·2 in.

The average *time from induction* until pains began was 8 hr. 20 min. (primigrav., 7 hr. 12¼ min.; multigrav., 9 hr.). As a comparison, in four years (1916–19), in 169 bougie inductions at the Liverpool Maternity Hospital, the average time from induction until pains began was 24 hours, almost three times as long. With the balloon inductions the average time from induction until delivery was 29 hr. 17 min. (primigrav., 30 hr. 9 min.; multigrav., 24 hr. 31 min.).

In the Liverpool Maternity Hospital reports 1916–19 as above, the duration was 46·6 hours, which is nearly double. The average length of time from induction until pains began and until delivery was much prolonged by two cases, one a primigravida who had no true labour pains for 110¼ hours, and a multigravida who had no true labour pains for 183¼ hours. Excluding these two cases the average length of time from induction until pains began was 2 hr. 47 min. in the primigravidæ (hospital cases) and 3 hr. in the multigravidæ.

General anæsthesia was employed in all cases but two multigravidæ with cardiac disease. The indications were: (1) a minor degree of pelvic contraction, 63 cases; (2) post-maturity and large fœtus, 6 cases; and (3) maternal disease, 5 cases (3 cardiac, 2 toxæmias).

Pelvic Measurements.—In 41 cases there was a minor degree of general contraction, the diagonal conjugate averaging 4·4 inches. Eighteen of these cases were primigravidæ with an average D.C. of 4·3 inches. Twenty-three were multigravidæ, averaging 4·4 inches. The smallest D.C. in a primigravida was 3·8 inches. In 22 cases there was a minor degree of flattening, the D.C. averaging 4·3 inches. Nine of these were primigravidæ, giving an average D.C. of 4·5 and 13 multigravidæ giving an average measurement of 4·2.

Results.—1. Natural delivery took place in 52 cases. 2. Delivery by forceps in nine cases. 3. Delivery by Cæsarean section in seven cases.

Forceps Cases.

CASE.
2. P. Flat pelvis. D.C. 4¼. R.O.P. Infant 6 lb. 12 oz.
12. P. Second twin. Uterine inertia. Infant 6 lb. 4 oz.
17. M. First induction failed. D.C. 4¼. High forceps. Infant 6 lb. 2 oz.
37. P. Prolonged second stage. Low forceps. Infant 6 lb. 1 oz.
46. P. 134 hours before labour began. D.C. 4¼. Mid. forceps. Fœtal stress. Infant 7 lb. 8 oz.
49. P. D.C. 4¼. Prolonged second stage. Low forceps. Infant 6 lb. 12 oz.
56. P. D.C. 3¾. Hyperemesis. Hæmorrhagic vomiting. *B. coli* infection. High forceps. Stiff pull. Child died of meningitis fourth day. No intracranial injury. Weight 6 lb. 1 oz.
64. M. D.C. 4¼. History of stillbirth and septicæmia. Toxæmia during pregnancy. Streptococci in urine. High forceps. Infant 9 lb. 8 oz.
68a. P. D.C. 4¼. Rigid cervix. Hydrocephalic infant with spina bifida. Stillbirth. Weight 4 lb. 13 oz.

Delivery by Cæsarean Section.

20. P. D.C. 4¼. Slight pains 4 days. No advance. Cæsarean. Weight 6 lb. 12 oz.
25. P. D.C. 4. Pelvic presentation. No advance in 3¼ days. Cæsarean. Weight 6 lb. 7 oz.
31. M. D.C. 4¼. Two previous forceps. L.O.P. Uterine inertia. Cæsarean. 6 lb. 2 oz.
41. M. D.C. 4¼. Flat. Four forceps. One previous induction at 37 weeks. Induction. Transverse lie. Cæsarean section 23 hours after induction. Infant 7 lb. 2 oz.
44. M. Ten normal. 11th stillbirth. 12th lived one hour. 13th forceps. 14th balloon induction twice, followed by bougie induction. Uterine inertia. Cæsarean section by Dr. Willett. 6 lb. 13 oz.
54. 2-gravida. Previous delivery of 8 lb. infant after balloon induction. D.C. 4¼ in. Uterine inertia. Head remained above brim. Cæsarean. Infant 7 lb. 2 oz.
65. 2-gravida. First child normal delivery of infant 6 lb. 2 oz. D.C. 4 in. Contracted outlet. Full dilatation. Head above brim. Weight 8 lb. 5 oz.

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† In this series a fatal case of eclampsia where induction was done at the thirtieth week is not included.

Pelvic Presentations.

There were eight pelvic presentations, of which three were born normally, and one by Cæsarean section. There was difficulty with four cases.

CASE.
33. P. D.C. 4½. External version had failed. Delivered with difficulty of living child. Weight 7 lb. 3 oz.
61. P., with slight contraction and premature rupture of the membranes. Uterine inertia. Balloon induction. Four hours later balloon expelled followed by infant with extended legs. Weight 5 lb. 7 oz.
72. P. D.C. 4½. Extended legs and arms brought down with difficulty. Weight 6 lb. 10 oz.
12. P. Twins. D.C. not reached. Difficulty with after-coming head. Stillbirth. Second twin forceps delivery. Weight 5 lb. 10 oz.

Malpresentations.—In one case already mentioned (Cæsarean section) a transverse lie occurred (Case 41). In another (Case 10) M., with previous difficult forceps delivery—after expulsion of balloon head remained high, hand and cord presenting, bag of membranes at vulva. Presentation was rectified under anæsthesia. Normal delivery 40 minutes later.

Results.

Mortality.—All the mothers survived. Of the 74 infants 72 were born alive—viz., all except the first twin in two cases, one being a hydrocephalic monster, and the other a pelvic presentation in a primigravida where there was difficulty with the after-coming head.

Neonatal Deaths.—1. One of meningitis (fourth day). 2. One of diarrhœa and vomiting (twelfth day). Breech. Weight 7 lb. 5 oz.

All the infants therefore but four—viz., 5·1 per cent.—left the hospital alive. Of the 70 living infants, 58 have been traced, and 55 are alive. Three are known to have died in the first year: (1) Enlarged thymus, five months. (2) Convulsions and wasting, six weeks (breech). (3) Marasmus at three months. (This infant was the second twin to stillborn hydrocephalic infant) (also a breech). Of the 71 infants the ultimate known mortality is 9 per cent.

Morbidity.—Morbidity occurred in one mother (No. 61). This patient was a 2-gravida. D.C. 4½. The first child was a difficult forceps delivery with ruptured perineum which had not united, followed by septicæmia. Toxæmia with albuminuria was present during pregnancy. Induction was deferred on account of the history until $40^{6}/_{7}$th weeks, when the size of the child made it imperative. The large child, 9 lb. 8 oz., was delivered alive by high forceps operation (Tarnier's axis traction). Antistreptococcal serum was administered, and a bacteriological examination of the urine taken before delivery revealed streptococci. The temperature remained high for a few days, but the patient ultimately made a good recovery.

Special Points.—With a balloon induction, as with any other method, it is especially necessary to eliminate the possibility of latent sepsis, of gonococcal or streptococcal origin. It is important for the nurse in charge to note whether the head is following the balloon, and if not to push it into the pelvis.

Conclusions.

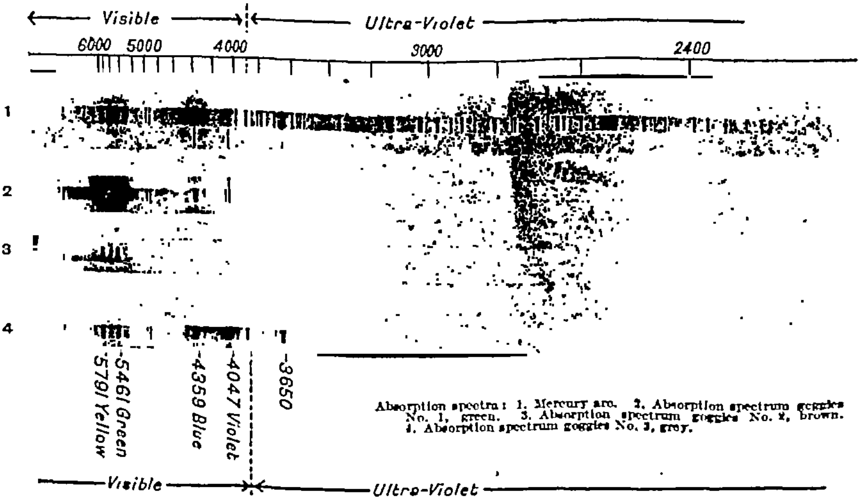
That by the induction of premature labour in suitable cases a considerable amount of unnecessary suffering from prolonged labour due to minor pelvic contraction may be avoided. In addition, induction of premature labour is not so inimical to the child as published statistics maintain.

THE SPECTROSCOPIC EXAMINATION OF ULTRA-VIOLET GOGGLES.

BY B. D. H. WATTERS, M.Sc.,
PHYSICS DEPARTMENT, MIDDLESEX HOSPITAL.

THE question of the quality of the goggles worn by operators when working in ultra-violet light is one which has scarcely received proper attention. These goggles have often to be worn for long periods, and they should transmit the maximum amount of the visible radiation, so as to allow the user to see the room and all apparatus, &c., perfectly clearly whilst every trace of ultra-violet is absorbed. Glass which fulfils both of these requirements is obtainable without difficulty, but a number of the goggles sold for this purpose are fitted with very inferior glass which often falls short on both counts.

A specimen was examined recently, as the operator who had been using them complained of headache and eyestrain after quite a short exposure. On taking a photograph of the absorption spectrum on a panchromatic plate, in a quartz spectrometer, the cause of the trouble was at once apparent. (See Fig. 4.) This glass transmits a considerable portion of the ultra-violet spectrum to about λ3500, thus allowing the intense mercury line at λ3650 to pass with very little diminished intensity. At the same time the lines of the visible spectrum are partially absorbed, giving rise to the dark-grey colour of the glass. Not only are the goggles unnecessarily dark in



Absorption spectra: 1. Mercury arc. 2. Absorption spectrum goggles No. 1, green. 3. Absorption spectrum goggles No. 2, brown. 4. Absorption spectrum goggles No. 3, grey.

tint, but, what is much worse, a dangerous quantity of ultra-violet light is transmitted.

That radiation of this wave-length is harmful can easily be proved by isolating it by a suitable filter, when it is found to cause a most painful sensation in the eyes if the exposure is longer than a few seconds. At the same time it will be noticed that the eyeball fluoresces brilliantly.

The grey goggles were replaced by a pair of light-green tint whose absorption spectrum is shown. (See Fig. 2.) The difference is strongly marked. The yellow and green light which is so strong visually is transmitted almost without absorption, the blue to a less extent, and the violet still less. No trace of any radiation is to be recorded even by prolonged exposure beyond the limit of the visible spectrum. These goggles have proved very satisfactory in use—everything in the room was clearly visible, and all painful sensation in the eyes completely disappeared.

For purposes of comparison the spectrum of a third pair is included (See Fig. 3.) These were brown in colour and transmitted only the yellow and green of the visible spectrum, whilst a faint trace of the ultra-violet line λ3650 will be noticed. The latter, however, is too weak in this case to have any perceptible effect. This pair of glasses may therefore be classed as not quite so good as the green ones, but probably quite efficient in use, and very much better than the original grey ones.

To summarise, it is clear that the mere visual examination of a pair of goggles is quite insufficient to indicate their suitability or otherwise for use in ultra-violet work—a spectroscopic examination is essential.

Clinical and Laboratory Notes.

A CASE OF SPONTANEOUS PNEUMOTHORAX.

RAPID AND COMPLETE RECOVERY.

By F. H. KELLY, M.B., B.S. LOND.

CASES of spontaneous pneumothorax, apart from those occurring in the course of active tuberculous disease of the lung, are not always characterised by a prolonged course or by a bad ultimate prognosis, as the following case shows.

The patient was a thin and slightly-built man aged 32. There was no history of previous illness, and he had served through the war without trouble. On the morning of Feb. 26th last he experienced sudden pain in the region of the sternum whilst stooping down after breakfast. He worked all day although the pain continued, and he had considerable shortness of breath.

Condition on Examination.—When seen for the first time on the 27th he had obvious signs of complete left pneumothorax. The left side was increased in size as compared with the right, but moved less. The percussion note showed increased resonance on the left side but was not tympanitic. The lower limit of resonance at the back was 2 in. lower on the left side than on the right. There was complete absence of vocal fremitus and vocal resonance on the left side. There was no cardiac dullness in the usual place, its left edge appearing to coincide with the right edge of the sternum. The apex beat could not be felt, but the position of maximum intensity of the heart sounds was exactly in the mid-line of the sternum. There was obvious dyspnœa even when lying in bed, and this was markedly increased by even gentle movement. The pain was not severe so long as the patient kept quite still.

Up to April 4th, on which day the patient was seen, there was practically no change in the condition of the chest. The left side became gradually a little less resonant, but was still distinctly more so than the right. At the back the lower limit of resonance was now only 1–1½ in. lower on the left side than on the right. The position of the maximum intensity of the heart sounds was still approximately in the middle line, but was a little difficult to locate owing to the development of a loud slapping extra-cardiac sound, due presumably to the forcing together of two pleural surfaces by the heart's action. During this time the patient had gradually been promoted to getting up one hour a day, pain had disappeared, and dyspnœa was much less. The temperature, taken each evening at 6 o'clock, had never exceeded 98° F.

On April 6th, five weeks and four days after the onset, the cardiac dullness was found to be restored to its normal position, the apex beat was ½ in. internal to the nipple line, all the signs described above had disappeared, and in fact the chest appeared to be in all respects normal except that the breath sounds on the left side were not so good as on the right (this difference disappeared in a few days). The contrast from the condition only two days previously was amazing.

The subsequent progress of the case has been one of uninterrupted recovery. No abnormal signs have been found in the chest on either side and the patient appears now (June 15th) to be perfectly fit and well in every respect. He started work again a few weeks ago.

Hurstpierpoint, Sussex.

A CASE OF CHRONIC MENINGITIS LASTING FIFTEEN YEARS.

By MARY HAMILTON WILLIAMS, M.B., B.S. LOND., D.P.H. CAMB.

THIS case is reported in order to suggest that there are more cases of intractable headache due to chronic germ infection of the meninges than is recognised.

Early History.—The patient, a married woman aged 55, had an early history of arrested pulmonary tuberculosis, malaria, and cerebro-spinal fever. A growth had been twice removed from the left antrum, and she had had a high degree of myopia. At the age of 40 the patient lost 3 st. in weight in less than a year, and this was ascribed to a probable recrudescence of tuberculosis. During this year she had attacks of partial loss of vision, occurring suddenly, and also saw flashes of white light, very brilliant, often appearing to resemble showers of falling stars. Sometimes the light was coloured and zig-zag. The flashes always appeared to the left eye. After one to two hours visual disturbance acute pain in the head set in. This was at first localised in the right occipital and parietal regions, and then diffused. There was also aphasia, nausea, acute photophobia, tenderness, and aching of the right cervical glands. During this year the patient lost two-thirds of her hair. The patient was examined by various consultants, who agreed that the trouble was probably tuberculous. Sir Victor Horsley diagnosed a meningitis 15 years ago, but considered it inoperable. The oculist diagnosed "typical migraine," and found bi-temporal limitation of fields of vision; fundus normal. These attacks at first occurred every six weeks, but gradually became more frequent.

Subsequent History.—As the years passed the patient lost strength, and any considerable fatigue brought on an attack. After an attack—not during—there was marked pallor of the face. Insomnia became very troublesome, whole nights being passed without sleep. There were also terrifying dreams. Either before or during an attack a period of extreme drowsiness would occur, lasting several hours, and not terminating in restful sleep. All possible means were tried to give sleep, as otherwise insanity would have been the termination. The patient continued to do brain-work, and did not consider that this tended to bring on an attack. But it was necessary to work in a warm room (70° F. for choice) and backing the light. Work which required lateral movements of the eyes—e.g., checking a catalogue—brought on pain. On waking in the morning, and sometimes during the night, there were jerky movements of arms, hands, legs, and feet. When the patient first drank in the morning there was sometimes acute pain at a special point which appeared to be about the cardiac orifice of the stomach, and the patient could not swallow until it passed.

After the attacks had continued during some five years it was noticed that before an attack there was frequently slight epistaxis, and during the attack there was constipation. After an attack ended pain was never again caused, for at least 48 hours, by exercise or exertion, which, at any other time, would have started pain with certainty. The temperature was always raised, being 99·4° in the morning and reaching 102° or higher on some nights. This was at the time ascribed to a recrudescence of tuberculosis. After about ten years had passed dyspnœa was first noticed, and the pulse was slow, 70–76, even with pyrexia. The attacks gradually became more frequent, and the patient reached a condition when she was never free from pain for more than a few hours, and the insomnia and dyspnœa grew worse.

Two unusually severe attacks made it evident that, if operation was not possible, the patient's life would be short. In these attacks there were great drowsiness and agonising right occipital pain; flashing in the left eye, acute dyspnœa, the pulse-rate varying from 58–60, and intermitting seriously, with absolute insomnia. Plantar reflexes not detected; Kernig positive. There was some flashing in the right eye. A few days later there was definite extensor response to plantar reflex. An area of acute local tenderness was present over the right occipital area, and there was also slight œdema here, lasting some hours. On each of these two attacks, after the head pain had lasted some hours, severe stabbing pains set in in the shoulders and back. A peculiar sensation and thrill in the muscles was also present. In addition to the dyspnœa there was great air-hunger, so that the patient only breathed happily in front of a large open window.

The patient was taken to London and Mr. Donald Armour decided, despite the absence of definite localising symptoms, and at the express wish of the patient, that he would operate.

Definite extensor plantar reflexes were found which often varied from day to day. There was some œdema, as before, and it was considered that this and the localised pain would suffice for localisation. Sufficient bone was therefore removed from the right occipital and parietal regions to allow for access to the cranial contents. Considerable fluid was found outside the dura mater, with great bulging of the meninges, the dura being under high pressure. The meninges were three to four times as thick as normal, and this area was removed. The cerebro-spinal fluid escaped under high pressure. No sign of tuberculoma was found. The scalp was replaced, leaving a large area without bone.

On recovery from the anæsthetic the patient said she felt as if she could not breathe and it was necessary to keep an electric fan working close to her night and day. (In a recent report of a post-mortem on such a case I noted that there were numerous small hæmorrhages found in the region of the vital centres in the medulla, suggesting a cause for air-hunger.) The condition took several days to pass off.

Post operative History.—After the operation photophobia was extreme and brilliant white sheets of light lasting for hours were distressing. Unfortunately it had been taken for granted that the germ causing the meningitis was the tubercle bacillus, and therefore no cultures were made. Since the operation the patient is much improved, the elasticity of the scalp preventing dangerous degrees of pressure occurring, but the insomnia and pain became again troublesome towards the end of last year, and a vaccine was made from the post-nasal region, after a most exhaustive negative X ray examination of all the head region. Dr. L. G. Mackey found an infection of pneumococcus and influenza and from this made a vaccine. Only small doses can be used, but the patient is again improving, leading a busy working life.

An uneducated patient would have been unable to give the descriptions which here helped this diagnosis. "Migraine" is a diagnosis of a highly unsatisfactory character, and the causal germs need ascertaining.

Colwall, Malvern.

DONATIONS AND BEQUESTS.—By the will of the late Miss Elizabeth Jane Humby, of Hamilton-terrace, St. John's Wood, the testatrix left, among other bequests, £100 each to the Royal National Sanatorium for Consumption, Bournemouth, the Western General Dispensary, Marylebone-road, the Royal Medical Benevolent Fund, the Royal Medical Benevolent Fund Guild, St. Mary's Hospital, Paddington, the Middlesex Hospital, and the Church Army; £50 each to the London Fever Hospital, the Hospital for Epilepsy and Paralysis, the Paddington Green Children's Hospital, and King Edward's Hospital Fund.

CONTRIBUTORY SCHEME AT IPSWICH.—A contributory scheme is about to be started by the East Suffolk and Ipswich Hospital. It is proposed to include not only industrial weekly wage-earners, but also the clerical staffs in the factories, the employees of shops and offices, and the one-man trader. An agricultural contributory scheme has been in existence for the last six years, each farm-worker giving a penny a week with a similar amount from his employer. During the last 15 years members of the board of management have subscribed £15,000 for the enlargement, improvement, and maintenance of the hospital.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT BATH.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

THIS Section met on three days—Wednesday, Thursday, and Friday—Lady Barrett (London) occupying the chair.

WEDNESDAY, JULY 22ND.

MALIGNANT DISEASE OF THE PELVIC ORGANS.

Prof. B. P. Watson (Edinburgh), in an opening address on the

Problem of Cancer of the Uterus,

said that the toll this disease took of the population of the world was enormous, and although we did not know the cause, yet chronic irritation was so constantly present in cancer of the cervix that it must be recognised as one of the ætiological factors. Cervical cancer was ten times more common than uterine cancer, and it was essentially a disease of parous women He thought that the incidence of the disease could be diminished (1) by avoiding all procedures likely to cause cervical lacerations at childbirth; (2) by the thorough treatment, and, if necessary, removal of the existing lesions. Women should be made to understand that long-continued leucorrhœal discharge indicated a diseased condition, and called for investigation and treatment. He considered that operations such as a plastic repair or amputation of the cervix were very simple procedures and devoid of risk. In his opinion the more extensive employment of these prophylactic measures at or about the menopause would diminish the incidence of the disease and early diagnosis would lessen the mortality. Prof. Watson emphasised the importance of teaching students the necessity of thoroughly investigating every case of irregular vaginal bleeding in women of all ages, nor should they be satisfied until cancer was definitely excluded. He maintained that it was only by this means that the early cases would be recognised.

The speaker then proceeded to discuss the relative merits of operative and radium treatment in cancer of the uterus. He had formed the opinion that in a clearly operable case of cancer of the cervix operation preceded by radium treatment offered the best chance to the patient, but in border-line and advanced cases radium treatment was the only one that held out any hope. In cancer of the body, however, he thought that operation offered a better chance than radium treatment. He held that wherever the disease, and whatever the treatment employed, the chances of cure were in inverse proportion to the duration of the symptoms. Prof. Watson finally made a strong appeal for a widespread educational propaganda to be carried on amongst the people in order that the cases might be seen early. He did not think it would unduly alarm the women of this country, for ten years' work among women on the other side of the Atlantic had convinced him that more good than harm resulted from such knowledge.

Mr. Victor Bonney then read a paper on the

Operative Treatment of Carcinoma of the Uterus.

He said that he welcomed the opportunity of speaking on the operative treatment of carcinoma of the uterus because he had no doubt at all that, up to the present time, it remained the treatment of election for the majority of cases. Dealing first with carcinoma of the cervix he reminded his hearers that here, as in every other variety of carcinoma, the growth extended itself in two ways—tissue infiltration and lymphatic permeation, and the line of operative excision must, therefore, be planned so that whilst at all points it kept outside the margin of growth by infiltration, it was extended in the regions of lymphatic permeation as far outwards as the anatomy of the parts and the endurance of the patient would permit. The operation which fulfilled these requirements was that introduced by the

Viennese gynæcologist, Wertheim. From 1907 to the present day he (Mr. Bonney) had performed Wertheim's operation about 300 times, but since no figures bearing on the subject were of any value unless grounded on the basis of five years' freedom from recurrence he dealt only with the first 192 cases of the series. These cases should be looked upon as the number he was able to operate radically upon, out of 303 unselected patients seen by him between the years 1907–20. With so high an operability rate it followed that in a large proportion of the patients the disease was well advanced, and in many cases very advanced. In general, the only bars to the accomplishment of the operation that he had recognised had been deep and extensive involvement of the bladder or the bowel, or involvement of both ureters to the extent of producing bi-lateral hydro-ureter. He had found what others practising the operation had found—namely, that in many cases it was impossible to determine whether the growth was removable or not, except by opening the abdomen. The operation as performed by him had always been as drastic and radical as he believed it possible to perform while giving the patient a good chance of recovery. The uterus and appendages, the whole or practically the whole vagina, together with the parametric and paravaginal tissue occupying the obturator fossæ and the glands along the external iliac vessels were removed. As regards the vagina, he had extended the operation of recent years; originally removing the upper half only he now removed it entire in most cases, because, next to the lymphatics which run out to the obturator fossæ, the vaginal wall was the most important line of march of the cancer cells. His results were as follows: Died of the operation, 32 (an operative mortality-rate of 16 per cent.); died of recurrent growth, 70; died of other disease, 5; lost sight of, 7; well after five years, 78 (that is 40 per cent. of the whole series, or nearly 49 per cent. of the cases recovering from the operation, or 25 per cent. of all the cases seen, reckoning his operability rate at 63 per cent.).

The operative mortality was high compared with that of ordinary operations of surgery, but he could have reduced it by performing a less drastic operation and by refusing to operate on the many "last chances" he had undertaken. The likelihood of recurrence was greatest in the first two years, and progressively diminished from then onwards. Five years' freedom from recurrence used to be considered an absolute cure, but unfortunately that was not quite true, as a certain small number of recurrences (about 3 per cent. of all recurrences) took place after five years, the latest among his cases being six and a half years. In regard to the 78 cases reported as "well" after five years, the accomplishment rate of the operation depended upon the point of view from which it was considered. Thus, reckoning for the present purpose all these cases as cures, then out of the 303 unselected cases of carcinoma of the cervix seen by him between 1907 and 1920 25 per cent. were cured. Lastly, taking only these cases that recovered from the operation, there were cured just on 49 per cent. of the 160 patients who recovered from the operations performed between 1907 and 1920. In 78 of the cases the glands removed at the operation were carcinomatous, and it had been argued that where this was found to be the case it was useless, or usually useless, to proceed with the operation. Although the outlook for cases with carcinomatous glands obviously could not be as good as for cases in which the glands were not carcinomatous, it was by no means hopeless; 25·6 per cent. of the 78 cases operated on were well after five years and 33·3 per cent. of the 60 cases recovered from the operation. He did not use radium beforehand as a routine, though he had operated on a good many cases in which it had been so used with the idea of making the growth removable. Those who said it could do this did not know the limits of operability. It did nothing of the sort, but on the contrary made the operation much more formidable on account of the intense fibrosis set up which so welded the surrounding tissues to the growth that all planes of cleavage were lost and the separation of the bladder and ureters became a matter of great difficulty. Except in exceptional instances irradiation after the operation was not advisable, for the indiscriminate use of radiation without guide either as to direction or depth carried with it the very real danger of stimulating instead of killing any stray malignant cells that might have been left behind at the operation.

Turning to the surgical treatment of carcinoma of the corpus, Mr. Bonney said that the problem of diagnosing the disease must be given an important place. It was frequently necessary to explore the interior of the uterus under an anæsthetic, and even then it was sometimes impossible to scrape out anything worth microscopical investigation. Bleeding after the menopause should always be regarded as a menacing sign, and the likelihood of error should always be on the side of an interpretation too grave rather than too optimistic. The operation he performed was a free total hysterectomy, taking out the uterus, the vaginal vault, and both appendages, dividing the ovario-pelvic ligaments at the point where they take off from the pelvic brim. He only did Wertheim's operation in special instances. In his experience at least 50 per cent. of the patients recovering from operation were free from recurrence five years afterwards. This estimate was not based on accurate statistics, as he had not followed up these cases with the same thoroughness as in the case of those with cervical carcinoma.

Mr. S. J. Cameron (Glasgow) said that he intended to confine his remarks to

Cancerous and Sarcomatous Disease of the Ovaries and Cancer of the Fallopian Tubes.

He purposely omitted chorion-epithelioma and only briefly referred to the Krukenberg tumours of the ovary, which, in his opinion, were almost invariably secondary to cancer of the stomach. He based his paper on 94 unpublished cases. In his experience primary cancer of the ovary was much more uncommon than the secondary type, which, owing to its obtrusive size, had attention called to it, whereas the primary growth, being small and giving rise to no urgent symptoms, often remained unrecognised. Apparently the ovary provided a suitable soil for the implanted cancer cells, and, although it was generally accepted that the histological appearance of the secondary growth was the same as the primary, he had not always found this so. The speaker made a strong plea for the careful microscopic examination of all ovarian cystoma after removal, as a naked-eye examination might fail to reveal malignancy. The latter condition should always be suspected in a woman who had been in failing health for some time previously, and more especially if ascites were present. Sarcoma of the ovary was much less common than carcinoma, but the prognosis in either case was almost equally bad. Mr. Cameron drew attention to the difficulty of making an early diagnosis in these cases and hoped that Gye's recent work would make this possible in the near future. In referring to primary cancer of the Fallopian tubes, the speaker said that this condition was rare; he personally had only met with two cases. The diagnosis was difficult and the most prominent symptom was a copious watery discharge which might occasionally be blood-stained.

Discussion.

Mr. H. J. D. Smythe (Bristol) was interested to hear that Mr. Bonney now removed the whole of the vagina in Wertheim's hysterectomy. He agreed with Prof. Watson on the importance of the prophylactic treatment of cervical lesions, and stated that he always performed a pan-hysterectomy in these cases.

Prof. W. C. Swayne[1] (Bristol) said that Mr. Bonney had proved by his figures that the most radical operation in carcinoma of the cervix was the best. He agreed about educating the public, but thought that the propaganda could only be carried out by the general practitioner.

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[1] The tragic death of Prof. W. C. Swayne was the subject of an obituary notice in THE LANCET of August 22nd, 1925 (p. 410)

Prof. F. W. Marlow (Toronto) drew attention to the value of slow cauterisation of the growth as a preliminary to operation. The technique he employed was a modification of the Percy method. It was safer than radium as it removed the focus of infection.

Mr. Sidney Forsdike (London) said that he had never found any great difficulty with prophylactic radiation in cancer of the cervix. He would be interested to hear the methods and technique employed by Mr. Bonney in these cases.

Dr. M. Donaldson (London) strongly protested against the sweeping statements made by some of the speakers who opposed the use of radium, although it was obvious that they had had very little, if any, experience of its use. He pointed out that one of the speakers condemned radium after seeing a few patients who had been treated by applications which lasted less than 12 hours.

Mr. Leith Murray (Liverpool) pleaded for the better training of midwives, as they were often consulted before practitioners in these cases.

Replies.

Several other speakers took part in the discussion, and Prof. Watson and Mr. Cameron briefly replied.

Mr. Victor Bonney deprecated the criticism of the results he had obtained in cases in which the regional glands were carcinomatous, where radium was incapable of effecting a cure. The advocates of radiation would, no doubt, say that the carcinomatous regional glands could be treated by deep X rays, but his experience of this treatment, both for primary and secondary growths, was most disappointing. He had seen many cases in which the growth was certainly delayed, but never once had he seen a cure. In short, the only cure for cases in which the regional glands were malignant was operative removal, and this being so he saw no point in girding against the results of a treatment which, though very far from ideal, was yet the only treatment which held out any hope. He submitted that to have "cured" 25 per cent. of these cases was an unexpectedly great triumph. If it were possible to recognise before the operation those cases in which the glands were carcinomatous he would not adversely criticise the surgeon who considered that, as a group, they were not worth operating on, seeing that the risk of the operation was great and the chances of permanent cure relatively small. He should not agree with such a view himself, but it would be a matter of personal opinion which every surgeon would have to decide for himself. It was, however, impossible to make such a distinction not only before the operation, but even during the operation, for until the glands were removed it was, in many cases, impossible to say whether they were malignant or not.

No one was more anxious than himself to find a better method of treating carcinoma of the cervix than operation, but there was no sense in the advocates of radiation carping at the results of surgery until they had produced a series of figures comparable with those he had just put before them. It was no use trading on foreign sources for such figures: a study of the literature showed how entirely discordant they were. What was needed was the publication of a British series of not less than 100 cases treated by radiation, in all of which at least five years had elapsed between the date of cessation of all treatment and the date of publication. The interval that had elapsed since the cessation of all treatment was of prime importance. There was a great difference between keeping a patient alive with a carcinoma and curing a carcinoma. When such a series, produced from a reliable British source, gave a better cure-rate than he had obtained by operation, then he would immediately cease to operate any longer and hand over all his cases of cancer of the cervix to the radiologists.

THURSDAY, JULY 23RD.

Prof. James Heyman (Stockholm) opened a discussion on the

Treatment of Inoperable Cancer of the Pelvic Organs.

He said that he intended to set forth the result of his experience at the gynæcological department of the Radium-Hemmett, Stockholm, during the 15 years of its existence. This institution was founded by the Swedish Cancer Research Society for the radiological treatment of cancer cases referred from other hospitals. Radium treatment had been almost wholly restricted to inoperable cases, with the exception of cancer of the cervix, where the figures submitted in the first published report (1920) had been so striking that the leading Swedish gynæcologists had since that date ceased operating for this condition. The speaker claimed that he could report on 100 per cent. of the cases treated. This had been made possible by organised control of the patients and by the fact that owing to a special Act of Parliament the Swedish Government paid the travelling expenses of the poorer patients to and from the Radium-Hemmett.

Cancer of the cervix formed the most important group, and during the years 1914–22 inclusive they had treated 440 inoperable cases of this disease with radium. Of this number 243 had been under observation for five years or longer, 80 of whom remained free from symptoms. This gave a figure of 10·7 per cent. of permanent cures amongst cases which would otherwise have been regarded as hopeless. In addition two-thirds of the cases had regained sufficient strength to resume work and nearly half of these had remained at work over a year. Inoperable cancer of the body formed a smaller group than the preceding one and included those technically operable cases which, on account of old age and pronounced adiposity, rendered them unsuitable for operation. Out of 54 such cases treated with radium between the years 1915 and 1922 inclusive, 17 had been observed for five years or longer; of these 10, or 58·7 per cent., had remained free from symptoms. Inoperable cancer of the vulva and vagina had not reacted well to radium treatment, and results obtained from the treatment of ovarian carcinoma were disappointing. Six cases of cancer of the urethra were treated—the results were not good.

Prof. Heyman then briefly referred to the technique he employed and the methods of treatment adopted. He always used radium salts which were filtered through 3–4 mm. of lead, and as a rule only three applications were made. If possible radium was inserted at each of these treatments both in the vagina and the uterus. He rarely combined the treatment with X rays, nor did he approve of previous curettage.

Mr. Percival Cole (London), who followed, confined his remarks to the

General Position and Treatment of Inoperable Cancer of the Uterus.

He said that the numerical importance of the subject before them was emphasised by the inoperability rate which he estimated at 62 per cent. Operability, or otherwise, of any particular case was generally decided by the extent of local invasion, and it was estimated that in 60 per cent. of cases of cancer of the cervix death occurred as the results of effects determined by what remained to the last a local lesion. The regional glands were involved in from 24 to 38 per cent. of cases. Mr. Cole gave an account of the result of his experience at the Cancer Hospital, London, where 203 cases of cancer of the uterus were admitted between and including the years 1910–25. Of the cases admitted 103 were treated with radium and 61 by the Percy cautery operation; only 12 per cent. of cases were operable and 40 per cent. were too far advanced for any form of treatment. In discussing the technique employed in radium treatment he emphasised the importance of using dosage and filtration suitable to the case. He had found that the use of needles and gauze packing had largely obviated the most important of the radium sequelæ—namely, proctitis, cystitis, and fistula formation. He did not approve of unfiltered glass capsules of radium emanation. He drew attention to the possibility of a violent hæmorrhage after the use of radium. This had occurred in five of his cases. He now ligatured the internal iliacs in the worst type of case. The speaker commented favourably on the systematic radiation of the pelvis by X rays after local radium applications, but had nothing favourable to say about the use of colloidal preparations. In referring to the Percy cautery operation he said that the average life duration of those who died had been 13·9 months after operation, which compared with 8·9 months in the radium cases after treatment and a total duration of life of 14·8 months in untreated inoperable cases. He had found that post-operative progress with relief of symptoms and absence of shock was a striking phenomenon following the Percy operation. He sometimes employed small doses of radium six to eight weeks afterwards.

Dr. M. Donaldson, in his paper on

Treatment of Inoperable Cancer of the Pelvic Organs,

pointed out the necessity for educating the public on the early symptoms that might point to malignant disease in women. He did not believe this would increase the number of cases of "cancer phobias," but would tend to diminish it. He then described in detail the technique he employed for radium treatment of carcinoma of the cervix, the main principles of which were the use of 20 or more long needles of moderate intensity buried in and around the growth giving a continuous exposure for six days. The results of this technique were more promising than those of the method he had previously employed. He then drew attention to the necessity of investigating the biological laws involved in irradiating living tissues, and stated that interesting work by Dr. T. S. P. Strangeways and his other colleagues was being done on the effect of irradiation of tissue cultures, the results of which emphasised the importance of the distance and time factors. Finally, he pointed out the urgent necessity for organised and coördinated research, and hoped that the profession as a whole would urge the raising of public funds for this purpose.

Discussion.

Mr. Sidney Forsdike drew attention to the type of case where radium was contraindicated. He described the technique he employed and stated that he always removed any necrotic growth with a blunt curette as a preliminary to radium treatment.

Mr. G. I. Strachan (Cardiff) called attention to the risk of applying radium in cases of pyometra.

Circulatory Changes in Normal Pregnancies.

Dr. Dorothy C. Hare (London) read a paper comprising a preliminary report on an investigation of cardio-vascular conditions in normal pregnancy by means of clinical tests. The object of the investigation was to discover if by the methods of clinical examination evidence could be obtained of changes in the pulse-rates, blood-pressures, and response to exercise tests during the course of pregnancy and to relate such changes to the period of pregnancy in which they occurred. A series of observations on 40 pregnant women was made at four-weekly intervals, and the tests applied under uniform conditions; a number of other pregnant cases were examined once and their records included; 50 women medical students also were examined as controls. Other control figures were also obtained from the work of L. D. Cripps. As the report was a preliminary one the results were therefore incomplete. The mean of the figures obtained in each month of pregnancy was charted and the curves compared with the range of figures in the groups of control cases. The results, so far as they went, were remarkable for the high degree of "normality" and "efficiency" shown. The mean pulse-rates lay within or below the control figures.

		Pregnants.		Controls.
Lying pulse-rate	..	83 to 85	......	None.
Sitting "	..	75 " 87	......	77·5 to 88.
Standing "	..	88 " 99	......	90 " 87.

It was only in the fourth month of pregnancy that the rate lay outside the range of the control figures, and there was no marked difference in the last months from the earlier months. A study of individual pulse records showed no general tendency to increase of rate in the later months. The difference between the lying or sitting pulse-rates and the standing rate was generally recognised as a test of the efficiency of the cardio-vascular mechanism in making rapid adjustments to change of position. An increase of 15 beats or less was usually considered a "normal" response. It was found that 88 per cent. of pregnant women gave a "normal" response and that only two abnormal responses occurred in the last two months. Comparison of the sitting and lying pulse-rates of the individual showed little difference on the whole, an increase or slowing of the rate with the change of position being met with in almost equal numbers. An exception to this was found in the eighth month of pregnancy, when the majority of patients have a slower sitting than lying rate. This was probably to be attributed to the position of the uterus in that month causing an embarrassment of the diaphragm and circulation when lying, which was relieved when the patient sat up, with a consequent slowing of the pulse-rate. The response to change of position in the ninth month was reversed. The exercise efficiency test used was an easy one. Patients stepped up and down on to a stool 7 in. high 30 times in 60 seconds. The pulse-rates after the exercise were recorded. A "normal response" might be taken as a return to or below the resting-rate in that time. A larger percentage of "normal responses" was found in the records of the later than in the earlier months. The blood pressures of the patients were recorded in the lying and sitting positions. They were taken by auscultation over the brachial artery, two observers working simultaneously on the two arms, two arm-bands being attached to the same mercury manometer. Several readings were taken in succession. It was found that the pressures, both systolic and diastolic, might be highly variable in the same individual at one sitting. The systolic and diastolic curves in pregnancy showed a mean rather below the control figures, and the actual range of systolic readings was low. The systolic pressures are not higher in the last month than in previous months, but the diastolic pressure showed a tendency to rise, though not above the control figures. The lying systolic pressures ranged from 116 to 109 mm. Hg. No control figures were available. A record of over 140 mm. was found only four times in 191 records. The presence of a persistent high systolic pressure in any case should lead to careful investigation to exclude the presence of any toxic condition.

Friday, July 24th.

The Rôle of Surgery in the Treatment of Backward Displacement of the Uterus.

Miss Frances Ivens (Liverpool) opened a discussion on this subject. She proposed to confine her remarks to the group of cases which she described as the immobile non-adherent backward displacement. In this group were included both retroversion and retroflexion of the uterus. She challenged the statement so often made that backward displacements in single unmarried women caused no symptoms, and if present they were due to a neurosis. She had found a definite pathological condition in a large number of such cases seeking treatment, and when the lesion was remedied the symptoms had disappeared. She entirely disagreed with the view which would treat not the displacement, but only its complications, and thought it was entirely wrong to conceal from the patient the fact that such a condition was present. The speaker had found it extremely difficult to prove the causal relationship of strain to this condition, but undoubtedly retroversion was more common in women engaged in laborious occupations. In these cases it was possible that the malposition was already present, and the strain only exaggerated the condition. She regarded the dorsal decubitus during the puerperium as the most potent cause of backward displacements. In discussing the pathological changes associated with a retro-displacement, Miss Ivens said that these changes depended largely upon congestion and back-pressure due to interference with the venous circulation in the pelvis. Direct pressure upon the rectum by the fundus of the uterus sometimes produced hæmorrhoids. The speaker then dealt with the symptomatology of the condition and quoted illustrative cases of the results obtained by operative treatment. In her opinion there were only two classes of cases where the treatment of backward displacement was non-operative. These two classes were: (1) pregnancy and the puerperium; (2) grave organic disease. The operation she practised was Mayo's modification of the Gilliam operation, and she had performed it on more than 1000 occasions with only 5 deaths. She had been able to trace 200 post-war cases. Of these 58 per cent. were cured of all symptoms, 14·5 per cent. were improved, and 15 5 per cent. no permanent benefit.

Dr. Russell Andrews (London), who followed, agreed that operative treatment was best in the following types of cases: (1) Uterus fixed and retroverted; (2) dyspareunia; (3) childless women with repeated abortions. In the majority of other cases the retroversion could be ignored, and in this category came most, if not all, single women and girls. He refused to believe that a mobile retroverted uterus of normal size could press on the rectum and cause difficult defæcation and piles. The speaker commented on the fact of how practices differed and thought Miss Ivens saw a large number of school girls the ordinary gynæcologist did not see. He had, however, looked after the nurses at the London Hospital for the past 22 years, and during that time had only seen one case of retroversion. He thought that perhaps the preliminary dilatation and curettage had a beneficial effect on a large number of the cases. In referring to the modified Gilliam operation described by Miss Ivens, he stated that he had seen several cases followed by a small sensitive swelling on each side of the scar, which sometimes turned out to be a hernia. He had never made this lateral incision, but had always sutured the round ligaments to the edge of the aponeurosis on the other side, and had never had cause to regret it.

Mr. R. H. Paramore (Rugby) gave an interesting historical survey of the various procedures adopted for retroversion. He said that intra-abdominal pressure maintained the uterus in position and this depended largely on the muscular tone of the abdominal wall. He thought that surgical treatment was of secondary importance and advised the use of an abdominal support.

Prof. W. C. Swayne said that the rôle of surgery in retroversion depended upon the position of the appendages. If symptoms were present there was always some associated pathological lesion. He discussed the functions of the round ligaments, and emphasised the necessity of restoring the anatomical functions of these structures if an operation was performed.

Dr. Farquhar Murray (Newcastle-on-Tyne) warmly endorsed Dr. Russell Andrews's able criticism on the paper. He said that he could not too strongly deprecate the practice of giving nervous young girls minute details about their pelvic organs.

Prof. E. W. Marlow said that in his experience retroversion was fairly common in young girls and unmarried women, but in the majority of these cases there was comparatively little symptomatology. In cases where marked symptoms were present there was always some degree of descent of the uterus, and in these cases it was always necessary to repair the pelvic floor. He did not think that the operation described by Miss Ivens should be called after Mayo for it was only one of the many modifications of Gilliam's operation. He did not agree about the general condemnation of pessaries, which, when fitted properly, were extremely useful.

Dr. Leith Murray said that he very rarely performed an abdominal section for this condition.

Colonel V. B. Green-Armytage (Calcutta) gave an account of his experience of gynæcological practice amongst the women in India. He believed that a large number of operations performed for retroversion were unnecessary. Miss Ivens briefly replied.

Erosion of the Cervix.

Dr. Gilbert I. Strachan then followed with a paper on the pathology and treatment of erosion of the cervix. This was, he said, the most common lesion in the female genital organs and was of special importance and gravity as a precursor of carcinoma. The pathology of the condition was discussed. The main predisposing factors were any breach of continuity in the cervix as occurred in a cervical laceration, or any alteration in the normal acid reaction in the vaginal secretion. Labour was then the usual antecedent condition, although in nulliparæ or virgins it might be congenital or due to lack of resistance to infection. Gonorrhœa might also be causal. The changes produced in erosion were traced and the possible complications mentioned, stress being laid on carcinoma. The best treatment was preventive, by giving plenty of time for cervical dilatation in the first stage of labour. Should laceration occur it should be sutured accurately if it can be seen. In treating the established condition the merits of application of antiseptics, electrical treatment, cauterisation, and vaccines were discussed, and it was concluded that it was only in slight and early cases that cure was likely to be effected. Most cases required operation, and while curettage would improve the endometritis that was often present, scraping with a sharp spoon was necessary for the hard cervix. The most effective form of treatment was found to be removal of the eroded area by the technique of Bonney. In some cases amputation of the cervix was called for, depending upon the amount of tissue to be removed, while in nulliparæ Schröder's operation was often satisfactory. While this line of treatment was radical it was the only way in which satisfactory and rapid cure could be attained, and was also an important preventive to the future development of carcinoma.

SECTION OF OPHTHALMOLOGY.

This Section met on two days, with Mr. W. M. Beaumont in the chair.

Wednesday, July 22nd.

Eye Injuries and Interstitial Keratitis.

Mr. Holmes Spicer, in opening a discussion on this subject, said that in a certain number of cases there appeared to be a connexion between interstitial keratitis and a local injury to the eye. In his experience such injuries had included a foreign body on the cornea, a "spark from the engine," chemical injury from caustic potash, surgical operation, and so forth. In 8 per cent. of the cases collected by him a direct association could be traced. In some cases the stigmata of hereditary syphilis might be absent and the question might become a most important one from the point of view of legal compensation. Harrison Butler had claimed that there was a connexion with injury in 20 per cent. of his cases, but the difference probably depended on the definition of injury. With regard to an injury being the cause of the attack, he asked how the occurrence of interstitial keratitis in the second eye was to be explained. In syphilitic patients operations such as needling and squint operations had not been followed by interstitial keratitis. On the other hand, in two cases, the condition followed very quickly on simple needling. If the organism is present in the eye there will be an attack some time or other, but the possibility of the organism lying latent for many years must not be lost sight of. As to the possibility that the connexion with traumatism was a mere coincidence, he said that if this was the case we might expect to see cases where an injury to one eye was followed by interstitial keratitis in the other. Personally he had never seen such a case, though in the ordinary course of events the second eye was usually attacked subsequently to the injured one. He did not think the diagnosis presented any great difficulty. Typical interstitial keratitis was always syphilitic. Summing up the evidence, his opinion was that interstitial keratitis depended on the presence of the spirochæte inside the eye and its readiness for evolution. Whether or not an injury was capable of precipitating an attack depended entirely on the stage of evolution in which the spirochæte might happen to be.

Mr. N. Bishop Harman said that the important question from the legal point of view was this: Was it possible that whether, in default of any injury in any particular case, the attack of interstitial keratitis might possibly not have occurred. We must, he said, be on our guard, too, with regard to the psychological factor in all compensation cases.

Mr. Cyril Walker referred to pregnancy as a contributory factor. From the many severe and intractable cases he had seen at Bristol he recalled two especially. In one patient, a woman of 28, an attack began during a pregnancy. The second eye remained unaffected until two or three years later during another pregnancy, when that eye too succumbed. He had heard of a case following on an attack of conjunctivitis but had not himself seen one.

Mr. E. J. Primrose (Glasgow) said that in many cases of adult interstitial keratitis the Wassermann reaction might be negative. The diagnosis between syphilitic and tuberculous cases was not always easy. He advocated the arsenical treatment carried out by men who were prepared to use large doses and deal with any emergency that might arise.

Mr. Inglis Pollock laid stress on the urgency of antisyphilitic treatment. In two cases of interstitial keratitis following an injury to the cornea—both of them typically syphilitic—as the result of prompt arsenical treatment the second eye did not become affected.

Mr. A. W. Ormond recalled his experience during the war at a large hospital where many cases of traumatic corneal ulcer were treated. In as many as 10 per cent. of these cases an attack of interstitial keratitis supervened. The diagnosis between syphilitic and tuberculous keratitis was perfectly possible. Treatment was now far more important than it used to be 25 years ago. At that time mercury did not cure. It was different with modern arsenical treatment.

Mr. R. Wallace Henry spoke of a case of interstitial keratitis alleged to be the result of the administration of an anæsthetic.

Dr. de Schweinitz gave it as his opinion that an injury might lower resisting power, but in no other way could cause an attack of interstitial keratitis.

Mr. Bishop Harman read a paper on

Phlyctenular Conjunctivitis and Keratitis.

He said that in a total of 3300 children who had passed through the schools for the blind and the myope classes in London there were 699 whose disability was caused by inflammation of the superficies of the eyes. Of these 367 had suffered from ophthalmia neonatorum, 90 from purulent conjunctivitis of later years, and 242 from phlyctenular keratitis. Of these 242 cases 69 had such badly damaged eyes that they needed to be trained in schools for the blind. The proportion of total blindness in school-children caused by this disease was 3·56 per cent., while if we add to them the number of children with sight so damaged that they had to be educated in the myope classes, the percentage reached 7·3 of all included in the two types of school.

In discussing the ætiology, he said that it was a disease of the poorer classes, being rare in private practice. Comparing two classes of hospital patients, native and Jewish, it was found that phlyctenules were three times as common among natives as among Jews. The only factor accounting for these two contrasts is the food factor. Children of the middle class were well fed, and so were the children of alien Jews on a diet into which oil largely entered. Both these classes escape the ravages of phlyctenular disease. With regard to age incidence, he said that the frequency increased from the second year of life to the fifth, declining in later years. The state of the mouth in poor children of about 5 was apt to be worse than either earlier or later. The initial lesion was more commonly found in the lower and outer section of the limbus. More than half of the cases observed began in this situation or on the cornea adjacent to it. The nerve-supply of this area was derived from the loop formed by a twig from the lacrymal nerve and from the second division of the fifth, so that irritation within the mouth would explain the occurrence and situation of the eruption. The link of connexion with the lacrymal nerve similarly accounted for the profuse lacrymation that occurred. Unbroken phlyctenules were sterile so that it cannot be contended that the disease is due to microbic infection. Unlike contagious forms of conjunctivitis, phlyctenular disease was not specially rife during the spring and summer months, but is fairly evenly distributed throughout the year. The typical phlyctenule had a fluid content. The early investigators who considered it to be of the nature of a blister were right. These points of evidence converged on the general conclusion that the disease was a manifestation of some general disability and not a specific infection of the tissues of the eye.

With regard to the connexion with tuberculosis, the evidence for this, he said, was very slight. Of the 242 cases of phlyctenular disease already referred to, only eight had tuberculous lesions. Of 81 cases seen more recently only one showed any infection with tubercle. The evidence went to show that the primary general condition is not tuberculous, but feebleness due to lack of proper food and perhaps also lack of sun and air.

The prevention of this disease was bound up with the general social betterment of the people. Among factors making for this were the school medical service, by means of which cases requiring general or local treatment were discovered; open-air schools, dental and throat treatment, and the transfer of serious cases to country hospital schools through such an arrangement as there was in London between the County Council and the Metropolitan Asylums Board. Though these measures involved an immediate expense, when the saving in effective citizenship was considered they could not fail to be an ultimate economy.

A Light Recorder.

Mr. Wallace Henry demonstrated an instrument for recording light minimum and *light difference*. It was a somewhat elaborate piece of mechanism, [illegible] by its means he had made this interesting obse[illegible]tion in regard to light adaptation There might [illegible] difference in the two eyes of as much as 50 per [illegible] in the time taken for light adaptation, even in [illegible] with normal light difference and normal [illegible] minimum.

Mr. A. S. Percival referred to his own simple [illegible] device of revolving discs for testing light minimum [illegible] light difference. As an instance of its practical [illegible] he recalled the demonstration of a defective [illegible] minimum in a case of cataract in which he had discouraged operation on the ground that there was a probability of a macular affection. On the patient's subsequent appearance after an operation properly performed elsewhere but resulting in no benefit to the sight, Mr. Percival found his diagnosis confirmed.

Mr. R. Colley showed a case in which, as the result of an accident to a medical man, a piece of glass 7 mm. long could be demonstrated lying behind the lens and apparently doing no harm, the vision remaining at 6/5. Several more or less similar cases had been recorded.

THURSDAY, JULY 23RD.

On the second day Mr. Freeland Fergus opened a discussion on

Ocular Pain.

Two main causes, he said, were: (1) Uncorrected refraction, defects of accommodation, and muscle balance; (2) septic infection. In the first category he placed cases when there is difficulty in retaining parallelism on distant vision owing to a defective power of the external recti. In the latter he included pain following operations due to defective technique. Corneal ulcers were best treated not by atropine and bandaging, but by pilocarpine, frequent douches, and dark glasses.

Mr. Wallace Henry referred to reflex pain from decayed teeth. He remembered a case in which severe pain in the eyes was caused by defæcation. As a douche in operation cases he used 1 : 4000 acriflavine.

Mr. Bishop Harman referred to heat as our most valuable remedy in dealing with ocular pain.

Mr. A. S. Percival referred to the use of dionine.

Dr. Webster Fox pinned his faith to leeches, belladonna, and poppyhead fomentations and salicylates. He spoke favourably of milk injections (3 c.cm. to favour leukocytosis) and daturin instead of atropine.

Mr. Lindsay Rea read a paper on the

Treatment of Ocular Syphilis.

This paper, he said, was a plea for the prompt and energetic treatment of cases whether acquired or congenital. As an example of the former he displayed on the screen photographs of a young man who developed an alarming proptosis while on his honeymoon. The proptosis increased from day to day. It was directly forwards and there was limitation of movements in all directions, diplopia and pain. The pupil reacted to light, but vision was reduced to 5/60, and subsequently the eye became temporarily blind. There was very marked conjunctival œdema. At first one eye only was affected, but in the course of two or three weeks the second eye also became proptosed. Vision rapidly deteriorated in both and the eye first affected became blind. Meantime the Wassermann reaction was found to be strongly positive, and thereupon the patient was put on injections of novarsenobillon, 0·45 g. every fifth day for eight weeks. After two or three injections the proptosis began to diminish and the vision began to improve. Iodide of potash in 25 gr. doses was also given thrice daily and mercurial inunctions. At the end of three months the vision was 0/0 in each eye and the proptosis had entirely disappeared. It was a case of gummatous infiltration of both orbits rapidly responding to treatment.

Turning to congenital cases, Mr. Rea discussed first the diagnosis and then the treatment of interstitial keratitis. In 72 of his cases the Wassermann test was done. Of these cases 04 were new ones, and in every one of them the Wassermann reaction was positive. In eight old cases it was negative, but in five of them where he was able to get an examination of the cerebro-spinal fluid, although the Wassermann was negative, a luetic curve was obtained by Lange's colloid gold test.[1] He had not found a single case of typical interstitial keratitis which was not syphilitic.

In the case of adults he used N.A.B. injections, beginning with 0 3 g. and rising to 0 45 g., or in some cases to 0·0 g. In the case of children under 10 he used just half these doses and withheld mercury during the period of injections. Ten or 12 weekly injections were given, and under this treatment the results obtained were far better than under the old treatment with mercury and iodide of potash. Moreover, in 03 consecutive cases of interstitial keratitis treated with arsenical injections not a single case of deafness had developed. With regard to the duration of treatment with arsenical injections, it varied from four and a half to eight months. In cases where the veins of a child were difficult to find, Mr. Rea recommended the intramuscular injection of sulpharsenol into the buttock—0 cg. weekly.

The value of Lange's colloid gold reaction in establishing the diagnosis of syphilis was shown by a case of retino-choroiditis with negative Wassermann, both of the blood serum and cerebro-spinal fluid. The colloid gold test showed the luetic curve. Treatment with mercury and iodides arrested the disease and vision in one eye rose from 0/24 to 0/0. An interesting observation, in which Dr. Rayner Batten concurred, was that affections confined to the macula were not due to syphilis, although the macula might become affected in generalised syphilitic affections of the retina. In cases of congenital syphilis the Wassermann reaction was misleading. In old cases it may become negative without treatment, whereas in recent cases, in spite of efficient treatment, it might remain positive. If cases of ocular syphilis were treated vigorously with such preparations as novarsenobillon the results, although not dramatic in suddenness, were consistently good.

Mr. A. W. Ormond read a paper on

Visual Hallucinations of the Sane.

In some cases of hemianopia visual hallucinations appeared only in the half field. They depended on visual memories and the faculty of visual memory differed enormously in different people.

Mr. Wallace Henry recalled a case of distressing visual hallucinations in a patient with both eyes excised which was cured by 1 per cent. cocaine applied to the stump of the nerve in the socket.

Mr. J. Burdon-Cooper read a paper on the

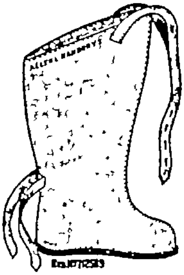
Conservative Treatment of Glaucoma.

Some underlying causes of glaucoma were depression and worry, high blood pressure, errors of metabolism, intestinal troubles, and acidosis. To combat congestive attacks he advocated warm baths, the hypodermic injection of ¼ g. of morphia twice daily, and the administration of nitro-glycerine, ♏i. every four hours, dry heat, scarification of the temple, and pressure massage, which last measure might reduce the tension. These measures were intended not as a substitute for, but as a supplement to operative treatment.

New Inventions.

OPERATING BOOTS.

THE operating boots here illustrated are the outcome of an attempt to obtain a legging which could be worn if desired over outdoor shoes, stand repeated sterilisation by dry or moist heat, be easily kept in place, and wrap up into small compass. The sole of the boot is made of special rubber, which is unaffected by boiling or steam, and the upper is of white coutil, which washes well, and is attached to the sole by hand-sewing, without the use of any rubber solution. The single long tape in front allows the boot to be attached to a front brace button, and the ankle tapes tied over the instep keep the foot portion in place. I have had one pair in constant use at hospital for the last nine months, and they show, as yet, no signs of wear.



I am much indebted to Messrs. Allen and Hanburys, Wigmore-street, W. 1—from whom the boots can now be obtained—for the trouble they have taken in finding the right materials to meet the objects I had in view.

ERIC PEARCE GOULD, M.Ch. Oxf., F.R.C.S. Eng.

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[1] THE LANCET, 1020, ii., p. 638.

Reviews and Notices of Books.

OFFICIAL HISTORY OF THE CANADIAN FORCES IN THE GREAT WAR, 1914–19.

The Medical Services. By Sir ANDREW MACPHAIL, Professor of the History of Medicine, McGill University. Published by authority of the Minister of National Defence. Ottawa: F. A. Acland. 1925. Pp. 428.

A CURIOUS and interesting book; an official history of the medical services of Canada in the war, yet prefaced by an official notice that "the opinions expressed are those of the author himself." The author confides to us some of the difficulties of the Canadian Medical Corps, sometimes caused by "the Imperials," but in the first half of the war the greatest difficulty of all was, he tells us, the Minister of Militia. And no doubt the Minister, like others, was far from perfect; he considered himself a universal expert, misunderstood and misjudged the work of the Medical Corps, naturally embroiled himself with his professional advisers, fought then for himself rather than for the service, and had to resign. Yet it should not be forgotten that "Sam," as he was known all across Canada, had seen the menace of Germany far sooner than most people, had prepared against it with ability, and, in Parliament at Ottawa in 1910, had given publicly to Lord Roberts the credit for foresight which so many smaller people were denying him. He also worked hard to send quickly overseas the 30,000 Canadians of the first contingent.

To the surprise of the War Office "the equipment brought with them was largely worthless and had to be replaced" (p. 29) from British ordnance and medical stores, and their training was still to come; so, though soldiers were badly wanted in France that winter, this division could not be sent across until February, 1915. The author is of opinion they might have been made more quickly battle-worthy in Canada, but in England they were closer to the real school of war, France, and were besides, through that depressing winter, a convincing evidence of the solidarity of the Empire. Once the division did get to France the credit of the Canadian troops was quickly established and soon grew to a great renown, not earned without sacrifice. Of 418,052 Canadians overseas, 51,678 (123 per 1000) were killed or died of wounds, 4960 (12 per 1000) died of disease; a heavy toll of her best which Canada still mourns. The chapters describing personal experiences of various medical officers and units are delightful reading. With his experience of the early confusion and the later orderliness of the war, why did the author not provide an appendix telling the newly volunteered medical officer on what duties to concentrate in the first days of a general mobilisation when all is strange and new, and conservancy and infectious diseases require particular care?

Medical units were, very properly, the earliest to reach the great first Canadian camp, Valcartier, and the subsequent development of the Canadian Medical Corps is carefully recounted and the diseases of the war are discussed. Venereal diseases were a great trouble though not, strictly, diseases of the army, being always contracted from civilians, outside the army. "Idleness is the mother of lechery" is the author's aphorism, from which we may deduce that the best disciplined troops should show a smaller venereal rate. The author agrees with the Official Medical History of the War that it is not yet known whether preventive measures and/or early treatment have really prevented infections from developing, but he reports the experience of the Canadian Corps with some hopefulness. Any man if infected had to disclose where the infection was contracted, and the woman was deported from the area, and, so long as there was no leave, one case only appeared per day among 30,000 men, the usual rate being three or four times as much.

The work must be read as a whole, as its parts are not everywhere consistent. Thus, on p. 306, we are told that "the food at all times was abundant and unfailing," though on p. 296 the food of No. 3 Stationary Hospital at Mudros was stated to have been "scarce and unsuitable for the personnel, impossible for the patients." Marvellous things happen in war, but who would have believed that horse lines, "the best in the army," so Field Marshal Plumer described them (p. 54), were designed by the Mother Superior of a Belgian convent!

CLINICAL THERAPEUTICS.

In two volumes. By ALFRED MARTINET, Paris. Authorised English translation from the second revised and enlarged edition, by LOUIS T. DE M. SAJOUS, Philadelphia. Philadelphia: F. A. Davis Company; London: Stanley Phillips, 45, Brondesbury-road. N.W. 6. 1925. Pp. 718. Price for the two volumes, 67*s*.

THE author in his preface styles his book "a manual of practical medicine, based on an essentially novel plan conforming to the actualities of practice and meeting clinical requirements." He points out that it is a complement to an earlier work entitled "Clinical Diagnosis." It is a bold claim that any book on medical treatment can be essentially novel, but that it conforms to the actualities of practice we are willing to admit. It is wide in its scope and excellent in its material. A medical student cannot possibly, in his short time in the wards, see all the processes used in the treatment of patients. But according to luck, and to a persistence in being present at times apart from the rounds of his chief, he may see many things he would only learn as a resident or not at all.

This book, besides giving many useful helps in drugs, tells in detail how the student must do those things which he has heard of and not seen, or has only seen done by someone else. The first part, the therapeutic agents, is divided into medicinal, alimentary, physical, and psychic agents; medicinal agents are again divided into (1) drugs acting on a definite function, and (2) those acting selectively on infectious and parasitic disorders. This last part, including serum therapy and chemotherapy, forms a section which is especially useful. Drugs acting on organic function are subdivided according to the system of the body in which they act principally and the best known one of each class is taken as a type. Pharmacology and chemical structure is touched on sufficiently to give the raison d'être of many of the drugs.

In the second volume, dealing with symptomatology and treatment, Dr. Martinet lays great stress on the importance of avoiding "equation therapeutics," but gives a very comprehensive 200 pages of common symptoms arranged in alphabetical order, with remarks on the various conditions they may indicate and the appropriate treatment. His fourth section, the treatment of disease, he divides into diseases of the various systems, metabolic, infectious and venereal diseases, skin, ear and eye diseases, and treats their subdivisions in systematic detail. He has made more use of his collaborators here, and whole sections are written by specialists in their particular diseases. The author's article on the treatment of poisoning is very well arranged and employs the tabulated method for quick reference, and his final chapter on instructions to the patient contains a great deal of matter that few general practitioners could read without a certain feeling of shortcoming. He insists that full dietary, hygienic, and physiotherapeutic instructions should be given not only verbally but also "legibly written on good paper"—an excellent rule, if perhaps a counsel of perfection.

Generally, the book is a direct translation from the French. The section on watering places has been liberally adjusted to the American reader, and the writer (or translator) is somewhat unfortunate in selecting Epsom as a place in England known for its purgative mineral waters. The book abounds in long words not in common use in English medicine, of which hypocrinic, crenotherapy, crymotherapy, inoscopy may be taken as samples, and in many respects it is tuned up to the American rather than the English reader. It is a valuable compilation.

THE HEALTH OF CHILDREN.

Health in Childhood. Five Lectures delivered at the Institute of Hygiene. With a Foreword by A. MIDDLETON HEWART, M.D., D.P.H. London: G. Bell and Sons, Ltd. 1925. Pp. 94. 2s. 6d.

Healthy Childhood between Infancy and School Age. By MARY E. WESTON, M.B., B.S. Lond., Assistant School Medical Officer and Assistant Infant Welfare Medical Officer, County of Leicester. London: Faber and Gwyer, Ltd. (The Scientific Press). 1925. Pp. 185. 4s.

IT is a mistake not uncommonly made to assume that one has only to write down the elements of hygiene for children in simple language and any mother will then be able to read, understand, and put these rules into practice. The subject has to be approached and explained in almost as many different ways as there are mothers, so that books on child welfare with an original outlook are still welcome. The first of these two volumes consists of five lectures on somewhat less popular and certainly less known aspects of the subject. Lieut.-Colonel Robert H. Elliot writes with all his well-known authority on the care of the eyes in children; Mr. George Thomson on the care of the primary teeth; Dr. King Brown on the prevention of infectious disease in childhood; the late Mr. Græme Anderson on the prevention of deformities in children; and Dr. C. S. Thomson on the mental and moral education of the child. All these papers, which were lectures delivered this year at the Institute of Hygiene, are of a high standard of excellence and demand the careful attention of all those dealing with the care of the young.

Dr. Mary Weston is concerned with the health of the toddler or pre-school child, a subject about which not much has been written in this country, although, and despite what Dr. Feldman says in his foreword, there have been several excellent volumes published in America. After a brief introduction the author deals successively with the diet, clothing, sleep, physical development, the air and sunshine requirements, the training and the holidays of the child between the period of infancy and school age. Two chapters are added on the child in sickness and on some common diseases. Well written, with much common sense, this book should have a wide appeal.

TOXIC GOITRE.

Kliniske Studier over Thyreotoxicosenes Diagnose og Prognose. By Dr. JOHAN HOLST. Oslo: Jacob Dybwad. 1924. Pp. 96.

WITH the financial assistance of the Fridtjof Nansen Fund, Dr. Holst has published a monograph which embodies his study of 150 cases of Graves's disease or Basedow's disease—terms which he prefers to discard in favour of the more modern expressions thyreotoxicosis or toxic goitre. He attaches a certain value to the Goetsch adrenalin test, Kocher's cytological formula, the blood-corpuscle suspension test, the sugar-tolerance test, and de Quervain's rat test, but it is the basal metabolic rate, as determined by Krogh's method and apparatus, on which he relies most for a diagnosis. He does not, however, undervalue the clinical examination. The term "latent thyreotoxicosis" is used by the author in connexion with those cases in which the metabolic rate is increased, although there are no clinical signs of the disease. It is probable that the patient who suddenly develops Graves's disease after a fright has been for some time suffering from latent thyreotoxicosis. For it is difficult to explain how the organic changes of Graves's disease could develop suddenly as a sequel to psychic shock. As the author points out, a knowledge of latent thyreotoxicosis is of great importance to the early diagnosis and treatment of the case.

Dr. Holst gives an interesting account of cases of monosymptomatic thyreotoxicosis, the patient suffering from neurasthenic symptoms only, or only eye symptoms or diarrhœa. Or the only symptoms may be referred to the heart. It is in such cases that the clinical diagnosis is apt to be wrong, and the determination of the basal metabolic rate is of unusually great importance. It is also very helpful in distinguishing between neuroses and thyreotoxicosis, for if the metabolic rate is found to be normal the patient is certainly not suffering from hyper-function of the thyroid gland. But if there is an increase of the metabolic rate by 25 to 30 per cent., thyreotoxicosis probably exists, although in neuroses also there may sometimes be a slight rise of the metabolic rate. With regard to operative treatment, the author is in favour of early radical resections in order that the proliferation of the toxic cells may be arrested before irreparable damage has been done to the heart or other organs. When symptoms persist after an operation, a determination of the metabolic rate will show whether they are due to an insufficient removal of diseased thyroid tissue or to secondary lesions in other organs, and thus the metabolic rate helps the surgeon to decide for or against another operation. It is again the metabolic rate by which the surgeon should be guided in the worst cases, and when this rate is more than plus 70 per cent. the author considers surgical treatment as dangerous.

The chief message, then, of Dr. Holst's admirable monograph is the value of the metabolic rate to the study of almost every aspect of Graves's disease.

PRACTICAL PATHOLOGY.

Including Morbid Anatomy and Post-mortem Technique. Second edition. By JAMES MILLER, M.D., D.Sc., Professor of Pathology, Queen's University, Kingston, Canada. London: A. and C. Black. 1923. With 100 figures. Pp. 528. 15s.

WE do not wonder that a second edition of this book, first published in 1918, has been called for. It does what it sets out to do very well, and gives a plain, easy, straightforward account of what the elementary student of pathology wants to know about his work in the post-mortem room. Eminently practical directions for making autopsies are interspersed with brief descriptions of morbid appearances and their meaning, and at the end a section is devoted to the methods of preserving and examining tissues. Prof. Miller gives one good way of doing each thing, which is educationally a far sounder plan than providing a maze of alternatives. It is certainly better to be able to cut up a body and display the organs neatly according to some definite and familiar plan and to be able to stain a section really well with hæmatoxylin and eosin than to half know three ways of performing a necropsy and ten ways of staining a section. There are, of course, plenty of small points in which each working pathologist who reads the book will be sure that the method recommended is not really the best—it is cosmetically preferable to open the neck by two incisions from the mastoid processes meeting at the top of the sternum than by a single median cut (Fig. 4); it is more elegant in v. Kossa's method (p. 431) to develop the silver phosphate with pyro than to rely on sunlight; rubber gloves are handier in use if one wears a pair of thin cotton gloves over them (p. 5); there is more to say about the ætiology of rickets than is found on p. 326—but there will be plenty of time for the student to learn some of these variants when he has really mastered some one way of doing what is requisite and necessary.

Industrial Poisons in the United States.

By Alice Hamilton, M.D. New York: Macmillan Company. 1925. Pp. 590. 21*s*.

The writer of this volume is an international authority who has made the matters discussed her own speciality and has visited many countries in the course of her studies. In some ways the title chosen is somewhat misleading, since, although the objective is industrial poisons in America, the information amassed is drawn to no small extent from investigations made in Europe and particularly in Great Britain. The scope of the book is strictly limited to recognised industrial poisons, such as lead, mercury, arsenic, caustics, acids, vapours and gases, and benzene compounds; but what determined the inclusion of troubles from oil and tar cancer, while the toxic silica is omitted, is difficult to guess. Further, there is no reference to caisson disease, which is well known in the United States, and might usefully have been grouped with gassing. If limitation of space was the determining factor, condensation might have been exerted relative to lead poisoning, which receives the lion's share of space; indeed, it accounts for nearly half the volume. Lead poisoning has in the past truly led the way in industrial toxicology, but its causation is now so well understood and its frequency is so rapidly diminishing, that the time has come to place it in more correct perspective. Nevertheless, the exposition given is likely to become for some time the standard for reference.

The scheme adopted is to state for each poison first a description of its symptoms and pathology, and then of the risks as they occur in industry. Long technical explanations of processes—all too common in books on this subject—are commendably avoided; and chemical questions are only introduced when required to display a connexion between molecular structure and toxicity. Prevention of risk is only incidentally discussed in connexion with causation, while treatment is entirely omitted. This omission, particularly in regard to such things as gassing with carbon monoxide, seems unfortunate.

On the whole, the book is readable and well-written. It places at the disposal of those interested a wealth of information in ordered sequence.

Electrical Conductivity of the Human Body.

La Conductibilité Électrique du Corps Humain. By André Strohl, Docteur-ès-sciences, Professeur à la Faculté de Médecine d'Alger. Paris: Masson et Cie. 1925. Pp. 128. Fr.8.

Dr. Strohl has conducted original research on the electrical conductivity of the human body. By means of a ballistic galvanometer he has been able to determine the resistance of the tissues at the moment when the current commences to flow and for minute fractions of a second after. With the apparatus at their disposal, previous workers have not determined the resistance at such early periods of the flow of the current. When a current at constant voltage is used, Dr. Strohl has shown that the resistance of the body rises, during the first few thousandths of a second, to a value two to five times greater than that found when the current has passed for longer periods. After this initial increase it falls, at first quickly, and then more slowly, till it reaches the values obtained by earlier workers. The author regards this initial rise, the existence of which has not hitherto been known, as the result of an E.M.F. acting in a direction opposite to that of the measuring current and produced by polarisation. This polarisation increases at the moment when the current commences but then diminishes slowly. It takes place throughout the tissues traversed by the current, but mainly in the skin. It is determined by the varying permeability of the cell membranes to the tissue-ions and it disappears, in part at any rate, when the integrity of the membranes is lost. The author thinks that the degree of permeability depends upon the nervous system, probably the sympathetic.

Dr. Strohl's work is of high scientific value. It shows that the polarisation of the tissues, causing as it does considerable variations in the strength of the current produced by a constant E.M.F., constitutes a source of difficulty in the measurement of tissue excitability to currents of short duration, and a possibility of error in the determination of the chronaxie. The author thinks that further study of the opposing E.M.F. caused by the polarisation, and the initial resistance of the tissues would yield information of value in the study of certain functions of the tissues.

Alcohol in Medical Practice.

By Courtenay C. Weeks, M.R.C.S., L.R.C.P. London: H. K. Lewis and Co., Ltd. 1925. Pp. 186. 3*s*. 6*d*.

The object of this little book is to show that although there has been a remarkable decrease in the use of wines and spirits in various hospitals and institutions within recent years, there is still room for even further decrease, if the use of alcohol as a drug be removed from the realm of empiricism and treated scientifically on its pharmacological merits. Dr. Weeks claims that his conclusions have been reached by a "careful consideration and appropriation of much that has been written during the past thirty years." These conclusions would carry more conviction to his professional brethren if some of the rhetorical utterances, which the author no doubt has found useful in public lectures, were curtailed, for they obscure a scientific analysis of the subject. Nevertheless, many of the arguments are very sound, and the tabulated results of an inquiry into the comparative amounts of alcohol used in various hospitals and other institutions in the years 1900 and 1923 are very instructive. One point, and not an unimportant one, which Dr. Weeks ignores, is the undoubted psychological effect of alcohol taken in even small doses by patients in the belief, *erroneous or otherwise*, that it is doing them good. A chapter on the evolution of medical opinion has been added and is very interesting reading. Dr. Weeks writes well and in a convincing manner, and perhaps this volume will be of some assistance in enabling those of "our professional brethren who have been so fast bound in the shackles of the past to emancipate themselves and their patients into the greater freedom of a newer knowledge." But this is one of the passages which the book would be better without.

Anatomische Praeparieruebungen.

By Hans Virchow. Curs I. and II. Berlin and Leipzig: Walter de Gruyter and Co. 1924. Pp. 66 and 110. M.5.50.

This is a guide for anatomical students, telling them shortly what they are expected to display, but not saying much on the subject of carrying out the intention. The first "Curs" is concerned with the muscles only, and the arm takes seven pages in this connexion. The fullness, comparatively, of the sections on the post-vertebral muscles seems to us rather remarkable, for one would imagine it more profitable to expend effort so relatively great on more worthy subjects; moreover, these muscles are among the easiest to teach in the body. Similar remarks might be made on the treatment of the face. These little books are not for teaching anatomy but for guiding the learner, but even from this point of view they are the curtest with which we are acquainted, though little human touches appear here and there among the short directions which may give pleasure to a worried reader. There are simple diagrams to show incisions and broad margins and spare pages for notes. The printing and appearance of the book are excellent.

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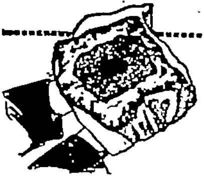

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LONDON: SATURDAY, SEPTEMBER 5, 1925.

AN IDEALIST ON MODERN SCIENCE.

The British Association for the Advancement of Science held its annual meeting at Southampton last week, and on August 26th Prof. Horace Lamb, F.R.S., delivered his presidential address. As a mathematician, he confessed that he found it difficult to choose a subject in which he had himself been interested without overstraining the patience of his audience, but he was equal to the test. He spoke on geophysics, a subject of intense interest to everyone of whatever education, and confined himself to facts of the earth's constitution that have been gathered from observations made in our own time, and mainly those that bear a mathematical or physical significance. Before he came to the subject-matter of his address, however, he reminded the Association of some general truths concerning science that cannot be repeated too often. He said that to the question "What is the real purpose of science, and what is the common inspiration of scientific effort and the common ambition of scientific workers?" there is a kind of stereotyped official answer, given in a formula that has become almost consecrated—viz., "To subdue the forces of Nature to the service of man." In other words, the only real value of science is as a key to the material gains and the larger powers that have in the last two centuries so transformed the external part of our lives, and since there is no knowing what abstract research may not prove in the future to promote the supreme end, the more speculative branches of science are to be not only tolerated, but to a certain extent encouraged. Now this Prof. Lamb rightly held to be only a part of the truth. Practical utility has undoubtedly been the conscious aim of much scientific work, and sometimes perhaps its main justification, but the Association would not admit that this formula adequately described what had really inspired discovery through the ages. The conic sections of Apollonius were to him not a possible future guide to the motions of planets, but a study that was legitimate and respectable in itself; and Faraday and Maxwell, feeling their way towards an electric theory of light, had no prescience of wireless telegraphy, though this was a development of their researches by no means remote.

For the British Association the primary aim of science must be to explore the facts of Nature, to ascertain their mutual relations and to arrange them as far as possible into a consistent and intelligible scheme. This is the true inspiration of scientific work, as success in it is the appropriate reward. The material effects come later if at all, and often by a very indirect path. In this constructive task, the President saw a very distinct æsthetic motive, and he showed in a fascinating piece of argument that the research worker was really as much an artist as the musician or the sculptor. A well-ordered piece of algebraic analysis is very like a musical composition. To the uninitiated it is merely a mass of curious symbols, but so is the score of a symphony, and in both is shown that purposeful evolution of a mass of unrelated elements into a grand harmonious unity, that marks the working of the universal creative life. Enthusiasts are using a perfectly true analogy when they speak of the poetical charm of Lagrange's work or the classic perfection of Maxwell's expositions, and the interest men find in the latest achievements of physical science should be not so much due to the hope of future profit as to the intrinsic beauty and novelty of the visions unfolded. Nevertheless, it would be disloyal to science, said Prof. Lamb, to depreciate the material advantages that it has bestowed on civilisation. The most utilitarian result is based on long and patient study and experiment, and science is also greatly indebted to industry for the impulse it receives from new problems and the extended scope that industry opens for its experiments. The National Physical Laboratory, started mainly in the interests of industry, is now, as Prof. Lamb pointed out, a great institute of theoretical as well as applied science, informed throughout by the true spirit of research. In speaking of Huxley in connexion with the increased intellectual freedom of to-day, the orator defended science against the criticism that arose from the disappointment of those expecting it to reform human nature, a criticism that President Wilson has expressed forcibly by the words, "Science has won us great liberty in the physical world but has not freed us from ourselves." It is not in the province of science to improve human nature. Science can give the gifts, but cannot bear the responsibility for their use by the human race. It can take its rightful place in our sports, as Prof. A. V. Hill shows well in his address to the Physiological Section of the Association (see p. 481), but it cannot prevent the abuses of too much play. Medical science has given us longer and healthier lives, but is not responsible for the use we make of them. It benefits both the just and the unjust, but we would not on that account close our hospitals or condemn our doctors.

Prof. Lamb then set forth some very interesting facts about geodesy, and the results of the latest researches on the shape and constitution of the earth, its rigidity and elasticity, and the forces that act upon it, and closed on a note of tribute to the great part that local universities and university colleges have played during the last 50 years in developing science in this country and the empire. He referred to the new schemes by which the University College of Southampton were now increasing their activity and furthering their development, and wished them every prosperity in the name of the British Association. Science has never been so widely and so enthusiastically cultivated as at the present time, with so complete sincerity, with more brilliant success or even with less of international jealousy: Prof. Lamb's words to this effect can fairly be re-echoed by those who pursue medicine.

THE INDIAN MEDICAL SERVICE.

Last week, in the Students' Number, we essayed to place before the medical schools a picture of the Indian Medical Service which would enable those who were choosing a career, and their advisers, to judge what the opportunities really are in the Service—both what are the drawbacks which have ensued on the great political changes of recent times, and what are the advantages which may be secured to the members of the Service under the various schemes put forward to deal with an admittedly difficult situation. How difficult was well elicited recently in the House of Lords when Lord Sydenham asked the Secretary of

State for India "whether measures are in contemplation adequately to fulfil the medical requirements of the Indian Army, British residents, official and non-official, and the civil hospitals, and to secure the progress of modern science in all its branches throughout India." In support of his inquiry Lord SYDENHAM reviewed briefly but eloquently the magnificent work that has been done for many years by the Indian Medical Service; he did not say a word too much when he claimed for it the position in the past of the finest public medical service ever created. The justification of this praise is to be found not only in the standard of health which has always been maintained in the Indian Army to which the Service specially ministers, but in its achievements on the civil side whereby a hospital system has been spread over the Indian Empire, and a directive force produced for the support of all that may be called sanitation in the country. When statements like these can be made unchallenged—and identical sentiments have been appearing in our columns for the last three-quarters of a century—no one can look upon a complete revolution of such activities with anything but sincere regret. But the idleness of tears is well replaced by constructive energy for the future. India definitely requires European medical assistance, not only for the care of the military and civil European populations, but for the maintenance in the country of that spirit of modern medicine which has accomplished already such mighty things, and which day by day is spreading in influence and value. It is a national responsibility to meet the requirements.

We need not recapitulate here the recommendations, now some eight years old, of the Royal Commission on the Public Services, nor those of the Verney Lovett report, for they have all been thoroughly discussed. The practical point is how far the last concessions under the recommendations of the Lee Commission will offer attractive terms for young medical officers and will at the same time provide in India for the three things which are seen to be essential—namely, the maintenance in India of modern standards of medicine, the conservation of the health of the military and civil Europeans, and the due care of their families resident in India. The answer to this far-ranging question was to some extent supplied by the Secretary of State for India in his reply in the House of Lords to Lord SYDENHAM'S request for information. The Lee Commission, Lord BIRKENHEAD explained, had taken the same line with the Indian Medical Service as with the other All-India services in dealing with what are termed the "transferred subjects." By the Commission it was proposed that the R.A.M.C. should absorb the I.M.S., but the conclusion has since been reached that the I.M.S. ought to remain as a military service, its reserve being secured from the officers lent to the civil administration. The recommendations further proposed that the Provincial Governments in India should in the future recruit and control the services for whose work they were responsible to their legislatures; but here the Secretary of State pointed out that in the case of the Indian Medical Service the general principle is limited by the considerations that the needs of the Army would have to be met by drafts from the Civil Medical Service—a service 50 per cent. Indian recruited—while special arrangements would be made to obtain medical attendance for European residents by British medical men. But efficiency in such attendance may be difficult to secure, and there does not seem any stronger appeal inherent in the work than we have been able to put forward last week. Good men will make their presence felt and appreciated, but unless the districts are limited there is much chance of wasted effort. Lord BIRKENHEAD inclined to the belief that it will be essential to earmark for the portion of the Army Reserve lent to the civil side, but not required directly for the medical care of the British Services, a number of civil positions, and he instanced research or professorial appointments. These appointments have always been attractive to officers of the Service, and, said Lord BIRKENHEAD, "if the essential Army Reserve maintained in civil employment allows a margin (as it almost certainly will) it is clearly a gain not only from the point of view of recruiting inducements, but to Indian public health generally that the men should be employed in the departments of research and teaching in which their predecessors have done so much for the welfare of India."

At any rate the period of inactive regret seems to have passed, and a general conclusion reached that there is a fine future before the Indian Medical Service, even though vast alterations in the world, mainly of modern origin, have brought with them a revolution in the conditions of work. Those who enter the Service now, no less than the pioneers of medicine in India a century and more ago, will have before them a great constructive task. Their predecessors tilled virgin soil. The present soil, though much remains untouched, has in the great essentials been cultivated and cultivated successfully, but under methods which in detail will no longer be pursued. Success will none the less come to the Service while its great ideal remains of promoting in India, for Europeans and Indians alike, the principles of health and sanitation. Medical science should know no difference between races, but it cannot, out of unbounded tolerance, be called upon to countenance mysticisms and superstitions. The work of the vaids and hakims, and the antique theories of indigenous medicine will give place in time to scientific procedures founded upon anatomy and physiology, upon observation, experiment, and research. Much tact will be required to persuade many millions of uneducated persons to look to science for their salvation, and the early energies of the Indian Medical Service in the future may have to be devoted, apart from their definitely official duties, to the education of the community through qualified Indian doctors.

THE RECOVERY OF THE LONDON HOSPITALS.

THERE is much that is comforting and encouraging in the annual report of King Edward's Fund upon the work and finances of the 118 London hospitals during 1924 which has just been issued. Not the least significant of its masses of figures are those which show that the number of beds has grown by 350 during the 12 months—practically a new bed every day—and that the number available in London is 1620 more than in the year before the war. With the very recent report of the Voluntary Hospitals Commission on bed capacity before us, it is obvious that the accommodation is still much too small, but so substantial a growth in a single year is a remarkable indication of the resiliency of the voluntary system. Income has kept pace with expenditure in an almost exact ratio —both are, roughly, double what they were in 1913. When, however, we compare 1924 with 1923 we find that maintenance expenditure has gone up £123,000 whereas income has increased by less than half that amount. Nevertheless, the aggregate deficits of 1920, 1921, and 1922 have, during the last two years, been changed into aggregate surpluses, and the number of hospitals with deficits fell from 77 in 1920 to 51 in 1924. That is still far too many, yet if the present rate of progress can be continued, in another few years minus quantities will be almost unknown in London hospital finance. The need of money for building, equipment, and endowment remains, and is likely long to remain, very serious, but here again the prospect is distinctly encouraging. During the last three years not far short of a million and a half has been given for these purposes.

Voluntary gifts are still the rock upon which hospital expenditure is based, and it must necessarily always be so. These gifts last year provided 37 per cent. of the aggregate income, but they are now being run rather closely by patients' payments, which in 1924 reached 29 per cent. of the receipts. This is a figure that is ever growing all over the country, and the more it grows the stronger the voluntary position will become. It is hopeless to expect that great hospitals can "live on their means," and last year their investment income was only one-fifth of the total. Ten years hence the demand upon the resources of the hospitals will be even heavier than at present. It is therefore important to consider the possibilities of reducing expenditure in directions that will not impair their usefulness, and Sir Mackenzie Chalmers has just renewed the suggestion to which we gave support a few months ago, that they should be relieved of a proportion of the heavy burden of local rates. It is understood that the London hospitals pay close upon £10,000 a year in rates, and there is a strong claim for their all-round reduction by, say, one-half—since they clearly derive benefit from local expenditure the case for total exemption would not be strong. Then there is the old story of the death duties on bequests to hospitals—duties which not only rob the hospitals but discourage testators, since both the institution and the dead man's estate suffer. Lord Cave's Committee some four years ago recommended that bequests to hospitals should be exempt from the 10 per cent. legacy duty on the ground that "there appears to be no good reason why the State should intercept at the source one-tenth of all sums bequeathed for the benefit of the sick." Since then more than one Chancellor of the Exchequer has refused to honour a recommendation which, it is believed, would help the hospitals to the extent of about £100,000 a year without raising any of the thorny questions implicit in more direct forms of State aid.

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THE INTERNATIONAL CONGRESS ON CHILD WELFARE.

THE first International Congress on Child Welfare has been held during the past week in Geneva, and the various factors in the well-being of the young have been taken into consideration from international aspects. With regard to the diminishing of infant mortality, some of these may well be beyond human power; for example, Dr. Afifi, speaking as an official delegate of the Egyptian Government, stated that the excessive heat of the summer in Egypt was responsible to a large extent for the increased mortality of infants during the months of June, July, and August. The infant mortality in Egypt is certainly very high, for the last figure which we have seen was 143 per 1000 births; but before the sacrifice of life thus implied can be attributed to the climate it is necessary that we should have analogous figures for comparison collected from other countries having as wide a range of temperature as prevails in Egypt. The season of the year when the deaths occur is another point which might well have been brought before the Congress, and no doubt in future meetings subjects like this, of wide international relevance, will be set down for discussion. According to Dr. Afifi it is noticeable that in Egypt the infant death-rate per 1000 has gone up steadily for some years, almost in proportion to the increase of the population, which is simply a proof of his own statement that it is the conditions prevalent in the cities which are responsible for the sacrifice of child life.

Annotations.

"Ne quid nimis."

ROYAL COLLEGE OF SURGEONS IN IRELAND.

A RESOLUTION was unanimously adopted at a special meeting of the Council of the Royal College of Surgeons in Ireland, expressing high appreciation of the conduct of Mr. R. C. B. Maunsell, the President, in the recent controversy, and confidence of his defence of the interests of the College. The Council then considered the whole situation, which has arisen under the decision to institute a separate medical register for the Irish Free State, taking note of many suggestions from various sources that they should intervene in the political issues. The Council, however, decided, seeing that the medical profession in Ireland have never interfered in any way in politics, to fight the matter by educating public opinion, and only thus influencing politicians. As a beginning of the education of the public they have decided to convene a meeting of medical practitioners on Sept. 8th in the Examination Hall of the College.

OCCUPATIONAL DISEASES OF SEAMEN.

Dr. H. Ruge, Marinestabsarzt (Surgeon Lieut.-Commander) in the German Navy, in some interesting articles published in the *Marine Rundschau*, observes that when diseases of seamen came prominently into notice in the age of the great voyages of discovery the first and worst was scurvy. Next in importance were the infective diseases: Typhus (ship-fever), typhoid, dysentery, and in the tropics yellow fever and malaria. The number of sick was almost incredible in these early expeditions. In 1757 a French expedition, as it sailed, sent 400 typhus cases ashore at Brest from two of its ships. A thousand were landed at Louisburg on arrival, survivors were re-embarked in autumn, and when the ships reached Brest there were 4000 sick in the fleet, while hundreds had died during the passage. Hosier in 1726, off Colon, lost his personnel twice over from yellow fever. Little was known definitely about prevention, but Cook (1772–5) and La Perouse (1785–8) had hardly a man sick in their voyages. The food was unbelievably bad; the water was no better. It was not till 1815 that iron tanks began to replace the old decaying wooden casks. To make the dirty, stinking water tolerable it was mixed with rum, of which each man was issued with 5 oz. daily. Thereon alcoholism began to rage. Rouppe (1701) calls delirium tremens the characteristic disease of seamen, but improvement set in in the latter half of last century, and the disease is now rare.

Dr. Ruge classifies the sickness of the modern German Navy in four main groups: Chills, mechanical injuries, inflammations of connective tissue, and venereal disease. Under "chills" are included tonsillitis, sore-throat, bronchial catarrh, pleurisy, acute catarrhal, gastric and intestinal attacks, and rheumatism of muscles or joints. Chills are more common afloat than ashore (as 75 to 65), more frequent in iron than in wooden ships (as 3 to 2 in 1893–7), and it is the engine-room, or rather the stokehold, staff that suffer most, and he comments that these men should always wear jerseys when on deck in cold weather; steam heating of the ship also lessens risk. Mechanical injuries cause much loss of time. They are more frequent and more dangerous in sailing ships, but these ships are becoming few. The mortality of accidents in sailing ships is 30 per cent., in steamships 5 per cent. But most accidents nowadays occur about the guns, and sailors are the victims; there are few accidents in the engine-room. Recruits and men new to the ship suffer most, and accidents are more frequent on Mondays, lessening as the week goes on. This is due to unwisely-spent leave at week-ends, when, too, venereal disease is most often acquired. Eighty-five per cent. of accidents occur on duty. Many might be prevented by improved construction of ships, but accidents there will always be where people are working hard. Men in ships are fortunate in having a doctor at hand when they are injured, so that wounds need not become septic. Boils cause much loss of service; they are generally on the arms, and attack sailors more than stokers. They are at their maximum in summer but have a second maximum in autumn, when the recruits join. The recruits are very susceptible, probably because they are constipated. Cleanliness is the best protection against boils, and once they have a hold on the ship, the ship should be disinfected. Three-quarters of the venereal infections are contracted by men under the influence of alcohol. At Hamburg, Nocht found 7000 cases of venereal disease in three years aboard ships entering the port. The East Asiatic Squadron has had one-third of its force at one time under treatment. Sailors suffer much from syphilis, and the worst infected women are at the ports. Unlike alcoholism, venereal disease has decreased little since the war. The men in the German Navy are warned, preventives are always available for them: the merchant seaman is less protected. Dr. Ruge's article deals interestingly with a subject too little discussed.

PYELITIS IN INFANTS.

CASES of pyrexia occurring in infants of a few days or a few weeks old are frequently difficult to diagnose and troublesome to treat. They may, and usually do, have most symptoms referable to the alimentary tract such as anorexia, loss of weight, and vomiting. The fever or other manifestations of general constitutional disturbance may persist in an exasperating way for weeks and finally clear up without any diagnosis having been made, or any treatment, except "symptomatic," having been suggested. Some light has been shed on the possible cause of many of these cases in a discussion led by Dr. L. W. Sauer, of Evanston, Illinois, before the recent American Medical Association Session at Atlantic City.[1] He quotes 12 cases of his own, and three of Helmholz, in which the infants, varying from 6 to 28 days old at the probable onset of the disease, suffered from pyelitis; and he arrives at the following conclusions: (1) Neonatal pyelitis is probably a periodic disease occurring more frequently in male infants. (2) Gastro-intestinal symptoms, especially vomiting, anorexia, diarrhœa, and tympanites predominate. (Other of the more common clinical features noted are pyrexia, loss of weight, pallor, and constipation.) (3) The urine is invariably strongly acid and contains pus, *B. coli*, and a variable amount of albumin. Under the low-power lens numerous polymorphonuclear leucocytes, epithelial cells, erythrocytes, and perhaps casts are seen even in uncentrifugalised urine when fresh. (4) The disease, when free from complications, usually responds within six weeks to diuresis and continued alkalinisation of the urine. (5) The infection is probably by way of the blood-stream, the organism being pathogenic enteral *B. coli*. Diagnosis is not easy in the early stages, for various reasons, and it may be difficult in private practice to obtain a sample of the urine. Also it is known that while the pyrexia lasts there may be only one or two pus cells in the urine—scarcely sufficient to establish a diagnosis—and only when the temperature is nearing normal may there be an outpouring of sufficient pus to make the condition easily recognisable by microscopic examination. This raises the question as to whether the condition may be primarily and not secondarily a colon infection, especially as the symptoms are referable to the alimentary tract before pyuria is present. Alkalies are recommended in the treatment of such cases, though doubt has been cast on whether they are valuable in themselves or only in so far as they promote diuresis. Certainly the abundant use of plain water is advisable. Other measures suggested are careful regulation of the milk or other food, the administration of hexamine, and, in cases of extreme anorexia and vomiting, occasional stomach lavage, subcutaneous salines, and rectal feeding. It is possibly advisable to continue the administration of alkalies for several weeks after the urine is free from pus, albumin, and bacilli. In cases of troublesome diarrhœa the treatment of acute enteritis should be followed—e.g., castor oil, starvation for 24 hours, sips of sterile water, and a few minims of brandy alone being given; then albumin water, chicken tea, and so forth, until it is considered safe to begin with very dilute milk or other food of low carbohydrate content. The prognosis is good. Thirteen of the 15 cases quoted by Dr. Sauer recovered. Of the two exceptions, one was complicated by meningitis, and the other by congenital stenosis of the right ureter, with multiple abscesses of both kidneys, and *B. coli* septicæmia. Finkelstein, in 1924, reported that he had frequently diagnosed pyelitis within the first two weeks of life. Apart from his work and that of Helmholz there is little literature on the subject, but the condition is probably much more common, in milder degrees at any rate, than is generally supposed. Certainly it is possible that many cases of pyrexia in infants, which clear up in a most gratifying way when a mixture containing a little sodium bicarbonate and flavouring matter is administered, may be due to pyelitis.

QUINIDINE IN MALARIA.

A RECENT publication of the United States Public Health Service[1] shows that the death-rate from malaria from 1919–23 still ranges as high as 40 and 50 per hundred thousand in some of the Southern States, although there is encouraging evidence that the disease is gradually disappearing and constantly becoming confined within narrower geographic limits. Some years ago a committee was appointed by the Medical Research Council to inquire into the value of quinine derivatives. The reputed toxicity of cinchonine and the previous reports of Major H. W. Acton, I.M.S., on the value of quinidine decided the committee to confine its inquiry to the properties of the latter alkaloid. Naturally, the conduct of this investigation was beset with many difficulties. Since the committee had no long series of malarial patients in a malaria-free country on which to experiment, the test took the form of a comparison of the relative efficacy of quinine and quinidine in causing disappearance of the parasites from the blood during an acute attack, and were carried out by medical officers in various centres.[2] Reports have been received from Palestine, Khartoum, British Guiana, Uganda, and the Federated Malay States, and all suggest that quinidine is at least as efficacious as quinine, but do not support Major Acton's original suggestion that quinine is definitely inferior to quinidine in the benign tertian infection, though specific for the malignant subtertian parasite. The contribution thus made is a small one, but should lead on to further and extensive observations. It deposes quinine from the position of unique value which practice and tradition have accorded to it among the cinchona alkaloids. The depressant effect of quinidine on the heart may constitute a real drawback to its employment, but the committee have reason to think that the reputed toxicity of cinchonine is due to impure specimens, and a small supply of carefully purified cinchonine has been sent out for trial at Kuala Lumpur. A systematic comparison of these alkaloids, particularly cinchonine and cinchonidine, is very much to be desired. If the suggestions made in this preliminary report are confirmed, it will form a most valuable contribution to medical science, for if an indefinite mixture of the alkaloids could replace quinine the problem of cheapening the supply of antimalarial remedies would be much simplified. Interest in the experiments is not confined to malaria-infested countries, since the efficient control of benign tertian malaria is of great importance to British psychiatrists in connexion with the treatment of general paralysis by the Wagner-Jauregg method.[1]

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[1] Jour. Amer. Med. Assoc., August 1st, 1925, p. 327.

[1] Reprint No. 926, Public Health Reports. Government Printing Office, Washington, U.S.A. 6 cents.

[2] Medical Research Council, Special Report Series No. 96. H.M. Stationery Office. 1s.

INOCULATION AGAINST MEASLES.

Dr. Arturo Atria, of Santiago de Chile, has writen a book[2] advocating the universal adoption of the practice of inoculation against measles. As physician-in-chief of the Section of Bacteriology at Santiago and a late student of the Pasteur Institute he speaks with a certain authority, and he invokes the support of tradition by giving considerable space to enthusiastic eulogy of Home, a Scottish physician of the eighteenth century, who first experimented with inoculation about 1740 on a small scale. Home was certainly an able man, much in advance of his age, but the number of his cases was far too small to admit of any deduction being made from the results, and his work is only of historical interest. Nor does the amount of work done since on the same lines come anywhere near to justifying the sweeping conclusions arrived at by Dr. Atria. His attitude may be judged of from the fact that he speaks of 1150 cases as being a colossal number, whereas to arrive at any definite judgment we should need thousands of cases, carefully observed during a period of years. No evidence is offered as to how long the effects of inoculation last in conferring immunity, nor does the author seem to weigh the very varying degrees of liability in communities and individuals in considering such statistics as he has got. Dr. Atria advocates wholesale case-to-case inoculation with the blood of individuals at a certain stage in the disease, but he does not face adequately the difficulties and dangers of the course that he proposes. Two obvious ones may be mentioned: (1) As the virus cannot be stored, large numbers of cases would be required from which to inoculate, and there would be a constant risk of imparting some other disease, such as syphilis or tubercle. (2) As the constitutional reaction in effective cases is presumably more severe than in ordinary vaccination, very large provision would have to be made for nursing and medical attention if the results are not to be disastrous. It is a pity that so much time and energy have been expended in advocating what in the present state of our knowledge can only be characterised as wholly premature. The bibliography, which has neither chronological nor alphabetical order, shows that a very large number of works has been consulted, but all that is of value in the book might well be compressed into one-tenth of the space occupied.

BRITISH HYDROLOGY.

INCREASED attention is being paid to the organisation of British spas, which, although differing in ranges of altitude and temperature from those abroad, do offer in a large number of cases amenities which not only compare favourably with many continental spas in the matter of treatment and comfort, but also save the expense and inconvenience which foreign travel may mean to many patients. During the war, when continental spas were no longer available to British visitors, and when the indicated treatment for many war victims was that provided by baths, the British waters had perforce to be resorted to, with the result that a somewhat neglected branch of medical science and practice in this country received a great impetus. During the past three years a course of lectures on medical hydrology has been given at the London University, arranged by the board to promote the extension of university teaching, and in coöperation with the Committee for the Study of Medical Hydrology in Great Britain. The fee for the course is £1, and in the week during which the course is held, usually at the end of April and the beginning of May, visits are made to, and demonstrations given at, some of the hydropathic centres of the country. Taken in connexion with the work of the British Spa Federation, which includes some of the leading spas complying with a certain standard of efficiency, the lectures are a step towards the organisation of British spas on lines laid down by Dr. Fortescue Fox in THE LANCET last year.[1] These were: (1) the coördination and development of British waters, under medical authority; (2) post-graduate lectures in hydrology at the universities; (3) facilities at one university for the systematic training of hydrologist practitioners. Particulars of the lectures and demonstrations can be obtained from Miss Hilda Fox, care of University Extension Department, University of London, South Kensington, S.W.7.

THE DOCTOR OF THE FUTURE.

UNDER this title Dr. George E. Vincent, the President of the Rockefeller Foundation, discusses the trend of medical practice in the United States. At present the mass of the population, "perhaps 75 to 80 per cent., are treated by general practitioners who have limited technical appliances, little or no specialisation of skill, and slight relation to medical services organised in hospitals, dispensaries, and clinics." Among the forces now at work which will modify the present state of things is the growth of preventive medicine which, by reducing sickness, will limit the material for curative practice. The high cost of sickness is leading to a demand for insurance. The character of a modern medical education is depleting the rural areas of their physicians. Already four types of doctors have emerged from the modern crucible according to Dr. Vincent, who classifies them as follows: "(1) the professorial doctor who teaches and investigates; (2) the specialist; (3) the socialised or full-time salaried doctor; and (4) the individual, independent, general practitioner." Can the latter type, still the most important numerically, continue to survive? he asks, with his increasingly difficult handicaps. While his disappearance would be a serious loss, Dr. Vincent evidently does not look on it as an impossibility. As conditions of survival he postulates coöperation in the use of laboratories and other resources, willingness to take part in insurance schemes, and above all readiness to become a practitioner of preventive medicine.

THE DIPLOMA IN TROPICAL MEDICINE.

IN the Students' Number of THE LANCET under this heading it is stated that systematic instruction for these diplomas is given at the London School of Tropical Medicine, at 5, Endsleigh-gardens, London, N.W. The old London School of Tropical Medicine now forms the Tropical Division of the London School of Hygiene and Tropical Medicine, and the address is 23, Endsleigh-gardens, Euston-road, N.W. 1, and not 5. An account of the activities of the new body was given in THE LANCET of June 27th, 1925 (p. 1354).

Sir StClair Thomson has been appointed hon. consulting laryngologist to the Italian Hospital, London.

Dr. T. Vincent Dickinson has been elected Master of the Society of Apothecaries, one of the oldest of the City Livery Guilds.

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[1] THE LANCET, August 22nd, 1925.

[2] Profilaxis del Sarampion. By Arturo Atria. La Illustration Press. 1925. Pp 351.

[1] Vide THE LANCET, 1924, ii., 884, 885.

EXTENSION OF KIDDERMINSTER HOSPITAL.—In commemoration of his silver wedding the Prime Minister has given £5000 towards the £25,000 required for alterations and additions to Kidderminster District General Hospital, and Mrs. Baldwin recently laid the foundation-stone of the extensions. The scheme embraces an out-patients' department with consulting room, a dispensary, an operating room, a new ward for 40 children, and a laundry.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

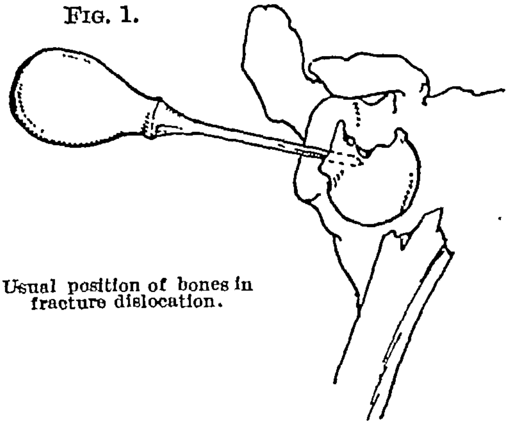
CXXXVII.—FRACTURE DISLOCATIONS OF THE UPPER END OF THE HUMERUS.

THIS complicated injury is fortunately a rare one. It is caused by direct violence upon the shoulder; the same blow which forces the head of the humerus out of the glenoid cavity breaks the neck of the bone. From this it follows that the fracture is often comminuted and that the head is usually rotated so that its axis in no way corresponds with that of the shaft. In this, as in the majority of juxta-articular fractures, a good result can only be obtained by early and exact diagnosis. The severity of the injury will cause so much pain, swelling, and distortion of the shoulder that there ought to be no excuse for neglecting thorough examination.

Dangers of Diagnostic Error.

There are two very real dangers of serious error. One is that of simply putting up the arm with sling and bandage without making an exact diagnosis. In the first place this is done by way of "first-aid" and then, the patient being fairly comfortable, a policy of procrastination is followed for days and then weeks, and when the true nature of the disaster is brought to light by the fixed and painful shoulder on which the X rays are turned for the first time, the chance of cure has passed by and a judge and jury are invited to the consultation.

FIG. 1.



Usual position of bones in fracture dislocation.

The other likely mistake is to recognise the dislocation, by the emptiness of the glenoid cavity and the sagging inwards of the deltoid beneath the acromion, but to overlook the fracture. If then an attempt to treat the dislocation is made, a spurious reduction may be effected by forcing the shaft of the bone into the shoulder-joint and there leaving it. This mistake should be avoided by noticing that the head of the bone does not rotate with the shaft, and that crepitus is often elicited. Of course, the use of the X rays within the first 24 or 48 hours of the accident should be regarded as absolutely essential, and the fact that this rule is so often neglected, with disastrous results, affords a most puzzling comment on the mentality of doctors, who thus carelessly endanger the patient, themselves, and the reputation of the profession.

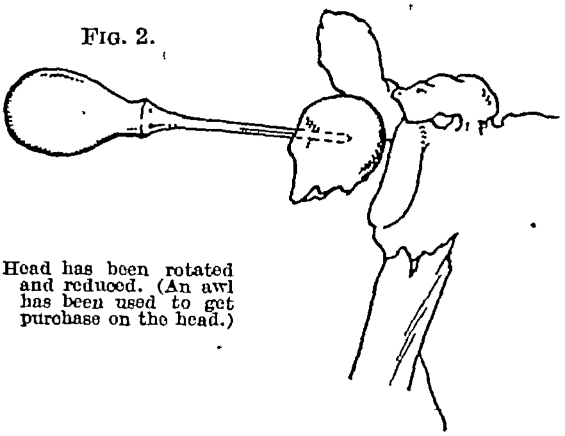
The X ray picture ought to afford a clear indication as to the nature of the injury. The glenoid cavity is empty, the neck of the bone is broken, and the upper fragment is distorted so that its fractured surface is turned away from that of the shaft. (Fig. 1.)

Open Operation and Reduction.

When these facts have been made clear, immediate arrangements should be made for open operation and reduction in a suitable institution. There is no alternative to operative treatment which can afford any hope of a good functional arm, and there is nothing gained by delay or the adoption of any temporising measures.

It is impossible to reduce the dislocation by any manipulation of the arm, because the continuity of the head and shaft of the humerus is broken.

FIG. 2.

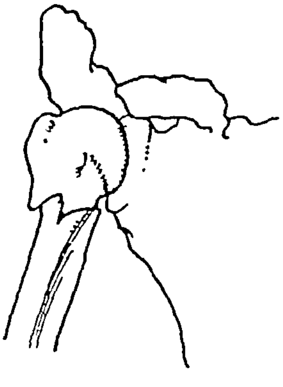


Head has been rotated and reduced. (An awl has been used to get purchase on the head.)

It is useless to wait for consolidation of the fracture and then to hope for reduction of the dislocation, because the alignment of the fragments is so faulty that only gross malunion can occur, and when it has occurred the torn capsule will be so united by scar-tissue as to make reduction impossible.

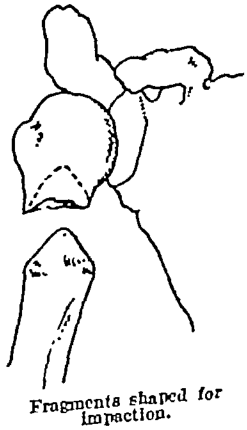
The operation for this injury involves the consideration of three main points—viz., adequate exposure, reduction of the head, and fixation of the fracture. Exposure should be by the ordinary anterior incision along the anterior border of the deltoid muscle. The cephalic vein is exposed and ligatured. Having made a three-inch incision and investigated the underlying conditions, it will probably be of advantage to prolong the incision upwards along the deltoid border to the clavicle, and then to cut outwards towards the acromion. The clavicular origin of the deltoid is cut and the muscle turned outwards. The capsule of the joint may be so much torn that no further division is necessary in order to get at the head of the bone. Otherwise the capsule should be divided by a vertical incision along the line of the long head of the biceps. The humeral head now being exposed, the difficulty consists in putting it back into the glenoid cavity and in rotating it into correct alignment. Probably the tendon of the subscapularis will already be torn, but it ought not to be necessary to cut any of the short rotators unless the operation is being done several weeks after the accident. Manipulations of the head of the bone may be effected by means of a shoe-horn elevator

FIG. 3.



Fracture treated by simple impaction.

FIG. 4.

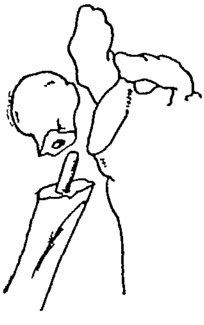


Fragments shaped for impaction.

or by transfixing it with a stout bone-drill on a handle. (Fig. 2.)

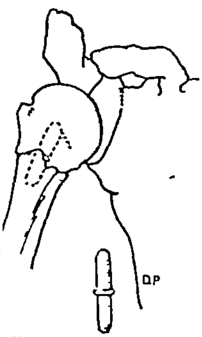
When the head has been restored to its socket with its broken surface directed towards the axis of the arm, fixation of the fracture can be effected. In most cases this fixation does not require any special apparatus. The fracture is recent and the ends of the bone are jagged. All that is necessary is by traction and leverage to fit the ends together (Fig. 3), when the tension of the muscles may be trusted to keep them in apposition. If the bone ends are oblique or have become so smooth that they will not lock, then some impaction may be necessary. Often the shaft will present an outstanding point which may be trimmed up and forced into a cavity gouged out of the head. (Fig. 4.) Or else an intra-medullary peg, two inches long and a quarter of an inch thick, with a central stop may be used. This is first hammered tightly into the shaft and the projecting end is manœuvred into a hole drilled in the axis of the head. (Figs. 5 and 6.) Whatever method of fixation is used, great care should be taken to secure correct orientation of the fragments in regard to rotation. The operation is concluded by suturing of the capsule, the clavicular origin of the deltoid and the skin. The arm is put up in moderate abduction for the first few days with an axillary pad and a sling. Then, when the patient can sit up the arm is put on to an abduction splint, which is retained for four to six weeks. After the first ten days the splint is removed daily for exercise and massage.

FIG. 5.



Union by pegging. Peg inserted into distal fragment.

FIG. 6.



United over a peg. Inset shows the peg with central stop.

If the patient's condition contra-indicates a general anæsthetic, the operation may be performed under local anæsthesia, by infiltrating the brachial plexus with 2 per cent. solution of novocaine. If the patient refuses an open operation, then the arm should be put up in full abduction from the outset.

Late Operation.

If the nature of the case has been overlooked, and treatment has to be undertaken six weeks or more after the accident, then an attempt may be made to carry out the reconstructive operation above described, but it will seldom be found possible because the head of the bone has become so fixed and also so atrophied. Under these circumstances the head must be removed, whilst the shaft, which may be rounded off, is placed in the glenoid cavity. But at the best this operation will only secure a weak joint for which a subsequent arthrodesis may have to be done.

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STUDENTS' GUIDE—SESSION 1925–26.

DENTAL SURGERY.

APPEARANCE on the Medical Register entitles a practitioner to practise as a dentist, although he cannot register as such without degree or licence in dentistry; but few dental appointments at general or special hospitals or dispensaries are available save to those with a special diploma.

In THE LANCET of August 29th we outlined the constitution of the Dental Board of the United Kingdom, and the regulations in regard to the registration of dental students.

The Examining Bodies in Dentistry which grant degrees or diplomas in the subject are as follows:—

Royal College of Surgeons of England.—Licence in Dental Surgery.

Royal College of Surgeons, Edinburgh.—Licence in Dental Surgery. The College also grants a Higher Dental Diploma which is registrable in the Dentists Register as an additional qualification.

Royal Faculty of Physicians and Surgeons of Glasgow.—Licence in Dental Surgery. The curriculum, which is similar to that of Edinburgh, includes in addition dental bacteriology.

Royal College of Surgeons in Ireland.—Licence in Dental Surgery.

University of Birmingham.—Dental licence; degrees of Bachelor and Master of Dental Surgery (B.D.S. and M.D.S.).

University of Bristol.—Licence in Dental Surgery; degrees of Bachelor and Master of Dental Surgery (B.D.S. and M D.S.).

University of Durham.—Licence in Dental Surgery; degrees of Bachelor of Dental Surgery (B.D.S.) and of Master of Dental Surgery (M.D.S.).

University of Leeds.—Licence in Dental Surgery; degrees of Bachelor of Dental Surgery (B.Ch.D.) and Master of Dental Surgery (M.Ch.D.).

University of Liverpool.—Licence in Dental Surgery; (L.D.S.); degrees in Dental Surgery (B.D.S. and M.D.S.).

University of London.—Degree of Bachelor in Dental Surgery.

University of Manchester.—Degrees of B.D.S.; and a licence in Dentistry.

University of Sheffield.—Degree of Bachelor of Dental Surgery; and the diploma of Licentiate in Dental Surgery.

Queen's University of Belfast.—Licentiate in Dental Surgery, Bachelor of Dental Surgery, and Master of Dental Surgery.

In the following syllabus the respective requirements of the various examining bodies in dentistry are set forth, together with the facilities for dental study offered by certain other institutions.

THE EXAMINING BODIES IN DENTISTRY.

THE ROYAL COLLEGE OF SURGEONS OF ENGLAND grants a diploma in Dental Surgery under the following regulations, which apply to all candidates who have passed the required Preliminary Examination in General Education before Jan. 1st, 1923.

Candidates are required to pass three examinations: the Preliminary Science Examination, the First Professional Examination, and the Second Professional Examination. 1. Preliminary Science Examination.—This is identical with Part I. of the First Examination of the Examining Board in England. Candidates must pass the Preliminary Science Examination before commencing the courses required for the Second Professional Examination. 2. The First Professional Examination.—The candidate must produce evidence of instruction in Dental Metallurgy and Practical Dental Mechanics. The Examination consists of Part I. (Mechanical Dentistry), Part II. (Dental Metallurgy and the Properties of Dental Materials), the examination in Dental Metallurgy being by written paper, and Part III. (a) General

Anatomy and Physiology, (b) Dental Anatomy and Physiology conducted by papers and vivâ voce examination. The parts may be taken together or separately. 3. The Second Professional Examination.—This is divided into two parts: (a) the General, (b) the Dental. The General part must be passed before the Dental portion. The instruction is obtained partly at a General Hospital and partly at a Dental Hospital. The Second Professional Examination consists of: Part I., General Surgery and Pathology; Part II., Dental Surgery and Pathology, and Practical Dental Surgery. There is a written and vivâ voce examination in each part and a practical examination as well in Part II. Exemption from the Preliminary Science Examination is granted to candidates who have passed an Examination in Chemistry and Physics for a degree in Medicine at a University in the United Kingdom, in India, or in a British colony. Exemption from Examination in Anatomy and Physiology is granted to candidates who have passed the Second Examination of the Examining Board in England or the corresponding Examination for any degree or qualification in Medicine or Surgery registrable under the Medical Act of 1886. Exemption from Examination in General Surgery and Pathology is granted to candidates who have passed the Examination in Surgery of the Examining Board in England or the corresponding Examinations of the Universities above mentioned. The fee for the diploma is 20 guineas, and is payable as follows: Preliminary Science Examination, for each admission to Part I., £3 3s.; Part II., £2 2s. First Professional Examination, for each admission to Part I., £4 4s.; Part II., £1 1s.; Part III. (a) £2 2s.; (b) £2 2s.; Second Professional Examination, for each admission to Part I., £2 2s.; Part II., £4 4s.

The following Regulations apply to all candidates who pass the Preliminary Examination in General Education on or after Jan. 1st, 1923.

1. Candidates for the Licence in Dental Surgery of the Royal College of Surgeons of England are required to pass one of the Examinations in General Education recognised by the Conjoint Examining Board in England, and the Pre-Medical Examination in Chemistry and Physics conducted by that Board or one of the examinations recognised in lieu thereof, before they commence the curriculum of professional study for the Licence extending over four years.

2. Candidates who produce evidence of having been registered by the General Medical Council as Medical or Dental Students on or after Jan. 1st, 1923, will be considered to have passed the required Preliminary Examination in General Education and the Pre-Medical Examination.

3. Candidates who hold the degree of D.M.D. Harvard, D.D.S. Pennsylvania, D.D.S. Michigan, D.D.S. Illinois, D.D.S. St. Louis, Missouri, D.D.S. Northwestern University, Chicago, D.D.S. Minnesota, D.D.S. Tufts College, Boston, B.D.S. Sydney, or the Licence of the Dental Board of Victoria, Australia, are not required to pass these Examinations.

First Professional Examination.—1. The First Professional Examination consists of Part I. Dental Mechanics, Part II. Dental Metallurgy and the Properties of Dental Materials and Part III. Section (a) General Anatomy and Physiology, Section (b) Dental Anatomy and Physiology, and is held in January or February, April, and September or October in each year.

2. Candidates may present themselves for the several Parts of the First Professional Examination together or separately, but before admission to any part of the Examination they must produce evidence of having passed the required Preliminary Examination in General Education and the required Pre-Medical Examination or a certificate of having been registered as a Medical or Dental Student by the General Medical Council.

Part I. *Dental Mechanics.*—3. This Examination is a practical one, conducted in the Mechanical Laboratory of one of the Dental Hospitals in London.

4. Candidates must give 21 days' notice in writing of their intention to present themselves for the Examination, and at the same time forward certificates:—

(1) Of having been engaged during a period of not less than two years in acquiring a practical familiarity with the details of Dental Mechanics. One year at least of this study must be taken in the Mechanical Department of a recognised Dental Hospital where the arrangements for teaching Dental Mechanics are satisfactory to the Board of Examiners in Dental Surgery. Part or the whole of the rest of the course may be taken as a pupil with a competent dentist provided that time spent as a private pupil shall be at least twice the time required for the corresponding instruction* taken at a Dental School.

(2) Of having attended at a recognised Dental Hospital and School: (a) A course of lectures on Dental Mechanics; (b) a course of Practical Dental Mechanics, including the manufacture and adjustment of 6 dentures and 6 crowns.

6. Any candidate referred at this Examination who does not hold a registrable Dental Qualification will be required, before admission to re-examination, to produce a certificate of having received three months further instruction under the conditions specified in Certificate (1) paragraph 4.

Part II. *Dental Metallurgy and the Properties of Dental Materials.*—7. This Examination is conducted by written paper.

8. Candidates must give 21 days' notice in writing of their intention to present themselves for the Examination, and at the same time forward a certificate:—Of having attended at a recognised Dental Hospital and School: (a) A course of lectures on Dental Metallurgy; (b) a course of Practical Dental Metallurgy.

9. Any candidate referred at this Examination who does not hold a registrable Dental Qualification will be required, before admission to re-examination, to produce a certificate of having worked in a Dental School, to the satisfaction of the Dean, for a further period of three months.

Part III. (a) *General Anatomy and Physiology*, (b) *Dental Anatomy and Physiology.*—10. This Examination is partly written and partly oral.

11. Candidates may enter for Section (a) only or for Sections (a) and (b) together on producing the required certificates, but they will not be allowed to proceed with Section (b) until they have passed in Section (a). In the case of a candidate who enters for both Sections and fails in Section (a) the fee paid for admission to Section (b) will not be forfeited, but will be credited to the candidate on readmission to examination in that Section. Candidates who enter for both Sections together may pass in Section (a) although failing to pass in Section (b).

12. Candidates must give 21 days' notice in writing of their intention to present themselves for the whole or for one Section of this examination and at the same time forward certificates:—

(1) For Part III. (a). Of having attended at a recognised Medical School: (a) Courses of instruction in Anatomy, including special demonstrations on prepared dissections during three terms; (b) a course of dissections to include, if possible, the head and neck, during one term; (c) courses of instruction in Physiology, including General Biology, Biochemistry, and Biophysics, during three terms; (d) a course of instruction in Histology.

(2) For Part III. (b). Of having attended at a recognised Dental School: (a) A course of instruction in Dental Anatomy and Physiology; (b) a separate course of instruction in Dental Histology, including the preparation of Microscopical Sections.

13. A candidate referred at this examination who does not hold a registrable Dental Qualification will be required, before readmission to Section (a), to produce a certificate of three months' additional study of Anatomy and Physiology at a recognised Medical School, and will be required before readmission to Section (b) to produce a certificate of having worked

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* This instruction may be taken prior to the date of passing the Examination in General Education and the Pre-Medical Examination, but will not be counted as part of the required four years of professional study unless taken after passing the Pre-Medical Examination.

in a Dental School, to the satisfaction of the Dean, for a further period of three months.

14. *Exemptions.*—Candidates who have passed Section I. of the First Professional Examination of the Conjoint Examining Board in England, or who produce evidence of having passed the Examination in Anatomy and Physiology for a degree, or other qualification, in Medicine or Surgery, registrable under the Medical Act of 1886, or for the degree of M.B. or M.D. of a Foreign or Colonial University recognised by the Conjoint Examining Board in England, are not required to pass Section (*a*).

Second Professional Examination.—1. The Second Professional Examination is held in February, May or June, and November in each year, and consists of: Part I., General Surgery and Pathology; Part II., *Dental Surgery and Pathology, and Practical Dental Surgery.*

2. Candidates who have passed the First Professional Examination at least six months† previously may present themselves for Part I. only on producing the certificates mentioned in paragraph 6 of this section, or they may enter for the whole Examination at one time on producing the certificates mentioned in paragraphs 6 and 10 of this section.

3. Candidates must pass in Part I. before proceeding to Part II.

4. Candidates who enter for the whole Examination at one time may pass in Part I. although failing to pass in Part II.; but if they fail to pass in Part I. they will not be allowed to proceed with the Practical and Oral Examinations in Part II. In such cases the fee paid for admission to Part II. will not be forfeited, but will be held over until such time as the candidate is readmitted to examination in that Part.

Part I. *General Surgery and Pathology.*—5. This Examination is partly written and partly oral.

6. Candidates must give 21 days' notice in writing of their intention to present themselves for this Examination, and at the same time forward certificates:—

(1) Of having attended at a recognised Medical School: (*a*) A course of instruction‡ in Surgery during two terms; (*b*) a course of instruction in Medicine during two terms; (*c*) a course of instruction in General Pathology (including Bacteriology) during two terms. (2) Of having *acted as* Surgical Dresser in the Out-patient Department of a recognised Hospital for three months. (3) Of having attended, at a recognised Hospital or Hospitals, the practice of Medicine and Surgery, including clinical lectures, *for* 12 *months.* (4) Of being 21 years of age.

7. Any candidate referred at this Examination who does not hold a registrable Dental Qualification will be required, before admission to re-examination, to produce a certificate of such additional study during three months at a recognised Medical School and Hospital as the Teachers of the School may determine.

Exemptions.—8. Candidates who are Members of the College or who have passed the Examination in Surgery of the Conjoint Examining Board in England, or who produce evidence of having passed the Examination in Surgery for a Degree, or other Qualification in Medicine or Surgery registrable under the Medical Act of 1886, are not required to pass Part I. of the Second Professional Examination.

Part II. *Dental Surgery and Pathology.*—9. This Examination is partly written, partly oral, and partly practical. The oral examination is conducted by the use of preparations, casts, drawings, &c. At the practical examination candidates may be examined:—

(*a*) On the treatment of Dental Caries, on the preparation and treatment of teeth by filling with gold or other material, by inlaying or by crowning, and on other operations *in Dental Surgery.* (Candidates must provide their own instruments.) (*b*) On the treatment of abnormalities of position of the teeth of children. (*c*) On Clinical cases.

10. Candidates must give 21 days' notice in writing of their intention to present themselves for this Examination, and at the same time forward certificates:—

(1) Of having been engaged during four years in the acquirement of professional knowledge subsequently to the date of registration as a Medical or Dental Student, or of having passed the Pre-Medical Examination conducted or recognised by the Conjoint Examining Board in England. (2) Of having attended at a recognised Dental Hospital and School: (*a*) *A course of Dental Surgery and Pathology*; (*b*) a separate course of Practical Dental Surgery; (*c*) a course of Dental Bacteriology; (*d*) a course of Dental Materia Medica; (*e*) a course of practical instruction in the administration of such Anæsthetics as are in common use in Dental Surgery. (3) Of having attended at a recognised Dental Hospital and School, or in the Dental Department of a recognised General Hospital, the practice of Dental Surgery during two years.

11. Any candidate referred at this Examination who does not hold a registrable Dental Qualification will be required before admission to re-examination to produce a certificate of three months' additional study at a recognised Dental Hospital.

Fees.—The fee for the Diploma in Dental Surgery is 20 guineas.

Synopses of examinations and all further information can be obtained from the Director of Examinations, Examination Hall, Queen-square, London, W.C. 1.

ROYAL COLLEGE OF SURGEONS, EDINBURGH.—Regulations giving a list of Preliminary Examinations recognised for obtaining the Licence in Dental Surgery, as well as of the subjects of the Professional Examinations, may be obtained from Mr. D. L. Eadie, Clerk to the Royal College of Surgeons, at 49, Lauriston-place, Edinburgh. Candidates must produce certificates of having, subsequently to the date of registration, been engaged for four years in professional studies and of three years' instruction in Mechanical Dentistry from a registered dental practitioner, except in the case of previously registered medical practitioners, when two years will be considered sufficient. Candidates must also have attended a course of instruction at a University or in an established school of medicine or in a provincial school specially recognised by the College as qualifying for the Diploma in Surgery. In addition they will be required to have attended in a recognised dental hospital, or with teachers recognised by the College, special courses of lectures and instruction in Anatomy and Physiology (Human and Comparative), Surgery, Pathology, Materia Medica, Dental Histology, and Practical Dental Mechanics and Metallurgy; two years' attendance at a dental hospital or the dental department of a general hospital recognised by the College. Practical instruction in Mechanical Dentistry from a registered Dentist, or in the Mechanical Department of a recognised Dental Hospital and School, for three years. Candidates who have passed the First and Second Examinations for the Triple Qualification will be exempt from the First Dental Examination, and will have the advantage of being admissible either to the Final Dental Examination or to the subsequent Examination for the Triple Qualification, or to both. But the First Dental Examination will not be held as equivalent to the First and Second Triple Examinations, and will admit to the Final Dental Examination only. Candidates who are Licentiates of this College or who may be registered medical practitioners will be required to produce certificates of attendance on the special subjects only and will be examined in these only for the dental diploma. First Professional Examination: The candidate must have attended the required courses. The examination embraces (1) Chemistry and Physics; and (2) *Anatomy and* Physiology. The fee is £5 5*s.* for the complete examination, and £3 3*s.* is payable for each division. In all cases of rejected candidates the fee for re-entry is £3 3*s.* Second Examination: The candidate must have attended the remaining courses of the curriculum, must produce certificates showing that he is 21 years of age, and must pay a fee of £10 10*s.*, for re-entry £5 5s. The examination embraces (1) Surgery and Medicine; and (2) the special subjects of Dental Anatomy and Physiology, Dental Surgery and Pathology, Dental Materia Medica, Dental Mechanics and Dental Metallurgy, with a practical as well as the written and oral examinations in the subjects of Dental and Oral Surgery, Pathology, and Mechanics. The candidate will be tested in the Treatment of Dental Diseases, in Operative Dentistry, the Administration of Anæsthetics, Orthodontics, and in Prosthetic and Mechanical Dentistry. Candidates who claim exemption from the First Dental Examination on the ground of having passed the First and Second Triple Qualification Examinations or other recognised examinations will, before being admitted to the Second Dental Examination, be required to pay the total fee of £15 15s. payable for the dental diploma. Candidates applying for copies of Regulations should state date of registration as a dental student. Fees and schedules must be lodged with the Clerk not later than one week before the examination.

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† The interval of six months is not required in the case of a colonial or foreign dentist.

‡ These courses of instruction must be attended after the completion of the courses in Anatomy and Physiology.

Separate Regulations are issued for candidates registered as Dental Students after Jan. 1st, 1923, for whom there is a much more extended course.

Higher Dental Diploma.—The College grants a Higher Dental Diploma which is registrable in the Dentists Register as an additional qualification. Every candidate for the Higher Dental Diploma shall produce evidence that he has been engaged in the study or practice of his profession as a Registered Dentist for at least one year subsequent to his having obtained the Licence in Dental Surgery of the College, or a Licence or Qualification in Dental Surgery specially recognised by the College. Particulars as to the examinations can be obtained from Mr. D. L. Eadie, Clerk to the Royal College of Surgeons, 49, Lauriston-place, Edinburgh. The fee payable by Licentiates of the College is £15 15s. For all other candidates £21. A fee of £10 10s. is retained for examination expenses in the case of referred candidates.

The examination embraces the following branches of Dental Science and practice: Dental Surgery, Anatomy, Pathology and Bacteriology, Prosthesis, Anæsthesia, and Dental Radiology. The examination will be clinical and practical as well as written and oral. Candidates will be expected to show a high degree of knowledge and skill.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The regulations as to certificates, curriculum, number, and subjects of examinations, fees, &c., are in effect similar to those of the Royal College of Surgeons of Edinburgh, but embrace Dental Bacteriology. Candidates can enter for the First Examination in three divisions, the first embracing Physics and Chemistry, the second Dental Metallurgy and Dental Mechanics, and the third Anatomy and Physiology. The examination in Dental Mechanics is practical; and there is at the Final Examination an examination in Practical Dentistry conducted in a dental hospital. Copies of regulations, &c., to be obtained from Mr. Walter Hurst, Registrar, Faculty Hall, 242, St. Vincent-street, Glasgow. Candidates applying for Regulations should state date of registration as a dental student.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—Candidates for the licence in Dental Surgery are required to pass three professional examinations, and to produce certificates of having, subsequently to registration as a Dental Student, passed the examination in Biology, and attended courses of instruction in the following subjects at a recognised school of medicine: (*a*) Human anatomy, with dissections and demonstrations, for three academic terms. (*b*) Physiology, theoretical and practical, including Dental Physiology lectures for two academic terms. (*c*) Histology, for one academic term. (*d*) Chemistry and Physics as applied to Dentistry. For the second examination certificates must be produced of having attended, at an institution recognised by the College for the purpose, the following courses: (*a*) General Pathology (including Bacteriology) for three academic terms. (*b*) Medicine for two academic terms. (*c*) Surgery for two academic terms. (*d*) The practice of a general hospital, with certified instruction in Clinical Medicine, Clinical Surgery, and Venereal Diseases, for three academic terms. For the final examination evidence must be produced of having been engaged during a period of two years in acquiring a practical familiarity with the details of Mechanical Dentistry under the direction of the Superintendent of the Mechanical Department of a recognised Dental Hospital where the arrangements for teaching Mechanical Dentistry are satisfactory to the Council of the College; of having attended, at a recognised institution, courses of instruction in (*a*) Dental Surgery and Pathology, Orthodontia, and the Materia Medica and Therapeutics applicable to Dental Surgery. Lectures. Two courses. (*b*) Dental Mechanics. Lectures. Two courses. (*c*) Anæsthetics. One course. (*d*) The practice of a Dental Hospital, or of the Dental Department of a General Hospital. Twenty-four calendar months. (*e*) Dental Metallurgy. (*f*) A course of Radiology; of having been engaged during four years in the acquirement of professional knowledge subsequently to the date of registration as a Dental Student; four years of professional study; and of being 21 years of age.

The subjects of the first examination are Anatomy, General, and Physiology and Histology. For the second examination (*a*) General Pathology (including Bacteriology), (*b*) Medicine and Surgery. For the Final Examination, General Surgery and Dental Pathology, with the Materia Medica and Therapeutics applicable to Dental Surgery, Dental Mechanics and Metallurgy, Anæsthetics, Orthodontia. Candidates must pass in all the subjects set at each examination which in the second and final parts will be partly vivâ voce and partly practical, and will include the examination of patients and the performance of dental operations. The total fee for the Diploma in Dental Surgery is 21 guineas.

UNIVERSITY OF BIRMINGHAM.—The teaching of Dentistry is undertaken by the University acting in association with the Birmingham Dental Hospital and the Birmingham Clinical Board. The instruction at the Dental Hospital is carried out under the direction of the University Dental Clinical Board, so that students may fully qualify themselves for the Dental Diploma (L.D.S.) of this and other universities and licensing bodies. There is a special and well-equipped Dental Museum: The "John Humphreys Odontological Museum." An Entrance Exhibition, value £37 10s., is awarded annually at the commencement of the winter session. The following are the regulations for Degrees in Dentistry:—

1. The degrees conferred by the University are those of Bachelor and Master of Dental Surgery (B.D.S. and M.D.S.). 2. All candidates for these degrees must pass the same Matriculation Examination as that required from candidates for Medical Degrees. 3. The degree of Bachelor of Dental Surgery is not conferred upon any candidate who has not obtained a Licence in Dental Surgery. The candidate is not eligible for the degree until a period of 12 months has elapsed from the passing of his examination for the Licence in Dental Surgery. Of this period at least six months must be spent in the dental department of a general hospital approved by the University. 4. *A.* In addition to the Licence in Dental Surgery the candidate must produce *evidence that he has attended* the courses required by medical students of the University in the following subjects and passed the Examinations held in the same *for Medical and Surgical* Degrees: (*a*) Elementary Biology and Organic Chemistry, (*b*) Anatomy and Practical Anatomy, and (*c*) *Physiology and Practical Physiology. B. That he has passed the class examinations in*: (*d*) One Special Course of Lectures on Medicine, (*e*) One Special *Course of Lectures on* Surgery, and (*f*) *Pathology* and Bacteriology. *C.* That he has attended courses and passed the class examinations in: (*g*) Dental Histology and Patho-Histology, (*h*) Comparative Dental

Anatomy, and (*k*) Dental Surgery and Prosthetic Dentistry. *D.* That he has received instruction in the Clinical Examination of living cases at the dental department of a general hospital for a period of not less than six months. 5. The Final Examination will deal with the subjects in Classes *C* and *D.* 6. On the expiration of 12 months from the date of passing the Examination for the Degree of Bachelor of Dental Surgery, the candidate will be eligible for that of Master of Dental Surgery. 7. For this degree candidates will be required to submit a thesis containing original work, and investigations in some subject connected with Dentistry, which theses shall be submitted to examiners to be nominated by the Dental Advisory Board.

UNIVERSITY OF BRISTOL.—Candidates for the degree of Bachelor of Dental Surgery must be not less than 21 years of age and shall have pursued the courses prescribed by University regulations during not less than four years after passing the first examination in the subjects of Chemistry and Physics, of which three shall have been passed in the University. All candidates for the degree of B.D.S. are required to satisfy the examiners in the several subjects of four examinations. The First Examination: The subjects are Chemistry, Physics, and Biology, and the curriculum extends over one year.* The Third Examination: The subjects are Dental Mechanics, Dental Metallurgy, and Dental Materia Medica, and the candidate shall produce evidence of having served for three years an approved pupilage in Dental Mechanics.† The Second Examination: The subjects are Anatomy, Physiology, and Histology, Dental Anatomy, and Dental Histology. The Final Examination: The subjects are Medicine and Surgery, Dental Surgery (including Prosthetics), Operative Dental Surgery, and Dental Bacteriology. Degree of Master of Dental Surgery: Candidates shall be Bachelors of the University, shall present a Dissertation on some subject of Dental Surgery to be approved by the Examiners, and pass an examination in Dental Surgery. Diploma in Dental Surgery: Candidates need not be undergraduates, but shall have passed an entrance examination satisfactory to the University before being admitted to any professional examination; the curriculum extends over four years from the date of passing a preliminary science examination in Chemistry and Physics. A three years' pupilage in Mechanical Dentistry is required† and four examinations must be passed, the subjects of which agree with those of the B.D.S. Medicine is not required for the Final Examination. Candidates who are already registered medical practitioners shall be further exempted from study and examination in Physics and Chemistry, Anatomy, Physiology and Histology, Medicine, and General Surgery.

UNIVERSITY OF DURHAM.—Every Dental student must, at the commencement of his studentship, be registered in the manner and under the conditions prescribed for Medical students.

Licence in Dental Surgery: The first examination consists of three parts, which may be passed separately. Part 1, Organic Chemistry. Part 2, Biology. Part 3, Theoretical Dental Mechanics, Dental Metallurgy (Theoretical and Practical). Second Examination: Anatomy, Physiology (including Biochemistry and Biophysics), Dental Anatomy and Dental Histology. Third Examination: Pathology and Bacteriology, Practical Dental Mechanics, Dental Materia Medica and Therapeutics. Final Examination: Medicine, Surgery, Dental Surgery and Pathology, Orthodontics, Operative Dental Surgery, and Dental Prosthetics, and Anæsthetics.

A candidate before presenting himself for examination is required to furnish certificates of instruction in the required subjects, attended after registration as a dental student at recognised Colleges or Schools.

Degree of Bachelor of Dental Surgery (B.D.S.).—(*a*) For students taking their complete course of instruction in the University. Such students must pass the same matriculation tests as medical students, and the same pre-registration examination in Inorganic Chemistry and Physics. After registration students must spend five years in the University, on attendance on such subjects as Senate, on the recommendation of the Board of the Faculty of Medicine, may from time to time determine. They must attend the practice of the Newcastle-upon-Tyne Dental Hospital for not less than two and a half years. Six months of this time must be devoted to the study of the higher branches of dental science. There are four examinations.

The subjects of the *first* examination are Biology, Organic Chemistry, and Dental Mechanics and Metallurgy.

The subjects of the *second* examination are Anatomy, Physiology, Dental Anatomy and Histology.

The subjects of the *third* examination are Pathology and Bacteriology, Dental Materia Medica and Therapeutics, and Practical Dental Mechanics.

The subjects of the *final* examination are Medicine, Surgery, Dental Surgery and Pathology, and Orthodontia and Operative Dental Surgery. In this subject knowledge of a much higher standard, and more advanced practical work, is required than for the Licence in Dental Surgery.

(*b*) For candidates possessing a Licence in Dental Surgery of a British University. Candidates must study for at least one year in the University. During such year they must (*a*) attend a course of instruction in Pathology and Bacteriology, and (*b*) spend at least six months in the Newcastle-upon-Tyne Dental Hospital in the study and practice of the higher branches of dental science. They must also pass the third and final examinations for the degree of Bachelor of Dental Surgery.

Degree of Master of Dental Surgery (M.D.S.)—Every candidate for this degree must be a Bachelor of Dental Surgery of the University of not less than two years' standing, and present an essay embodying original work and research in some subject connected with dentistry. They must also perform to the satisfaction of the examiners a piece of special dental work demanding a high degree of skill and experience.

The examinations are held concurrently with the medical examinations, and the fees payable by candidates are as follow:—For the Licence in Dental Surgery: First, Second, and Third Examinations, each £3 10*s.*; Final Examination, £5; for Licence, £3; total, £18 10*s.* For the Bachelor of Dental Surgery: First, Second, and Third Examinations, each £5; Final Examination, £8; for the degree, £6 10*s.*; total, £29 10*s.* For the Master in Dental Surgery: examination, £5; degree fee, £6 6*s.* The practical examinations in dentistry are conducted at the Newcastle Dental Hospital.

UNIVERSITY OF LEEDS.—The degrees in Dental Surgery are Bachelor of Dental Surgery (B.Ch.D.) and Master of Dental Surgery (M.Ch.D.). All candidates for the degree of Bachelor of Dental Surgery shall be required to have passed the Matriculation Examination, to have pursued thereafter approved courses of study for not less than five academic years, two of such years at least having been passed in the University subsequently to the date of passing Parts I. and II. of the First Examination, and to have completed such period of pupilage or hospital attendance, or both, as may be prescribed by the regulations of the University. No candidate will be admitted to the degree who has not attained the age of 21 years on the day of graduation. The Diploma in Dental Surgery (L.D.S.) is awarded to successful candidates after attendance on approved courses extending over not less than four years. The curriculum for the Diploma now includes the study of Biology for the First Examination. The classes in the Department of Dentistry begin on Oct. 1st. The instruction in the Preliminary subjects of Chemistry, Physics, and Biology are given in the main buildings of the University. The classes in the other subjects and the systematic courses in Dental subjects are held in the School of Medicine of the University in Thoresby-place. The clinical instruction is given in the Dental Hospital at the Leeds General Infirmary. Applications for the prospectus should be made to the Academic Sub-Dean of the Faculty of Medicine.

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* Candidates who have passed the Higher School Certificate approved by the Board of Education in these subjects will not be required to sit for the first examination for either the B.D.S. or the L.D.S., and will be regarded as having completed one year of study.

† This pupilage must be taken either in the University laboratories or those of some institution recognised for the purpose by the University.

UNIVERSITY OF LIVERPOOL.—The University grants a Licence in Dental Surgery (L.D.S.) and degrees in Dental Surgery (B.D.S. and M.D.S.). The management of the curriculum (lectures, practical and clinical) is in the hands of the University Board of Dental Studies. The courses of systematic instruction are given in the main University buildings, and those in Dental Mechanics, Operative Dental Surgery, &c., are given in the University School Extension (opened 1922), adjoining the Dental Hospital, the laboratory of which is in charge of a skilled dental mechanic under the supervision of the Director of Dental Education. The clinical instruction is given in the Dental Hospital. Students can take the whole curriculum, including Dental Mechanics, at the University School of Dental Surgery. The times of the lectures at the University are arranged to meet the convenience of students, thus allowing the maximum time for attendance upon Dental Hospital practice. Fees: The fees for the complete courses, including Pupilage and Hospital Practice, are as follows: Degree of B.D.S., £250; M.D.S. (by research, £32; by examination, £27); L.D.S. (Liverpool), £198. Further information may be had from the Director of Dental Education, Prof. W. H. Gilmour.

In order to be admitted to the Bachelor's Degree in Dental Surgery a student must normally, after registration as an Internal Student, have—(1) Attended prescribed courses of study for five years at one or more Schools of the University. (2) Passed the following examinations:—(*a*) First Examination: *Part A:* (i.) Chemistry, (ii.) Physics, (iii.) Biology (Zoology and Botany); *Part B:* (iv.) Dental Metallurgy. Candidates may take Parts A and B separately. (*b*) Second Examination: *Part A* (i.) Anatomy, (ii.) Dental Anatomy, Dental Physiology, and Dental Histology; *Part B:* (iii.) Physiology; *Part C:* (iv.) Dental Mechanics. Candidates may take Part A separately but must take Parts B and C together. Third Examination: *Part A:* (i.) Elementary Bacteriology, (ii.) Clinical Chemistry, (iii.) General Pathology; *Part B:* (iv.) Dental Materia Medica, (v.) Dental Mechanics and Dental Prosthetics. Candidates may take Parts A and B separately. Students who have received not less than two years' instruction in Dental Mechanics previous to Nov. 30th, 1922, with a Dentist registered under the provisions of the Dentists Act (1921) and who have passed a recognised examination in preliminary education may, on application, be registered as students for the Licence under certain conditions.

UNIVERSITY OF LONDON.—The curriculum for the degree of Bachelor of Dental Surgery covers five years from Matriculation. The Regulations for Internal and External Students may be obtained post-free on application to the Principal Officer, at the University.

UNIVERSITY OF MANCHESTER.—In the University of Manchester the Dental Department forms an integral part of the Faculty of Medicine. This contains a series of laboratories, lecture rooms, and museums which will bear comparison with those of any other school in the kingdom, and the fullest opportunities for study are offered to students preparing for any of the professional examinations. Instruction adapted to the requirements of students preparing for the B.D.S. Degree and the Dental Diplomas of the University, the Royal College of Surgeons of England, and of other licensing bodies is given throughout the session both at the University and at the Dental Hospital of Manchester adjoining the University. The required general hospital practice is taken at the Manchester Royal Infirmary. Women students are admitted to the classes in the Dental Department, and for them common rooms are provided. The composition fee for candidates for the University degree of Bachelor of Dental Surgery is 94½ guineas, payable in three equal yearly instalments. The composition fee for candidates for the University Diploma in Dentistry is 84½ guineas, payable in three equal yearly instalments. The composition fee for candidates for the L.D.S. of England is 94½ guineas, payable in three equal yearly instalments. Students who have already served their apprenticeship with a private practitioner, and who propose to complete the final portion of their attendance at the University and at an approved dental hospital, will be required to pay the composition fee in two equal instalments at the commencement of the first and second years of studentship. The composition fee does not include the hospital fees, the examination fees, nor the fee for the conferment of the degree or the diploma.

UNIVERSITY OF SHEFFIELD.—*Degree of Bachelor of Dental Surgery.*—A candidate must have attained the age of 22 years on the day of graduation and have pursued the courses of study required by the University regulations during a period of not less than five and a half years subsequent to matriculation and the passing of the further examination in Chemistry and Physics, three of such years at least having been passed in the University, one at least being subsequent to the passing of the First Examination.

First Examination: The subject of the examination is Biology. Candidates must have attended a course of instruction for one year after matriculation and the passing of the further examination in Chemistry and Physics. Second Examination: The subjects of the examination are Anatomy, Physiology, Dental Anatomy, Physiology and Histology; Dental Mechanics, Dental Metallurgy. Final Examination: The subjects of the examination are: Part I., Pathology and Bacteriology; Part II., Medicine and Surgery, Dental Surgery, including Materia Medica and Therapeutics. Candidates for Part II. must have completed five and a half years of professional study.

Degree of Master of Dental Surgery.—Candidates must have passed the examination for the degree of B.D.S. at least one year previously and before admission to the examination must have held for not less than six months a dental appointment in a hospital affording full opportunity for the study of Dental Surgery. Candidates shall not be required to but may present a thesis embodying observations in some subject approved by the Faculty and a candidate whose thesis is of exceptional merit may be exempted from any part of the examination.

Diploma of Licentiate in Dental Surgery.—A candidate must have attained the age of 21 years on the day upon which he is to receive the diploma, and have pursued the courses of study required by the University regulations during a period of not less than four years subsequently to passing the preliminary examination and the passing of the further examination in Chemistry and Physics. Two years must be passed in the University, one at least being subsequent to the passing of the First Examination.

First Examination: The subject of the examination is Biology. Candidates must have attended a course of instruction for one year. Second Examination: The subjects of the examination are Anatomy and Physiology, Dental Anatomy and Physiology, Dental Mechanics, Dental Metallurgy. Final Examination: The subjects of the examination are: Part I., Pathology and Bacteriology; Part II., Medicine and Surgery, Dental Surgery, including Materia Medica and Therapeutics. Candidates for Part II. must have completed the fourth year of professional study.

The Dental Composition Fee is £25 for each year of the course. In addition a fee of £50 is payable each year the student receives instruction in Mechanical Dentistry in the Dental Department.

QUEEN'S UNIVERSITY OF BELFAST.—The following degrees and diplomas are now conferred: Licentiate in Dental Surgery, Bachelor of Dental Surgery, and Master of Dental Surgery. Lecturers have been appointed in Dental Surgery, Dental Mechanics, Dental Metallurgy and Materia Medica, and Orthodontia.

The TEACHING INSTITUTIONS will be summarised in the sequel.

(To be continued.)

Special Articles.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 403.)

EVIDENCE OF NURSING AND OTHER WOMEN'S ORGANISATIONS.

Queen Victoria's Jubilee Institute for Nurses.

(App. LXXII. and Q. 10400–19582.)

THIS evidence was submitted by Miss Peterkin, Mrs. Bruce Richmond, and Major H. F. Cadell. The Institute was incorporated by Royal Charter in 1889 with the object of training and providing nurses for work among the sick poor in their own homes. The principal functions of the Institute are the organisation of local nursing associations, the selection, training, and supply of nurses, and the supervision of their work while in the service of the local associations. The conditions for affiliation of nursing associations are mainly (1) that the work should be carried out under the direction of the medical practitioners; (2) that it should be inspected periodically from the Institute by a nursing expert; (3) that it should be unsectarian; (4) that the nurses' services should be primarily for those unable to employ a private nurse, and that the necessitous poor should be nursed free.

The cost of domiciliary visits varies somewhat widely, but the average rate of payment works out at 1*s*. 4*d*. Arrangements which have been made with many approved societies have been of two kinds—

Those in the first group make payment at the rate of 1*s*. 4*d*. a visit for the first 30 visits and then at the rate of not more than 5*s*. a week; those in the second at the rate of 1*s*. a visit, the Nursing Association collecting from the patient, if it wishes to do so, the additional 4*d*. a visit which makes up the average cost. Payment for the nursing of chronic cases is not made by those in the second group; both make a payment of 5*s*. for a nurse's attendance at an operation.

The contention of the Council of this Institute was that there is in existence an organised national service capable of covering the whole country and it urged that nursing should be provided for all insured persons. It was thought that such a service could be provided at a capitation fee of 1*s*. per insured person.

Asked whether, if such a service were made available, there would be much point in having a nursing association and a local authority supervising it, the witnesses deprecated the employment of nurses by the local authority and urged that the work should be done through the existing associations; they desired to make no suggestions as to who should administer it on the insurance side. The reason why, up to the present, nursing had not been greatly in favour as an additional benefit was partly due to the system of payment by visit and partly due to the too-sure feeling that nursing arrangements were already freely available to insured and uninsured alike. The witnesses did not think that imposing a charge on National Health Insurance funds would injure the flow of voluntary subscriptions, but such a charge would entitle insured persons to priority of service.

In the Scottish part of this evidence it was stated that 80 per cent. of the homes of the people are quite suitable for the nursing care of all illnesses excepting only those requiring major surgical operations, and that while there are some rural areas still unnursed, the greatest need is for an expansion of the existing service in industrial centres, which it would not be difficult to arrange.

College of Nursing.

(App. LXXIII. and Q. 19583–10265.)

The College of Nursing has a membership of over 23,000 trained nurses, and is the largest organisation of trained nurses in the Kingdom. Miss J. P. Watt, Miss G. Bremner, and Miss H. Viney gave evidence. The Council of the College recommend: (1) The provision of a statutory nursing benefit complemental to medical benefit from National Health Insurance funds; (2) that the staff employed for visiting care be fully qualified general-trained nurses with additional district training; and (3) that the visiting nursing care of the insured should be coördinated with other public nursing services, and that where resident care is required, the services of private nurses be utilised. They pointed out that the importance of trained domiciliary nursing has been much stimulated by the statement in 1914 of the then Prime Minister that any system of doctoring was hopelessly inefficient which was not supplemented by a good system of nursing. Notwithstanding this, nursing was still left very largely to voluntary enterprise. It was suggested that the Council's proposed scheme should be financed by a capitation payment of 1*s*. per insured person, with supplemental grants towards the cost of training and (experimentally) for the maintenance of a limited residential nursing service.

On the question of free choice of nurse the witnesses said that there was no analogy between the profession of nurse and panel doctor. Free choice of nurse is not feasible for economic reasons; also it was pointed out that a person going into a nursing home or a hospital cannot have choice of nurse. The witnesses thought that, amongst other things, a nursing service would bring home to the people the general benefit under the Act, because they would get a larger amount of individual attention.

(Q. 10506.) For example, you get a case of an abscess; it does not take the doctor very long to open it if you have a local anæsthetic; but it does take a nurse many days with dressings to get it healed. The same applies to pneumonia, where a doctor's visits would be about a quarter of an hour, whereas the nurse would spend nearly two hours, coming twice a day and perhaps a third time.

The witnesses estimated that 8 per cent. was the minimum number of insured persons requiring nursing and that this would increase as the value of the service became known.

(Q. 10505.) Would you agree that a nurse should be provided to attend upon an insured person only on the recommendation of the doctor in charge of the case?—It is an established practice now in district nursing that the people are at liberty to requisition the service, and after paying the first visit (unless it be a very trivial matter) the nurse arranges for or tells the people to call the doctor, and thereafter the doctor and nurse continue the treatment together.

It was thought that there was an adequate supply of trained nurses to meet the present needs of the insured population, and that the service would rapidly expand with improved conditions.

(Q. 10508.) The College wants an inclusive minimum salary of £250 a year, with allowances, as a living wage for these women; that would make the service attractive to them. The extra factors we have to consider in the district service work are the wear and tear of clothes, and the struggling against all weathers.

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* References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1169.

A nursing service should be a good business proposition and should progressively reduce sickness benefit claims. Its business value has been recognised by the Metropolitan Life Assurance Company of New York, who, last year, spent $500,000 on nursing.

Incorporated Midwives' Institute; Scottish Midwives' Association.

(App. LXXIV. and LXXV. and Q. 19626–19703.)

Evidence was given by Miss Doubleday, Miss M. Gilligan, and Miss J. C. Barker. These witnesses indicated certain delays and other points of criticism of the administration of maternity benefit and the way in which these objections should be met. They urged that in addition to the cash payment, maternity benefit should include antenatal treatment. They also recommended that sick pay should be given for four weeks after the confinement both to the woman who is the wife of an insured person, and to the woman who is herself an insured person.

The Scottish evidence included a complaint that many general practitioners who had given up their poorer class midwifery practice were now resuming it, but employing untrained women. The Midwives' Association protest that this imperils the livelihood of their members and was a positive danger to infant life. While recognising that it was a serious offence to "cover" an unqualified woman, they said that none the less this was done.

(Q. 19664.) You would make the benefit available only if the labour has been conducted by a medical practitioner or a certified midwife?—Unless in a genuine emergency. We always allow for that.

With regard to the question whether the cash payment of maternity benefit was abused, the witnesses said that the mother was the right person to have it, although, in fact, it was sometimes misapplied.

(Q. 19652.) I do not say that the money is abused exactly. The position is this, that if they are living on the dole, as a very large number in Glasgow are just now, they are inclined to get a little bit behind with their rent, and they will say: "We will make that right when we get our maternity benefit," and it goes to the rent, or some necessary purpose, instead of to the midwife.

As regards antenatal treatment, the witnesses were asked whether this was not already given as part of medical benefit by the doctor, and they replied that a midwife undertakes her own antenatal work and advises medical supervision when it is necessary. In the case of a woman who is the wife of an insured man she is not entitled to receive medical benefit by the doctor.

The insistence of the witnesses on the fact that both antenatal and postnatal treatment so far as medical intervention was necessary called for specialist services led to the following:—

(Q. 19688–19689.) The British Medical Association have been here and have urged that every medical practitioner should, if he thinks fit, have a right to place his name on the midwifery panel. Are we to say if we adopted that recommendation we should be making a grave mistake?—I would say a very grave mistake.

You are prepared to put your opinion against that of the British Medical Association?—Yes.

(Q. 19697–19698–19699.) Is there anything left that the general practitioner can do with competence?—Yes, we are all prepared to agree with that.

We should be interested to hear it. So many people have told us there are so many things the general practitioner cannot do?—The general practitioner does deal with a normal amount of work connected with midwifery, all minor things, but I think everybody agrees that midwifery, directly it becomes abnormal at least, is a specialised subject, and they probably have not had either the time or the opportunity to concentrate upon that particular branch of the work.

National Union of Societies for Equal Citizenship.

(App. XCIX. and Q. 22975–23024.)

This Union, represented by Mrs. Hubback, is of opinion that no health insurance scheme is worthy of being called national if wives and children of the insured are excluded. They recommend the payment of allowances for the wives and children while the husband or father is unemployed owing to ill-health, the extension of medical benefit to dependants of insured persons, and the admission to voluntary insurance, after marriage, of women who have been insured workers.

Industrial Women's Organisations.

(App. C. and Q. 23025–23208.)

Dr. Marion Phillips, D.Sc., appeared for the Standing Joint Committee, which represents the whole of the organised working women of the country, whether in the political or industrial Labour movement or in coöperative organisations.

The Committee recommends extension of medical benefit to dependants, the raising of the income limit for non-manual workers from £250 to £350, and the extension of the scope of medical benefit to include every form of specialist service. The Committee further urges the adoption of the proposals of the Maternity Convention held at Washington in 1919, including the provision of adequate maintenance for mother and child.

(App. C. 27.) Such women should have the right to leave their employment six weeks before the expected birth of a child, and not be permitted to return until six weeks after, and the allowance should continue throughout the period.

The payment of what the Committee called Washington benefit—£1 a week for 12 weeks—would involve a net charge of about £1,000,000 per annum. The Committee suggests that the administration of the maternity and Washington benefits should be in the hands of the local maternity and child welfare committees. Dr. Phillips said that they were not prepared for any increase in the contributions of working women towards the cost of the new and increased benefits which were recommended. As to the panel system the witness said that it has worked fairly well, but there is a strong tendency towards an increase in the number of salaried full-time medical officers, and that it was a tendency to which the Committee saw no objection.

Amongst other points in the evidence was a suggestion that women should have a clear and full statement of their rights to sickness benefit in the antenatal period, and a statement that the witness thought that the objections of the British Medical Association to clinics was to some of the present uncomfortable clinics, where the patient has to wait for hours and get a very hurried and poor service very often in the end, and not to specialist clinics. Clinics should be supplemental to domiciliary treatment and not a substitute for it.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Sterilisation of the Currency.

THE Academy of Medicine recently instructed a committee to inquire into the question of sterilising money and banknotes. Dr. Jules Renault, reporting the conclusions of this body, pointed out that sterilisation of money, as of all objects exposed to dirt, was theoretically desirable but at present impracticable. Fortunately, coins and notes, even the dirtiest, rarely carry pathogenic organisms; silver and bronze, indeed, have a considerable bactericidal action. Dr. Renault's researches showed that notes, if not sterile, are yet generally free from pathogenic organisms, a state of affairs probably due to the oxidation permitted by the porosity of the paper.

Alcoholism and Tuberculosis.

It has been stated that alcoholism favours tuberculosis. Dr. E. Arnould has recently studied the published statistics of this subject and concludes that more than half the fatal cases of tuberculosis in most countries occur in that section of the populace which, by reason of age, includes the fewest alcoholics. The incidence of alcoholism is always considerable in men and women between 30 and 60 years of age, although varying in different countries; the incidence of tuberculosis, on the other hand, is always low at this age and is fairly constant in all lands. In England and Germany statistics for the last 30 years show that the consumption of alcohol per head has not diminished, while the mortality from tuberculous disease has gone down 50 per cent. English statistics from 1890–1912 show no correspondence whatever between the alcoholic mortality and the tuberculosis mortality, either for any period or for any class or profession. In France the figures show that the consumption of alcohol is sometimes a little higher in rural districts than in towns and sometimes a little lower, while the tuberculosis mortality of the country is always lower than that of towns. There seems to be no statistical correspondence between the frequency of alcoholism and that of tuberculosis.

Mental Disease Among Soldiers.

Médecin Principal (Colonel) P. M. V. Chavigny, discussing[1] mental disease in the French Army, has given it as his opinion that in peace time there is no special form of mental disease peculiar to the army, but that the cases seen by the army specialist differ completely from those that come before the asylum physician. He makes the following points. In the first place military cases are generally seen quite early, and generally, also, they are so slight that they would have escaped notice in civil life, but the military environment, in which eccentricities are seen under a magnifying glass, makes the symptoms conspicuous. Slight as they are, they are of great importance, for their consequences may be serious to the patient in the military punishments which may mistakenly occur. Colonel Chavigny instances the stupid but well-to-do young man, who moves from one of his houses to another because, he alleges, he is bored everywhere. No one bothers about this vagary of his while he is a civilian, but if he acts so in the army he has become a deserter, with the gravest penalties due from him. In France every man is drafted into the army and must be utilised somewhere, if that is possible, or man-power is wasted. If he is not fit for the fighting line, a recent decree permits his being drafted into the auxiliary services where some occupation more suited to his intelligence may be found for him. After classifying these mildly insane cases, Colonel Chavigny advises that great pains should be taken to distinguish them from the merely idle or incompetent, but avoids the practical difficulty of suggesting the methods of diagnosis, and recommends great caution in classing any as malingerers before they have had a week's observation ("this prevents regrets"). He thinks the medical officer who will treat these cases successfully must be a good clinician, must seek to sympathise with the difficulties of his patients and desire to help them, must not judge their mental processes by his own high standard, nor must he think them cured when they are only silenced. "It is easy enough to empty one's wards, but that is not the aim." He also notes the difficulty of explaining these cases to a court-martial, which does not understand them, nor does it trust the expert. His article will well repay study.

Unfounded Protests.

Quite recently some 200 patients from the Municipal Tuberculosis Sanatorium at Bicêtre, Paris, formed a silent procession through the streets to protest against the bad quality and insufficiency of the food served to them; at their head was borne a placard bearing the inscription: "Defence committee for the interests of the tuberculous patients of Bicêtre." One well-known Paris journal decided to investigate the matter, and sent a representation to visit the institution at the invitation of the director of public relief. The representative came away full of praise for what he saw, and cheered by the reports several patients gave him of their well-being. No further protests, I understand, have been made.

International Anti-Tuberculosis Union.

The Executive Committee and the Council of the International Union against Tuberculosis at the last meeting adopted some interesting resolutions, to be presented to the next international conference in 1926. It was resolved that the following questions should be taken for discussion: (*a*) The part played by contagion in tuberculosis among adults (clinical subject); (*b*) anatomical structure of tubercle from histogenesis to cavity (biological subject); (*c*) tuberculosis and milk (social subject). Thursday, Sept. 30th, Friday, Oct. 1st, and Saturday, Oct. 2nd, 1926, are proposed for the next international conference at Washington, Dr. Theobald Smith, President of the American Association, to preside. A further resolution called attention to the need to intensify the organisation of occupational therapy, and the investigation of the relations between tuberculosis and school management.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Irish Free State and the Medical Register.

UP to the moment of writing there has been no change in the position as regards the Medical Register, and the Government shows so far no sign of yielding to the pressure of public opinion in favour of maintaining the present arrangements. The newspapers have published many protests, not only from medical teachers and members of the medical profession, but from laymen who see the dangers of the policy adopted by the Government. Almost the entire bulk of the correspondence, and of the numerous interviews given to press representatives, has been in favour of continuing the control of the profession in the Free State by the General Council. One or two individual medical men have written in the contrary spirit, and a document in favour of the change has been published by a standing committee of University College, Galway, appointed to consider all matters of a medical nature affecting the College. They say:—

> "Control of Irish medical matters has been in the hands of the British Medical Council, on which Ireland has a minority representation. That the British Medical Council have worked in the interests of the profession is not disputed. The time has now arrived, however, when an Irish nation must control its own affairs, and this applies to medicine as to other matters. The action of the Government is the logical result of our present national status. The hardships which will accrue to Irish graduates when Irish medical men take charge of their own affairs has been unduly stressed. Australian and Canadian graduates may, without much difficulty, practise in England. We believe that the interests of young Irish medical men can also be protected."

This has been the only statement from any medical body in favour of the attitude of the Government. It has received two answers, written from very different angles. The first is given by "a prominent Dublin surgeon," who prefers to remain anonymous. He deals in some detail with the technical and legal difficulties involved in obtaining reciprocity or Colonial status. As regards reciprocity, the Dublin surgeon points out that if reciprocity be established, the mere fact of establishing such a relationship with the General Medical Council places the medical schools of Ireland again under its complete control.

As regards the technical mode of obtaining registrations on the Colonial List, the Dublin surgeon quotes the Medical Act of 1880 to show that—

> "the applicant must prove, to the satisfaction of the Registrar to the General Medical Council, that the diploma or diplomas through which he wishes to be placed on the Colonial Register were granted to him at a time when he was not domiciled in the United Kingdom, or in the course of a period of not less than *five years*, during the whole of which he resided outside the United Kingdom."

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[1] Arch. de Médecine Militaire, May, 1925, p. 563.

He sums up his case as follows:—

> "The Free State Government cannot obtain reciprocal arrangements with England as regards the Colonial Register unless (1) they desire to be recognised as a British possession; (2) they wish to have their medical men tried by a 'foreign' tribunal, on which they have no representation; (3) they are content to wait until five years (one and a half years more) have passed since the setting up of the Free State."

Senator Oliver Gogarty, F.R.C.S.I., in a letter to the daily press, furnishes another, if indirect, answer to the Galway statement. He suggests that it is in the mind of the Government to turn the College of Galway into an institution in which a medical education will be given in the Gaelic tongue. As such a project might be difficult to carry out while medical education is under the control of the General Council, the Government first decides to abolish that control. Strange as such a suggestion appears, Senator Gogarty appears to write in all seriousness.

The "prominent Dublin surgeon" has rendered a service in stressing the difficulties that lie in the way of obtaining any reciprocal registering arrangement with Great Britain. Many of those who wrote to the papers took for granted that reciprocal arrangements were impossible, and contented themselves with pointing out the evils of an entirely independent and separate Register. Later controversy has therefore tended to focus more and more on the relative advantages and disadvantages of the Colonial List. In this connexion a point of some importance has emerged, in that it appears that the General Medical Council cannot register, either in the Colonial List or anywhere else, a Diploma in Public Health granted outside the United Kingdom.

The President and Vice-President of the Executive Council (Mr. Cosgrave and Mr. O'Higgins) have defended their position on the platform, the basis of their arguments being that the Irish nation must control its own affairs, and summing up the present problem as "a question as to the particular place on the Register on which the names of Free State doctors will appear." Two temporising measures have been suggested in the public press as a way out of the impasse: the first is that the Government should postpone the operation of its decision for a year by passing another temporary Act, concrete and definite arrangements for reciprocity being made in the available period; and the second, emanating from the Galway College, is to the effect that a provisional medical council be appointed, consisting of representatives of licensing bodies in the Free State, and that this body should discuss with the General Medical Council the future relations.

The President and Council of the Royal College of Surgeons in Ireland have summoned a public meeting of the profession for Tuesday, Sept. 8th, at 4.30 P.M., to consider the whole situation. The Council has passed a resolution approving of the attitude taken in the controversy by the President, Mr. R. C. B. Maunsell, and expressing its confidence in his judgment. It is wisely announced that no political discussion will be permitted at the meeting, which is for the education of the public on the questions at issue.

Poor-law Reform in Dublin.

The Commissioners in charge of the affairs of the Dublin Poor-law Union have under consideration a comprehensive scheme for the reform of Poor-law administration in Dublin. They hope to separate the several classes of inmates at present in the union, and to provide suitable treatment for each group. It is understood that the St. Vincent de Paul Society, a very powerful charitable organisation, is prepared to play an important part in assisting the Commissioners towards this end. The present intention is that the society shall take over a portion of the North Dublin Union premises for the reception of all able-bodied destitute classes with a view to reforming this particular class rather than housing them. With regard to the aged people, they will be handed over to some religious order and housed outside the union. It is possible that the old age pensions will be given to many of these people. Special treatment is to be provided for mental cases in surroundings which will give them every possible chance of a recovery. There are at present 400 such cases in the wards of the union and they are neither segregated nor treated in accordance with modern methods. They will be placed under the care of specially trained sisters, and will be paid for on a capitation basis. Consumptives will be provided for on similar lines. If all the arrangements projected are carried out, the only classes that will be received in the Dublin Union premises will be those needing medical or surgical treatment, and the buildings will be turned into a modern hospital. The scheme, it is claimed, will make for proper supervision and correction of the "ne'er-do-well," better treatment for the casually destitute person, up-to-date assistance for the mentally affected, proper classification for consumptives, with suitable surroundings, the provision of a home for the reception and training of crippled, deformed, and mentally defective children.

Northern Ireland: Vital Statistics.

During the quarter ended June 30th, 7414 births were registered in the 27 superintendent registrar's districts in Northern Ireland, this number being equivalent to an annual birth-rate of 23·2 per 1000 of the estimated population. The corresponding birth-rate for England and Wales for this quarter was 19·4 per 1000 and for Scotland 22·9. The deaths registered during the quarter numbered 4913, representing an annual rate of 15·3 per 1000; the corresponding death-rate in England and Wales was 11·7 per 1000 and in Scotland 13·0 per 1000. The population of Northern Ireland in the middle of 1925 is estimated to be 1,281,000, inclusive of military.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEKS ENDED (1) AUGUST 15TH AND (2) AUGUST 22ND, 1925.

1. *Notifications.*—The following cases of infectious disease were notified during the week ended August 15th: Small-pox, 34; scarlet fever, 1400; diphtheria, 700; enteric fever, 80; pneumonia, 441; puerperal fever, 54; cerebro-spinal fever, 9; acute poliomyelitis, 10; acute polio-encephalitis, 1; encephalitis lethargica, 35; continued fever, 1; dysentery, 11; ophthalmia neonatorum, 118. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 5 deaths from enteric fever, 18 from measles, 13 from scarlet fever, 37 from whooping-cough, 23 from influenza, and 13 from diphtheria. There were 136 deaths of children under 2 years from diarrhœa and enteritis, as compared with 108, 101, 64, 50, and 44 in the preceding weeks. In London itself there were 2 deaths from diphtheria, 3 from whooping-cough, and 5 from influenza.

2. *Notifications.*—The following cases of infectious disease were notified during the week ended August 22nd: Small-pox, 50; scarlet fever, 1330; diphtheria, 711; enteric fever, 88; pneumonia, 440; puerperal fever, 38; cerebro-spinal fever, 5; acute poliomyelitis, 10; acute polio-encephalitis, 1; encephalitis lethargica, 44; continued fever, 1; trench fever, 1; dysentery, 8; ophthalmia neonatorum, 112. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 3 deaths from enteric fever, 31 from measles, 9 from scarlet fever, 44 from whooping-cough, 20 from influenza, and 20 from diphtheria. There were 177 deaths of children under 2 years from diarrhœa and enteritis, as compared with 130, 108, 101, 64, and 50 in the preceding weeks. In London itself there were 4 deaths from diphtheria, 8 from whooping-cough, and 2 from influenza.

Dr. J. A. Mitchell, Secretary for Health and Chief Health Officer of the Union of South Africa, is taking three months' vacation in order to represent the Union of South Africa at the Conference of Empire delegates at the Ministry of Health, to be held in connexion with the proposed International Sanitary Convention.

Correspondence.

"Audi alteram partem."

THE SUPPLY OF VACCINES TO PANEL PATIENTS.

To the Editor of THE LANCET.

SIR,—The letter of Dr. C. W. Cunnington in THE LANCET of August 22nd gives public expression to a question which I frequently hear asked by panel practitioners, and have wondered why more adequate arrangements are not made with pathologists for the supply of vaccines when required for panel patients.

In my work as pathologist I have *not* infrequently supplied either stock or autogenous vaccines for panel patients free of charge, for one or other of the following reasons. Either the case is so urgent that the clinical condition will not allow of the delay necessitated in obtaining official permission for the necessary vaccine preparation, or the panel practitioner obtains this help for his patients, which is not officially given; or when repayment is refused, as has happened, the pathologist has forgone remuneration for the work done on behalf of the panel service. I am sure my experience is not an isolated one. Most panel doctors are keen clinicians and want to give their patients not only the best therapeutic, but also prophylactic treatment, and are galled by the restrictions which limit adequate service being provided. The absence of these facilities for panel patients, which makes the occasional provision of gratuitous supplies necessary, introduces an obvious difficulty, for medical men hesitate or refuse to ask for the repetition of unremunerated assistance from colleagues except in very special circumstances, and therefore other cases are less adequately treated than might be.

It would not be difficult to arrange with the health insurance authorities for a standard rate for vaccines supplied for the treatment of panel patients and thus obviate such difficulties as your correspondent has encountered.—I am, Sir, yours faithfully,

E. CRONIN LOWE, M.B.E., M.B., B.S.

Southport, August 25th, 1925.

A PECULIAR SYMPTOM IN ENCEPHALITIS LETHARGICA.

To the Editor of THE LANCET.

SIR,—Since the mental sequelæ of encephalitis lethargica are attracting much attention at the present time, the following may be of interest to your readers.

Mrs. E. C., aged 25, married, a machinist by occupation, complained of insomnia of a fortnight's duration. She felt sleepy during the day and restless at night. On asking her to walk on tiptoe she staggered and said her "legs gave way." She had diplopia and consequently was unable to do her work. She complained of sore-throat and her voice was hoarse. Fine tremors of the hand could be detected on careful observation. The most interesting symptom consisted in the fact that she avoided travelling by omnibus and tramcar as it made her worse and uncomfortable, and consequently *preferred to walk* accompanied by her mother even a fairly long distance. Her pulse and temperature were normal.

It is difficult for me to offer a satisfactory explanation of the above symptoms, but no doubt neurologists will be able to elucidate them.

I am, Sir, yours faithfully,

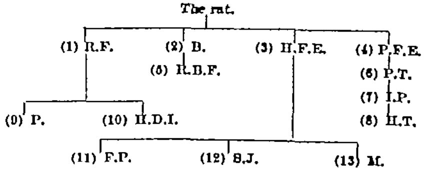
London, August 25th, 1925. J. D. DHRUV.

RAT-BORNE DISEASES.

To the Editor of THE LANCET.

SIR,—The Department of Agriculture S.S. and F.M.S. recently prepared an exhibit showing the damage done by rats to food and tropical produce for an agricultural exhibition held in Kuala Lumpur. The Institute for Medical Research was asked to collaborate by arranging a demonstration of the dangers of rats to public health, and the attached table of diseases of rats, which are communicable to man, was drawn up for the exhibit. As the table may be useful for other exhibitions and for propaganda during "rat weeks" I am forwarding a copy for publication.

Human Diseases Spread by Rats.



(1) R.F.—By the rat flea.
(2) B.—By biting.
(3) H.F.E.—By contaminating human food with excreta.
(4) P.F.E.—By contaminating pig's food with excreta.
(5) R.B.F.—Rat bite fever.
(6) P.T.—Pig trichinosis.
(7) I.P.—By eating imperfectly cooked infected pork.
(8) H.T.—Human trichinosis. (Trichina is a worm which, in its embryo stage, lives in the muscles.)
(9) P.—Plague.
(10) H.D.I.—Hymenolepis diminuta infection (a small tapeworm).
(11) F.P.—Food poisoning.
(12) S.J.—Spirochætal jaundice.
(13) M.—Melioidosis (a glanders-like disease).

I am, Sir, yours faithfully,

A. NEAVE KINGSBURY,
Pathologist, Institute for Medical Research,
Kuala Lumpur, Federated Malay States.

July 18th, 1925.

ASCARIS LUMBRICOIDES AND PIGS.

To the Editor of THE LANCET.

SIR,—I was very interested in the annotation in your issue for July 18th, *Ascaris lumbricoides* in Hertfordshire. Here in Port Said, for some reason not hitherto explained, about 90 per cent. of the Egyptian population (Port Said, European 13,000, Egyptian 87,000) are infected with ascaris, and it has always been a puzzle why this should be so as the rest of Egypt does not show such a high percentage for ascaris (about 4 per cent.). Your annotation probably puts us on to the origin of the trouble—pigs. In Port Said pigs are bred for the crews of the passing ships. The result is a vast herd of pigs feeding on the town rubbish dump near the destructors and, I suppose, hence the ascaris. The water-supply at Port Said is one of the purest and best in the world and is quite above suspicion.

I am, Sir, yours faithfully,

H. E. S. STIVEN, M.D. Camb.,
Principal Medical Officer, Government Hospital,
August 8th, 1925. Port Said, Egypt.

ALL SAINTS' HOSPITAL.

To the Editor of THE LANCET.

SIR,—May I draw your attention to the fact that in the Students' Number of THE LANCET there is no mention of this hospital among the supplementary hospitals giving courses of instruction.

Courses of instruction are given at the out-patient department, 49–57, Vauxhall Bridge-road, S.W. 1, on Monday, Wednesday, Thursday, and Saturday afternoons at 1.30, and on Monday, Wednesday, and Thursday evenings at 6.30; opportunities are afforded for the seeing of operations performed daily at the in-patient department at 91, Finchley-road, N.W. 8.

I am, Sir, yours faithfully,

ELIZABETH HART,
Assistant Secretary.

Vauxhall Bridge-road, S.W., August 29th, 1925.

Obituary.

JOHN FREDERICK GORDON DILL, O.B.E., M.D. Camb., M.R.C.S. Eng., M.R.C.P. Lond.,

CONSULTING PHYSICIAN TO THE ROYAL SUSSEX COUNTY HOSPITAL.

We announced last week the regretted death of Dr. J. F. Gordon Dill at the age of 66, which occurred at his residence in Hove on August 22nd.

Dr. Gordon Dill was the eldest son of the late Dr. Richard Dill, a well-known medical practitioner in Brighton and Hove, by his wife, the daughter of General Sir Charles Wale, K.C.B.—she only died in May last at the age of 101. Dr. Richard Dill had succeeded an uncle in practice at Brighton, thus making a long hereditary connexion.

John Gordon Dill was educated at Gonville and Caius College, Cambridge, and St. George's Hospital. At the University he graduated in honours in the Natural Science Tripos, and was well known also on the running-track and, perhaps especially, as a footballer under Association rules. He completed his medical education at St. George's Hospital, took the Cambridge M.B., and, after holding certain resident appointments, went to Paris to study under Charcot. At that time his inclination was towards entering into special practice in London, but on his return he decided to carry on his father's work at Brighton and Hove. Here he succeeded to and enlarged a prominent practice, while he was elected at the first opportunity upon the staff of the Royal Sussex County Hospital.

For the next 30 years Dill's name was associated with all medical movements in the town and county. He was at different times chairman of the Brighton Medical Association, president of the Sussex Medical Society, and physician to the Sussex Dental Hospital, as well as physician to the County Hospital, and in all his posts his wisely tolerant attitude, coupled with his energetic mind, made him early to see the places in which the organisation of the medical profession was weakest and enabled him to discern that the places were those in which the public interests had to be considered equally with those of the practitioner. He was an ardent champion of the right of the general practitioner to occupy an important place in all the national developments of medicine foreshadowed under the National Insurance scheme, while from his intimate acquaintance with hospital administration he could realise out of personal experience the fundamental troubles associated with the poverty of voluntary hospitals, the tragedy of bed shortage in the institutions coupled with their long waiting-lists, and the difficulties of dealing with hospital abuse—subjects upon all of which he wrote much and judiciously and on occasions spoke with great clearness. The concrete form which his energies finally took was the foundation of the Sussex Provident Scheme by which hospital benefits and additional medical services were to be brought economically within the reach of the proper subjects. This scheme, of which the full details have been published on several occasions in The Lancet, gained in the end, and after some criticism, the approval of the medical profession in the county of its origin, and soon began to attract attention elsewhere. It was a scheme designed to supply medical service which should debar no one from obtaining every accepted means of diagnosis and treatment, the essential aim being to supply a service which the patient could afford and which at the same time brought a fair remuneration to the doctors. The scheme rolled nine coöperating general and special hospitals together on a uniform basis, urgent cases being admitted to the hospitals as already arranged for, while other cases requiring operation or consultation were placed upon waiting-lists, such patients, however, taking no precedence of urgency cases. The consultation fees were drawn from a pool formed by deducting a percentage of the moneys allotted to each hospital, and it was Dill's hope that, if and when his scheme in Sussex could be proved successful, a similar plan would be applied to conditions ruling in other areas. His ideas took further practical shape in the foundation of the British Provident Association, when in 1921, with the assistance of Viscount Knutsford, Sir Arthur Stanley, Sir Alan Anderson, Lord Dawson, and Mr. McAdam Eccles, he set up the National Provident Scheme for hospital and additional services. This scheme, which during the intervening years has done excellent work and has developed into the British Provident Association as now known, owed its conception to his imaginative faculty. As secretary of the original scheme and of its permanent successor he gave of his time and energies without stint, and the results achieved are a proof of his sagacity as well as a justification of his enthusiasm for the welfare of his fellows. As far as Sussex is concerned, the last figures published showed that 26,500 members of the public were entitled to the benefits of the scheme, and that in 1924 over £5500 were paid through its channels to the hospitals for services rendered to the subscribers. It is understood that the figures for the first six months of the present year have an equally good or better promise.

In October last year Dill was compelled to undergo a serious operation from which at the time he made a successful recovery, but the relief proved only temporary, and the sad end was not unexpected by many of his friends.

Dr. Gordon Dill married Mary, daughter of the late Simon Martin, of the Indian Civil Service and son of the well-known consulting physician to the India Office, Sir Ronald Martin, by whom he had two sons. He leaves behind him the memory of an able and generous man whose talents as well as his personal charm had endeared him to a wide circle.

JAMES STEWART FOWLER, M.D., C.M., F.R.C.P. Edin.

Dr. J. Stewart Fowler, physician to the Royal Hospital for Sick Children, Edinburgh, died on August 24th in Elie, Fifeshire, at the age of 55. By his untimely death Edinburgh in particular and the medical profession in general has lost a valuable member.

James Stewart Fowler was the son of Dr. James Stewart Fowler, of Georgetown, Demerara, and was educated at the Edinburgh Academy. He received his professional training at Edinburgh University, where he graduated M.B., C.M. in 1892, taking in the same year the English double qualification. As a student he had a distinguished medical career, gaining honours on graduation, along with the Allan Fellowship, the Gunning Victoria Scholarship, and the McCunn Scholarship. He was keenly interested in the Royal Medical Society of Edinburgh, of which he was a Fellow and past president. After the usual hospital appointments in Edinburgh he went abroad to study in Vienna, and in 1899 took the M.D. Edin., being awarded a gold medal for his thesis. In 1895 he became a member of the Royal College of Physicians of Edinburgh and two years later obtained the Fellowship of the College with which he has been so closely associated ever since. Dr. Fowler practised as a physician, and was a sound authority on the diseases of childhood. He was senior physician to the Royal Hospital for Sick Children and University lecturer in diseases of children at that hospital, physician to the Chalmers Hospital, and honorary pediatrician to the Royal Maternity Hospital. Formerly he held posts as assistant physician to Leith Hospital and physician to the New Town Dispensary of Edinburgh. During the war he acted as temporary captain in the R.A.M.C., and was on active service with the forces in Salonica. In 1918 he was appointed secretary and registrar of the Royal College of Physicians of Edinburgh, which post he held up to the time of his death. He was a member of the Association of

Physicians of Great Britain and the Medico-Chirurgical Society and Pathological Club of Edinburgh, and took a great deal of interest in the proceedings of these societies.

Dr. Fowler made many valuable contributions to medical literature, and at the time of his death was joint editor of the *Edinburgh Medical Journal*. In 1899 he published, in joint authorship with Dr. G. Elder, "Diseases of Children: a Clinical Handbook," and in 1909 appeared his "Artificial Feeding of Infants." Both of these books have proved valuable works of reference. Among his contributions to various compilations and journals are the following: an article on Mumps in the Encyclopædia Medica (1901); Diseases of the Genito-Urinary System in Garrod, Batten, and Thursfield's Diseases of Children; Splenic Anæmia of Infancy, *Brit. Med. Jour.* (1902); Epidemic Cerebro-Spinal Meningitis, *Rev. Neurol. and Psychiatry* (1907); and, with Dr. Carnegie Dickson, Tuberculous Sclerosis, *Quart. Jour. Med.* (1910).

A colleague writes: "The unexpected suddenness of Dr. Fowler's death has come as a great shock to his many friends. Up till a few hours before the end he had been in his usual good health, and indeed on the morning of August 24th he had been on a boating expedition with his daughter and a friend. In the afternoon he felt ill, became unconscious, and passed away in the evening. As a skilled and sympathetic physician he was greatly loved, and his charm endeared him particularly to those very young children amongst whom he did the greater part of his work."

Dr. Fowler was married in 1902 to Edith, daughter of Mr. Philip Hudson, C.E., of Hyderabad, who predeceased him 11 months ago. He leaves one daughter.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Capt. J. J. H. Rooney is placed on the Retd. List with the rank of Surg. Capt.

Surg. Comdrs. A. H. Joy to the *Pembroke* for R.N. Barracks, temp.; F. L. Smith to the *Furious*, on commg.; and S. F. Dudley to *Diomede*, on recommg. (lent to N.Z. Division). Surg. Lt.-Comdr. L. W. Gemmell to the *Comus*, on commg. Surg. *Lts.* E. B. Pollard to the *Columbine* for Port Edgar Base, temp.; S. Morrow to the *Furious*, on commg.; and S. G. Rainsford to *Pembroke* or R.N. Hospital, Chatham.

ROYAL NAVAL VOLUNTEER RESERVE.

J. Stephen, late Temp. Surg., and Proby. Surg. Lt. A. S. Bradlaw to be Surg. Lts.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. F. W. W. Dawson retires on ret. pay.

Capt. R. P. Cormack is granted the temp. rank of Maj. whilst empld. as Dep. Asst. Dir. of Pathology.

Capt. W. E. Tyndall relinquishes the temp. rank of Maj. on ceasing to be empld. as a Dep. Asst. Dir. of Pathology.

Capt. D. C. Bowie is restd. to the Estabt.

Capt. G. O. Robinson is placed on the half-pay list on *account of ill-health.*

ARMY DENTAL CORPS.

Temp. Capt. A. S. Newton, Dental Surg., relinquishes his commn. and retains the rank of Capt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Qrmr. and Capt. F. C. Strike, having attained the age limit of liability to recall, ceases to belong to the T.A. Res. of Off., and retains his rank.

SUPPLEMENTARY RESERVE OF OFFICERS.

Capt. A. G. B. Duncan, late temp. Capt. R.A.M.C., to be Capt.

ROYAL AIR FORCE.

Flight *Lt. D. G.* Boddie is promoted to the rank of Squadron Leader.

Flight Lt. G. M. Mellor relinquishes his temporary commission on ceasing to be employed and is permitted to retain his rank.

Capt. A. B. H. Cole, Army Dental Corps, is granted a temporary commission as a Flight Lt. on attachment to the R.A.F. for a period of four years.

Flight Lt. J. Wren (Capt., Army Dental Corps) relinquishes his temporary commission on return to Army duty.

INDIA AND THE INDIAN MEDICAL SERVICE.

The King has approved the retirement of Lt.-Cols. L. Hirsch (on account of ill-health), J. C. G. Kunhardt, and H. A. F. Knapton.

Capt. S. N. Hayes, Civil Surgeon, Dalhousie, is appointed Professor of Midwifery, King Edward Medical College, Lahore. Maj. E. W. O'G. Kirwin, Civil Surgeon, Murshidabad, is appointed to act as Superintendent, Central Medical Hospital, Berhampore, during the absence on deputation of Capt. J. E. Dhunjibhoy. Maj.-Gen. D. J. Collins, Deputy Director of Medical Services, Southern Command, officiates as Director of Medical Services in India, Army Headquarters, during the absence on leave of Maj.-Gen. O. L. Robinson. The services of Maj. J. A. S. Phillips, Assistant Director of Public Health (Malariology), United Provinces, are lent temporarily to the Government of Nepal *for malaria work.* Lt.-Col. Godfrey Tate, V.H.S., officiating Inspector-General of Civil Hospitals, Punjab, is appointed President of the Punjab Medical Council, vice Col. C. R. Bakhle, resigned.

The King has been pleased to give directions for the appointment of John Owen Shircore (Director of Medical and Sanitary Services) to be an Official Member of the Executive Council of the Tanganyika Territory.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—T. K. Clifford, Manchester; C. D. Cogswell, King's Coll. Hosp.; V. G. Crowley, Sydney; S. W. Cuff, St. Bart.'s Hosp.; A. L. Evans, London Hosp.; W. O. H. Evans, Bristol; T. H. Harrison, Sheffield; A. H. Henson, Charing Cross Hosp.; J. Herbert, Guy's Hosp.; E. P. Hyde, Manchester; A. B. Osbourne, St. Mary's Hosp.; W. Irving Pierce, Boston; F. Reynolds, Manchester; H. A. Sack, Middlesex Hosp.; G. H. Shanley, Durham; M. Schwartzman, Odessa and Middlesex Hosp.; and I. Waynik, Charing Cross Hosp.

Medicine.—C. D. Cogswell, King's Coll. Hosp.; W. Hinds, Durham; E. P. Hyde, Manchester; and M. V. Roberts, London Hosp.

Forensic Medicine.—O. Bastable, Leeds; E. P. Hyde, Manchester; E. J. Newman and M. V. Roberts, London Hosp.; and I. Waynik, Charing Cross Hosp.

Midwifery.—R. F. Ashkenny, Cambridge and London Hosp.; A. L. Evans, London Hosp.; W. Ivors, Manchester; E. H. Rampling, St. Thomas's Hosp.; M. V. Roberts, London Hosp.; and C. H. Spencer, Manchester.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: A. H. Henson, J. Herbert, W. Irving Pierce, A. B. Osbourne, and I. Waynik.

THE FELLOWSHIP OF MEDICINE.—The Fellowship of Medicine and Post-graduate Medical Association (1, Wimpole-street, W.) will provide an intensive course in general medicine, surgery, and the various special departments at the Westminster Hospital from Sept. 21st to Oct. 2nd from 10.30 A.M. to 5.30 P.M. each day. The fee for the course is 3 guineas or 2 guineas for either week. At the Infants Hospital a two weeks' comprehensive course dealing with the study of diseases of infants will be held from Sept. 7th. Three visits will be made to centres away from the hospital. The Seamen's Hospital will begin a five weeks' course in operative surgery from Sept. 7th. Classes will be held four times weekly, and the fee is fixed at £10 10s. In dermatology an afternoon course will be provided at Blackfriars Skin Hospital from Sept. 7th to 19th. A special demonstration of interesting cases will be given on Sept. 8th. The Royal Westminster Ophthalmic Hospital has arranged a three weeks' course from Sept. 7th. Clinical instruction will be given every afternoon, and special demonstrations three times weekly. From Sept. 21st to Oct. 3rd the Brompton Hospital provides a special course covering the various aspects of pulmonary disease by lecture, demonstration, &c. On four successive Wednesdays, beginning Sept. 23rd, Dr. C. B. Heald will give special *demonstrations on treatment* by electrotherapy at the Royal Free Hospital at 5.30 P.M., the course being designed for general practitioners. Full particulars and syllabuses of the courses, together with the Fellowship programme, may be obtained from the secretary.

British Mosquito Control Institute. — The opening of the new house of this Institute on Hayling Island by Sir Ronald Ross on Monday last was a public recognition of the valuable work done by a non-professional worker. Mr. John F. Marshall, the founder of the Institute, has devoted himself to the investigation and elimination of the mosquito from Hayling Island. From this nursery originate nearly all the mosquitoes that torment our coast towns in the late summer, and the general public owes a considerable degree of increased comfort on holiday to the efforts of Mr. Marshall and his fellow workers. The fourth report of the Institute describes the work undertaken, at a cost of £180, to clear the numerous breeding-places of the salt-water mosquito, *Ochlerotatus detritus*, and the fresh-water larvæ of *O. rusticus* and *Theobaldia annulata*. A valuable auxiliary corps was found in the "mosquito control class" of local school-children, who were taught how to identify and collect specimens of mosquitoes and larvæ. Many breeding-places have been located by the children. The original local work extended so rapidly that Mr. Marshall determined to erect a special building for research into the problems of mosquito control, and to inaugurate a "British Mosquito Control Institute." Many distinguished scientists have become members of its council and the opening ceremony was attended by a large party from the British Association. The Institute contains a demonstration museum, laboratory, drawing and record offices, photographic rooms, and a mechanical workshop, in addition to the well-equipped research rooms. Sir Ronald Ross, in his speech, said that 30 years ago, when he started work on malaria and mosquitoes in India, there was not a single satisfactory book or article on the mosquito. Now there was much knowledge, but energy to act upon the knowledge was still needed to carry on the work begun in Ismailia, Panama, and the Malay States. The ultimate aim must be to control all the dangerous and unpleasant pests that affect man, his crops, and his herds. He urged a great increase in the amount of money devoted to research. Colonel James, representing the Ministry of Health, seconded the vote of thanks to Mr. Marshall proposed by Mr. Tate Ryan, President of the Zoological Section of the British Association. Colonel James said that the success of public health administration was very largely due to the voluntary assistance received from public-spirited persons, adding that the Ministry of Health would watch Mr. Marshall's work with keen and helpful interest.

Royal Sanitary Institute.—The autumn course of lectures and demonstrations for sanitary officers commences at the Institute on Wednesday, Sept. 23rd. The course comprises the subjects scheduled for the examinations of the Institute and the Sanitary Inspectors' Examination Board (formed by the Institute and other bodies). On Friday, Oct. 2nd, a course of systematic practical training in the inspection of meat at a cattle market, &c., will be opened for meat and food inspectors. A detailed programme of the courses and full particulars may be obtained from Mr. E. White Wallis, F.S.S., director and secretary of the Institute, 90, Buckingham Palace-road, London, S.W. 1.

Insanity and Mental Deficiency in Scotland. The annual report of the Scottish Board of Control, which has just been issued, states that the number of insane and mentally defective persons under the Board's supervision on the first day of the present year was 20,850, of whom 18,398 were certified insane—almost exactly the same number as in the preceding year. Certified mental defectives have, however, increased from 2308 to 2452. The proportion of recoveries calculated on the admissions during the year was 33·4, which is 3·4 above the average of the previous five years. There was a substantial increase in the number of voluntary inmates. The Board express the hope that the contemplated scheme for the establishment of colonies for the adult mentally defective will reduce to a minimum the practice of placing of such patients in asylums.

Royal Medical Benevolent Fund.—At the last meeting of the Committee 54 cases were considered and £663 was voted to 43 applicants. The following is a summary of the new cases relieved :—

M.R.C.S., L.R.C.P., 1893, aged 59. Married, six children, aged 5 to 18 years. Eldest tea-planting in Ceylon at Rs.400 a month. The rest live at home and attend school. Income from practice and panel dispensary about £230 per annum. Rent and rates £66 per annum. Applicant was taken suddenly ill in July and was operated on for gangrenous bladder. Nursing home fees were paid by his colleagues in the profession, but it was discovered that the wife and family were without means. The Fund sent £10 at once.

Widow, aged 58, of L.R.C.P. Edin. who was a ship's surgeon and died abroad in 1923. Applicant has managed to keep herself and invalid sister on the little money left and by the sale of trinkets and jewellery. This being exhausted a large debt was accumulating for board and lodging when a doctor on the Committee of the Fund heard of the case and referred her to the Fund. An immediate grant of £5 was made for food. The Professional Classes Aid Council were asked to contribute towards the maintenance of the sister of the applicant, who is the unmarried daughter of a solicitor. A vote from them enabled the sister to be got away to be looked after as she is an invalid and crippled with rheumatoid arthritis, and our Guild found a post for the applicant and made a grant towards the debt outstanding for board and lodging. The Fund and Guild and Professional Classes Aid Council are working together to get the sister permanently looked after so that the applicant will be self-supporting.

Widow, aged 45, of L.R.C.P. Edin. who practised in Lancashire and died this year. She is left with three children, aged 6, 9, and 12, who are all at day school. After the practice was sold £500 was left and War Loan purchased. Applicant hopes to augment income by letting apartments. A report from the local branch of our Guild supported the application and the Fund voted £18 towards education and referred it to the Guild to consider a similar grant.

Widow, aged 36, of M.B. who practised in the Midlands and died in 1916. Applicant has been able to support herself and son, who is now 9 years of age, up to last November, when her mother died who looked after the boy whilst the applicant was at work. Help is asked for the child. The guardians have been applied to and a grant was made by them of 7*s.* 6*d.* a week for five weeks. The Fund voted £10 to a local doctor, who is interested in the case, to be administered for the benefit of the child.

M.R.C.S. Eng., aged 62, who is in practice and asks the Fund to help him while getting established. The practice is increasing, but he has only £42 in hand. Fund voted £40.

Widow, aged 54, of L.M.S.S.A. who practised as a ship's surgeon and died suddenly, leaving applicant and daughter, aged 17, totally unprovided for. Has been working as a servant but at present staying with friends. Voted £26 in six monthly instalments.

Subscriptions may be sent to Sir Charters Symonds, Hon. Treasurer, at 11, Chandos-street, Cavendish-square, London, W. 1.

Hospital Administration.—A three months' course of lectures and demonstrations will be given at the North-Western Hospital, Lawn-road, Hampstead, N.W., by the medical superintendent, Dr. E. W. Goodall, on Mondays and Thursdays, at 4.45 P.M., and alternate Saturdays at 10.30 A.M., beginning Oct. 1st. The fee is £4 4*s.*, and the course complies with the requirements of the revised regulations of the General Medical Council for the D.P.H. Further particulars may be obtained from the Clerk to the Metropolitan Asylums Board, Victoria Embankment, E.C. 4.

Post-Graduate Courses in Tuberculosis.—The following courses have been arranged by the Joint Tuberculosis Council: (1) A fortnight's course, Sept. 21st to Oct. 3rd, at Victoria Park (class limited to six members); (2) a course in non-pulmonary tuberculosis, Sept. 28th to Oct. 3rd, visiting Ascot, Carshalton, London Hospital, Royal College of Surgeons, All Saints' Hospital for Genito-Urinary Diseases, and Oxford (class limited to 30 members). Early application should be made to William Brand, acting hon. secretary, 19, Brunswick-square, S.E. 5, who will supply all further particulars (in addition to those published in The Lancet on August 22nd, p. 412).

The People's League of Health.—The Sims Woodhead series of constructive educational health lectures will commence on Friday, Oct. 9th, at 6 P.M., at the Regent-street Polytechnic, London, and will be continued on the following five Fridays at the same hour. Among those who have promised to lecture are: Sir Harry Baldwin, Dr. Leonard Hill, Prof. H. R. Kenwood, and Mr. E. B. Turner. At the conclusion of the series there will be an optional examination for those who have attended the series, and certificates will be issued by the Medical Council of the League. The fee for the series is 7*s.* 6*d.*, single lectures 1*s.* 6*d.* Tickets and further information regarding the lectures held may be obtained from Miss Olga Nethersole at 12, Stratford-place, London, W. 1.

Artificial Sunlight at Drury Lane Theatre. On August 26th Sir Alfred Fripp formally opened the artificial sunlight baths which have been installed at Drury Lane Theatre for the benefit of the company and staff. In opening the proceedings Sir Alfred Butt said that the directors believed that the greatest possible benefit would result from conserving the health of their employees, and the baths had been provided with this object. Every member of the company and staff could have a sunlight bath when desired, free of charge, provided the doctor approved. Sir Alfred Fripp gave a short address on the benefit of artificial sunlight and of the advantages of living as near to nature as possible; he said that he knew several prominent actors who had been greatly benefited by artificial sunlight baths, and congratulated the Drury Lane authorities on their generous action in providing this means for promoting the health of their staff and company. The installation is under the supervision of Dr. F. Howard Humphris, and Dr. Cecily Maude will be in charge at the theatre. The total radiation value is 100,000 candle-power and provides for about 60 baths per hour.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Sept. 7th, to SATURDAY, Sept. 12th.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars. Daily instruction in the out-patient department from 2.30 P.M. Special demonstration of cases on Tuesday.—INFANTS HOSPITAL, Vincent-square, S.W. Special Course. Lectures and demonstrations every afternoon. "Round Table" consultation on Friday, and on Saturday special visit to Model Pasteurising Plant.—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Charing Cross. Clinical instruction every afternoon from 2 o'clock with special demonstration three times a week.

Appointments.

CARON, N. B., M.B., Ch.B. Liverp., has been appointed Hon. Physician to the Royal Southern Hospital, Liverpool.

LAIRD, JEAN P., M.B., Ch.B. St. And., Junior Resident Medical Officer, East House and Hospital, Dundee.

THOMSON, I. S., Ch.B. Aberd., D.P.H. R.C.P.S. Eng., Assistant Medical Officer of Health and Tuberculosis Officer for Westminster.

Royal Infirmary, Sunderland: ROBINSON, W. V., B.M., B.Ch. Oxf., and HAMILTON, NORAH, M.B., B.S. Durh., Anæsthetists. MILNE, J., M.B., Ch.B., Deputy Anæsthetist. ROBINSON, V. P., B.M., B.Ch. Oxf., House Physician.

St. Paul's Eye Hospital, Liverpool: GORST, P. E., M.D. Liverp., M.R.C.S., L.R.C.P.; PLUMMER, F. C., M.D. Liverp.; and GRAVES, B., M.R.C.S., L.R.C.P., Hon. Surgeons. BICKERTON, H. R., M.B., B.Ch. Camb., M.R.C.S., L.R.C.P., D.O. Oxf., D.O.M.S. Lond.; HUGHES, E. N., L.R.C.P., M.R.C.S., D.O.M.S. Eng.; and MOORHOUSE, I. H., M.B., Ch.B. Liverp., Hon. Assistant Surgeons.

Westminster Hospital: DUNLOP, H. A., M.R.C.S., L.R.C.P., Lond., House Physician; and DAVIES, A. E. C., M.R.C.S., L.R.C.P. Lond., House Surgeon.

Certifying Surgeons under the Factory and Workshop Acts: ANDERSON, D. L., M.B., Ch.B. Edin. (Hoddesdon, Hertford); CONYNGHAM, R. S., L.R.C.P. & S. Irel. (Snaith, West Riding); WILLIAMS, R. E., (Torpoint, Cornwall); and BOLTON, N. H. (Wrotham, Kent).

Vacancies.

For further information refer to the advertisement columns.

Ayr County Hospital.—Jun. H.S. £80.

Bradford Royal Infirmary. H.P. £150.

Brighton County Borough Sanatorium.—Res. M.O. £350.

Chiswick General Hospital.—Hon. Anæsthetist and Hon. Asst. Anæsthetist.

Denbigh County Council.—Asst. M.O. £600.

Dewsbury and District General Infirmary.—H.S. £200.

Dreadnought Hospital, Greenwich.—H.P. and H.S. Each at rate of £110.

Halifax Royal Infirmary.—Third H.S. At rate of £150.

Hampstead, New End Hospital.—Jun. Res. Asst. M.O. At rate of £150.

Hospital for Tropical Diseases, Endsleigh Gardens, N.W.—H.P. at rate of £110.

Hospital for Women, Soho-square, W.—Res. M.O. At rate of £100.

Lancaster County Mental Hospital.—Temp. Asst. M.O. 7 guineas weekly.

Lister Institute of Preventive Medicine, Chelsea Bridge-road, S.W.—Jenner Memorial Research Studentship. £250.

London School of Hygiene and Tropical Medicine, Endsleigh-gardens.—Director of Medical Entomology. £900.

Manchester and District Radium Institution.—Asst. Radiologist. £500.

Manchester Royal Children's Hospital, Pendlebury.—Asst. M.O. At rate of £150. Res. Surg. O. At rate of £80.

Manchester, St. Mary's Hospitals.—Three H.S.'s. Each at rate of £50.

Metropolitan Ear, Nose, and Throat Hospital, Fitzroy-square, W.—Anæsthetist.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—H.P.'s, H.S.'s, &c. Each at rate of £50.

Norwich, Norfolk and Norwich Hospital.—H.S. £150.

Nottingham Children's Hospital.—Res. H.P. and Res. H.S. Each at rate of £150.

Pharmacological Laboratories of the Pharmaceutical Society of Great Britain.—Director. £1200.

Prince of Wales's General Hospital, Tottenham, N.—H.S., Spec. H.S., and H.P. Each at rate of £150. Also Jun. H.S. and Jun. H.P. At rate of £110.

Queen Mary's Hospital for the East End, Stratford, E.—Cas. O.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—H.S., H.P., and Cas. H.S. Each at rate of £100.

Radium Institute, 16, Riding House-street.—Cancer Research Worker. £500.

Rochdale Infirmary and Dispensary.—Jun. H.S. £200.

Royal National Orthopædic Hospital.—H.S. At rate of £150.

Royal Northern Hospital, Holloway, N.—M.O. to Out-patients. At rate of £125. Also H.S. and Obstet. H.S. Each at rate of £70.

St. Bartholomew's Hospital and College.—Res. Asst. Phys.-Accoucheur and Demonstrator of Pract. Midwifery.

Salford County Borough.—Asst. Clin. Tub. O. £600.

Salford Royal Hospital.—Res. M.O. and H.S. At rate of £175 and £125 respectively. Also Radiologist. £300.

Singapore, Straits Settlements.—Two Asst. Health Officers. $7200.

Southern Rhodesia Government Public Health Dept.—Dentist. £650.

West London Hospital, Hammersmith-road, W.—H.P. and Two H.S.'s. Each at rate of £100.

Whipp's Cross Hospital, Leytonstone.—Res. Asst. M.O. £350.

The Chief Inspector of Factories, Home Office, London, S.W., announces a vacant appointment for a Certifying Factory Surgeon at Boxhill, Sussex.

Births, Marriages, and Deaths.

BIRTHS.

BERRY.—On August 30th, at Glenthorne, Park-avenue, Watford, the wife of D. H. Berry, M.R.C.S. Eng., L.R.C.P. Lond., of a daughter.

BROWN.—On August 19th, at Bassett-crescent, Southampton, the wife of Dr. A. W. Brown, of a daughter.

GRAHAM-HODGSON.—On August 17th, at Grey Lodge, Chislehurst, the wife of Dr. Graham-Hodgson, of a daughter.

HAULTAIN.—On August 30th, at Walker-street, Edinburgh, the wife of W. F. Theodore Haultain, F.R.C.S.E., of a son.

RAMMELL.—On August 17th, at Swaffham, Norfolk, the wife of Dr. J. Rammell, of a daughter.

THOMPSON.—On August 23rd, at Eastbourne House, Devizes, the wife of James Thompson, F.R.C.S., of a daughter.

MARRIAGES.

BROADBRIDGE—HEAD.—On August 20th, at St. Marylebone Parish Church, Harold George Broadbridge, M.B., B.S. Lond., to Enid Muriel, only daughter of the late Mr. and Mrs. Robert Head.

CANNING—TURTON.—On August 10th, at St. Saviour's, W., Henry George Richmond Canning, L.R.C.P., M.R.C.S., L.D.S. Eng., to Ruth Helen Gwenyth, only daughter of Mr. and Mrs. Turton, of Tintagel, Cornwall.

COWELL—SMITH.—On August 22nd, at Bideford Church, Dr. S. J. Cowell, to May Penelope, eldest daughter of Mr. and Mrs. Cecil Smith, of Link House, Westward Ho!

McGRATH—TYNDALL.—On August 12th, at Blackrock, Co. Dublin, William M. McGrath, M.B., B.Ch., B.A.O., Cane Hill Mental Hospital, Coulsdon, Surrey, to Eileen, elder daughter of the late Mr. J. P. Tyndall, "Farmleigh," Stillorgan, Co. Dublin, and Mrs. Tyndall, Eaton-square, Monkstown, Co. Dublin.

OVERTON—BROMAN.—On August 26th, at the Savoy Chapel, Squadron-Leader R. S. Overton, M.R.C.S. Eng., L.R.C.P. Lond., R.A.F., of Sutton Lodge, Sutton, Surrey, to Justine Leontine ("Jean") Broman, of Oslo, Norway.

WHITAKER—WAITE.—On August 29th, at Knutsford, Cheshire, Sydney Morgan Whitaker, M.D. Brux., M.R.C.S. Eng., L.R.C.P. Lond., of St. Helier, Jersey, to Hilda Mary, widow of Lieut. J. Thorp Waite, 5th East Kent Regiment (The Buffs), and elder daughter of the late Frederic Smith, of Dunham Lawn, Bowdon, Cheshire.

DEATHS.

ACKLAND.—On August 17th, at The Circus, Bath, Donald Ackland, M.R.C.S., L.R.C.P. Lond., aged 50.

BRAMWELL.—On August 26th, at Corfe, Taunton, Herbert Bramwell, M.D., F.R.C.S. Edin., M.R.C.S. Eng., late Lieut.-Colonel, Gloucestershire Hussars, T.D., son of the late John Byrom Bramwell, of Tynemouth, Northumberland, aged 62.

BURROWES.—On August 16th, at Lomain, Looe, Cornwall, Henry Ambrose Burrowes, M.D., aged 60.

DILL.—On August 22nd, John Frederick Gordon Dill, M.D., Denmark Villas, Hove, aged 66 years.

DUNBAR.—On August 25th, suddenly, at Oakfield-road, Clifton, Bristol, Eliza L. Walker Dunbar, M.D. Zurich, L.R.C.P.I. and L.M., younger daughter of the late Alexander Walker, M.D., H.E.I.C.S., in her 80th year.

FOWLER.—On August 24th, at Broehead, Fife, suddenly, James Stewart Fowler, M.D., F.R.C.P. Edin., of Northumberland-street, Edinburgh, aged 54.

LANGDON-DOWN.—On August 19th, at Dixland, Teddington, Percival Langdon Langdon-Down, aged 57.

MARSHALL.—On August 24th, at Hove, John James de Zouche Marshall, V.D., L.R.C.S.I., L.M., L.A.H. Dub., Lieut.-Colonel (retired) R.A.M.C., T., aged 79.

ODELL.—On August 21st, at Ferndale, Torquay, William Odell, M.D., F.R.C.S., aged 74.

WALES.—On August 18th, at Downham Market, Thomas Garneys Wales, M.R.C.S., in his 93rd year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

HOSPITAL ORGANISATION.

To those concerned with the present problem of meeting the hospital needs of this country the series of handbooks on Hospital Organisation, Construction, and Management, published by the Macmillan Company of New York, should prove instructive. The first of the series, by Joseph J. Weber, M.A., editor of the "Modern Hospital," deals in a general way with the hospital field as we find it to-day, and some very striking figures are quoted, showing the rapid progress which has been made in the United States since 1873. In 1873 there were only 149 hospitals in the United States; at the beginning of 1923 there were in the United States and its possessions 7095 hospitals and sanatoriums, with a total patient bed capacity of 792,069. The ratio of hospital beds to the population is very striking; in New York City the actual hospital beds available in January, 1923, was five beds to every 1000 of population. The factors influencing the ratio of beds to the population are fully discussed, and it is noted that there is a very direct bearing between the number of hospital beds required and the housing conditions of the community. In estimating the hospital needs, one might calculate on 75 per cent. of the beds being utilised through the year. Mr. Weber indicates the procedure to be adopted by a board of trustees in the organisation of a hospital, and the various steps to be taken to arrive at the best results. The second volume is by Frank E. Chapman, director, Mount Sinai Hospital, Cleveland, and deals in detail with general administration, laying emphasis on the centralisation of administration. Various diagrams and tables are given showing how this is carried out in different parts of America, and the methods adopted in some hospitals are given in great detail. Many useful hints are given, which are worthy of careful consideration.

THE FACTORY GIRLS' COUNTRY HOLIDAY FUND.

To the Editor of THE LANCET.

SIR,—The committee venture to ask you to allow them to make a very urgent appeal again for *subscriptions and* donations for the Factory Girls' Country Holiday Fund. Some of those who are hoping to go away during the next few weeks have never slept out of London. Our funds are very low, and we fear that in any case many will be disappointed of their little holiday this summer.

The need for this brief rest and change is probably more urgent than ever before. Trade depression has resulted in the girls becoming the main support of hundreds of families, which but for their earnings would be on the verge of starvation. The general standard of comfort in the average home is lower than it has been for many years, and the health of the community in the crowded and airless factory districts of London has deteriorated considerably. Nor is it possible for the girls to contribute as much towards a holiday as they have done in former years. Good food, rest, and fresh air for a short time would make it possible for many to continue their work through the coming winter, who might otherwise break down under the strain and privation they have had to bear for so many months. The short holiday will give them fresh hope and courage.

Subscriptions and donations will be thankfully received and acknowledged by Miss Canney, 75, Lamb's Conduit-street, W.C. 1.

We are, Sir, yours faithfully,

ALBERTA SANDWICH.
MARY SCHARLIEB.
MARY ST. HELIER.
A. F. LONDIN.
JOHN KENSINGTON.

FRANK LLOYD.
J. H. HERTZ,
Chief Rabbi.
J. F. GREEN,
Chairman of the Executive
Committee.

August 27th, 1925.

HEALTH RESORTS IN GERMANY.

THERE has recently been published in Berlin a large and comprehensive directory, compiled from official sources, of the various spas, watering-places, and health resorts of Germany. The compilers of this *Reichs Bäder Adressbuch* state that the publication is the first of its kind, and as a work of reference the sphere of its utility should be very extensive. The book is, of course, methodically constructed, the resorts being described and illustrated alphabetically in three sections, while an appendix deals with the large towns. A table of resorts grouped geographically follows the preface, and a general index completes the volume. Of particular interest to medical men is the index, in which the spas are grouped according to the disease conditions for which they are specially suited. The cost of the *Adressbuch*, containing 980 quarto pages, is 9.50 Rentenmarks.

MEDICAL MEN AND DEATH CERTIFICATES.

IN the House of Commons recently Sir Gerald Strickland asked the Home Secretary whether he was aware that it was not unusual for certificates of death to be signed by doctors without previously viewing the body after death and on the hearsay evidence of others; and whether he was prepared to propose legislation which would make it incumbent on doctors who signed death certificates to add thereto that they had ascertained to the best of their ability that death had actually occurred and was not merely apparent. This is a very old question, Mr. Neville Chamberlain replied, assuming reference to a certificate which the medical practitioner in attendance on a deceased person in his last illness is required by law to give, "stating to the best of his knowledge and belief the cause of death." He pointed out that the first part of the question gave the present position, but with regard to the latter part of the question he said that the whole subject is under consideration. The matter of death certification has waited for new legislation too long; some term ought to be put to the delay.

CHARTERED SOCIETY OF MASSAGE AND MEDICAL GYMNASTICS.

THIS society has now on its register over 5500 masseurs and masseuses, the majority of whom are qualified to administer treatment by massage, remedial exercises, and medical electricity under medical directions. The society was incorporated by Royal Charter in 1920, and its efforts towards the establishment and maintenance of a careful training in this important ancillary branch of the healing art have done much to secure a worthy place in the ancillary ranks of medicine for the masseur and the masseuse. Admission to the register is obtained by examination. Independent examinations are provided and supervised in London, at various centres in the provinces, in Scotland, and in Ireland, the subjects of examination extending to anatomy, physiology, pathology, massage, remedial exercises, and medical electricity. Many well-known medical men and women, specialists in these subjects, act as examiners, and no member can receive a certificate until a qualified medical practitioner has been satisfied with the candidate's proficiency. The society's register shows that members are now practising throughout the United Kingdom, in the Colonies, and elsewhere. Lists of members practising in any particular district or a copy of the register may be obtained from the secretary of the society, 157, Great Portland-place, London, W. 1.

COUGHING EPIDEMIC IN MILLS.

A MYSTERIOUS epidemic of coughing has broken out among weavers in Burnley mills. It makes them so ill that they have to cease work, and others who have taken their places are similarly affected. Operatives when they return to the mill are again affected. This is the third time such an outbreak has occurred in Burnley mills, the last occurrence being 12 years ago. It has been decided to close the mills for a week, when all suspected apparatus will be removed. In one of the previous outbreaks the cause was believed to be mildew in weft, but it appears that this outbreak was not due to the weft.

CIVIL SERVICE BONUS.

THE Minister of Health announces, on information received from the Lords Commissioners of H.M. Treasury, that the review on Sept. 1st, 1925, of Civil Service bonus will be on the basis of an average cost of living figure of 75, that is, on the same basis as obtained during the six months commencing Sept. 1st, 1924.

MEDICAL EDUCATION IN MISSOURI.

"IF Governor Baker is far-sighted, he will purge Missouri at once of the noisome mess," is the comment of the *Journal of the American Medical Association* on certain curious positions in medical and public relations that have arisen in the State. "Noisome" is hardly too violent an adjective if the suggestions in our contemporary are warranted, for we have stories of money received to influence the Secretary of the State Board of Health, of appointments to the State Penal Board in return for political services given by persons whose records are shadowed by political intrigue, and names are employed throughout. The position reached is, that the Board of Health of the State, having issued an ultimatum that they would resign, are now embarrassed by finding that, if they are loyal to their ultimatum, they will leave the field to the Governor and to one surviving member, when new men can be appointed to cover up the whole situation. The use of strong language by our contemporary appears warranted.

Principles
OF
TREATMENT BY MANIPULATION
OF SOME CHRONIC DISORDERS OF THE KNEE-JOINT FOLLOWING INJURY.

By A. G. TIMBRELL FISHER, M.C.,
F.R.C.S. Eng.,
LATE HUNTERIAN PROFESSOR OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND; SURGEON (WITH CHARGE OF OUT-PATIENTS) AND JOINT LECTURER ON OPERATIVE SURGERY, DREADNOUGHT HOSPITAL.

An attempt will be made in this paper to point out the underlying pathology of those chronic affections of the knee-joint following injury that may be cured or markedly alleviated by that valuable and often brilliant therapeutic measure, manipulation.

The medical historian of the future will have to record that our profession has greatly neglected this important subject and has shown too often a tendency to proscribe rest when movement has in reality been indicated, adhering to the dictum "rest inflamed structures" when the cause of the chronic inflammation has been some intra-articular condition which a lifetime of rest or its concomitants, plaster, Scott's dressing, and strapping would not cure, but which could often have been rapidly cured by special manipulative methods. The fact must be faced that the bone-setter has been curing multitudes of cases by movement, many of which have previously been ordered too prolonged rest by our profession, even by its most eminent members, and that by our often faulty methods we are largely responsible for his very existence. It is churlish and dishonourable under these circumstances to throw exaggerated emphasis on the dangers of bone-setting, real though they be, and to minimise the good work for humanity that some of the best of these unqualified practitioners have performed.

Wharton Hood wrote more than 50 years ago:—

> "The belief in the great value of rest in such cases may be regarded as a tradition handed down from the time of Sir Astley Cooper, who said, 'In no cases, after injury, should the patient be allowed to exercise the parts as usual, until all pain has ceased and the part has nearly regained its original form.'"

Hilton and H. O. Thomas perpetuated this teaching. Although half a century has passed since these words were written, the tradition is still firmly rooted in certain circles.

There are a large number of different lesions affecting the knee-joint which may occur after trauma. It is proposed to enumerate first examples of the after-effects of an exceedingly common form of injury—viz., sprain of the internal lateral ligament, although much will apply to other sprains of this joint. Afterwards we shall shortly discuss the after-effects of contusions, lesions of the semilunar cartilages, toxic or infective synovitis, chronic arthritis, combined cases, and functional cases.

Space will not permit here of any description of manipulative technique, and for this reason a number of illustrative cases are also omitted. Further details will be found in a forthcoming publication.

SPRAINS OF INTERNAL LATERAL LIGAMENT: PREVENTION OF ADHESIONS.

Much that follows in this section applies also to sprains of other ligaments of the knee such as the external lateral.

The general treatment of such sprains, and the prevention of adhesions resulting from synovitis following a sprain of a lateral ligament, can be summed up in a few words—viz., "Rest from all undue strain of the damaged ligament combined with early movement of the joint." At first sight this maxim may seem contradictory, but in reality this is not the case. Rest from weight-bearing and excessive use permits healing to proceed, *but early movements, at first of but short* duration, prevent the formation of adhesions. The principle of early movement, admirable though it be, is not sufficient, for unless we aim at early movement *through its full range*, adhesions may yet develop and give rise to much subsequent trouble.

Let us attempt to illustrate the principle of the prevention of adhesions by a concrete example, viz.:—

Treatment of a Case of Synovitis of the Knee following a Sprain of the Internal Lateral Ligament.

Rest in bed or on a couch is enjoined at first. This is combined with a firm compression bandage over a thick layer of wool, which should completely surround the joint and extend for some little way upwards into the thigh and downwards into the leg, leaving a small fringe of wool above and below uncovered by the bandage. No splint should ever be used, but the joint slightly flexed over a pillow, for experience has shown this to be the position of greatest ease. Rest from weight-bearing must be enjoined as long as the synovial effusion persists. From the very first the bandage is removed daily and gentle massage (effleurage), electrical stimulation of the quadriceps, and movements may be instituted, for these, added to the elastic compression, play an important part in the absorption of the intra-articular effusion and prevent muscular wasting. Each day the movements are increased. In about a week in marked cases, or considerably less in minor cases, effusion will have subsided, and it should be our aim to have obtained full movements by this time.

There is now no objection to weight-bearing, provided strain upon the recently damaged ligament be eliminated, and this can usually be ensured by the simple device of reinforcing the inner sides of the sole and heel by a wedge-shaped piece of leather ¼ in. in thickness, or in severe cases rotation and abduction may be prevented by the temporary use of a knee-cage which permits flexion and extension. For a short period, and especially if there is any tendency to swelling occurring after exercise, a compression bandage should be worn during the day. This, however, should be dispensed with as soon as possible, as it tends to interfere with the development of the thigh muscles. As this swelling is often due to loss of tone of the thigh muscles, every effort should be made to remedy this by re-education.

Treatment of Chronic Cases.—It has already been mentioned that in many of these cases we are faced with a set of conditions constituting a vicious circle. The sprain has given rise to synovitis; this causes reflex wasting of the thigh, and the resulting laxity of the capsule still further predisposes to minor traumata of the synovial membrane and delayed absorption of synovial fluid. It should be pointed out that the tenderness over the internal lateral ligament is due to the presence of scar tissue, which may be present not only in the ligament itself, but in the synovial membrane lining its deep surface which, indeed, may be adherent to the scar. Now this scar tissue when stretched gives rise to a sensation of acute pain and a reaction in the joint, and hence the recurrent attacks of pain and effusion after exercise. The presence of scar tissue in excess is the *fons et origo* of the group of symptoms, and the great principle of treatment is to deal with this and subsequently to concentrate upon the treatment of the resulting and concomitant conditions. The latter are sufficient in themselves to give rise to serious trouble and a continuance of symptoms after the internal lateral ligament has ceased to be a source of trouble per se. The ideal treatment of the original lesion, as we have seen, is so to direct Nature's efforts that the scar formed is not in excess—neither should it cause any interference with movement, but neither should it be unduly stretched. By early movements there can be no doubt that we may prevent the adhesion of the synovial membrane to the scar in the internal lateral ligament. When adhesions have actually developed which persist after a fair trial has been given of gymnastic exercises, the vicious circle may be broken and the patient put on the high road to recovery by manipulation. In some slight cases this measure is all that is necessary, but in neglected cases the after-treatment is of great importance and must follow two important lines.

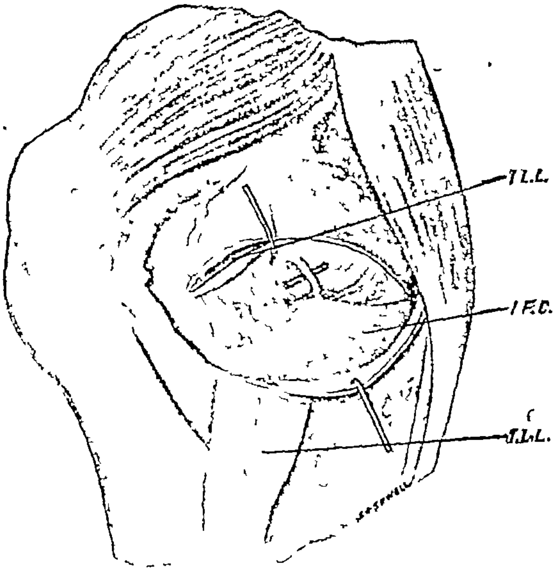
(1) The increased range of movement obtained by manipulation must be preserved, and the ground gained consolidated by the patient voluntarily exercising the joint through the increased range at regular intervals, commencing almost immediately.

(2) The wasted thigh muscles must be made to recover their tone and bulk by re-education. It will be then noted that the lateral mobility hitherto present will usually disappear. In some minor cases the adhesions may be gradually stretched and full movement restored by gymnastic exercises; this process is, however, longer, more tedious, and less reliable than manipulation under anæsthesia.

Pathology of Cure by Manipulation in Cases of Neglected Sprain.—The internal lateral ligament is stretched on full extension but relaxed during flexion. It is difficult therefore to explain the actual mechanical limitation of flexion on the supposition of the presence of scar tissue in the ligament itself. To appreciate better the pathological condition present the anatomy of the region should be recalled.

Surgical Anatomy.—The relationships of the various parts may be seen from a reference to Figs. 1 and 2. It will be seen that beneath the upper part of the internal lateral ligament near its femoral attachment is a synovial pocket or recess which forms part of the synovial reflection from the femoral condyle to the capsule. Normally the two layers of synovial membrane are in contact, and the internal lateral ligament is in contact with the outer synovial layer. In ruptures, either partial or complete, of the long portion of the internal lateral ligament, it is clear that the synovial membrane must participate therein, and that, if the joint be left at rest, the two opposed layers of synovial membrane must become glued together by inflammatory exudate which may become organised with the formation of a definite adhesion. Furthermore, the outer layer of synovial membrane must become adherent by fibrous tissue to the scar in the ligament.

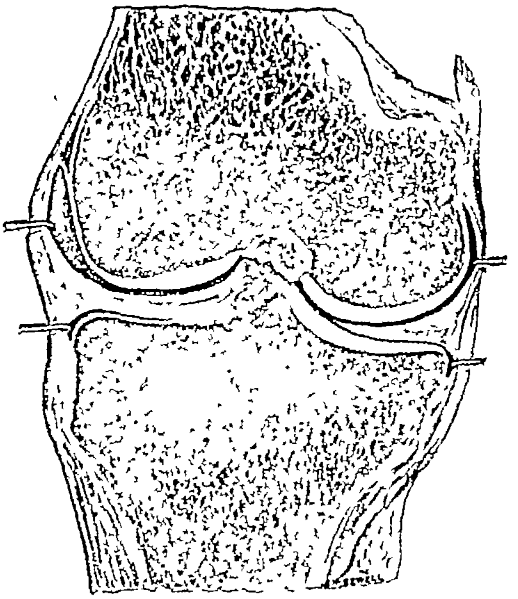
FIG. 1.



Dissection of inner aspect of knee-joint showing synovial pocket beneath internal lateral ligament and adjacent part of capsule. The rod is inserted beneath an adhesion. I.L L = internal lateral ligament. I.F.C. = internal femoral condyle.

There is no greater contributory factor in the formation of these adhesions than prolonged treatment by complete rest, plaster, Scott's dressing, and strapping. In fact, the adhesion of the two opposed layers of synovial membrane is made almost certain thereby. Another shallow synovial pocket is also present beneath the attached margin of the semilunar, where the synovial membrane lines the deep surface of the coronary ligament and is reflected from it to the margin of the tibial condyle (Fig. 2). It is probable that after ruptures of the deep fibres of the internal lateral ligament adhesions are particularly liable to form at this site, giving rise to persistent tenderness. The tenderness at this site is often quite erroneously thought to indicate a displaced semilunar cartilage, and when, as so often happens, a complete cure results from manipulation in this type of case, the bone-setter has often obtained the credit for curing a displaced cartilage of long standing.

FIG. 2.



Coronal section through anterior part of knee-joint showing synovial pockets above and below semilunar cartilages.

CONTUSIONS OF THE KNEE-JOINT.

The most characteristic symptom of contusion is that the pain and tenderness are localised to the affected area and remain thus localised for a considerable period, and in some cases a troublesome form of periostitis ensues. Contusions, like sprains, are very liable to be followed by synovitis with effusion, and much that has already been said concerning the general pathology of adhesions in cases of sprain applies also to adhesions following contusion. There is, however, a great tendency in the latter cases for the adhesions to be more generalised, and although they may occur almost anywhere, they tend to be more marked in the front and lower part of the joint, in the region of the infrapatellar pad of fat and its processes, and at the lateral synovial reflections. The adhesions may be of great delicacy and yet potent of much trouble, or of a somewhat extensive nature. Localised tenderness is often present, with limitation of some particular movement or movements. In this connexion the movements of the patella laterally and the rotatory and "screw-home" movements should always be tested. The pathology of this type of case is described more fully in the author's book.[1]

CHRONIC OR RECURRENT LESIONS OF THE SEMILUNAR CARTILAGES: THEIR DIFFERENTIAL DIAGNOSIS AND MANIPULATIVE TREATMENT.

We are not here concerned with the question of manipulation in original displacements of the semilunar cartilage, although it may be mentioned that there is no evidence that early movements after reduction, provided rotation be avoided, are less *efficacious in bringing about union than the long* period of immobilisation that is often ordered, which is apt to lead to the pernicious after-effects of adhesions and wasting

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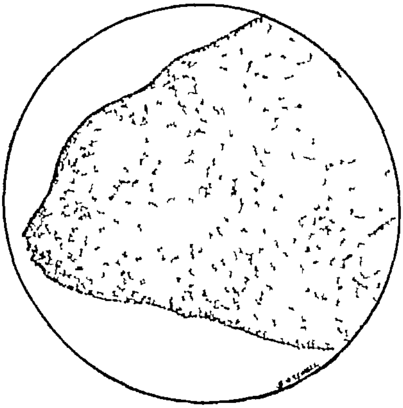
[1] Internal Derangements of the Knee Joint; their Pathology and Treatment by Modern Methods. H. K. Lewis and Co.

The author has investigated the problem of repair in the semilunar cartilages experimentally, and has also examined microscopic sections of fractured semilunar cartilages removed at operation at various intervals from the original injury These investigations all point to the fact that repair is sluggish in the menisci (Figs. 3 and 4)

It must never be forgotten that in most cases a lesion of the internal semilunar cartilage is in essence a complication of a severe sprain of, at any rate, the deep fibres of the corresponding lateral ligament. There will therefore be a somewhat similar history to that of sprain and a certain similarity in the points of tenderness In many chronic cartilage lesions however, tenderness is completely absent Protrusion of the fractured cartilage outwards, although mentioned in many text books, is, in the author's opinion, excessively rare, but a peculiar "rumble" or "snap" on flexion and extension is almost pathognomonic of a torn meniscus.

The most characteristic feature about a recurrent *lesion of a semilunar cartilage is the history* of one or more attacks of true mechanical locking, which may be momentary or last until reduced by manipulation, which often occurs with an audible snap Very frequently mechanical locking occurs at the *original* accident, and thereafter attacks of sudden giving way associated with a loud report, crack, or snap rather than true locking, *or*, on the other hand, locking may not occur at first, but on subsequent occasions.

FIG 3.



Transverse section of fractured surface of semilunar cartilage of long standing. The surface is smooth and in places covered by an endothelial layer

One of the most striking features in the differential diagnosis is the excellent and often *detailed* history that the patient gives. He or she will even demonstrate the exact position of the limb which produces the 'locking' A young baronet in whose knee-joint the author found tears of both semilunars told him that any *turning movement* caused a report "like a double-barrelled gun, and down he fell. The author has frequently felt justified in exploring a knee-joint purely on such an accurate and careful history and in the complete absence of any physical *signs, and has almost invariably found in such cases* a torn cartilage True mechanical locking must, of course, be very carefully distinguished from limitation of movement due to synovial effusion and pain, which in the original injury are of later onset, *and from other* forms of mechanical locking as may occur with loose body or certain injuries to the tibial spine.

In some cases the symptoms of semilunar derangement are less typical For instance, it is obvious that if merely a slight tear is present this will not bring about true locking, and the symptoms will approximate more to those of sprain of the corresponding lateral ligament, and often there will be a complaint of giving way rather than of true locking In the author's opinion it is impossible to diagnose this type from sprain, and it should be treated as the latter at first Suspicions should be aroused if the symptoms of the sprain persist over an unusually long period, when no limitation of movement suggesting adhesions is present, when all other causes have been excluded (a radiogram being never omitted), and when manipulation followed by a course of re-education of the wasted muscles fails to cure the condition In such a case exploratory arthrotomy is certainly justifiable, preferably by the author's patella-displacing approach, through which all the structures in the anterior compartment of the joint may be exposed to vision

To sum up, our sheet anchor in diagnosis between *sprain of the deep fibres of the lateral* ligament alone and a lesion of the corresponding meniscus must be an accurate and painstaking history The position of maximum tenderness helps in some cases, but is often fallacious There is a type of case in which, in the present state of our knowledge, having ruled out of court by a complete investigation other forms of internal derangement, it is impossible to say whether a patient is suffering from the sequelæ of a sprain or whether he has one of the less common types of lesion of the internal meniscus In my opinion the practitioner should proceed upon the following lines in this difficult type of case He should explain the position to his patient and advise a manipulation first, for this is simple free from risk, and often succeeds In the event of failure, exploratory operation should then be advised.

Underlying Pathology of Manipulation in Lesions of the Semilunar Cartilages

It may be stated at once that in the author's *opinion* although manipulation in cases of neglected sprain or contusion associated with adhesions is a most valuable therapeutic measure, this method of treatment is not quite so satisfactory in recurrent lesions of the semilunar cartilages *Cases of apparent* cure occur, especially when too long an interval has not elapsed since the primary lesion, but in some the benefit is of a temporary nature. This fact depends upon the physiology of repair in the semilunar cartilages. Repair is at best sluggish, and when the fractured surfaces have become smooth and endothelialised (Fig 3) the repair is even more slow, but if accurate apposition is maintained is quite possible

A fact of fundamental importance in this connexion is that the commonest lesion of a semilunar cartilage is a definite tear which usually takes the form of a complete longitudinal tear or "bucket-handle" type of lesion (Figs 4 and 5), and the characteristic symptoms of the semilunar derangement are due to the behaviour of the fractured portion of cartilage It is most important to remember that it is quite possible for the inner torn portion, if narrow, *to occupy certain* abnormal positions without giving rise to any *permanent* locking or limitation of movement or, indeed, to any physical signs whatsoever For instance, the *inner portion may* be in the intercondylar space between the crucial ligament and the femoral condyle and it is only when some sudden turning movement causes the portion of cartilage to slip outwards that giving way or locking occurs

If, however, the inner portion is broad, it cannot be in such a position without causing mechanical interference with extension. These facts have all been confirmed on several occasions at operations by the author. This frequent absence of mechanical interference with movement, even when a fractured portion of a semilunar occupies some abnormal position, has hitherto been largely overlooked, but seems to have been known to the bone-setter. It seems fairly clear that what the bone-setter achieves in this type of case is to *cause the displaced fragment to retrace its steps, when, in a certain proportion of cases, sufficient repair may take place between the two fragments to prevent recurrence.* The chances of repair must clearly depend upon the age of the lesion. In time the fractured surfaces become smooth and rounded, and in these late cases the chances of repair are proportionately lessened. Again, in cases of multiple tear the chances of permanent recovery by manipulation are very slight. My operation findings, moreover, convince me that in certain cases in which manipulation has been performed, the fractured portion of the cartilage has been forced into the intercondylar region between the femoral condyle and crucial ligament, where from its position it has given rise to continuance of symptoms, and by slipping periodically between the femoral condyle and the tibia has caused attacks of giving-way or actual locking.

To sum up, the commonest lesion of a semilunar cartilage is a definite tear, and most commonly the complete longitudinal tear or "bucket-handle" type (Figs. 4 and 5). At the original accident the inner torn portion is usually dislocated into the interior of the joint, where, being fixed at first between the femoral and tibial condyles, it gives rise to a mechanical block to extension.

By manipulation two things may happen: (1) The displaced portion may retrace its steps and, provided rotary movements are avoided for some time, repair will probably take place. (2) The displaced portion may be forced still further into the interior of the joint, when the mechanical locking is released, but symptoms become recurrent. In these recurrent cases the fractured portion may yet be made to retrace its steps by manipulation, and repair by fibrous tissue gradually occurs.

There is a group of conditions to which I particularly desire to draw attention that interfere with the normal "screw-home" movement of the inner femoral condyle, and which are particularly amenable to treatment by manipulation. These are: (*a*) Minor displacements of the anterior half of the internal semilunar cartilage due to stretching or tearing of the coronary attachment; (*b*) inflammatory induration of the semilunar process of the infrapatellar pad of fat with adhesions in connexion with the latter process.

(*a*) *Minor Displacements of the Anterior Horn of the Internal Semilunar.*

To refer briefly to the anatomy of this important region. If a transverse section be made through the knee-joint at the level of the semilunar cartilages, it will be seen that the internal semilunar, in addition to the attachment to the true capsule, is firmly adherent to the deep fibres of the internal lateral ligament, and behind this to the aponeurotic layer. The anterior half of the cartilage, however, is separated from the aponeurotic layer by a well-marked interval filled with loose fatty tissue, and the periphery is attached to the margin of the internal tibial condyle by a portion of the true capsule, known as the coronary ligament. A weak mechanical site therefore exists at this spot where the mobile anterior half meets the more fixed posterior half, opposite the level of the internal lateral ligament. A sudden twist inwards of the femur upon the fixed tibia with the knee slightly flexed may, without causing a definite tear of the cartilage or of its anterior attachment, cause a partial rupture of the coronary attachment and a minor displacement, not sufficient to cause obvious locking, but a feeling of discomfort on full extension, which may be limited by a few degrees.

(*b*) *The Semilunar Extensions of the Infrapatellar Pad of Fat.*

In the investigation of 100 formalin-hardened knee-joints I found that the anterior one-third of the internal semilunar cartilage is usually protected by a process of the infrapatellar pad of fat, upon which the important screw-home movement of the internal femoral condyle occurs at the termination of extension; and this process is frequently injured, either alone, or simultaneously with injury of the anterior end of the internal semilunar. Although the process is so important clinically, it has not been considered worthy of a name by the anatomists, although it is often wrongly called the inner alar pad. Possibly "semilunar process" or "pad" might be a better name. In a large number of cases in which it is considered that a lesion of the cartilage is present, it is really this process which is at fault. A lesion of the process may be followed by the formation of adhesions between it and the cartilage, or some other adjacent structure. It seems clear, however, that it is in this group of conditions that manipulation is a valuable therapeutic measure.

We must never overlook another very important fact before deciding that any case has been cured by manipulation—viz., that long intervals which in some cases may amount to many years may normally exist between attacks of "locking," and therefore we can never be logically certain that we have really effected a permanent cure in any given case. If a definite recurrence occurs after a manipulation, operation should in most cases be advised, although occasionally a second manipulation may succeed.

MANIPULATION IN TOXIC OR INFECTIVE SYNOVITIS AND CHRONIC ARTHRITIS.

This condition is very liable to follow any of the aforementioned injuries of the knee in persons past the meridian of life. It is not proposed to discuss its pathology here as the author has previously discussed it in various publications.

The remarks already made concerning the misapplication of rest apply with redoubled force to this group of conditions, in which the articular surfaces are but little affected and the disease is principally situated in the synovial membrane. This leads in most cases to a certain amount of painful limitation of movement due to intra- and peri-articular adhesions.

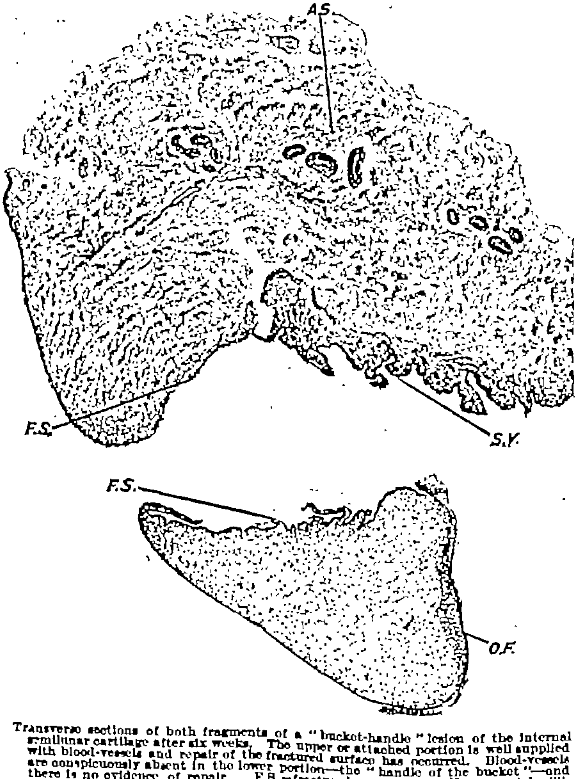
Unfortunately, the symptoms due to the presence of these adhesions are often mistaken for some progressive disease, and what not infrequently happens is that the patient receives every conceivable form of medical treatment and wanders from one spa to another with the knee fixed in an orthopædic apparatus, and the movement for which the joint is clamouring i withheld. When such a joint is fixed it is physic logically placed at the greatest disadvantage fo combating any smouldering infection that may b present, for the circulation not only of blood but o lymph, and the secretion and absorption of the synovi fluid, depend largely upon regular movement. Whe complete rest is enjoined, the formation of synovi fluid is very markedly diminished, and the amour of fresh blood-bearing phagocytes and antibodies i reduced to a minimum.

One of the principal complaints in this disease is c stiffness and discomfort of the joint after the night rest or after sitting still for some time, but whic disappears after exercise. Over-exertion is, of cours to be most carefully avoided, but the practice c completely immobilising the joint in this type of cas is contrary to the dictates of reason or even of commo sense.

In chronic arthritis of what the author ha designated the chondro-osseous and mixed types i which the articular surfaces are also involved, th principle of preserving movement, if this is possibl should be maintained. In these chronic cases Natu is endeavouring in a remarkable way to form a ne joint, and the patient, if possessed of the necessary determination, can assist the process very materially.

The author has endeavoured to show that a fundamental feature is degeneration of the central poorly nourished part of the articular cartilage and proliferation, which is often compensatory, of the lateral better-nourished portions whereby chondro-osteophytes are formed. Nature makes good the loss of the central part of the articular cartilage by sclerosis and eburnation of the subarticular bone, and the chondro-osteophytes extend the articular surface. If regular movements through complete range are maintained from the first the following benefits result. 1. Contracture of scar tissue, both intra- and extra-articular, and painful limitation of movement is prevented. 2. Mechanical obstruction of movement by osteophytes is also prevented. 3. The process of eburnation is materially assisted. 4. Muscle tone is preserved. 5. The nutrition of the joint structures is maintained.

FIG. 4.

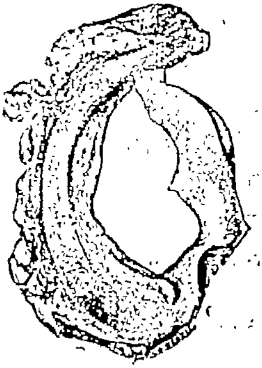


Transverse sections of both fragments of a "bucket-handle" lesion of the internal semilunar cartilage after six weeks. The upper or attached portion is well supplied with blood-vessels and repair of the fractured surface has occurred. Blood-vessels are conspicuously absent in the lower portion—the "handle of the bucket"—and there is no evidence of repair. F.S.=fractured surface. S.V.=synovial villi. O.F.=outer fragment. A.S.=attached surface.

Many persons are able to lead active lives when all the evidence points to the fact that the articular cartilage in the affected joint has been largely destroyed. In cases in which these principles have been neglected, an effort should always be made in the first place to restore full movement by manipulation. It is often assumed, and this applies particularly to the hip-joint, that if marked osteophytes are present nothing short of open operation can be of any avail. It is surprising to find in many of these cases that the limitation of movement actually due to osteophytes is much less than one would imagine and that by manipulation a marked increase of movement may be obtained.

A strong tendency exists in many quarters to the formation of a fixed joint by excision in these cases. In my opinion this is very rarely necessary and should only be performed as a last resource. It is a tragedy to consider how often this operation is quite unnecessarily performed. A fixed joint is a considerable disability in itself; for instance, an ankylosed hip in good position is usually assessed at 60 or 70 per cent. disablement. Cases have come to my notice on which the operation has been performed on young persons in which it was quite clear that sufficient had not been done to secure a movable joint.

FIG. 5.



Typical example of complete longitudinal tear ("bucket-handle" lesion) of internal semilunar cartilage, which constitutes by far the commonest pathological type of lesion.

Mixed Cases.

In certain cases of sprain or cartilage lesion the clinical picture may be greatly complicated by the supervention of a toxic synovitis or chronic arthritis, both of which may be localised or generalised, and in other cases the damaged ligament appears to be picked out by circulating toxins and the picture complicated. This is particularly liable to occur in persons past the meridian of life, and suspicions are aroused by three factors: (a) the existence of "rheumatic" symptoms elsewhere or a history of them; (b) when recovery from a sprain is unusually prolonged; (c) the presence in the patient of some focus of toxic absorption.

Functional Disorders of the Knee-joint following Injury.

This is a large and important subject to which it is impossible to do justice in a short paper, and attention is merely drawn to a few special points which are sometimes overlooked.

1. An injury associated with marked mental shock, such as a railway or motor-car accident in which the knee is injured, is particularly liable to give rise to a neurosis in an individual of a nervous temperament. There is no surgeon of great experience who has not at some time been puzzled or misled by a functional condition of the knee.
2. A purely functional condition may occur from the first, or more frequently the condition is superadded upon some such condition as a slight degree of chronic synovitis or arthritis. The unwary or inexperienced may overlook the functional element, and consider that the symptoms and signs betoken a much more marked degree of arthritis than is actually present.
3. Quite apart from the question of injury it must be remembered that a functional element is very frequently quite a marked feature in chronic arthritis in both sexes. These are the cases of "rheumatoid arthritis" of many years' standing which are cured by "faith-healers."
4. In an early functional case, if spasm be abolished by anæsthesia, full movement can be obtained readily. If, however, the condition is of long standing, actual adaptive shortening of ligaments and periarticular structures occurs. This is, of course, more liable to occur if the condition has been superimposed upon a slight degree of chronic synovitis or arthritis.
5. Even in primarily functional cases swelling of the joint may occur probably from the general loss of tone of the thigh muscles and impaired absorption of synovial fluid. It may then be a moot point whether the functional condition is primary or secondary.
6. Manipulation is by far the most effective therapeutic measure in these functional cases owing to the powerful suggestion of the anæsthetic. Treatment by suggestion should, however, precede and immediately follow the anæsthetic, and be carried on for some weeks or months subsequently.
7. The after-treatment is often of more importance than the manipulation itself, and not only the surgeon, but everyone with whom the patent comes in contact, must endeavour to convince the patient that he or she is now cured.
8. The prognosis in these cases depends upon the time that the condition has been present, in cases of long standing the prognosis is less hopeful. Even more, perhaps, depends upon that indefinable but all-important attribute, the personality of the surgeon who performs the manipulation.

In conclusion, much work remains to be done before bone-setting is placed upon a scientific basis. Let us hope that for the honour of our profession workers will not be lacking, so that we shall eventually arrive at the truth.

SOME
Practical Considerations
IN THE CONSERVATIVE TREATMENT OF FRACTURES OF THE PELVIS AND LOWER EXTREMITY.

A Course of Four Lectures delivered for the University of London at St. Bartholomew's Hospital

BY SIR WILLIAM I. DE COURCY WHEELER,
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LECTURE IV.*

Fractures about the Knee-joint.—(*Continued.*)

Fractures of the Patella.

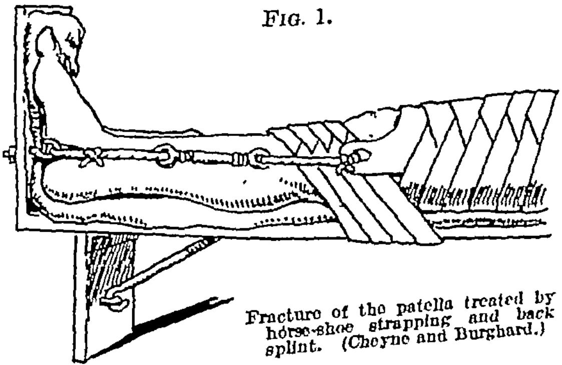
THERE are certain cardinal points in connexion with fractures of the patella to be borne in mind. (1) In comminuted and longitudinal fractures conservative treatment is followed by bony union. (2) Transverse fractures should be treated by operation, but nevertheless an excellent functional result may follow with wide separation of the fragments. I have an intimate friend who fractured his patella about 30 years ago. He has wide separation of the fragments, but walks without a limp and without inconvenience, and takes strenuous exercise. (3) Operation followed by bony union is not always followed by a good functional result. (4) If the fracture occurs near the ligamentum patellæ, the knee-joint may not be opened, as the synovial membrane is reflected from the posterior surface of the patella some distance from the inferior tip of the bone. (5) Circumstances will arise when a fractured patella cannot be sutured under favourable conditions, and if the conditions are not ideal the attempt should not be made.

The first part of conservative treatment is to get rid of the effusion. To accomplish this, the limb should be elevated to relax the quadriceps extensor muscle and a tight bandage applied over several layers of wool. A practical way of helping absorption is suggested by Scudder:

> Two slightly moistened bath or carriage sponges are allowed to dry under pressure sufficient to flatten them. These are placed upon each side of the knee and over it, and are held by a few turns of a roller bandage. Cold water is then poured over the whole. As the sponges absorb the water they enlarge, causing equable and firm pressure on the knee, thus very materially hindering the accumulation of fluid and favouring its absorption. This dressing is repeated every day. When the effusion has disappeared a calliper splint can be applied, in the manner recommended by Jones. The calliper splint should be worn for about two months. Full flexion of the knee should then be restrained for a time by a knee-cage, to prevent gradual separation of the fragments.

There are many other methods employed, the "Middlesex Hospital" method being one of the best.

FIG. 1.



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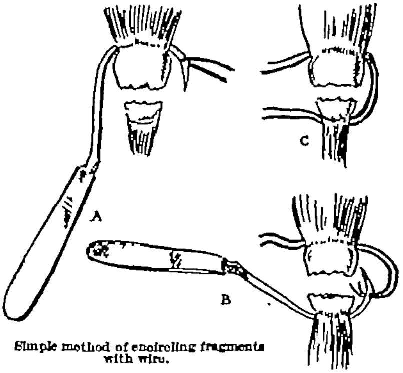

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Functional Disorders of the Knee-joint following Injury.

This is a large and important subject to which it is impossible to do justice in a short paper, and attention is merely drawn to a few special points which are sometimes overlooked.

1. An injury associated with marked mental shock, such as a railway or motor-car accident in which the knee is injured, is particularly liable to give rise to a neurosis in an individual of a nervous temperament. There is no surgeon of great experience who has not at some time been puzzled or misled by a functional condition of the knee.
2. A purely functional condition may occur from the first, or more frequently the condition is superadded upon some such condition as a slight degree of chronic synovitis or arthritis. The unwary or inexperienced may overlook the functional element, and consider that the symptoms and signs betoken a much more marked degree of arthritis than is actually present.
3. Quite apart from the question of injury it must be remembered that a functional element is very frequently quite a marked feature in chronic arthritis in both sexes. These are the cases of "rheumatoid arthiritis" of many years' standing which are cured by "faith-healers."
4. In an early functional case, if spasm be abolished by anæsthesia, full movement can be obtained readily. If, however, the condition is of long standing, actual adaptive shortening of ligaments and periarticular structures occurs. This is, of course, more liable to occur if the condition has been superimposed upon a slight degree of chronic synovitis or arthritis.
5. Even in primarily functional cases swelling of the joint may occur probably from the general loss of tone of the thigh muscles and impaired absorption of synovial fluid. It may then be a moot point whether the functional condition is primary or secondary.
6. Manipulation is by far the most effective therapeutic measure in these functional cases owing to the powerful suggestion of the anæsthetic. Treatment by suggestion should, however, precede and immediately follow the anæsthetic, and be carried on for some weeks or months subsequently.
7. The after-treatment is often of more importance than the manipulation itself, and not only the surgeon, but everyone with whom the patent comes in contact, must endeavour to convince the patient that he or she is now cured.
8. The prognosis in these cases depends upon the time that the condition has been present, in cases of long standing the prognosis is less hopeful. Even more, perhaps, depends upon that indefinable but all-important attribute, the personality of the surgeon who performs the manipulation.

In conclusion, much work remains to be done before bone-setting is placed upon a scientific basis. Let us hope that for the honour of our profession workers will not be lacking, so that we shall eventually arrive at the truth.

SOME

Practical Considerations

IN THE CONSERVATIVE TREATMENT OF FRACTURES OF THE PELVIS AND LOWER EXTREMITY.

A Course of Four Lectures delivered for the University of London at St. Bartholomew's Hospital

By Sir WILLIAM I. de COURCY WHEELER,
M.D. Dub., F.R.C.S. Irel.,
PAST PRESIDENT, ROYAL COLLEGE OF SURGEONS IN IRELAND.

LECTURE IV.*

Fractures About the Knee-joint.—(*Continued.*)

Fractures of the Patella.

There are certain cardinal points in connexion with fractures of the patella to be borne in mind. (1) In comminuted and longitudinal fractures conservative treatment is followed by bony union. (2) Transverse fractures should be treated by operation, but nevertheless an excellent functional result may follow with wide separation of the fragments. I have an intimate friend who fractured his patella about 30 years ago. He has wide separation of the fragments, but walks without a limp and without inconvenience, and takes strenuous exercise. (3) Operation followed by bony union is not always followed by a good functional result. (4) If the fracture occurs near the ligamentum patellæ, the knee-joint may not be opened, as the synovial membrane is reflected from the posterior surface of the patella some distance from the inferior tip of the bone. (5) Circumstances will arise when a fractured patella cannot be sutured under favourable conditions, and if the conditions are not ideal the attempt should not be made.

The first part of conservative treatment is to get rid of the effusion. To accomplish this, the limb should be elevated to relax the quadriceps extensor muscle and a tight bandage applied over several layers of wool. A practical way of helping absorption is suggested by Scudder:

Two slightly moistened bath or carriage sponges are allowed to dry under pressure sufficient to flatten them. These are placed upon each side of the knee and over it, and are held by a few turns of a roller bandage. Cold water is then poured over the whole. As the sponges absorb the water they enlarge, causing equable and firm pressure on the knee, thus very materially hindering the accumulation of fluid and favouring its absorption. *This dressing is repeated* every day. When the effusion has disappeared a calliper splint can be applied, in the manner recommended by Jones. The calliper splint should be worn for about two months. Full flexion of the knee should then be restrained for a time by a knee-cage, to prevent gradual separation of the fragments.

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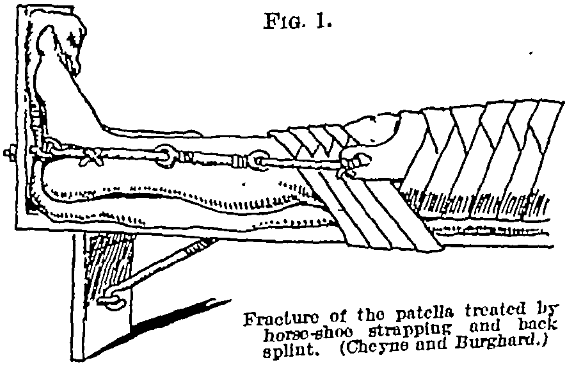

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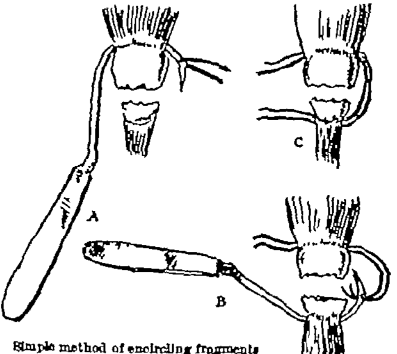

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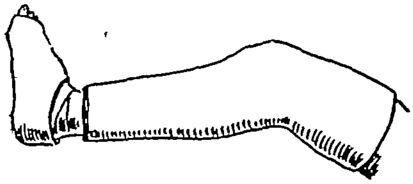
to the gates (see Lectures I. and II.), or pulled upon by means of a block and tackle arrangement. The two plasters are then united as before.

3. When more than manual traction is necessary, the clove hitch over the plastered foot is a somewhat clumsy, though effectual, method of reduction. It is better, I think, to pass a long nail under the tendo Achillis in contact with the os calcis, and connect this through the medium of a wire hoop to the end of the gates, so that forcible extension may be applied. The surgeon simultaneously manipulates the fragments into position, and takes care to pull the heel well forward. There is now no difficulty whatever in applying plaster of Paris, and the extension is not released until the plaster is set. The pin and wire stoop are partially encased in the plaster, but can easily be removed.

Fig. 3.



Sectional plaster of Paris in the treatment of fractures of the lower third of the leg.

4. It will become obvious in certain cases that nothing but continuous traction will reduce the overlapping and shortening. In such cases the nail is passed *through* the os calcis, and after forcible extension on the gates, the hoop of wire is fixed tightly to the end of a Thomas splint until the patient is back in bed. This fixed extension may be continued, but in these cases heavy weight-and-pulley extension is better through the medium of the nail—the Thomas splint merely acting as a sling. It is best to pass the nail obliquely through the os calcis on a slightly higher level on the outer side, so that as traction is employed the tendency is slightly to invert the foot. (Fig. 4.)

5. Operation with internal fixation should be the last resort. Probably the best way of securing the fragments is by means of Parham's bands.

Quite often after open reduction no fixation will be found necessary, and the treatment can be continued by any of the methods mentioned above.

Pott's Fracture.

The original description of Pott's fracture, as given in 1768, has been quoted recently by Sir D'Arcy Power, and is well worth reading. To this day Pott's fracture, in the wards of the big hospitals, constitutes a favourite subject for discourse to students, yet the treatment and the results are far from being universally satisfactory. It is the old story: Want of proper reduction at the time of the injury and want of precautionary measures to prevent displacement when weight-bearing is permitted.

The fracture is produced by violent eversion. The astragalus is thrown against the external malleolus. The ligaments binding the fibula to the tibia remain intact and act as a fulcrum, and the shaft of the fibula breaks at the weakest point near the ankle. The importance of the fracture lies in the fact that the astragalus is displaced outwards, perhaps half-way across the articular surfaces of the tibia as well as backwards. The thrust of the foot, if the deformity is not corrected, is between the tibia and the fibula, and not squarely on the tibia. The backward displacement prevents dorsiflexion of the foot, by the contact of the neck of the astragalus with the anterior edge of the tibia.

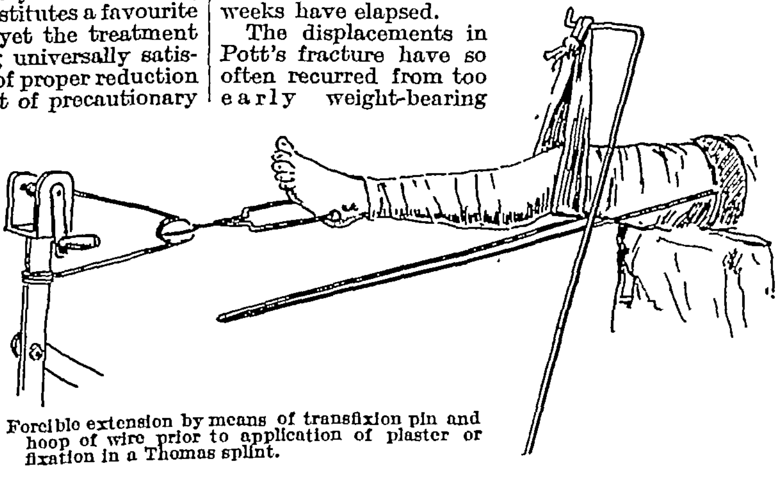
A patient with an improperly reduced Pott's fracture can never walk without pain in the ankle and pain on the inner side of the knee with a tendency to knock-knee. The distortion outwards of the foot leads to a condition of flat-foot, a further addition to the misery of the patient. If there is much displacement outwards of the foot, the internal malleolus or the internal lateral ligament must, of necessity, be torn. Pott's fracture may be transformed into a Dupuytren's fracture by forcing the astragalus up between the tibia and the fibula. The astragalus may carry with it a portion of the articular surface of the tibia; a piece may be knocked off the anterior portion of the tibia and block dorsiflexion, or a portion of the back of the tibia may accompany the backward dislocation of the foot. (Figs. 5 and 6.)

Whatever the complications the treatment is the same. Under an anæsthetic the outward and backward displacements must be reduced. As in fractures of the lower third of the tibia and fibula, relaxation of the tendo Achillis by flexing the knee is an advisable preliminary. The foot is then forcibly twisted inwards in order to bring the astragalus squarely under the articular surface of the tibia, and at the same time the heel is pulled steadily forward until the foot can be dorsiflexed with ease beyond a right angle. The foot must be maintained in this position of dorsiflexion and exaggerated inversion.

The displacement does not readily recur after reduction, and any form of splint intelligently applied will secure fixation. A board or gutter splint secured to the outer side of the leg and well padded at the lower extremity will, by a thrust, keep the foot inwards. Dupuytren's splint and Symě's splint are still employed. Plaster of Paris in a recent case is an admirable means of fixation. It should extend—as in fractures of the lower third of the leg—from the foot to above the knee. It is best to make two plaster splints composed of several folds of superimposed bandage. One strip is made into a posterior splint, which extends from the toes along the sole, round the back of the heel, and up beyond the knee-joint behind. The other strip is moulded in position while the foot is held in inversion, and extends from the external malleolus over the dorsum of the foot to the inner side under the sole, and upwards along the outer side of the leg to the same height as the posterior splint. The posterior splint is applied first, and both are secured in position by a roller plaster bandage. The foot must be held in the correct position during the setting of the plaster of Paris. They can be easily removed in about three weeks for massage and movements, but should be reapplied in the intervals until another three weeks have elapsed.

The displacements in Pott's fracture have so often recurred from too early weight-bearing that it is best to prohibit walking for at least two months from the original injury, and before walking is allowed the inner side of the heel and sole of the boot should be raised so as to maintain a slight varus position.

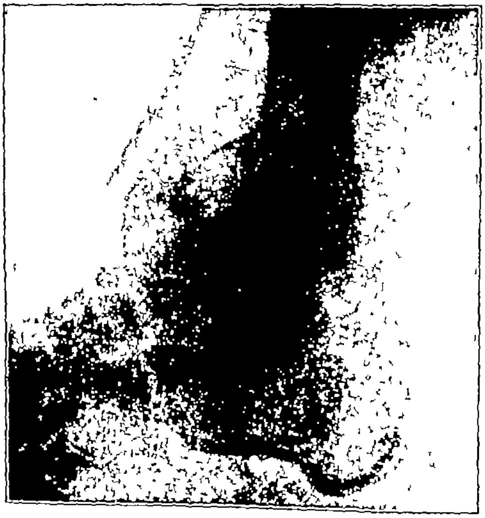
Fig. 4.



Forcible extension by means of transfixion pin and hoop of wire prior to application of plaster or fixation in a Thomas splint.

In dealing with patients who are not helpful, or in heavy subjects, it is wise to prescribe an outside iron and an inside cross strap, so as to ensure support and inversion. I will describe three cases, but I have had many, in which the patient was treated accurately while in hospital, but when weight-bearing was resumed the callus was not strong enough to bear the strain, and the patient returned with pain and disability consequent on gradual yielding in the direction of the original displacement. It is important to know what to do in cases which have been allowed to walk four or five weeks *after the accident* without support and who come back suffering from pain and a valgus deformity.

FIG. 5.



Fracture of fibula with portion of tibia detached and blocking *dorsiflexion.*

CASE 1.—The patient was a big, heavy woman, who refused to stay in hospital more than a week. The displacements were reduced, and the foot put in plaster of Paris. She commenced weight-bearing at the end of a month, and then returned to the extern department of the hospital, with pain and some slight eversion and tenderness at the site of fracture An X ray photograph showed no displacement. The boot was raised on the inner side, and an outside iron fitted so that the foot was well inverted. In this case, a recurrence of the deformity was anticipated and prevented.

CASE 2, a private patient, came for advice seven weeks after her accident. The fracture was reduced correctly by her local doctors, but she began to walk without permission and without support after the lapse of a month. An X ray photograph showed the astragalus displaced outwards and somewhat backwards. The patient was anæsthetised, and thorough wrenching in an inward and forward direction was carried out with a Thomas wrench. This procedure did not appear to bring the foot satisfactorily into position, and an osteotomy of the fibula was done. Further wrenching after the osteotomy *completely* corrected the displacement. Three weeks later she *was discharged* in a light plaster case, and shortly afterwards was fitted with an outside iron and a crooked heel. Her progress was quite satisfactory.

CASE 3.—This patient came back a year after recurrence of the displacement. The fibula was divided, and a cuneiform osteotomy performed on the inner side of the tibia, after the method of Jones, so that inversion of the foot could be obtained and the weight thrown on the outer side of the foot without making any attempt to reconstruct the joint.

This simple form of osteotomy has given me good results. I have never undertaken the reconstruction of the fracture, as recommended by Murphy and others.

The patient is seldom quite well and free from pain after a Pott's fracture in less than six months. It may sometimes be necessary to do an open operation, when a portion of the tibia, either in front or behind, is torn off and mechanically blocks the movements of the ankle-joint, but in cases seen early forcible manipulation will usually secure a right-of-way in every direction.

FRACTURE OF THE ASTRAGALUS.

Sometimes from heavy falls on the foot the astragalus may break instead of the tibia and fibula. There is often an irregular comminution of the body, or the neck may be fractured, and to all intents and purposes the latter fracture is outside the ankle joint. Forward dislocation of a fractured astragalus can be reduced by traction on the foot, and, if necessary, the tendo Achillis is divided in order to pull the os calcis away from the tibia. In some cases the fractured bone gets so twisted and displaced that astragalectomy becomes necessary. In cases of fracture of the neck, as distinct from fractures of the body, there is usually little displacement, and treatment should consist in placing the foot in full dorsiflexion in plaster of Paris for three weeks. Weight-bearing should not be allowed for two months.

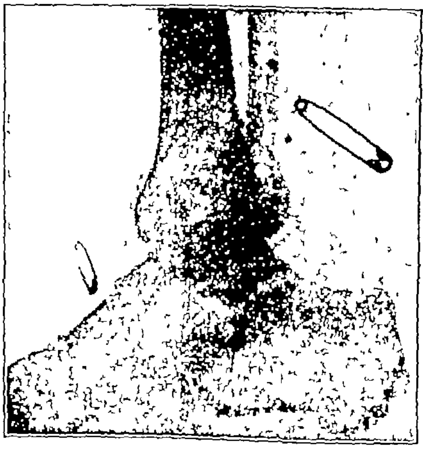
Sometimes a little *ossicle of bone,* described by Pirie, is seen between the astragalus and scaphoid as if detached by an injury; a comparison with the sound side will sometimes show a similar condition. The recognition of "Pirie's ossicle" is of medico-legal importance; it is not the result of injury.

Thurstan Holland, in the *Journal of Anatomy,* July, 1921, deals with the significance of this ossicle.

FRACTURE OF THE OS CALCIS.

The bone may be torn by muscular action at the point of insertion of the tendo Achillis. It may be crushed, fractured transversely or longitudinally, and may be associated with fracture of the astragalus. Complete plantar flexion of the foot may be needed to bring the fragments well into position and to take the pull of the tendo Achillis

FIG. 6.



Fracture reduced and treated in plaster of Paris.

from the posterior fragment. A traumatic flat-foot often results from unreduced fracture of the os calcis or astragalus.

The treatment in the first instance should anticipate this possibility, and after attempted reduction the foot should be placed in slight inversion.

Fractures of the os calcis give unsatisfactory results, a painful heel often persisting whatever treatment is adopted. The treatment of this unsatisfactory late result was discussed by Cotton in "Annals of Surgery," 1921. He regarded it as being due chiefly to excessive new bone formation on the outer side locking the fibula to the os calcis, and he recommended a U-shaped incision under the external malleolus, the turning up of a subperiosteal flap, and a wide removal of bone in this area.

Fractures of the Scaphoid.

Bennett described two examples of fractures of the scaphoid bone of the foot in 1884. The articular surface which receives the head of the astragalus presented lines of ununited fracture, but on the opposite surface—in contact with the cuneiform bone—the lines of fracture were quite indistinct.

Thurstan Holland draws attention to the presence of a distinct skeletal bone situated at the posterior external side of the tuberosity of the scaphoid which has been mistaken, after injury, for a fracture of the tuberosity of the scaphoid. To assist in the diagnosis, the other foot should always be examined. The bone is usually known as the "tibiale externum."

Fracture of the Metatarsal Bones.

Fracture of the metatarsal bones usually causes flattening of the transverse metatarsal arch. Treatment is directed to restoring this and maintaining fixation for some weeks. A pad should be applied in the cavity of the arch, and the latter kept in position by a circle of adhesive strapping. To prevent metatarsalgia, weight can be prevented from falling on the fractured bone by a transverse metatarsal bar across the sole of the boot. It must be remembered that a small portion of the base of the fifth metatarsal bone may be detached normally and remain as a separate bone throughout life—"the bone of Vesalius"; it appears in an X ray photograph as if a fracture.

Fracture of the Sesamoid Bones.

The sesamoid bones must not be forgotten. Cases have been reported by Hall Edwards, by Scales, and by Muller, which were operated upon and the diagnosis of fracture confirmed. Kellog Speed lays great stress on these injuries, and says they are usually due to a heavy object falling on the foot, or sudden increase in weight-bearing force when carrying heavy objects.

Physical examination reveals little, but by finding persistent tenderness under the head of the first metatarsal, the possibility of this fracture should be considered. Out of five cases, four were found to be fractures of the internal sesamoid, which is more distinctly in relation to the head of the metatarsal bone. The best treatment is removal by operation.

Thurstan Holland states that, developmentally, the inner sesamoid may be in two, three, or even four separate bony pieces. Many times, says Holland, such a bone has been described as fractured when there has been a history of injury, but, in his experience, fracture must be a very rare occurrence, and most of the so-called fractures are really nothing of the kind. Comparison should be made with the other foot. In the same paper, he reminds the surgeon of the bone of Vesalius, referred to above, which is probably a persistent epiphysis, part of the spur-like process at the base of the fifth metatarsal bone. At first sight it looks like a chip of bone separated as a result of injury.

Operative Treatment of Fractures.

In these lectures I have confined my remarks to the conservative treatment of fractures, but operation may be part of the conservative treatment, and in a number of cases, especially when necessary appliances are not available, the displacement of fractured extremities may be reduced without internal fixation by open operation. Afterwards the treatment along conservative lines is continued.

In very few cases within recent years have I found it necessary to apply plates, screws, metal bands, or bone grafts.

I think the internal fixation of fragments with foreign bodies served a useful purpose during a period when splints, such as Liston's splint, Cline's splint, and MacIntyre's splint were the best known to surgery, and were often responsible for deplorable results. During this period neither traction nor suspension was generally understood. I think plates and screws have done the same service in the surgery of fractures as Murphy's button has done in the case of intestinal surgery, at a time when the technique of suture of the intestines was in its infancy. The work of Sir Arbuthnot Lane, and others of the same school, has been an immense impetus to those working for better results in the treatment of fractures, and I believe it will go down to history as an important landmark in the march of surgery.

It appears to me that the time has arrived when the routine operative treatment of recent fractures must be regarded as a confession of failure—a confession that the surgeon is unable, by manipulative methods, to reduce deformity and to keep deformity reduced until a first-rate functional result is assured. Imagination and skill are more often required in the non-operative than in the operative method of treatment. The management of a case for the first three or four weeks requires constant and minute attention, but these disadvantages must be offset against the very real dangers in connexion with operation, especially in the case of fracture of the femur. Even assuming the most perfect surgical technique, delayed union, non-union, delayed infection, perhaps through the blood stream, may take place, and the treatment of fractures so complicated must be commenced de novo under the most unsatisfactory conditions. I speak only of recent fractures. If conservative treatment is not successful in the first instance, a new beginning can usually be made with a bright outlook, provided too long an interval of time is not wasted before the surgeon sees the error of his ways.

The wave of thought in favour of operative treatment of fractures during the decade prior to the war was due to faulty teaching in orthopædic methods. Every student was taught with minute accuracy how to reduce dislocations. No surgeon ever dreamt, unless under very exceptional circumstances, of reducing dislocations by open operation. It was different in the case of fractures. I can remember quite well how minutely I was taught the mechanism of the displacement of the fragments in the case of fractures, and when that aspect of the injury was completed, the teachers and the text-books went straight on to a detailed description of a multitudinous variety of splints and the methods of their application. There was hardly an intelligent sentence in reference to the all-important subject of reduction.

It is on reduction of displacements and the attainment of a perfect alignment that union and a good functional result depend. I can give no better example of this than fracture of the neck of the femur. It was no wonder that a rising generation of surgeons before the war determined that by some means or another alignment and reduction must be assured, and in an aseptic era the easiest method appeared to be open operation.

The war has come and gone, and we know that by non-operative methods we should be able in the great majority of cases to attain perfect alignment and a perfect functional result free of risk, immediate and remote. To this day there are cases, few and far between, where a Murphy's button is of use in intestinal surgery, and so occasionally operation will be needed in a surgeon's practice. In the realm of fractures there still remain the patella, the olecranon, and a rapidly decreasing number of the oblique fractures of the lower third of the tibia and fibula, which may defeat all efforts at conservative treatment.

ON THE EXPERIMENTAL TREATMENT OF IMPLANTED MALIGNANT TUMOURS OF THE RAT.

BY THOMAS LUMSDEN, M.D. ABERD.

(*From the Department of Experimental Pathology, Lister Institute.*)

IN a previous communication[1] the effects of an antiserum upon cancer cells, growing in vitro, were detailed. It was shown that if 1–2 g. of finely divided mouse carcinoma (M. 63, Imperial Cancer Research Laboratory) were injected into the peritoneal cavity of a rat or rabbit weekly for two to three months, a concentration of antibodies, sufficient to kill cancer cells in vitro within a few minutes, was obtainable in the serum of the rat or rabbit. If mouse heart muscle, spleen, kidney, or salivary gland were grown on the same slide as a fragment of mouse cancer, an application of the antiserum, which killed the cancer cells rapidly, did not seriously damage the normal mouse tissues. Thus a fragment of heart muscle might beat and grow in the antiserum for four or five days, after the death of the cancer cells cultured alongside of it. Since the above facts were published they have been confirmed more than 200 times, and no single instance has been observed in which cancer or sarcoma cells could survive in an antiserum made as above directed.

The object of the experiments now reported was to determine whether comparable results could be obtained in the living cancerous or sarcomatous animal.

Experimental.

The tumours employed were the mouse carcinoma (M. 63 of the Imperial Cancer Research Laboratory) and Jensen's rat sarcoma. In most cases the sarcoma was used because it was found that while M. 63 is very satisfactory for in vitro work, it is less suitable for experiments in vivo. It is a hæmorrhagic tumour and tends to degenerate readily, so that when it attains a considerable size it consists of an actively growing shell surrounding a central mass of degenerate tissue. Its hæmorrhagic nature made it almost impossible to obtain an antiserum which did not contain a large amount of agglutinins and lysins for mouse red blood corpuscles, which naturally increased its toxicity. These could be absorbed, but the serum obtained from one rabbit might require the corpuscles of several dozen mice for its complete absorption. Jensen's rat sarcoma, on the other hand, grows freely and, even when it attains large proportions, consists of a mass of healthy malignant cells with a minimum of stroma and free from hæmorrhages. Central degeneration sets in very late, and although this tumour, like all others, may occasionally absorb before it gets a firm footing, it practically never does so when well established, say, in the flank of a healthy young rat. Thus, with the precautions taken in the following experiments, out of considerably over 100 tumours of the foot only two absorbed spontaneously, and of over 400 established tumours of the flank or back in young rats I have not seen one example of unaided recovery.

A. *Infectivity of Cancer Cells Previously Treated with Antiserum.*

In order to determine whether cancer cells treated with antiserum in vitro were capable of producing a progressive tumour in vivo the following experiment was undertaken. Mouse carcinomata were removed aseptically and the healthy portions finely divided up with scissors. Of this material about 1 g. was transferred to a heavy watch glass and 5 c.cm. of normal rabbit serum was added. To a similar amount of the tumour tissue in another watch glass 5 c.cm. of antiserum was applied. The watch glasses were covered with glass plates, and sealed with vaseline to prevent evaporation. They were then placed in an incubator at 37° C. for periods varying from three to six days. In other instances the fragments of cancer to be used for inoculation were cultured separately by the ordinary hollow slide and cover-glass method, in normal rabbit serum, or in antiserum from an immunised rabbit. The results of these two methods were exactly similar and may be given together.

Of 15 mice inoculated with cancer cells cultured in normal serum for from three to seven days, seven developed progressive tumours—i.e., 46·6 per cent. Of 20 mice inoculated with cancer cells kept for three to six days in antiserum not one developed a progressive growth; in all cases, however, an inflammatory reaction was seen at the site of injection which passed off in seven to ten days. It appeared then that the antiserum had so damaged the cancer cells that they were unable to infect when inoculated into normal mice or else the immunity induced by the absorption of the attenuated cells was sufficient to prevent tumour formation.

B. *Investigations of the Curative Effects of Antiserum in Vivo.*

The antisera are definitely toxic and irritant; thus it was found that 0·25 c.cm. of unabsorbed M. 63 antiserum when injected into the tail vein might kill a 25 g. mouse within 10 to 30 minutes. If the antiserum were fully absorbed with mouse red blood corpuscles then 0·4 or 0·5 c.cm. might sometimes be safely given. When a fatal dose is injected, intense dyspnœa and collapse come on within five minutes, and post-mortem examination invariably shows the presence of acute œdema and congestion of the lungs. Similar results were obtained with Jensen's sarcoma antisera.

Experiments with Jensen's Rat Sarcoma.—The antisera produced as described were obtained from rabbits which had been inoculated weekly from 8 to 16 times with from 1–2 g. of minced Jensen's rat sarcoma. In all cases the sera were tested on healthy growing cultures of Jensen's rat sarcoma in vitro, and invariably cytolysis was observed. It was, however, only after prolonged inoculation that the rabbits gave a highly specific serum. The antisera were tested in sarcomatous rats in the following ways.

1. By injection into the tail vein. As in cancerous mice no curative effect was consistently noticed.

2. Subcutaneously at a point remote from the tumour. This was without benefit. In 1908 Walker[2] reported that in a batch of ten mice treated with subcutaneous injections of an antiserum, the tumours in seven dried up and came away as small scabs. He does not state whether recurrence took place. With the tumours I have employed and using a slightly different technique, I have never obtained satisfactory results.

3. By injection into a tumour of the flank. When the growth was small some amelioration resulted. Out of six rats so treated only one completely recovered. In the case of large tumours gangrene or sloughing may follow such inoculations, but recurrence almost invariably takes place in the ulcerated area so produced.

These unpropitious results were so unlike the invariably lethal effects obtained on the tumour cells in vitro that it was suspected that the antiserum could not have come into intimate contact with the cells in adequate concentration for a sufficient period. An attempt was therefore made (it would be easy in man or any other large animal) to inject the antiserum into the artery going to the affected area and to close the corresponding veins. Even in a large rat this was found to be impracticable on account of the small size of the blood-vessels.

For this reason in the last 100 experiments the following technique was adopted. Rats were inoculated with Jensen's rat sarcoma in either the right foot alone or in both feet, and after two to three weeks when the tumours were well established and had attained the size of a green pea (Fig. 1, A) the antiserum was injected into and around the tumour. In most cases before the injection a rubber band was applied round the ankle and the constriction was so graded as to just completely shut off the blood circulation. The purpose of the constriction was to maintain around the tumour a high concentration of the antiserum for an appropriate period. It was found that by means of this manœuvre definitely curative results could always be obtained.

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[1] THE LANCET, Feb 21st, 1925.

[2] THE LANCET, Sept. 12th, 1908.

After many trials of different doses of antiserum and varying degrees and duration of constriction, the most effective procedure was found to be as follows. Immediately after applying the rubber band 0·2 c.cm. of antiserum was injected into the tumour, after 15 minutes a further dose was given, and an hour later a third and final injection of 0·2 c.cm. was made. The rubber band was removed after two to three hours from the time of its application. When this was done and repeated in a day or two if the tumour still looked active, in the great majority of cases the tumour disappeared though sometimes, when the growth was large, some loss of normal tissue also occurred. After removal of the constricting band the foot rapidly swelled, and not infrequently some hæmorrhage into the tumour took place. Within three to four days the growth became inactive, either gradually absorbing or forming a brown or blackish crust which separated after 10–14 days, leaving a small healthy scar (Fig. 1, B and C). No instance of recurrence after complete healing has been seen.

In four animals cure was effected without constricting the limb. In this case a preliminary inoculation caused—as it invariably does—inflammatory œdema within five to ten minutes. Into this œdematous area a second and later a third inoculation was made 15 and 60 minutes after the first. In six other animals so treated the tumour continued to grow, and cure was only effected after antiserum with constriction.

The actual results in the last 50 animals treated and the controls employed were as follows:—

Animals treated 50

J.R.S., of foot 46; of tail 4.

Animals cured 41

Without serious loss of normal tissue, 35 (foot 33, tail 2); with loss of foot 4, of tail 2.

Animals not cured 9

Tumours of right foot very large, 2; ulcerated, 2; without constriction, 2. Coexisting large tumour of back, 3.

Control animals (8 recovered) 50

Tumour of foot—spontaneously, 1; of tail after constriction + nor. ser., 3; of foot after constriction + nor. ser., 2; of foot after constriction + AgNo$_3$ (5 per cent.), 1; of foot after constriction antiplatelet serum, 1.

Other controls (none of which recovered) .. 42

Constriction and nor. ser., 11; constriction alone, 10; antiplatelet serum and constriction, 2; iodine 0·3 per cent. + constriction, 2; untreated, 16; constriction and AgNo$_3$ (5 per cent.), 1.

It will be seen that of animals treated 82 per cent. were cured; the 18 per cent. uncured included large or ulcerating tumours in which the *antiserum* escaped when injected Of the controls 2 per cent. recovered spontaneously, a further 14 per cent. recovered after control treatment of various sorts, 84 per cent. produced progressive tumours. It was noticed that antisera in which the hæmolysins and agglutinins had been absorbed, though only about half as toxic, were rather more effective against the sarcoma than the unabsorbed antisera.

It must be appreciated that convincing results are only to be attained after very considerable experience and with careful attention to certain essential details. It may be of value here to specify the precautions which are necessary to that end.

1. A potent and specific antiserum must be obtained. This should be tested upon cultures of Jensen's rat sarcoma in vitro before use.

2. The investigator must acquire experience sufficient to enable him to grade the constriction so as not to cause destruction of the foot, and to apply, and if necessary re-apply, the serum in appropriate dose.

3. The antiserum must be sterile, for septicity invalidates the results. If a large septic ulcerating area exists, discharge escapes, and there may not be sufficient absorption from the dying cells to evoke immunity.

4. Only healthy young rats (six weeks to six months) and a vigorous strain of tumour must be used, otherwise the controls might not grow with certainty. In any single experiment the animals should be as far as possible similar in age, breed, &c.

5. Treatment should be begun only when all the tumours are well established and about the size of a green pea.

6. The controls should, as a rule, be equal in number to the cases treated.

C. *Immunity after Cure by Antiserum.*

Bashford, Murray, Haaland,[3] and others have shown that if an animal spontaneously recovers from any particular inoculated tumour it is in future immune thereto. In order to discover whether a similar immunity followed the disappearance of growths after treatment by antiserum + constriction, all the animals which had recovered from sarcoma of the right foot and those which had not been cured were from four to nine weeks after the original implantation inoculated with a fresh graft of Jensén's rat sarcoma in the left foot. All were injected on the same day and with the same tumour material and dose. In all cases a tumour appeared and increased in size for seven to ten days, but thereafter, in those animals in which antiserum treatment had cured a tumour of the right foot, the tumour of the left foot rapidly disappeared. In the animals in which treatment had failed or had resulted in serious loss of tissue, the tumours implanted in the left foot increased and formed typical progressive sarcomata (Figs. 2 and 3). When examined 14 and 21 days after the test implantation of Jensen's rat sarcoma into the left foot, the following were the results. In 35 animals in which the original tumour was cured without serious loss of tissue, 35 were apparently immune—i.e., no tumour developed on the left foot. In six animals with loss of the foot or tail as the result of treatment of the original sarcoma, six proved to be not immune—i.e., a progressive tumour developed on the left foot (Fig. 2). In nine animals in which treatment of the right foot tumour was unsuccessful eight were not immune—i.e., tumour developed on the left foot; one was apparently immune—i.e., the implant in the left foot did not develop.

It will thus be seen that after cure of the tumour of the right foot or tail, by means of antiserum and constriction, the proportion of animals showing general immunity, as evidenced by failure of inoculations of Jensen's rat sarcoma into the left foot, and later into the right axilla, reaches 100 per cent. While if absorption of products from the original tumour was prevented by separation of the extremity no immunity resulted (Fig. 2).

D. *The Effect Produced on a Jensen's Rat Sarcoma Tumour of One Foot, by Treating with Antiserum a Similar Growth of the Other Foot, both Tumours having been Implanted at the Same Time.*

From a number of rats inoculated with Jensen's rat sarcoma in both feet at the same time, 14 in which the tumours had become well established were selected. Of these, five which bore the smaller tumours were retained as controls. In the other nine rats, the tumours on the right foot only, were treated by antiserum + constriction. The experiment was somewhat interfered with by an epidemic of enteritis, but the following results were obtained:—

Tumours of right foot, treated, 9; cured, 9. Controls untreated, 5. Progressive growth, 5.

Tumours of left foot in surviving treated rats, 7; disappeared, 5. (Fig. 4.) In control rats, 5; progressive growth, 5. (Fig. 5.)

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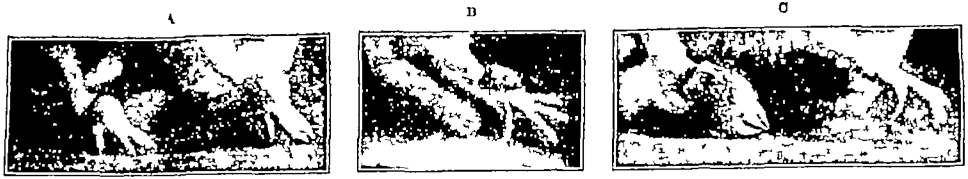
[3] Third Scientific Report, Imp. Canc. Res. Fund.

REPRODUCTIONS OF PHOTOGRAPHS ILLUSTRATING IMPLANTED MALIGNANT TUMOURS OF THE RAT .

FIG 1

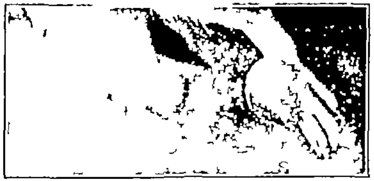


A. Control. Rat 12. Right foot of two rats before experiment Smaller tumour = control. Larger tumour = rat 12 to be treated

B. Rat 12. Rat 12 ten days after treatment by antiserum with constriction Tumour now shrunken and crusted.

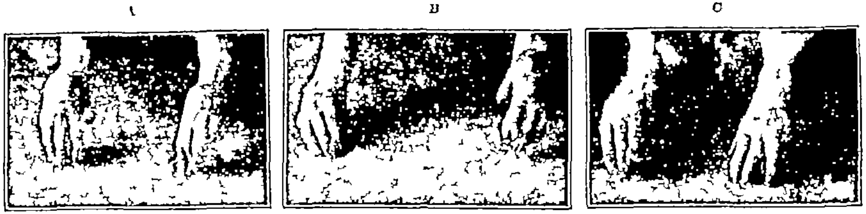
C. Control. Rat 12. Right foot of same rats 14 days later rat's tumour has grown progressively now cured. Control Rat 12

FIG 2



Showing absence of immunity after amputation

FIG 4

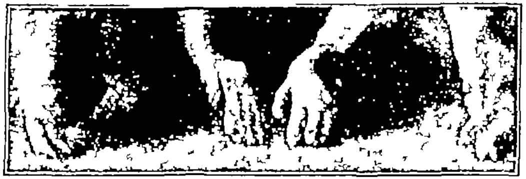


A. R. L. Tumour of both feet before treatment.

B. R. L. Right foot tumour removed by antiserum. Left tumour inactive though untreated

C. R. L. Both feet now free from tumours. Only right foot was treated.

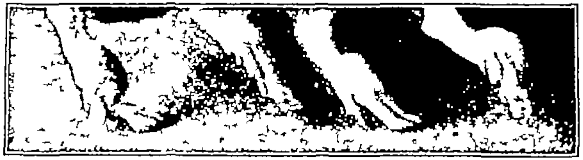
FIG 3



R. L. R. L.

Right and left feet of two rats. The tumours on the left feet show absence of immunity when original (right) tumour not cured.

FIG 5



R. L R. L.

Two control rats with tumours of both feet untreated and growing progressively.

Two of the treated rats died of enteritis after cure of the right foot though before the left foot tumours, which had begun to absorb, had time to disappear. But even discounting these, the results show: Of seven surviving treated rats, in all the right (treated) foot is cured, in five the left (untreated) foot is also cured (Fig. 4). Of the two remaining left foot tumours, one is retrogressing and will almost certainly disappear, one still looks active. All the ten tumours in the control rats grew progressively (Fig. 5).

Discussion.

From observation of the action of antiserum on cancer fragments in vitro the following facts emerge.

1. Malignant cells which have migrated out from the fragment are killed, in a few minutes they cease to move, and the fine fatty granules become irregular in shape and clump together. The nucleus shrinks leaving a transparent ring around it, and the same is true of the granular cell cytoplasm. Later cytolysis occurs and the bodies of the cells become invisible unless stained and are represented only by an irregular mass of protoplasmic debris surrounded by a few large fatty globules.

2. The antibodies diffuse very slowly into the solid fragment of cancer, so that living cells can still be seen in the centre of the fragment even one or two days after antiserum has been applied to it.

If the culture is now fed with normal serum a few cells may again migrate out into the medium. A second application of antiserum may be required in order to kill the whole of the malignant tissue.

The poor diffusibility of the antiserum partly explains why it acts so inefficiently when injected without coincident constriction directly into a tumour in vivo. A further cause of failure is that without stoppage of the circulation in the tumour area, a high concentration of the antiserum cannot be attained locally. When injected into a sarcoma the antiserum forces a passage through the compact mass of malignant cells reaching lymph and blood spaces, from which it is absorbed very rapidly into the general circulation. This is shown by the fact that when a lethal dose of antiserum is injected into a tumour of the back death may ensue almost as rapidly (15–30 minutes) as when a fatal dose is run into the tail vein. The causes of failure when antiserum is injected into the peritoneum, the subcutaneous tissues, or intravenously are probably these: (*a*) The antiserum is diluted with the whole of the body fluids before reaching the tumour. (*b*) When the antibodies have entered the blood-vessels there is some difficulty in their leaving these again. (*c*) The inoculated animals appear to have some means of resisting or neutralising the foreign antibodies, for it is found that they tolerate without ill-effects a larger dose the second time they are inoculated. (*d*) There is some evidence that the antibodies are absorbed by a large new growth when present. Thus it was found more difficult to cure a tumour of the foot when there was in the same animal a large sarcoma of the back.

It is probably because most of the above points were overlooked that the many antisera heretofore used for the treatment of cancer in this country, and especially abroad, have invariably given disappointing results. I suggest that antisera to be directly effective in man ought to be injected into the arteries supplying the tumour area, and the corresponding veins and lymphatics should be tied or compressed.

The reason why sarcomata treated by constriction and injections of antiserum disappear, raises some points for discussion, but clearly the most important thing is the fact that these tumours can thus be got rid of practically at will, and that thereafter the rats dealt with are immune to the tumour concerned.

The possible factors causing the disappearance are: (1) Temporary stoppage of circulation. (2) Consequent retention of a high concentration in the tumour and its vicinity of antiserum injected thereinto, (*a*) acting as a non-specific irritant, (*b*) acting specifically on the sarcoma cells.

The controls make it abundantly evident that constriction as such alone plays, at most, a subsidiary part, for of ten animals so treated not one recovered. It is not so clear that constriction plus some non-specific irritant or some mechanical destruction of the tumour cells is equally ineffective. For of three rats treated with an anti-rat platelet serum kindly given me by Dr. S. P. Bedson, all showed very severe hæmorrhages into and around the tumours. One recovered and proved immune, two were not cured. When normal serum is inoculated several times into a tumour with coincident constriction recovery sometimes takes place; here it is possible that enough damage has been done mechanically to cause retrogression of the tumour. Two sarcomata of the foot and three of the tail disappeared after such treatment, while 11 continued to grow. In passing, it may be remarked that the tail is not a satisfactory site for experimental purposes since spontaneous absorption frequently happens in sarcomata in this situation.

On the whole, it seems probable that the specific cytolysins proved in vitro to be present in the antiserum are the main factor in the recoveries reported above. The fact that a fair proportion of cures follows the repeated injection of antiserum even without coincident constriction favours this view. The selective way in which the tumour was in most cases removed points in the same direction. In about 60 per cent. the growth retrogressed after antiserum and constriction, without apparent loss of any normal tissue; even the skin over the tumour survived, although in some cases tightly stretched and thinned out over a large growth. In most of the other cases of recovery a brown or blackish crust formed (Fig. 1, B) over the tumour area, and when this fell off 7 to 14 days later, a neat scar was left. In these cases just referred to no discharge escaped, so that all products of destruction from the tumour were absorbed into the general system. Such absorption is, I think, necessary if immunity is to supervene, and this explains why no immunity takes place when the tumour is removed surgically, when the limb becomes immediately gangrenous, or when a discharging septic wound or ulcer results from treatment.

The following seems to me to be the sequence of events: (1) When the antiserum is got into the lymph round the tumour cells and is maintained there for some hours in good concentration it selectively kills many of the malignant cells and damages others. (2) Absorption of the products of degeneration of these cells acts like a vaccine, and calls forth a general active immunity which completes the cure locally, and prevents subsequent grafts from holding.

It may be by absorbing the antibodies thus produced by the animal, that a large Jensen's rat sarcoma of the back renders more difficult the successful treatment of a coexisting tumour of the foot. For a similar reason it is hardly to be expected that absorption of a tumour of the left foot should invariably follow cure of a sarcoma of the right foot. The results may be dependent on the relative size of the tumours, &c.

In estimating the meaning of the above experiments it is to be appreciated that causing the disappearance of an inoculated and more or less encapsuled tumour is a very different thing from curing a spontaneous, invading, and metastasising new growth. It is further noteworthy that the conditions were to some extent favourable for success by reason of the site chosen for inoculation. In spite of these considerations the results do seem to indicate a hopeful line of inquiry.

Looking to the future it is proposed to try whether curative effects can be obtained by frequently repeated inoculation of cells damaged by culture in antiserum or of cells otherwise attenuated. Further, if the virus and specific factor for the existence of which Gye and Barnard have adduced evidence prove to be the veritable cause of cancer, then the antiserum may have other than purely cytolytic effects, and it may be possible to obtain a stronger and more specific antiserum by using these isolated factors as antigens than by employing the living cancer cells as I have done.

Conclusions.

1. An appropriate antiserum kills cancer or sarcoma cells in vitro, rapidly and invariably. It is much less toxic to the normal tissues than to the malignant cells. 2. Pieces of cancer tissue kept in antiserum for three to six days at 37° C. do not thereafter produce a progressive tumour when inoculated into the living animal. 3. Jensen's rat sarcoma of the foot can be caused to disappear by repeated injections of antiserum into and round the tumour, along with temporary stoppage of circulation in the foot. 4. After such removal of a tumour the rat becomes immune, so that a subsequent inoculation of Jensen's rat sarcoma into the other foot or into the axilla does not hold. 5. When an implanted tumour is growing on each foot, removal of one of these by means of antiserum and constriction is, in a large proportion of cases, followed by absorption of the tumour in the other untreated foot. 6. It is suggested that during absorption of the tumour after treatment with antiserum and constriction, the products absorbed from the attenuated or dying cells evoke a general active immunity which completes the cure and prevents subsequent grafts from holding. Such an antiserum might in this way prevent recurrence of a tumour after incomplete surgical removal.

My grateful thanks are due to Prof. C. J. Martin, F.R.S., for putting a laboratory at the Lister Institute of Preventive Medicine at my disposal and for never-failing help and advice in many directions. I have to thank also the British Empire Cancer Campaign for a grant which has enabled me to continue the experiments above recorded.

A CASE OF

CHRONIC NEPHRITIS WITH A POSSIBLE PARATHYROID SYNDROME.

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THE following case seems to us to be worthy of a detailed record, since, as far as we are aware, the findings cannot be paralleled in the literature, and since, in view of certain recent observations of Collip, which will be discussed later, the changes in the chemical composition of the blood are of considerable interest. Some details of the latter have been reported already by one of us[1] in a study of the calcium and phosphate content of the blood in nephritis, but in that communication numerous abnormalities presented by the patient were not touched on, and no clinical details were given.

Record of the Case.

The patient, a man of 37, gave no history of any previous illnesses with the exception of two attacks of enteritis while serving in France. He was admitted to hospital on Nov. 7th, 1922, as a suspected carcinoma of the stomach. He had then suffered from attacks of nausea and vomiting for about six months, attacks which had been increasing in severity during the ten weeks previous to admission, and which had led to considerable loss of weight and strength. The vomiting usually occurred three hours after meals and was not accompanied by any abdominal pain. No hæmatemesis or melæna had been noted; there was a doubtful history of jaundice at the onset. The patient also stated that nocturia and polyuria had been present for some years.

Condition on Admission.—An anæmic, wasted man, showing a fine tremor of the hands; no thyroid enlargement. Pulse 80–90. Arteries moderately thickened; apex beat 4 inches from the mid-line in the fifth space, a faint non-conducted systolic murmur present at the apex. Lungs, abdomen, and central nervous system—nothing abnormal. Urine sp. gr. 1010, acid, faint trace of protein, no sugar; deposit, red blood cells, hyaline and granular casts. The amount of urine passed tends to be excessive, frequently exceeding 2500 c.cm., and occasionally reaching a figure in excess of 4000 c.cm. Wassermann reaction negative.

Test Meal.—Free HCl 0·131, combined HCl 0·104, total 0·205—a result which could be taken as excluding gastric carcinoma.

During his stay in hospital the patient suffered from occasional attacks of vomiting and headache. He was at his worst from Dec. 11th, 1922, onwards, when a considerable degree of circulatory failure accompanied by a stuporous, semi-comatose condition developed. In the absence of an increase in the inorganic phosphate of the plasma uræmia was excluded, and the symptoms were attributed to the cumulative effect of chloretone, which had been administered to check the vomiting, in the absence of efficient renal elimination. With omission of the chloretone the patient slowly recovered. On discharge the patient had gained about a stone in weight, and the general condition had improved, though vomiting was still present on occasion. As will be seen from the accompanying table no improvement had occurred in the renal condition as judged by the urea-concentration test, though the blood-urea had fallen as the result of excessive diuresis.

—	Blood urea.	Plasma inorganic P.	Serum calcium.	Serum solids.	Urea-concentration test.	B.P. systolic.
	mg. per 100 c.cm.					
Nov. 13th, 1922	125	4·8	20·1	10·4	1·5	155
„ 20th „	132	5·1	18·5	10·2	1·3	155
„ 27th „	120	4·0	16·2	9·4	0·8	160
Dec. 13th „	146	3·4	17·1	8·6	1·2	164
„ 21st „	150	3·5	18·3	8·7	1·2	160
Jan. 1st, 1923	70	3·4	15·6	8·3	1·1	135
„ 11th „	48	3·3	13·9	8·4	1·2	125
„ 24th „	58	3·0	13·7	8·8	1·1	150
Feb. 16th „	52	3·8	14·0	9·1	1·3	160
March 9th „	40	3·3	14·9	9·4	1·1	154
„ 23rd „	55	3·7	16·1	9·7	1·0	160
April 17th „	49	3·2	11·7	9·5	1·0	160

Though on admission the urine showed no sugar, a reducing substance, identified by its osazone as glucose, was present at times from Jan. 21st, 1923, onwards. The amount of sugar present was small, averaging about 0·3 per cent. Tolerance curves to 50 g. of glucose gave the following figures:—

23/1/23. Before: Blood-sugar, 0·100 per cent. After: 30′, 0·100; 60′, 0·131; 115′, 0·125; 135′, 0·110.

8/2/23. Before: Blood-sugar, 0·101 per cent. After: 30′, 0·105; 60′, 0·112; 120′, 0·112.

The glycosuria was therefore attributable to a lowered renal threshold. The sugar tolerance appeared to be increased, the highest level met with in the course of the test being below that usually found in the normal. This point cannot, however, be stressed in view of the possibility of impaired absorption in a patient who constantly suffered from nausea.

Electrical reactions were normal. The basal metabolism gave a figure of + 26 per cent. (Feb. 9th, 1923). X ray examination showed no evidence of pituitary enlargement or atrophy, no changes in the consistency of the bones, and no arterial calcification.

Owing to a progressive weakness in the voice, the larynx was examined on Jan. 30th, and a complete paralysis of the right recurrent laryngeal was found to be present. The alkaline reserve of the plasma, estimated April 17th, 1923, gave a low normal figure—53 vols. CO_2 per 100 c.cm. of plasma.

The patient died three months after his discharge at Exeter, and no post-mortem examination was performed.

Conclusions.

We have, then, a patient presenting definite evidence of chronic azotæmic nephritis, and in addition an increased basal metabolic rate, a possible increase of sugar tolerance, and a recurrent laryngeal paralysis. Of the chemical findings the most striking is the abnormally high calcium content of the serum. The method employed in estimating the serum calcium was that of Kramer and Tisdall, a method which is usually accepted as sufficiently accurate for clinical use, and at the time at which these high figures were obtained numerous serum calcium estimations were being made upon other patients, in none of whom was a calcium content in excess of 11 mg. per 100 c.cm. of serum met with. In the individual under consideration the calcium at one time reached a figure of 20 mg.

This extraordinary variation of what is usually one of the most constant constituents of the blood naturally suggests an involvement of the parathyroids. Such an involvement would be of the nature of a hyperplasia, since parathyroidectomy leads to a fall in the serum calcium. Some confirmation of this view is to be found in the literature. MacCollum,[2] as long ago as 1905, reported a case of parathyroid hyperplasia, in which a tumour 2 cm. in diameter and composed of parathyroid tissue was found below the lower pole of the thyroid; the patient had suffered from a severe chronic nephritis of some years' duration. In another case of advanced chronic nephritis McCollum noted abundant mitoses in the parathyroids. Later Bergstrand[3] described hyperplastic enlargement of the parathyroids in ten cases of severe renal disease. None of these patients showed osteoporosis or osteomalacia, but deposits of lime salts were present in the kidneys. Barker[4] mentions a case studied by Thomas and Wentworth in which parathyroid hyperplasia was associated with chronic renal disease of ten years' standing. In this patient deposits of lime were present in the tendon sheaths and bursæ of various parts of the body, and an X ray examination showed extensive calcification of the smaller arterioles. At autopsy a considerable degree of bony softening was found to be present.

There appears, therefore, to be good evidence of a connexion between chronic renal disease and parathyroid hyperplasia, and of the possibility of a mobilisation of calcium salts in the condition. As far as we can discover, however, no previous records exist of an increase in the serum calcium in chronic nephritis; as a rule, the calcium of the serum is diminished in proportion to the degree of phosphate retention present.

Recently Collip[5] has studied the effects of an active extract which he has prepared from the parathyroid gland. By repeated injections he was able to raise the serum calcium of normal dogs to a level of 21 mg. per 100 c.cm. When the serum calcium exceeds 15 mg. symptoms of a condition which he describes as hypercalcæmia appear. These symptoms are weakness and atonia, diarrhœa and vomiting, circulatory impairment, extreme viscosity of the circulating blood, and ultimate collapse and death. The extreme viscosity of the circulating blood, which according to Collip makes it difficult to obtain blood even by venesection, was not noted in our case. The chemical changes in the blood that result from such injections are a great increase in the urea nitrogen, a gradual fall in the halogen content of the blood (which, it may be suggested, is a result of the vomiting), a terminal rise in the phosphate content, which is at first unaffected, and a pre-mortal fall in the alkaline reserve of the plasma. It is not as yet clear whether these changes result from a direct action on the kidney, or whether the primary circulatory failure leads to renal inadequacy with the above characteristic changes in the blood. It is, however, obvious that normal dogs may, after repeated injections of the parathyroid hormone, show a chemical blood picture resembling that seen in our patient.

The paralysis of the recurrent laryngeal is a readily conceivable pressure effect in parathyroid enlargement. The cause of the increased basal metabolism remains obscure. No evidence of hyperthyroidism was present, and the action of parathyroid on the basal metabolism does not appear to have been worked out. If the blood-sugar curves are accepted as evidence of increased sugar tolerance, such an effect is to be expected in parathyroid hyperplasia, since parathyroidectomy is reported to produce a diminished carbohydrate tolerance in animals. Salvesen[6] has shown also that in parathyroidectomised animals the carbohydrate tolerance curves rise as the serum calcium falls, and believes that a direct connexion exists between the serum calcium content and the capacity of the organism to deal with ingested carbohydrate. Attempts were made to reduce the serum calcium in our patient by administration of sodium bicarbonate, and di-sodium phosphate, but no definite results were obtained.

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YATREN IN THE TREATMENT OF AMŒBIC DYSENTERY.

WITH A NOTE ON THE RESULTS OF STOVARSOL IN CERTAIN CASES.

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SINCE the introduction of emetine in the treatment of amœbiasis in 1912 various improvements in the therapeutics of amœbic dysentery have been made. It is now generally conceded that emetine injections, although temporarily successful, do not eradicate an amœbic infection from the bowel, even when administered in almost toxic doses. Hence emetine bismuth-iodide and its modification, emetine periodide, have been largely employed in the treatment of the disease and have proved themselves efficacious to a considerable extent in the acute, as well as in the chronic, stage with the passage of *E. histolytica* cysts.

There are several objections to the continued use of these emetine compounds; amongst others may be cited their nauseating and debilitating effects, the liability to develop symptoms of emetine intoxication, the very restricted diet upon which it is necessary for the patient to be placed, and to these may be added the general depressing after-effects, mental and physical, which too often result from their use. In a certain proportion of cases of chronic amœbic dysentery (variously estimated by different authorities) the organisms become resistant to emetine, and under these circumstances it appears to be useless to continue further emetine treatment with the idea of effecting a permanent cure.

The occurrence of emetine-resistant forms has been tolerably familiar to tropical practitioners since the end of the war, and it is for this class of case that Yatren was originally introduced by Mühlens and Menk in 1921.

Yatren ($C_9H_6O_4SNI$) is a combination of iodine with oxyquinoline-sulphonic acid with the addition of 20 per cent. sodium bicarbonate. The iodine is so firmly combined that it is not given off on boiling nor split off within the body of man, hence it cannot produce iodism. For the last ten years Yatren has been in use in Germany and Holland as a wound antiseptic and tissue stimulant. Under the name "Yatren Purissimum No. 105," it is manufactured by the Behring Institute, Marburg/Lahn, Germany. The drug, when given by the mouth or enema, is rapidly absorbed, and is to a great extent excreted in the urine, where its presence can be demonstrated five or six hours later by the addition of ferric chloride, with which it gives a green colour.

In the treatment of amœbic dysentery Yatren may be exhibited in one of three ways: in pill form, containing 0·25 g. (4 gr.), of which two are given twice daily; in cachet form of 0·5 g. (7½ gr.) twice daily by the mouth; or by enema of 200 c.cm. containing 3–6 g. of the drug given daily for 8–14 consecutive days. In 1921 Mühlens and Menk reported upon two extremely resistant cases of amœbic dysentery which had been completely cured by Yatren given by mouth and per rectum. Birt in Shanghai, in 1923, treated a series of 28 cases by lavage alone, using 100 c.cm. of a 10 per cent. solution twice daily, and he concluded that it was a good treatment, but not more efficacious than others previously in use; whilst in many, particularly in the freshly infected cases, the patients suffered much more from colic and tenesmus as a result of the injection. The criticism of his results by Menk is to the effect that the menstruum was too small in quantity and the concentration too great. In 1922 Kuenen published details of four cases all cured by Yatren given by the mouth in doses of 3 g. daily for 8–14 days. In the only paper on the subject in English, Gordon notes two cases treated by lavage which relapsed in a short time; the doses were those originally recommended by Mühlens and Menk. Recently a considerable amount of literature has accumulated round the subject, of which a number of references will be given at the end of this paper.

During the last six months we have had the opportunity of treating four typical cases of amœbic dysentery of different degrees of severity with this drug. We make a special point of stating that diagnosis and treatment have been controlled by sigmoidoscopic examination, a method which is more reliable than stool examination alone.

Clinical Reports.

The following are brief details of these cases.

CASE 1.—Ex-soldier, Indian infection; five months' duration; acute symptoms. Loss of 4 st. in weight (actual weight 9 st. 2 lb.). Stools, four to five a day, containing blood, mucus, and very numerous active free *E. histolytica*.

Sigmoidoscopy.—Mucous membrane of rectum appeared as an extensive bleeding ulcerated surface, the intestinal lumen being full of extravasated blood, constituting a picture of the most marked amœbic ulceration yet seen on sigmoidoscopic examination (P. H. M.-B.). General condition of patient poor.

Treatment.—Yatren 2½ per cent. solution; 200 c.cm. by enema daily for five days and then, after a four-day interval, a further similar course (10 treatments) and concurrently Yatren pills (1½ g. daily) for 19 days.

Results.—Entamœbæ disappeared from stools, which became formed and normal within four days. Sigmoidoscopy repeated 23 days after commencement of treatment; former ulcerated areas now appear as non-depressed diffuse granulating patches which do not bleed. No active ulceration seen. General condition much improved. After one month in hospital gained 18½ lb. in weight. Improvement maintained now for over four months on ordinary diet.

CASE 2.—Ship's cadet. Infection contracted in Mauritius. One and a half years' duration; acute symptoms; loss of 1½ st. in weight; stools four to five a day, diarrhœic, blood and mucus, free active *E. histolytica* in large numbers. Previously treated with injections of emetine, pulv. ipecac., bismuth and opium, &c.

Sigmoidoscopy.—Granular eroded patches in rectum and definite ulceration as far as could be seen. General condition poor.

Treatment.—Yatren 2½ per cent. solution; 200 c.cm. for six days together with Yatren pills (1½ g. daily) for ten days.

Results.—Entamœbæ disappeared from the stools, which became normal on the fifth day. Presence of Yatren demonstrated in urine. Sigmoidoscopy one month after treatment showed a few pin-point submucous hæmorrhages and scanty minute depressions in mucosa at site of former ulcerations; otherwise normal. General condition of patient much improved, gain of 1 st. in weight. Stools have been examined on five occasions during the last four and a half months since his discharge; general good health maintained; stools normal in number and consistency; no entamœbæ or cysts.

CASE 3.—Colonial official. Nigerian infection; two years' duration; acute symptoms off and on for one year; recently passed through an attack of amœbic hepatitis. Loss of 3½ st. in weight. Stools five a day with blood and mucus and active free *E. histolytica*.

Sigmoidoscopy.—Typical diamond-shaped amœbic ulceration of rectum extending to anus. General condition of patient poor.

Previously Treated.—In hospital on two occasions for same condition. Had received 42 injections of emetine (gr. 1 each), also 90 gr. of emetine in Nigeria; 72 gr. of E.B.I. (two courses); 52 gr. of E.P.I. and other drugs. On each occasion relapse occurred with passage of typical stools within three weeks.

Present Treatment.—Yatren 4 per cent. solution, 200 c.cm. by enema daily for ten days (i.e., 80 g. of Yatren) together with 1½ g. by mouth daily in pill form for three weeks.

Result.—Remarkable improvement in general condition; gained 2 st. in weight within six weeks of cessation of treatment; states "Since course of Yatren I feel an entirely different person." Stools one daily, formed, and on 11 examinations in two months after cessation of treatment were negative for amœbæ or cysts. Has now returned to Nigeria in good health.

CASE 4.—Business man. Infection in Cape Verde Islands; 2½ years' duration; acute relapses from time to time during that period. Acute symptoms on admission. Loss of weight about 1 st.

Stools.—Diarrhœic, two a day, blood and mucus, free active *E. histolytica*.

Previous Treatments.—3½ gr. of emetine; 10 gr. of E.P.I., 1 g. of N.A.B., and potassium permanganate lavages.

Present Treatment.—Yatren 2½ per cent. solution; 200 c.cm. for six days.

Sigmoidoscopy.—At end of treatment showed healing and granular patches in rectum.

Gain of weight 9 lb. during treatment; general improvement. Six weeks after cessation of treatment: no acute symptoms, but cysts of *E. histolytica* were found on examination of stool. Course of E.B.I. subsequently given with resultant disappearances of cysts. Good health and improvement maintained for last three months.

Summary.

The results may be summarised thus. The first three cases may be considered as uniformly satisfactory, whilst the fourth is less so, but was only incompletely treated with Yatren, the eradication of the infection being subsequently brought about by E.B.I. To those who have studied the details of the above protocols, we would like to point out that the rapidity with which Yatren acts in the acute stage of the disease is remarkable, amœbæ being apparently destroyed in four days after the injection of Yatren by enema.

In our opinion, in order to get the maximum effects, the drug has to be administered per rectum, as well as by mouth. To do this successfully, the bowel has to be previously washed out with a 2 per cent. solution of sodium bicarbonate about one-quarter of an hour before the injection of Yatren, which must be done slowly by means of a funnel and tube. The solution is then retained as long as possible and then voided. In our cases the average time of retention was about eight hours, occasionally as long as 12 hours. No toxic disturbances appear to be produced by the absorption of the drug.

Yatren is said, by many writers on the subject (Mühlens and Menk, and others), to produce a specific diarrhœa, but in cases of amœbic dysentery we have not encountered this phenomenon, though in other bowel conditions, such as ulcerative colitis and chronic bacillary dysentery in which we have also given it a trial, it readily does so.

Conclusions.

Yatren is of definite therapeutic value in the treatment of amœbic dysentery. Our cases are limited in number, but were all very typical examples of the disease. The results have been most gratifying and are apparently permanent. From the patient's point of view Yatren therapy is more pleasant than any yet evolved, the toxic effect being almost negligible, and there being no necessity to restrict the patient's diet unduly. As the drug is not nauseating our patients have been on a diet of fish, eggs, milk and milk puddings, and toast throughout their course of treatment. (Case 3.)

NOTE ON TREATMENT OF CASES WITH STOVARSOL.

One great difficulty in the effective treatment of amœbiasis is the chronic cyst-passer, or the man who continues to excrete cysts of *E. histolytica* subsequent to the cessation of acute symptoms. For this purpose we have recently been exhibiting tablets of stovarsol, as recommended by Marchoux. This drug is given in 4-gr. tablet by the mouth, and has been used in the treatment of syphilis; it is an acetyl-oxy-amino-phenyl compound of arsinic acid. A considerable amount of literature has accumulated round this drug, and it appears to be especially adapted for the symptomless cyst-passer who cannot, or will not, undergo a drastic course of E.B.I. treatment. One tablet of the drug is taken after breakfast daily for 14 consecutive days in two courses with an interval of a week's duration between them, so as to avoid any possible manifestation of arsenical intoxication. Two medical officers, who were cyst-passers, have been treated in this manner recently. The cysts disappeared from the stools after the first week of treatment, and we concluded that the use of stovarsol as an after-treatment is to be recommended, its value being probably due to its tonic effects.

Quite recently we have had the experience of two good cases of relapsing amœbic dysentery, who proved to be particularly resistant to E.B.I., so that their eventual recovery may be ascribed to stovarsol.

CASE 1.—The patient had been under observation for 2¼ years. Had had four attacks of acute amœbic dysentery including one relapse with hepatitis. His treatments had consisted of five courses of E.B.I. of 36 gr. each; two courses of E.P.I., and over 100 gr. of emetine. During his last relapse he was exceedingly ill and lost over 1 st. in weight. Since October, 1924, he has taken stovarsol in two courses of 8 gr. daily. During the recent period of observation, since the beginning of 1925, his health has much improved, his weight has increased by 42 lb., and his stools are normal and consistently negative for amœbæ and cysts.

CASE 2.—Infection contracted 1922 in Java, where he was treated with emetine, E.B.I., and ipecacuanha. In England in June, 1924, an acute relapse occurred for which he was treated with 24 gr. of E.B.I.; relapsed again four months later, and he was then given stovarsol in large doses of 12 gr. daily for 14 days and subsequently 1 tablet daily for two months. Since then he has been free of symptoms, the stools have been examined at intervals on five occasions, and when last seen in May, 1925, was in good health and has regained his normal physical condition.

Conclusions.

We may thus regard stovarsol as an adjuvant of considerable value in the treatment of amœbiasis. We have no evidence that it acts as a direct amœbicide, but it has a definite therapeutic value in the chronic stage of the disease, and may be recommended in those cases which are resistant to or intolerant to emetine and its compounds. As toxic symptoms due to absorption of arsenic are apt to occur, the dose of 2 tablets daily (gr. viii.) for one week, or 1 tablet daily (gr. iv.) for 14 days, should not be exceeded.

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BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT BATH.

SECTION OF NEUROLOGY AND PSYCHOLOGICAL MEDICINE.

THIS Section met on three days under the presidency of Sir Maurice Craig.

WEDNESDAY, JULY 22ND.

Causation and Symptomatology of Multiple Neuritis.

In opening a discussion on this subject, Dr. T. Grainger Stewart (London) defined cases of multiple neuritis as "those in which, as the result of a general cause—toxic, infectious, or metabolic—the symptoms present pointed to a more or less simultaneous affection of many of the peripheral nerves, or of their associated peripheral neurones." By this definition all cases of neuritis directly due to local traumatism or compression were excluded, but not those in which the neuritis arose as the result of the general action of a toxin, developed locally in connexion with a local lesion. Further, it permitted the inclusion of cases in which the peripheral neurones, rather than the peripheral nerves proper, were involved. Dr. Grainger Stewart considered it quite impracticable in the present state of our knowledge to attempt to classify multiple neuritis on any other than an ætiological basis, as although the clinical picture in certain forms of multiple neuritis was distinctive, in the majority of cases no clinical differentiation was possible. He would, therefore, classify the different forms as follows:—

(A) *Exogenous Poisons.*—Lead, arsenic, mercury, &c.; alcohol, carbon monoxide, carbon bisulphide, serum disease, &c.

(B) *Endogenous Toxins.*—(1) Metabolic: Diabetes, beri-beri, hæmatoporphyrinuria, and during pregnancy. (2) Cachectic: Malignant disease, senile, chronic anæmia, &c. (3) Infective: (*a*) In association with acute infective fevers, &c.—typhoid, paratyphoid, &c.; tubercle, syphilis, &c. (*b*) In certain epidemics—e.g., influenza. (*c*) Infective disease in which the neuritis was an essential part of the clinical picture—uveo-parotitic paralysis, pink disease. (*d*) Infections in which the toxin had a special affinity for the nervous system—e.g., diphtheria. (*e*) In acute, subacute, or chronic infections whose incidence was chiefly on the nervous system—acute toxic polyneuritis, acute febrile polyneuritis, acute infective polyneuritis, Landry's paralysis, and recurrent multiple neuritis.

(C) *Multiple Neuritis of Obscure Origin.*—Rheumatic.

(D) *Local Infections of Nerves.*—Leprosy, interstitial hypertrophic neuritis: (1) juvenile (Dejerine-Sottas), and (2) adult (Dide and Courjon).

The two principal factors which determined the mode of onset and the distribution of the symptoms were: (1) the selective action of the poison, and (2) the distribution of the poison within the nervous system. It was known that the nervous system had the property of fixing certain toxins, such as those of tubercle, diphtheria, and tetanus, owing to a special chemical affinity. The distribution of the toxin was also influenced by the selective factor, and its incidence was determined in the first place by the paths along which the toxin reached the nervous system. There were two such paths: (1) the blood, and (2) the nerves (perineural lymphatics).

In dealing with the various forms of multiple neuritis the opener referred chiefly to three of that group due to exogenous poisons—viz., the neuritis of alcohol, lead, and arsenic. Alcoholic neuritis was now more rare than formerly, and appeared to be more frequent in spirit-drinkers than those addicted to beer. The characteristic features in all cases of alcoholic neuritis were: (1) The severity of the pain and sensory disturbances; (2) the acute tenderness of the nerves and muscles; (3) the tendency for the lower limbs to be affected earlier and more severely; (4) the weakness predominating in the extensor muscles; (5) the rapid onset of contractions and deformities; and (6) the occurrence of mental changes of a typical character. The latter—known as "Korsakow's psychosis"—consisted in an amnesia for recent events combined with a disorientation in space and time. With regard to lead neuritis, the palsy was only one of the manifestations of lead poisoning. The special features were: (1) The absence of sensory symptoms—apart from muscular cramps; (2) the nerve trunks were not tender; (3) the upper extremities were more affected than the lower and the palsy was often confined to certain groups of muscles; and (4) other evidences of lead poisoning were present—anæmia, colic, blue line in the gums, and vascular changes. Various clinical types had been described, among which were: (1) The antebrachial type (Remak)—seventh cervical, in which the extensors of the wrist and fingers, the extensor and long abductor of the thumb were paralysed, causing drop-wrist. The supinator longus muscle—innervated from the fifth cervical root—generally escaped. (2) The Aran-Duchenne type—eighth cervical and first dorsal—characterised by weakness and wasting of the intrinsic muscles of the hand; and (3) the Duchenne-Erb type—fifth and sixth cervical, in which the dorsal, biceps, brachialis anticus, and supinator longus were chiefly affected. The clinical picture in lead palsy, therefore, pointed to an affection primarily of the lower motor neurone and its segmental or radicular distribution to a neuronic rather than to a neuritic affection. Apart from the occurrence of arsenical poisoning, accidental or intentional, the condition might arise from the prolonged use of arsenic in the treatment of chorea or the severe anæmias. All four extremities were wholly affected, while severe sensory disturbances, trophic changes, falling of hair, hyperkeratosis, and pigmentation were characteristic features.

The most important of the metabolic group was the neuritis of diabetes, and it was present in about 50 per cent. of cases of that disease. Sensory symptoms predominated, and examination showed that the deeper forms of sensation were more affected than the superficial. It was rare to find complete paralysis, but definite muscular weakness was easily demonstrable; the lower extremities were more often affected than the upper. Multiple neuritis had been found in association with most of the well-known varieties of infectious disease, either during the course of illness or supervening upon it. Diphtheria provided us with an example of multiple neuritis occurring in an organismal infection developing its local lesion on a surface of the body, and at the same time evolving a toxin with a selective action on the nervous system. Paralysis occurred in about 20 per cent. of cases. Experiment had shown that antitoxin would prevent paralysis and statistics that no multiple neuritis occurred in those cases in which the bacilli were destroyed early. It was only when the local lesions had been missed or neglected that severe paralysis followed a mild infection.

To the group which he had termed "acute, subacute, and chronic infections with incidence chiefly on the nervous system," Dr. Grainger Stewart proposed to add Landry's paralysis. In Landry's paralysis the onset might be abrupt with ascending paralysis commencing at the periphery of the lower extremities—ascending even to the facial muscles provided death had not resulted from respiratory paralysis. The paralysis was flaccid, painless and sensory disturbances rarely exceeded a mild paræsthesia in the extremities. In some cases the onset was less abrupt and the paralysis might be of a descending type or even appear to spread from the site of onset both upwards and downwards. If we compared this with the descriptions of acute febrile or acute infective polyneuritis given by Bradford, Bashford and Wilson, and by Holmes, we found no material difference. Extending from the toes upwards, the paralysis affected the trunk muscles, arms, and face, the facial palsy—although sometimes of slight degree—being a characteristic feature. Sensory changes had not been marked.

Dr. Grainger Stewart said he had seen several cases of Landry's paralysis and over 20 cases of acute toxic polyneuritis. In some of the latter the diagnosis was based solely upon the development of sensory disturbances 10 to 14 days after the onset of the paralysis; had death occurred before, they would certainly have been accepted as being typical of Landry's original description. Now, in all these cases we had the following resemblances: (1) An acute ascending paralysis of flaccid type with abolition of deep reflexes; (2) a febrile onset; (3) only slight disturbances of sensibility; (4) transient interference with sphincters; (5) absence of mental changes. Cases of recurrent multiple neuritis had been described. The symptoms were predominantly motor, each attack left the patient weaker than before, there was more wasting than was usually found in multiple neuritis, and the attacks occurred without known cause at irregular intervals. In view of all facts, it was no longer possible, he said, to limit our conception of multiple neuritis to one in which the peripheral nerves alone are affected. We should think in terms of neurones, as it was illogical to separate a nerve cell from its fibres; they were essentially one from the point of view of function, and interference with either must, and does, affect both.

Discussion.

Dr. Wilfred Harris (London) commented upon classification and considered that Dr. Grainger Stewart's groups (*c*) and (*d*) would probably fall into either the "Exogenous poison" or the "Endogenous toxin" group. Leprosy did not appear to him to be a cause of multiple neuritis. Korsakow's psychosis also occurred in connexion with neuritis other than that due to alcohol, and multiple neuritis might develop from local septic wounds apart from diphtheria. With regard to the alleged neuritis of serum disease, he thought that such neuritis was more likely to be a result of the infective disease for which the serum was given rather than of the serum itself; during the war, while acting as a tetanus inspector, he had seen many serum-treated cases and had met with no neuritis as a result. Dr. Harris disagreed with Dr. Grainger Stewart that lead neuritis was segmental in distribution, the radial extensors were innervated not from the seventh cervical segment but mainly from the sixth and even the fifth. The Aran-Duchenne type, he considered, was due to chronic anterior poliomyelitis, and, as distinct from wrist-drop, was permanent and incurable.

Dr. W. Johnson (Liverpool) dealt with certain atypical forms of lead neuritis which did not appear to harmonise with the theory of the selective action of the toxin and compelled us to seek an additional explanation. Fatigue might be a contributory factor.

Edinger, of Frankfort, originally advanced the view that in a condition in which toxins are circulating through the system the poisoning effects are liable to occur chiefly in those structures which have been the seat of fatigue. The ordinary painter used a free flexion and extension movement at the wrist in performing his work; the extensors were at a mechanical disadvantage as compared with the flexors and were therefore more susceptible to fatigue. The right arm was more commonly affected, but if the patient were left-handed, then the left arm showed the more marked paralysis. In the occupation known as "puddling" a heavy scraper was used which threw considerable strain on the shoulder muscles. In such cases the upper arm type of lead palsy was the more common.

Dr. F. J. Nattrass (Newcastle-on-Tyne) drew attention to the occasional occurrence in cases of multiple neuritis of enlargement and hardening of the nerves. He had met with two such cases. Portions of the musculo-cutaneous nerve of the leg and the great auricular nerve were examined microscopically; some hundreds of serial sections revealed no anatomical changes beyond some œdema of the nerve sheath. In a longitudinal section of a portion of the great auricular nerve, however, a pre-capillary venule in the adventitial tissue at some distance from the nerve showed perivascular infiltration with large mononuclear cells.

Dr. S. A. Kinnier Wilson (London) agreed with the opener that in many cases the term "multiple neuritis" was a misnomer since changes were found not only in the nerve trunks but also in the nerve cells and muscles. Further, sensory changes might be entirely absent. A better term for such cases was "polyneuronitis." The speaker was not impressed by Edinger's theory of fatigue. He also referred to the condition known as "central neuritis"—really a neuronitis—in which the medullated fibres of the central nervous system were affected.

Dr. C. Worster-Drought (London) referred to the occasional occurrence of nystagmus in polyneuritis, and particularly in the alcoholic form; a case of the latter disease showing pronounced nystagmus was under his care at the present time. With regard to a question raised by Dr. Grainger Stewart, the speaker had seen the neuritis of diabetes improve pari passu with improvement in the diabetic symptoms both on dietetic treatment alone and with insulin. Syphilitic neuritis was an interesting though somewhat rare form of polyneuritis—or more strictly, polyneuronitis, since sensory changes were usually absent. The condition, when present, usually appeared late in the secondary stage and with suitable treatment the prognosis was exceedingly good. Dr. Worster-Drought also described a case of recurrent multiple neuritis which he had observed over a period of two years; the onset and each recurrence was ushered in by acute gastro-enteritic symptoms The case had been fully investigated from the clinico-pathological standpoint but, apart from certain blood-cell changes, with negative results.

Dr. A. F. Hurst (New Lodge Clinic) raised the question of latent peripheral neuritis. Absent ankle-jerks, he considered, might be the only sign of alcoholism. Such cases could be distinguished from early tabes dorsalis, as in the latter disease the calves were analgesic, whereas in alcoholic neuritis they were very tender. It was very rare to find alcoholic neuritis and cirrhosis of the liver coexisting; indeed, they appeared mutually exclusive. In alcoholics who died of cardiac failure it was often surprising what few changes were found in the heart muscle on post-mortem examination; the cardiac disorder, he considered, was largely due to a disturbance of the vagus nerve. In certain cases of beri-beri Dr. Hurst considered that in addition to vitamin deficiency as an ætiological factor there was an infective agent. In the Gallipoli campaign, for instance, beri-beri was often accompanied by jaundice; in these cases the duodenum was found post mortem to show evidence of inflammation.

In the unavoidable absence of Dr. J. S. Collier (London) his observations were read by Dr. E. Mapother. Dr. Collier considered it peculiarly fitting that Dr. Grainger Stewart should open the discussion on multiple neuritis, since it was his father—Sir Thomas Grainger Stewart—who wrote the first English monograph on the subject 45 years ago. Dr. Collier also mentioned the occurrence of nystagmus in polyneuritis, and thought the phenomenon was due to involvement of the cerebellar neurones. The lesions of multiple neuritis were not necessarily symmetrical; he had seen cases of both lead and alcoholic neuritis which were strictly unilateral. He was glad to see Landry's paralysis placed in its proper position as a polyneuritis by Dr. Grainger Stewart. Lastly, Dr. Collier referred to cases of neuritis due to the too enthusiastic and unduly prolonged administration of bacterial vaccines.

The President of the Section observed that it was important to examine the mental aspect as well as the physical in many forms of peripheral neuritis; minor mental changes in such cases often passed unrecognised. He pleaded for just as much care to be devoted to the mental examination as was given to the motor and sensory signs.

Prof. Edwin Bramwell (Edinburgh) emphasised the fact that in many cases of acute polyneuritis the ætiology was most obscure. In many cases, he believed, there was more than one active ætiological factor—e.g., an attack of influenza might determine the onset of neuritis in a victim of lead poisoning. He also referred to the occurrence of polyneuritis in association with hyperemesis gravidarum and described a case which showed the usual signs of multiple neuritis together with nystagmus and bilateral facial paralysis; later a Korsakow's psychosis developed. In the causation of some obscure cases there might be a food factor, the patient being unable to digest and absorb the necessary vitamins.

THURSDAY, JULY 23RD.

The Treatment of Insomnia.

Dr. Robert Hutchison (London), opening a discussion on this subject, said that for the purposes of treatment he divided cases of insomnia into two groups, (1) secondary, and (2) primary. In the secondary group the insomnia was the result of some physical discomfort—such as pain, dyspnœa, cough, flatulence, &c. The primary or intrinsic cases arose either from some psychical discomfort (worry, anxiety, &c.) or they were originally secondary cases, in which the physical cause having disappeared, the insomnia persisted largely as the result of auto-suggestion.

1. *Secondary Insomnia.*—The treatment of the secondary cases was primarily that of the associated disease. There could be no objection to the use of hypnotics in these cases from the fear of establishing a habit, as we were usually dealing with a disease of short duration in which the promotion of sleep was essential for the maintenance of the patient's strength and powers of resistance. When the insomnia was due to pain, analgesic drugs—aspirin and pyramidon—should be tried before morphine. In sleeplessness from dyspnœa, the hypnotic used depended upon the cause of the dyspnœa. For cardiac cases there was no drug to equal morphine, but in dyspnœa of pulmonary origin—e.g., bronchitis—it was contra-indicated. In such cases opium might be given in the form of Dover's powder; strychnine and oxygen were useful adjuvants. Pneumonia was a disease in which insomnia often resulted from a variety of factors—pain, fever, cough, dyspnœa, and toxæmia all playing a part. In the early stages—before the fifth day—morphine was much the most effective agent for promoting sleep; after the fifth day, however, it was rarely safe to use morphine, and opinions differed as to the most suitable hypnotic. Chloral was effective, and in Dr. Hutchison's opinion the depressing effect of this drug on the circulation had been exaggerated. Paraldehyde was safe but uncertain in its action; a dose of at least 2 drachms was required to produce an effect. For allaying

STUDENTS' GUIDE—SESSION 1925-26.

DENTAL SURGERY.

(Concluded from p. 519.)

TEACHING INSTITUTIONS IN DENTISTRY.

OF teaching institutions those connected with the several universities have now been described in some detail, but in addition to these there are a number of institutions which offer facilities to dental students and which are here set out under their localities.

LONDON.

Royal Dental Hospital of London, School of Dental Surgery, Leicester-square.—A school of the University of London. Women are now admitted as students and are eligible for all hospital appointments and school prizes. The school provides the special dental education required by the Royal College of Surgeons for the Licence in Dental Surgery. The general part of the curriculum may be taken at any general hospital. The hospital is open from 9 A.M. to 5 P.M., there being one staff for the morning and another for the afternoon of each day. Pupils are received for the training in dental mechanics recognised by the curriculum. The instructors at the commencement of each session give a course of lectures on Operative Dental Surgery. The five house surgeoncies are held for four months each and are open to all qualified students. The lecturers, in addition to their lectures, give special demonstrations on the Microscopy of Dental Anatomy and Dental Surgery. The lecturer on Dental Mechanics also gives practical demonstrations in the laboratory. There is an Entrance Scholarship in Chemistry and Physics of the value of £25. One Entrance Scholarship in Dental Mechanics and Metallurgy, value £25, open to pupils of the Hospital only. One Entrance Scholarship of £25 in Dental Mechanics, open to pupils of private practitioners. The Saunders Scholarship of £20 and Saunders Prize of £5 awarded to second year students. The Storer Bennett Research Scholarship for Scientific Research in any branch of Dental Surgery, value £50, is awarded triennially. The Alfred Woodhouse Scholarship of £35 and the Robert Woodhouse Prize of £10 for Practical Dental Surgery. The "Lonnon" Bursary of £25 for second year students. Prizes and certificates are awarded by the lecturers for the best examinations in the subjects of their respective courses at the end of the summer and winter sessions. Fee for two years' hospital practice required by the curriculum, including lectures, £70 in one payment, or £78 10s. in two yearly instalments. The curriculum requires two years to be passed at a General Hospital; the fee for this is about £52 10s. Both hospitals can be attended simultaneously. For the lectures in Chemistry and Physics for the Preliminary Science or Pre-Medical Examination £13 13s. The fee for the instruction in Dental Mechanics and the two years' hospital practice required by the curriculum is £200 if paid in one instalment, or 200 guineas if paid in three equal instalments. The fee for tuition in Dental Mechanics is £70 per annum; for one year's hospital practice £28. The Winter Session opens on Oct. 1st.

University College Hospital Dental School, corner of Great Portland and Devonshire-streets, W.—This Hospital and School has recently been thoroughly reorganised, and is now fully equipped with all the most modern appliances. Students are entered as students of University College Hospital, and, as such, attend the classes of Anatomy and Physiology in University College, which is a few minutes' walk from the Dental Department in Great Portland-street, hitherto known as the National Dental Hospital, the first Dental School to admit Women Students. Practical courses to comply with the R.C.S. curriculum are held. Clinical Lectures and Demonstrations are given, and each student on entering passes through a preliminary course under a demonstrator. A calendar containing full information as to lectures, fees, prizes, &c., may be had on application to the Sub-Dean for Dental Students, who attends the Hospital on Monday mornings at 10 o'clock.

Guy's Hospital.—The work of the Dental Department begins daily at 9 A.M. both in the extraction rooms and in the conservation room. The Extraction Rooms: There is ample accommodation for ordinary extractions and anæsthetic extractions, together with waiting- and retiring-rooms. Patients are admitted between 8.45 and 9.30 A.M., and are seen by the dental surgeon for the day, the staff demonstrator, the dental house surgeon, and the dressers. The Conservation Room is open from 9 A.M. till 5 P.M. It has a floor space of over 6000 square feet, and affords accommodation for about 100 dental chairs, with the necessary equipment of the most modern type, for the use of the Dressers, who, under the supervision of the Staff, perform the various operations of Dental Surgery. The members of the staff attend every morning and afternoon to give demonstrations and otherwise assist students in their work in the Conservation Room and Prosthetic Laboratory. The Probationers' Laboratory is supervised by three of the staff demonstrators, and instruction is given in operative dentistry on a "mannikin" to students during their first three months of clinical study. Students in Dental Prosthetics are received, and a graded, systematic, and full course of instruction, extending over two years, is carried out under the supervision of the Director of the Prosthetic Laboratory, assisted by two demonstrators and five mechanics. Dental students have the opportunity of attending at this hospital the whole course of instruction required by the examining board for the B.D.S. Lond. or L.D.S. Eng.—viz., the complete course in dental prosthetics, the special lectures and practice of the Dental Department, and the general lectures and practice of the Medical School. The fees for these two courses may be paid separately or together, or they may be combined with the fees required to be paid for the course for a medical diploma. Students who enter for a medical as well as a dental diploma are allowed to pursue their study of Dentistry during any period of their medical course most convenient to themselves without further charge. Two Entrance Scholarships are awarded in July of each year, a War Memorial Scholarship in Arts of the annual value of £40 for four years; and a Jun'or Science Scholarship of the value of £40 per annum for not more than four years. Prizes of the aggregate value of £40 are awarded for general proficiency and for skill in Operative Dentistry. The Newland-Pedley Gold Medal for Operative Dentistry is also awarded annually. Dental students are eligible for admission to the Residential College and enjoy the privileges of students in the Medical School. Application should be made to the Dean of the Medical School.

Appointments: All appointments are made according to the merits of the candidates, as determined by a committee of the Dental Staff. Eighteen house surgeons, 15 assistant house surgeons, and 15 clinical assistants, and four student demonstrators of Dental Histology are appointed annually. The following appointments are held by students: Full surgeon's dresser, assistant surgeon's dresser, orthodontia dresser, casualty dresser, clerk to the anæsthetist, dresser in the gas extraction and ordinary extraction rooms, and probationary dresser.

King's College Hospital.—The Dental School is part of the Medical School of King's College Hospital, and was opened in November, 1923. The Dental Out-patient Department of the Hospital is used for the performance of dental extractions. A large Conservation Room with provision for 40 dental chairs has been equipped. Smaller rooms are used for clinical teaching and administrative requirements, and a specially equipped laboratory for training in the art of dental mechanics. An X ray apparatus has been installed for special use in dental skiagraphy. A museum containing a large number of specimens illustrating oral, buccal, dental, and other diseases is available for teaching purposes. The library, lecture theatre, lecture rooms, common rooms, and the refreshment room are all available for the use of students. Courses of study, including practical work, are provided for the degree of Bachelor of Dental Surgery of the University of London, and for the Diploma in Dental Surgery of the Royal College of Surgeons of England. Special arrangements are made for those students who wish to take a medical degree or qualification in addition to a degree or diploma in Dental Surgery. Full particulars of the Dental School may be obtained on application to the Dean, Dr. H. Willoughby Lyle, or to the Secretary, Mr. S. C. Ranner, M.A., King's College Hospital, Denmark Hill, London, S.E. 5.

London Hospital.—This school is a part of the London Hospital and Medical College, and is fully equipped on the most modern lines and with the latest appliances. It provides a complete curriculum in all subjects for the B.D.S. Degree and for the L.D.S. Diploma, and is admirably adapted for the purpose of teaching. The Conservation Room is well lighted and ventilated and fitted with pump chairs of the latest pattern; the fountain spittoons at many of the chairs have been specially designed. Each spittoon has attached to it a saliva ejector, hot and cold water, compressed air, gas and electric current, also a swing bracket to carry the students' cabinet. Electric sterilisers are supplied in each department and motor engines where required. The School possesses in addition to the Theatres, Laboratories and Museums in the College, a special Museum of Dental Anatomy and Surgery, Operative Dentistry, Prosthetic and Extraction Rooms, and Laboratories for Practical Metallurgy and Prosthesis. A systematic course of instruction is arranged for pupils. The up-to-date Laboratory contains every modern apparatus and is in charge of a skilled curator and his assistants. Connected with the Medical College and Dental School are a Library, Athenæum, Clubs' Union, Dining Hall with moderate tariff, Students' Hostel, and an Athletic Ground. For full particulars as to Scholarships and Prizes, fees and course of study advised, apply to the Dean, Prof. William Wright, who will be glad to make arrangements for anyone wishing to see the Dental School and Medical College.

London (Royal Free Hospital) School of Medicine for Women.—Full courses are arranged for women students, in conjunction with the Royal Dental Hospital, Leicester-square, for the study of dentistry, and in preparation for the B.D.S. Degree of the University of London and the Licence in Dental Surgery of the Royal College of Surgeons of England, at the London (Royal Free Hospital) School of Medicine for Women.

PROVINCIAL.

Birmingham Dental Hospital, Great Charles-street.—Dean: Mr. W. T. Madin. The Dental Hospital was founded in 1858, and was recognised by the Royal College of Surgeons in 1880 for the teaching of Dental Students. Having an annual attendance of about 21,000 patients, it affords every advantage for students about to enter the profession to acquire a thorough practical knowledge, as required by the Medical Council. The present Hospital was opened on July 6th, 1905. It has accommodation for 100 students. The equipment is in accordance with the most modern requirements for the efficient teaching and practice of Dental Surgery. The operations performed annually average 41,000, including 9000 gold and other fillings, and many cases of crowns, bridges, porcelain inlays, and regulations. By arrangements with the Birmingham University and with the General and Queen's Hospitals the entire course of Lectures, Hospital Practice, &c., may be completed for an inclusive fee of £144 4s. 6d., or including Mechanical Pupilage, £255 15s. 9d., inclusive of Examination fees for L.D.S. Birm. The instruments and materials necessary for Hospital Practice cost about £45. The Composition Fee for the courses required for the L.D.S. of the University, or any of the Corporations alone, is £75, payable in two annual instalments at the commencement of the first and second years; that for the courses required for the L.D.S. and the Degree in Dentistry of the University is £93 15s.; that for the L.D.S. in combination with the M.R.C.S. and L.R.C.P. is £115; and that for the M.B., Ch.B., and B.D.S. is £120. All of these composition fees are payable in two annual instalments at the commencement of the first and second years. Each of these fees covers the cost of the courses given at the University for the qualifications indicated, but does not include fees for Hospital teaching, nor Pre-Dental year Chemistry and Physics. For two years' dental hospital practice the fee is £26 5s., payable in two instalments of £13 2s. 6d. each at the commencement of the first and second (hospital) years respectively. For two years' mechanical pupilage, £111 11s. 3d., which may be paid in two annual instalments of £65 12s. 6d. and £45 18s. 9d. respectively; mechanical pupils may join for a probationary period of one month, fee £6 11s. 3d., which is deducted upon payment of the full amount. For general surgical hospital practice, lectures, and demonstrations: Surgery, two winters, £13 2s. 6d. A Dental Scholarship is offered annually of the value of £37 10s. It is awarded to the student who, entering for the Dental Degree of the University, shall pass the best examination in the subjects studied during his apprenticeship. Application for admission must be sent to the Dean of the Medical Faculty, Mr. William F. Haslam, on or before Sept. 1st.

Leeds University School of Dentistry.—The School of Dentistry is adequately equipped to provide for the complete training of the dental student. The School forms a part of the Leeds School of Medicine, whilst the instruction in clinical and mechanical dentistry is carried out in the Dental Hospital at the General Infirmary. The courses of study are mainly designed to meet the requirements of the B.Ch.D. and L.D.S. Leeds, but every opportunity is afforded to students preparing for the degrees or diplomas of other licensing bodies. Full-time demonstrators give the instruction in clinical dental surgery and prosthetic dentistry, which is carried out under the supervision and direction of members of the Honorary Staff, two of whom are in attendance each day. Special facilities are provided for instruction in Orthodontia and Dental Radiography. Prizes are offered for competition to pupils and students in their respective years of study. Communications should be addressed to the Warden, School of Dentistry, The University, Leeds, from whom a prospectus may be obtained.

Dental Hospital of Manchester.—This hospital is in association for teaching purposes with the University of Manchester and the Royal Infirmary, and is in the centre of a very large population. Courses of study are provided to meet the requirements of the various examining bodies, including those of the University of Manchester for the qualifications L.D.S. and B.D.S., and the L.D.S. of the Royal College of Surgeons of England. Clinical instruction is given in Dental Prosthetics, Operative Dentistry, Diagnosis and Extraction, Orthodontics, Dental Surgery, Radiography, and Anæsthetics by specially appointed Clinical Teachers.

For the whole course of hospital instruction for the L.D.S. (including two years' mechanical training) the fee is £131 5s., paid in instalments. For the two years' Operative Course only, £26 5s., paid in two instalments. For the whole course of hospital instruction for the B.D.S. degree (including mechanical training), £168, paid in instalments. In accordance with the new regulations, L.D.S. students who have taken two years' training in practical Dental Mechanics with a registered practitioner are required to take a further year in the Hospital mechanical laboratory, the fee for this being £63. All the courses of instruction are open to women students. Copies of the Prospectus will be forwarded on application to Mr. J. Hilditch Mathews, Dean.

Newcastle-upon-Tyne Dental Hospital and School.—This hospital is centrally situated (within five minutes of the various colleges, infirmary, and railway station); the rooms are well lighted and thoroughly equipped for carrying on the work. Dental surgeons and an anæsthetist attend each morning. A tutorial dental surgeon and a prosthetic tutor is also in attendance. The Composition Fee for the special Dental Lectures and Dental Hospital Practice is £60 4s. if paid in one sum, or £62 6s. if paid in two instalments of £31 3s. The Composition Fee for the Lectures at the Colleges of Medicine and Science is £67 10s.; in addition to this there is a library and an athletic club fee. The fee for General Hospital Practice at the Royal Victoria Infirmary, Newcastle-upon-Tyne, is £23 2s. Medals and Certificates of Merit are granted to students showing certain standards of proficiency in the various classes at the Dental School. The prospectus of the Dental Hospital and School, containing full information, may be obtained from either Mr. J. T. Jameson, 13, Windsor-crescent, Newcastle-upon-Tyne, Dean, or Mr. James Coltman, 18, Ellison-place, Newcastle-upon-Tyne, Vice-Dean.

Devon and Exeter Dental Hospital, 24, Southernhay West, Exeter.—Established 1880.—The hospital is open on Mondays, Tuesdays, Wednesdays, Thursdays, Fridays, and Saturdays, and patients are admitted between the hours of 9.30 and 11 A.M. Students attend the practice of the hospital under the control of the medical officers. Honorary treasurer, Mr. J. M. Ackland; secretary, Mr. Albert G. Littlejohn.

SCOTLAND.

The Incorporated Edinburgh Dental Hospital and School.—The Edinburgh Dental Hospital and School is located in spacious and well-equipped buildings at 30, 31, and 32, Chambers-street, and offers special advantages to dental students. A large and important extension of the existing buildings is now in process of construction. The General Courses required for the Dental Diploma may be taken in the Medical School of the Royal Colleges of Physicians and Surgeons or in the University schools. The general hospital attendance and clinical instruction are taken at the Royal Infirmary. The University, Medical Schools, and Royal Infirmary are within three minutes' walk of the Dental Hospital. The special courses are taken in the hospital. The Dental Hospital practice, extending over two years, affords a student ample opportunity for a full acquaintance with every branch of dentistry. The hospital admits a limited number of indentured pupils. They receive their instruction in Mechanical Dentistry concurrently with the general and special courses. A premium of 60 guineas is payable with each such pupil. The practice and lectures of the hospital are recognised by, and qualify for, all the Licensing Boards. The cost of the hospital outfit of instruments is included in the Dental Hospital fee of £42. The minimum cost of classes and Diploma for the whole course of dental instruction amounts to £118 10s. Those students who desire to take a Medical and Surgical Diploma in addition to the L.D.S. have in this school admirable facilities for so doing. The triple qualification of the Royal College of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow is recommended. The *minimum* cost of Professional Education, the Triple Qualification, and the Licence in Dental Surgery amounts to £107 8s. 6d. The Higher Dental Diploma (H.D.D.) of the Royal College of Surgeons affords an opportunity of obtaining a higher qualification subsequent to registration. The Prospectus, with full information, may be obtained by application to the Dean or the Assistant Secretary.

Incorporated Glasgow Dental Hospital, 158, Renfrew-street and 15, Dalhousie-street, Glasgow.—The School is open to Men and Women Students, and Lectures are given on Dental Surgery, Operative Dental Surgery, Orthodontia, Dental Anatomy and Physiology, Dental Histology, Dental Mechanics, Crown and Bridge work, Dental Metallurgy, Dental Bacteriology, Radiology, Anæsthetics, and Dental Materia Medica. Lectures on general subjects required for Dentistry may be taken at the University or at one of the extra-mural schools where special provision is made for Dental Students. Composition fee for two years' Hospital Practice and Lectures special to Dentistry, £60 on entry, or in two instalments of £35 and £30. A new mechanical laboratory with bench accommodation for 60 pupils and fully equipped with the most modern appliances for teaching practical dental mechanics has recently been added. Fee for two years' tuition, £63, or in two instalments. Full information may be had on application to the Dean.

Glasgow Royal Infirmary (Dental Department).—Mr. W. R. Taylor attends at the Royal Infirmary at 9 A.M. on Wednesdays and other days as arranged. The following course in the curriculum can be taken at St. Mungo's College: Anatomy, six months; Practical Anatomy, nine months; Physiology, six months; Chemistry, six months; Practical Chemistry, three months; Surgery, six months; Medicine, six months; Materia Medica, three months; Clinical Surgery, six months; Dental Surgery, six months, and attendance for two years on the dental department of the hospital.

IRELAND.

Incorporated Dental Hospital of Ireland, Lincoln-place, Dublin.—All Dental Students who have passed their First Dental Examination in the Royal College of Surgeons in Ireland (or an equivalent examination or examinations) are admissible to the Clinical Instruction of the Hospital. In addition to Clinical Instruction and Special Demonstrations, courses of lectures are given at the hospital on Dental Surgery and Pathology, Mechanical Dentistry, the Administration of Anæsthetics, Orthodontia, Dental Anatomy, and Dental Materia Medica, and instruction in Anæsthetics. Fees: Hospital Practice (each year), £18 18s.; Lectures, £5 5s. The course in practical Dental Mechanics can be taken in the Hospital Laboratory. Further particulars can be obtained from the Dean.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt.-Comdrs.: E. S. Mellor to *Kellett*; H. L. P. Peregrine, A. Craig, C. N. Ratcliffe, J. F. Haynes, K. A. I. Mackenzie, G. Aubrey, R. E. Rampling, and H. L. Douglas to *President*, addl., for five months' course of instruction.

Surg. Lt.-Comdr. L. F. Strugnell, R.N., has been awarded Sir Gilbert Blane's Gold Medal, he having obtained a first-class certificate at the examinations held in 1925 for promotion to the rank of Surgeon Commander.

ROYAL AUSTRALIAN NAVY.

Surg. Comdr. W. J. Carr to *President*, addl., for five months' course of instruction.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. D. Bertram to *Ajax* for 28 days' training.

D. R. W. Burbury entered as Proby. Surg. Sub-Lt., and attached to the London Division.

ROYAL ARMY MEDICAL CORPS.

Temp. Capt. R. C. H. Francis relinquishes his commn. and retains the rank of Capt.

The undermentioned Lts. (on prob.) are confirmed in their rank: R. A. Bennett, W. H. Carter, W. D. Speedy, W. A. D. Drummond, J. G. E. Vachell, J. N. Atkinson, J. D. Corner, and J. T. Smyth.

ROYAL AIR FORCE.

Flight Lt. T. P. Harpur resigns his temp. commn.

COLONIAL MEDICAL SERVICE.

Dr. J. A. Beamish, medical officer, West African Medical Service, serving in the Gold Coast, has been appointed to be a Senior Medical Officer in Nigeria, with effect from Feb. 13th, 1925, in succession to Dr. T. M. R. Leonard, D.S.O., promoted to be Assistant Director of Medical Services in that colony.

Special Articles.

INTERNATIONAL CONGRESS OF CHILD WELFARE.

THE first International Congress on Child Welfare, as noted in THE LANCET last week (p. 509), was held at Geneva from August 24th to 31st. It was presided over by Mr. André Oltramore of Geneva, and was well attended; over 800 delegates from all parts were present, including some 200 British representatives. The inaugural meeting was opened by Mr. Haeberlin, Vice-President of the Swiss Federal Council. The speakers included Prof. C. Pirquet (Vienna), the President of the Hygiene and Medicine Section, Mr. Georges Scelle (professor of international law at Dijon), President of the Social Welfare and Administration Section, and representatives of 12 other countries. The Marchioness of Aberdeen and Temair, speaking as President of the Education and Propaganda Section, referred to the work done by the International Council of Women (of which she was the President) in drawing up the declaration of the rights of the child, now called the Declaration of Geneva. Dr. Luis Morquio, the provisional director of the American International Bureau for the Protection of Childhood at Monte Video, in the course of his address, mentioned that at the Congress at Santiago (Chili) in 1924 all the delegates signed the declaration.

The Exhibition.

In the afternoon the exhibition was visited officially by Mr. Haeberlin. The comprehensive exhibit of Great Britain with over 2000 items included several excellent health posters. The Swiss exhibit was particularly good; Pro Juventute, an organisation centring in Zurich, which possesses three travelling exhibitions, showed an excellent display, which included articles used in the Froebel and Montessori methods of teaching. This society organises work for children's leisure hours. The Union International de Secours aux Enfants, located at Geneva, set out the help given by 35 countries to the children of 38 other countries. The most striking feature of the French exhibit illustrated the work carried out by Mme. J. René Dubost in placing babies in families in Mainville and Milly, where they are visited regularly by English nurses and taken weekly to the local infant welfare centre also established by Mme. Dubost. Later the children are boarded out by the Assistance Publique in peasant families on farms. The most prominent Austrian exhibits illustrated the activities of the municipality of Vienna and the work of the Art School of Prof. Cizek, also of Vienna. The German exhibit, which was extremely well arranged, illustrated the work of the German Red Cross and the national equivalent of our "Save the Children Fund."

Sectional Meetings.

On Tuesday morning the sections met. The Medical Section dealt with the measures used in different countries to reduce infantile mortality before and after birth, tracing the problem back as far as the advocacy of the marriage of healthy parents. Dr. Rott (Berlin) spoke on prematurity; Prof. Pinard (Paris) referred to the evils of separating a child from its mother.

Infant Mortality.

Dr. A. K. Chalmers (Glasgow) held that we ought to consider whether the special decline of the infantile mortality-rate in our country was due to our efforts, or whether it were a biological phenomenon. He said that a decline had been recorded in all the countries of Western Europe, even in those where very little preventive work had been done, and that the mortality was increasing in some countries, such as Egypt, in spite of administrative efforts. The fall in the rate in the British Isles had occurred in the children of a generation which had profited by the important addition of foreign meat to their food-supply. He thought we had not done enough to interest and educate fathers. The need at present was to get mothers to appreciate the value of the medical supervision of children between 1 and 5 years of age. He had found the mothers in Glasgow unwilling to avail themselves of antenatal care until one mother profited; she became an ardent apostle, and after that there was no difficulty in filling the clinics. Mme. Vivier-Robert (Strasbourg) indicated the importance attached in Alsace-Lorraine to the work of the health visitor. The members of the audience were very much impressed by the close correlation of the fall in infantile mortality, with the dates of the introduction of various specific preventive measures. Dr. Bornstein (Berlin) and Dr. A. Koller (Lausanne) spoke on alcohol in this connexion; both considered alcoholic habits and the alcoholised constitution of parents responsible for a considerable part of infantile mortality.

Prof. Winifred Cullis (London) referred to the striking reduction in infantile mortality from syphilis brought about by the treatment of pregnant women in Scotland and London.

The Feeding of Children.

In the discussion on the feeding of children of all ages Dr. R. C. Jewesbury (St. Thomas's Hospital) expressed his belief that no artificial preparation could take the place of breast-milk. He referred to the possibility of re-establishing lactation after it had ceased for six to seven weeks, also to the absence of any organisation in England for supplying wet nurses. He would like a uniform system of feeding adopted in England. Prof. Taillens (Lausanne) also held that every effort to lessen infantile mortality must take breast-feeding as its fundamental principle. A valuable paper on the feeding of the pre-school child was read by Prof. Bernheim-Karrer (Zurich); he thought that digestive disturbances due to faulty feeding were increasing; he had found that over-feeding with milk caused constipation, and even anæmia if too little fruit and vegetables were given. Dr. E. Nobel (Vienna) thought that for the school child breakfast should be one of the principal meals and equal in nutritive value to the midday and evening meals; during the morning and afternoon there should be two light meals.

Prof. R. G. Freeman (New York) described clean milking on a farm which supplied New York and showed slides, one of which demonstrated how a cow was prevented from lying down between grooming and milking. He said that bovine tuberculosis was being rapidly eliminated in the United States. Prof. Caronia (Rome), in an interpolated paper, dealt with his recent work on the prophylaxis of measles and scarlet fever; the part of the paper that dealt with measles was discussed by Dr. E. Nobel.

Heliotherapy.

On Thursday morning during the discussion on heliotherapy, Dr. Knut Wejdling (Stockholm) emphasised the importance of giving cod-liver oil with the light treatment. Dr. A. Rollier (Leysin) showed a series of slides demonstrating the results of the work carried out at Leysin. Dr. P. F. Armand-Delille (Paris), in an interpolated paper on tuberculosis, written in collaboration with Dr. Lestoquoy, described the work of the Œuvre Grancher, which places the healthy children of tuberculous parents in families living in the country. Drs. Messerly (Lausanne), Chatin (Lyon), Mme. Vivier-Robert (Commissariat-General de la République, Strasbourg) described the work done in their areas. The paper of Dr. O. Bernhard (St. Moritz), the originator of the use of sunlight in surgery, should be read in full. Dr. C. W. Saleeby (London), in a model address, referred to the glass made in Birmingham for windows which contains no lead and no large atoms to prevent the passage of the ultra-violet rays.

Orthopædics.

The chief addresses on the prevention of crippling in children were given by Prof. Hans Spitzy (Vienna), Mr. R. C. Elmslie (St. Bartholomew's Hospital), and Dr. Murk Jansen (Leiden). Prof. Spitzy showed slides illustrating what to do and what not to do to prevent deformities of growth during the critical period of life until the baby has acquired the upright position. On the walls of the room were displayed some extraordinarily good original pictures in colours by Udo Weith, with suitable text, dealing with the prevention of crippling. Mr. Elmslie, whose contribution also evoked great applause, thought that medical inspection in London schools was responsible for the large reduction in the number of cases of scoliosis. He asked the representatives of other nations to publish an account of the organisation of the work for cripples in their countries, and mentioned that many of the British orthopædic surgeons who had worked under Sir Robert Jones during the war had become personal friends and were thus able to meet and discuss their various difficulties and new methods.

Dr. Murk Jansen was much concerned at the evil effects on the offspring of excessive smoking by the expectant father and mother. He considered that the tobacco habit had a marked effect on growing cells. Some of the most valuable of the papers of the congress dealt with the unification of the prenatal, neonatal, and later infantile mortality statistics of different countries. Dr. Rott (Berlin) explained the importance of the work of the subcommittee of the League of Nations, which had formulated a definition of stillbirth for international use; Dr. L. I. Dublin, the statistician of the Metropolitan Life Assurance Company, New York, pointed out that in the States 4 per cent. of the total births are stillbirths, and that their number is practically the same as the number of deaths which take place during the second to twelfth months of life. Yet very little statistical work was or could be done by any country at present. Dr. Marcel Ney (Berne) also read a valuable paper on this subject.

In the other sections the chief papers of medical interest were read by Dr. Th. Simon (France) and Mr. Cyril Burt (London) on the standardisation of the definition of mental deficiency and its different degrees, and by Dr. D. C. Kirkhope (Tottenham) on the education of public opinion in child welfare.

At the concluding meeting of the Congress a number of resolutions were passed summing up the recommendations made during the meetings of the sections.

Excursions.

A pleasant feature of the Congress were the informal receptions held by Prof. and Frau Pirquet. After a trip on the lake the Medical Section were charmingly entertained by the Genevese Medical Society and the other sections by Mme. Gustave Hentsch and Mr. Edmond Chenevière. During the Congress visits were paid to local institutions in Geneva, including le Rayon de Soleil at Frontenex, an adapted football stand and pavilion; one of the three open air schools; a *pouponnière* at Orange Canal; a home for unmarried mothers (La Retraite); the J. J. Rousseau Institute for research work in child study and experimental pedagogy; and the Cantonal Hospital with its maternity and isolation blocks. Unofficial visits were paid to see Mr. Spahlinger and his work, to Dr. Rollier at Leysin under the guidance of Dr. King Brown, and to the Institut d'Hygiène, where Mr. Maurice Valerien briefly indicated the chief sanitary features of the city and of the Canton of Geneva, and to Nestlé's milk factory at Verey.

On Saturday the Congress visited Leysin, the village which has grown up round Dr. Rollier's first clinic, a modest chalet since expanded into 33 establishments capable of dealing with 1000 adults and 300 children at a time. Although many know the work from the film shown in England, nothing but a visit to the village can enable anyone to envisage the place as a whole in the beauty and charm of its setting. It is evident that although the pioneer work carried out at Leysin by Dr. Rollier and his large staff has been and still is of great value, the organisation of the work of a similar kind in England to-day is equally good; the arrangements for the education of the child of school age while under treatment have, perhaps, been somewhat better organised owing largely to the work of the Board of Education; the after-care work in our country is also better. Possibly we have something still to provide in the way of arrangements for manual work for adults.

A visit was subsequently paid to Zurich under the guidance of Dr. Pfeiffer of the Pro Juventute Foundation. An unpretentious but well-run epileptic institution was inspected, under the charge of Dr. A. Ulrich, who considered sedobrol and a salt-free diet of great value. At the Orthopædic Hospital, Anstalt Balgrist, an address was given by Dr. Richard Scherb, and the good following-up system was described. At the Cantonal Institution for Blind and Deaf and Dumb Children the two types were kept entirely apart. Oral teaching only was carried on for the deaf and dumb; if a child could not be taught by this method it was not retained in the institution. The bedrooms for the children were good enough for a first-class hotel.

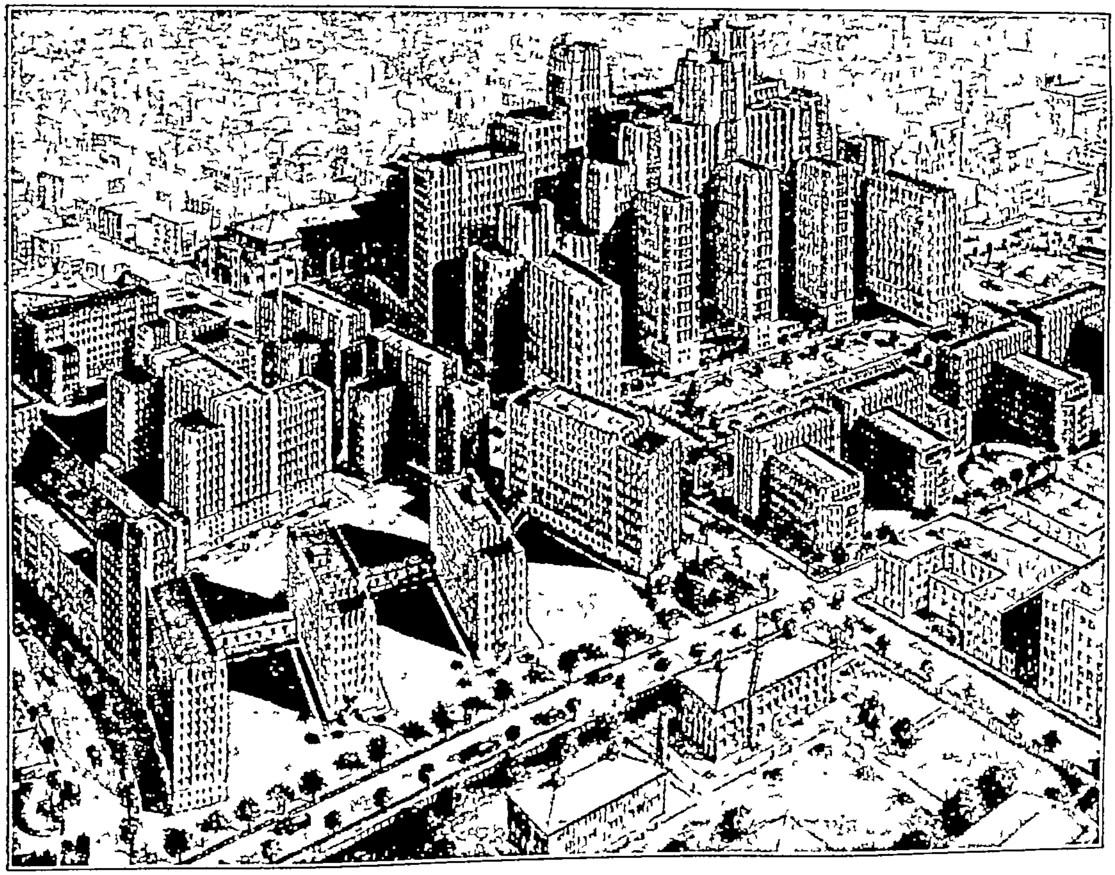
In the afternoon a pleasant home for unmarried mothers was visited with 10 beds and 30 cots; the mothers were confined here and allowed to remain in for another six weeks, the babies might be left in for two years or even more; later to the Children's Hospital and Polyclinic, of which Prof. E. Feer is the director. Here the most interesting feature were the glass cubicles in the observation block used for definite and suspected cases of infectious diseases. The visitors were informed that congenital syphilis had been so rooted out of Zurich that it was difficult to find clinical material for the students.

The conference as a whole was remarkably successful; it not only brought together fellow workers from many countries, but also provided matter for subsequent study by the technical experts.

THE "MEDICAL CENTRE" OF NEW YORK.

THE erection of the Columbia Presbyterian Medical Centre has now commenced and it is hoped to make of New York one of the world's greatest centres of medical teaching and research. The site occupies an area of 20 acres overlooking the Hudson River. The first building will be the new home of the Presbyterian Hospital and of the College of Physicians and Surgeons of Columbia University. This building will contain some 23,000,000 cubic feet, or one and a half times the space in the Woolworth Building in New York, the tallest building in the world at present. It is hoped ultimately to group together many medical institutions, covering many fields of treatment, education, and research which, though independent, will nevertheless coördinate the service of the sick and further the cause of health. Provision will be made for 1400 beds. The institutions already included in the plan, in addition to the two mentioned above, are the State Psychiatric Institute and Hospital, the Neurological Institute, the Babies Hospital, the Sloane Hospital for Women, the Vanderbilt Clinic, and the Presbyterian Hospital School for Nursing. All these are established institutions carrying on their work in old buildings in other parts of New York, and it is expected that their removal to new and larger premises at the medical centre will be effected with little or no interruption to their routine. Other institutions which it is hoped to include in the centre are ear, eye, nose, throat, and skin hospitals, a dental school, training schools for public health and social workers, a convalescent home, as well as dormitories for students and housing for the staff and personnel.

The Presbyterian Hospital Building will have 17 stories; the first floor and mezzanine will be for administrative uses and the next 13 will be ward floors. Above them will come an operating floor and mezzanine, while on the top floor will be an open-air gymnasium, loggias, and a recreation roof. Each ward floor will be as nearly as possible a hospital in itself, with 64 beds, divided into single and small wards. Attached to them will be a laboratory, treatment rooms, service rooms, three solaria, and a reception and lecture room on each floor. Each floor will have its own permanent nursing staff. In this way the patient will have all the advantages attaching to a small institution while at the same time commanding the resources of the centre as a whole. The private patients' pavilion will have 125 rooms, and there will be accommodation for relatives and friends who wish to live near the patients for a short period.



The Columbia Presbyterian Medical Centre as it will appear when completed. The new Presbyterian Hospital, now under construction, is the nearer half of the large central unit.

The medical school of Columbia University will have a building of the same height as the hospital building and connected with it on all the floors by an axis in which will be offices for the doctors and rooms for equipment to be used by both the school and the hospital. Included in the plan is an operating amphitheatre to serve the group and afford a clinical meeting-place for medical congresses. A unit corresponding to the medical section is reserved for the future development of the Vanderbilt Clinic, while the site for the Babies Hospital will be large enough to accommodate some 160 beds, thus enabling it to extend its work to include older children as well as infants. The Presbyterian Hospital of Nursing will have a building for 400 nurses. The eighth floor of the General Hospital Building will be devoted to the Squier Urological Clinic and will represent a self-contained unit devoted to bladder and kidney surgery, equipped with the most modern methods of diagnosis, with accommodation for 61 patients. Special floors will be allotted to the Sloane Maternity Hospital, which will have an obstetrical ward capacity of about 125 beds; while the Neurological Institute will need space for 200 beds, the number allocated to the State Psychiatric Institute and Hospital, now located on Ward's Island. There is distinct need for a recovery home which, it is hoped, will be erected on Riverside Drive, where the patient will have the advantage of being easily accessible to those under whose observation he should remain while recuperating.

Special attention will be devoted to the housing of the students and personnel. The keynote of the medical centre will be cooperation. It will be not so much a single organisation as a community in which everyone is concerned with the same general problem of restoring the patients to health and keeping them well afterwards. Each institution will retain its independence and will have its own trustees or managers, but they will all work together through the joint administrative board, composed of representative physicians and laymen.

While the cost of the buildings now in progress is estimated at $10,000,000, the final cost of the centre can only be vaguely guessed at at present. It certainly will run into many millions sterling. In the same way, it is difficult to estimate the time it will take to evolve the project to its fullest possibilities. The present belief is that it will need a generation, but maybe some public-spirited millionaires will come forward and provide the funds to carry the scheme to completion in ten or a dozen years from now.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Restriction of Hospital Beds Under Government Control.

FOLLOWING the stringent measures of economy, to which our budget is forced by the control of the League of Nations, a number of Viennese hospitals are to be closed down because the beds in these institutions are not in full-time occupation. Owing to the new hospitals erected on the outskirts of the city within the last 15 years, and to the numerous well-equipped new hospitals in the smaller provincial towns, the sick and the ailing do not flock to Vienna as they used to do. The diminution of the number of inhabitants of our country—now 6½ millions against 50 millions formerly—has also had its effect. The Government has found it more feasible to distribute the patients all over the country, thus keeping the minor hospitals in the provinces fairly busy. Not only has this scheme advantages from the point of view of economy, most of these hospitals being maintained by the local authorities, but it also promotes the general professional standing of the country doctors. Three hospitals have thus already been closed in Vienna, and the fourth—the Poliklinik, well known to every student of medicine in Vienna—has only escaped this fate through reorganisation; it is now rapidly becoming a hospital for the middle-class citizen with limited means. Its out-patient department, however, is working as usual. In order to understand the situation it must be added that in this country until 30 years ago all hospitals were Government institutes, with the exception of a couple or so of private hospitals, and one municipal hospital in Vienna. The system of hospital support by voluntary contributions is not known here. Local hospitals, indeed, were erected not very long ago in smaller towns by the municipalities and in Vienna by private corporations, but they soon had to fall back on Government support, especially in the years 1914–24. Now conditions have changed. What we really do want is not so much an increase of general hospital beds, but tuberculosis beds. Even here, however, our expenditure is curtailed by the urgent order of the "League" for economy.

Is the Human Saliva Poisonous?

An incident occurred recently in a public bath which has caused comment in medical circles. The facts are as follows: A girl of 15 was playfully bitten by a young man on the thigh whilst the two were enjoying themselves in one of our public sunbaths. The girl applied for medical help, stating that the bite had been caused by a dog, and was promptly sent to the hydrophobia department of the institution for experimental pathology. There she underwent a course of anti-rabic injections. She soon developed marked weakness, hypersensibility of the skin, pyrexia, and gradually symptoms of paralysis of several limbs appeared. After about a dozen injections the girl died. Rumours soon spread that she died in consequence of the injections, especially when her girl friends volunteered the information that the bite was inflicted not by a dog but by a young man. Police investigations were at once instituted and a post-mortem was obtained, in which it became clear that the girl had died from acute poliomyelitis, the fatal illness having no connexion either with the bite or the injections. But in the course of the public discussion, Dr. Kraus published an essay in which he set forth present knowledge regarding the toxicity of the human saliva. Many authors in the past, including Galen and Pliny the Younger, have pointed out that this fluid has a special activity. In comparatively modern times, about 90 years ago, Eberle reported from personal experiment that saliva had toxic effects, this quality depending on emotional conditions. A series of investigations were conducted by Pasteur in his laboratory, showing that over 32 different strains of pathological micro-organisms have been isolated from human saliva, some with distinct virulent effects, besides about 20 strains of non-virulent type. Dentists know very well that the mouth is a focus of infection. The assumption that the girl died from the human bite could not therefore be repudiated off-hand. But investigation proved that by a coincidence death had occurred from an infectious disease and was quite unconnected with the playful assault.

Two Distinguished Medical Contemporaries.

One of the most eminent of the Vienna medical teachers, Prof. N. Ortner, director of the second medical clinic in our city, recently celebrated his sixtieth birthday. A native of the city of Linz, he studied in Vienna in the clinics of Bamberger and Neusser. As assistant to the latter he found excellent opportunities for the study of numerous pathological conditions. His chief attention centred at that time in the conditions of the liver and gall-bladder, and his books on "Cholelithiasis" and "Infection of the Bile-ducts" won for him the gold medal of the Vienna University. Between 1895 and 1899 he published a series of papers on diseases of the vagus, paralysis of the recurrens, and on adventitious murmurs in peritonitis and pseudo-pericarditis, which showed a brilliant gift of keen observation. He thereafter published a series of lectures on special therapy of internal diseases, a concise and easily intelligible contribution to modern medicine. He was called to Innsbruck as clinical teacher (1907–11), but in 1911 he was recalled to Vienna and since that time has acted as a prominent member of the teaching staff of the university. Ortner is held in high esteem by his colleagues, as the recent "festschrift," published by the *Wiener medicinische Wochenschrift* showed.—Another birthday jubilee has also been celebrated recently. The well-known ophthalmologist, Dr. S. Klein, completed his eightieth year in full health. He was one of the first pupils of Jäger, and is the only man here who still examines the fundus with Jäger's ophthalmoscope, a method of excellent value, but hardly known to the younger generation. Klein's merits are on the diagnostic and therapeutic side of his science, and his skill as an operator is still a joy to those privileged to watch him.

SOUTH AFRICA.

(FROM OUR OWN CORRESPONDENT.)

Medical Congress at Maritzburg.

THE twentieth South African Medical Congress was opened in the Town Hall, Maritzburg, Natal, on July 6th, by Sir John Dove-Wilson, the Natal Judge President and President of the Council of Natal University College. There were 120 delegates present from all parts of the Union of South Africa and Rhodesia. Sir F. Spencer Lister, representing the South African Committee of the British Medical Association, inducted Dr. Dugald Campbell Watt, J.P., one of the oldest practitioners in Maritzburg, to the chair as President of the South African Medical Congress. Sir John Dove-Wilson, in his address, said his endeavour was to emphasise the extent to which the two professions of medicine and law are associated in a common task, and to acknowledge the great debt which the law owes to medicine for its loyal assistance and coöperation in the great work of doing justice between man and man. He dealt with the difficult problem of professional secrecy, and remarked that patients had no right to expect, or doctors to demand, that knowledge gained in their professional capacity should not be divulged by doctors in a court of law when it was relative to the matters at issue.

The President said that it was 20 years since a medical congress had been held in Maritzburg, and many changes had taken place. He recalled his predecessor in the chair in that city 20 years ago, Colonel James Hyslop, D.S.O., V.D., M.D., a man honoured in his day and generation. As against the sad and inevitable losses that the efflux of time had caused, they had seen in those passing years the advent of many young, energetic, and well-qualified colleagues, both eager and able to carry on the ideals and duties of their profession.

The President's address dealt mainly with the necessity for a spirit of unity, and outlined the history of medical associations in general and the S.A.M.A in particular. He said that the science and art of medicine in all its branches had become so intricate, extensive, and profound that no one human brain, however brilliant, could hope to reach the highest standard of efficiency in all. The practitioner was, therefore, compelled to collaborate with others who had; after qualifying, made one subject or another their special study. Strength was much required for the vigorous prosecution of their work in all its branches—from research to clinical—and this could only be effectively utilised and developed by uniting the whole of the necessary forces in the State, both lay and professional. All had one object in view: the greater alleviation of suffering, the abolition of the causes of disease, and the propagation of a sane, healthy, and virile population. It was the duty of the State to afford them its moral and financial support.

On the first evening of the Congress a public lecture was given in the Town Hall, Maritzburg, by Dr. Shadick Higgins, M.O.H., Cape Town, recently medical officer of health for St. Pancras. His subject was Public Health in Relation to Social Welfare. Ten papers were read at the Section of Medicine and Mental Hygiene, under the presidency of Dr. E. P. Baumann. The meeting opened with a paper by Dr. R. L. Girdwood on Focal Infection. The Surgical Section met under the presidency of Dr. A. McKenzie to discuss the Treatment of Carcinoma of the Breast, the subject being introduced by Mr. H. A. Moffat. The Public Health Section discussed the milk-supply and had two subsections for M.O.H.'s and school M.O.'s respectively. The causation and prevention of fœtal death was discussed at the Obstetrical Section under the presidency of Dr. A. Simpson Wells, and a special discussion on the work of the laboratory in relation to the practice of medicine was opened by Sir F. Spencer Lister.

Obituaries.

The late Dr. J. A. Clements had filled the post of Government district surgeon for the Umsinga district of Natal, and was an extremely popular and honoured officer. His death followed an operation for internal ulcer.—The late Dr. Wynn Westcott had become a resident of South Africa after his retirement from the coronership in London. He had attained much distinction in Blue Masonry and had been a Master of Lodge Quatuor Coronati, the membership of which is restricted to Masons noted for original research and literary work. He was also a student of the Kabalistic philosophy, Hermetic writings, and the work of the alchymists and Rosicrucians, of which latter he held the office of Supreme Magus.

A Central Leprosy Hospital.

The Union Leprosy Commission concluded its deliberations at Cape Town on June 24th, and will not meet again this year. According to *Die Burger*, the Commission recommends doing away with all the several smaller isolation places and having one central leprosy hospital in Pretoria, as being the most suitable position. The idea is to make this hospital a modern model institution, and the Commission, it is stated, has worked out a scheme which will save the Union Department of Public Health about £20,000 a year. Some members of the Commission were in favour of having a medical expert specially brought to South Africa in order to advise the Government on the building and fitting out of the proposed hospital.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

The Irish Free State and the Medical Register.

THE controversy on the question of medical registration in the Irish Free State is still carried on in the Irish press, but it has shown a milder tendency in the past ten days. This change of atmosphere is due in large measure to the conciliatory attitude taken by Mr. Cosgrave, the President of the Irish Free State. In reply to a memorandum sent to him by the President and Fellows of the Royal College of Physicians, he invited the College to send a deputation to discuss the matter with him. The deputation met him on Sept. 3rd, and a frank discussion was held on the present situation. Mr. Cosgrave was firm on the point that the Government was determined to establish a medical register for the Irish Free State, and, if forced, was prepared to go to the country and fight the matter at the meetings. The Government had not yet framed a Bill, and he invited the coöperation of the profession in its drafting. As soon as the Bill was framed it was the intention of the Government to approach the English Government with the view of obtaining some sort of reciprocity between the two countries; and he believed that he would obtain such a measure of reciprocity as would not endanger the status of persons seeking Irish medical qualifications. The deputation urged that, if the Government were determined to set up a medical council and register in the Free State, the existing conditions should be allowed to continue until such time as that had been accomplished. Mr. Cosgrave, while remaining sympathetic towards this view, pointed out that any such continuation of the existing conditions would be granted only on the condition that prolongation was not used for the purpose of delaying the establishment of an Irish register.

Mr. Cosgrave has invited the members of the Consultative Committee, consisting of representatives of the educational bodies and of the medical profession, to meet him in conference on Sept. 9th. In the meantime, the meeting of protest, to be held on Sept. 8th, will have contented itself with a recognition of Mr. Cosgrave's conciliatory attitude.

Sept. 7th.

INDIA.

(FROM OUR OWN CORRESPONDENT.)

A General Medical Council for India.

IT is interesting to learn that a private member proposes to introduce, in the coming session of the Indian Legislative Assembly, a Bill for the formation of a Council of Medical Education in India. The idea is to create a body on the lines of the General Medical Council of the United Kingdom for controlling medical education under the direction of the medical profession. As one of the objects of the measure will be to establish a qualification in the indigenous methods of treatment of disease, it is not surprising that disapproval has been warmly expressed at a meeting of medical men held in Bombay.

The Committee appointed by the United Provinces Government to advise them regarding the best means to be adopted for improving the Ayurvedic and Unani systems has commenced its labours, but it will be some time before it presents its report.

The Supply of Medical Students.

At the Medical College, Calcutta, 120 vacancies were announced for the last winter session, and there were 1000 applications. The Government of Bengal control the college, and were therefore able to issue specific orders as to the qualifications of applicants. The most noteworthy of these were: (1) that a few places were reserved for men who had taken the B.Sc. degree; (2) that half were reserved for candidates who had passed high up in the intermediate science examination; (3) that four places were reserved for the sons of distinguished medical men; and (4) that only five places were reserved for women students.

Broadcasting Epidemiological Information.

It was decided at a conference attended by delegates from 12 Far Eastern administrations that the first appearance in any part of Asia or Australia of cholera, plague, small-pox, yellow fever, or the unusual prevalence of any other infectious disease, should be immediately reported to the Far Eastern Epidemiological Bureau, and that a weekly bulletin should be despatched recording: (1) The mortality from these diseases; (2) the existence of plague infection among rats; and (3) notes of unusual epidemics. The information collected by telegraph from the various Governments is broadcasted by the Government of French Indo-China from their wireless station at Saigon, and in India this information is received at Simla by the Public Health Commissioner with the Government, and then distributed to the health officers of the large Indian ports, who have thus, each Saturday morning, detailed information regarding the health of the major ports of the Far East up to the midnight of the previous Saturday.

Extended Distribution of Anti-Rabic Vaccine.

The Pasteur Institute at Kasauli is now issuing vaccines on a large scale to various centres for anti-rabic treatment. Prior to Jan. 1st of the present year, the only regular issue of vaccine was to a railway centre at Allahabad, but recently a centre was opened by the Punjab Government at Lahore, one at Rawalpindi for soldiers, and another at Rajkote, in Kathiawar, and these are likely to be followed by others in various parts of India. The Behar and Orissa Governments have decided, moreover, to open a centre and make their own vaccine. These developments enable patients to be treated in their own districts.

Child Welfare Work in Madras.

The Government in reviewing the report on child welfare work for the quarter ending March 31st, 1925, state that only three district boards, 23 taluk boards, and 84 municipalities have sent in reports of their work. There are only 45 centres in the Presidency for a population of over 43 millions. The districts of Cuddapah, Kurnool, Guntur, Nellore, and Malabar do not possess a single child welfare centre. On the other hand, there are eight centres working in the Chittoor district, and among the remaining districts, three—the Nilgiris, Vizagapatam, and Chingleput—have four centres each, two others have three centres each, six have two each, while the rest have one centre each. The municipalities of Chingleput, Madura, Vellore, Tanjore, and Ootacamund have each of them two centres, the two at Chingleput having been organised and maintained by the Red Cross Society. Only seven new centres were opened in the Presidency in the year under review, in spite of the Government's special appeal in the last year's review. Thirteen local bodies have organised committees for intensive child welfare propaganda and the inauguration of new centres wherever feasible. To facilitate the opening of more child welfare centres and their efficient working the Government have decided, as an experimental measure, to train four women as health visitors with a view to their subsequent employment by local bodies.

A successful "Baby Week" was recently organised in Poona.

Training and Employment of Qualified Midwives.

Only 17 municipalities and eight taluk boards are so far known to have employed qualified midwives in their service. Of these, four were appointed during the year under review by the municipal councils of Villupuram and Cuddalore, and the taluk boards of Perambalur and Koilkuntla. The appeal made by the Director of Public Health to the local bodies to take steps for the training of midwives did not meet with sufficient response. The supervision of the work of trained "dhais" and the improvement brought about by training do not seem to have been adequate.

Medical Inspection of School-children in Madras.

The system of inspection of pupils in recognised secondary schools sanctioned in 1920 is now to be put into force. The inspection will be confined for the present to recognised secondary schools for boys, school departments of colleges and training schools, and will be carried out annually by local practitioners selected by the local boards of management or the Director of Public Instruction in consultation with the Surgeon-General. The aim will be to ascertain the general physical condition of the pupil, the treatment of those suffering from disease being left to the parents. The management of the school undertakes to maintain the records and submit the required returns.

Meagre Hospital Facilities in Bombay.

The Government of Bombay has addressed the municipality on the subject of the inadequate hospital accommodation provided in Bombay, in comparison with its population and importance. The number of beds available for the treatment of general diseases is only 526, or approximately 1 bed for every 2000 of the population. On making a comparison with the other leading cities of India, it has been found that the number of beds per 1000 of the population is as follows: Lahore, 7·2; Madras, 3·4; Calcutta, 2·6; Bombay, 0·5. The Government call for a conference to discuss the subject of medical relief in the great city which has been aptly called "The Gateway of India."

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics of six counties for 1924:—

Name of county.	Mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Surrey	742,900	14·9	10·6	0·80	1·46	2·0	—	52	3·6
Wiltshire	305,100	17·1	11·4	0·83	—	—	—	55	4·0
Northamptonshire	316,200	16·2	11·6	0·91	1·31	1·0	—	52	3·4
Warwickshire ..	358,300	18·8	11·0	0·89	1·25	1·9	—	60	4·3
Leicestershire ..	273,100	18·8	11·7	1·01	1·29	2·2	—	60	2·7
Fife (landward area)	108,161	24·0	12·2	0·83	1·06	3·1	—	84	3·1

Surrey.

Dr. Joseph Cates reports that the infant mortality and general death-rate are slightly higher than in 1923, and that influenza and its respiratory complications were among the causes of this increased death-rate. The county council now has a comprehensive and compact scheme for all branches of home visitation which has been evolved so as to obviate overlapping. The county is divided into 12 areas. In each area there is an assistant medical officer, who carries out school medical inspection and treatment, maternity and child welfare and dispensary duties. Three or four health visitors, who are fully trained nurses and hold the certificate of the C.M.B. and the health visitors' certificate of the Royal Sanitary Institute, are allocated to each area. These health visitors carry out antenatal and birth visitation, follow up defects discovered in the scholars of the elementary and secondary schools, inquire into tuberculosis, supervise the mentally and physically defective, and visit the blind.

Surrey now has an organised scheme for the discovery and treatment of crippling defects. Children are referred to the assistant medical officers by the health visitors, teachers, school attendance officers, and voluntary workers, and after examination are sent to the orthopædic centres included in the scheme. Children of school age, who reach the centres on the advice of medical practitioners and other agencies, are seen by the assistant medical officers before the committee accepts liability for treatment. The approved orthopædic centres are the Guildford County Hospital, the Croydon General Hospital, the Nelson Hospital at Raynes Park, and the aid-posts of the Red Cross Society at Kingston and Woking. At each centre there is in attendance an orthopædic specialist and nurses trained in massage, electrical treatment, and plaster work. Minor operations are carried out at the centres; major operations in one of the hospitals mentioned or a London hospital. For certain of the patients prolonged in-patient treatment is necessary, and 50 beds at the homes of the Waifs and Strays Society at Pyrford have been secured for the purpose. These homes are recognised by the Board of Education and are well equipped for the operative treatment and education of cripples. The county council pay 3s. per attendance at the centres for cases referred by their assistant medical officers and £104 a year for each occupied bed at Pyrford.

Dr. Cates refers to the complaints, which are made from time to time by the Surrey local sanitary authorities, as to the dumping of refuse by certain of the metropolitan borough councils, and is emphatic that the time has arrived when urban communities should destroy their refuse in a properly constructed destructor. During the present year a survey will be made of the methods adopted throughout the county for the disposal of refuse. A report on isolation hospital accommodation in the county indicates the need for some reorganisation. For example, the Frimley Urban District Council's hospital at Mytchett is quite unsuitable, and diphtheria cases from this district are already sent to the Farnham Hospital. Dr. Cates considers that the Frimley hospital should be closed and all cases of infectious disease sent to the Farnham or some other hospital. Again, at Redhill are the well-constructed hospital of Reigate borough and the antiquated, unsatisfactory hospital of Reigate district, whereas the former building would serve both areas. A third recommendation is that the Epsom Urban District Council should close their hospital and arrange for their patients to be admitted to the Joint Hospital at Cuddington. The report for 1922 contained a complete survey of the Hogsmill; that for 1923 a survey of the Wandle; and the present report contains a survey of the Beverley Brook. The condition of the Beverley Brook, says Dr. Cates, is not so serious as that of the River Wandle, but furnishes additional evidence that the county council needs supplementary powers to enable them to deal satisfactorily with the condition of the rivers in the county.

Wiltshire.

Dr. Claude E. Tangye reports an increase in the prevalence of encephalitis lethargica, there being 12 cases notified as against three in 1923. Four of the cases ended fatally and most of the survivors suffered damage to the nervous system. Five children of school age survived the disease with impaired mentality and a sixth with facial paralysis. Other cases of this disease have occurred which were not notified at the acute stage, but only diagnosed by the after-effects. The orthopædic clinics which have been started at Devizes, Trowbridge, Corsham, and Swindon in connexion with the Children's Orthopædic Hospital at Bath, have been of great value to the tuberculosis scheme. Dr. Tangye points out that the notification of tuberculosis is still incomplete and that about one-fifth of the deaths from tuberculosis in 1924 were unnotified cases. An arrangement has been made with Swindon whereby midwives notify all cases of discharging eyes, however slight, to the borough medical officer of health. Under this scheme 13 notifications were received by Dr. D. Brewer, the Swindon M.O.H., and the cases were subsequently treated at the borough child welfare clinic with most satisfactory results. The health visitors of the county council supervise boarded-out children for most, but not all, of the boards of guardians in the county. In consequence of the relatively high rate of maternal mortality in the county, the district medical officers of health were asked to furnish details of all deaths from complications of childbirth in return for a small fee. A number of such reports have been received, but it is too early to judge of their value. There are now six maternity and child welfare centres in the county. The centre at Trowbridge is the only one administered directly by the county council, the others being under voluntary committees. Antenatal work has been begun at the Trowbridge centre, and the employment of practitioners of special experience in this work is a question which is receiving careful consideration.

The report on the sewage works of the county shows that there is considerable pollution of the rivers by a large number of unsatisfactory effluents. Only one licence has been issued by the county council under the Milk Designations Order—namely, for Grade A milk. The shortage of houses in Wiltshire is still acute and very little is being done in the matter of the inspection and repair of insanitary houses. Dr. Tangye reports that the provision, by which the local sanitary authority can carry out repairing work in the default of the owner and charge the owner with the cost, is practically never used. It is surprising to learn that there are four rural districts which have no building by-laws. Of these, says, Dr. Tangye, "the Bradford-on-Avon Rural District is conspicuous for the activity of building operations quite uncontrolled by the local sanitary authority."

Northamptonshire.

Dr. Charles E. Paget notes the passing of the Thames Conservancy Act, 1924, as one of the important events of the year. By this Act the jurisdiction of the Thames conservators has been extended to six additional counties—viz., Northamptonshire, Warwickshire, Worcestershire, East and West Sussex, and Bedfordshire. The effect of the Act is to bring all sources of sewage pollution of the River Cherwell and its tributaries within the rural districts of Brackley, Daventry, and Middleton Cheney under the surveillance of the conservators. When the Bill came before Parliament there were three serious pollutions of the Cherwell. In respect of two of these action had already been taken, but the Brackley R.D. Council had refused to carry out a scheme for Kings-Sutton on the grounds of expense. Dr. Paget points out that the standard of purity required by the Thames Conservancy is much higher than that adopted by any authority enforcing the Rivers Pollution Act. Presumably the Brackley R.D. Council will have to come into line. Dr. Paget reports an increase in the prevalence of encephalitis lethargica. There were 19 notifications in 1924, as compared with 6 in 1923; 9 of the cases ended fatally; 7 of the 9 deaths occurred at or over the age of 45.

The inspection of dairy cows in the county during the year was interfered with by outbreaks of foot-and-mouth disease. To Dr. Paget's regret, veterinary inspection is not in operation in all parts of the county. There are two joint committees in the county for veterinary inspection and the results judged by success in finding cows with tuberculous udders are a curious contrast. Thus the veterinary inspector of the Kettering Joint Committee found six cases of tuberculous udders among 3808 cows, while the veterinary inspector of the Wellingborough Joint Committee found 10 tuberculous udders among 2070 cows. The county analyst, Mr. E. W. Voelker, reports that nearly 10 per cent. of the 371 milk samples were adulterated, 26 being deficient in fat and 10 being watered. The proportion of butter samples containing boric acid preservatives was much less than in 1923. One reads with interest that two samples sold as "ginger brandy" were non-alcoholic syrups flavoured with ginger, while a beverage with the innocent name of "cowslip wine" contained 20 per cent. proof spirit.

Warwickshire.

Dr. A. Hamilton Wood reports a considerable amount of progress in the matter of prevention of river pollution. The activities of the Upper Tame Basin Joint Committee have stimulated the authorities whose effluents were polluting the Tame before it reached Warwickshire. The Birmingham Tame and Rea District Drainage Board have introduced many improvements including bio-aeration plants, and a great improvement is expected in the quality of the effluent of 30,000,000 gallons per day discharged into the Tame below Water Orton. The condition of the River Cole is also improved. Important reconstructions have been carried out at the sewage works of both Hinckley and Nuneaton, which will improve the condition of the River Anker. The Avon is still polluted by sewage from the city of Coventry, but it is expected that an improvement will shortly result from the installation of the bio-aeration plant which is now in progress at the city sewage works. The effluents from the Warwick sewage farms and the Leamington sewage works are still unsatisfactory.

The county analyst, Mr. Rigby, reports that the average composition of the milk samples analysed during the year showed 8·75 per cent. of non-fatty solids and 3·88 per cent. of fat. For the first and fourth quarters of the year the average was about 8·74 per cent. of non-fatty solids and 4·02 of fat. For the two middle quarters of the year the non-fatty solids averaged about 8·76 and the fat 3·73. The fat was thus 0·3 per cent. higher during the winter quarters. The record of the V.D. clinics shows an increase in new cases dealt with from 170 in 1923 to 204 in 1924. The patients who ceased to attend without completing treatment numbered 110, while only 40 were discharged after the completion of treatment. Dr. Wood, referring to the statement of the Ministry that no Exchequer grants are available towards the cost of the training of midwives, points out that local expenditure either from voluntary or rate-aided sources must be increased if the efficiency of the county midwifery service is to be maintained.

In view of the high maternal mortality from childbirth provision has been made for complicated midwifery cases at several hospitals and at the county maternity homes at Warwick and Rugby. The Warwick home admitted six antenatal cases and the Rugby home 12 antenatal cases during the year. Only 144 new cases attended the antenatal clinics, while the number of births in the county was 6722. Both of the county homes have been recognised by the Ministry as training institutions for midwives. There were 34 notifications of ophthalmia neonatorum with no cases of impaired vision. This result is attributed to the routine use of a colloidal silver preparation by the midwives introduced in 1910 and perfected in 1920. The following are the cases of blindness in infants from ophthalmia neonatorum during the last nine years:—

Year.	Notifications of ophthalmia.	Blindness.		Year	Notifications of ophthalmia.	Blindness.	
		Both eyes.	One eye.			Both eyes.	One eye.
1916	66	1	1	1921	36	0	0
1917	60	2	0	1922	59	0	0
1918	46	1	1	1923	40	0	0
1919	52	1	1	1924	34	0	0
1920	56	0	1				

Leicestershire.

Dr. T. Robinson reports an effort towards the production of cleaner milk in the county. The county laboratory is to be extended and its staff increased in order to deal with milk samples sent by the district councils. Both the district councils and the vendors will be informed of the result of the examination. A clean milk competition was held during the year, for which 20 farmers entered. For the competition six samples were sent by the competitor and one surprise sample was taken. A steady improvement was noticed in the samples as the competition progressed. Of the 20 competitors eight produced Grade A milk in each of the seven specimens, while only one competitor failed to produce Grade A milk in any of the seven samples examined. The Ministry have issued four licences for Certified milk and one for Grade A (tuberculin tested), while the county council have issued Grade A licences to three producers. Small-pox was introduced into the county in December, 1923. There were 98 cases reported during 1924. The disease was of a mild type and caused no deaths.

Fife.

Dr. G. Pratt Yule, in referring to the fact that the Board of Health has issued an Order making infective jaundice compulsorily notifiable, states that this disease appears to be associated with a similar condition in rats and that it has occurred among miners in the county in the past, but would appear to have been limited to pits in the Lochgelly-Cowdenbeath area. During 1924 seven lupus patients were sent to Edinburgh to receive treatment at Sir Norman Walker's arc-light clinic at the infirmary. Dr. Yule and Dr. McGillivray (the tuberculosis officer) were much impressed with the results obtained at this clinic. They saw one case, who had been attending the infirmary for 40 years trying all kinds of treatment without benefit, and whose lupus was practically healed after four months of the light treatment. They recommended that a similar clinic be established at the county sanatorium at Glen Lomond. Dr. W. P. S. Johnson, the medical officer of the Dunfermline V.D. centre, reports that, as compared with 1923, there is an increase in the percentage of gonorrhœa cases and a decrease of syphilis cases. The percentage of cases which cease to attend before the completion of treatment was 13·8, which compares very favourably with the experiences of other centres. Dr. Johnson points out that the clinic in Market-street is unfortunately situated; for one thing, it is at a distance from the hospital where the in-patient treatment is carried out, but the principal objection is that the position is so exposed that prospective patients are deterred from attending. Housing conditions are still difficult, and the need is particularly urgent in the mining districts of Kirkcaldy and Dunfermline. No applications have been made for licences to sell graded milk.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED AUGUST 29TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 37; scarlet fever, 1302; diphtheria, 787; enteric fever, 81; pneumonia, 449; puerperal fever, 41; cerebro-spinal fever, 6; acute poliomyelitis, 12; acute polio-encephalitis, 2; encephalitis lethargica, 31; continued fever, 1; dysentery, 8; ophthalmia neonatorum, 109. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there was 1 death from enteric fever, 20 from measles, 5 from scarlet fever, 40 from whooping-cough, 12 from influenza, and 27 from diphtheria. There were 218 deaths of children under 2 years from diarrhœa and enteritis, as compared with 177, 186, 168, 101, and 64 in the preceding weeks. In London itself there were 10 deaths from diphtheria, 5 from whooping-cough, and 1 from influenza.

Correspondence.

"Audi alteram partem."

THE INDIAN MEDICAL SERVICE.

To the Editor of THE LANCET.

SIR,—I was delighted this morning to read the leading article in THE LANCET on the Indian Medical Service. It was most refreshing after the orgy of pessimistic representations that have appeared in other papers. The article is, I believe, an accurate statement of the present position of the I.M.S., and taken with what appeared in the Students' Number last week should be very helpful to young medical men wishing to know the exact state of things.

I was very glad also to read your eulogy of Lord Sydenham's speech. The fundamental point is that the I.M.S. is not to be abrogated. I am inclined to think that once the home schools' embargo is raised there will be a rapidly increasing number of candidates for the I.M.S. There will be few home candidates for the 50 per cent. appointments of the civil or rather provincial medical services; the Lee Commission recommended that the shortage of these 50 per cent. was to be made up by additional transfers (apart from the War Reserve of 122) from the R.A.M.C. (India). If this is given effect to in the I.M.S., we shall go near to a restoration of the status quo ante. *Nous verrons!*

I am, Sir, yours faithfully,
P. HEHIR.

Westward Ho! Devon, Sept. 4th, 1925.

*** If the recommendations of the Lee Commission are applied in their entirety to the Indian Medical Service it follows, as we set out in the Students' Number of THE LANCET, that no attempt will be made to perpetuate that Service as at present constituted. Happily, the Government of India and the Secretary of State for India are in agreement that the Indian Medical Service must be maintained. Lord Birkenhead has still to communicate his final decisions, but there is nothing in the existing situation to belie optimism.—ED. L.

ADENOIDS AMONG SCHOOL-CHILDREN.

To the Editor of THE LANCET.

SIR,—In reference to the annotation upon this subject in your issue of August 22nd (p. 391), it may be of interest to your readers to be reminded of an investigation into the occurrence of adenoids in three of the London County Council elementary schools, the results of which I published 15 years ago.[1] The investigation dealt with 2315 children and was made during the winter of 1907–08. Without going into details, which can be seen in the reference given, the conclusions to be drawn were as follows:—

1. That on the average about 37 per cent. of the children in elementary schools have adenoids, and between 72 and 76 per cent. have enlarged tonsils as well.

2. That on the average 31·2 per cent. of adenoid cases are mouth-breathers, complete or partial, and that hypertrophy of the faucial tonsils may give rise to mouth-breathing in the absence of adenoids.

3. That sex appears to have no influence upon the incidence of adenoids.

4. That adenoids are most common about the age of 8 and are next most frequent at about 12.

5. That true aprosexia is often confused with apparent dullness due to defective hearing, and that true aprosexia occurs only in about 4·7 per cent. of adenoid cases, is more frequent in girls, and, when present, is associated with a marked degree of adenoids.

6. The so-called adenoid facies is uncommon, save in association with a marked degree of adenoids.

7. That the association of an abnormally high palate with adenoids is rather due to peculiarities of cranial formation than to extra-uterine influences of nasal stenosis, and that, if there is any relation between a high narrow palate and adenoids, it is possible that the palate shape is rather the cause of the adenoids than vice versa.

8. That the presence of adenoids has more to do with the presence of carious teeth than have mouth-breathing and palate shape, and that this is probably due to the increased tendency to oral sepsis in adenoid children.

9. That irregularity of the upper incisors is less a result of adenoids than of palate shape.

10. That the percentage of ear complications in adenoid children is about 10·8, and that adenoids are probably by far the most important factor in the ætiology of ear affections in childhood.

There is no need to compare my conclusions with those of Dr. Newsholme, but I cannot agree with his estimate that 5 per cent. only of the school-children would be suffering from symptoms calling for operation, presuming, of course, that the children referred to are the 600 out of 18,000. I am much more in agreement with my friend Dr. Dan McKenzie, that the percentage requiring operation is 30.

There is one thing that must be said in conclusion, for it has come repeatedly before me in my work as an officer of the L.C.C., and my experience has been endorsed by other otologists to whom I have spoken on the subject. It is that a large percentage of adenoid operations are inefficiently performed. Not a month passes without my being told by mothers that a child's deafness has been made worse by, or dated from, an adenoid operation. It is not the special hospitals that this complaint involves, but the large general hospitals and general practitioners in poor neighbourhoods. Even when the operation has been efficiently performed it would appear that in many instances the child is expected to recover hearing by itself, and no trouble is taken to follow cases up and to ensure that proper aural after-treatment is obtained.

Finally, the more I see of the treatment of adenoids and tonsils, the more I am convinced that the operation should be regarded as one of the highest importance and not as one so trivial that "anyone" can perform it.

I am, Sir, yours faithfully,
MACLEOD YEARSLEY, F.R.C.S.,
Consulting Aural Surgeon to the London County Council, &c.

Wimpole-street, W., Sept. 4th, 1925.

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[1] British Journal of Children's Diseases, February and March, 1910.

RADIATION FOR CARCINOMA:

MR. BONNEY'S CHALLENGE.

To the Editor of THE LANCET.

SIR,—I perceive from your report of the proceedings of the Section of Gynæcology at the B.M.A. annual meeting that Mr. Victor Bonney has been at it again. The mere mention of the word "radiation" appears to make him see red. Speaking of cases of carcinoma of the uterus with carcinomatous glands, Mr. Bonney said (THE LANCET, Sept. 5th, p. 498):—

> "He did not use radium beforehand as a routine, though he had operated on a good many cases in which it had been so used with the idea of making the growth removable. Those who said it could do this did not know the limits of operability. It did nothing of the sort, but on the contrary made the operation much more formidable on account of the intense fibrosis set up, which so welded the surrounding tissues to the growth that all planes of cleavage were lost."

If Mr. Bonney goes on at this rate (and he *does* go on, as his later remarks will show) his name will become a bogy with which to frighten young radiologists at their mother's knee! I am not specially concerned to take up the cudgels for radium as a pre-operative treatment, as I think it is less easily controlled than X rays, and may, unless very skilfully handled, cause actual tissue necrosis, with resultant extensive scarring. But Mr. Bonney does not confine his hostility to radium. He goes forth with bell, book, and candle, reciting a kind of Athanasian Creed which includes radium, X rays, and their advocates in one comprehensive damnation.

Now, if there is one thing firmly established in radiotherapy, it is that X rays in suitable doses have the power to cause the absorption of pathological fibrous tissue. Keloid melts away under their influence, and the tense bands of a Dupuytren's contraction become softened. The X ray, it is true, *does not* distinguish between fibrous tissue which is the result of disease, and adhesions which have been deliberately provoked by the surgeon. In a case published some years ago an intensive dose of X rays was given to a patient in whom a ventrofixation of the uterus had been successfully performed 12 months previously. Within a few weeks of the irradiation the adhesions to the abdominal wall gave way, and the original prolapse recurred. This case was quoted by a surgeon to illustrate the dangers of X ray therapy; in reality it was an excellent proof of the power of X rays to dissolve fibrous tissue. That this particular result was not the one aimed at does not in any way invalidate the demonstration. I am frequently called on by my surgical colleagues to attempt to render an inoperable case operable, and in many instances I am able to cause a fixed growth to become movable. This is a statement which it is quite obvious that no responsible medical man would make unless he were prepared, if necessary, to produce independent surgical testimony as to its truth.

To quote Mr. Bonney further (p. 400):—

> "His experience of this treatment (deep X rays) both for primary and secondary growths was most disappointing... No one was more anxious than himself to find a better method of treating carcinoma of the cervix than operation, but there was no sense in the advocates of radiation carping at the results of surgery until they had produced a series of figures comparable with those he had just put before them.... What was needed was the publication of a British series of not less than 100 cases treated by *radiation, in all* of which at least five years had elapsed between the date of cessation of all treatment and the date of publication."

The idea of the British radiologist carping at the results of surgery makes one smile. If he has erred in the past it is by excessive deference to surgical views. *Damnat quod non intelligit* is not a fault which can be laid at his door. But Mr. Bonney issues a direct challenge. It is, however, one that he must know he is quite safe in making. To carry out such a test it would be *necessary* to secure 100 cases of pelvic cancer not of the moribund type, which the British radiologist usually sees, but similar to an average 100 of the cases which are now operated on. At present the sequence of events is this: The practitioner sends the patient to a gynæcological surgeon, who invariably recommends operation when this is technically possible. The radiologist sees only (1) the inoperable cases, (2) recurrences, and (3) a few patients who refuse operation. It is only from these latter that *statistics* such as Mr. Bonney asks for could be compiled, and I doubt if there are many radiologists who see 20 such cases in a life-time of practice. Is Mr. Bonney—is any gynæcological surgeon—prepared in his hospital practice to set aside 50 per cent. *of* all operable cases for five years or more in *order* to put the matter to proof? I think not. But unless those who control the cases are prepared to follow some such plan it is idle to taunt the British radiologist with the failure to produce statistics.

I *express no opinion* as to what the probable result of such a test would be. Personally, I have always advocated combination in treatment. My object has been to show that Mr. Bonney has issued a challenge which, through no fault of the *radiologist*, cannot be *accepted*.—I am, Sir, yours faithfully,

Harley-street, W., Sept. 5th. F. HERNAMAN-JOHNSON.

LONDON MEDICAL GRADUATES AND CONVOCATION.

To the Editor of THE LANCET.

SIR,—May I point out to all M.B.'s of London the significance of the amendment of Statute 41, Clause (ii), which was ratified by the King in Council in May last, and is now in force, which entitles every M.B. to be registered *as a member* of Convocation (and, subject to the Representation of the Peoples Act, 1918, places him on the Parliamentary roll for the University vote) immediately he or she graduates, provided the age of 21 years has been attained. Hitherto every graduate was compelled to wait three years from graduation, which produced the striking anomaly that, whereas graduates in other faculties (divinity, arts, law, music, science, in which graduation can be attained after a three years' course) might enter Convocation six years from *matriculation*, graduates in the medical *faculty* were compelled to wait eight and a half to nine years.

I pointed this out in the *Times* of Oct. 23rd last, and at the same time memorialised the faculty representatives and the present Member of Parliament for the University. They agreed that the existing anomaly called for removal, and accordingly a motion was framed, and put by Mr. Eason at the meeting of the Faculty of Medicine on Oct. 20th last, which called the attention of Convocation to this anomaly, and recommended the amendment of Statute 41, para. (ii) by the abolition of the probationary period of three years. This was carried unanimously, and was sent on to Convocation. Independently of this action Dr. James Mould, at the request of the Twentieth Century Society of London Graduates, placed a notice of motion on the agenda paper of the meeting of Convocation held on Jan. 16th, 1925. Convocation resolved in accordance with the *terms of Dr. Mould's* motion which was then forwarded to the Senate, and, as stated above, was finally approved by His Majesty in Council in May.

The link between the University and her graduates *needs strengthening* by every possible means, and now that our Alma Mater stretches out her hands in welcome, it behoves every M.B. to become a member of Convocation as soon as possible, and thus to take an active interest in the government of the University.

I am, Sir, yours faithfully,
CHARLES A. H. FRANKLIN, M.D. Laus.,
M.B., B.S. Lond.

Bickley, Kent, Sept. 7th, 1925.

SILICATE IN A HARROGATE WATER.

To the Editor of THE LANCET.

SIR,—Valuable therapeutic uses are attributed to silicate by Prof. F. Luithlen in the article annotated in your issue of August 22nd (p. 392). Luithlen there points out the importance of a proper balance between calcium and silicon in healthy tissue. A deficiency of silicate is said to result in decreased *elasticity* and certain senile conditions. Any natural medicinal source, therefore, containing silicate presents points of interest hitherto rather neglected, although Weber and Weber ("Climatotherapy and Balneotherapy," p. 341) refer to the therapeutic *influences* of this compound.

In the Harrogate John's Well we have a water which appears particularly suitable for the administration of silicate. Only in very rare cases does the silicate content of a natural water approach the calcium in amount, and a brief search discloses no instance in which the ratio Si/Ca is so high as in the John's Well. Results of analysis of John's water, expressed in terms of parts weight of ions per 100,000:

Specific gravity 16°/15° C.	1·00019	Calcium	1·83
Total solid matter	19·00	Iron	0·08
Sodium	1·04	Manganese	0·022
Potassium	0·20	Chloride	1·80
Ammonium	0·000	Silicate	3·54
Lithium	trace	Sulphate	0·86
Magnesium	0·87	Carbonate	14·2

The water is palatable and assimilable. It is hypotonic, having an osmotic pressure of about 130 mm. of mercury. Usually it is prescribed *for its* iron content, which is small, but as Bain and Edgecombe say of this spring ("Harrogate Waters, Baths, and Climate," p. 99): "There are certain patients so peculiarly susceptible to the influence of iron that, unless weak solutions easily assimilated are prescribed, the remedy has to be abandoned." The ration of silicate to calcium is 1·93.

I am, Sir, yours faithfully,
A. WOODMANSEY, M.Sc.,
Analyst, Royal Baths, Harrogate.

Sept. 4th, 1925.

MISQUOTATION.

To the Editor of THE LANCET.

SIR,—In the *Vaccination Inquirer*, the organ of the National Anti-Vaccination League, dated Sept. 1st, a statement has been made to the effect that at a meeting of the Natural History Society in Eastbourne I stated: "I would rather sleep with a case of small-pox than a case of influenza," and for having stated this I am alluded to as "Eastbourne's sensible M.O.H." It will interest your readers to know that this statement is a *part* of a sentence which was completed to this effect: "Because I have been vaccinated against small-pox and keep myself re-vaccinated from time to time."

The *Vaccination Inquirer* is, I understand, circulated to medical men, and the passage might very well give the impression that I did not believe in vaccination. The facts are that I was giving an address on vaccination and similar matters at the meeting of the Natural History Society, and was taking the opportunity of rubbing in the importance and advisability of vaccination and re-vaccination, explaining carefully the reasons for my doing so.

It is interesting to know that anti-vaccinators can take a part of such a statement as I made and twist it so that it would appear that my opinion is diametrically opposite to that which I stated in full at the meeting. The statement in the *Vaccination Inquirer* may not be a matter altogether of bad faith on the part of the writer in that paper, for his information was got from a local paper in which a contributor, who is a prominent anti-vaccinator, made the original statement.

I am, Sir, yours faithfully,

W. G. WILLOUGHBY,

Sept. 8th, 1925. Medical Officer of Health, Eastbourne.

⁂ We have received from the President of the National Anti-Vaccination League a pamphlet on the vaccination question, asking for assistance on the ground of "the power of the press in all matters." The power of the press is sadly minimised when misquotations of the sort complained of by Dr. Willoughby occur. Dr. Willoughby suggests that the editor of the *Vaccination Inquirer* was misled, but the error should be rectified now.—ED. L.

RHEUMATIC INFECTION IN CHILDHOOD.

To the Editor of THE LANCET.

SIR,—The leading article in your issue of August 15th (p. 341) seems to endorse the view of Dr. Robert Hutchison and others that rheumatic infection is not a poverty disease. But the figures given in the discussion do not appear to me to warrant their deduction. In 48 per cent. the wages, it is stated, do not exceed 7*s.* per head, or, say, for a family of eight a total of £2 16*s.* per week. Why, to house a family of eight decently the rent would be at least 16*s.*, whilst clothes, boots, &c., would amount to another 2*s.* per head or 16*s.* for all, to say nothing of paying into a club, saving for a rainy day, tobacco, entertainments, &c., so that there remains but 24*s.* to feed a family of eight for the whole week, and yet Drs. Coates and Thomas think this not poverty. How much milk at 10*d.* per quart is likely to be bought for such a household? Would any eggs at 4*d.* each ever be consumed by a single child? Yet such important lime-bearing foods as milk and eggs are essential for the good health of children.

In my investigations, which I have carried out with Dr. Tighe and which comprise more than 44 children, it was found that nearly all the post-rheumatic or post-choreic heart cases occurred in those who took neither milk nor eggs. I divide children into two classes—viz., milk-drinkers and non-milk drinkers. Of this latter class there are those who aggravate their poor intake of lime-bearing food by partaking largely of vinegar, sauces, and sour things generally, thereby helping still further to deplete the system of lime; this subclass I call the "acid class," from which in my experience all the cases of rheumatic fever and chorea arise.

The inadequate intake of lime and its aggravation by the consumption of acid and sour things constitute a predisposition which, in my opinion, requires but a protein sensitisation such as occurs when children are bitten by harvest bugs, midges, fleas, sand fleas, and the like, to give rise either to rheumatic fever or chorea.

I am, Sir, yours faithfully,

G. ARBOUR STEPHENS,

Consulting Cardiologist, Welsh National

Swansea, Sept. 6th, 1925. Memorial Association.

MOSQUITO CONTROL IN ENGLAND.

To the Editor of THE LANCET.

SIR,—Referring to the account, given in your issue of Sept. 5th (p. 526), of the formal opening at Hayling Island of the well-equipped building provided by Mr. John F. Marshall to house the recently constituted British Mosquito Control Institute, it is curious that although during the past 28 years enormous advance has been made in the control of mosquito-borne disease, and that British scientists, notably Sir Ronald Ross, have taken a leading part in this work, yet, with the exception of the now well-known investigations of Mr. Marshall, the subject of mosquito control in this country has been almost entirely neglected.

In the absence of endemic malaria the mosquito problem has not been such a vital question in this country as in many other places; at the same time, even in this country, there are numerous districts in which the residents suffer severely from the bites of these insects, and fatal results are by no means unknown. Apart, however, from serious injury to health, the nuisance and irritation caused by these insects become at times almost unbearable. The success which has attended the efforts of Mr. Marshall in Hayling Island is likely to lead to a demand for the adoption of measures for mosquito control in many other places, and to any of my fellow medical officers of health, upon whom may devolve the duty of dealing with the mosquito nuisance, I would suggest that an application to Mr. Marshall and his colleagues at the British Mosquito Control Institute would secure advice and assistance which would materially promote the success of their efforts in this direction. I can testify from personal experience both to the scientific and thoroughly practical character of the work which has been carried out at Hayling Island, and to the courteous and ready response to applicants for advice.

I am, Sir, yours faithfully,

A. MEARNS FRASER, M.D.,

Sept. 8th, 1925. Medical Officer of Health, Portsmouth.

MEDICINE IN RUSSIA.—About six million cases of malaria have been recorded throughout the Union of Socialist Soviet Republics in 1924. As a certain number of cases remain unrecorded this figure is a minimum. The death-rate did not exceed 5–6 per cent. of the total number of victims, even in the Caucasus and Astrakhan regions where malaria is most prevalent. The People's Commissariat for Health, and its provincial branches, carry on an anti-malaria campaign, having at their disposal 103 equipped malaria stations, six tropical institutes for scientific study, and a number of clinics served by a special staff. 75,000 kilogrammes of quinine have been imported to U.S.S.R. during this year, and 6000 kilogrammes have been distributed, free, to the population. In addition to this amount the "Zusstrah" (Central Organisation for the Social Insurance of Workers) has purchased abroad and distributed among the workers about 2000 kilogrammes of quinine.—To locate the leprosy centres in Siberia is the object of a scientific expedition which is leaving Irkutsk under the leadership of Dr. Perevodchikov. In his opinion one of such centres must exist east of the Baikal Lake: there are also indications that one lies in the region of Barbousin, in the Buriat Republic.

Medical News.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—An intensive course in General Medicine, Surgery, and the Special Departments will be given at the Westminster Hospital from Sept. 21st for two weeks. The Brompton Hospital will start a fortnight's course in Diseases of the Chest on Sept. 21st. Full particulars and syllabuses of the courses, together with the Fellowship programme, may be obtained from the Secretary, 1, Wimpole-street, London, W. 1.

OPENING OF THE MEDICAL SCHOOLS.—The following functions will be held in connexion with the opening of the undermentioned London medical schools:—

St Bartholomew's Hospital.—Old students' annual dinner, Thursday, Oct. 1st, in the Great Hall of the hospital. Chairman: Mr. J. Adams.

St. Mary's Hospital.—Past and present students' annual dinner, Monday, Oct. 5th, at the Connaught Rooms, Great Queen-street. Chairman: Mr. Leslie Paton.

Middlesex Hospital.—In the Queen's Hall, Thursday, Oct. 1st, at 3 P.M., prize distribution by the Hon. Sir Arthur Lawless; inaugural address by Dr. O. E. Lakin on Tradition in Medicine. Annual dinner, Thursday, Oct. 1st, at the New Criterion Restaurant, Regent-street. Chairman: Sir Arnold Lawson.

Westminster Hospital.—Inaugural address by Prof. A. E. Gardner, Thursday, Oct. 1st, at 3 P.M., in the board room of the hospital. After the address Prof. Gardner will unveil in the hospital laboratories a tablet commemorating the generous endowment of pathological research work by Mr. A. J. H. Carlill.

ROYAL DENTAL HOSPITAL OF LONDON.—The distribution of prizes to the school of dental surgery will be made by Sir John Bland-Sutton at the hospital on Monday, Oct. 5th, at 4 P.M.

UNIVERSITY OF LONDON.—Applications for the Julius Mickle Fellowship must be made before Oct. 1st. The Fellowship, which is of the value of at least £200, is awarded by the Senate to the man or woman who, being resident in London and a graduate of the University, has, in the opinion of the Senate, done most to advance medical art or science during the preceding five years.

UNIVERSITY OF DURHAM.—Post-graduate instruction will be held in clinical medicine, clinical surgery, and pathology on each Thursday from Oct. 1st to Dec. 10th, and courses in various special subjects will also be held weekly. A detailed syllabus may be obtained from Prof. R. Howden, College of Medicine, Newcastle-upon-Tyne.

UNIVERSITY OF PARIS: *Pathological Anatomy.*—An advanced course on this subject will commence on Monday, Oct. 5th, under the direction of Prof. G. Roussy, assisted by many distinguished collaborators from Paris and other medical centres of France. The course is open to French and foreign doctors and students and the fee is Fr.150. Full particulars and the syllabus may be obtained from Dr. Leroux, 21, Rue de l'École de Médecine, Paris.

INTERNATIONAL CONGRESS OF HYDROLOGY AND MEDICAL CLIMATOLOGY.—The eleventh congress of this series will be held in Brussels from Oct. 11th to the 13th, under the presidency of Dr. Modeste Terwagne. Full particulars may be obtained from the general secretary, Dr. René Beckers, 36, Rue Archimède, Brussels.

CARDIOLOGY.—A special two weeks' course in cardiology will be held at the National Hospital for Diseases of the Heart, Westmoreland-street, Marylebone, W. 1, from Oct. 5th to 10th. The course includes lectures, demonstrations, clinical and pathological. As the course will be limited to 10 participants, early application should be made to the Dean, Dr. B. T. Parsons-Smith, from whom copies of the syllabus may be obtained.

RONTGEN SOCIETY.—The following are the officers and members of council for the session, 1925–26:—President: Dr. F. W. Aston, D.Sc., F.R.S. Vice-Presidents: Dr. Robert Knox, Dr. N. S. Finzi, Prof. A. W. Porter, D.Sc., F.R.S. Hon. Treasurer: Mr. Geoffrey Pearce. Hon. Editor: Dr. G. W. C. Kaye, D.Sc. Hon. Secretaries: Dr. E. A. Owen, D.Sc., Dr. Russell J. Reynolds. Council: Dr. G. B. Batten, Dr. H. A. Colwell, Prof. J. A. Crowther, D.Sc., Dr. E. P. Cumberbatch, Mr. A. K. Glover, Dr. J. E. A. Lynham, Dr. J. M. Woodburn Morison, Dr. G. H. Orton, Mr. C. E. S. Phillips, Prof. S. Russ, D.Sc., Mr. W. E. Schall, Dr. G. Shearer, D.Sc.

ROYAL PHOTOGRAPHIC SOCIETY.—The annual exhibition will be held at the house of the society, 35, Russell-square, London, W.C. 1, from Sept. 14th to Oct. 24th. Admission is free.

METROPOLITAN EAR, NOSE AND THROAT HOSPITAL.—The eighty-sixth annual report of this institution records (in tabular form) a successful year of work. Over 3000 out-patients and nearly 600 in-patients have been received and treated for conditions ranging from wax in the ear to lupus of the fauces, and from globus hystericus to ethmoidal sarcoma. Two special evening clinics for pensioners are still being held, and nearly 200 ex-soldiers have been treated. The average total cost of each in-patient is now £3 per week, a decrease of £1 4s. 0d. on 1923.

THE LATE DR. B. W. DAKERS, OF KENYA.—Bernard William Dakers, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., died at Kisumu, Kenya Colony, on July 10th. Dr. Dakers qualified in 1906 and entered the Kenya Civil Service in June, 1920. He was the first medical officer to be stationed in South Kavirondo. He was employed throughout in native reserves. There he won, by his sympathy and tact, the confidence of the local native population, and was very largely instrumental in popularising European methods of treatment.

NEW BETHLEM HOSPITAL.—It is stated in the annual report of Bethlem Hospital that the Monks Orchard estate, to which the institution is to be removed, cost a little under £30,000. The average weekly cost of the patients was £5 1s. 7d. The scarcity of female nurses (in the words of the report) "still causes much anxiety." One half of the patients pay amounts ranging up to £3 3s. per week.

BELGRAVE HOSPITAL FOR CHILDREN: PAYING PATIENTS.—Early next year a ward is to be opened for the admission of patients whose parents can afford to pay the cost of maintenance (about £3 per week) and a small fee to the physician or surgeon in attendance. This cannot be done until the new west wing, now being built, is finished. This wing will afford sufficient accommodation for the nursing staff, which is now inconveniently housed in three different buildings.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL: MIDWIFERY TRAINING.—The annual report of this hospital shows that out of 123 pupil midwives who sat for the C.M.B. examination only four failed. Henceforward the period of training will be 12 months instead of six, save in the case of pupils who hold a certificate of three years' training in general nursing, in which case the period will be six months instead of four as hitherto.

A FOUNDER OF HOSPITALS.—Canon J. O. Stephens, who died last week at the age of 93, while holding the benefice of Savernake in 1866 founded and endowed Savernake Cottage Hospital, Marlborough, which provides medical and surgical help for 54 rural parishes in Wiltshire and Berkshire. When, in 1870, he left Savernake to become rector of Blankney in Lincolnshire, he was the prime mover in the foundation of the Alexandra Hospital at Woodhall Spa.

A RECOVERY HOSPITAL FOR HUDDERSFIELD.—The board of management of Huddersfield Royal Infirmary have purchased for £10,000 the Green Lea estate, Lindley, with the intention of creating a recovery hospital. It is proposed that, for the present, surgical cases shall be removed thither for recovery, but that eventually the existing infirmary itself shall be used as an out-patient and casualty hospital, in patients being treated at Lindley, which is 700 feet above the sea. The Green Lea estate is between 13 and 14 acres in extent.

LEEDS PENSIONS HOSPITAL.—Rapid progress is being made with the new Military Hospital at Gledhow, Leeds, which, when completed, will be a centre for ex-Service men from the north of England. It will accommodate between 200 and 300 patients and 80 nurses, and will cost £100,000. The buildings will include a cinema hall.

THE LATE DR. W. B. LIVERMORE.—William Barclay Livermore, M.D. Aberd., of Exeter, died on August 21th in a Plymouth nursing home of cerebral hæmorrhage at the age of 62. Born in Aberdeenshire, he was educated in Elgin and at the Aberdeen Gymnasium. He received his medical training at Aberdeen University and at Westminster Hospital, graduating M.B., C.M. Aberd. in 1883. After some experience in private practice at Cleckheaton, Yorkshire, he took up the study of tuberculosis and was appointed medical superintendent to the Devon and Cornwall Sanatorium for Consumptives, Didworthy, South Devon. Under Dr. Livermore's administration, which extended over 15 years, this institution increased in capacity from 20 beds to 76. On his retirement he was appointed to the consultant staff.

ST. BARTHOLOMEW'S HOSPITAL WAR MEMORIAL.—The archway beneath the north wing of the hospital is to be utilised for the erection of a war memorial to St. Bartholomew's men.

ROTHERHAM HOSPITAL.—On Sept. 7th Princess Mary opened a much-needed extension of Rotherham Hospital, which was last enlarged nearly 30 years ago. The additions have cost £20,000, practically the whole of which has already been subscribed.

PRESENTATION TO A MEDICAL MAN.—Dr. W. J. L. Ffrench, of Barnetby, Lincs, who has been identified very prominently with the public life of the district for 30 years, was recently presented with a silver salver and a cheque for £207.

THE Hastings Town Council has decided to acquire the lease of the White Rock Bathing Establishment, now leased by the corporation to a private organisation which is ready to surrender the balance of its term. If the council carries out its design, it should take over the baths as from Sept. 30th, when it will be necessary to spend a large sum to bring the establishment up to high standard, and this policy is to be followed.

THE PRINCE IN ARGENTINA.—H.R.H. the Prince of Wales recently visited the "Oxo" supply ranches in Argentina. Some 15 or 16 years ago a special commissioner of THE LANCET was sent to Argentina to investigate the circumstances in which the "Oxo" products were prepared, and his long and interesting report will as well repay study to-day as then. (Vide THE LANCET, 1908, ii., 1233.)

THE "PAUPER TAINT."—Mr. Richard Turley's seat on the Leeds board of guardians has been declared vacant because he has become an in-patient of the Poor-law infirmary. Mr. Turley was taken thither in a semi-conscious condition because there was no bed available at Leeds General Infirmary. He is a paying patient, yet under the Local Government Act of 1894 he has not only lost his seat but is disqualified for re-election for 12 months.

KEIGHLEY'S CHILD CONVALESCENTS.—Sir Prince and Lady Prince-Smith have provided and opened the Southburn Children's Home in the Yorkshire wolds near Driffield for child convalescents from Keighley. The former residence of Sir Prince-Smith's land agent has been adapted for the purpose, and the inmates are to be "children of deserving parents who cannot afford to pay for convalescent treatment," who will be taken either from Keighley Hospital or upon a doctor's recommendation.

THE LATE DR. J. MURDOCH BROWN.—James Murdoch Brown, M.D., F.R.C.P. Edin., died at his residence in Edinburgh on Sept. 3rd. Although he had been retired from active practice for many years, he was at one time one of the best known practitioners of the city. He graduated M.B., C.M. at Edinburgh University in 1874 with first-class honours and was Ettles Scholar of his year, and in 1878 became a Member of the Royal College of Physicians of Edinburgh, obtaining the Fellowship two years later. He gained the M.D. Edin. in 1897. Dr. Brown for many years held the office of justice of the peace for the county of Edinburgh.

DONATIONS AND BEQUESTS.—Sir William Northrup McMillan, of St. Louis, Missouri, U.S.A., and of Kenya Colony, left among other bequests $250,000 to the Scott Sanatorium, Nairobi, British East Africa, as an endowment.—Mr. Richard Fenwick, Edgbaston, Birmingham, left £6000 to the University of Birmingham for a scholarship or scholarships upon such terms and conditions as the governors in their discretion should think fit, and £200 each to the Birmingham Maternity Hospital and the Birmingham Royal Institution for the Blind.

Appointments.

CAPON, NORMAN BRANDON, M.D. Liverp., has been appointed Hon. Physician to the Royal Southern Hospital, Liverpool.

Vacancies.

For further information refer to the advertisement columns.

Birmingham General Hospital.—Asst. S. £50.
Blackburn County Borough.—Asst. M.O.H. £600.
Bradford Municipal General Hospital, St. Luke's.—H.P.'s and H.S.'s. Each at rate of £200.
Brighton County Borough Sanatorium.—Res. M.O. £350.
Brighton, New Sussex Hospital for Women and Children.—Hon. Radiologist.
Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—H.S. £100. Also Jun. H.S. £50.
Chester Royal Infirmary.—Hon. Asst. S.
Colwyn Bay and Colwyn Urban District Council.—M.O.H., &c. £750.
Denbigh County Council.—Asst. M.O. £600.
Dreadnought Hospital, Greenwich.—H.P. and H.S. Each at rate of £100.
Durham County Council.—Asst. Sch. M.O. £600.
Evelina Hospital for Children, Southwark, S.E.—H.P. at rate of £120.
Exeter, Royal Devon and Exeter Hospital.—H.P. and Asst. H.S. Each at rate of £150.
Glasgow Royal Infirmary.—Supt. £800.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Asst. P.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S., H.P., and Asst. Cas. O. Each at rate of £50.
Hospital for Tropical Diseases, Endsleigh Gardens, N.W.—H.P. At rate of £110.
Lambeth Parish Hospital, Brook-street, Kennington, S.E.—Jun. Asst. M.O. £200.
Lister Institute of Preventive Medicine, Chelsea Bridge-road, S.W.—Jenner Memorial Research Studentship. £250.
London Hospital, E.—First Asst. and Referee to one of the Five Surgical Firms. £400.
Macclesfield, Cheshire County Mental Hospital, Parkside.—A.M.O. £350.
Manchester and District Radium Institution.—Asst. Radiologist. £500.
Manchester Royal Infirmary.—Res. Clin. Pathologist. £50 for six months.
Manchester, St. Mary's Hospitals.—Three H.S.'s. Each at rate of £50.
Manchester University.—Asst. Lecturer in Chemical Pathology. £400.
Metropolitan Ear, Nose, and Throat Hospital, Fitzroy-square, W.—Anæsthetist.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Hon. Asst. S.
Nottingham Children's Hospital.—Res. H.P. and Res. H.S. Each at rate of £150.
Pharmacological Laboratories of the Pharmaceutical Society of Great Britain.—Director. £1200.
Prince of Wales's General Hospital, Tottenham, N.—H.S., Spec. H.S., and H.P. Each at rate of £150. Also Jun. H.S. and Jun. H.P. At rate of £110.
Radium Institute, 16, Riding House-street.—Cancer Research Worker. £500.
St. Pancras Hospital, &c.—Sen. Asst. Med. Supt. £400.
Singapore, Straits Settlements.—Two Asst. Health Officers. $7200.
South London Hospital for Women, South Side, Clapham Common, S.W.—H.P., three H.S.'s. Each at rate of £50. Clin. Asst. £1 1s. per attendance. S. to Ear, Nose, and Throat Department.
West London Hospital, Hammersmith-road, W.—H.P. and Two H.S.'s. Each at rate of £100.
Whipps Cross Hospital, Leytonstone.—Specialist Consultant in Light Treatment. £300. Res. Asst. M.O. £350.

The Chief Inspector of Factories, Home Office, London, S.W., announces vacant appointments for Certifying Factory Surgeons at Purfleet, Essex, and Ramsgate, Kent.

Births, Marriages, and Deaths.

BIRTHS.

GREEN.—On Sept. 1st, at Chippenham House, Monmouth, the wife of J. G. Green, M.B., B.Ch., B.A.O. N.U.I., F.R.C.S.I., of a daughter.

MARRIAGES.

CURRY—REA.—On Sept. 5th, at St. Clement Danes Church, Strand, Henry Donald, eldest son of the late H. G. Curry and Mrs. Curry, of Stradella-road, Herne Hill, to Helen Gladys Rea, L.R.C.P.I. and L.M., L.R.C.S.I., younger daughter of J. C. Rea, of Howth, Co. Dublin.

HUME—POOLE.—On Sept. 3rd, at Westcliff-on-Sea, John Basil Hume, M.B., F.R.C.S., to Marjorie Constance, daughter of Mr. and Mrs. Fredk. Poole, of Westcliff.

DEATHS.

BATTY.—On Sept. 1st, at Broadoak Cottage, Newnham, Brig.-Surgeon Richard Hamilton, I.M.S. (retired), L.R.C.S.I., L.S.A., aged 84.

BROWN.—On Sept. 3rd, at Strathearn-road, Edinburgh, James Murdoch Brown, J.P., M.D., F.R.C.P. Edin., aged 77 years.

CHURCHWARD.—On Sept. 4th, suddenly, at Selhurst-road, South Norwood, Albert Churchward, M.D. Brux., M.R.C.S. Eng., M.R.C.P. Edin., L.S.A.

ESKRIGGE.—On August 31st, Richard Bertram Eskrigge, L.R.C.P. Edin., and L.M., M.R.C.S. Eng., Royston, Barnsley, Yorks, aged 62.

LOVE.—On Sept. 6th, at Downpatrick, Ireland, Gilbert Love, M.D., B.Ch., B.A.O. R.U.I., of Great Budworth, Cheshire, the result of an accident.

ORR.—On Sept. 2nd, at Templepatrick, Co. Antrim, James Orr, L.R.C.P. & S. Edin., M.O. and M.O.H. Templepatrick Dispensary District.

RENTOUL.—On Sept. 3rd, at Hartington-road, Liverpool, Robert Reid Rentoul, M.D. R.U.I., L.R.C.P. & S. Edin., M.R.C.S. Eng., aged 70.

N.B.—A fee of 7s. 6d. is charged for the insertion of **Notices of** *Births, Marriages, and Deaths.*

Notes, Comments, and Abstracts.

NATIONAL INSTITUTE FOR THE BLIND.

THE report of the executive council of this institution for the year ended March, 1925, is a gratifying record of the way in which the care of the blind has regained the support of the general public. After passing through lean years, the Institute is now in a position to extend its activities in the wider fields of former years; during the period under review, a third "Sunshine House" (Blind Babies Home) has been opened at Leamington Spa, Warwickshire, a convalescent and holiday home has been established at St. Leonards-on-Sea, Sussex, the publication of Braille literature has been considerably increased, and the price of Braille books and periodicals reduced. Among the many training departments of the Institute the school of massage is one which offers particularly good opportunities, for massage is pre-eminently a profession in which the blind can compete with the sighted. This school is recognised by the Board of Education. The special training given to blind students in medical electricity is in charge of Dr. Murray Levick, and a blind masseur who has specialised in the subject has been appointed on the staff to give instruction in the theory of electricity and the construction of batteries. The total number of blind civilian masseurs and masseuses on the register of the massage department is 100, and great care is given to the settlement of pupils after qualifying. During the past term Sir Jenner Verrall delivered a special course of lectures to blind students on modern orthopædics. The report, which incorporates the annual reports of the Clifton Home for Blind Women, the Home Teaching Society for the Blind, and the Moon Society makes stimulating reading, and concludes with an invitation to all interested to visit the headquarters of the Institute at 224-26-28, Great Portland-street, London, W. 1.

THE WEB OF LIFE.

THE first fortnightly part has just appeared of a new serial by Prof. J. Arthur Thomson entitled "A New Natural History: Nature's Wonder-land." Justifying his ambitious title Prof. Thomson points out how the study of living creatures is undergoing a subtle change and how our knowledge must be readjusted to meet this change. His own attitude towards animal life has brought him to think of animals not only as threads in a wavering web of life but as personalities of a sort which may share in their own further evolution. The first instalment, which is profusely illustrated, opens with a chapter on the Web of Life, in which the author sets out the linkage between bird and plant in the relation between missel-thrush and mistletoe, and the more complicated alliance in the petiole of a species of laburnum between plant, beetle, and mealy-bug. How such an alliance began he hardly attempts to explain, and the chapter ends on a note of inquiry which may well induce the reader to pursue the subject further. The great value of Prof. Thomson's work seems to us to lie in his power of setting out broad principles in an engaging manner, producing in his readers a taste for investigation on their own account. Moreover, the alliance of visible organisms in the web of life may be of help to the reader in visualising the inter-relations between microscopic cells on which organic function within the species depends. The work is to be completed in about 20 fortnightly parts at the price of 1s. 3d. each. (Geo. Newnes.)

NURSERY PSYCHOLOGY.

A SERIES of six lectures will be held this autumn at Carnegie House, 117, Piccadilly, on Everyday Psychology in the Nursery. These lectures are a further series of those held in the summer and the previous autumn, which proved to be a success. They will be welcomed by mothers who are anxious to hear the best authorities on various aspects of child life and difficulties. Amongst the lecturers are Dr. Hector Cameron, Sir Bruce Bruce-Porter, and Dr. Leonard Williams. There will be one special lecture for mothers and fathers on Family Discipline, by Dr. H. Crichton-Miller, on Thursday, Dec. 10th, from 6 to 7 P.M. The fees for these lectures are 7s. 6d. for any single lecture, or £3 for the series of lectures, and 15s. for two tickets for the special lecture by Dr. Crichton-Miller. The lectures will be under the headings of the Psychology of Infancy; Dangers of Tradition in the Nursery; Heredity and Environment; Habits and Subconscious Mind; Temperament; and Problems of School Age. These lectures take place on Thursdays, commencing Oct. 29th, at 3.15 P.M., and time is given at the end of each lecture for questions to be asked. Tickets may be obtained from Viscountess Erleigh, 65, Rutland-gate, S.W. 7, and Mrs. Ernest Shaw, 65, Conduit-street, W. 1.

THE PROFESSIONAL CLASSES AID COUNCIL.

UNDER this name the Professional Classes War Relief Council, instituted in October, 1914, has continued since 1920 its valuable work among those unpensioned sufferers from post-war conditions known as the new poor. How necessary such work is can be gathered from the fourth annual report of the Council for the year ending April, 1925, during which period 680 applications for help were received. The Council gave financial assistance—in many cases considerable—to 150 families, thus benefiting 314 individuals, and, in addition, 305 were advised where to obtain help. The scope of the Council's work is entirely dependent on the extent of the financial support it receives, and subscriptions will be welcomed by the treasurer at 251, Brompton-road, London, S.W. 3.

NATIONAL SOCIETY FOR THE PREVENTION OF CRUELTY TO CHILDREN.

THE Society's forty-first report shows the encouraging fact that neglect of and cruelty to children is gradually decreasing. The proportion of cases reported by the public is 62·5 per cent., larger than ever before, while the proportion discovered by inspectors is lower than in any previous period. In 1898 there were 2192 prosecutions and in 1924 there were 882. In recent years there has been a steady increase in the number of parents themselves seeking the advice and aid of the Society. There has also been a reduction in the number of instances where the children have had to be removed from the care of their parents. The conditions of life for children on canal boats is still unsatisfactory, and the Society has prepared a statement of facts for submission to Members of Parliament. It is hoped to secure legislation excluding children of school age from canal boats. The Guild of Good Courage consists of girls and young women who have been in the Society's legal custody as children and like to continue their association; it has a membership of 99. The medical branch has dealt with 700 cases, ranging from defective eyes and teeth to venereal disease, epilepsy, and chorea, and many cripples have been successfully operated on. A dinner in aid of the funds of the Society is to be held at the Guildhall on Nov. 25th. H.R.H. the Prince of Wales has graciously consented to preside and Sir W. Joynson-Hicks will speak. As the report says: "There is really no limit to what can be done to make life endurable for children if only all who are concerned in their welfare will coöperate to this end. Knowledge spreads slowly, and every time a new helper is secured the possibility of further usefulness is extended."

A GENEROUS OFFER.

A CORRESPONDENT writes: "A gentleman in a luxuriously appointed motor-car, whom I lately met on Exmoor, handed me a prodigious page of advertisement, containing an offer that should not be kept for one moment from the knowledge of your readers. You are too prejudiced to regard my plea for an open mind; yet I may remind you that these are days of overcrowding and competition when many a young man finds it hard to get his foot upon the ladder of success: £1000 per annum will be paid by my motoring acquaintance as salary to a qualified medical man who should possess the following qualifications. He must be able to make the blind to see, the deaf to hear, and the lame to walk. These biblical qualifications must be reinforced by ability to make flesh grow on withered limbs at the rate of a quarter to half an inch—whether this growth refers to thickness or superficies is not clear (as you will see by the advertisement which I enclose), but from hints dropped in conversation by the advertiser I infer that thickness is meant. Further, the applicant must be capable of curing 'undeveloped brain'; a vista of psychological possibilities thus opens into infinity. Two of the remaining qualifications required in the successful aspirant are a complete summary of professional competence—he must be able 'to inform patients what is the nature of their complaint, and its duration.' Here the power of diagnosis comes in. Lastly, it seems that he should be able to subdue pain in his patients without the use of drugs or anæsthetics, and above all to transmit vitality without contact. Apparently he is not expected to possess these abilities, but to acquire them by contact with the inventor, who states that 50,000 people have been already successfully treated and are walking testimonials to magnetic treatment. For his position will be that of an assistant who must submit to all rules and obey all regulations laid down by his principal and must act constantly as his locum tenens, showing as good a percentage of cures by pursuing the same methods."

As the advertiser succeeds in curing vast series of cases of "undeveloped brain" his business will diminish in ratio; so along one line of his activities we wish him luck. But we can hardly imagine any newspaper conducted by an editor with a brain sufficiently undeveloped to sanction the publication of this advertisement.

OBLITERATION OF TATTOO MARKS.

To the Editor of THE LANCET.

SIR,—Some years ago a patient of mine, a young woman, was tattooed on both legs. The present fashion of short skirts and thin stockings make the marks unduly prominent. Is there any method by which tattoo marks may be obliterated? I shall be grateful if any of your readers can tell me.

I am, Sir, yours faithfully,

Sept. 4th, 1925. M.B., &c.

THE PATIENT AS DIAGNOSTICIAN.

To the Editor of THE LANCET.

SIR,—For the information of my colleagues in London may I bring forward this story. A certain medical man in London is advising a patient, while travelling, to obtain the services of a local medical man every week wherever he may be for the purpose of injecting hypodermically a quack nostrum for the cure of a certain disease. In my case the patient met with a flat refusal and a letter followed to the London practitioner informing him of the fact. I may say that in his letter this doctor stated he was using this stuff "at the patient's own risk and responsibility"—a glaring irregularity in my opinion.

I am, Sir, yours faithfully,

Blackpool, Sept. 3rd, 1925. PERCY HOWARD DAY.

BRITISH HEALTH RESORTS.

WE have received a communication from Mr. Lyman D. Davis, Chairman of the Foreign Relations Committee of the Anglo-American Hotel Association, in which he pays a tribute to British holiday resorts from the point of view of an American "whose business has been for many years past connected with a number of the best known pleasure resorts in Europe and America." The Briton may decry his own pleasure resorts, both inland and coastal, but when it comes to the point of deciding where to spend his holiday he prefers a home resort, and when he travels abroad he does so for knowledge rather than enjoyment. In Mr. Davis's opinion all our possible continental competitors, in spite of their vigorous advertising, have been knocked out "because the facilities provided by the hotels and railway companies, town for town and village for village, are more complete and incomparably better and safer in Britain than in any other part of Europe." It is refreshing in these days to find anything British extolled for its own sake, and Mr. Davis's encouraging words will be appreciated.

THE DISINFESTATION OF LIVING SPACES.

To rid living spaces of insects and vermin is often difficult and as yet no standard method has been agreed upon. Hydrocyanic acid can, under careful regulations, be safely used in ships in harbours, but it is hardly suitable in barracks and tenements. For destroying rats and their fleas as well as other insects on ships sulphur has proved efficacious if the ship is thoroughly sealed down for six hours, but sulphur is not without its inconveniences. We are glad therefore to find in the *Journal of the Royal Army Medical Corps* for July a report by Major D. Reynolds on Disinfestation of Rooms by Formalin. He tells us that he has secured complete destruction of bugs in infested rooms when employing, as a minimum, 2 pints of formalin (40 per cent. formaldehyde) per 1000 cubic feet, poured on 2 lb. of a mixture of one-fifth quicklime and four-fifths bleaching powder, in a warm (70° F.) and damp (70 per cent. humidity) atmosphere. The vapour is allowed to act for at least 24 hours. Unfortunately, the question of cost is not discussed; 3 lb. of sulphur would cost 7*d.* at current wholesale prices, but 2 pints of formalin would be 3*s.*, plus the cost of the bleaching powder. It would be a help to medical officers of health and others concerned in the planning of disinfestation work if authors when describing new large-scale methods would mention the cost per 1000 cubic feet at which, in their experience, the methods they recommend have been carried through, differentiating if possible the cost of the materials from that of the labour employed.

CASTRATION THREATS TO CHILDREN.

WE have received from a lay correspondent an account of the disastrous effects of a castration threat directed towards himself when 3½ years old, as a punishment for an exhibitionist act. The memory of this he claims to have recovered by a process of self-analysis, and he is emphatic about the evil influence of such threats in connexion with the infantile tendency to exhibitionism, declaring that not more than two or three boys out of every ten escape some threat of this nature. This situation he links with the "castration complex," believed by psycho-analysts to be a frequent factor in mental disturbances of later life, and he suggests that parents should tell the two-year-old boy that he must not expose his genitals, but he is not to be frightened if anyone makes a cutting off threat against these parts, whilst servants and others should be warned against making the threat, though the child is to be smacked on the buttocks, if necessary, to check the forbidden behaviour. If our correspondent's view of the results of the threat be correct the remedy seems, on psycho-analytical grounds, to be equally inadvisable, for corporal punishment of this nature has been known to arouse perverted tendencies. Assuming that children pass through an exhibitionist phase it would surely be best to regard it as unemotionally as we regard other childish peccadilloes; we do not attach great emotional value, for example, to the offence of throwing food upon the floor and yet children quickly learn that "it isn't done." The castration threat may well ferment in the childish mind and is to be condemned; our aim should be to avoid feeling or showing emotional reaction towards behaviour which is nothing more than a passing phase, but may, if psycho-analytical findings are sound, become a source of serious trouble if excessive emotion is attached to it. Our correspondent has little doubt himself that the findings obtained by careful psycho-analysis are sound although the process is frequently painful.

Oil Fuel at the London Hospital.—The governors who, a few years ago, refused to replace coal fuel with oil have now reversed their decision and have decided to build a central boiler establishment to serve the whole of the hospital, the fuel being oil. There are still 101 closed beds in the hospital.

Messrs. Kelvin, Bottomley and Baird, Ltd., 51–52, Fenchurch-street, E.C. 3, have published a new eight-page list of apparatus for ultra-violet light therapy. Their full catalogue is in course of preparation. A copy will be sent on request to anyone interested.

X. Y. Z.—The medical statisticians present at the luncheon given by the Government on August 18th were: Dr. S. Rosenfield (Austria), Dr. Camille Jaquart (Belgium), Dr. H. J. Hansen (Denmark), Dr. T. H. C. Stevenson (England), Dr. Martti Kovero (Finland), Dr. M. Huber (France), Dr. E. Roesle (Germany), Dr. Gunnar Jahn (Norway), Dr. J. C. Dunlop (Scotland), Dr. E. H. N. Arosenius (Sweden), Dr. Marcel Ney (Switzerland), Dr. W. H. Davis (United States), Dr. A. Aguirre-Sayago (Chili), Dr. Martin Kacprzak (Poland), Mr. K. Stouman, and Mr. J. Pagnod (League of Nations).

THE British Dyestuffs Corporation, Limited, of 70, Spring-gardens, Manchester, have sent us a price list of fine organic chemicals for research work, which also includes a list of indicators, microscope stains, medicinal and photographic chemicals. The stains have been prepared from selected dyes tested at the Manchester Laboratory of Applied Pathology and Preventive Medicine. The indicators offered range in a complete series from pH nil, e.g., naphthol yellow S, to pH 13, e.g., Titan yellow. The Corporation were the original manufacturers of acriflavine in this country, and euflavine is now offered, being the same compound with one molecule of HCl removed. Auramine, put up in solution as glauramine, is believed to be one of the most powerful antiseptics ever produced. New products of the urea type have also been elaborated and tested.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Sept. 14th, to SATURDAY, Sept. 19th.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars. Daily instruction in the Out-patient Department from 2.30 P.M. Special demonstration of cases on Tuesday, and a Venereal Clinic on Tuesday and Thursday from 5.30 to 7 P.M.—THE INFANTS HOSPITAL, Vincent-square, S.W. Special Course. Lectures and demonstrations every afternoon. "Round Table" consultation on Friday, and on Saturday a visit to the Home for Blind Babies.—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Charing Cross. Clinical demonstration every afternoon from 2 o'clock with special demonstration three times a week

Hunterian Lecture

ON

SOME DISORDERS OF THE LARYNX.

Delivered at the Royal College of Surgeons of England

BY V. E. NEGUS, M.S. LOND., F.R.C.S. ENG.,
JUNIOR SURGEON TO THE THROAT AND NOSE DEPT. OF KING'S COLLEGE HOSPITAL.

John Hunter studied the circulation of blood through the lungs, and with his accustomed practical genius he exposed part of the lungs of a dog and watched the changes taking place in them under conditions of artificial respiration maintained by specially constructed bellows. He has left on record the observations he made,[1] and writes these words:

> "The diminution of the heart's motion upon stopping respiration does not depend upon the immediate impression of improper blood on the left auricle and ventricle as a sedative, but upon the sympathetic connexion which exists between the heart and lungs (one action ceasing the other also ceases); which sympathy is established, because if the heart were to continue acting it would send improper blood into the body, by which it can be supported only a little while. The right auricle and ventricle also cease acting, although not so early, and for the same reasons; because on the cessation of the function of the lungs the blood cannot receive any benefit in passing through them. These actions and cessations are all dependent on life and the connexion of one action with another."

No better words could possibly be found to express the object of the present paper. I shall attempt to describe what I imagine to be one of "the connexions of one action with another," and to show how the larynx serves an important function in preventing the heart from sending "improper blood" into the body. I wish to add what I imagine to be one link to the work carried out by Hunter and only hope that my efforts are worthy of the illustrious investigator whose researches were based on close observation, reasoned interpretation, and an earnest desire for the discovery of truth.

I wish to express once again my indebtedness to Sir Arthur Keith, who has given me facilities for research and has been ready at all times to give me advice and information derived from his store of knowledge. He pointed out to me the importance of the respiratory movements of the glottis in their bearing on the circulation of the blood, a subject to which he has given considerable attention. I am also extremely grateful to Prof. R. J. S. McDowall, both for allowing me the opportunity of making experimental observations on animals, and also for supplying facts and experimental evidence relating to respiration and circulation.

A large source of knowledge has been supplied by Prof. J. S. Haldane's book on Respiration[2]; so many of the observations recorded are derived from this authority that it would be confusing to refer to each one as it occurs. I have attempted to correlate the various observations and to add my humble contribution to the elucidation of that "sympathetic connexion" described by the great master.

NORMAL MOVEMENTS OF THE LARYNX.

A study of the anatomical structure of the larynx of all lung-breathing animals is but a means to the understanding of the physiology of the organ. It is only by the evidence of comparative anatomy and physiology that the multifarious functions of this important part of the body can be explained, and I intend to make use of what information is available from the literature and from personal observation in dealing with the question of respiratory movements of the glottis.

The movements of the larynx are many. The whole organ ascends in the neck on deglutition and phonation. The laryngeal aperture closes on swallowing, by virtue of contraction of its muscular sphincter. The vocal cords come together during phonation, and for the alteration of intrapulmonary and intrathoracic pressure in both a positive and negative direction. The ventricular bands come together when it is desired to raise intrathoracic pressure to a great degree. And finally, the vocal cords open and shut to a greater or lesser degree during respiration, in proportion to the force of breathing.

RESPIRATORY MOVEMENTS AT THE GLOTTIS.

It is recorded in many physiological text-books and in other works that the glottis opens to a certain extent on inspiration and partially closes on expiration; as far as I know, no reason is given for these movements. As they cannot be accidental it seemed necessary to discover their object; brief allusion was made to the subject in my Arris and Gale lecture delivered in 1924.[3] In the present paper it is intended to study the subject more fully, to add whatever new information has been collected, and to apply the physiological findings to the elucidation of certain conditions caused by disease. At the beginning of inspiration the glottis opens to a certain degree, which increases in direct relation to the force of inspiration; at the beginning of expiration it closes partially, and under certain conditions is almost completely closed. Exception may be taken to this statement, because in many individuals in the resting condition the glottis is apparently immobile during the phases of respiration, as pointed out in particular by Semon.[4] In all individuals, however, it seems probable that respiratory movements occur as soon as any exertion is undertaken, while in animals such as cats, dogs, and rabbits, and in birds, reptiles, and amphibians, the opening and closure is to be seen at all times.

In those human beings who do not show variations in size of the glottic aperture during the phases of inspiration and expiration, there is, however, a change in size when an increase or decrease in depth of breathing occurs. This change in size is all that is essential to substantiate the explanation given later on as to the mechanism probably at work. Although alterations in size when present add the fine adjustment to regulation of gas exchanges, it is not necessary that they should occur during the different phases of respiration.

The mechanism is extremely complicated, but without discussing in detail the many factors at work, an attempt will be made to give a short description of the chief objects of the movements as they apply to man.

Relation of Respiratory Movements at the Glottis to Alveolar CO_2 Content.

The main function seems to aim at keeping the reaction of the blood constant. This is attained by the provision of a fine adjustment for the regulation of air entry into the lungs, the degree of washing out of CO_2 from the alveoli, and the correlation of these actions with the flow of blood through the lungs. A word may be said with regard to gas exchange in the lungs. Atmospheric air contains 20·96 per cent. of oxygen and 0·04 per cent. of CO_2. "Alveolar air," obtained at the end of the deepest expiration, is found to contain oxygen 18 per cent., and CO_2 5·6 per cent., and the rest nitrogen.

The venous blood contains about 8 per cent. of CO_2; it is not saturated with oxygen. Arterial blood, on the other hand, is saturated with oxygen and contains the same percentage of CO_2 as the alveoli—namely, 5·6 per cent. This means that the blood absorbs oxygen and becomes saturated in its passage through the lungs and gives up about 2·4 per cent. of CO_2. The latter is removed from the lungs in the tidal air and is dissipated in the atmosphere, where the percentage is so much lower; the greater the volume of CO_2 removed from the blood, the greater the volume of tidal air changed per minute.

(a) *Mechanism during Inspiration.*—Practical equilibrium is maintained between the CO_2 percentage of the alveolar air and that of the arterial blood; the level in the latter is generally, but not always, slightly higher than that in the former. The percentage both in alveoli and blood changes but little. Haldane states that "a rise of 0·2 per cent. or 1·5 mm. in the CO_2 pressure of the alveolar air and arterial blood causes an increase of about 100 per cent. in the resting alveolar ventilation."[2] Any rise of CO_2 percentage in the blood would tend to cause a change in the reaction of the blood, but for the action of buffer substances, notably the bicarbonates and phosphates. The CO_2 percentage in the arterial blood which leaves the lungs to nourish the tissues is of primary importance, because the tissue cells are intolerant of changes in reaction of the medium which nourishes them, and numerous devices are present to ensure constancy of reaction, which is, in fact, slightly on the alkaline side.

The breathing is regulated to keep the arterial percentage of CO_2 constant, and variations are met by alteration of depth rather than of rate; only after big changes is the rate altered.[3] Such alterations will, however, do no more than regulate the average percentages over several respirations. Evidence will be put forward which indicates that glottic movements greatly assist in keeping the interchange of CO_2, and hence the blood reaction, practically constant during all phases of respiration.

When inspiration commences the opening of the glottis slightly precedes the moment when expansion of the thorax and descent of the diaphragm commence; there is provided an inlet of a certain calibre in accordance with the immediate needs of the body. In some individuals the size of the glottis is not varied at each respiration, as was pointed out above. The glottis is a choked point on the air-way at all times, even when opened to its maximum extent, and therefore there is always delay in filling of the thorax, even when the force of inspiration is very gentle.

When the capacity of the thorax is enlarged air cannot enter sufficiently quickly to fill the increasing space, and there is consequently a temporary diminution of both intrathoracic and intrapulmonary pressures. When inspiration is gentle the glottis is opened to a slight degree only; the gentle force drawing in air produces a certain degree of negative pressure. When inspiration is powerful the glottis is more widely opened. But a greater volume of air is required to fill the lungs, and although the glottic inlet is wider, yet there will again be negative pressure. And if the force of inspiration be very powerful, the diminution of pressure will be greater than before.

In all cases the results of these actions are much the same; the laryngeal obstruction causes the lungs to be filled gradually instead of suddenly. As breathing is kept automatically at a fixed rate by the control of the respiratory centre, there would be the same number of inspirations every minute, whether the required volume of air entered the lungs gradually or suddenly. .The chief reason for the prolongation of air entry appears to be directed to washing out of CO_2 from the blood. The gradual entry of air during inspiration leads to gradual dilution of alveolar air, whereby the percentage of CO_2 is kept at a more or less constant level in the alveoli, and consequently in the blood. Haldane has shown that, because of the large reservoir of air always present in the lungs, the alveolar CO_2 never changes much.[3] Only about one-eighth, or perhaps rather more, of the air-content of the alveoli is changed on gentle respiration; Keith gives the figure as one-fifth.[5] The volume changed at each respiration increases on exertion; therefore the buffer provided by the reservoir of air in maintaining constancy of CO_2 is less at such times than during rest.

Even during gentle respiration there must be a content of CO_2 in the alveoli gradually tending to rise in percentage from the time when dilution with inspiratory tidal air has reached its maximum point until the next similar phase. It must be remembered that when samples of alveolar air are examined they are invariably taken at the end of the deepest expiration. The sample comes from mixed alveolar air and represents the last part of supplemental air; but it only gives an indication of the percentage of CO_2 present in the alveoli at the end of each expiration. If a sample be taken immediately after a forced inspiration results are given differing from what is found by the ordinary method. As the blood leaving the lungs will contain a CO_2 percentage almost equal to that in the alveoli, there must be some mechanism by which the percentage is kept constant; otherwise the CO_2 in the blood would gradually drop towards the end of inspiration and rise during expiration.

Maintenance of uniformity of CO_2 content of the blood seems to be dependent on the volume of blood flowing through the lungs and its relation to the air-content of the alveoli. At the beginning of inspiration the diminished intrathoracic pressure causes more blood to be drawn into the great veins and right auricle; increased intake is aided by descent of the diaphragm, which squeezes blood out of the splanchnic area. At the same time there is diminished pressure in the lungs; this causes dilatation of the pulmonary capillaries because of the lessened air pressure both in the alveoli and on the outer surface of the lungs, as Sharpey Schafer has demonstrated.[6] There is another important factor described by Lewis[7]—namely, diminution of pressure on the pericardium, as distinct from suction action on the great veins and right auricle. The heart's rate is increased among other results; this and the other effects may be shown readily by experiment.

The mean result of these various factors is that more blood is received by the right auricle, and more is pumped through the freely open capillaries. At the beginning of inspiration the air rushing into the alveoli tends to lower the CO_2 percentage; at the same time an increasingly large volume of blood rushes through the capillaries, and from it a certain volume of CO_2 is washed out. Towards the end of inspiration the dilution of CO_2 in the alveoli is at its height, and intrathoracic and intrapulmonary pressures are at the same moment at a lower level than at the beginning of inspiration. Therefore, more blood flows through the lungs and a greater total volume of CO_2 is withdrawn. The result is that the CO_2 content of the arterial blood leaving the lungs is kept constant.

That a greater volume of blood passes through the lungs during inspiration than during expiration may readily be demonstrated by Valsalva's experiment. If the changes in dilution of alveolar CO_2 described did not take place, the blood leaving the lungs during inspiration would contain a higher percentage of CO_2 than during expiration; because the alveoli would only be able to take up the same volume of CO_2 during inspiration as during expiration. And as a greater volume of CO_2 is brought to the lungs by the increased blood-flow during the former phase, there would necessarily be retention during this period.

(*b*) *During Expiration* the pressure inside and outside the lungs is raised, depending to a great extent on the position of the glottis. It is found that during expiration the glottis is narrowed to a considerable degree. As already mentioned, this sudden change in size does not occur in all subjects during quiet respiration. As gentle respiration calls for a partially closed glottis on both inspiration and expiration, the mechanism described above would still hold good.

The increased pressure on the right auricle and great veins does not permit so much blood as before to enter the heart, and the increased pressure on the pulmonary capillaries does not give so free a passage to blood-flow through the lungs as during inspiration. Therefore, the amount of blood flowing through the lungs is less during expiration than during inspiration; the volume gradually decreases from the beginning to the end of the act. As the CO_2 content of the alveoli tends to rise during expiration, there will be less washing out from the blood, especially towards the a cough causing insomnia, codeine was probably the best remedy. In the sleeplessness of uræmia, morphine was most effective and the common prejudice against its use in renal cases he considered unjustified.

2. With regard to *primary insomnia*, it was as well at the outset to make sure that the case was one of primary insomnia and not one of secondary insomnia in which some physical discomfort—such as dyspepsia, flatulence, or constipation—had been overlooked. Flatulence, either in the stomach or colon, was specially liable to prevent sleep; it was worth while, therefore, when no psychical cause for the insomnia was evident, to try the effect of an alkaline carminative draught at bed-time. In primary insomnia, one's first duty was to inquire into causes of mental discomfort. As the elucidation and removal of an anxiety state might take considerable time, the first task was to try to get the patient to adopt the right mental attitude to the symptom. As most sufferers from insomnia exaggerated in their own minds the effects of not sleeping, one should explain that there was no fear of his either dying from insomnia or of going mad as a result of it. Also, it should be pointed out that health could be maintained on a much smaller allowance of sleep than most people took and that rest and muscular relaxation were to a large extent a substitute for it. Unless the insomnia had resulted from mental overwork—and this, in the absence of coexisting worry, was a rare cause—when a holiday might effect a rapid cure, Dr. Hutchison believed it best to attempt to cure the insomnia in the environment in which it arose. Institutional treatment, however, had its advantages in cases requiring prolonged psychotherapy and, of course, in all psychoses.

With regard to drugs in the treatment of insomnia, the speaker believed it cant to say that hypnotics should only be used as a last resort and that the fear of establishing a habit was a bugbear; the possibility of the insomnia becoming a habit was a much more real danger. The removal of an anxiety state or the resolution of a conflict took time, and meanwhile, especially if the insomnia was becoming absolute, artificial sleep must be induced. As we could not afford to fail without making the patient worse, it was wise to begin with a hypnotic and dose rather more powerful than was really necessary. The bromides were, therefore, only indicated in the mildest cases; bromural and adalin were better for the less severe insomnias. Of more potent drugs, veronal or medinal (sodium-veronal) in 7½ grain doses would meet most indications. Chloral had fallen too much into disuse; it was wise to avoid it in cases of myocardial degeneration, but otherwise Dr. Hutchison believed it quite safe. Trional, from its delayed action, was specially indicated in those cases in which the patient was awake only during the latter part of the night (the so-called internocturnal insomnia). Luminal was unnecessarily powerful for use unless in exceptional circumstances, and morphine should never be given for primary insomnia outside a mental hospital.

Dr. Harry Campbell (London) defined insomnia as the "inability to enjoy a sufficiency of sleep under moderately satisfactory conditions." In the treatment of all cases of insomnia an attempt must be made to raise the level of the general health of the patient. Tranquillity of mind was essential to combat primary insomnia; the patient should endeavour to cultivate the idea that he is really going to sleep. Reading in bed, so long as it did not excite, often promoted sleep, and there were individuals who habitually read in bed until drowsiness compelled them to put out the light. Sources of irritation—cold feet, pruritus, nasal obstruction—which often interfered with sleep, should be sought for and treated. The bedroom should be dark, quiet, and well ventilated, and the bed placed away from the wall. In cases of high blood pressure the pillow should be high, but when the pressure was not supernormal and the patient was otherwise healthy, a low pillow was best. Open-air exercise was conducive to sleep and a warm bath at bed-time, with the addition of a little mustard, was often helpful. As regards climate, high altitudes were unsuitable for bad sleepers; for most patients a low altitude and a relaxing climate were preferable.

Dr. H. Devine (Portsmouth) said that in the insomnia of the acute psychoses the use of powerful sedatives which stupefied the patient and which had been described as "chemical restraint" was steadily growing into disfavour. Endeavour should be made to assist Nature to bring about a cure by careful nursing and medical treatment—attention to digestion and the state of the bowels, frequent feeding with liquid diet, &c. Direct attempts should be made to promote sleep by sponging, hot packs, or if the condition permitted, prolonged baths. Hypnotics were often necessary, but they should be used as sparingly as possible and in conjunction with such methods as described above. The aim was not to treat the insomnia itself but rather the morbid process in the organism responsible for its occurrence. The insomnia of psychoses was essentially a secondary insomnia in the sense that it was a reaction to a morbid and sensitive state of the organism. There was a practical value in regarding all cases of insomnia as the outward expression of a mal-functioning organism.

Dr. C. P. Symonds (London) dealt with certain physiological factors underlying the function of sleep. The causes of insomnia due to an increase in the flow of stimuli to the cerebral cortex had, on the physical side, been dealt with by the opener of the discussion. On the psychical side it was unpleasant emotions, such as anxiety and fear, which readily prevented sleep. He considered that the principles guiding the use of hypnotics in cases of neurosis should be (1) not to continue drugs for more than a week or so without openly reducing the dose and observing the result, and (2) never to exhibit the same hypnotic for more than three nights in succession. A habit which was valuable in some cases was that of muscular relaxation. With training, the ability to relax could be developed so that a patient might learn to relax all his limbs in turn and finally together. Dr. Symonds was doubtful regarding the wisdom of allowing patients to read or play "patience" in order to pass the time; the practice might tend towards a habit of wakefulness.

Dr. E. I. Spriggs (Ruthin Castle) considered that the insomnia of overworked business men was best relieved by advising the patient to spend one or two hours in the open air each day, or at least every other day. A regular allowance of fresh air was most important for the individual working indoors. In nervous and excitable patients, a good plan for avoiding insomnia was to persuade them to take regular rest after the mid-day meal.

Dr. D. Stone (Northampton) said that the posture adopted in bed was important. A sleepless patient—especially one with digestive trouble—should sleep on the right side, as in that position it was easier for the stomach to empty. It was not wise to go to bed on an empty stomach; a moderate meal was advisable. From personal experience in general practice, he thought paraldehyde was the best hypnotic for routine use—1 drachm was usually sufficient.

Dr. W. J. Smyth (Bournemouth) spoke of the value of hyoscine in asylum practice. In adolescents insomnia was frequently due to some anxiety or fear and was usually only remedied finally by removal of the cause. In his experience medinal was the hypnotic that gave the best results in obstinate insomnia.

Dr. W. A. Potts (Birmingham) drew attention to the value of combining hyoscine with morphine in cases in which drug treatment was necessary; the combination enabled a smaller and safer dose of each drug to be used. In certain selected cases alcohol was valuable, and even a dose of "blue pill" was often efficacious.

Dr. C. Mortlock-Brown (Braunton) pleaded for further research in the physiology of sleep and considered that hypnotics should be used only as a last resort.

Dr. Mackenzie Wallis (London) spoke of certain experiments he had carried out regarding the relative toxicity of certain hypnotics. He had found that sulphonal, veronal, and medinal (sodium-veronal) in ordinary doses had no effect whatever on the functional activity of the liver and kidneys, nor was there any effect on general metabolism. All three drugs were rapidly excreted and showed no evidence of cumulative action.

Dr. T. A. Ross (Penshurst) considered that the insomnias termed primary were in reality secondary, but that the cause was less obvious. He agreed that it was sometimes necessary to give hypnotics in cases of neurosis, but believed that the practice tended to inhibit the process of psychological investigation.

Dr. Woods Hutchinson (California, U.S.A.) said that insomnia depended upon the testimony of the patient, and the patient was usually incorrect in his statements, since no individual could testify as to how long he slept. The aim should be to try to make the patient physically fit in all respects and to persuade him to forget his insomnia.

Dr. R. Whittington (Hove) believed that the nature of the treatment adopted largely depended upon the temperament of the patient; one form of treatment might suit one individual but not another. He would have wished to hear more of hypnotism and suggestion in the treatment of insomnia.

Dr. H. Crichton-Miller (London) had found that dyspepsia was often a basis on which insomnia developed. In many cases the circulation was also at fault. He did not consider that the exhibition of hypnotics hindered a psychological investigation.

The President of the Section, in bringing the discussion to a close, said one had to think of the patient first and that experience had taught him that insomnia was often the key position to many graver conditions that might arise later. Physiologists had shown that the repair of fatigued tissue took place only during sleep. In his opinion sleeplessness should be relieved in its earliest stage—even in children. The danger of habit-formation was much exaggerated. The drug he favoured most was medinal; Dr. Mackenzie Wallis's observations constituted a good answer to the fostering of prejudice against such a sedative. He considered that if a particular hypnotic proved suitable, it was a great mistake to change it.

Friday, July 24th.

The Prophylaxis of Mental Disorder.

Sir Humphry Rolleston, in opening a discussion on this subject, stated that such a discussion, though in a special section, should be on very broad lines, for it dealt with the highest reaction of the human organism—in fact, with its reactions as a whole, whereas in other branches of medicine, one organ or system of organs chiefly attracted our attention. The public, as well as the medical profession, required education as to the way in which mental abnormalities should be regarded, and should be impressed with the commonplace that prevention was better and cheaper than cure, so that the earliest departures from the normal should at once be communicated to the doctor and remedial measures started without delay. The measures appropriate for the prevention of mental disorder were necessarily determined by the numerous forms of mental unsoundness. The multiplicity of the causes—hereditary, environmental, physical or bodily, and purely psychological—complicated the problem of prevention. Heredity and environment were closely interwoven in the causation of mental disorder as disposing and exciting factors respectively; the disease was the morbid reaction resulting from a complete set of external agents stimulating an inborn low margin of physiological resistance. The special form of nervous disorder was not inherited as such, but there was a low state of vitality. Although, generally speaking, more could be done in the way of modifying the environmental conditions—viz., by all that is included in the term "mental hygiene"—measures to counteract gross hereditary disease, such as syphilis and cretinism, must not be neglected. Half the cases of mental disorder had been ascribed to hereditary factors. As a means of prevention this factor necessarily carried with it the difficult subjects of eugenics, sterilisation of the defective, and birth control. We might wisely hesitate before advocating strict eugenic measures of breeding, which, if carried to their logical conclusion, might seriously impair the future progress of the race; for if the inborn tendency to variation, which is responsible both for mental weakness and for intellectual ability, were thus removed, a dead level of standardised men, like "Robots," might conceivably result. To a limited extent the Mental Deficiency Act (1914) had met the question of sterilisation of the mentally defective by diminishing the propagation of the handicapped child. Birth control was less drastic and difficult than the standardised propagation of the human race; it was widely practised, though far more often among those whose offspring would be of value to the race than among the very poor. The arguments against this practice were the risk of a falling population and the moral one that promiscuity would be favoured.

While fully recognising the indubitable influence of heredity, there was the opposite and more or less mechanistic conception that man's actions were determined by his response and adaptation to environmental stimuli. What was often assumed to be hereditary might really be acquired in early youth as the result of family environment and irresistible imitation. An inherited tendency might remain latent unless and until some stress was brought to bear on the individual, who then manifested symptoms of mental disorder, when an absolutely normal person would escape. The stress which was the exciting factor acted in virtue of the psychopathic predisposition, and might be: (1) Physical—trauma, infection, toxic factors, unhealthy environment, unsuitable diet; or (2) psychical—worry, emotional strain, overwork. Chronic infective foci and the resulting toxæmia, by diminishing the resistance of the body and by producing degenerative changes in the nervous and endocrine systems, constituted an important factor both in disposing to and even determining mental disorder. Auto-intoxication due to oral, tonsillar, and intestinal infection was sometimes an obvious factor. Responsible focal infections, especially disease of the accessory nasal sinuses, might remain latent and escape detection. At the New Jersey State Hospital, Trenton, the number of discharges increased from 37 to 85 per cent. after removal of oral and tonsillar infections (H. A. Cotton, 1923). The effects of alcoholism and syphilis and the means of obviating these factors were well recognised. With regard to epidemic encephalitis, more information was needed as to the prevalence of carriers and their detection, the problems of immunisation, and of specific curative treatment. A further interesting question was the possible responsibility of primary deficiency of the endocrine elements of gonads for mental disorder. Sir Frederick Mott had shown that changes in the sex glands occurred in dementia præcox, but it was difficult to disprove the view that the endocrine maldevelopment was concurrent and part of the general bodily arrest of development or precocious degeneration. Endocrine deficiency of congenital origin—e.g., cretinism—might to some extent be prevented by antenatal treatment and environmental precautions. Overpressure in schools on clever boys likely to gain scholarships was a widely recognised but somewhat neglected danger, and not infrequently led to mental sterility in later life. Precocious able boys would, of course, be in forms with boys considerably older, and therefore would be likely to share the same hours of sleep, whereas they required more on account of both their more tender years and their mental activity. Sufficient sleep and rest in the prevention of mental strain and breakdown were most important. Boys were not sent to school to earn testimonials to the transient success of a forcing system. The senseless and harmful punishment of writing out hundreds of lines and keeping boys in after school hours should be regarded as relics of barbarism.

The speaker pointed out that the possibilities included in mental hygiene were extremely numerous; they concerned the home conditions and influences bearing on young children and the education in this respect of the parents: for the impression made by environment on the young mind was of the utmost importance. Mental hygiene was the first line of defence in the prevention of mental disorder, and its want or failure was shown by the need for early treatment in psychiatric clinics, which in their turn should preserve many patients from the necessity of having to enter mental hospitals. Early treatment in psychiatric clinics attached to general hospitals had many advantages; the education of the public to the recognition that mental disorder was intimately connected with bodily disease and not a distinct and mysterious condition; from the patient's point of view the avoidance of the stigma attaching in the public mind to residence in a mental hospital and especially certification; the provision of a much more satisfactory means of educating students, not only in mental disorders, but also in the understanding of the psychological aspects of everyday practice, &c. The prevailing note in the case of early and recoverable patients should be sympathetic conciliation rather than the forbidding coercion—cheerfulness and helpfulness instead of severity and repression.

Dr. Helen Boyle (Hove) agreed that the hereditary factor was difficult to control for fear of producing a race of individuals of dead uniformity. It should be remembered that many of those who have contributed largely to the arts were mentally unstable. Also there was no definite model at which to aim—nobody had yet seen the perfect man, and perfect physical formation did not necessarily mean good mental development. As regards birth control, at present the practice was only adopted by intelligent and thrifty people, and thus those most needed tended to be exterminated. Dr. Boyle also laid great stress upon the correct upbringing of children.

Dr. Bernard Hart (London) said that cases of mental disorder could be divided into two large groups: (1) Physiogenic, which included those cases ascribed to physical causes—toxic, endocrine, heredity, and other physical factors; and (2) psychogenic—a group much subdivided and varying with the different analytical schools of Freud, Adler, and Jung. It was difficult indeed to find a single factor in the ætiology of these cases on which uniformity of opinion could be based. Consequently, in devising preventive measures great care was necessary, and our fragmentary knowledge of ætiology had to be improved. It was important to recognise that in mental disorders there were no disease-entities; what occurred was a reaction of the whole organism to its internal and external stresses; while we clung to the disease-entity idea, it was difficult to harmonise the different ætiological factors. Dr. Hart pleaded for tolerance between the different schools of psychological thought and deplored the present lack of suitable institutional accommodation for psychoneurotics.

Dr. E. Mapother (London) considered it necessary carefully to distinguish between the early treatment and the prevention of mental disorder—that is, between measures taken after the appearance of the earliest symptoms and, on the other hand, measures designed to prevent the occurrence of even first symptoms. This distinction was important because demands for public help towards early treatment could reasonably be based on moderate claims regarding our powers, while appeals in aid of prevention should be founded on our almost total ignorance of and impotence in the prophylaxis of mental disorder.

Dr. Ross said that it was most important to get medical students more interested in minor mental maladies such as the psychoneuroses. At present they were interested in physical illness only, and, in consequence, when they became practitioners and met such cases they did not know how to handle them; they either fussed over them unduly or neglected them. It was not possible for specialists or institutions to undertake the entire care and treatment of all psychoneurotics; they were too numerous and their cases were too prolonged. The patients needed support for a long time, and the bulk of this support should be given by the general practitioner.

Dr. Potts could not accept entirely the somewhat pessimistic attitude of Dr. Hart and Dr. Mapother, although he agreed that more detailed investigation and more knowledge were necessary. There was universal agreement that infections were existing factors and must be dealt with. Following this, if necessary, some form of psychotherapy should be employed. His idea was that the chief places for the prevention of mental disorder were the antenatal clinic and the nursery.

Dr. P. Watson-Williams (Bristol) dealt with the influence of toxæmia as a cause of mental disorder. He considered that by the detection and elimination of focal or other infections the occurrence of mental unsoundness could be prevented, relieved, or absolutely cured. He had seen elimination of sepsis in the nose, throat, or ear lead to the relief of neurasthenia, depression, and even delusional insanity. It was particularly latent or cryptogenic foci that were prone to cause chronic toxæmic conditions; where there is an obvious purulent discharge there was much local reaction and little tendency to toxæmia, but when the infection was associated with but little discharge, and that non-purulent or only opalescent and difficult to observe, toxæmic symptoms were more prone to arise. Hence a well-marked pyorrhœa alveolaris was less dangerous than the apical granuloma of latent dental sepsis.

Dr. Crichton-Miller agreed that the elimination of foci of infection was most important; a toxic factor might not be the entire cause, but it was the easiest to handle. He also described the blood-cell changes found in certain neuropaths.

Dr. C. A. Mortlock-Brown appeared to consider the present generation degenerate and maintained that self-control was better than birth-control. She also advocated the appointment of medical women to the Board of Control.

Dr. R. N. Craig (Torquay) gave details of two psychiatric clinics, attached to general hospitals, with which he was associated. There had been great difficulty in starting them owing to prejudice and opposition from even medical men, but the success attained by the clinics clearly showed that there was a demand for them.

The President of the Section said that over and over again he had seen mental factors neglected in patients at general hospitals; the patient was, in fact, treated in one respect (the physical) and neglected in another (the psychical). Cases of mental disorder due to toxic foci were frequently overlooked. He would deplore any attempt to eliminate the hypersensitive individual—the person who reacts quickly is often the most intellectual or the most successful in life. Unfortunately they reacted equally easily to environment and toxins. Overwork meant over-stimulation, and fatigued tissue was more likely to become infected than healthy tissue.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL.—In their annual report the committee of management state that it is "of vital importance that more beds should immediately be provided at the country branch," and King Edward's Fund has been asked to approve of plans for an additional 200 beds, estimated to cost at least £50,000. At the same time the out-patients' department has become "hopelessly inadequate," the attendances during the past year having exceeded 71,000. A new department, with nurses' home, resident medical officers' quarters, and workshops, will cost another £50,000, a total of £100,000, of which only £30,000 is in hand. Every branch of the work has again increased, and there is an adverse balance amounting, happily, to only £1600, as against more than treble that amount in 1923.

Reviews and Notices of Books.

HISTORY OF MEDICINE.

Proceedings of the Third International Congress of the History of Medicine. Antwerp: De Vlijt. Pp. 320. 21*s*.

THE fourth of this series of congresses has just taken place in Geneva.[1] The volume under review contains the contributions presented to the Congress which met in London in July, 1922, and was attended by some 150 delegates from 16 countries. In the epidemic section, Dr. Tricot-Royer contributes an analysis of the orders of the town council of Antwerp against plagues in the sixteenth and seventeenth centuries, and also a description of the sixteenth century leper house of Hérenthals and its documents. M. Jeanselme's paper shows the connexion of plague with the flood, famine, and earthquake which precede it, and Prof. Sir W. Simpson urges renewed attack on the problems of endemic disease in our own day. Dr. Wickersheimer gives an account of the Black Plague as it affected and was dealt with in Strasbourg in 1349, and of a "regimen" dating from this time; while Dr. R. Neveu describes the plagues of Tuscany in the fourteenth and fifteenth centuries, with an analysis of the reasons for the long-continued infections. Sir W. J. Collins gives a résumé of the work of Sir Edwin Chadwick, and Miss M. C. Buer discusses the decrease in epidemic disease in this country between 1750 and 1830, ascribing it to the improvement in medical science and popular hygiene accompanying the industrial revolution. In the anatomical section Dr. Ricardo Jorge's paper deals with the renaissance of anatomy and medicine in Portugal; MM. Laignel-Lavastine and Livet discuss the part played by symbolism in anatomy, with reference to the rules of divination, the teachings of astrological medicine, and the idea of correspondence between macrocosm and microcosm; Dr. J. G. de Lint publishes two new anatomical "flying sheets" and a fragment of an obstetric MS.; and Dr. E. T. Withington and Mr. Donald Campbell contribute papers on the anatomical writings of Galen. Prof. Ménétrier attempts to rescue the reputation of anatomists by citing instances of their humanity toward "subjects" handed over to them imperfectly executed and susceptible of restoration to life. Dr. V. H. Turkomian discusses the knowledge of anatomy possessed by the ancient Armenians, and also shows that that country was a pioneer centre for propagation of the practice of inoculation for small-pox. M. Fosseyeux's paper describes the anatomical studies of Déscartes, and MM. M. Villaret and F. Moutier discuss plagiarism in anatomical illustrations during the sixteenth century. Dr. K. Lander deals with the anatomical studies of women before the nineteenth century. Mr. T. W. Parry describes prehistoric trephination in Great Britain. In the pharmacy section Dr. M. A. Van Andel describes the history of human fat as a medicament, and Dr. Van Schevensteen the use of remedies taken from the human body in the treatment of eye diseases. Dr. P. Dorveaux contributes a study of the seventeenth-century apothecary, Le Febvre Nicaise, and Mr. J. P. Gilmour sketches the history of pharmacy in the British Isles. M. C. H. Fialon outlines the statutes of the Master Apothecaries' Corporation of Lyons, and Mr. C. J. S. Thompson gives the history of Hiera Picra. In the veterinary section M. M. Sevilla writes on the "colic" syndrome in the Græco-Roman epoch, Major-General Sir F. Smith publishes an abstract of his paper on English veterinary anatomy from the sixteenth to the eighteenth centuries, and Mr. F. Bullock an abstract of his account of the fifteenth century MS. "Mulomedicina Chironis." M. L. Moulé describes the conditions grouped by ancient writers under the term "Malleus." Among miscellaneous papers are found one by Dr. F. G. Poynton on the early aeronautical work of medical men; a study of Byzantine culinary recipes and ingredients by MM. Jeanselme and Oeconomos; and an account of the use of the Danish amulet "Muskatnuss," by Mr. J. W. S. Johnsson. Of particular interest at the present moment is a description of the psychiatric ideas of Roman jurists by Dr. S. K. Waard. MM. Laignel-Lavastine and J. Vinchon contribute an account of the psychiatric work of Jean Schenck, and M. Jeanselme attributes the degeneration of the Carolingian family to hereditary neuropathic taints. Dr. N. G. Horner presents an amusing seventeenth century journal or daybook which belonged to Dr. John Westover, of Wedmore. Among the portraits published are one of Luis Mercado, physician to the Spanish court in the sixteenth century, and that of a young man, by Moroni, showing an apparatus for drop-foot. Of literary interest are Dr. J. Van Gils's comparison of the doctors of Molière with those delineated by Shaw, and a note by Dr. H. Leclerc on the reference to the "sacred thistle" in *Much Ado About Nothing*. Newly published texts include the preface of a thirteenth century Latin edition of the sixth book of "Epidemics" (Mrs. Singer), an Italian MS. giving a large number of hitherto unknown names of Salernitan doctors (Dr. P. Capparoni), and a treatise on air and winds published in 1612 by Panarolo (Dr. G. Hinsdale). The collection concludes with a paper by Mme. Panayotatou on hygiene and dancing among the ancient Greeks.

The volume may be cordially recommended to those who have a taste for medico-historical hors d'œuvres.

HANDBUCH DER TROPENKRANKHEITEN.

Third edition. Vol. II. By various Authors. Prof. Dr. CARL MENSE, General Editor. Leipzig: Verlag von Johann Ambrosius Barth. 1924. With 306 text figures, 4 black and white and 14 coloured plates. Pp 1019. G.M. 66–70.

THE second part of the new "Mense" is a ponderous volume comprising a vast amount of information upon a great variety of essential tropical diseases and subsidiary subjects. As has been customary in previous editions, the bibliography is remarkably complete. But the most important diseases do not appear to be arranged in any logical order; thus we have leprosy, undulant fever, cholera, psittacosis, plague, tsutsugamushi disease, sprue, beri-beri, tropical skin diseases, and those caused by tropical poisons, both of vegetal and animal origin, treated in sequence—a lack of method detracting from the real merits of the work.

The chapter on leprosy by Dr. Georg Sticker, of some 120 pages, includes a history of the disease from the earliest times and is a definite contribution to medical literature. Interesting statistics are given of the present-day distribution of leprosy; in China and the East Indies there are 50 lepers to every 100,000 inhabitants; in Finland, 2; in Egypt, 20; while in the Marquesas islands there are known to be 250 amongst a total of 4000 inhabitants. Dr. Martin Mayer is responsible for a succinct and well-written chapter on undulant fever. In the treatment of this particularly intractable fever attention is directed to the injection of colloidal metals, notably collargol. Cholera, from the pen of Dr. Paul Krause, is mainly remarkable for the chronological table of various cholera epidemics from the year 1817 onwards; the information being wholly derived from Russia from 1914 up to the present time. The various methods of treatment which have from time to time been advocated are given in detail, but no particular line is specially advocated, while the injection of hypertonic salines receives but scanty recognition. Dr. Filippo Rho writes on psittacosis, though it is by no means clear why this somewhat exceptional disease should be included in a treatise on tropical medicine. The article on plague is by Dr. P. C. Flu, of Leyden, and contains a careful description of the bacteriology of the disease, while the attention given to morphology of the various plague-disseminating fleas is noteworthy.

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[1] THE LANCET, 1925, ii., 291.

Tsutsugamushi disease, *or Japanese river fever*, by Dr. M. Miyajima, comes from an authoritative source and is welcome on account of its comparative brevity and the excellence of the illustrations. The story of sprue, by Dr. Hermann Dold, occupies a great deal of space, of which the greater part is taken up by a detailed account of the pathological anatomy. The recital of many pathological items which apparently have no bearing upon the ætiology of the disease renders this section confused and inconclusive. Beri-beri, by Dr. Bernhard Nocht, is an extremely good account of the symptomatology and treatment of this peripheral neuritis; the whole subject of vitamins receiving adequate consideration. Tropical skin diseases, including oriental sore, ainhum, climatic bubo, veldt sore, ulcerating granuloma, and other less well-defined conditions are described by Drs. A. Plehn and Karl Mense, jun. We note that yaws and syphilis in the tropics, illustrated by some characteristic photographs, are also included in this section, though more generally regarded by other writers as being systemic in nature with cutaneous manifestations. The same authors are responsible for mycetoma, tinea umbricata, sporotrichosis, and other fungus diseases.

Poisonous symptoms due to tropical plant poisons are thoroughly discussed by Dr. Rho. Originality and thoroughness of this section make it the most striking contribution in the present volume. Dr. E. S. Faust deals with the analogous conditions produced by animal poisons, including snakes, fishes, reptiles, arthropods, and mollusca.

The general printing and reproduction of the illustrations are, on the whole, good.

An Index of Treatment.

By Various Writers. Ninth edition. Edited by Robert Hutchison, M.D., F.R.C.P., and James Sherren, C.B.E., F.R.C.S. Bristol: John Wright and Sons, Ltd. 1925. Pp. 1035. 42s.

After an interval of less than four years the ninth edition of this well-known manual of treatment has been produced. Recent additions to therapeutical knowledge have rendered its issue advisable sooner than was anticipated. Two subjects hitherto omitted appear for the first time—namely, Infective Endocarditis (Sir Thomas Horder) and Spinal Analgesia (Dr. Felix Rood), while additions have been made to the article dealing with the general treatment of tuberculosis. The article on diabetes by Dr. Edmund Spriggs has been rewritten in the light of modern research, but we are glad to say that the same amount of space, or more, is still devoted to the informing tabular statements with regard to the composition and value of different foods and their arrangement for the various meals. It will be noticed that the article on asthma has been excellently brought up to date, and other sections which have received notable additions are those dealing with venereal and tropical diseases.

In its latest issue the Index of Treatment can be recommended, in accordance with previous notices, as a first-class book of reference.

International Clinics.

A Quarterly of Illustrated Clinical Lectures and Articles. Vol. II. Thirty-fifth series. London: J. B. Lippincott Company. 1925. Pp. 311. Per set of four volumes, 50s.

This, the latest issue of a quarterly symposium of lectures and articles on medicine, surgery, and obstetrics contains, like its predecessors, many interesting sections contributed by well-known authorities. Among the contents of this volume which are especially noticeable may be mentioned a dissertation on the present status of affections of the kidney by Dr. I. W. Held of New York; a paper on cystic neoplasms of the ascending mesocolon by Dr. C. G. Cumston of Geneva, in which the symptoms are well set out and the diagnosis discussed; and a suggestive essay by Dr. J. J. Walsh of New York entitled "The Patient or His Disease." Throughout this last paper the valuable advice is insisted on to observe the patient's mental attitude towards his own complaint; it is pleasant to note in this connexion a reference to a paper read before the Charaka Club in New York by Dr. Frederick Peterson, which dealt with the neuroses brought out among those who served in the American Civil War. It is clear from this paper that the experiences of more recent date were not without precedent in America, though the conditions of warfare were so different.

Clinical Laboratory Methods.

Second edition. By Russell Landram Haden, M.A., M.D., Professor of Experimental Medicine, School of Medicine, Kansas City. London: *Henry Kimpton. Pp. 310. 18s.*

This book differs from most of the myriad others which have appeared in the last decade under closely similar titles in that theoretical and clinical considerations have been almost entirely eliminated; this has made possible the inclusion of a great deal of purely technical matter which must otherwise have been omitted from a volume of this handy size; and, while reducing its appeal to the student and general practitioner, very considerably enhances its value to the whole-time laboratory worker. The section devoted to biochemical procedures is by far the best; the author has limited himself to describing one technique only for each of the procedures included; his choice has not always fallen upon the particular one most popular in this country; in fact, as was more or less inevitable, it has usually failed to do so. In every case, however, the methods described are sound and well approved, and the descriptions of them are clear and accurate. Very valuable chapters are those on the use of the colorimeter and on the standardisation of quantitative reagents. The bacteriological section is of less value to English readers, and most of the illustrations are familiar.

The Essentials of Healthy Living.

By William S. Sadler, M.D., F.A.C.S., formerly Professor at the Post-Graduate Medical School of Chicago. New York: The Macmillan Company. 1925. Pp. 481. 15s.

This appears to be at least the fourteenth book on health matters written by Dr. Sadler for the lay public as his contribution to the educational campaign now proceeding in America and other civilised countries for creating an "urge for health," as it has been called. As Prof. W. A. Evans says in an introduction, "health cannot be greatly improved from above downwards," and he quotes the baffling hopelessness of trying to improve the health of ignorant natives in tropical countries. Dr. Sadler believes that "personal hygiene is the keynote to the health teaching of the coming generation," and this book is a veritable text-book on the art of keeping healthy. It is a long way from the primitive poster with "Kill that fly" written upon it in large capitals to a volume of nearly 500 pages, but if only the intelligent section of the community, or at any rate those that can afford a guide to health at the price of this volume, can be "won for health," the movement will slowly spread downwards. Some of the chapters here strike an original note, particularly that on the history of preventive medicine with which the book opens, and one on "The Mission of Pain" which is full of common-sense teaching. The remainder of the volume deals along the usual lines with the different systemic diseases, diseases of various organs, and matters of general hygienic interest.

Symptoms of Visceral Disease.

Third edition. By Francis Marion Pottenger, A.M., M.D., LL.D., Medical Director, Pottenger Sanatorium for Diseases of the Lungs and Throat, Monrovia, California. London: Henry Kimpton. 1925. Pp. 304. 28*s.*

This is the third edition of a book which the author in his preface states to cover a unique field in clinical medicine, the uniqueness, we believe, being to make the patient the chief object of study. We confess that we are still puzzled, as we were in previous readings of this suggestive book, to understand in what this claim to particular singularity consists. In general arrangement the book remains as before—that is, an introduction being followed by three parts entitled (1) Vegetative Nervous System; (2) Relationship between this System and Visceral Systems; and (3) the Innervation of Important Viscera and a Clinical Study of the Germane Reflexes. The reflections are often sound and sometimes obvious, and the work is beautifully illustrated.

A Manual of Pharmacology.

Sixth edition. By Walter E. Dixon, M.A., M.D., F.R.S., sometime Professor of Materia Medica and Pharmacology at King's College, London. London: Edward Arnold and Co. 1925. Pp. 478. 18*s.*

We are glad to receive a new edition of this admirable manual. It has been completely revised in conformity with recent knowledge by Prof. E. Mellanby, Dr. O. Inchley, and Dr. A. J. Copeland, and additions are included covering all accepted knowledge on the subject of pharmacology. The information is imparted in a form useful alike to the student of pharmacy and of medicine.

We have noted before the essentially practical nature of the work, which is at the same time an exposition of the relations between physiology and medicine. Looking back on the way in which pharmacology was taught as recently as 25 years ago, we can see how the large and varied researches in physics and chemistry which have taken place in the interval have enabled teaching to assume the logical character which Prof. Dixon and his collaborators give to it. The reader, for example, of Chapter XVII. in this book, which deals with the drugs acting locally on the alimentary canal, will obtain arguments for therapeutic procedures which he may have to undertake daily in the course of practice. He will know both what to do and why he should do it, and throughout the volume consultation will put him in the same position along other lines. The manual is in the first rank of books available on its subject.

Scientific Preservation of Food.

By Thomas M. Rector, Consulting Chemist. London: Chapman and Hall, Ltd. 1925. Pp. 213. 10*s.*

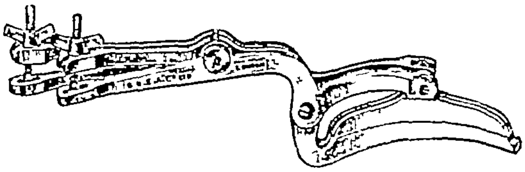
It is not very evident for whom this book is intended. It gives a clear, but rather gossipy, account, freed from technicalities, of the different methods for the preservation of foods. Indeed, technicalities are so eliminated that the book will make but little appeal to the chemist, bacteriologist, or medical expert interested in the scientific data underlying the problems of food spoilage and their prevention. But to the medical man who wishes to obtain a broad general idea of the methods employed in food preservation, this book may make appeal, and it will be found of considerable interest to laymen. It is, however, a serious defect in a book issued in 1925 that the important subject of vitamins and the extent to which they are destroyed or damaged by food preservation methods is entirely ignored. Vitamins, indeed, are only incidentally mentioned. In other directions words with a technical meaning are used without adequate explanation, a defect if the work is intended for the uninitiated.

In scope the work is comprehensive and includes short accounts of the nature of the main types of manufactured and preserved foods. The causes of food spoilage are discussed, including those from insects and larger animals, micro-organisms, enzyme action, and physical and chemical conditions. The food preservation methods include simple storage, application of cold, dehydration, chemical preservation, preservation by fermentation, hermetically sealing, heat sterilisation, and pasteurisation. In the description of these processes the author follows customary lines, but here and there unusual pieces of information are quoted. For instance, it is mentioned that the United States Bureau of Fisheries during the war recommended the canning of dog-fish and other members of the shark family under the name of "grey-fish." When acted upon by many canners it was discovered that the flesh of sharks contained urea which decomposed in time to ammonia, spoiling the flavour of the product and swelling the container. This caused great loss to canners and illustrates well the importance of scientific knowledge in relation to food preservation.

New Inventions.

A NEW GASTRECTOMY CLAMP.

Surgeons who have had practical experience of the modification of the Billroth I. gastrectomy operation introduced by Schoemaker of The Hague[1] will have found considerable difficulty in applying Schoemaker's crushing clamp to the stomach in certain cases. That instrument has to be passed across the stomach from the greater curvature, and where the ulcer is high on the lesser curvature, or the stomach not very mobile, it is sometimes impossible to apply the clamp sufficiently above the lesion. The clamp here illustrated is designed to extend the range of this ingenious and physiologically admirable operation. It is applied from the upper border or lesser curvature of the stomach, with the inner and outer halves clamped together by the central milled screw and by an interlocking device at the tip of the blades. The two upper blades are set on a rocking joint so as to secure even crushing of the stomach, and the upper and lower blades are so ground as to fit into each other without risk of side-slipping or shearing the stomach wall. The crushing is effected by tightening the wing nuts on the ends of the handles. When the distal portion of the stomach has been cut away, exactly as in the Schoemaker operation, the outer blade is removed by simply releasing its wing nut and the central milled screw. I have found that this instrument simplifies the Schoemaker operation considerably.



I am indebted to Dr. K. B. Pinson, anæsthetist to the Manchester Royal Infirmary, for designing it, and it has been made for me by the General Radiological and Surgical Apparatus Co., Ltd., 204–6, Great Portland-street, London, W. 1.

John Morley, Ch.M. Manch., F.R.C.S. Eng.

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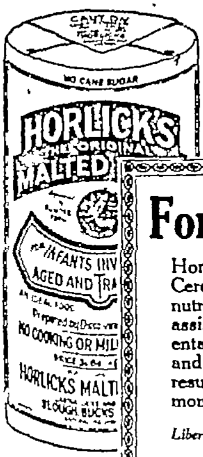
[1] Surgery, Gynecology, and Obstetrics, December, 1921, pp. 591–596.



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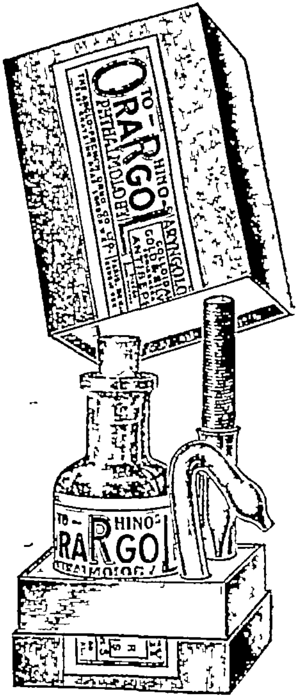

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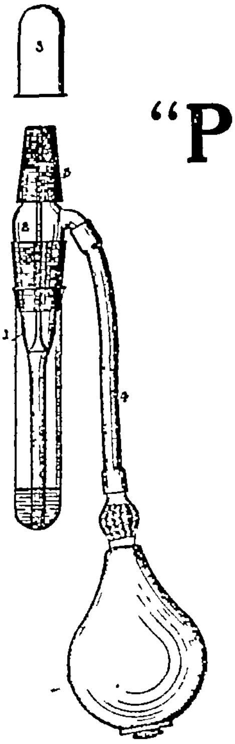

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THE LANCET.

LONDON: SATURDAY, SEPTEMBER 12, 1925.

THE TREATMENT OF FRACTURES.

The important series of lectures by Sir William de Courcy Wheeler which has been appearing in our recent issues and terminates to-day, and the discussion on the subject at the meeting of the British Medical Association at Bath, have combined to awaken a widespread interest in the treatment of fractures, and especially in that treatment as carried out in our great hospitals and as taught to our students. That this treatment might be greatly improved no surgeon will deny, but as to how it should be improved opinions differ, and, broadly speaking, there are three schools of thought. First, there are those who would retain the present system of treatment in general wards by general surgeons; secondly, those who would treat these cases in a special department under general surgeons; and thirdly, those who advocate a department controlled by specialists. The first school claims that specialisation has already gone too far; that it is to the great general surgeons of the past that we owe most of our knowledge of fractures; and that, from the point of view of the student, the removal of these cases to a separate department would withdraw them entirely from his range of educational subjects—for no one would be found to suggest that intensive attention to fractures should form another special subject in the ordinary curriculum. The second school would seem to find a happy mean and to be in a very strong position, were it not that the third maintains that the general surgeons would never go near the fracture department, and that in any case the average general surgeon, despite his position on the hospital staff, often knows little specially about fractures or their treatment. And there is occasionally just enough truth in this final argument to give very serious point to their contention.

The matter might be left to academic discussion, when we can see directions in which entertaining debates would ensue, were it not that it is in reality one of the most serious problems of practical surgery at the present day. With the increase of machinery and of mechanical transport and the general speeding up of life the number of fractures has enormously increased. Their occurrence forms a serious item in the industrial problems of to-day, and, quite apart from individual considerations, their mismanagement may be a source of serious loss to the community. The vast majority of these cases will of necessity come to be treated neither by fracture specialists nor by general surgeons at hospitals, but by general practitioners who have so wide a range of professional and scientific duties that they can only pursue routine of the proper standard. The careful segregation of a few of these cases of fracture into special departments at the great teaching hospitals would certainly raise in a proportional number of centres the level of routine, but such sporadic instruction would be a mere drop in the ocean of real need—namely, that our students in the mass should receive better instruction in the treatment of fractures. It is undeniably the case that the student cannot be well taught on cases which are badly treated, while at the present time the treatment of fractures in general surgical wards is often left entirely to the house surgeon, who cannot possibly have the knowledge required to do the best for the case, and whose unfailing enthusiasm will not supply the experience wanted. The present system, indeed, when closely examined, has practically nothing to commend it, for it is often unfair alike to the patient and to the student, whilst it is not unusual for a hospital surgeon, whose interest is attracted to other branches of surgery, to regard the fractures in his beds as mere encumbrances of the ground at his therapeutic disposal. A far better arrangement, and one likely to meet the reasonable requirements of all concerned, would be the setting aside of special wards for the treatment of fractures, to which the patients would be admitted under the charge of the various surgeons on the staff, but ensuring that these wards should be under the charge of a senior medical officer of the standing of a registrar, with an aptitude for the special work. The house surgeons of the different members of the staffs would look after the cases of their respective chiefs as they do at present, but their work would be carried on under the eye of this senior medical officer, to whose advice they would be expected to defer. The members of the staff really interested in the treatment of fractures would have the inestimable advantage of the assistance of an expert, whilst the student would be presented with an object-lesson in systematic treatment which he would be scarcely likely to forget. All the experience of the war in the treatment of fractures went to show how much better this was carried out when the cases were grouped together in one ward and under one control, and far from nursing being more difficult under these conditions, it became easier from the systematic arrangements which could be made for its requirements.

We think that these are the sound lines on which to employ and develop specialism in any important or more or less general branch of medicine, especially in those hospitals which are responsible for the training of our medical students. At the present time the student may be too much at the mercy of men of high scientific attainment, each of them convinced that his own is the only subject that matters. They may load him up with knowledge which would be worth its weight in gold if he could use it, but to him it is heavier than lead and just about as useful; and thus his frail barque, blown from one department to another, is finally wrecked by a brutal examiner who asks him practical questions. The fact that so many of our students succeed in arriving at port, and later in becoming really useful and practical men, says more for their power of endurance than for the wisdom of their educational training in many schools, though there are teachers in those schools whose devotion minimises the difficulties. It is undoubtedly to the specialist, willing to devote his energies to a limited field, that surgery owes some of its greatest advances, but it is from the teaching of the general clinician, the man who speaks from a wide experience spread over many branches of his art, that the student will learn the principles upon which he will ultimately rely. It is, we think, a matter for real regret that many surgeons have become specially engrossed in other branches so as to lose sight of the importance of fractures, leaving their treatment to be carried out along unprogressive and uninspiring lines. Why this should be we cannot guess, for not only are the highest skill and ingenuity called for in the modern and special methods of this branch of surgery, but the cases requiring aid are increasing, and the general practitioner will need more assistance than he now gets from his training. Some such plan as we have suggested might help the student towards practical skill in a vital subject, and might bring back to the hospital surgeon a true sense of proportion and an appreciation of the exquisite art of which British surgeons were once justly proud.

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FOOT-AND-MOUTH DISEASE.

AFTER the two abortive attempts which have been made to elucidate the mysteries of foot-and-mouth disease by appointing committees to make investigations, it is most encouraging to find that the third council, constituted as recently as March, 1924, under the presidency of Sir CHARLES SHERRINGTON, and later Sir WILLIAM LEISHMAN, is already in a position to issue a report[1] which sets out solid and substantial progress. The work has been done partly at the laboratories of the Ministry of Agriculture at Weybridge under the supervision of Sir STEWART STOCKMAN, and partly at the Lister Institute under Dr. J. A. ARKWRIGHT, who had experience of the disease in the ill-conceived attempt to work at it on a hulk in the Thames estuary. So far their observations have been confined to small laboratory animals, but by the adaptation of the Ministry's cattle testing station at Pirbright an admirable establishment has been secured where good facilities for exact work can be combined with a reasonable degree of isolation and experiments on pigs and cattle can be begun. This postponement of the direct attack on the disease in farm animals has not been without its advantages, since it has enabled attention to be concentrated on the means available for the identification of the virus and on its nature and properties, necessary preliminaries to the investigation of the main problems which are the mode of spread and the possibilities of protective inoculation.

It is curious that LÖFFLER and FROSCH, who found as long ago as 1897 that the vesicular fluid remained infective after it had been passed through a Berkefeld filter, failed to reproduce the disease in the small laboratory animals, for recent workers have all agreed that the guinea-pig may be infected with a regularity and certainty and with resultant lesions so characteristic that it is of the greatest value as a test animal. Almost any sort of inoculation gives positive results, but infection is best achieved by intracutaneous injection into the skin of the pad of the hind foot. After an incubation period of one to four days, redness and swelling appear at the site followed quickly by vesiculation. One or two days later symptoms of generalised infection appear; the animal is obviously ill, loses weight, there is often diarrhœa, and blisters appear in and about the mouth and on the fore-feet; appropriate experiments show that the virus is present throughout the body, mainly in the blood. As in cattle the mortality is low—about 5 per cent.—and the recovered animals are highly resistant to a second inoculation. This guinea-pig reaction is the only practicable means at present available for identifying the virus. A rather limited series of experiments on other animals indicates that a proportion of white and wild brown rats can be infected with some difficulty and the long-tailed field mouse seems to be quite susceptible; with house mice, white mice, and fowls the results were negative. Attempts to transmit the disease by bugs failed, and epidemiologically it is very remarkable that infection is never transmitted from diseased to healthy guinea-pigs living together.

Using the guinea-pig reaction, most interesting observations have been made on the nature of the virus. It is present in abundance in the fluid of the vesicles, about 0·05 c.cm. of a 1 in 1,000,000 dilution being regularly infective. It dies in a day or two at 37° C., in the cold it survives for months, and if diluted vesicle fluid is rapidly dried over sulphuric acid it may remain potent for at least six weeks; infected tissues can be conveniently preserved in 50 per cent. glycerine, especially in the cold. As is well established, the virus readily passes through porcelain filters, and it is so small (or of such an abnormal gravity) that it cannot be concentrated by centrifugalisation; when in blood serum it is not entangled in the precipitates formed by precipitins or in the general coagulation of the proteids brought about by 60 per cent. alcohol. Nor are its dimensions or its substance of the nature which leads to its absorption onto the surface of particles such as red blood corpuscles, dead bacteria, or kaolin. Its resistance to ordinary killing agents is equally remarkable. In 60 per cent. alcohol it survives for 18 hours at room temperature, whereas *B. coli* and staphylococci are killed in a minute; in 0·5 per cent. phenol it lives for 21 days, and for two days in a saturated solution of chloroform in water; ether vapour does not kill in 36 hours, though 1 per cent. antiformin destroys it in an hour. Attempts to repeat the cultivation on artificial media reported by FROSCH and DAHMEN last year have failed even after a personal visit to Berlin, where Dr. ARKWRIGHT and Dr. S. P. BEDSON were freely shown the methods used by those workers. Such seems a common fate of much-advertised discoveries. The progressive transmission of the disease through guinea-pigs without loss of virulence seems then to be the only evidence that the virus is alive. Its other properties do not correspond with any recognised conception of living matter, nor is there at present any proof that it is particulate. It may, indeed, be a real *contagium fluidum* at last, and these researches are at least as important from this point of view as they may be as a beginning of gaining control over a disease which has been an intense agricultural nuisance for long enough.

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THE PUBLIC HEALTH ACT, 1925.

THE Minister of Health has published a summary of the new Public Health Act which came into force on Sept. 8th.[1] The Act covers a wide range and much enlarges the powers of local authorities, though many of its provisions require adoption by the local councils before they come into force. They deal with many matters of housing, drainage, recreation grounds, and street planning, as well as with more strictly medical matters. The section on verminous premises, &c., enables the local authority, on a certificate of the medical officer of health or sanitary inspector, to cause verminous articles in any premises used for human habitation to be cleansed or destroyed at the public expense. The owner or occupier of verminous premises may be required to remove the wallpaper or take any other steps necessary for clearing the vermin. Any person notified as being in a verminous condition may be removed by his own consent to a cleansing station, or if he does not consent a petty sessional court may order his removal for cleansing. Women are to be treated only by a medical practitioner or a woman authorised by the M.O.H. The section dealing with infectious diseases provides a penalty not exceeding £5 for any person in whose dwelling a patient has died of such a disease if the owner of the dwelling fails to take reasonable steps to prevent persons coming into contact with the body. It enables a justice to grant the M.O.H. a warrant to enter a common lodging-house and examine its inmates if the existence of such disease is suspected; or the lodging-house may be closed by the petty sessions. The diseases included in the term "dangerous infectious disease" are those listed in the Notification Act of 1880. The list, therefore, does not include plague, cerebro-spinal fever, or dysentery, but it may be added to by the Minister at need. County councils and urban authorities are enabled by this Act to apply to a court of summary jurisdiction for an order for the removal to hospital of any person suffering from an infectious pulmonary tuberculosis and for his detention up to three months, even contrary to his wish. To safeguard the patient in such a case it is enacted that this power shall only apply where the accommodation prevents the adoption of adequate measures against the spread of infection and where it can be shown that there is serious risk to others. The period of detention may be extended a further three months if the circumstances are unaltered. Section 67 provides that any local authority may arrange for the publication of information on health questions and for lectures and display of pictures. Section 72 forbids the sale, preparation, or storage of foodstuffs in any room where a w.c. or sleeping place communicates directly or where there is inlet or opening from any drain. Dealers in rags and bones are not to be allowed to sell food or toys of any sort. The Act does not apply to London except in its ninth section, dealing with baths and washhouses. This part removes the statutory prohibition on mixed bathing. The amendments thus effected in the law are a preliminary step towards the much-needed consolidation of the Public Health Acts into a reasonable code.

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[1] First Progress Report of the Foot-and-Mouth Disease Research Committee. Ministry of Agriculture and Fisheries. Stationery Office. 1925. 1s. 3d.

[1] H.M. Stationery Office, Adastral House, Kingsway, London, W.C. 2. 6d.

TUBERCULOUS MILK: NEW REGULATIONS TO PREVENT HUMAN INFECTION.—The Minister of Health has introduced new regulations (H.M. Stationery Office. 1925. 1d.) investing local authorities with specific powers for the purpose of preventing the spread of infection by tuberculous persons handling milk. The enforcement of the regulations will be a matter for the local sanitary authorities; they forbid any person suffering from tuberculosis of the respiratory tract to enter on any employment or occupation which would involve the milking of cows, handling of vessels used for milk or the treatment of milk. Any such person can be required to discontinue his employment at a week's notice, with right of appeal to the courts. The new regulations to some extent remove the restrictions imposed on local authorities in cases of notified tuberculosis. Authorities are urged, however, to make every effort to preserve the confidential character of notifications as far as is consistent with the due exercise of the new regulations. The medical officer of health is required to take all reasonable steps, including expert clinical and bacteriological examination, to be sure that the suspected person is really suffering from tuberculosis.

Annotations.

"Ne quid nimis."

VOCATIONAL TESTS.

THE familiar question "What shall we make of the boy?" has usually been settled in the past by family conclave, modified by financial considerations, the desire of the father either for a successor in his business or to see his son succeed in some line of life where he himself has failed and, to an increasing extent in recent times, by the expressed wish of the child himself. In the near future it is not so certain that any of those factors will have a place in the selection of a career. The psychological expert will be called in to settle the matter by the standardised tests that are already being used extensively in America and on the continent. In Germany, for instance, such firms as Osram, A.E.G., Siemens, Krupps, and the Post Office and State railways have established psychological laboratories in which their new employees are tested before being allocated to the various branches of the firm's activities. Several large firms in this country also have sought the aid of the National Institute of Industrial Psychology in instituting definite psychological tests. A committee of the British Association under the chairmanship of Dr. C. S. Myers drew up a report for presentation to the Psychological Section at Southampton. The report reviews the present position of vocational testing and asks for a grant towards the expenses of a systematised research into the subject. The committee say that:—

"In order to define the position of psychological tests in schemes of vocational guidance and selection it is important to realise that the school records give only one side of a child's mental or physical activities. The records are obtained under conditions very different from those obtaining in the outside world, and their value must be estimated accordingly. In the same way a teacher's estimate of a child's ability is only valid within his sphere of observation; similarly with the estimates of parents and guardians. The medical examination can give help mainly in determining for what occupations a child is not fitted. In this sphere there is an enormous ground to be covered before valid positive information can be obtained. Psychology can help in forming a truer estimate of the value of the children's own wishes and inclinations in determining a choice of occupations, and it can survey more completely and exactly than any other method the child's mental and physical activities. Psychological tests can be applied which will ascertain, for instance, his level of intelligence, measure his manual dexterity, and to a certain extent estimate his temperamental qualities. This information is, however, of little use unless the extent to which these qualities are required in everyday occupations has also been determined, and this implies a careful analysis of the requirements of the occupations and a classification of those requiring allied ability. When such information is available reliable advice can be given.

"With the rapid development in this work that has taken place during the last few years, there has arisen a demand for persons who have received training in the methods of devising, applying, and evaluating suitable tests, and a number of bureaus have organised training courses for those who wish to take up this work. In nearly every country of the world the work of developing vocational tests is proceeding rapidly, and it is felt that in order that workers in this country may keep abreast of the developments here and abroad, full information should be available concerning: (1) vocational tests that have proved of value in practical use; (2) research work that has a direct bearing on the development of vocational tests. In order to do this satisfactorily it will be necessary to get in direct touch with all organisations carrying out this work and to obtain, wherever possible, copies of the tests, accurate descriptions, drawings, and illustrations of apparatus used, &c."

There can be no doubt of the value of such research. Those who believe that the true vocation of the best type of worker is indeed "a call," strong enough to drive the individual to his destiny over all obstacles, must nevertheless admit that to many men such an experience comes late if at all, and any laboratory process that can reduce the number of square pegs fitting clumsily into round holes is bound to increase the well-being of the community as well as the sum total of individual content.

THE NEW CENTRAL PHARMACOLOGICAL LABORATORIES.

THE plan to establish new pharmacological laboratories at the headquarters of the Pharmaceutical Society[1] has reached the stage at which a director is being sought, and in all probability the laboratories will be fully equipped and staffed before the Therapeutic Substances Act comes into operation. The detailed arrangements and the lines on which the scheme will develop will not be determined until the director has been appointed, but we understand that it is the intention of the Pharmaceutical Society that commercial testing as well as research work in pharmacology shall be commenced at the earliest convenient time. The director will be given a free hand in the choice of equipment and in the selection of his staff, and while the whole of the work of the laboratories will be under the supervision of the director the routine commercial testing will be left as far as possible in the hands of competent assistants, freeing the director to carry out researches. We have inspected the four laboratories that will be placed at the disposal of the director, and this accommodation would appear to be sufficient for some time to come, but if the work develops to the extent that is hoped it may be necessary, in due course, to provide further premises. It is probable that in the earlier period the work will be confined to the physiological standardisation of drugs such as digitalis, strophanthus, and ergot, these being typical examples of drugs which cannot be standardised by chemical means, and that the standardisation of vaccines and sera and similar substances will be deferred until a later period in the development of the scheme. This, however, is a matter for future decision. Commercial testing for firms which are not in a position to undertake the testing of the products which the Therapeutic Substances Act will require to be standardised is not likely to cover the cost of the laboratories, and indeed it is not intended that the laboratories should be self-supporting. The advisory committee, which includes Sir Nestor Tirard, Dr. H. H. Dale, and Sir Humphry Rolleston, will assist the Council of the Pharmaceutical Society in selecting the director.

THE DENTAL SERVICE IN THE U.S. NAVY.

THAT the care of the teeth of the men of the U.S. Navy obtains, and rightly, grave consideration from the officers of the Medical Corps, is evidenced by the issue of a " Dental Number " of the *U.S. Naval Medical Bulletin* (for April). The Surgeon-General, in his recent annual report, observed that there is now in actual service one dental officer to every thousand men, but that the establishment, if attained, would provide one officer to 615 men, although, in his opinion, there should be one for each five hundred. The actual work of officers of the Dental Corps is much lightened by the help given by the naval dental assistants or dental technicians (selected from the sick-berth staff and trained specially for 16 weeks), who act as "oral hygienists"; they clean mouths, do scaling, and give patients individual teaching besides assisting the dental officer in the management of apparatus, the sterilising of instruments, and so forth. The importance of the work done at naval training stations, where recruits are received, is shown by the experiences reported from one of them, where, of 4337 recruits examined and charted in six months, 3016 were found to require treatment; 1246 teeth were extracted, 6314 cavities found, and 1040 fillings done, while 5274 fillings were left over to be carried out in rotation on board ship. A dental ward of 12 beds has been opened in the naval hospital at Norfolk, Virginia, with complete annexes for dental work. It is there recognised that the dental officer's first duty is that of "prophylactodontist," especially before operations requiring general anæsthesia, and in syphilis. His next care is the elimination of dental focal infections, which may lead to systemic sequelæ, such as rheumatism, gastro-intestinal disorders, diseases of eye, ear, nose, antrum, and skin. Lieut.-Commander J. R. Barber, Dental Corps, U.S.N., has devised a scheme of routine for the dental examination and treatment of the men of small craft arriving at the New York Navy Yard for refit; this has worked well and is mentioned with approval. The men are all examined on arrival, those requiring treatment are listed, and the list is sent to the captain, who daily releases for treatment as many men as he can spare from duty. A new list is sent next day, and so on, till all are put right.

A STANDARD FOR MATERNAL MORBIDITY.

LITTLE progress can be hoped for in dealing with what is still commonly called puerperal fever unless the condition is accurately defined. In 1905 the British Medical Association laid down a definition of puerperal morbidity and recommended that it should be adopted as a standard by the medical profession. Although this standard has been largely accepted its general adoption has not been universal. This lack of uniformity is well brought out in comparing the clinical reports of various maternity hospitals and charities. There is the more stringent Queen Charlotte Hospital standard which in some quarters is preferred to that advocated by the Association. Several hospitals have invented entirely new definitions of their own, whilst others have failed to interpret the B.M.A. prototype correctly. We have before us the medical report for 1924 of the British Hospital for Mothers and Babies at Woolwich, the authors of which show two sets of figures " in the absence of any generally accepted standard of morbidity-rate." These are based on the number of deaths which have shown a temperature of (1) over 100·4° F. for 24 hours or more, and (2) over 100° for less than 24 hours. It is a matter of serious concern when an institution as admirable and reliable as the British Hospital at Woolwich denies the existence of a standard of puerperal morbidity; it means that it is impossible to compile any statistics on the subject whatever. Obviously, if we are to avoid absolute chaos, the B.M.A. enactment should be adopted in toto or a new formula should be drawn up more in accordance with the views of obstetrical authorities both in this country and abroad. If the latter course were adopted the various international statistical returns on morbidity could be compared and some idea obtained of the incidence of puerperal infection and the relative value of the many forms of treatment carried out. Could not the medical statisticians associated with the League of Nations draw up a memorandum on the subject and arrange a standard in conformity with the opinion of the leading obstetricians of their respective countries?

THE ANÆSTHETIC PROPERTIES OF PROPYLENE AND ACETYLENE.

SINCE Luckhardt and Carter published in 1923 their discovery of the value of ethylene as an anæsthetic, several experimenters have investigated its homologues. The physical properties of propylene suggested that it would prove a more powerful and safer drug than ethylene. Brown, Meyer and Hopff, and Riggs have experimented with it, and we published recently the report of Dr. F. E. Shipway[1] on this and other new gaseous anæsthetics. The August number of *Anæsthesia and Analgesia*, the publication of the International Anæsthesia Research Society, contains the record of experiments by Prof. J. T. Halsey, Mr. C. Reynolds, and Mr. W. A. Prout at New Orleans. They have found an initial difficulty in obtaining pure propylene, but when this has been overcome rapid and comfortable narcosis can be produced in animals and man by a concentration less than one-half of that required with ethylene.

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[1] THE LANCET, June 6th, p. 1192.

[1] THE LANCET, 1925, i., 1126.

Death does not result till a concentration 150–160 per cent. of the anæsthetic dose is reached and is usually due to simultaneous failure of the heart and respiration. In animals it was not possible to obtain complete muscular relaxation, but an analgesia sufficient for clinical purposes resulted from concentrations of 40 to 50 per cent.; at which strength there seemed to be no harmful effects and no toxic sequelæ. The authors conclude that propylene may prove of value in anæsthesia, but this can only be determined by cautious clinical trials made by experienced and competent anæsthetists with careful attention to exactness in dosage. The same publication contains a note by Mr. A. Goldman, D.D.S., and Mr. J. D. Goldman, D.D.S., of New York, on acetylene-oxygen anæsthesia. This combination has been extensively tried in Germany. The American investigators have experimented with white mice and conclude that anæsthesia can be maintained with percentages of oxygen much higher than that in air and that the symptoms of danger (gasping) are readily recognisable and appear early enough before respiration ceases for the animal to be easily brought back into safety. The safety margin is much more favourable with commercial acetylene and oxygen than with either ethylene and oxygen or nitrous oxide and oxygen. Dental operations conducted under this anæsthesia were very successful, the subject retaining good colour and returning to consciousness with a hearty appetite ten seconds after the apparatus was removed. It is important to get the acetylene pure; German investigators claim to have freed it from all trace of phosphine and sulphur, but the American workers did not succeed in getting less than 0·0008 per cent. of phosphine and 0·002 of sulphur.

INTESTINAL NEURO-DYSPEPSIA.

UNDER this title Prof. Arturo Campani, of the University of Modena, publishes a description[1] of a syndrome which, though clearly defined, is slight in its effects on the bodily organism, and perhaps on this account liable to be confused with myelasthenia, disturbances of metabolism, or chronic enterocolitis. According to Prof. Campani the malady consists of a stable and characteristic group of fundamental symptoms which are deserving of special study and nomenclature. These manifestations are: (1) Insomnia of a peculiar kind, the patient sleeping soundly till 2 or 3 A.M., then waking with a sense of heat, sweating, and borborygmus. Sleep is resumed with difficulty. (2) Disturbance of intestinal digestion characterised by changes in the rhythm of defæcation, sometimes spasmodic constipation, but more often slight tendency to diarrhœa or to repeated and copious evacuations. (3) Retardation of morning digestion, the patient having no inclination for food after the mid-day meal. (4) An eruption on the dorsal surface of the fingers sometimes so slight as to escape notice unless carefully looked for, characterised by guttate desquamation of the epidermis over the second and third phalanges, with irritable redness of the underlying dermis, more or less evident erythema, never severe, dry, with slight tendency to fissures. Not infrequently the skin of the phalanges is less pigmented and becomes smoother than the rest of the hand. (5) Tingling on the arms and head, retinal hypersensitiveness, muscæ volitantes. (6) Increased plantar and skin reflexes. (7) Tolerance towards adrenalin, intolerance towards belladonna even in small doses. This group of symptoms which form the syndrome is often accompanied by accessory manifestations such as polyuria, hand tremors, and irritability of temper; true psychasthenia, however, is never found. The general health suffers but little; there is not rarely a history of phosphaturia in youth which disappears with the progress of years and develops into a tendency to urinary hyperacidity and calciuria. This syndrome rarely makes its appearance before the age of 40 and is almost confined to the male sex. Its cause may lie in some functional disequilibrium of the endocrine glands causing sympathetic and vagal hypotonus; it usually ceases when true old age is reached. Further elucidation is required to settle what glands or group of glands are most implicated; the disturbances of calcium metabolism and the cutaneous pigmentation seem to suggest a slight suprarenal insufficiency, and Prof. Campani thinks that the cutaneous nervous and intestinal signs have some remote resemblance to pellagrous conditions. Treatment is best directed to elimination from the diet of sugar, cream, chocolate, and sweet farinaceous foods, and to reduce the evening meal to a minimum. Bromide of sodium may be given as an intestinal antispasmodic, and some good effects have resulted from the administration of preparations of lime together with adrenalin.

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[1] La Riforma Medica, April 27th, 1925.

THE ICONOGRAPHY OF VESALIUS.[1]

IN 1912 Prof. Dr. Paul Heger, now president of the University of Brussels, originated a scheme to produce a Liber Memorialis in honour of Andreas Vesalius, to commemorate the fourth centenary in 1914 of the birth of the father of modern anatomy. A subsidy was promised by the Belgian Government and a select band of scholars was chosen to collaborate. Of this project, including biographical, historical, and scientific and iconographic sections, only the last section, which was placed in the competent hands of Mr. M. H. Spielmann, F.S.A., has come to fruition. With the active assistance of Prof. Heger, Mr. Spielmann was able to complete his section, which was set up in type before the other essays were completed. Then came the war, and the whole matter was suspended. After the war it was found impossible to proceed with the scheme, for everyone was more occupied with the future than with the past, and of the band of scholars who had been entrusted with the other sections not less than four had fallen victims to the war, either directly or indirectly. But it was decided to publish the iconography, which was first written in French, the English version being published under the auspices of the Wellcome Historical Medical Museum, forming No. 3 of the series of Research Studies in Medical History. The work is in every way worthy of the distinguished anatomist; we doubt whether so complete an iconography of any one individual has ever before been compiled. Mr. Spielmann has omitted nothing which can throw light on his subject. He deals with portraits in oils, pictures, engravings, illustrations, sculpture, and medals; there are numberless illustrations most admirably reproduced and an iconographic bibliography which is a model of what such things should be, while Mr. Spielmann's critical and literary notes are of extreme interest. The portrait of Vesalius which is the source and ground of all others of him, either directly or indirectly, is the well-known woodcut, dated 1542, which appears in the first edition of Vesalius's great work, De Humani Corporis Fabrica Libri Septem, published at Bâle in June, 1543. The drawing was done by Calcar, but the name of the wood-cutter to whom he entrusted the drawing is unknown, although he was evidently a master of his craft. There are 20 known portraits in oils of Vesalius, or at least claiming to represent him, but of these Mr. Spielmann considers that only nine can be reasonably regarded as true representations. One of them is no longer in existence, although it was so when Mr. Spielmann wrote of it, the famous picture which used to be in the University of Louvain. Besides these oil paintings there exist numerous engravings both of Vesalius alone and showing him demonstrating before an audience, the chief of these latter being the title-page of the Fabrica of 1543. Sculptures and medals are dealt with in the latter portion of the iconography. Of no man of science, we may say, are there so many graphic illustrations as of Vesalius, and when we consider that among the artists are such men as

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[1] The Iconography of Andreas Vesalius, 1514–1564; with Notes, Critical, Literary, and Bibliographical. By M. H. Spielmann, F.S.A. London: John Bale, Sons, and Danielsson, Ltd. 1925. Pp. 243. 30s.

Titian, Tintoretto, and Moroni, it is evident that his fame is not posthumous alone. Artists and medical men, together with historians, owe a debt of gratitude to all the begetters of this book.

PATHOLOGICAL INVESTIGATION IN SCOTTISH MENTAL HOSPITALS.

IN Scotland the effort to centralise and develop the study of mental pathology is continuing. The Board of the Scottish Asylums Pathological Scheme report that Dr. F. E. Reynolds has been appointed superintendent of the laboratory with recognition as lecturer in neuropathology to Edinburgh University—a most valuable combination of posts. Dr. Reynolds visits the contributing asylums periodically to advise and encourage the work carried on by individual medical officers, and is himself conducting researches into the paths of infection of the leptomeninges. The laboratory undertakes such routine work as may be desired by the 21 hospitals supporting the scheme, and supplies them with printed forms for description of specimens and circulars explaining the best methods of taking, despatching, and preserving material. A similar scheme is in force in the West of Scotland. It is reckoned that a contribution at the rate of six-tenths of a penny per patient from each of the seven bodies concerned in the scheme would make the financial basis sound. Dr. W. Whitelaw, director of the research institute in Glasgow, reports a steady increase in the routine work done, from 450 specimens in 1921 to 2006 in 1924. Owing to epidemics of typhoid fever at Hawkhead and Greenock Asylums, a large proportion of these specimens were examination of excreta for *B. typhosus* or of blood for Widal reaction. The epidemic at Hawkhead seems to have been present since 1916, but has undergone exacerbation since 1921. Twelve carriers in all have been isolated, and Dr. Whitelaw is of opinion that typhoid will come to occupy the position that dysentery once held if drastic steps are not taken to deal with it. He urges the importance of early recognition and early isolation. Research has been undertaken on blood-sugar in anxiety states, on the calcium content of the blood in epilepsy, and on the cerebro-spinal fluid in general paralysis which is being treated by protein shock; but it is too early yet to formulate conclusions. A number of medical officers have been examining the relation of chronic infection, especially intestinal toxæmia, to certain mental disorders. Treatment by intestinal disinfectants has not yielded any useful results. Dr. J. Neilson, a M'Cunn scholar, is working on the histology of encephalitis lethargica. Certain post-mortem material is being investigated with special regard to the associative mechanism, and Dr. Whitelaw appeals for material from dementia præcox cases. It is clear that while valuable work is being done by these two Scottish schemes, there is still ample scope for extension and improvement.

THE LATE DR. J. DE ZOUCHE MARSHALL.—John James de Zouche Marshall, L.R.C.S. Irel., Lieut.-Colonel, R.A.M.C. (T.), died at his residence in Hove on August 24th at the age of 78. Born in Limerick, he was educated in Dublin, studying medicine at the Royal College of Surgeons in Ireland, where he qualified L.R.C.S. Irel. in 1869, L.A.H. in 1870, and L.M. (Coombe Lying-in Hospital) in 1871. His professional life was spent in England, at Surbiton, Esher, and Hastings, until his retirement some eight years ago, when he took up residence at Hove. While in practice he actively identified himself with the Volunteers, and then with the Territorials in the Royal Army Medical Corps, to which he devoted much of his time and energy. He rose to the rank of Lieut.-Colonel and received the Volunteer Decoration. He commanded the 3rd Home Counties Field Ambulance, was lecturer and examiner to the St. John Ambulance Association, and at one time served in that capacity to the Metropolitan Police. He contributed a number of articles on ambulance work and allied subjects to medical literature. Although in later years declining health prevented him from taking an active part in the affairs of the St. John Ambulance Association, he followed the work of the movement with a never-failing interest.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXXXVIII.—THE TREATMENT OF PAPILLOMA OF THE BLADDER.

OF the various methods of treatment of papillomata of the bladder, only two will be considered here; in one, the tumour is burnt or coagulated by the passage of an electric current at high voltage, contact being effected by an electrode introduced through a catheterising cystoscope, the method being known as fulguration; in the other, the tumour is removed by operation through a suprapubic incision. The old treatment of washing out the bladder with solutions of various drugs is not curative, and the removal of growths with the operating cystoscope is not advised for reasons which will be clear later.

Two Lines of Treatment.

Each form of treatment has its advantages and disadvantages, and what is suitable for one tumour may be unsuitable for another. Each case must be judged on its merits, and, while no hard and fast line can be drawn, the following points should be taken into consideration when deciding which is the better method for any given patient.

Fulguration possesses these advantages. It can be done without a general anæsthetic, and the patient need only be confined to bed for a day or so, and in many cases not at all; it is therefore valuable for patients for whom a general anæsthetic is contra-indicated or who prefer a cure without a "cutting" operation. It is suitable only for growths which are undoubtedly simple, relatively small, and not numerous; mere multiplicity, however, is no contra-indication, provided the total bulk of the tumours is not too large. It is of the greatest value in dealing with the small recurrences or implants which so frequently occur after the cure of an original papilloma. Experience has shown that there is a somewhat less risk of the occurrence of secondary seedlets on the vesical wall after fulguration than after suprapubic removal.

The disadvantages of fulguration are as follows. As the process of coagulation is slow, the procedure required for the complete destruction of a tumour, unless of small size, is often a lengthy one, frequently several sittings being required, especially when no general anæsthetic is employed. Fulguration is unsuitable for tumours that are sessile, as it is difficult to be sure of their non-malignancy, owing to the impossibility of determining for certain with the cystoscope the absence of infiltration of the vesical wall. It is unsuitable for tumours that are large or very numerous, owing to the number of sittings required and sometimes to the field of operation being obscured by the imbedding of the end of the cystoscope in portions of the growth. Lastly, it is unsuitable for cases in which hæmorrhage occurs on the least provocation and cannot be controlled; hæmorrhage of this type is most likely to take place when the end of the cystoscope butts into and traumatises the growth, which is often near the internal meatus or of large size. Fulguration is difficult to employ when tumours are situated in certain inaccessible positions, such as close to the internal meatus, on the antero-superior surface, and at the back of the retroprostatic pouch.

Removal by suprapubic cystotomy has the advantage of enabling the tumour or tumours to be eradicated at one sitting, and is indicated when the question of non-malignancy is in doubt, or when the tumour is sessile or of large size. It is the only form of treatment for the radical cure of definitely malignant growths, as by its means those tissues which are infiltrated, including portions of the vesical wall of varying extent, can be removed with the tumour. Furthermore, the suprapubic exploration of the bladder affords the only means of determining accurately the presence of infiltration in the earlier stages and the extent of it in the later.

Removal by suprapubic cystotomy has the disadvantage of subjecting the patient to a major operation with its attendant risks and complications and to a period of post-operative convalescence. Generally it is possible to suture the suprapubic vesical wound completely and, in the majority of cases, to obtain primary union without a urinary fistula; in favourable cases, therefore, the patient is confined to bed for a fortnight, while in those in which a fistula occurs, the wound will take from three to six weeks to heal. The occurrence of secondary seedlets is more common after this method of treatment than after fulguration, but is in part probably due to the more serious tumours being dealt with by this method. Recurrences, however, do take place not uncommonly in the suprapubic vesical scar and rarely in the scar of the abdominal wall.

In deciding which is the method of choice in a given case, in addition to the above considerations, due regard must be given to the temperament of the patient, his ability to attend for treatment, and his own views on the matter. Some surgeons are more strongly in favour of fulguration and others of removal by suprapubic cystotomy.

Of all the points to be taken into consideration, the determination of the innocence or malignancy of the tumour is the most important, and is often difficult. The signs suggesting malignancy are—the presence of sloughs or phosphatic deposits on the surface of the tumour; a ragged and torn appearance of its villous processes; the absence of a narrow pedicle; the presence of infiltration, which is responsible for a diminution of the normal vesical capacity and for the symptom of frequency; and the presence of a tumour on bimanual examination of the pelvis.

Whichever method is adopted, however, some important pathological properties of vesical papillomata must be borne in mind. First, the ease with which cells of, or portions of, the tumour will implant themselves, and grow, on the apparently intact mucous membrane of the bladder and in other tissues of the host; secondly, the frequency with which multiple tumours occur; thirdly, the frequency with which other and similar growths appear in the bladder months or years after the complete removal of the first; fourthly, the vagueness of the line of demarcation between a simple and malignant tumour, and the fact that a simple papilloma sooner or later usually becomes malignant if untreated. It is clear, therefore, in treating papillomata of the bladder that as far as possible living cells or portions of the tumour should neither be allowed to come in contact with the vesical wall or other tissues of the patient nor be left behind lying free in the bladder, and that, after the cure of one papilloma, the bladder, even in the absence of symptoms, should be examined with the cystoscope every two, or at most three, months at first, and later every six months, over a period of many years.

Technique of Fulguration.

The employment or otherwise of a general anæsthetic varies with the practice of different surgeons. Its use may enable a growth which would otherwise require several applications to be destroyed at one sitting; moreover, the surgeon's attention is not distracted by the thought of giving the patient pain or discomfort; on the other hand, its use adds a definite risk, small though it is. Without a general anæsthetic, the duration of the treatment is limited by the fatigue of the patient induced by the presence of the cystoscope in the urethra, by the discomfort of the distended bladder, and by the pain caused by accidentally touching the sensitive trigone; moreover, the patient, and to some extent the surgeon, are under mental tension throughout. Generally speaking, the smaller the growth, the older the patient (the bladder and urethra being less sensitive in the aged), and the more stolid he is, the less the desirability of a general anæsthetic.

One terminal of the apparatus is connected to a malleable metal plate, which is firmly bandaged to the thigh, suprapubic region of the abdomen, or back. The bladder is gently distended with fluid, the catheterising cystoscope introduced, and the electrode, connected with the other terminal of the apparatus, inserted into the cystoscope. To prevent living cells, or living portions, of the tumour from becoming detached during the subsequent procedure, the surface of the growth should as far as possible be dealt with first. The electrode is gently pushed on to the tumour so that its point lies among the villous processes and in contact with them, and the current turned on. In a few seconds the part of the growth immediately around the electrode turns white, then black, and a little later bubbles begin to appear accompanied by a sound of fizzing and the appearance of an arc. As little arcing as possible should be allowed to occur, and on its appearance the electrode is withdrawn a little, the current switched off, and the procedure repeated at a fresh place. It is important during the withdrawal of the electrode to avoid as far as possible the risk of pulling off pieces of living growth, as, apart from the theoretical objection of liberating living tumour cells, hæmorrhage is liable to be produced; this risk is lessened by keeping the current switched on during the withdrawal; portions of coagulated tissue will, however, often become firmly glued to the electrode and will come away with it. In the case of the smaller tumours the whole growth and its pedicle can in a short time be destroyed in this manner; it is, however, essential to treat a small area of apparently normal mucous membrane immediately surrounding the place of origin of the tumour in the same way; in the case of the larger pedunculated tumours, time can often be saved by cutting through the pedicle, a procedure, however, only to be adopted after the surface of the growth has first been coagulated.

During fulguration the electrode has to be removed frequently and its point scraped free from the pieces of coagulated tissue which become firmly adherent to it and prevent the conduction of the current; from time to time, too, the fluid in the bladder must be changed, partly because of its rise of temperature, which is considerable if much sparking has been allowed to occur, and partly because of its diminution in translucency caused by the presence of blood and particles of coagulated tissue. Should bleeding occur, it can usually be stopped by leaving in the bladder for a few minutes some fluid containing one or two ounces of 1 in 1000 adrenalin solution.

Sometimes, in treating a papilloma growing in the middle line of the trigone, difficulty is caused by the repeated accumulation of bubbles on the lens of the cystoscope obscuring the view; the difficulty can be avoided by turning the patient on his side.

Papillomata growing on the anterior vesical wall, usually recurrences in the scar of a previous suprapubic cystotomy, may be brought into closer relationship with the electrode by an assistant placing his hand on the suprapubic region and pressing backwards the anterior abdominal wall and by only partly filling the bladder with fluid.

If fulguration is carried out under a local anæsthetic, half an hour is about as much as the patient will tolerate, while if under a general anæsthetic, it can be continued for say an hour and a half, but has then to be stopped, sometimes owing to fatigue of the surgeon, sometimes to hæmorrhage obscuring the field of operation, and sometimes, after the whole surface of the tumour has been coagulated, to the necessity of awaiting the separation of the sloughs before the amount of living tumour remaining can be determined.

At the end of the sitting the free sloughs are evacuated with a Bigelow's evacuator, and some surgeons wash out the bladder with a 1 in 10,000 silver nitrate solution with the object of killing any loose living tumour cells.

Post-operative treatment calls for no special comment. Some urethral discomfort from the presence of the cystoscope in the urethra is usual and a little hæmaturia may occur, but is not severe. In cases in which the tumour or tumours cannot be completely destroyed at one sitting, the next treatment should be undertaken three weeks or a month later. If at the second sitting it is found that no marked diminution in the size of the growth has occurred, its non-malignancy is in grave doubt.

Technique of Suprapubic Removal.

The patient is given a general anæsthetic and the bladder gently distended with fluid. A long paramedian incision is made, extending from the symphysis pubis to the umbilicus or above, the rectus sheath opened, and the peritoneum stripped off the anterior wall of the bladder as far upwards as practicable. To avoid the possible contamination of the wound with living tumour cells which might perhaps be suspended in the fluid, the bladder may now be emptied by the catheter left in situ for the purpose. The patient is put in the Trendelenburg position and the bladder opened by a long vertical incision in its anterior wall. The wound, shielded with rubber pads, is held widely retracted in a good light. Thompson Walker's self-retaining illuminating retractor is useful. Any fluid remaining in the bladder is removed either by a suction tube or by pieces of gauze, care being taken not to touch the papilloma. The amount of infiltration of the vesical wall, if any, must be determined. It is wise as a first step to destroy the whole surface of the tumour with the benzoline or electric cautery or the diathermy apparatus. In the case of the smaller growths, their complete destruction and that of their pedicles and adjacent vesical mucous membrane can be accomplished in this way. In the larger but pedunculated growths, the root of the pedicle is seized with suitable forceps, after the preliminary cauterisation of the surface of the growth, and the tumour with a portion of the normal vesical mucous membrane cut or burnt away; the seizing of the tumour itself with forceps should never be done, as it will almost certainly cause hæmorrhage and the tearing off of portions of the growth. In dealing with the larger but sessile tumours and with those in which infiltration has occurred, a piece of the whole thickness of the vesical wall should be removed with the tumour by means of the knife or cautery, the line of section being kept well clear of the infiltrated tissue. The resulting wound, if made by the knife, is sutured with catgut after ligating the bleeding points, but if made by the cautery is best left to granulate after separation of the sloughs; should the whole thickness of that part of the vesical wall which is covered by peritoneum need to be removed, the knife should be used and the wound carefully sutured. If the tumour is growing on or near a ureteric orifice, no hesitation need be felt in removing that orifice or even a portion of the ureter itself if necessary. In many cases the vesical mucous membrane upon which the papilloma has been resting is dark red, granular, and velvety; the whole of the area thus affected should be cauterised. If thought desirable, the bladder may be washed out with a solution of silver nitrate. Some surgeons prefer to close the suprapubic vesical wound completely, drainage being established by a catheter tied into the urethra for a few days, while others prefer to provide suprapubic drainage; generally, suprapubic drainage is unnecessary unless hæmostasis is incomplete; but sometimes secondary hæmorrhage occurs during convalescence when the sloughs separate, and occasionally is so free as to necessitate reopening the suprapubic wound.

During convalescence the urine should be kept acid and the patient given hexamine, and it is as well to commence the use of this drug a day or so before operation. Whether the patient is submitted to bladder washes or not depends on the practice of different surgeons. In the majority of cases in which suprapubic drainage has not been adopted, the wound heals per primam, and the patient is out of bed at the end of a fortnight; in those in which a suprapubic fistula occurs, the wound closes in from three to six weeks.

At the subsequent cystoscopic examinations very careful inspection should always be made of the suprapubic vesical scar, as recurrences in that situation are not uncommon.

For the undoubtedly malignant tumours an operation planned on the lines indicated above should be performed, a more or less extensive area of the whole thickness of the vesical wall being removed, the procedure amounting to a partial cystectomy. Inoperable cases are of two types. In one the bladder is filled with a mass of papillomatous growth; the only radical treatment is total cystectomy, an operation having so high a mortality that it is rarely performed; sometimes the whole mass of the growth is curetted out and the bladder cauterised, a procedure which, besides causing severe hæmorrhage difficult to control, is almost certain to be followed by recurrence. In the other type the growth invades the extravesical tissues, producing a large, firm, fixed pelvic mass. For both types, in addition to the treatment of symptoms, radium may be employed with advantage; sometimes the patient's existence is so miserable that it is advisable to put the bladder out of court by a bilateral ureterostomy, the ureters being either brought to the surface or inserted into some part of the intestinal tract.

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Obituary.

JOHN DARLEY WYNNE, M.B., B.CH. DUB., D.P.H.

Dr. J. Darley Wynne, who died on August 4th in Guernsey, was the second son of the late Right Rev. F. R. Wynne, D.D., Bishop of Killaloe. He was educated at St. Columba's College and graduated in arts and medicine at Trinity College, Dublin, gaining the Hudson prize and silver medal of the Adelaide Hospital. He began his medical career in Sheffield, where he was for a time house surgeon to the Jessop Hospital for Women. He was afterwards medical officer to the Nottingham Borough Fever Hospital, and having also gained experience of general practice in that city he returned to Ireland and was for many years one of the leading practitioners in Clonmel, Co. Tipperary. It was during this period that he turned his attention to public health matters, and took with honours the diploma of the Irish Royal Colleges. He was one of the pioneers of the special study of tuberculosis in Ireland and published several papers on the subject, one of which on the Connexion between Cattle Fairs and Tuberculosis in Ireland was an important piece of original observation. Another paper on Dr. Johnson and the Medical Profession was the outcome of a discerning knowledge of English literature. After a severe illness Dr. Wynne left Ireland and took a country practice in Norfolk, but continued ill-health compelled him to seek less strenuous work in Guernsey where he died. In spite of physical disability he remained a hard worker and a keen sportsman almost up to the day of his death; in fact, the final failure of his heart seems to have been determined by a bathe in the sea three days before he died. Yachting, boat-sailing, and swimming were his recreations, and he never lost his love of them. To those who knew him best he was a man who had not lost the charm of youth in spite of ill-health, and he is still remembered with affection by his old colleagues in Sheffield and elsewhere. He leaves a widow and three children.

end of the phase; but as the volume of blood flowing through the lungs is itself diminishing during the same period, so the blood leaving the left heart will contain a more or less constant percentage of CO_2.

A gradually decreasing volume of CO_2 is washed out of a gradually decreasing volume of blood, and the ratio between the two seems to be maintained by the degree of closure of the glottis. The mechanism is the reverse of that occurring during inspiration.

Relation of Respiratory Movements at the Glottis to other Factors.

What has been described appears to be the chief function of the respiratory movements at the glottis of man, although it is not a primitive function.

(*a*) *Oxygen-content of Alveoli and Blood.*—I had supposed that the mechanism of correlation between air entry and blood-flow was directed towards regulation of oxygen exchange; by Prof. McDowall's aid I was enabled to see the error of this view, and it was at his suggestion that I reconstructed the theory to apply to CO_2 exchange. In some aquatic mammals regulation of oxygen-content of the alveoli and blood seems to be a function carried out by the glottis; in man this does not appear to be the case. The percentage of oxygen in the alveolar air even at the end of expiration is almost always high enough to saturate the blood, and from this we see that it is obviously unnecessary for the glottis to take part in regulation of oxygen-content of the lungs.

(*b*) *Relation to Aortic Blood Pressure.*—The respiratory movements have a marked influence on the blood pressure, because of the factors already mentioned—namely, the increased flow of blood through the lungs during the major part of inspiration and the diminished flow during expiration. The normal respiratory waves depend to a considerable extent on the descent of the diaphragm and not merely on the alterations in pressure within the thorax; but the latter factor is the more important of the two. In comparison to the usual high level of aortic blood pressure, however, the respiratory variations would not appear capable of exerting any marked influence; they would seem to be merely incidental to the mechanism designed for regulating the reaction of the blood, and not to be directed purposely to maintenance of the blood pressure in the systemic circulation. It is the power of the left ventricle which maintains the very high pressure in the aorta.

(*c*) *Pump Action on Circulation.*—Sir Arthur Keith has impressed on me the great importance of another closely related factor—namely, the pump action of the respiratory movements in drawing blood through the lungs, and of thus assisting the circulation. The inspiratory pump action has already been described as regards its relation to CO_2 exchange, in which respect it appears to be extremely important. As to the assistance given to the heart in causing circulation of blood round the body, the effect is proportional to the difference between the increase of volume of blood drawn into the right heart and great veins and so to the lungs on inspiration, and the decrease of volume consequent on slight compression of the right heart, and especially of the great veins during expiration.

In relation to the work of the heart the glottic movements would seem to exert a definite and important function in conjunction with the other factors such as the mechanical compression of veins and the action of CO_2 on the venous reservoirs, which promote the return of blood to the heart and increase the rate and output of the latter. It was stated above that the movements of the glottis have little effect on the height of aortic blood pressure, because the differences noted between inspiration and expiration are slight and almost negligible when compared to the high level present in the great systemic arteries. But as regards the right side of the heart the effect is marked. The pressure in the pulmonary artery is very low as compared with that in the aorta, and any assistance given by the mechanism described during inspiration is of great benefit in maintaining efficient circulation through the lungs. On the other hand, any obstruction offered during expiration exerts a marked influence. These variations, in allowing more or less blood to reach the left ventricle, will indirectly affect the level of aortic blood pressure, but it should be clear that there is a difference as regards the action of the glottis in the two respects—namely, that great assistance is given to the work of the right side of heart, while little is afforded to that of the left.

(*d*) *Effect on Hering-Breuer Reflex.*—When the lung is distended at the end of inspiration a stimulus passes up the vagus which instigates the commencement of expiration. At the end of expiration another stimulus causes inspiration to begin. The obstruction offered by the glottis to passage of air causes prolongation of the time taken to fill or empty the lung and thereby causes suitable delay in the timing of the signals for emptying or filling of the lungs—namely, the Hering-Breuer reflex. The importance of this mechanism has already been emphasised. Lumsden considers that passage of air either into or out of the air passages gives the signal referred to as the Hering-Breuer reflex.[4] Such a view does not alter the significance of the part played by the glottis in the mechanism.

(*e*) *Regulation of Filling of Alveoli.*—From observation of certain facts related to comparative anatomy it appears to me that obstruction offered by the glottis during expiration may have an important effect in assisting to distribute air in the air sac systems, and in helping to fill those alveoli distally situated. The mechanism would be considerably aided by contraction of the bronchiolar musculature at the beginning of expiration, because the bronchioles contract before elasticity of the pulmonary tissue or contraction of the expiratory muscles have had time to expel air from the lungs to any marked extent.

At the same time diffusion of gases from and to tidal air is reinforced by the process of mechanical mixing, probably to a most important degree. It is suggested that air is drawn from the alveoli, air sacs, and alveolar ducts into the bronchioles at the beginning of inspiration; and that at the beginning of expiration some air is driven from the contracting bronchioles into the terminal ramifications of the lungs. The subject is too big to be discussed further at this point; it will be dealt with in a separate paper.

ALTERATIONS UNDER CERTAIN PATHOLOGICAL CONDITIONS.

Reason for Priority of Abductor Paralysis.

If the recurrent laryngeal nerve be slightly injured, there is loss of power in some of the muscles supplied by it; power disappears from the abductors sooner than from the adductors. This to me is natural, because adduction is an older function than is abduction, and therefore the power of the former survives that of the latter. *Lepidosiren*, a lung fish, has a sphincteric band of muscle at its larynx, which has the power of closing the aperture in the manner of a purse string and of protecting the delicate lungs from the entrance of irritants such as food or water. It has no abductor muscles, according to my observations, and needs none, because passive relaxation of the sphincter is all that is required to allow passage of air into and out of the lungs. In other animals such as *Ceratodus*, another lung fish, dilator fibres are present, so that opening of the glottis can be attained more rapidly and more widely; the sphincteric band is, however, of more primitive origin than are the dilator fibres. In mammals the sphincteric band is split up into various components—namely, the thyro-arytenoid, lateral crico-arytenoid, and inter-arytenoid muscles—while the dilator fibres are represented by the posterior crico-arytenoid. In an animal such as a mongoose the sphincteric group is used mainly for protective closure of the larynx, but not at all for phonation; while the dilator muscles are for opening the glottis on inspiration, just as in *Ceratodus*.

In man and many animals certain fibres of the sphincteric group are used for phonation; this is, however, a comparatively new and subsidiary function, as pointed out in my Arris and Gale lecture, and does not alter the fact that the primary object of the group is for protective closure. Therefore in man, as in lung fish, the function of adduction is of older standing than is that of abduction, and in consequence it survives longest. In cases of abductor paralysis in man the paralysed cord lies nearer to the mid-line than the cadaveric position, because of tonic contraction of the adductor group. In health the position is determined by active contraction of the abductors,[4] balanced by opposition of the adductors, associated with resistance of elastic fibres in the crico-arytenoid joint; the latter tend to bring the cartilages and cords into the cadaveric position.[5]

Effect of Laryngeal Obstruction.

Obstruction to passage of air through the larynx may be due either to paralysis of the muscles which open the glottis or to spasm of those which close it, or to local conditions which cause mechanical blockage. If there is merely inability to abduct the vocal cords, then difficulty will be experienced on inspiration only, because of the valvular nature of the glottic margins, which are flat above and conical below. Spasm of the sphincteric muscles will produce effects similar to those of paralytic obstruction; but in the former case the condition is overcome as soon as asphyxia commences, while in the latter it is permanent. As there is nothing particular to describe in the present connexion, spasmodic conditions will not be considered separately. If the pathological process has produced marked narrowing of the laryngeal passage, then obstruction will be offered during both inspiration and expiration. Combinations of the two types of paralytic and mechanical obstruction are met with; they will give rise to mixed effects.

(1) *Inspiratory Obstruction.*—One important result of inspiratory obstruction, usually due to abductor paralysis, will be upset of the normal mechanism of washing out of CO_2 from the blood. At the beginning of inspiration in these cases there is considerable delay in the passage of air through the glottis, and therefore there is not dilution of CO_2 in the alveoli at the usual rate. But the intrapulmonary and intrathoracic pressures during this phase are lowered more than usual, because the increasing capacity of the lungs is not filled by inrushing air as quickly as is normal. The abnormal lowering of pressure in the thoracic cavity causes an unusually large volume of blood to flow through the lungs as an exaggeration of the usual increase; as the percentage of alveolar CO_2 is higher than it should be there is less of the gas washed out of the blood. Consequently the blood leaving the lungs and travelling to the tissues contains a higher percentage of CO_2 than in a normal individual during this period; a certain degree of breathlessness is produced because of this relative retention of CO_2. Towards the end of inspiration entry of tidal air reaches its maximum and there is therefore dilution of alveolar CO_2, so that blood CO_2 falls in consequence.

On expiration there is the usual mechanism of washing out of CO_2 in cases of abductor paralysis, because, although the failure of the muscles which open the glottis does not permit attainment of the desired width of the aperture, yet the abductors and elastic fibres are still capable of closing it to the requisite degree, while simple relaxation of the sphincteric muscles will allow the funnel-shaped margins to be blown open in a mechanical manner when the force of expiration is great enough to necessitate wider opening at the larynx. Therefore "sympathetic connexion" is not upset during this phase. This is the effect on washing out of CO_2 during the different phases of respiration; it is seen that the normal correlation between inspiratory entry of air and volume of blood passing through the lungs is upset, and that the CO_2 content of the arterial blood is in consequence no longer constant, tending in the mean result to be higher than usual, and thus causing breathlessness. Other effects are due to the diminution in volume of tidal air because of the abnormal obstruction on inspiration. The CO_2 percentage of the arterial blood tends to rise if lung ventilation becomes insufficient. It is raised also because of the abnormally insufficient washing out of CO_2 at the beginning of inspiration; a combination of all these factors leads to increased stimulation of the respiratory centre.

The result will be increased effort on inspiration and a temporary compensation of the laryngeal obstruction, and return of blood CO_2 to the normal level. The increased effort is not able, however, to keep pace with the accumulation of CO_2 in the alveoli; therefore the CO_2 in the blood again rises and the respiratory centre has to accommodate itself to respond to a permanent new level. The level may reach as high as 7·5 per cent., as in a case investigated by Dr. R. D. Lawrence and myself.

As to supply of oxygen to the lungs. In the early stages anoxæmia is not produced because of the normal surplus of oxygen contained in the alveolar reservoir; the colour of the patient is therefore good. But as the total volume of tidal air per minute decreases, there will come a time when the hæmoglobin does not find sufficient of the gas to saturate it. A further factor depends on an observation made by Haldane (p. 157).[3] If the blood-flow through the lungs is abnormally accelerated, as it is in these cases during the early stages of inspiration, there may not be time to pick up what oxygen is available; therefore the condition of anoxæmia is aggravated. The effects of anoxæmia on the respiratory centre are to stimulate it in a jerky manner and to hasten an early failure of the controlling mechanism of respiration, which is due chiefly to the continued excessive stimulation by CO_2.

(2) *Complete Paralysis.*—Cases of complete paralysis of all the muscles controlling the glottis will show the same characters during inspiration as those already described; during expiration, however, the flabby passive opening of the aperture will not offer sufficient resistance to the current of air. The result will be that the blood-flow during expiration is not decreased to the requisite extent and insufficient CO_2 is washed out. Therefore, not only is arterial blood CO_2 excessively high at the beginning of inspiration, falling towards the end of the phase, but it also tends to rise above the normal during expiration. The total result is that the respiratory centre is abnormally stimulated and calls for increased effort on the part of the respiratory muscles. The other factors do not differ materially from those seen in abductor paralysis.

(3) *Narrowing of Laryngeal Aperture.*—There will be the same effects during inspiration as those produced in paralytic affections; during expiration, however, there is a difference. Obstruction during the latter phase leads to further decrease in the volume of tidal air per minute; it tends to prolong the Hering-Breuer reflex stimulus for inspiration, but this tendency is counterbalanced by increasing CO_2 content in the alveoli—with absolute CO_2 retention—and usually by a certain degree of anoxæmia. Therefore the rate of respiration tends to rise, while the force increases. The circulation through the lungs is impeded more than in health, because of the increased pressure brought to bear on the right auricle and great veins and on the pulmonary capillaries. Consequently, sufficient blood for the needs of the body cannot pass through to the left side of the heart during this phase of circulation; the veins become engorged with unoxygenated blood and cyanosis appears at a much earlier stage than in cases of pure inspiratory obstruction.

(4) *Treatment of Laryngeal Obstruction.*—With regard to the treatment of cases of laryngeal obstruction, it must be remembered that prolonged deficiency in lung ventilation and upset in the correlating mechanism between air entry and blood-flow lead to increase in the percentage of alveolar CO_2 before signs of anoxæmia appear. Therefore tracheotomy should be performed early and should not be delayed until

urgent symptoms arise. When the condition has become extreme it is often necessary to perform emergency tracheotomy. By this operation lung ventilation is suddenly and enormously increased. Paradoxical as it may seem, even when obstruction has been relieved, there are some cases in which death has taken place, as Sir StClair Thomson has pointed out to me. Therefore it seems necessary to consider the causes and means of avoiding such calamities. In this respect Haldane writes that if the amount of CO_2 in the blood and tissues is greatly reduced by effective artificial respiration for some time, there is prolonged apnœa, and the animal dies of want of oxygen without attempting to draw a single breath; he states that this occurrence has been described by Yandell Henderson.[9] The experiment may be carried out personally by deep breathing while resting, when apnœa is produced.

Dale and Evans[10] showed that a certain percentage of CO_2 was necessary for efficiency of the vasomotor centre, apart from any question of the action of the respiratory centre; this factor was said to play an important part in the difficulties encountered in the attempt to climb Mount Everest. With regard to the observation of Yandell Henderson mentioned above, Haldane adds: "This important experiment shows that when the CO_2 pressure is reduced below a certain point in the respiratory centre, the latter ceases to respond to even the extremest stimulus of want of oxygen."[8] It is apparently the sudden withdrawal of CO_2 from the alveolar air and blood, and the consequent inactivity of a respiratory centre temporarily set to respond to a less alkaline blood reaction caused by the high percentage of CO_2, that leads to danger in tracheotomy. The problem was elucidated by Prof. McDowall, and in conjunction with him and Dr. R. D. Lawrence I hope to make further investigations of the cause of this occasional unfortunate occurrence, and the means of avoiding danger in such cases. It is sufficient to mention at present that the line of preventive treatment is directed to gradual lowering of the CO_2 percentage of the blood, either by injections into the blood itself or by the addition of CO_2 to the inspired air.

In the absence of complete data, however, the observations outlined are not intended to represent final conclusions.

Effect of Tracheotomy and Total Laryngectomy.

When the regulating mechanism of the glottis is thrown out of action many alterations affect the economy of the individual, and may take the subjective form of depression and an inability for exertion; in some patients the scene is terminated by suicide. Warming the inspired air is not sufficient to combat these ill-effects, and therefore other causes must be sought for. It would be surprising if total abolition of whatever influence is exerted by the respiratory movements of the glottis should be unattended by serious effects, and therefore it will not appear strange if the main factor at work can be traced to removal of the glottic valve from its controlling position. After opening of the trachea the same total volume of air enters and leaves the lungs during each minute if the activities of the body are maintained at the same level as before the operation.

But the lungs are filled more rapidly and emptied more rapidly than before the operation, because the delaying action of the obstructive glottis has been removed from the path of the air-stream. Consequently, the Hering-Breuer reflex is more rapid in *onset* than before, and rate of breathing appears to be faster than in the healthy individual. The actual rate observed on 274 occasions in 12 subjects of tracheotomy was on the average 22·83. In one patient after the operation —because of double abductor paralysis—the average rate was 27·8, while the average pulse-rate was 98·4. If more respirations are taken each minute, then each one must be shallower than is normal; that is to say, the tidal volume of air at each respiration is diminished.

These alterations in the mode of air entry are of great importance in the question of removal of CO_2 from the blood. At the beginning of inspiration in the tracheotomy patients a considerable volume of air enters the lungs suddenly and lowers the percentage of CO_2 in the alveoli; consequently, a large volume of CO_2 is washed out of the blood during this period. But there has not been the usual fall in pressure within the pulmonary and pleuro-pericardial cavities, because air entry is so free that it can keep pace with the expansion of the thoracic walls, and can fill the increasing space as soon as it is created. There is still, of course, a certain diminution in intrathoracic pressure because of the influence exerted by elasticity of the lungs; but the total effect on blood-flow through the lungs is definitely less than when the glottis is in action. Consequently, the sudden dilution of alveolar CO_2 is not associated with any marked increase in the volume of blood flowing through the lungs. As this volume of blood is less than during normal inspiration, and as much CO_2 is washed out of it, therefore the CO_2 content of the arterial blood will be less at the beginning of inspiration than during health.

Towards the end of inspiration the flow of blood through the lungs increases, but the washing out of CO_2 does not increase. As a result the CO_2 content of arterial blood rises, and some blood passes through to the systemic circulation insufficiently depleted of the gas.

At the beginning of expiration the tidal air escapes rapidly from the lungs; but there is not the usual increase in intrapulmonary and intrathoracic pressures, because of the absence of obstruction at the glottis. Therefore the blood-stream continues to be of a greater volume than is normal. And as the alveoli have lost their tidal air early, they are gradually accumulating CO_2 until the percentage of the gas rises above the usual level. When this happens the percentage of CO_2 in the arterial blood must also rise because the one follows the other. As a result the CO_2 content of blood leaving the lungs on its way to the tissues continues to rise during expiration; at the beginning of inspiration it will suddenly drop again, as already pointed out.

To sum up: The CO_2 percentage in the alveoli falls suddenly at the beginning of inspiration, and rises considerably towards the end of expiration, while the volume of blood flowing through the lungs rises but slightly during inspiration and is decreased to a less degree than is normal during expiration. The result is that the CO_2 content of the blood supplied to the tissues is lower than normal at the beginning of inspiration and rises towards the end of inspiration and more so still during expiration. There is relative retention of CO_2, which leads to breathlessness, in the same manner as in pneumonia. The changes described will not affect oxygenation of the blood, because the hæmoglobin will be almost saturated, provided there is a sufficient supply of oxygen in the alveolar reservoir.

The supply in the alveoli will be adequate as long as a volume of tidal air arrives at each inspiration sufficient to replace the oxygen which has been taken up by the blood. After opening of the trachea the mechanism will be efficient for this purpose at ordinary times; it is immaterial whether the alveolar oxygen is replaced in jerks instead of in a steady and prolonged stream as in the normal individual. It is possible that upset of distribution of air through the alveoli is another factor dependent on absence of obstruction at the glottis during expiration. Furthermore, the mechanism of air mixing referred to must be obliterated to a certain degree. If contraction of the bronchioles is able to expel air easily through the trachea, there will be an absence of *blow-back*; replacement of oxygen and removal of CO_2 will then depend on diffusion to a greater degree than is usual. As an incident it will be found that the respiratory waves in the aortic blood pressure are distinctly less marked than in the healthy subject; the mean blood pressure need not, however, show any divergence from that usually seen, because of the many factors capable of compensating for the altered mechanism of respiration.

It will be understood, when these disorganisations of a marvellously delicate mechanism are recognised, why certain individuals cannot tolerate life with an open trachea, and prefer the escape of suicide. But there is no reason why the pulmonary air tract should not be fitted with an automatic valve capable of reproducing the movements of the glottis, and of re-establishing "sympathetic connexion" between respiration and circulation; such a valve is in course of construction.

Results of Nerve Anastomosis.

The working of the respiratory centre has been elucidated by Lumsden,[8] who describes the normal mechanism as due to periodical rhythmical inhibition of inspiratory tonus. When this inspiratory tonus is inhibited expiration takes place chiefly as a passive act; the latter phase can, however, be actively stimulated from a special centre. Afferent impulses travel up the vagus to the respiratory centre and determine the timing of the phases of respiration. The stimulus for these impulses has been referred to distension or emptying of the lungs, but is thought by Lumsden to be due during easy breathing to passage of air into and out of the lungs.[8] The respiratory centre during the inspiratory period sends stimuli to various muscles, and at the same time it causes the glottis to open because of certain impulses carried by the recurrent laryngeal nerves. The degree of opening of the glottis is determined by the relation of contraction of the dilator group of muscles to that of the sphincteric group. Both sets are in contraction, but during inspiration the action of the abductors is much more powerful than is that of the adductors. The glottis opens before inspiratory movement of the diaphragm commences, and closes before expiration begins, according to observations made on cats by McDowall and myself. Therefore contraction of laryngeal and diaphragmatic muscles is not synchronous.

The factors at work in determining the position of the vocal cords have been described by various authors, notably by Semon.[4] If a stimulus be sent along the recurrent laryngeal nerve as a whole, the glottis closes, because the action of the adductors is more powerful than is that of the abductors. Therefore the stimulus during normal inspiration, which causes the glottis to be held open, must be a selective one, and directed more powerfully to the dilator muscles than to the adductors. After anastomosis of the recurrent nerve in certain paralytic conditions, either to the descendens hypoglossi,[11 12] or to the phrenic,[12] movement of the affected cord may recommence. As there is in these cases a selective stimulus directed to the abductors, it is probable that impulses must originate from different parts of the nucleus of the nerve employed for anastomosis, and stimuli must be supplied to this particular part of the nucleus from the respiratory centre. The phrenic nerve, for instance, must send powerful stimuli to the diaphragm during inspiration, and only feeble ones or none at all during expiration, because this muscle is active only during the former phase, and is passively relaxed during the latter. Therefore it may be supposed that if part of the phrenic be anastomosed to the recurrent laryngeal nerve, and if the nerve were to carry stimuli of the same character as before, there would be impulses sent along all the fibres of the recurrent nerve during inspiration, impulses intended to reach the diaphragm.

It must be remembered that there is no primitive connexion between the larynx and diaphragm. The former is present, and shows definite respiratory movements at the glottis, in many animals in which the latter is absent, as, for instance, in amphibians and reptiles. Any general stimulation would cause closure of the glottis, because of the superior power of the adductors as compared with the abductors. It has been shown that the fibres serving the abductors travel together in a bundle distinct from those going to the adductors[13]; the two groups can be separated in the vagus, and must obviously originate from distinct groups of nerve cells. After anastomosis the abductor fibres must be replaced by a bundle of phrenic fibres in a corresponding position; these must originate from a distinct group of cells. Consequently, it is to be supposed, in view of the fact that abduction of the cords occurs during inspiration, that this new group of cells from which the abductor fibres originate receives a selective stimulus from the respiratory centre, or else that the group supplying the adductors is inhibited, thus allowing tonic impulses to bring about opening of the glottis because of the unopposed action of the abductors.

The results obtained by Ballance and Colledge and others appear to be remarkably successful when these aspects of the subject are considered. But even when this extraordinary selective result has been attained success is not perfect unless the glottic aperture is enlarged to the requisite degree in accordance with the immediate needs of respiration. Wide opening on gentle breathing, or slight opening in forced respiration does not fulfil the conditions necessary for the delicate mechanism described. Although the result is admirable for ordinary purposes and allows of successful respiration and phonation, yet the fine adjustment is lost. If the opening is too big the conditions resemble those described in the case of tracheotomy; while if it is too small then a certain degree of laryngeal obstruction is present, with its varied effects. There is, in brief, a loss of that "sympathetic connexion" referred to by John Hunter, whose brilliant example has supplied the incentive for this attempt at elucidation of certain aspects of a somewhat complex problem.

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THE LATE DR. J. F. S. HAY.—Joseph Frank Strong Hay, M.B., C.M. Aberd., Inspector-General of the New Zealand Mental Hospitals, died on Sept. 5th at sea, while returning to New Zealand after a visit to England. Dr. Hay graduated in medicine at Aberdeen University in 1890, and shortly after became assistant medical officer at James Murray's Royal Asylum, Perth, Scotland. He was then appointed to the post of physician-superintendent at the Ashburn Hall Asylum, Dunedin, New Zealand, and subsequently became Inspector-General of Mental Hospitals and Prisons in that country.

ON IMMUNITY TO THE TOXIN OF STREPTOCOCCUS SCARLATINÆ.

A Report to the Medical Research Council.

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PART I.

A MEASUREMENT OF IMMUNITY AS DETERMINED IN CHILDREN AND IN ADULTS BY THE INTRADERMAL TITRATION OF MULTIPLE DOSES OF TOXIN.

AT present there is not available an in-vitro test or an animal test by which the toxin of *Streptococcus scarlatinæ* can be measured, so that for purposes of titration recourse must be had to the skin test on human beings. It may be assumed that a strong Dick toxin will give a positive reaction with the majority of individuals, while the same toxin can be diluted so far that it yields no positive reactors at all. It is only at some intermediate point between these two extremes that a dilution will be found that gives the most successful differentiation between susceptibles and immunes. Theoretically, the best dilution to use is that which gives the greatest number of negative reactions when tested on convalescents, and which, conversely, will also disclose the largest number of positive reactors among susceptible individuals. But to determine this dilution is a problem of much difficulty, nor does it help matters to define it as a dilution of a certain strength, for such a statement gives no measure of its valency. It is a common experience that toxins prepared from the same strain of organism under experimental conditions which seem to be constant give wide variations in potency, so that a 1 in 50 dilution of one toxin may be equivalent to a 1 in 5000 dilution of another.

It follows, therefore, that until such time as the toxins used for a Dick test can be effectively standardised against an antitoxin constant and expressed in terms of this constant, it is premature to group individuals into positive or negative reactors, particularly as it has become customary to base this differentiation on the result of one solitary skin test. Until we have information regarding the effect of both higher and lower dilutions of the same toxin on the same group of individuals, we are unlikely to attain to a true interpretation of our results.

The experiments detailed in this report were undertaken with different dilutions of the same toxin, each individual receiving two, three, or four skin test doses together with a heated control. The toxin used is an 8-volume alcohol precipitated toxin. The smallest amount employed for a skin test dose is represented by 0·00015 mg. of the precipitated product, and from this starting point we have proceeded, by multiples of two, through a series of dilutions to a maximum skin test dose of 16 times the smallest—viz., 0·0024 mg. For descriptive purposes we propose to call the minimum dose one unit, so that the series of experiments we shall describe was undertaken with 1, 2, 4, 8, and 16 units.

Thus it has become possible to grade the individuals who have been tested into what may be termed "immunity groups," and also to determine how much excess of toxin is capable of breaking down resistance in such a way as to transfer a negative reactor into the group of positive reactors.

The most resistant group that comes within the ambit of our observations is composed of individuals who give no reaction with 16 units, while the most sensitive group is made up of individuals who react positively to one unit. The skin reactions of these extreme groups and of the intermediate groups are set forth diagrammatically in Table I.

TABLE I.

The classification of individuals into "immunity groups" according to their reactions to the toxin of *Streptococcus scarlatinæ*.

Group.	Toxin units.					Group.	Toxin units.				
	16	8	4	2	1		16	8	4	2	1
I. ..	–	–	–	–	–	IV. ..	+	+	+	–	–
II. ..	+	–	–	–	–	V. ..	+	+	+	+	–
III. ..	+	+	–	–	–	VI. ..	+	+	+	+	+

In our previous report[1] dealing with the preparation and precipitation of the toxin of *Streptococcus scarlatinæ* we divided individuals into positive and negative reactors, taking as positive reactions such as reached a diameter of 1 cm. or more, and classifying as negative all those of lesser extent. It soon became obvious to us, however, that although some slight reactions might be attributable to trauma yet many were actually positive, and therefore could not be legitimately classified as negative. With further experience it became possible for us to distinguish the reaction or disturbance due to trauma from the slightly positive reaction, and this latter we have designated by the symbol ±. The validity of establishing such an intermediate group between positive and negative reactors becomes apparent from a scrutiny of our figures, for with the two- or three-dose method of titration which we have employed it becomes possible to discern how, with increase in dosage, negative reactors are gradually transferred into positive reactors by passage through the intermediate ± zone.

There is also another type of reaction to which we would wish to draw attention. The Dick reaction as it occurs in susceptible folk is of a bright scarlet or pink colour, which to the experienced is unmistakable. In certain scarlet fever convalescents, and occasionally also in individuals who have not suffered from the disease, the reaction may be equal in area to a positive reaction, but it is either colourless or very faintly pink. Its presence may be detected only from the fact that it possesses a well-defined though very narrow pink edging or margin, which may be easily missed unless the examination be carried out in good daylight. From its appearance we would designate this as the "ghost" reaction, and we have classified it with the ± reactions.

(A) *Titration in Children.*

EXP. 1.—This was carried out with 1 and 2 units and was in the nature of a preliminary titration. Twenty children 14 of whom were from 2 to 5 years and six from 5 to 10 years of age, were tested intradermally. In none of these children as far as could be ascertained was there any history of scarlet fever. At the same time the same amounts of toxin were given to 20 adult females, hospital sisters and nurses, many of whom had had long contact with scarlet fever cases. These groups of individuals were chosen on the assumption that they were likely to represent extremes in so far as immunity to the toxin was concerned. The results, expressed in Table II., showed that although the amounts of toxin used gave good reactions in susceptible children, yet the doses employed did not disclose a single positive reactor among the adults.

TABLE II.

A two-dose experiment to show the differentiation between susceptible children and adult females.

	Toxin units.					
	1			2		
	+	±	–	+	±	–
Children (20) 2–10 years ..	12 ..	2 ..	6	12 ..	4 ..	4
Adult females (20)	0 ..	1 ..	19	0 ..	6 ..	14

EXP. 2.—In this experiment 2 and 1 units of toxin were used, the test being carried out on 25 non-scarlet children

and on 50 children convalescent from scarlet fever. The age-groups of these children were as follows:—

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[1] Henry, H., Lewis, F. C., and Others: On the Toxin of *Streptococcus scarlatinæ*, THE LANCET, April 4th, 1925, p. 710.

Years—	2–5	5–10	10–15
Non-scarlet	20	5	—
Scarlet	13	27	10

The scarlet children were grouped according to their period of convalescence thus:—

Days—	0–10	10–20	20–30	30
Scarlet ..	0	3	7	40

The results (Table III.) show that with 2 units there is a marked preponderance of positive reactors among non-scarlet children and that the majority of scarlet convalescent children are resistant to the same dose.

TABLE III.

A two-dose experiment in selected children to show differentiation of normal from scarlet fever convalescent children.

	Toxin units.					
	2			4		
Children.	+	±	–	+	±	–
Non-scarlet (25)	16	6	3	20	3	2
Scarlet (50)	2	7	41	10	12	28

EXP. 3.—This was a three-dose titration carried out with 2, 4, and 8 units on 100 scarlet fever convalescents and on 100 non-scarlet individuals. Each series shows approximately 10 per cent. of adults, the remainder being children who, when classified according to their age, present two groups that are as closely parallel as is practically possible. The age-groups of both series and the period of convalescence in the case of scarlet fever individuals are as follows:—

Age-groups—	2–5	5–10	10–15	Adult
Non-scarlet (100)	40	32	19	9
Scarlet (100)	25	45	19	11
Convalescence in days—	0–10	10–20	20–30	30 on
Scarlet	5	22	24	49

The readings of this titration are set out in Table IV.

TABLE IV.

A three-dose experiment to show differentiation between non-scarlet children and scarlet fever convalescent children, as representing an average fever hospital population.

	Toxin units.								
	2			4			8		
	+	±	–	+	±	–	+	±	–
Non-scarlet (100) ..	53	7	40	55	13	32	64	19	17
Scarlet (100)	9	11	80	17	11	72	25	22	53

EXP. 4. *A Collection of "Throw-outs."*—In Exps. 2 and 3 we have dealt with two well-defined series of individuals. One of these series was made up of individuals who had passed through an attack of scarlet fever, while the other series comprised those who had passed through an attack of diphtheria. From the first series we have been careful to exclude those cases in which there was, on clinical grounds, doubt in regard to the diagnosis of scarlet fever and these we have grouped under the term "doubtful diagnosis." At the same time, there were found in the diphtheria wards a number of children in which there was a clear history of a previous attack of scarlet fever. These we have excluded from the non-scarlet cases and classified here as "old scarlets." The age-groups of these individuals are as follows:—

Age-groups—	2–5	5–10	10–15	Adult
Doubtful diagnosis (23).	3	12	5	3
Old scarlets (22)	2	14	5	—

The three-dose titration of these groups is given in Table V.

TABLE V.

A three-dose experiment in cases of doubtful diagnosis and in cases in which there is definite evidence of a previous attack of scarlet fever.

	Toxin units.								
	2			4			8		
	+	±	–	+	±	–	+	±	–
Doubtful diagnosis (23)..	10	4	9	16	3	4	18	2	3
Old scarlets (22) ..	1	0	21	1	0	21	2	5	15

EXP. 5. *Determination of End-points in the Scale of Titration.*—The figures which result from the titrations grouped together in Exp. 3 show the number of positive and negative reactions to 2, 4, and 8 units of toxin in two series of individuals, composed respectively of scarlet and of non-scarlet children of comparable age. There still remains for determination the number of positive reactors at the extreme limits of our scale—viz., with 1 unit and with 16 units. Ten scarlet fever convalescents who proved to be negative to 8 units were tested intradermally with 16 units, and of these five proved to be positive. No similar figures are available for non-scarlet children, but it may be assumed that in this case the number of positive reactors to 16 units is as before—viz., about half the number that is negative to 8 units. The 16-unit results are not easy to read, because here for the first time we found ourselves faced with the difficulty of pseudo-reactions. At the other end of the scale—viz., in experiments with 1 unit—it was found that out of 24 non-scarlet children who were positive to 2 units, 13 proved to be still positive to 1 unit. No figures are available in respect of scarlet convalescents, and here again we have assumed the number of positive reactors to 1 unit to be approximately half the number of those who are positive to 2 units. At this end of the scale also it is difficult to arrive at an accurate estimate, because the reactions are both slight in intensity and fugitive in character.

(B) *Titration in Adults.*

EXP. 6.—A three-dose test with 2, 4, and 8 units was carried out on 120 adult females and on 110 adult males, the result of the titration being set forth in Table VI. Of ten adult females who were resistant to the 8-unit dose, five proved to be still resistant to 16 units. In the case of the adult males no figures are available. Also, at the other end of the scale, in regard to the 1-unit dose no figures are available either in respect of adult males or of adult females. A reference to the graph shows that immunity is at a higher level in the females we tested than in the males.

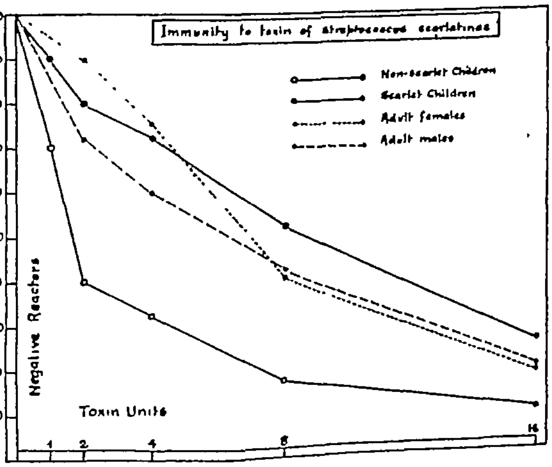
TABLE VI.

A three-dose titration in adults.

	Toxin units.								
	2			4			8		
	+	±	–	+	±	–	+	±	–
Adult females (120)	4	9	107	12	16	92	45	25	50
Adult males (110) .	25	5	80	31	12	67	40	23	47

Discussion.

Exps. 1 and 2 were undertaken with a view to determining how effective our toxin is in disclosing a differentiation between susceptibles and immunes. In each case there was a selection of individuals that resulted in an accentuation of this capacity for differentiation. The susceptible individuals were the most susceptible that could be found, and the resistant individuals were, on similar presumptive grounds, those whom we decided were likely to show the highest immunity. Therefore the differentiation between susceptible and resistant people is in each of these experiments at an exaggerated maximum.



On the other hand, the individuals grouped in Exp. 3 were not selected, and so represent better an average hospital population. From the figures obtained in Exp. 3 we have constructed a graph showing the degree of immunity of both scarlet and non-scarlet children at each point on our scale of titration. It is to be noted that the maximum amount of differentiation according to our experimental data is not at one particular point of the scale, but extends over a relatively large range of doses. With 2, 4 and 8 units it is practically 40, and it is perhaps of interest to note that the maximum percentage differentiation as given by the Dicks for one skin test dose is 41·0.

On reference to the theoretical definition of a skin test dose as propounded in the introduction to this Report it will be found that the 2 unit dose agrees more closely with this definition than any other, inasmuch as it gives the minimal number of positive reactors in scarlet fever convalescents. Yet the American skin test dose differs from our 2 unit dose in one very important particular, in that it discloses only negative or faintly positive reactors among scarlet fever convalescents, whereas the 2 unit dose gives positive reactions in 20 per cent. of convalescents. Most of these reactions are strongly positive, so that a difference of interpretation of readings does not account for the existence of this difference between our findings and those of American workers.

In seeking to discover what these positive reactors mean we would venture to suggest that the following considerations might be borne in mind. 1. They may be cases of mistaken diagnosis, a possibility which cannot be excluded. 2. They may be cases of scarlet fever which do not for some reason develop an immunity. It is to be noted that more than half these cases suffer from complications such as otitis, myocarditis, &c. 3. They may be cases which resemble scarlet fever so closely as to be clinically indistinguishable from it, in much the same way that paratyphoid resembles typhoid. In the present state of our information it is not possible to assign to each of these three considerations its proper measure of importance. We think it probable that no one of them can be altogether excluded.

There still remains to consider the question of the degree of immunity as shown by adults and by scarlet fever convalescents. To the graph which interprets Exp. 3 we have added our findings in regard to adult immunity. The majority of the females were hospital staff who were constantly coming into contact with scarlet fever, while the adult males were taken at random. Yet, except for an increased immunity in the females, there is but little difference between the two curves. Also we find that the level of immunity to which adults reach is practically the same as that attained by convalescent children. Of the males only 9 per cent. and of the females 20 per cent. gave a previous history of scarlet fever, so that the majority of the adults, both female and male, have acquired immunity without passing through a disease which is clinically recognisable as scarlet fever. Also, at first sight the degree of immunity reached by convalescent children would seem to be relatively low. Is this because the type of scarlet fever is at present mild in character, or is it because the peak of antitoxin production is reached only after months rather than weeks of convalescence?

PART II.

AN EXPRESSION OF INDIVIDUAL RESISTANCE IN TERMS OF ANTITOXIN CONTENT.

In the first part of this Report we have sought to classify individuals into a series of "immunity groups" according to their resistance to increasing doses of the toxin of *Streptococcus scarlatinæ*. Our findings showed that throughout any collection of individuals the resistance varied over a wide range. At one end of the scale of immunity could be grouped the majority of small children in that they proved to be sensitive to a small dose of toxin, whereas the bulk of convalescent scarlet fever children and the majority of adults either male or female were resistant to this dose. Further, by testing with multiples of this small dose it became possible to obtain a collection of folk who were highly resistant to the toxin in that they did not react to these higher doses.

It remained, however, to discover whether this resistance, as determined by a skin test, could be measured in any other way. The brief series of experiments detailed in this report shows that individual resistance to the skin test is correlated with the presence of antitoxin in the blood of the individual. The sera which have been proved to contain antitoxin were taken from individuals in Groups I. and II. of the "immunity groups" already mentioned. At the same time we have examined serum obtained from individuals in Groups V. and VI., and in these we have not detected any antitoxin which is measurable by the titration method employed.

Method of Titration.

The method has consisted in the mixing of a fixed amount of toxin with decreasing amounts of serum, the mixtures being incubated for one hour at 38° C. before inoculation. For example, if 50 units of toxin in 0·5 c.cm. of saline are mixed with 0·5 c.cm. of undiluted serum, and if 0·2 c.cm. of the mixture be used for the skin test, then the inoculum consists of 10 units of toxin and 0·1 c.cm. of serum.

For the testing of toxin-antitoxin mixtures individuals who are susceptible to 1 or 2 units have to be selected, because they react the most readily to any unneutralised toxin there may be in the mixture and so give a more exact end-point. The amount of toxin used in each individual dose of a toxin-antitoxin mixture is a matter for experiment. We have found that 4 units gives an end-point that is too indistinct, and that 20 units gives an end-point which occurs too suddenly, and which may occasion too large an area of skin reaction. A dose of 10 units has been selected, therefore, as being a practicable amount.

Interpretation of Readings.

The fact that these toxin-antitoxin mixtures are capable of dissociation after inoculation presents a problem which may add considerable difficulty in regard to the reading of an end-point. The phenomenon may be best explained perhaps by the description of an actual example. A human serum containing antitoxin was titrated against 10 units of toxin, the amounts of serum present in each skin test dose of the series being 0·1, 0·04, 0·02, 0·01, 0·004, 0·002, 0·001, 0·0004 c.cm. The reactions in the case of the first three doses were 0·25 to 0·5 cm. in diameter at 24 hours, and at 48 hours were faint and indistinct. In the case of the next three doses in the series the 24-hour readings gave areas of varying size from 1 to 2 cm. in diameter, whereas at 48 hours each of these areas had greatly increased by the formation of an areola, the total zone of skin affected being 3 cm. or more in diameter. In the case of the last two doses the reactions, of 2 to 3 cm. in diameter, were fully developed at 24 hours and had begun to fade at 48 hours. There are thus three zones of reactions to be read after the intradermal titration of a toxin-antitoxin mixture—a zone of complete neutralisation, a zone of dissociation and presumably of partial neutralisation, and a zone of no apparent dissociation with neutralisation at a minimum.

The problem of dissociation is not one that can be dealt with here, and we propose to discuss it more fully in a future Report, particularly as it has a distinctly practical bearing on the immunisation of individuals with toxin-antitoxin mixtures.

The end-point in the scale of titration which we have selected is the point at which occurs a reaction of 1 cm. or less in 24 hours. Each serum dealt with in this Report has been titrated on two or more individuals, the value given in each instance being the number of toxin units neutralised by 1·0 c.cm. of serum.

EXP. 7.—This was carried out with four sera taken from individuals who were strongly sensitive to toxin: Serum A, adult female, sensitive to 1 unit, giving no history of scarlet fever; B, child, aged 5 years, sensitive to 2 units, having no history of scarlet fever; C, child, aged 6 years, "doubtful diagnosis," sensitive to 2 units; D, adult female, aged 19 years, diagnosed as surgical scarlet fever, highly sensitive to 2 units. The results, set forth in Table VII., show that there is no neutralisation of 10 units of toxin even with 0·1 c.cm. of serum, and that if antitoxin is present it cannot be measured in the scale of titration used. The absence of dissociation in the case of serum A we are inclined to consider as indicating complete, or almost complete, absence of antitoxin, while its presence in sera B, C, and D indicates small quantities of antitoxin. Each of these sera, therefore, contains less than 100 units.

TABLE VII.

Four sera taken from individuals who are sensitive to small doses of toxin and titrated against 10 units of toxin. In all cases the reactions were more than 1 c.cm. in diameter.

Serum.	Test.	Serum—amounts in c.cm.			Serum.	Test.	Serum—amounts in c.cm.		
		0·01	0·04	0 02			0·01	0·04	0·02
A	1	+	+	+	C	1	+	+	+
	2	+	+	+		2	+	+	+
	3	+	+	+					
B	1	+	+	+	D	1	+	+	+
	2	+	+	+		2	+	+	+
	3	+	+	+					

EXP. 8.—*Two sera taken from Group I. individuals and two taken from Group II. individuals were used in this experiment*: Serum A, adult female with history of scarlet fever in infancy; B, a convalescent scarlet fever child; C and D, adult female with no history of scarlet fever. *The results, set out in Table VIII., show that each of these sera contains a measurable amount of antitoxin.* In the case of the Group I. sera it amounts to 500 units, while in the others it amounts to about 400 and 250 units respectively.

TABLE VIII.

Four sera taken from resistant individuals and titrated *against 10 units of toxin.*

Serum.	Test.	*Serum—amounts in c.cm.*					Serum.	Test.	*Serum—amounts in c.cm.*				
		0·1	0·04	0·02	0·01	0·004			0·1	0·04	0·02	0·01	0·004
A	1	–	–	–	+	+	C	1	–	–	–	+	+
	2	–	–	–	+	+		2	–	–	+	+	+
	3	–	–	–	+	+		3	–	–	–	+	+
	4				–								
	5				+								
	6				–								
B	1	–	–	–	+	+	D	1	–	–	+		
	2	–	–	–	+	+		2	–	–	–		
								3	–	–	+		

Summary.

The sera of individuals who are sensitive to small doses of toxin contain little or no antitoxin. On the other hand, the sera of resistant individuals contain a measurable quantity of antitoxin, amounting to as much as 500 units. That this amount is considerable may be judged from the fact that the best of a series of horse antitoxic sera, the first to be produced in this country, titrated against 20 units of toxin, have given a unitage of about 800 on the same scale. The exact relationship of resistance to antitoxin content is a matter for further experiment.

There are peculiar difficulties which are inherent to an investigation of this nature. Fortunately we have had the encouraging help of the public health committee of the Birmingham City Council, and it gives us pleasure to record our appreciation of the facilities they have given us in affording access to clinical material in the City Fever Hospitals and of the practical and friendly interest they have taken in the progress of the work. The majority of the reactions herein detailed were carried out by ourselves, and for most of the remainder we have to thank Dr. E. H. R. Harries and his medical officers. We gladly express our thanks, too, to Dr. R. H. H. Jolly and Dr. B. C. Haller, of Wolverhampton, together with Dr. J. B. Ferguson and Dr. R. Sandilands, of Smethwick, who generously placed at our disposal the available material in the respective hospitals over which they have control. We also wish to thank the President and members of the Birmingham Rotary Club for assisting us in obtaining the necessary number of adult volunteers for test.

THE GEOGRAPHICAL DISTRIBUTION OF HEART DISEASE IN ENGLAND AND WALES

AND ITS RELATION TO THAT OF ACUTE RHEUMATISM AND TO SOME OTHER FACTORS.

BY MATTHEW YOUNG, M.D. GLASG.

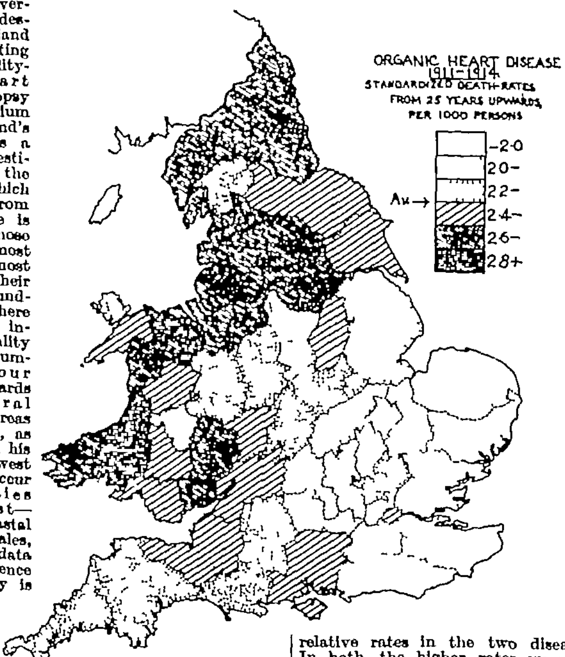
(*From the National Institute for Medical Research.*)

THE annual mortality from heart disease in England and Wales comprises a relatively large proportion, approximately 12 per cent. on the average, of the mortality from all causes. It seemed to be of interest to determine from recent data if the mortality from this cause showed any notable variation in different parts of the country, if the districts with high and low rates of mortality were distributed in any special manner, and if the geographical distribution of heart disease had any relationship to that of acute rheumatism which so frequently precedes it, or any association with special physical features, or industrial or environmental conditions.

The data that were used were the recorded deaths, at the different ages, from heart disease in the administrative counties and county boroughs of England and Wales published by the Registrar-General in his annual reports. Two groups of data were taken: (1) The deaths from organic heart disease in the four years' period 1911–14, and (2) the deaths from heart diseases in the three years' period 1921–23. Included in the term "organic heart disease," as defined by the Registrar-General, are valvular disease of the heart, fatty degeneration of the heart, and other organic diseases of the heart. The data for the three years' period consist of heart diseases in the aggregate and include, in addition to organic heart disease, pericarditis, acute endocarditis, acute myocarditis, and angina pectoris. These other diseases only comprise, however, as shown by the data for the three years' period 1921–23, approximately 6·5 per cent., and, excluding angina pectoris, 4 per cent. of the total deaths from heart disease on the average. Amongst the recorded deaths from heart disease in the same triennial period, 44 per cent. are described definitely as valvular disease, a further 20 per cent. are given as "heart disease undefined," which is probably also to some extent valvular disease; well over 50 per cent. of the registered mortality from heart disease may thus probably be attributed to valvular affections.

From the published data for deaths from heart disease in urban and rural districts in the administrative counties and the associated county boroughs, figures were compiled for the areas corresponding approximately, but not accurately, to registration counties, and for each of these standardised death-rates from heart disease for the sexes separately, and for persons from 25 years of age and upwards and from 45 years and upwards respectively were calculated. These standardised death-rates for the different areas, which may be referred to briefly as county areas, were used as an index of the mortality therein. In England and Wales data were available for 55 counties altogether.

The standardised death-rates from heart disease amongst persons from age 25 and upwards were inserted in a map of England and Wales (see figure) showing the counties, and the distribution of the rates obtained from the data for the two periods, 1911–14 and 1921–23, was in general very similar and very characteristic. The death-rates for the earlier period are shown in Table I., and the distribution of these rates, classified in six different grades of magnitude, is shown in the accompanying map. The highest rates, with few exceptions, are found localised in the northern and western areas of the country; in the counties of Wales particularly, the rates are generally above the average for England and Wales as a whole. The counties of Radnor and Westmorland are notable amongst the exceptions to this generalisation. The rate in Westmorland, however, is practically the average for the whole country, and in the later period it exceeds the average. It should be recollected also that in both these counties the number of deaths and the total population are relatively small, and consequently the death-rates have a larger probable error than in many of the other counties. In the eastern, south-eastern, and midland counties of England, however, the mortality rates are lower than in the counties farther west, and definitely below the average as a rule. The incidence of the relative mortality thus shown is very divergent from that described by Haviland (1875) as existing for the mortality-rates for heart disease and dropsy in the decennium 1851–60. Haviland's conclusion, as a result of his investigation, was that the counties in which the mortality from heart disease is greatest are those that are the most inland or the most protected by their physical surroundings, and that there is a progressive increase of mortality from the circumference of our peninsula towards its more central localities. Whereas Haviland found, as he illustrates in his maps, the lowest mortality to occur in the counties farthest west—namely, the coastal counties of Wales, in the present data the highest incidence of mortality is localised there. The discrepancy may be explained in part by Haviland's use of crude mortality rates for the earlier period, but the distribution of relative mortality in the two periods, 1851–60 and 1911–14, is so completely at variance that it seems unlikely that this can be an adequate explanation. Possibly some change in the relative incidence in different districts may have taken place in the interval that has elapsed between the two epochs. It is readily apparent from the map that the lowest mortality in the present data is not coincident with or closely related to the greatest exposure to prevailing winds or sea air, or the highest mortality characteristic of districts that are protected by their physical features, as suggested by Haviland, and that other factors that determine the distribution must be in operation.



Association between Relative Mortalities from Heart Disease and Acute Rheumatism.

The question then arises, is there any correspondence in the county areas between the distribution of the relative mortalities from heart disease and acute rheumatism? In a previous paper (1921) on the epidemiology of rheumatic fever, the distribution of the mortality from rheumatic fever in the registration counties of England and Wales, as shown by the standardised death-rates from age 15 upwards, is given for the decennium 1901–10. This analysis seemed to show that an excessive incidence of the disease in the counties had some definite relation to excessive amounts of rainfall and cold weather. Though the standardised death-rate from rheumatic fever can only be regarded as an approximate measure of the actual incidence of the disease in the respective counties, it is the only criterion that is available at present. The use of the mortality rates as an index of the prevalence of the disease in different districts receives some support as regards the northern, western, and eastern counties of England from some data recently published in an analysis of the incidence of rheumatic fever amongst insured persons in England and Wales in 1922 by the Rheumatism Committee of the Ministry of Health. An excess of acute, including subacute, rheumatism over what might be expected was found in the north-western and north-eastern divisions, whereas the south-eastern division showed a pronounced shortage as compared with what might be expected.

On comparing the two maps of England and Wales that had been prepared to show the mortality-rates from rheumatic fever and from heart disease in the respective counties, evidence of some agreement in the distribution of the relative rates in the two diseases was apparent. In both, the higher rates were found in general in the northern and western counties; in the eastern counties, as has already been mentioned for heart disease, the rates were considerably lower. The data available made it possible to determine the relationship more precisely. Coefficients of correlation were calculated between the standardised death rates from rheumatic fever amongst persons aged 15 and upwards in the respective counties in the decennium 1901–10 and the standardised death rates from organic disease of the heart in the corresponding counties for each of the periods 1911–14 and 1921–23. In the earlier period, the coefficient of correlation between the death rate from heart disease at age 25 and upwards and acute rheumatism was + 590 ± ·059 and that between the death rate from heart disease at age 45 and upwards and acute rheumatism + 573 ± ·061. For the later period the coefficients of correlation between the corresponding variables were ·608 ± ·057 at age 25 and upwards and + 503 ± ·063 at age 45 and upwards—i.e., practically identical with those for the earlier period. A very definite association thus exists in the counties between the distribution of the relative mortalities from rheumatic fever and diseases of the heart in the aggregate.

The Industrial Factor.

With regard to the distribution of relative mortality from heart disease throughout England and Wales, certain other points require consideration. Amongst the English counties showing the highest mortality-rates from heart disease are the West Riding of Yorkshire, Durham, Northumberland, and Lancashire. These counties possess the common feature that one or two special industries provide occupation for a relatively large proportion of their inhabitants. Thus, in the West Riding, textile, principally wool and worsted, manufacture and coal-mining; in Lancashire textile, principally cotton, manufacture, coal-mining, and working in metals; in Durham and Northumberland, coal-mining, are much the commonest forms of employment for males. It may be suggested that the excessive mortality from heart disease found in these counties has some relationship to the special industries that prevail therein. The influence of occupation in determining the onset of heart strain and valvular disease of the heart has been described by some authors, including Peacock (1865) and Cowan (1922). Fortunately it is possible to obtain some information on this point. In the supplement to the seventy-fifth annual report of the Registrar-General, Part IV., are given particulars of the mortality from valvular disease of the heart in certain occupations in the three years 1910, 1911, and 1912. The comparative mortality figure for valvular disease of the heart for all occupied and retired males in the three years' data is 39. In textile workers as a whole and in those engaged in cotton manufacture, in wool and worsted and in hosiery manufacture, the mortality figures for the disease are practically the average for all males. In the coal-mining industry as a whole the comparative mortality figure for valvular disease of the heart is 37; in coal-miners in Lancashire and in Northumberland and Durham it remains at the same level—i.e., approximately the average for all occupations. In the groups of metal workers the comparative mortality figure for the disease is usually under the mean value. The mortality-rates for valvular disease thus do not seem to be in excess in the occupations which provide the major proportion of the employment in these counties. Further, as has been mentioned already, many counties with relatively high death-rates from heart disease as a whole, including those actually highest, are found in Wales. In Brecknock, Carmarthen, Denbigh, and Glamorgan a relatively large proportion of the male population is employed in the mining industry, but in Cardiganshire and Pembrokeshire, where rates amongst the highest that occur are found, the population is mainly engaged in agricultural pursuits; in Merionethshire also, agriculture provides employment for the largest proportion of the male inhabitants, though many are engaged in slate-mining and quarrying. In slate-quarriers and workers the comparative mortality figure for valvular disease of the heart is 37—i.e., practically the average; in agricultural workers and farmers the comparative mortality figures are definitely lower than the average for all occupied males. The circumstance that the highest death-rates from heart disease occur in counties in Wales where no specially adverse industrial conditions exist, such as obtain in the West Riding of Yorkshire and Lancashire, is opposed to the view that the excessive prevalence of the disease in the latter can be attributed in any definite degree to occupational influences.

TABLE SHOWING THE STANDARDISED DEATH-RATES FROM ORGANIC DISEASE OF THE HEART IN THE COUNTY AREAS OF ENGLAND AND WALES FOR THE FOUR YEARS' PERIOD 1911–14.

Counties.	S.D.R.'s per 1000 from age 25 upwards*			Counties.	S.D.R.'s per 1000 from age 25 upwards*			Counties.	S.D.R.'s per 1000 from age 25 upwards*		
	M.	F.	P.		M.	F.	P.		M.	F.	P.
Bedford	2·129	2·129	2·129	Leicester	2·252	2·332	2·342	Worcester	2·638	2·339	2·488
Berkshire	2·295	2·077	2·181	Lincoln	2·204	1·859	2·032	York, E. Riding	2·684	2·198	2·441
Buckingham ..	2·219	1·904	2·062	Middlesex	2·261	1·992	2·127	York, N. Riding	2·577	2·527	2·552
Cambridge ..	1·839	1·749	1·794	Monmouth ..	2·503	2·731	2·617	York, W. Riding	2·727	2·763	2·745
Chester	2·803	2·563	2·683	Norfolk	2·185	1·926	2·056	Anglesey	2·423	2·171	2·297
Cornwall	2·477	2·171	2·324	Northampton ..	2·100	2·011	2·056	Brecknock ..	2·401	2·602	2·502
Cumberland ..	2·844	2·444	2·644	Northumberland	2·718	2·663	2·691	Cardigan	2·901	2·786	2·844
Derby	2·106	2·273	2·190	Nottingham ..	2·616	2·528	2·572	Carmarthen ..	2·583	3·151	2·867
Devon..	2·451	2·141	2·296	Oxford	2·200	2·089	2·145	Carnarvon	2·674	2·374	2·524
Dorset..	2·313	2·133	2·223	Rutland	2·452	2·251	2·352	Denbigh	2·666	3·128	2·897
Durham	2·717	2·675	2·696	Shropshire	2·470	2·261	2·366	Flint	2·640	2·551	2·599
Essex	2·172	2·042	2·107	Somerset	2·990	2·150	2·570	Glamorgan ..	2·621	2·562	2·592
Gloucester	2·709	2·336	2·523	Stafford	2·263	2·252	2·258	Merioneth	2·914	2·319	2·617
Hampshire ..	2·635	2·213	2·424	Suffolk	2·092	2·063	2·078	Montgomery ..	2·353	2·542	2·448
Hereford	2·696	2·623	2·660	Sussex	2·336	2·020	2·178	Pembroke	2·756	2·775	2·766
Hertford	2·414	1·978	2·196	Surrey	2·027	1·708	1·868	Radnor	1·897	2·228	2·063
Huntingdon ..	1·786	1·904	1·845	Warwick	2·148	2·286	2·217	London	2·507	2·344	2·426
Kent	2·211	2·058	2·135	Westmorland ..	2·520	2·228	2·370				
Lancaster	2·632	2·574	2·603	Wiltshire	2·354	2·323	2·339	England and Wales	2·479	2·351	2·416

* The deaths from age 25 upwards exceed 95 per cent. of the total deaths.
M. = Males. F. = Females. P. = Persons.

Incidence of Heart Disease in the County Boroughs.

Some reference may be made to the incidence of heart disease in the county boroughs. As the deaths at the different ages in the several county boroughs had been extracted for the purpose of summation with those in the administrative counties with which they are associated, and as the corresponding populations were readily obtained, the standardised death-rates from age 25 and upwards were calculated for each borough. The standardised death-rate from organic heart disease amongst persons in all the county boroughs taken together exceeds that for England and Wales as a whole by 9·5 per cent. and that for the rural districts of England and Wales by nearly 18 per cent. Dr. J. Brownlee (1922) has shown, however, that the apparent excess in mortality from valvular heart disease in town over country practically disappears when the life table death-rate is used as the criterion. In the data for the four years' period 1911–14 (see table) the standardised death-rates from heart disease in the different county boroughs show a considerable range of variation. The highest values are found in Bury, South Shields, Oldham, West Hartlepool, Chester, Rochdale, and Worcester. Though these include some of the chief industrial county boroughs of Lancashire, Durham, and the West Riding of Yorkshire, and though other industrial boroughs of these counties show relatively high values, certain other boroughs therein—e.g., Sheffield, Wigan, and Bolton, in which industrial activity is apparently quite as intensive as in those already named—have relatively low mortalities from heart disease. Moreover, the cities of Chester and Worcester are two boroughs in which the mortality-rates from heart disease are amongst the highest that are found, and they are not pre-eminently industrial. From this it would appear that, though the environmental conditions that are associated with great intensity of industrial activity may have some influence in determining the incidence of heart disease, it cannot be said from the present data that an excessive mortality from this cause is a feature in all the boroughs that may be described as industrial.

Conclusions.

From the data that have been investigated, it seems reasonable to draw the following conclusions:—

1. The mortality from heart disease in the counties of England and Wales shows quite definitely a tendency to a special distribution in which the higher death-rates are found in the counties towards the west.

2. The geographical distribution of the relative mortalities in the periods examined is very different from that described by Haviland as occurring in data for an earlier epoch, and the explanation offered by him—namely, that the excessive incidence is found in counties that are distant from the sea and sheltered by their physical surroundings from the sea winds, cannot be held to account for the distribution of the fluctuations in incidence in the present data.

3. A definite association exists in the counties between the distribution of mortality from organic heart disease and heart diseases in the aggregate and the mortality from acute rheumatism. The relative incidence of acute rheumatism appears to be the essential factor that determines the incidence of heart disease, although other factors, possibly mainly environmental, may have some influence on the rate of mortality in different districts.

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THE THERAPEUTIC PROPERTIES OF STOVARSOL

(ACETYLAMINOPHENYLARSINIC ACID, "190").

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THE acetyl derivative of amino-oxy-phenylarsinic acid, first introduced into therapeutics in 1922, possesses such interesting curative and preventive properties that it has seemed to me to be of sufficient importance to warrant a review of the question to the point to which it has now developed. I shall first outline the facts relating to the discovery of the parasiticidal properties of stovarsol, and then review the results obtained with this product in syphilis, yaws, malaria, *amoebiasis*, and other intestinal parasitic infections.

Historical.

Acetylaminophenylarsinic acid was first prepared in Germany by Ehrlich, Benda, and Bertheim,[1] but the compound was not systematically examined by these authors. As a matter of fact, it belongs to the series of arsenical compounds known as "arsinic acids," in which the arsenic is pentavalent, and Ehrlich considered the members of these series quite inferior to the "arsenobenzenes," in which the arsenic is trivalent. However, in 1922, Fourneau,[2] at the Institut Pasteur, decided to re-investigate the arsinic acids, believing the unsatisfactory results obtained in Germany to be directly attributable to the presence of certain impurities which the compounds of these series are apt to contain. Fourneau, and his co-workers Mr. and Mme. Trefouel, re-prepared almost all the members of the series, carefully purified them, and then tested them on both animals and human beings, injecting them either intramuscularly or subcutaneously. Tests were carried out with amino-oxy-phenylarsinic acid ("189") and stovarsol ("190") in experimental syphilis by Levaditi and Navarro-Martin,[3] and in human syphilis by L. Fournier and his co-workers, Guenot and Schwartz.[4] The results obtained in human syphilis were very interesting; however, in view of the fact that relapses were observed, the product, thus administered, did not seem to have an action comparable to that of the arsenobenzenes.

Such was the condition of affairs when, following their studies on the action of bismuth compounds, Sazerac and Levaditi[5] demonstrated the value of a prophylaxis of syphilis by the simple ingestion of an efficient spirillicidal compound, a method in itself more practical than injections or local applications of pomades. The experiments carried out with soluble bismuth salts (lactate) administered by the mouth having failed to give very encouraging results, Levaditi and Navarro-Martin[6] then tried the arsenicals. Inasmuch as they had already tested acetylamino-oxyphenylarsinic acid in subcutaneous injection, they used the same compound, prepared by Mr. and Mme. Trefouel according to Fourneau's directions, and this time they administered it by the mouth.

The experiments were undertaken first from the prophylactic and then from the curative standpoint. The first observations showed that stovarsol exerted, in man as well as in small animals, a distinct prophylactic and curative action in syphilis. These were completed by numerous and convincing clinical observations by Fournier and his co-workers. Thus was inaugurated the introduction into the therapy of syphilis of an arsinic acid administered by the mouth. In what follows we shall see to what an extent this therapy has developed.

General Considerations.

It is quite proper to ask, at this juncture, if indeed this new therapy offers any advantages over the older methods of administering arsenical compounds. From the very beginning of their work, Levaditi and Navarro-Martin noticed that, when given by the mouth in experimental syphilis, stovarsol was more active than when injected under the skin or into the muscle. At the same time they remarked that its toxicity was greater in the first case than in the second. (In this connexion cf. the clinical observations of Fournier and his colleagues, and the recent researches of Navarro-Martin and of Kolle.[7]) How was this surprising fact to be explained? Very probably the compound undergoes in the intestine or in the liver certain modifications more favourable to its therapeutic action than the changes which take place in the other tissues or in the general circulation. The intestinal tract, then, is more favourable to the development of the therapeutic effects of stovarsol, and this is a distinct advantage. Again, it often happens, in practice, that it is impossible to treat syphilitic patients by the injection (even intramuscular) of any spirillicidal compound whatever. It may also be necessary with some patients to give a supporting treatment during the interval between two series of arsenic or bismuth injections. Such a treatment is easily given with stovarsol. These constitute serious arguments in favour of this new therapy per os.

Let us now examine briefly what we know of the results obtained with stovarsol in syphilis, and in other diseases such as yaws, the intestinal parasitoses, malaria, and, in fact, wherever the use of this compound has afforded an opportunity of collecting interesting data.

1. *Stovarsol in Syphilis.*

Besides the first experiments of Levaditi and Navarro-Martin, referred to above, particular attention should be called to the work of Fournier and his co-workers, Levaditi, Navarro-Martin, and Schwartz.[8] These authors treated 80 syphilitic patients by ingestion of stovarsol in the form of tablets containing 0·25 g. Four tablets, representing a dose of 1 g., were given every morning in a little water before breakfast in periods of from five to seven days, each period being followed by an interval of equal length. In this way a total dose of 12–16 g. of stovarsol was given the first month. This method of administration was decided upon with two ideas in view: First, better arsenical impregnation, and second, prevention of accumulation. (Mr. and Mme. Trefouel had previously demonstrated that the elimination of the arsenic, which is abundant during the first two or three days, decreases very considerably on the following days.)

According to these authors, stovarsol exerts, in a great number of cases, a remarkable action on the primary, secondary, and tertiary erosive and ulcerous lesions, an action which is often as rapid as that of the arsenobenzenes given intravenously. The product induces a rapid healing of the superficial syphilitic lesions; it is capable of arresting the evolution of the disease and of exerting a favourable effect on the blood reaction. As a matter of fact, Fournier and his co-workers have published a number of serological curves in which are shown either the rapid negativation of a sero-reaction which was strongly positive at the beginning of the treatment, or the maintenance of a negative Wassermann in cases where the treatment with stovarsol was begun in the pre-serological period. To this must be added the excellent tonic effect which the compound exerts on the general condition of the patients. Naturally enough, as with every other arsenic compound, there will be encountered some cases both of arseno-resistance and of relapse. For this reason, Fournier and his fellow-workers look upon stovarsol as a weapon to be used in attack either alone or in association with another specific such as bismuth. "The benefit of the absorption of '190' (stovarsol) per os is absolutely real in every case where, for any reason whatsoever, intravenous or subcutaneous injections of antisyphilitic medicaments are impracticable."

The results of these researches have been generally confirmed by several authors in France as well as in Germany. In France, Yovanowitch,[9] in a noteworthy thesis, declares that stovarsol has a marked antisyphilitic power, comparable with that of the arsenobenzenes and the salts of bismuth. Its action is directed, however, very much more against the infectious cutaneous and mucous lesions, which it sterilises, than against the serological reactions, which it influences more slowly than either bismuth or the arsenobenzenes. Thus, whereas in some cases the author has recorded a total negativation of the Wassermann, in others there was only a marked attenuation of the reaction. However, the author himself recognises that the treatment with stovarsol was never very intensive. "It is logical to think," says Yovanowitch, "that with stronger doses the stovarsol would have exerted a deeper action on the evolution of the syphilis, and would have more strongly influenced the Bordet-Wassermann reaction."

Again, Cadenaule and Clarac [10] report evidence to show that hereditary syphilis is susceptible of being treated efficaciously by stovarsol. One of their observations is to the effect that stovarsol, given half an hour before feeding, is perfectly tolerated by the new-born, that there is advantage in administering high doses (0·12 g. per day for a child weighing 3 kilos), and that the results are most satisfying: disappearance of the cutaneous lesions and of the coryza, marked general improvement, and increase in weight.

In Germany we would call attention to the work of Oppenheim, of Heymann, and of Weitgasser. The first-named author [11] finds that stovarsol administered per os acts in a manner which is rigorously specific even in a dose of 0·25 g. He gives six observations in support of this view. The product acts on the syphilitic lesions and the treponema quite as strongly as mercury, bismuth, or salvarsan. In a second and longer report,[12] Oppenheim describes a large number of observations which permit him to form the conclusion that no other antisyphilitic agent given per os exerts as marked a therapeutic action as stovarsol, which, when properly administered, is perfectly well tolerated by the patients. Its influence on the treponema and upon the specific lesions is comparable with that of the arsenobenzenes; moreover, it determines an increase in weight. Apparently relapses are rare, for Oppenheim reports only two out of the 83 cases treated.

The indications are hypersensitiveness to salvarsan, difficulty of giving intravenous injections, impossibility of applications other than per os, replacing salvarsan in its association with mercury or bismuth. According to Oppenheim, the treponemata disappear in 24–48 hours, the primary lesions heal in 5–15 days, while the eruptive manifestations of the disease disappear in a few days.

The conclusions of Heymann [13] are very similar to the above. They show that stovarsol is perfectly tolerated [14] even when given in daily doses of 1 g., and a total dose of 20 g. in a month. The author believes that this compound is, at the present time, the most active antisyphilitic agent which can be given per os. It has a most satisfactory action on all of the ordinary manifestations of syphilis, and exerts a favourable influence on the Wassermann reaction. Heymann is likewise of the opinion that stovarsol can be administered in conjunction with bismuth or mercury. Weitgasser [15] is more reserved in his opinion. He recognises the manifest spirillicidal action of the new product, but has not so far observed any profound and lasting effect on the Wassermann. The question may be asked, however, whether, in the cases treated by Weitgasser, the treatment was sufficiently intensive.

From the foregoing, the basis for the use of stovarsol as an antisyphilitic seems firmly established. In our own opinion, the new medication is applicable to the rapid sterilisation and healing of the specific lesions, whatever they are; in other words, it constitutes a method of curative prophylaxis of which the advantages cannot be overrated. If, in a great many cases, treatment exclusively by stovarsol is sufficient to determine healing of the lesions and to render the Wassermann persistently negative, in other cases it is necessary to associate with stovarsol another powerful specific drug, having a somewhat deeper and more durable action, such as bismuth. The advantages of an arsenical treatment with stovarsol lie in the spirillicidal strength of the compound, the ease with which it is administered, and its general tonic action on the whole system.

2. *Stovarsol in Yaws.*

Yaws, the ulcerous disease caused by *Spirochæta pertenuis* (Castellani), responds, like syphilis, to treatment with stovarsol. This has been demonstrated by the recent work of Beurnier and Clapier,[16] who report excellent results. They recommend doses not exceeding 1 g. in 24 hours, an entire cure requiring 8 g. for an adult weighing 50 kilos. Baermann[17] has studied the preventive action of stovarsol in yaws, and has observed that the compound given in a total dose of 3·75 g. in four days is capable of protecting man from a massive infection. He reports similar results with monkeys. Tanon and Jamot [18] remark that stovarsol cures the lesions of yaws even when they have proven resistant to the arsenobenzenes. They further observe that children seem to tolerate the product as well as adults, that it is advantageous to administer stronger doses at the beginning and to reduce them later, and, finally, that the fact that its administration by the mouth makes it very acceptable to the natives, who exhibit a certain apprehension of injections in general, of whatever sort.

To close this chapter on the spirillary diseases curable by stovarsol, let us simply mention intestinal spirochætosis (Waldorp [19]), ulcero-membranous stomatitis (Sabrazes [20]), spirillary bronchitis (Fontanel [21]), (Couvy [22]), phagedenic ulcer (Couvy [23]), Vincent's angina (Couvy [24]), (Cot [25]), &c.

3. *Stovarsol in the Intestinal Parasitoses.*

Ravant [26] was the first to use arsenicals by the mouth in the treatment of intestinal amœbiasis. He used the arsenobenzenes for this purpose, and stated the facts in favour of this method. But it is to Marchoux [27] that we owe the discovery of the parasiticidal and curative action of stovarsol in amœboid dysentery and intestinal lambliasis. In two papers published in 1923 he reported the first results obtained with stovarsol in the treatment of these diseases. His observations have been confirmed by Delanoe,[28] Leger and Nogue,[29] Fontanel,[30] Rubenthaler and Jansion,[31] Leon Bernard and Thomas,[32] and still more recently by Petzetakis.[33] Marchoux has recently published [34] a review of the results obtained, and we cannot do better than to give a summary of his paper at this point.

Amœbiasis.

Between March, 1923, and July, 1924, Marchoux treated by means of stovarsol 50 patients infected with *Amœba dysenteriæ*. The infections had been obtained in France, Germany, Orient, Morocco, Syria, and in the French Colonies. Of these 50 patients, all but two were very successfully treated. Of these two, the first had a dysentery which resisted every treatment tried, while the second showed improvement only while the treatment was in progress. In all the other cases the amœba and the cysts disappeared on the second or third day, while the quantity of stools diminished and their consistency became firmer. In addition, there was a general improvement in the general health of the patients, and a subsiding of the secondary effects of the infection. In order to avoid any possibility of relapse, Marchoux recommends a supporting treatment of two tablets a day (0·50 g.), the medicine being taken regularly at meal-time for six weeks. Certain dietary precautions are also recommended: complete abstention from tobacco, from all alcoholic beverages, and from fresh butter.

Petzetakis, of Athens, has treated with stovarsol a number of cases of intestinal amœbiasis, lambliasis, and diarrhœa due to various species of trichomona, and comes to the following conclusions. Stovarsol is an excellent remedy for the intestinal parasitoses. The compound destroys the amœba, and in some cases its favourable action is evident during the first 24 hours of treatment. There are some cases, however, which prove resistant or which relapse. He suggests that in these cases the dosage be increased or the treatment prolonged. The treatment is applicable to children as well as to adults. Finally, Petzetakis insists upon the fact that stovarsol exerts a *preventive* action against infection by *Amœba dysenteriæ*, and mentions a case in support of this contention.

Lambliasis.

Marchoux [35] has treated 21 cases of intestinal lambliasis, with diarrhœa and presence of lamblia in the fæces. Treatment with stovarsol produced an immediate improvement, and, even with small doses, the cysts disappeared from the fæces. In some cases, however, the cysts reappeared if treatment was stopped completely. A supporting treatment of 0·25 g. (one tablet) of stovarsol per day is therefore recommended. According to Marchoux [36] stovarsol always destroys the blastocysts, which are the cause of the persistent diarrhœa.

Malaria.

If, on the one hand, Baermann (loc. cit.) was unable to obtain a preventive action in tertian malaria by using stovarsol as a prophylactic agent, on the other hand, Valenti and Tomaselli [37] have called attention to the efficacy of the product given per os in tertian and quartan fever. In a short paper, which appeared last September, these authors cited a case of malaria (quartan type), with repeated accesses of fever extending over a year, which had resisted intensive treatment with quinine. Plasmodia were present in the blood-stream. Treatment was begun with stovarsol (one tablet the first day and two tablets each day following). There was a single access of fever after beginning the treatment and no relapse, although the patient was observed for more than a month afterward, and in spite of the fact that the stovarsol was discontinued on the eleventh day. The plasmodia disappeared from the blood-stream on the sixth day. The second case was similar to the first except that it was of the tertian type.

Independent of Valenti and Tomaselli, Marchoux and Cohen [38] have studied the action of stovarsol in tertian malaria in general paralytics intentionally infected (method of Wagner). Seven patients were treated by intravenous injection of a solution of the sodium salt of stovarsol. The product seemed active to the extent that the attacks of fever ceased and the parasites disappeared from the blood-stream. In a second paper, Marchoux [39] describes the results of experiments undertaken with 130 malarial patients at Marengo, Algeria. The treatment consisted of the ingestion of 1 g. of stovarsol per day, or the intravenous injection of a similar quantity of its sodium salt. Marchoux concluded that stovarsol is effective against *Plasmodium vivax*, but does not seem to be very active against either *Plasmodium malariæ* or *Plasmodium falciparum*.

Although these observations are still not sufficiently numerous to permit the formulation of definite conclusions, it would appear that stovarsol, either given per os or by intravenous injection of its sodium salt, acts on malaria causing the disappearance of the parasites and a suppression of the accesses of fever. It will be for further research to show whether or not certain forms of malaria respond to this treatment, and whether or not the curative action is lasting. In any case, these researches will be of particular interest.

Conclusion.

Starting with a study of the prophylaxis of syphilis by way of the mouth, the field of action of stovarsol has become, in a very few years, greatly enlarged. One after the other, the treatment of syphilis, of yaws, of spirillary infections in general, of amœboid dysentery, of intestinal lambliasis, of the blastocystic diarrhœas, and, very probably, of malaria also have benefited by this new arsenic compound or rather by this new method of treatment per os. The efficacy of the method, its exceeding simplicity, and the security which it gives in a multitude of circumstances render it worthy of the attention of medical men, who, in their turn, are called upon to pass judgment upon it without any preconceived ideas, as is always proper when it is a question of controlling the observations made by conscientious workers.

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(Continued at foot of next page.)

Clinical and Laboratory Notes.

A CASE OF LUMINAL POISONING.

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THE following case of poisoning with luminal is probably worthy of record, for the symptoms, although alarming at the time, were followed by complete recovery.

A sober woman of 69, in collision with a cyclist on Nov. 24th, 1924, received a blow on the back of the head which momentarily stunned her. She found her way home and at once exhibited evidence of mental impairment. For example, she filled hot-water bottles with cold water, and next morning came downstairs with fish knives in her hair and proceeded to pour out tea into the milk jug. The sphincters were uncontrolled.

She was admitted to hospital on Dec. 1st, garrulous, incoherent, confused, and incontinent. There was an unclean scalp wound over the occiput in the middle line. There was no evidence of fracture, intracranial hæmorrhage, or defect of the visual apparatus, but the left pupil was larger than the right. There was no aphasia or paresis, and there was no sign of affection of the motor or sensory pathways. The systolic and diastolic blood pressure measured 140 mm. and 80 mm. of mercury respectively. The serum and cerebro-spinal fluid were healthy.

By Dec. 24th her symptoms had somewhat abated and the sphincters were controlled. She was still restless, garrulous, and confused. Luminal and potassium bromide in small doses were prescribed but, inadvertently, gr. 10 of the former and gr. 50 of the latter were administered daily for 12 days (total luminal gr. 120, potassium bromide gr. 600). On the twelfth day, Jan. 4th, 1925, she became stuporose and had a recurrence of double incontinence. The pupils were much contracted and lost their reaction to light. At times there was a divergent squint. The pulse-rate was increased. The cerebro-spinal fluid was under normal pressure. The urine contained no hæmatoporphyrin. After stimulation and a long delay she feebly obeyed certain instructions. Energetic treatment was employed in the form of strychnine, hot coffee by mouth and rectum, oxygen, and faradism. The luminal and bromide were cancelled. For a few days the periods of mental alertness increased in length but on each occasion she relapsed rapidly into stupor. Her conversation showed extreme confusion of thought. The tendon and superficial reflexes were unaffected throughout. By Jan. 10th the urgent symptoms were relieved and the sphincters once more under control. The systolic blood pressure measured 120 mm. of mercury. The pupils remained unequal and reacted to light very sluggishly. Then followed a period of four weeks in which she was greatly confused. On Jan. 19th, for example, her answers to questions were as follow. Year ?—March. Age ?—59. Year of birth ?—1950. Age ? —Westerham. War ?—China versus Chilians. Her handwriting was illegible and her composition grotesque. She knew not where or who she was. She expressed a fear of being killed by a firing party, and she said that her sister had fallen into a basket of damsons and, not being a business woman, would lose her money. She saw pistols in the hands of other patients and said that they wore leather helmets as a precaution against being killed. Her intelligence, judged by the accuracy of her replies to questions, varied from hour to hour. Rarely could her attention be secured.

On Feb. 10th Dr. H. J. Norman saw her with me and found her depressed and anxious, readily confused, and unduly apprehensive. The next day she rushed screaming round the ward and refused to be pacified until the windows, which had been closed for the round, were reopened. On Feb. 12th she made a sudden and complete recovery and her memory for the recent and distant past was once more clear.

Convalescence has been uninterrupted. She went to the seaside on March 5th, and recently I have had from her a grateful letter of a woman in complete possession of all her faculties. I call attention to the amount of the drugs taken, the value of faradism in treatment, and the avoidance of certification.

A CASE OF
RENAL GLYCOSURIA WITH KETONURIA.

BY J. PATTERSON, M.Sc., PH.D.
(*From the Biochemical Department, Charing Cross Hospital.*)

WHILE the crucial means for distinguishing between diabetes mellitus and renal glycosuria lies with the sugar-tolerance test, it is generally recognised that confirmatory to a normal curve indicating renal glycosuria is a urine examination showing a fairly constant and low value for the percentage of sugar, with the complete absence of acetone bodies. A negative finding with regard to these latter substances is such an invariable result in this type of case that one might have assumed reasonable certainty in diagnosing diabetes wherever an obviously positive glucose test was accompanied by an authentic acetone reaction in the urine. In only one case of renal glycosuria so far described (Allen, Wishart, and Smith, 1919,[1]) have ketone bodies been detected, but then only at the time the patient was admitted to hospital, for when placed on full diet the acetone test immediately became negative.

It would seem, therefore, to be of interest to supply a few details pertaining to a case which was quite exceptional in that the urinary examination was apparently contradictory to the findings based on blood analysis.

Clinical Record.

The patient, a man aged 42, was admitted to hospital with a history suggestive of pulmonary tuberculosis and diabetes.

History.—In 1911 he underwent an operation for gastric ulcer, at which time he was discovered to have sugar in the urine and was evidently regarded as diabetic. Later, he attended a hospital as an out-patient for six months, being told to diet carefully. Towards the end of 1918 he developed a bad cough, afterwards began to have night-sweats, and also brought up dark-coloured sputum. He had dyspnœa on exertion and suffered from loss of strength. Going before a medical board, he was X rayed and phthisis suspected, but shortly afterwards the cough improved and the night-sweats ceased. During the last six months preceding admission, dry red rashes appeared on the left thigh, both forearms, and scrotum. He had been thereupon examined at a skin hospital, where it was believed his skin disease was related to a diabetic condition.

No evidence of active pulmonary tuberculosis being found, a brief inquiry into his "diabetic" condition was instituted, with the results recorded below.

Chemical Findings.

1. *On full diet.*—Sugar and acetone constantly present in the urine, former identified as glucose in the form of phenylglucosazone ; amount varying from 0·5 to 3 per cent. ; latter confirmed by Lieben and by Gunning tests after distillation.

	Blood-sugar.	Nitro-prusside test.
29/1/25	0·091	+
30/1/25	0·085	+
31/1/25	0·090	+

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[1] Arch. Int. Med., xxiv., 523

(*Continued from previous page.*)

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19. Waldorp: Biologie Médicale, 1924, No. 7, p. 363.
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22. Couvy: Bull. Soc. de Path. Exot., 1924, p. 533.
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26. Ravaut: Collection Horizon, Masson, 1918, &c.
27. Marchoux: Bull. Soc. Path. Exot., 1923, No. 2, p. 79.
28. Delanoe: Maroc Médical, 1923, No. 17, p. 110; Soc. Path. Exot., 1923, p. 119.
29. Leger and Nogue: Bull. Soc. Path. Exot., 1923, No. 7, p. 537.
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32. Leon Bernard and Thomas: Bull. Acad. de Méd., June 24th, 1924.
33. Potzetakis: Presse Médicale, 1925, No. 19, p. 299.
34. Marchoux: Paris Médical, 1924, No. 47, p. 421.
35 and 36. Marchoux: Bull. Soc. Path. Exot., 1923, p. 325.
37. Valenti and Tomaselli: Il Policlinico, 1924, fasc. 36, p. 1159.
38. Marchoux and Cohen: Soc. de Biologie, 1925, xcii., 132.
39. Marchoux: Comptes Rendus de l'Acad. d. Sciences, 1925, clxxx., 617.

2. *Potatoes withdrawn from full diet.*—Sugar absent from urine the first day, reappearing to the extent of 2 per cent. on subsequent days. Acetone as before.

3. *Starvation.*—Sugar absent within 24 hours, marked nitro-prusside reaction first day with positive Gerhardt test, intense colour reactions on the second day, after which the patient was restored to full diet.

4. *Glucose-tolerance tests.*

—	Blood-sugar.	Urine.	
		Sugar.	(1) Acetone diacetic. (2) β-Hydroxybutyric.
(*a*) (6/2/25)		per cent.	mg. per cent.
Before glucose . . .	0·085	0·65	(1) 10·0 (2) 20·0
After glucose	—	1·80	(1) 7·3
½ hour	0·121	—	—
1 ,, ...	0·120	—	—
2 hours	0·097	—	—
3 ,, ...	0·075	—	—
(*b*) (12/2/25)			
Before glucose . . .	0·090	2·0	(1) 4·0
After glucose	—	3·2	(1) 2·0
2 hours	0·103	—	—
3 ,, ...	0·080	—	—

Urines collected for four-hour periods both before and after glucose.

5. *Other findings.*—Blood-urea, 32 mg. per 100 c.cm.; cholesterol, 0·250 per cent.; urea concentration (1) 3·1 per cent., (2) 3·0 per cent. Acetone plus aceto-acetic acid and hydroxybutyric acid were estimated by the method of Wrigglesworth (1924),[1] and are much in excess of the most recent average normal values, which are given by Hubbard and Noback (1925)[2] as 0·9 mg. per 100 c.cm. and 0·10 mg. respectively.

Discussion.

The most striking feature, then, is the continuous excretion of acetone bodies, a fact not merely based on a positive reaction but confirmed by more conclusive tests. Its relation to the sugar excretion, itself rather greater and at the same time more variable than in the typical renal glycosuria, is difficult to follow. The mere loss of about 20 g. of sugar per day would normally hardly result in the appearance of acetone, especially where it could be shown that the withdrawal of carbohydrate in the form of potatoes from the diet, or on the other hand, the addition of glucose, had no appreciable effect.

The appearance of a ketonuria in these circumstances is evidently contrary to the present-day theories as to the relationship between carbohydrate and fat metabolism, unless it be assumed that in addition to a very low threshold for sugar the patient had also a lowered threshold for acetone. Unfortunately it was not found possible to carry the investigation further in order to establish whether this were so or not, but since the abnormality cannot be accounted for on the basis of lack of carbohydrate utilisation, it seems feasible to suggest that its cause is a parallel one to that responsible for the abnormality of the accompanying sugar excretion.

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[1] Biochem. Jour., xviii., 1203.
[2] Jour. Biol. Chem., lxiii., 397.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT BATH.

SECTION OF LARYNGOLOGY, OTOLOGY AND RHINOLOGY.

THIS Section met on three days, under the presidency of Mr. Arthur H. Cheatle.

WEDNESDAY, JULY 22ND.

OVERLOOKED CASES OF FOREIGN BODY IN THE AIR AND FOOD PASSAGES.

A discussion on this subject was opened by Prof. Chevalier Jackson (Philadelphia). He said that his presentation of the subject was from the individual viewpoint of one who metaphorically as well as actually saw narrowly through a small tube; for the broader viewpoint the audience was referred to the internist. Of the 1485 cases of foreign bodies that had come to Prof. Jackson's bronchoscopic clinic in the past 20 years there were over 200 in which foreign bodies had been overlooked for periods of from one month to 30 years. A broad consideration of the histories of these cases showed the outstanding fact that the failure to recognise the presence of a foreign body was due not so frequently to inability to make the diagnosis, as to failure to attach sufficient importance to the consideration of foreign body as a diagnostic possibility. Foreign bodies had been regarded as curiosities of medicine rather than routine possibilities for exclusion. A careful analysis of all the cases in which records were accurate, however, showed that the chief factors in the overlooking of the foreign bodies (not in the ætiology of the accidents themselves) were as follows: (1) Failure to consider foreign body as a diagnostic possibility. (2) Absence of a history of foreign body as proven by over 100 cases at the clinic. (3) Scepticism as to the possibility of the presence of a foreign body, in some instances even in the face of a very positive circumstantial history of the accident. (4) The apathetic attitude of the practitioner. (5) The symptomless interval which usually elapsed after the swallowing of a foreign body. (6) Multiplicity of foreign bodies, one being removed, but others being left behind, this could be avoided by X ray examination after as well as before operation. (7) Waiting for spontaneous expulsion of the foreign body. (8) Simulation, in foreign body cases, of the signs and symptoms of common diseases, such as tuberculosis, asthma, bronchitis, pneumonia, empyema, bronchiectasis; foreign body in the lung would continue to be overlooked until the practitioner deemed it necessary to exclude foreign body in every case of acute or chronic pulmonary disease. (9) Lack of emphasis, in medical teaching, on the exclusion of foreign body in every case of acute or chronic disease of the chest. (10) Groundless assumption of passage by the bowel. (11) Character of the foreign body; vegetable seeds, for example, which did not cast a shadow on X ray examination, might be overlooked. Occasionally, even after a diagnostic bronchoscopy, there might be uncertainty as to the possibility of a small fragment of non-opaque foreign body in a minute bronchial branch; such cases required watching, for sooner or later signs would develop. Every case in which there was the slightest intimation of a foreign body accident, or of the patient having had an attack of choking, gagging, strangling, or coughing, should be regarded as a prima facie case of foreign body. A foreign body, he said, should be regarded as present until the contrary was proven by every means at command. The justification for that rather strong statement was that among his cases there were dozens of histories in which a child after having choked and gagged with food or some foreign substance in his mouth was taken to a practitioner or to a dispensary, or to an out-patient clinic, when entirely symptomless. Physical examination being negative, the parents were reassured and the child sent away. The symptomless interval, often of prolonged duration, prevented connexion of the initial symptoms with the tardy development of the symptoms of foreign body. The Röntgen ray was the most valuable diagnostic means in suspected foreign body; but careful notation of physical signs by an expert should be made in all cases. Expert X ray work would show all metallic foreign bodies and many of less density, such as teeth, bones, shells, buttons, and so forth. If the X ray was negative for foreign body but indicated bronchial obstruction, a diagnostic bronchoscopy should be done. Peanut kernels and watermelon seeds in bronchi produced obstructive emphysema of the invaded side, which should be distinguished from compensatory emphysema, in which the ballooning was in the unobstructed lung.

The relative rarity of foreign body in the air and food passages should not render it an unreasonable rule to exclude foreign body in every ailing child, for was it not a rule for all internists and pædiatricians to exclude Banti's disease as a matter of routine—yet what single clinician or clinic ever saw 1400 cases of Banti's disease? As regards the treatment of overlooked foreign bodies in the lungs, it might be said that 98 per cent. of the localisable foreign bodies of appreciable size that had reached the trachea, bronchi, or parenchyma of the lung through the mouth could be removed by peroral bronchoscopy, and no procedure other than peroral bronchoscopy was entitled to a moment's consideration in the ordinary case of foreign body in the lung. One of the most remarkable things was the recuperative power of the lung from a seemingly very serious pathological condition by a foreign body after the intruder had been removed.

After his opening address Prof. Jackson gave a demonstration on the manikin of mechanical problems of the bronchoscopic and œsophagoscopic extraction of foreign bodies from the air and food passages. After this demonstration he exhibited a number of cinematograph films demonstrating bronchoscopic aspiration for suppurative diseases of the lung of other than foreign body origin; it was remarkable to note the absence of discomfort in patients in whom bronchoscopes were passed into the lungs for aspiration, without any anæsthetic, local or general, in the skilled hands of Prof. Jackson's assistant, Dr. Gabriel Tucker.

Prof. Thomas McCrae (Philadelphia) said that the association of physicians with laryngologists was necessary if there was to be any improvement in the handling of the problem of foreign bodies in the lung. The bronchoscopist had the right to ask the general practitioner and the internal physician that they should be alert and make the diagnosis promptly; they, on their side, had the right to ask that certain laryngologists at least should acquire such skill in bronchoscopy that they could have patients referred to them in the assurance that they would be skilfully handled, and that if necessary a bronchoscopy for diagnosis could be done with perfect safety. He placed emphasis on the importance of the failure to consider the possibility of a foreign body in the air passages; to lessen that mistake a steady process of education was essential, and so long as a foreign body in a bronchus was regarded as something like a fairy tale little progress could be made.

Sir StClair Thomson (London) expressed the thanks of the meeting for Prof. Jackson's brilliant demonstration; he thought that foreign bodies in the air and food passages must be more common in America than in this country, and he blamed the acquisitive habits of the American child.

Sir William Milligan (Manchester) said that he regarded the intimate cooperation with the radiologist as of the utmost value, but where a negative report was given he thought that in any doubtful case an endoscopic examination should be made. He was in favour of a second X ray examination being made after the removal of the foreign body as other foreign bodies might be present. He had known of cases being treated as tuberculosis for years, and clearing up at once on removal of an unsuspected foreign body.

Mr. Herbert Tilley (London) described a typical case of overlooked foreign body, that of a boy who inhaled a paper-fastener into the left bronchus, which illustrated some of the pitfalls which might lead to the overlooking of a foreign body; the chief reason why the case had drifted on was that the chest was not radiographed by an expert directly the trouble occurred. He wondered how many cases of "bronchiectasis," "bronchitis," "pneumonia," and "tuberculosis without tubercle bacilli" had been caused by the presence of an overlooked foreign body, and referred to cases which he had recorded in THE LANCET.[1] If the foreign body was not opaque to X rays the chest should be screened at the moment of full inspiration and again on deep expiration, and a comparison of the two negatives would often show striking differences.

Sir James Dundas-Grant (London) described several cases of overlooked foreign body which had occurred within his own experience. He asked about the use of lipiodol and bismuth in the detection of non-opaque foreign bodies.

Mr. Douglas Crow (Brighton) detailed some of the early difficulties which he had experienced in bronchoscopy; he had found that the practitioner sometimes overlooked the bronchoscopist as well as the foreign body, even when the latter had been demonstrated by X rays.

Mr. G. Ewart Martin (Edinburgh) discussed chiefly the possibilities of the bronchoscope in the diagnosis and treatment of certain affections of the chest; he had obtained very satisfactory results, particularly in the treatment of bronchiectasis by bronchoscopic lavage.

Mr. E. B. Waggett (London) maintained that no examination for suspected foreign body was complete without a skiagram taken in the right antero-lateral position, as in well-developed adults lateral skiagrams of the chest were often obscure.

Mr. Musgrave Woodman (Birmingham) described two cases which came under the category of overlooked foreign bodies in the œsophagus, and showed lantern slides illustrating them.

Dr. P. Watson-Williams (Bristol) referred to the pulmonary symptoms in bronchial occlusion.

In the afternoon, at the Bath Ear, Nose, and Throat Hospital, Mr. V. E. Negus read a paper on evolutionary factors in the causation of pharyngeal diverticula, and also demonstrated a large number of specimens which he had dissected, to illustrate the comparative anatomy of the nose and throat.

Mr. Irwin Moore read a paper on the history of endoscopy, and demonstrated a number of valuable specimens from the special Endoscopic Museum which was the chief feature of the Pathological Museum of the Annual Meeting, and for which he had collected a large number of pathological specimens, endoscopic instruments, &c., from all over the country.

THURSDAY, JULY 23RD.

Chronic Middle-Ear Suppuration.

Mr. G. J. Jenkins (London) opened a discussion on the operative treatment of this condition. He said that operations in cases of chronic suppurative disease of the middle ear were undertaken primarily for the removal of the conditions which were potentially dangerous; secondarily in order to get rid of an offensive state which often necessitated a good deal of care and daily attention; and also, in some instances, with the possibility of improving the hearing. Of recent years many otologists in all parts of the world had been experimenting with methods that were something between the Schwartze operation and the radical mastoid, and which had been termed "conservative mastoid" or "modified radical mastoid" operations. This endeavour to find something better than the radical mastoid operation must have arisen because the latter had been found to be insufficient or defective in some respects. The result was not always satisfactory; sometimes the Eustachian tube remained patent, no matter how carefully that had been provided against. Often the hearing was damaged and sometimes the ear required careful attention for years, even when epithelialisation had been quite satisfactory. Whatever operation was done, the objects should be: (1) to remove all foci of potential danger; (2) to retain the maximum hearing; and (3) to leave a state of affairs that would necessitate the least possible after-attention. Rapidity of healing was a secondary consideration. The cases could be divided into three groups. In the first, the hearing was good, almost as good as in a normal ear, the mechanism of the middle ear not having apparently been damaged; in the second group were included those cases in which the middle ear conducting apparatus had been involved; the third group included those cases in which there was evidence of a gross lesion of the wall of the labyrinth or of the labyrinth itself. In the second group he had tried a modified radical operation of his own devising, the special clinical features which constituted suitability being the presence of a small perforation entirely or almost entirely surrounded by membrane, and evidence that the incus had been damaged; altogether he had operated on 38 cases. The operation might be described as an extended Schwartze operation, with removal of the incus, and the obliteration of the antrum and mastoid cavity by means of a flap of periosteum. The object in removing the incus was, first, to eliminate what he believed to be an important focus of disease which was unlikely to clear up spontaneously; and, second, by its removal he thought that ample drainage would be provided for the antral region until healing had occurred. When, however, there was a serious affection of the tympanic cavity, and especially when the tympanic membrane was extensively destroyed, Mr. Jenkins did not think the results from any form of conservative operation were equal to or as good as those of the radical mastoid operation.

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[1] THE LANCET, 1908, ii., 1359, and 1911, i., 1066.

Mr. Sydney Scott (London) said that in a case open to doubt as to the necessity for extirpation of the tympanum, when there was no cholesteatoma and no labyrinth disease, even where hearing was very defective, it was permissible to watch the effect of Schwartze's operation as modified by Küster before advising conversion to the epitympanic operation or to the radical operation. For years at St. Bartholomew's Hospital they had recognised the advantages in operating in two stages on conservative principles. Mr. Jenkins had systematised a new stage of conservatism, not a new stage of eradication.

Mr. J. Bowring Horgan (Cork) emphasised that in the overwhelming majority of cases the aural calamity which was designated by the name of chronic suppurative otitis media was a preventable calamity, and that the best treatment of that condition was the thorough and courageous treatment of its progenitor, acute suppurative otitis media. As regards operative treatment, he was convinced of the great value of the primary skin graft in mastoid operations.

Mr. H. Norman Barnett (Bath) said that chronic middle-ear disease was an eminently curable condition, and if under observation and careful treatment it had not been cured in four to six weeks he advised operation and opened up the mastoid antrum. He pleaded earnestly for an early exploration of the mastoid antrum in cases of chronic ear discharge, as it was quite useless ordering drops for such a patient.

Sir James Dundas-Grant said that among the operations for chronic suppurative otitis media the claims of the operation of ossiculectomy had been overlooked. The ossicles seemed sometimes to dam up the discharge, causing violent symptoms which apparently called for a radical mastoid operation; but he had not infrequently found that the symptoms entirely subsided after the removal of the ossicles.

Dr. W. S. Syme (Glasgow) said it was most important to define the actual limits of the disease. The performance of a conservative operation could now be recommended at a much earlier period in well-defined cases in which formerly a radical mastoid operation would have been recommended.

Mr. J. Aldington Gibb (Maidstone) said that recently he had adopted as a conservative measure with good results the transmastoid atticotomy of Bondy, as practised by Sourdille and others in France.

Chronic Non-Suppurative Middle-Ear Deafness.

A discussion on the treatment of chronic non-suppurative middle-ear deafness (excluding otosclerosis) was opened by Sir William Milligan, who said that while otology had made great strides in the past quarter of a century, more especially in the treatment of suppurative disease in and around the middle and internal ears, the treatment of chronic catarrhal and otosclerotic lesions remained practically at a standstill. If it was admitted that in advanced chronic catarrhal otitis media anything approaching a cure was out of the question, our aim should be to endeavour to prevent the onset of the disease and to treat it energetically in the early stages, so as to prevent, if possible, the advent of incurable fibroid changes. In a large percentage of cases the commencement of the disease dated back to childhood or early adult life as the result of some such ailment as measles, scarlet fever, or purulent nasal catarrh. Sepsis was, in many cases, the underlying element in the production of those pathological changes which ultimately led to the connective tissue and arthritic alterations associated with chronic catarrhal otitis media. It was almost unnecessary to recapitulate the importance and the necessity of the removal of septic tonsils and adenoids, and other forms of nasal obstruction and nasal sepsis; but what was necessary to emphasise was the necessity in cases of otitis media of keeping up, for varying periods, a careful toilet of the mucosa. The sheet anchor of treatment was unquestionably inflation by means of the bag or the Eustachian catheter, repeated as often as the particular case demanded. The greater the improvement after inflation and the longer it lasted the better was the prognosis. In order to maintain the patency of the Eustachian tube all obstructive or septic lesions of the throat, nose, and naso-pharynx had to be eliminated. Repeated examination and short courses of treatment were essential if the best results were to be obtained. An important factor in chronic middle-ear deafness was the subconscious loss of acuity of the cortical centres of hearing, and he believed these centres were capable of some amount of re-education, which should be systematised and if possible simplified.

Dr. J. Kerr Love (Glasgow) said that with a sound auditory nerve one should be able to do for a case of middle-ear deafness what the optician did for a refraction error. And yet it did not work out in practice. It was not enough to send the patient to a salesman of "aids to hearing," hoping that the latter would do something The real difficulty was that the acoustician waited upon the aurist, and the latter did not know enough of the pathology of the different types of deafness—the acoustician, of course, knew less. It was possible that because of the mixture of types of deafness the fitting of "auditory spectacles" would never be the success the lens was in the hands of the optician. But, he urged, we should not give up without further trial.

Mr. Neil MacLay (Newcastle-on-Tyne) said that people must be taught to give as much care and consideration to their ears as they gave to their eyes. Of the many remedies for chronic middle-ear deafness the most important were inflation, tympanic massage, and re-educative exercises, the last fairly claiming a certain amount of success. By employing an ordinary conversation tube, amplified if necessary by a receiver of large dimensions, the patient could read aloud to himself or be spoken to at intervals during each day.

Mr. H. Norman Barnett said that his main lines of treatment were the vaporisation of the middle ear through the Eustachian catheter with a mixture of iodine and camphor vapour, and ionisation, which was of very considerable importance in obtaining good results.

Dr. George Cathcart (London) referred to the good results he had obtained in the treatment of chronic middle-ear deafness by re-education of the hearing with the electrophonoide of Zünd-Burguet. He attributed the improvement mainly to stimulation of the organ of Corti and of the cortical auditory centres, in addition to a certain amount of local vaso-dilatation.

Sir James Dundas-Grant was convinced that many cases escaped benefit through the imperfect introduction of the Eustachian catheter. In the intervals of catheterisation the patient could keep up the treatment for himself by the use of a self-inflator containing a few drops of diluted chloroform. Operative treatment was seldom of any value.

Mr. Herbert Tilley said that the early stages of chronic adhesive otitis were frequently overlooked, even by otologists. In the ordinary type of serous exudation into the tympanum, it was his practice to inject through the Eustachian catheter a few drops of 10 per cent. argyrol after having removed the catarrhal fluid by inflation and aspiration with a Siegle's speculum. A few cases improved with endocrine therapy.

Dr. W. S. Syme emphasised the importance of sepsis in the nose and throat; nasal accessory sinus disease was more common than was usually supposed.

Mr. Sydney Scott laid stress on Mr. MacLay's suggestion of employing the speaking-tube in the re-education of the hearing. Dental sepsis had an important relation to deafness, and an X ray examination of the teeth could not be dispensed with.

In the afternoon Mr. Norman Barnett demonstrated at the Bath Ear, Nose, and Throat Hospital a large number of cases of chronic middle-ear suppuration treated by conservative operation, and of chronic non-suppurative middle-ear deafness treated by vaporisation and ionisation.

FRIDAY, JULY 24TH.

Occupational Diseases of the Ear, Nose, and Throat.

A discussion on this subject was opened by Mr. F. H. Westmacott. He said that the subject might most conveniently be discussed under two headings: (1) Industrial diseases which were included in Schedule 3 of the Workmen's Compensation Act of 1906, extended by various orders, and included in the Act of 1923; (2) industrial diseases which were met with in workers but which were not so included and might or might not cause incapacity of employment. In the first category the list of diseases affecting the ear, nose, and throat included anthrax, lead, mercury, phosphorus and arsenic poisoning or their sequelæ, poisoning by nitrous fumes, ulceration of the mucous membrane of the nose or mouth produced by dust, chromic ulceration, compressed-air illness, glanders. Among the second group were inflammation of the auricle followed by slough and necrosis, as occurred in cold-storage workers; rupture of the tympanic membrane due to explosions in mining, blasting, tunnelling, or gun-firing tests; acute or œdematous laryngitis might be directly caused by inhalation of irritant fumes of chlorine, bromine, iodine, ammonia, or sulphuric acid; membranous laryngitis, non-diphtheritic, occurred in workers in steam and irritating vapour, such as in stokers and cooks; chronic laryngitis was found among professional voice users, from misuse or faulty voice production; hypertrophic laryngitis was frequent in street hawkers, salesmen, or those exposed to dusty occupations. In continuous noises, such as riveting in boiler-making or loud machinery, which gave rise to continuous nerve strain, deafness was due not so much to damage to the sound-conducting mechanism as to destruction of the sensitive nerve-endings which constituted the sound-perceiving apparatus. More severe deafness was produced by intense sounds made up largely of overtones of high pitch than by noises of lower pitch such as were heard, e.g., in cotton mills. Tinnitus was invariable, but vertigo was only present in direct proportion to the loss of perception of the upper tone limit.

Surgeon-Commander S. W. Grimwade, R.N., said that with the exception of diseases of the ear, occupational diseases of the ear, nose, and throat were not at all common in the Royal Navy. During nearly two years' service at the R.N. Hospital, Plymouth, he had seen only four cases of labyrinth concussion from gunnery practices; all of these showed a very marked degree of deafness, which, however, was temporary, and they soon returned to normal. 99 per cent. of all cases of deafness in the navy were due to suppuration of the middle ear, and there was no question that more careful examination of recruits would eliminate a large number of these cases.

Wing-Commander D. Ranken, R.A.F.M.S., said that they found in the Royal Air Force that the effects of nasal obstruction, though disagreeable enough on the ground, were intensified in the air; the engorged nasal mucous membrane associated with high altitude frequently gave rise to insufficient ventilation and drainage of the frontal sinuses, and pilots often complained of headaches of varying duration during or immediately after descent. More important still was the presence or absence of Eustachian obstruction, for if equalisation of the pressures on either side of the ear drums by means of swallowing or auto-inflation could not be made during a rapid descent, pain and deafness together might occur, with such effects of labyrinthine disturbance as vertigo, nausea, or even fainting. There were two methods of preventing aeroplane deafness: harmful sound waves were cut off at their source by fitting silencers to the engines, and the persons exposed to noise were protected by ear protectors on the principle of a "baffle" system.

Major T. Jefferson Faulder, R.A.M.C., T.F., said that, showing the magnitude of the problem, the total number of first awards of war pensions for various aural disabilities had been 31,750; in December, 1924, this had diminished to 18,500, and approximately one-half of this total was assessed at 20 per cent. or less disablement. During the war admissions to hospital on account of ear conditions amounted to a total of 182,440, diseases of the nose 37,520, diseases of the respiratory organs other than tuberculosis 801,840, tonsillitis and sore-throat 441,040. As regards the question of ruptured drum-head, various opinions had been given, usually, in his own opinion, in the direction of over-estimation.

Mr. E. B. Waggett considered that the statistics of the recent war gave a wholly misleading impression, and he believed that the very heavy figures concerning hospital entries of chronic otorrhœa, aural, nasal, and throat operations, were to be explained on psychological rather than surgical grounds—chronic otorrhœa formed a convenient excuse for the soldier desiring a holiday at the base.

Dr. T. Ritchie Rodger (Hull) said that the sounds prevailing in boiler-making works were comparatively low in the scale, ranging round about 400 and 500 double vibrations per second. In regard to the occupational deafness of boiler-makers the mass of evidence was that the injury to the cochlea was conveyed by air-conduction, not by bone-conduction; middle-ear defects had no part in the causation. Meatal plugs of wax or vaselined wool were the only aids to prevention of the disability.

Mr. T. B. Jobson (Guildford) said that in 1915 he had had the opportunity of examining 50 German soldiers shortly after their exposure to prolonged gunfire, and about 80 per cent. of them showed diminution of acuity of hearing both for air- and bone-conduction. In from three to six months almost all of the cases had returned to normal.

In the afternoon Dr. P. Watson-Williams gave a demonstration of his method of making a complete investigation of the nasal accessory sinuses.

SECTION OF THERAPEUTICS.

WEDNESDAY, JULY 22ND.

Treatment of Asthma.

This Section met on three days, under the presidency of Prof. R. B. Wild.

Dr. W. Langdon Brown (London), in opening a discussion on this subject, said that the treatment of asthma summarised in itself, as it were, the chief trends of modern therapy: Psychotherapy, sensitiveness to foreign proteins, vagotonia, and endocrine balance. Successful treatment involved them all. Asthma was due to an unstable or irritable condition of the bronchomotor and vasomotor portions of the vagus nucleus, which caused it to react unduly to psychical or peripheral stimuli, or to foreign proteins in the circulating blood. The influence of the parasympathetic nervous system was also extremely important in asthma. The asthmatic, he said, was liable to other manifestations of vagotonia. It might, however, be that the vagotonia was due to a diminished action of the antagonising sympathetic nervous system. The sympathetic nerves activated those endocrine glands which released sugar into the blood, and in asthma the blood-sugar was below normal. The secretions of glands which coöperated with the sympathetic nervous system—the adrenals, pituitary, and thyroid—were generally effective in checking a paroxysm. Further, the liability of asthma to come on during sleep, when the parasympathetic nerves had the upper hand, pointed to a disturbed balance between the two great branches of the visceral nervous system. In general terms it would appear that when the endocrine balance swayed in the direction of the vagus, asthma was likely to occur in susceptible subjects; when the balance was redressed in favour of the sympathetic system attacks might be cut short or prevented.

In considering treatment, the suggestibility of the patient should be utilised to help him to expect a cure. Sources of peripheral irritation must be eliminated, including late suppers and cold bedrooms. Specific desensitisation presented considerable difficulties both because the actual cause could not always be found by skin tests and because hypersensitiveness was not always constant for one subject but might affect a whole group. Non-specific treatment might, however, be successful. The effect of climate was well known to be capricious, but at altitudes above 4500 feet attacks were very rare. Oxygen inhalations might act in the same way as pure or filtered air. Drugs which paralysed the parasympathetic endings or stimulated the sympathetic were also helpful.

Dr. E. P. Poulton (London) said that, defining asthma as a bronchial spasm with vasomotor turgescence, there were several causes of the condition. Asthma due to bronchitis or nasal coryza should be sharply separated from the idiopathic variety or allergia. The cardiac asthma of elderly patients was also a separate entity. The allergic group included other toxic idiopathics besides asthma. Skin reactions were of no value in diagnosing the cause of asthmatic attacks, but Loewe's extract of human dandruff might be of great use in determining whether a patient belonged to the allergic or to some other type. Asthma, in his opinion, was not due to anaphylaxis any more than histamine shock was due to anaphylaxis. Treatment might be directed towards: (1) Desensitising the patient either by specific or non-specific means; (2) keeping him away from the specific exciting substance; (3) acting on the receiving mucous membrane of the nose, as by light cauterisation; (4) altering the condition of the bronchial muscle and removing spasm by subcutaneous adrenalin or caffeine or by oxygen inhalation.

Dr. P. Hamill (London) said that it was wise to take a careful history and to consult the patient as to the cause of the attack. It was generally possible in this way to get at the exciting factor. He agreed with the previous speaker that it was difficult to achieve specific immunity, but non-specific immunisation might be tried. Peptones could be given by mouth for the purpose. Cases with a *M. catarrhalis* infection benefited by autogenous vaccines; but it was necessary to start with a very small dose as the patient was highly sensitive. Many drugs could be employed. The vagus endings could be paralysed by atropine or hyoscine, the sympathetic stimulated by adrenalin and cocaine; the bronchial muscle could be relaxed by nitrites, papaverine, or benzyl benzoate. Pituitrin and adrenalin were very effective in cutting short an attack if given at the beginning. Oxygen was useful if given efficiently, and some of the patients suffered from chronic oxygen lack. It was necessary to improve the general health and resistance and treat the patient as well as the disease. Arsenic, bromides, iodides, and thyroid were all useful.

Dr. Alexander Francis (London) said that the indiscriminate use of cautery to the nose did much damage. He gently touched certain spots on the mucosa keeping a careful watch on the blood pressure meantime. This was effective in 80 per cent. of cases, excluding those with nasal polyp. Cases complicated by nasal polyps were invariably made worse if cauterised or if the polyps were removed.

Dr. A. F. Hurst (London) said that, speaking as a sufferer for 30 years from asthma, he believed there was no cure for the condition, the patient always remaining a potential asthmatic. To ward off attacks adrenalin was invaluable if properly used. It must be given at the very beginning of an attack, when 1 minim would suffice. More than 3 minims was never required at this stage. He recommended that the patient should have an injection ready by his bedside so that he could give himself the drug the moment he felt the premonitory symptoms. The injection could be repeated as often as was necessary. If these instructions were carried out the patient need never lose a night's rest, and the fatigue which rendered him liable to further bouts was avoided. In fact, the best cure for asthma was not to have attacks.

Mr. Frank Coke (London), in spite of the dicta of previous speakers, believed in the efficacy of protein tests. He classified the types of asthma. Every single case must be fully and properly tested with every protein with which the patient comes in contact. The offending proteins must be avoided. If this is impossible, as in the case of horse dander, pollen, and proteins causing occupational asthma, the patient must be desensitised.

Dr. S. D. Bhabha (London) described an apparatus for administering oxygen which had been found successful in the treatment of asthma, and the President of the Section drew attention to the relation between asthma and eczema. The two conditions sometimes alternated in the same patient.

Dr. Langdon Brown, in replying to the discussion, agreed with Dr. Poulton's use of the term allergy. He thought that the value of skin tests was general rather than specific, and that they succeeded best when the cause of the asthma was already known. In reply to Dr. Hamill, he said that in his experience the action of amyl nitrite was somewhat uncertain. He had sometimes had great success with papaverine. He agreed with Dr. Francis as to the beneficial results of light cauterisation. With regard to the President's remark on the connexion between eczema or asthma, he showed the pedigree of a family in which the two diseases had appeared alternately in the different generations.

THURSDAY, JULY 23RD.

Treatment of Chronic Arthritis.

In opening a discussion on this subject, Sir Thomas Horder (London) laid stress on the usefulness of weighing the ætiological factors in each case. Although these were frequently obscure, there was good reason for thinking that a microbic factor was invariably present. A table to show the relative importance of this factor might be constructed as follows:—

INFECTIVE FACTOR	*Joint Disease.*
HIGH. ↑	Gonorrhœal rheumatism. Chronic pyæmia. Arthritis due to streptococcal, pneumococcal, dysenteric, and coliform infections. Tuberculous and syphilitic arthritis.
	Arthritis in association with focal sepsis. "Rheumatoid" arthritis. Osteo-arthritis.
	Gout.
↓ INFECTIVE FACTOR *Low.*	Arthritis in tabes, syringo-myelia, hemiplegia, and paralysis agitans.
	Trauma.

Arthritis as a definite expression of *focal sepsis* formed an intermediate group between the cases of direct joint infection and those termed "rheumatoid," which, owing to our present ignorance of the degree to which the element of infection was present, formed the crux of the therapeutic problem. In this intermediate group drainage or other appropriate treatment of the area of focal infection was the first step in treatment. More than one area was sometimes involved, in which case it was important to determine as far as possible which was primary—and attend to that first. Where teeth and tonsils, or teeth and gastro-intestinal tract, were both involved the teeth should receive attention first. The speaker discussed the rôle of the prostate, the uterus, and the alimentary tract in arthritis. Streptococci, both hæmolytic and non-hæmolytic, were probably by far the most common organisms concerned. Antigen therapy must be supplementary to drainage of the infected area and not a substitute for it. A diet which lowered the bacterial content and caused mechanical cleansing was probably more important than the use of intestinal antiseptics; but amongst these calomel and salol must not be forgotten.

In the great majority of cases, the speaker said, chronic arthritis was part of a general disease, for which the patient required treatment. The nutritional and the nervous aspects must both be carefully considered. Endocrine disturbance was frequently present, and small doses of thyroid were often helpful. The possibility of a metabolic factor, such as gout, must not be forgotten even in cases of marked infection. Protein-shock therapy gave relief in suitable cases, but the final results were not always favourable. It was definitely contra-indicated in active disease, or where there were visceral or serous membrane complications, such as pleurisy, "stagnant" cases should be chosen; and there was grave danger in teaching students to use methods which may easily be misapplied. It was sometimes said that the infectivity of most cases of chronic arthritis made the idea of spa treatment irrational; but if arthritis was a general as well as a local disease this reasoning was fallacious. There was undoubtedly as great a field for the treatment of these cases by spa measures as ever, and of radium waters and radio-active mud we were only now beginning to learn the potentialities. Sir Thomas Horder then went on to describe the local measures available. All efforts to restore and improve the function of diseased joints reacted beneficially on the general condition, and local treatment must prepare the limbs for an arrest of the disease which might occur at any moment.

Dr. Preston King (Bath) spoke on the balneological aspect of treatment of chronic arthritis. He thought that the value of spa treatment was generally acknow- ledged, and that the value of the Bath Spa was a very high one owing to the thermal character of its waters which rise at a temperature of 117° F. There were, of course, many factors producing beneficial reactions in patients, and the sceptical emphasised the factor of suggestion. Suggestion did play a part, but it was nothing new: it was as old as the practice of medicine itself. He referred to the different types of arthritic disease and their reaction to balneological treatment. In his experience the asthenic case of rheumatoid arthritis with rapid pulse, emaciation, sweating, and peri-articular swellings did not respond well to full bath treatments. Such cases were apt to do badly anywhere under any treatment, but tonic treatment with douching was the most suitable. Chronic arthritis in all forms was amenable to hydrotherapy. Treatment was directed to: (1) the relief of pain; (2) the removal of sources of infection; and (3) increasing the mobility and correcting the deformity of the joints.

Dr. Nathan Mutch (London) agreed with the remarks of the opener on the importance of the drainage of any area of focal sepsis which could be discovered; but the removal of foci of infection often proved a failure as regards improvement of the patient's condition. This might be because, although the original focus had been cleared out, the infection had already spread far beyond reach and escaped detection. A frequent source of infection was oral sepsis, and years after this had been eradicated, pathogenic streptococci of oral orgin might be recovered from the stools. If the bacteriological content of the bowel at different levels was studied at laparotomy, it was often found that the ileo-cæcal region was especially heavily infected, and an infection might be found above this level in the jejunum or even in the duodenum. Positive cultures might also be obtained in the lymph glands draining the bowel, indicating a widespread infection passing to the blood-stream and the lymphatics. It was not, he thought, generally realised what an enormous daily variation occurred in the bacterial content of the stools. The number of streptococci present might vary from nil up to ten times that of the *B. coli* present in different specimens, or even in different parts of the same specimen. Five to six specimens at least should be examined before giving an opinion in a difficult case. This variation should be taken into account in judging the results of drug treatments, and would also help to explain the want of uniformity in laboratory reports complained of by the opener. With regard to vaccine treatment, it was advisable before beginning this to consider the degree of toxæmia present. The reaction to vaccines varied with the activity of the toxic conditions, and this should, if possible, be reduced first. Lesions of joints and affections of the endocrine glands were often coincident. The thyroid more especially was frequently affected, and the giving of thyroid extract might assist other lines of treatment. Secondary infections and invasions often occurred. One organism might be followed by another. Joint reactions might be obtained by the injection of intestinal streptococci, when the original infection was known to have been a staphylococcus or a virulent streptococcus from the mouth. Organisms were not *the* cause of arthritis. Probably there was no one cause, and multiple causes should be looked for in all cases.

Dr. C. B. Heald (London) contributed to the discussion from the point of view of the cases as treated in an electrical department. He considered that they might be classified from their reaction to treatment as: (1) The stationary group, composed of those who are relieved of their symptoms so long as they continue under treatment and relapsing as soon as treatment is stopped; (2) the progressively improving group, which responds satisfactorily; and (3) the group that shows no reaction and is unrelieved or gets steadily worse. He found that cases were curiously selective in their reaction to electrical treatment; and as regards the form of treatment to which they responded, he was unable to distinguish clinically into which of the three groups a case would eventually fall. He thought that the reaction to treatment might vary with the basic variation of physical type. When studying variations of defective physical types in men presenting themselves for pilots in the Air Force, he had found that they might in general be placed in three classes: cardio-vascular debility, nervous debility, malnutri- tional debility. Before commencing treatment it was exceedingly important to take a careful history and to make a complete routine examination. Among other methods he always examined for areas of hyperalgesia by means of a small faradic current. The presence of positive zones was not diagnostic, but if they were present the patient was likely to show a bad reaction to treatment. Treatment was directed towards improving the basic condition and the local condition. For the nervous debility type of patient he used ultra-violet light with selected local treatments. For the cardio-vascular debility type he used diathermy, especially applied to the abdomen.

Mr. E. Watson-Williams (Bristol) thought that the importance of infections of the upper air passages should be realised and the sinuses carefully examined in every case. Although the gastro-intestinal tract might seem to be the primary source of an infection, this originated in many cases in the upper air tracts and the organisms had passed downwards through the stomach at some period when the hydrochloric acid was diminished. Therefore sinus infections should be eliminated first in all cases. Neurasthenic conditions, too, might be kept up by the presence of chronic infections, and even crippled patients might be improved by the discovery and removal of a sinus infection.

Dr. E. P. Cumberbatch (London) stated that he was a believer in the value of electrical methods of treatment, and especially in the use of diathermy in the treatment of gonococcal arthritis. If there were no gross changes the use of diathermy would cure, and in any case it would give improvement. The treatment was applied to the seminal vesicles or to the cervix uteri, and needed to be very carefully directed both as to dosage and details of administration. In non-gonococcal cases in women there was frequently an infection of the cervix, with endocervicitis and erosion. The organisms obtained in such cases might be coliform organisms, diphtheroid organisms, or a *Streptococcus fæcalis*. These, too, he treated with diathermy, with the result that in many cases the arthritis was arrested, there was an improvement in the general health, and the cervix was restored to a normal appearance. He raised the cervix to a temperature of 114° F., but not exceeding 115°. He standardised the temperature by application to the urethra, which was sensitive to heat, whereas the cervix was not.

Dr. David Campbell thought that rheumatoid arthritis presented two problems—the orthopædic problem and that of the cure of the infective process. He thought that there was great danger in immobilising the joint. In cases of the infective type of rheumatoid arthritis protein-shock therapy was worth trying. He had not observed any case of pleurisy following the use of typhoid vaccine, which was the one he had used; but he had seen two patients who, having had albuminuria previous to the injection, had developed a transient hæmaturia.

The President remarked upon the curious fact that the onset of damp weather should cause changes of a sensitive nature in joints which are themselves continually bathed in fluid. It appeared that when the humidity reached a certain point the elimination of carbonic acid from the body was much diminished, and it was possible that one might find in the accumulation of carbonic acid an explanation of these obscure pains.

Dr. P. Hamill thought that whilst harm could be done by too rigid splinting, one of the first principles of treatment of acute inflammation was rest, and therefore he remained unrepentant concerning his use of splints in moderation, though exercise and massage should certainly be employed in addition.

Dr. Warren Crowe (Harrogate) said that in arthritis and non-articular rheumatism (for the two conditions could be classed together) vaccines ought to do well. Every active case of chronic arthritis under vaccine treatment, almost without exception, passed through a stage of sensitiveness to vaccine, and this was sometimes so intense that vaccines were for a time not tolerated at all. When the clinician recognised this fundamental fact his results would be very much better.

Dr. F. G. Thomson (Bath) said that much depended on the general condition of the patient. If the general condition was poor the best course was to send the patient to a spa. If the general condition was good the most valuable thing for practical purposes was to use intravenous shock.

Sir Thomas Horder, in replying, said that he had not intended by any means to impugn the value of the work of the bacteriologist. He could not get along without him, but he thought it desirable to ginger him up occasionally. He wanted to make it plain that he did not advise protein shock in the case of a patient who was improving by any other method. To come back to his main thesis, which he thought the discussion had strengthened, he held that arthritis was a general disease with local manifestations, and for that reason the patient must be studied quite as much as the joints.

FRIDAY, JULY 24TH.

Therapeutic Value of Light.

At this meeting of the Section, Prof. W. E. Dixon (Cambridge) in opening the discussion, said that the subject was the therapeutic value of light. It had nothing to do with X rays or radium. The actions of light which could be easily demonstrated on animals or man were of three varieties: local, general, and specific. The local and general reactions might be produced by certain other irritants. The specific action was possessed, as far as was known, only by light. The local effect consisted of erythema, which might be followed by swelling of the skin, blisters, or even breaking down of the skin. Mustard had a similar action. The mechanism was an irritation of sensory nerves which, by means of an axon-reflex, produced dilatation of the blood-vessels in the skin or subcutaneous tissues. The proof of this was that if the nerve was cut or anæsthetised the reaction no longer occurred. For instance, if a drop of mustard solution was put into the eye of an animal, the result was acute inflammation of the conjunctiva, but if the eye had been previously anæsthetised with cocaine, inflammation did not occur. Although the mechanism could be explained, the problem was not quite so simple as it appeared. How was it that both mustard and light could stimulate nerve-endings? The stimulation was brought about in different ways. Mustard underwent hydrolysis in contact with the skin. Energy was thus liberated for the stimulation of the nerve-endings. It was not known how light excited nerve-endings without affecting other tissues, but it was probably due to the presence of fluorescent substances in the skin. If these substances were exposed to light their action was greatly enhanced. One such fluorescent substance was hæmatoporphyrin, obtained during the breakdown of hæmoglobin to bilirubin. People with excess of hæmatoporphyrin were sensitive to light. This could be proved experimentally by injecting mice with hæmatoporphyrin. When the mice were exposed to light the skin became red and swollen and the animals might die. Summer prurigo and hydroa vacciniforme were a result of excess of hæmatoporphyrin in the skin in man.

Pigmentation was another non-specific local effect. It was a protective mechanism the object of which was to absorb ultra-violet light. The general effects of light were a mild stimulation of medullary centres, slight increase of the pulse-rate, with vaso-constriction and rise in blood pressure, and stimulation of respiration. There was an increased activity of the tissues, as shown by the increased power of phagocytosis of the leucocytes. The specific effect of light was its influence on the storage of calcium and phosphate in the body. The ingestion of calcium by the mouth did not alter the percentage of the salt in the tissues any more than drinking water diluted the blood. Children could be prevented from getting rickets or cured of the disease by light. The point to discover was whether light acted on the surrounding air, on the food, or on the body. It had no effect on the air, but its effect on foodstuffs and on the body was important. Wheat, biscuits, flour, milk, eggs, lard, linseed oil, cotton-seed oil, and other substances which of themselves were incapable of influencing rickets, when irradiated assumed antirachitic properties. All these foods contained cholesterol. Cholesterol underwent changes on exposure to light. It became yellower and more translucent. This altered cholesterol had the property of preventing rickets. The skin contained a large amount of cholesterol and therefore exposure to light had the same effect as feeding with irradiated cholesterol-containing foods. Experiments on rats showed that feeding with skin had no effect in curing rickets, but the animals were cured when they were given skin which had been exposed to light. Too long exposure to light was harmful. In Sweden it had been found that certain groups of people, notably neurotic patients, were made worse by light treatment. If the observations made on cholesterol held good, there should be parallelism between the incidence of rickets and the amount of available sunshine. There were no good statistics on this point, but the information he had did not show any such relation. In the Panama zone there was little sunshine but no rickets. In the State of New York there was more sunshine but rickets was prevalent.

Dr. C. E. M. Jones (Alton) said that clinical phenomena could not always be explained scientifically. The two diseases in which light treatment had been found most effective were rickets and tuberculosis. From the clinical point of view the general action of light was more important than the local. Heliotherapy or natural sunlight aimed at producing a feeling of exhilaration and increased well-being in the patient. Certain patients could not be exposed to light and were known as non-pigmenters. They were, as a rule, fair or sandy haired, freckled people who got burnt instead of becoming pigmented. Pigmenters had a higher resistance to non-pulmonary tuberculosis than non-pigmenters. The feeling of exhilaration after heliotherapy was accompanied by increased metabolic activity. The latter might be attributed to exposure to the air and apparently did not occur with artificial light treatment, which was carried out in a room. We were familiar with psychological action of light in increasing cheerfulness. Increase of mental activity had been observed in children treated by light. Exposure to light must be graduated, otherwise depression and collapse supervened as happened with non-pigmenters. If a child who was a non-pigmenter had bone or joint tuberculosis and the lesion became quiescent it would almost certainly relapse or the child would get a fresh lesion. If the fresh lesion was treated often pigmentation supervened, and then the disease might be cured. If the patient did not have some power of acquiring pigmentation he appeared unable to shake off the infection. The effect of air and light on muscular wasting was remarkable. In cases such as those of tuberculosis of the hip, which in hospital always presented wasting of the muscle, there was practically none with treatment by heliotherapy, although the limb was immobilised in the same way. Artificial light was useful when sunlight was not available. Here the local action was much more important, but the best effects were obtained when local was combined with general light baths. He had obtained good results in the treatment of lupus. Light treatment was contra-indicated in non-pigmenters, febrile cases, in those who were acutely ill, in amyloid disease, and in the very young or the very old.

Dr. G. H. Lancashire (Manchester) said that great advances had been made in recent years in the treatment of skin diseases. He was one of the first people in this country to use Finsen's lamp, and had obtained very good results with it in lupus. Recently at Manchester they had installed a modern artificial light apparatus which was reserved for tuberculous cases. The results, especially in lupus, had been more successful than he had dared anticipate. The patients were given a general exposure to the light with the lesion covered. The cosmetic results were very good. Healing had been obtained in cases of buccal and nasal lupus. He had seen remarkable benefit from light treatment in alopecia, but he would like to utter a warning against making too wide a claim for the method. Light therapy should be reserved for cases where it gave better results than other forms of treatment. Evidence as to its special efficacy should be published before it was recommended in any particular skin disease.

Dr. William Mitchell (Bradford) spoke of his work at the Bradford Royal Infirmary, where he had treated cases since 1906. The chief conditions for which he employed light therapy were lupus, alopecia areata, tinea, acne, and lupus erythematosus. In lupus vulgaris a preliminary dose of X rays was of advantage. Cases of tuberculosis of the spine and glands did well provided that no abscesses had formed. Their presence was a contra-indication to the treatment. In lupus erythematosus better results were generally obtained with carbon dioxide snow and ether; but in some cases light was useful. For acne he preferred filtered X rays.

Dr. P. Heffernan (Buxton) asked whether any work had been done on the influence of light on iodine metabolism. Dwellers in dark and narrow valleys were liable to develop goitre due to iodine starvation. He would like to know whether sunlight had any power of fixing iodine in plants or of enabling the body tissues to make use of iodine.

Dr. J. R. Garrood (Huntingdon) suggested that the factor responsible for pigmentation or non-pigmentation might be racial. Mediterranean blood was widely prevalent in this country, and the Mediterranean type survived exposure to tuberculous infection better than the Nordic.

Dr. E. P. Cumberbatch asked to what depth the arterioles were affected as the result of an axon-reflex from stimulation of cutaneous nerves. He would also like to know whether it made any difference to the clinical results whether the patient was exposed for three minutes to a mercury lamp or for half an hour to a carbon lamp.

Dr. Newman Neild (Bristol) said that patients were apt to take the cure into their own hands with disastrous results. He had two cases of phthisis who had exposed their chest to the sun without medical advice and a bout of pyrexia had followed.

Dr. Helen Mackay (London) said that her experience had differed somewhat from that of other speakers. Neurotic children suffering from irritability did well under light treatment. They became much happier. In babies if the dose was increased too rapidly the child remained happy but stayed awake. If the dose was cut down the child immediately slept well. Moderate stimulation was good, but an overdose caused undue excitability and must be avoided. Cases of eczema benefited when light was added to local treatment. She had had good results with wasting babies, but it was extremely difficult to foretell which children were going to do well with light.

Dr. J. M. H. Munro (Bath) called attention to the analogies between tuberculosis and rheumatoid arthritis. In both treatment aimed at raising the metabolism generally. To this he attributed the good results obtained in arthritis with light therapy.

Dr. T. B. Poole (Westcliff) spoke of the benefits of calcium administration in menorrhagia and chilblains, and concluded that the drug was absorbed into the circulation.

Dr. Jones, in reply to Dr. Cumberbatch, said that he had found no difference between the two methods of exposure from the clinical standpoint; but he himself preferred the carbon lamp because it more closely resembled sunlight. He did not agree with Dr. Mitchell that abscess formation contra-indicated light treatment. He had had success in a case of tuberculous spine with abscesses. As Dr. Neild had said, there was a good deal of risk in pulmonary tuberculosis from unsuitable exposure.

Reply.

Prof. Dixon, in replying to the discussion, said that clinical observations could not always be explained by science. Science was only the handmaid of medicine. He agreed that pigmentation varied with the patient's resistance. Dr. Jones's observations and Dr. Garrood's explanation were both in agreement with Charles Darwin's statement that only the people who became black were able to resist certain tropical diseases and therefore they had survived. He did not know of any work on the influence of light on iodine metabolism. The question of calcium absorption had nothing to do with this discussion on light; he would only say that, unless there was calcium starvation, taking calcium by the mouth did not increase the amount in the blood, nor did it increase the clotting power of the blood. In reply to Dr. Cumberbatch, he said that the reflex from cutaneous nerves acted on the vessels in the subcutaneous tissues down to the muscles. Dr. Mackay had spoken of overdoses of light. Stimulation was always followed by depression. Unfortunately, we had at present no means of gauging the amount of light administered.

Dr. Newman Neild read a paper on the

Uses of Posture for Bronchial Drainage.

In order to drain the bronchi, he said, the patient must be placed in such position that the bifurcation of the trachea was lower than both bronchi. There were three practicable positions in which this result might be obtained—namely, on the back, on the face, and on the side. The best and the one most comfortable to the patient was on the side but turned a little towards either the face-down or the on-the-back positions. The patient would lie on his right side, with the head low and the waist raised with pillows, so that the highest point was under the lowest ribs. The right ear would be close to the edge of the bed so that the mouth would be over the side. The position must be maintained by suitably placed pillows. This posture was excellent when prolonged drainage was required. If only one side of the chest required drainage that side should be uppermost. Cases treated successfully by the adoption of this posture included hæmoptysis, pharyngeal paralysis, bulbar palsy, cerebral disease, and various conditions complicated by bronchitis. If dying patients were placed in this position the death rattle, which is so trying to others who are in the same ward, would cease.

Reviews and Notices of Books.

THE MECHANISM AND GRAPHIC REGISTRATION OF THE HEART-BEAT.

Third edition. By Sir THOMAS LEWIS, M.D., F.R.S., &c. London: Shaw and Sons. 1925. Pp. 529. 50s.

SINCE the appearance of the last edition of this monograph the results of some important researches in cardiac physiology and therapeutics have been published in this and other countries. A mass of new evidence has been collected—a very considerable part of it in Sir Thomas Lewis's own laboratory at University College, London—and a step forward has been made in our knowledge of certain aspects of the subject. This recent work is ably summarised in the present volume. Each new hypothesis considered is submitted to the same careful and well-balanced criticism which characterised the previous edition, and when, in the author's opinion, the evidence at present available is insufficient to justify a definite conclusion, the observed facts are clearly stated, and the reader is left to form his own judgment.

One of the objects of science is to simplify knowledge by developing general hypotheses which will correlate and explain what had previously been an apparently disconnected mass of observations. In the new chapters of the present book which deal with circus movement and with the membrane theory of electrical phenomena, the reader can catch a glimpse of two mechanisms which have already shown promise of bringing together observations hitherto more or less isolated and obscure. The researches of Mines and Garrey originally suggested circus movement as the cause of fibrillation; but at the time that the second edition of "The Mechanism" went to press an alternative hypothesis received the support of the author. In the present edition five chapters are devoted to the consideration of circus movement, the refractory period, and closely allied problems; while two others deal with the possible rôle played by circus movement in the genesis of extrasystoles and paroxysmal tachycardia, and with the alternative hypothesis of parasystole. Another new chapter treats of the nature of heart-block. In addition to these major alterations and additions, much of the text has been rewritten to conform with the most recent advances in our knowledge, and many new figures have been introduced. To deal in detail with these various points is beyond the scope of a review, and it must suffice merely to enumerate as examples the sections dealing with "the law of cardiac muscle," the relation of excitation to contraction, the membrane theory of electrical changes in muscle, and the significance of aberrant ventricular complexes.

There is one aspect of the subject which might with advantage be treated more fully in a future edition—namely, the instrumental investigation and the graphic registration of heart sounds and murmurs. The various devices employed by Einthoven and his colleagues, by H. B. Williams and by Wiggers, each have certain advantages over the older method with the carbon microphone. Year by year as specialisation increases it becomes more and more difficult for the clinician to keep in touch with the growing point of knowledge. The general physician of to-day must be content to receive most of his mental nourishment in a predigested form, but for those who still prefer to masticate their own food, and are prepared to curtail the number of courses on the menu, a book such as this is invaluable. It summarises recent work, it affords an easily accessible and very complete bibliography, and last, but not least, it gives the reader the benefit of the carefully considered opinion of an expert critic.

Sir Thomas Lewis's book holds a unique position in the literature of modern cardiology.

MANUAL OF PRACTICAL X RAY WORK.

Third edition. By JOHN MUIR, B.Sc., M.B., Ch.B., Assistant Radiologist, University College Hospital. London: William Heinemann. Pp. 524. 31s. 6d.

THIS excellent manual was first published in 1908 under the joint authorship of Dr. J. Muir and Dr. D. G. Arthur. In this third edition Dr. Muir has done the re-writing and revising in collaboration with the late Sir Archibald Reid and Mr. F. J. Harlow, of Blackburn, and no doubt the help and advice received has greatly enhanced the value of the book. The gastro-intestinal section, although not unsatisfactory, seems to be its least adequate part, and here some amplification would be useful. New methods and observations on such subjects as orthodiagraphy, pyelography, gall-stones, and eventration of the diaphragm are dealt with clearly and in sufficient detail for a text-book, while a small appendix on the radiography of the pregnant uterus is added.

Of good X ray books there are few, but this one can be recommended to the practitioner with confidence, and particularly to students who are studying for a diploma in radiology. Finally, the illustrations are sufficiently numerous, good, and clear. We have one criticism. Nearly all the modern X ray text-books are devoting more and more space to technical descriptions of X ray tubes, electrical supplies and apparatus. This seems often to be a great waste of time, space, and energy on the part of the authors. In this volume, for instance, 100 pages are given up to this technical electrical description out of a total of 524 pages, and practically all the information can be got from the excellent descriptive catalogues which are nowadays published by instrument makers. It seems that the space might be more usefully employed by a medical writer.

PATHOLOGY.

Text-book of Surgical Pathology. By C. JENNINGS MARSHALL, M.D., F.R.C.S., Assistant Surgeon to Charing Cross Hospital; and ALFRED PINEY, M.D., M.R.C.P., Director of the Institute of Pathology, Charing Cross Hospital. London: Edward Arnold and Co. 1925. Pp. 460. 21s.

ONLY occasionally does it fall to the lot of the reviewer to deal with a book for the production of which it can be truthfully said there was real need. The appearance of this volume provides one of these rare occasions. While it cannot be said that the comprehension of the pathological basis of surgery advances at such a rate as to render the older text-books on the subject obsolete, none the less changes in thought occur and the manner of looking at things alters on small points sufficient in the mass to make a text-book, unless frequently re-edited, date very perceptibly. And of the older standard text-books of surgical pathology there have been no new editions for several years.

The present volume is all that a text-book should be. The style is clear and concise; the illustrations, with the exception of some of the reproductions of X rays and the microphotographs, are excellent; the latter are as good as pictures of their class can be, but in comparison with the histological drawings they seem to demonstrate the incapacity of the camera to reproduce successfully histological sections. In the selection of their matter the authors have shown sound judgment, not only as to inclusion and exclusion, but also in the allotment of space. Their attitude towards matters still the subject of debate is particularly laudable; in all cases where diverse views are held, the authors have never hesitated to say so, and have gone to considerable pains, succinctly but with perfect fairness, to set forth all the conflicting views worthy of consideration. In one or two instances, as in the case of the alleged relationship between "intestinal stasis" and chronic mastitis, they have gone so far in their desire to be strictly impartial as to include hypotheses hardly meriting serious consideration. It is indeed on this subject of chronic mastitis that the reader looks in vain for guidance. From the two brief pages allotted to it no idea can be gained of the multiplicity of its clinical forms or histological appearances. The section on the blood is also disappointing. It does not help to clear thinking to describe "azurophile granules" as characteristic of the monocyte. It is true that the fine granules of these cells are azurophile, but they are seldom or never seen as such by the student, while the scanty but coarse azurophile granules of the large lymphocyte must be familiar to anyone who has seen a properly stained blood film. But these are relatively small points for consideration in a future edition.

The book may confidently be recommended alike to teachers and students of surgical pathology.

Laboratory Diagnostic Methods. By John A. Kolmer, Professor of Pathology and Bacteriology in the Graduate School of Medicine of the University of Pennsylvania; and Fred Boerner, Associate in Bacteriology in the Graduate School. London and New York: D. Appleton and Co. 1925. Pp. 338. 10*s.* 6*d.*

This book stands out from others of its class because its originators have from start to finish written solely for those actually concerned with the technique of clinical laboratory diagnosis. No cognisance is taken of the indications for the use of the various procedures described, nor is there a word as to the interpretation of results. Thanks to this rigorous self-limitation, the authors have been able to include details of methods covering practically the whole field of bacteriology, chemistry, and immunology as applied to clinical diagnosis. Histological methods of diagnosis are not included. Procedures are clearly and concisely described, for the most part in a series of numbered steps, and the composition of all reagents mentioned is fully set forth. The book should therefore prove of great value to all actively engaged in laboratory work.

The value of the book to medical practitioners and students, to both of whom it is addressed, is more doubtful. The busy practitioner has little time for the minutiæ of laboratory work. To place such a book as this in the hands of students would encourage the existing tendency to regard pathology as a short cut to diagnosis instead of the fundamental stuff of medicine. For the laboratory worker, who has presumably mastered the elements of his subject, and for the laboratory assistant to whom correct technical performance is an end in itself, the work should prove invaluable. Many of the methods described have not hitherto been available in any text-book. An excellent feature is the inclusion of McFarland's nephelometric method for the standardisation of bacterial vaccines; this closely resembles that described in 1919 by Kirman and Brown, but has the advantage of greater simplicity. It would mark one step in the clearing of the tangled skein of vaccine therapy if some such method as this could gain universal acceptance. At present one man's million may be another's thousand so far as organisms are concerned. Given a standard nephelometric method, the user of a vaccine could be reasonably sure that his "million" always represented the same amount of bacterial substance, though the actual figures would remain as mythical as at present.

PÆDIATRICS.

Handbuch der Kinderheilkunde. Third edition. Vol. IV. Edited by Prof. M. von Pfaundler, Munich, and Prof. A. Schlossmann, Düsseldorf. Leipzig: F. C. W. Vogel. Pp. 789. M.45.

The third edition of this well-known handbook is completed by the appearance of the fourth volume, which contains the index to the whole work. In the first part of the volume Prof. Noeggerath and Dr. A. Eckstein deal with the diseases of the urogenital tract and of the suprarenal glands, which are described in considerable detail, and preceded by a really useful account of the physiology and chemistry relevant to the subject. With the exception of a short chapter by Dr. J. Husler on bone and joint diseases, the remainder of the volume is devoted to neurology, and these chapters, by Prof. Ibrahim, Prof. Gött, Prof. Sage, and Dr. Mendelssohn, form one of the most comprehensive works which have appeared on this branch of children's disease. While they should be invaluable as a work of reference, their utility is of wider application. The chapter by Prof. Gött on functional nervous disease contains much that is original in its presentation, and should be read by all who are interested in this subject. One may regret the somewhat arbitrary division into separate chapters on organic and functional diseases (the latter including chorea, epilepsy, and mental defect) by different authors, but this does not detract from the excellence of the articles. The well-established reputation of this handbook will certainly be maintained by the new edition.

DIETETICS.

The Diabetic Life. By R. D. Lawrence, M.D., Chemical Pathologist and Lecturer in Chemical Pathology, King's College Hospital. London: J. and A. Churchill. 1925. Pp. 161. 7*s.* 6*d.*

This book has been written to meet the needs of both patient and doctor. It is quite certain that if the diabetic patient wants to keep well he must know a good deal about his disease. The book is well suited for this purpose. The elements of physiology and the symptoms of the disease are set out very clearly. The necessity of making the diet as palatable as possible is clearly recognised throughout. Provided that the patient has sufficient intelligence, he can be told to arrange his diet himself according to the number of grammes of carbohydrate, protein, and fat which are allowed him. The tables originally prepared by Drs. Harrison and Lawrence are included in the book and will enable the patient to make his own calculations. For those who are less intelligent the "line ration" scheme devised by Dr. Lawrence is simple to understand and should give sufficient variety. The different aims in treatment are briefly considered, and Dr. Lawrence does not consider that it is essential to make the patient uncomfortable in order to keep the fasting value of the blood-sugar normal. The sets of rules given for the use of insulin and for maintaining the general health are sound, and the appendix contains useful notes on food substitutes. The index is a good one.

The book should be of use to practitioner as well as patient.

Lexikon der Ernährungskunde. By Dr. E. MAYERHOFER and Dr. C. PIRQUET. Vienna: Julius Springer. 1924: Lief. I. Pp. 144. Sch.8.00. *1925: Lief. II. Pp. 330.* Sch.11.00.

THIS work, of which the first two sections (A to G) have appeared, represents a highly original idea carried out with remarkable thoroughness. It may be described as an encyclopædia of all that appertains directly or indirectly to the feeding of man or beast. It contains articles not only on every form of foodstuff and fodder, but on many subjects, the connexion of which with nutrition appears somewhat remote. Ants, for instance, receive notice owing to the peculiar habits of certain South American tribes; an article on apes appears for a similar reason, with some comments on the ethics of this form of diet. Short biographical notices are accorded to writers on gastronomic subjects, such as *Athenæus* and *Bergius* Benegt. In the articles on the more important forms of food special attention is given to nutritive values and methods of preparation. Some of the subjects, such as diet in fever, and the arrangement of children's diets, are intimately connected with medical practice.

This lexicon contains much that is quaint and rare, as well as much that is of practical importance to-day. It should be of use and interest to students of many subjects, more particularly to physiologists and physicians.

The Normal Diet. By W. D. SANSUM, M.S., M.D., Director of the Potter Metabolic Clinic, Department of Metabolism, Santa Barbara Cottage Hospital, California. *London:* Henry Kimpton. 1925. Pp. 72. 6s. 6*d.*

THE author of this little book considers that too little attention has been paid to the bulk requirements, the mineral and water requirements, and the balancing of a diet so as to avoid acidosis, and he has dealt with these more particularly while giving a brief account of the fundamental principles concerned with caloric value, protein and vitamin contents of a normal diet. His views on bulk requirements are the most original, and he appears to hold that colitis is about the most frequent cause of abdominal discomfort which may be largely removed by correct dieting. His statements on the progress of food through the bowel are, however, not in accord with the usual teaching in this country. He states that "the food taken on any particular day furnishes the residue for the bowel movement of the third or fourth day," while Hurst has shown by means of X rays that ingested food enters the rectum within 18 hours. For the average person to secure normal bowel movements Dr. Sansum considers that two pounds of fruit and vegetables are required daily, which is certainly more than the average person normally consumes. His views on acidosis are rather curiously stated, but they do serve to bring out an original idea on the subject of what he calls "shopper's headache," which occurs in women who do a full day's shopping on an empty stomach, thereby utilising much of their own fat with a resulting acidosis.

KLINISCHE LABORATORIUMSTECHNIK.

Second and enlarged edition. Vol. II. By Prof. Dr. THEODOR BRUGSCH and Prof. Dr. ALFRED SCHITTENHELM. Berlin: Urban and Schwarzenberg. Pp. 683-1418. G.M. 21.60.

IF this volume is intended for use in the clinical laboratory, as its title would lead one to suppose, the reader is tempted to speculate as to what kind of place a modern German clinical laboratory must be. Were only a quarter of the investigations described to be employed, this laboratory could only be worked by an amalgamation of the pure chemical, physical, biological, and mathematical departments of a very well endowed university. The "clinical laboratory techniques" include, amongst many other operations, the following: A complete account of inorganic analysis, a detailed account of ultimate organic analysis by means of both micro and macro furnaces, interferometric and refractometric observations on sera; detailed accounts of the methods of setting up the Starling heart-lung preparation. And it must be fully understood that we have not gone out of our way to quote the most abstruse sections, and that the above list is merely a small sample of the varied techniques described.

For the use of the worker in a big department embracing all branches of bio-chemistry the volume has great merits. For instance, there is a very complete account of the methods for analysing blood, fæces, urine, and tissues for metals, poisons, and drugs. The section on basal metabolism and respiratory methods is very well written, and is admirably complete. As usual, the section dealing with hydrogen-ion concentrations is far superior to that in any English book, a reproach that some of our own workers should remove. Methods of blood analysis are dealt with very thoroughly, and it is a pleasure to see Folin's methods reprinted without the misprints of his original papers. The volume contains methods for estimation of anything in everything. It is a boiled-down and condensed Abderhalden's Biochemische Handlexikon, with parts of the Arbeitsmethoden thrown in, all superimposed upon a background of Neubaem-Huppert's "Analyse des Harns."

The descriptions are good and full of detail, and an attractive feature is a series of tables, giving every factor likely to be wanted in the course of arduous biochemical research.

STUDENTS' GUIDE TO OPERATIVE SURGERY.

By ALFRED T. BAZIN, D.S.O., M.D., Assistant Professor of Surgery and Clinical Surgery, McGill University. Montreal: Renouf Publishing Co. Pp. 126.

THIS small book is for the use of students whilst actually performing operations upon the cadaver. The descriptions of operations are made as short and succinct as possible. The author makes no pretence of having written a text-book on operative surgery, and the work will be a useful guide to undergraduates doing an operative surgery course and perhaps also to their teachers, as a chapter on the organisation of the class and a schedule of the suitable operations have been added.

CHEMISTRY.

A System of Physical Chemistry. Third edition. By WILLIAM C. MCC. LEWIS, M.A. R.U.I., D.Sc. Liverp., F.Inst.P., Brunner Professor of Physical Chemistry in the University of Liverpool. In three volumes. Vol. III.: Quantum Theory. London: Longmans, Green and Co. Pp. 407. 15s.

THE first edition of this work was published in 1916 in two volumes. In the second edition in 1919 a third volume was added. This arrangement has been adhered to in the third edition. There are nine chapters, and a series of appendices, written by Mr. James Rice, Mr. A. McKeown, and Mr. R. O. Griffith on subjects with which they are specially conversant. The first chapter deals mainly with the theory of probability. The descriptions are admirably clear, and can be followed a priori. What is more, the mathematical parts are evolved before the readers' eyes, and no stages, however simple, are jumped. There is, perhaps, one minor point for criticism. The author explains very clearly that in ordinary mathematical probability the factor can never exceed unity. He states, in a footnote, however, that the factor for thermodynamic probability is usually a "quantity being in general a large integral number." This must confuse the beginner, since it would seem impossible to have anything surer than a certainty, which, after all, is what is meant by a probability factor of over one. The meaning of thermodynamic probability is fully described on p. 11, where the work of Boltzmann is discussed. We feel that a reference to this page would have helped the beginner. In the succeeding chapters the theories of quanta are reviewed, and a very full account is given of Planck's radiation hypothesis. The author is to be congratulated upon the clarity of his style and the clearness of his mathematical reasonings. The appendices uphold the high standard of the general text, with the result that the whole work can be described as a brilliant exposition of an intricate subject.

A Manual of Practical Chemistry for Public Health Students. Second edition. By Alan W. Stewart, D.Sc., A.I.C. London: John Bale, Sons and Danielsson, Ltd. Pp. 83. 5s.

The present edition appears after a lapse of 11 years, during which time the author states that he has "gained much experience in teaching students." The truth of this statement can easily be seen from the author's clear style and excellent arrangement. The book is meant purely as a laboratory notebook of methods, and is consequently interleaved. There are six parts, the first dealing with acidimetry and alkalimetry, the second with air, and the third with water analysis. All the descriptions of techniques are complete in themselves, and, with the exception of methods of air analysis, are up to date. The author does not mention certain modern advances in gas analysis—such as Haldane's methods, or the commercial use of the katharometer. The last three sections deal with analysis of food and beverages, disinfectants, and microscopic work. A series of examination questions are appended. Although the book is so small the descriptions are adequate, and practical wisdom is manifest in the hints to students in the front of the volume. The last hint consists of the one word "think."

PATHOLOGICAL ANATOMY.

Pathologisch-Anatomische Sektionsmethode nach den Grundsätzen des pathologischen Institutes der Prager Deutschen Universität. Herausgegeben von Dr. Béla Halpert, mit einem Geleitwort von Prof. Dr. A. Ghon, Vorstand des Institutes. Wien: Julius Springer. Pp. 48. G.M.2.

In this book is set forth in the briefest and most succinct manner possible the mode of procedure adopted in the performance of post-mortem examinations in the pathological department of the German University at Prague. To publish this procedure, the result of experience gained at many thousand autopsies, was distinctly a bright idea on the part of the author. The perusal of his pages in which is set forth the steady and methodical march of the investigation into the remotest recesses of the cadaver will cause many a pathologist to formulate good resolutions for the future. This is a book of a type of which, to the knowledge of the reviewer, there is no example in English. Although the procedure, modelled on that of Rokitansky, is not that in general use in this country, it would stand imitation.

PSYCHIATRY IN PRACTICE.

La Psychiatrie en Clientèle. By Dr. René Charon. Paris: A. Maloine et Fils. Pp. 152.

This small volume, one of a series dealing with various departments of medicine under the title "Comment guérir," is more completely divested of any academic superfluities than any other similar work which has come before us. Introduced by a brief résumé of normal and abnormal psychology, it presents the whole field of insanity under broad symptomatic headings, which are subdivided in the text only to the extent necessary for preventing confusion between maladies of totally different nature and origin. Some of the effects of this policy are necessarily odd: general paralysis, for instance, is treated in the chapter on "involutive disorders" (as distinct from "evolutive," due to congenital defect), as also is dementia præcox, apparently because both are dementias, and dementia is an involutionary change in senile cases. The whole is written from a practical standpoint, with concise and frequent paragraphs on treatment. In addition to the usual section on medico-legal questions, there is considerable space devoted to the sociological aspects of "mental hygiene."

New Inventions.

PHILIPS "METALIX" X RAY TUBES.

About a year ago we described in these columns[1] a new piece of X ray apparatus made by the firm of Philips, of Eindhoven, Holland, which had been in use at Dr. Bronkhorst's tuberculosis sanatorium in Apeldoorn. This apparatus, the Philips "Metalix" tube, has now been placed on the British market, and was exhibited at the International Congress of Radiology held at Westminster in July of this year, where it attracted considerable attention. The virtue of this apparatus lies in the simplicity of its manipulation and in the elimination of the danger to the operator hitherto associated with the application of X rays. The apparatus, which is made in five sizes for different types of work, consists of a cylinder varying in length from 16 to 20 in., in diameter from 2½ to 2¾ in., and in weight from 5 to 6 lb. The metal wall of the tube consists of a chromium-iron alloy capable of being readily sealed to the glass and retaining a perfect vacuum. The heat conductance of this metal is so very small that it can be made red-hot at one end without injuring the seal at the other end. An incandescent cathode filament is placed within the metal vessel which has a circular opening, at a very short distance from which an insulated electrode is mounted, serving as an anti-cathode. The electrons are drawn towards the anti-cathode through this opening. Thus a sharply-focused spot is produced, the diameter of which depends upon the size of the opening, which serves as an electron diaphragm. The X rays issue from the anti-cathode through a window at the end of the tube. The rays which do not emerge from the window are absorbed by metal protective walls of lead and brass arranged round the tube inside the chromium-iron casing; hence the tube can be used without any further protective devices. It is claimed that this type of tube, in addition to the general advantage of complete protection without external aids, also has an increased output as compared with the usual X ray tubes. The metal-encased tube has been developed in several types for various purposes, and such tubes are said to have worked perfectly satisfactorily for three years.

The "Metalix" tube was awarded the highest honours at the recent medical exhibition held in Warsaw on the occasion of the July Congress of Polish doctors.

Further particulars may be obtained from Philips Lamps, Ltd., 60, Wilson-street, Finsbury-square, London, E.C. 2.

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[1] The Lancet, 1924, ii., 562.

THE LONDON
MEDICAL EXHIBITION

Organised by the Management of the Exhibition of the 17th International Congress of Medicine, 1913, and the Fifth Clinical Congress of Surgeons, 1914.

THE CENTRAL HALL, Westminster, S.W.

Monday, Tuesday, Wednesday, Thursday, and Friday,

OCTOBER 5, 6, 7, 8, and 9, 1925.

From 12 noon till 6.30 p.m. daily.

THIS Exhibition, established in 1905, has proved, in view of the large number who visit it annually, to be greatly appreciated. Its scope has been enlarged and covers the whole range of agencies for medical treatment to-day. The most recent organo-therapeutic, bacteriological, and pharmaceutical remedies and prophylactics; electro-therapeutic apparatus; scientific dietary; surgical instruments; hospital furniture and medical appliances; diagnostic material and apparatus; pathological and physiological apparatus; artificial limbs, aids in invalidity and deformity; sick room requisites; natural and artificial hydrotherapy; professional literature; hygienic clothing, &c.

The attendance is strictly confined to the Profession, and the public are not admitted. Last year the Exhibition was visited by several thousand medical and surgical practitioners.

A handsome Reception Room, where catalogues and other literary professional matter can be obtained, will be at the service of the Profession; also a spacious Tea Room in which light refreshments will be provided and where an orchestra will perform each day.

Invitation cards will be sent to every member of the Profession residing within a 50 mile radius of the Hall. Those in the Provinces who do not receive cards, desiring to visit the Exhibition, can obtain same on application to the Secretary, the London Medical Exhibition, 194–200, Bishopsgate, London, E.C., or at the Central Hall during the Exhibition week.

PRESS OPINIONS.

"The Lancet," Oct. 11, 1924—

"At the Medical Exhibition organised by the management of the Seventeenth International Congress of Medicine, 1913, and the Fifth Clinical Congress of Surgeons, 1914, in the Central Hall, Westminster, London, S.W., which opened on October 6 and closes to-day (Friday), a most informative collection of drugs and appliances used in the art of medicine and surgery, organo therapeutic, bacteriological and pharmaceutical remedies, electro-therapeutic apparatus, and many ancillary agencies, such as dietetics, and hospital and invalid furniture, were displayed. The medical man is essentially a student, but in these days progress is so rapid that even the attendance at post-graduate courses hardly suffices to keep the practitioner abreast of present-day treatment. An exhibition of this kind affords an opportunity to the busy practitioner to see the products and inventions which follow so closely on advances in treatment or technique, and to appreciate the labours of the various firms who, in response to the scientific requirements necessitated by research, administer to the needs of medicine and surgery. That the exhibition really fills a need is shown by the large number of medical men who visited it between the hours of noon and 6.30 p.m. each day, and by the keen interest which they took in the exhibits. In addition, the exhibition afforded an opportunity for friendly discussion and social intercourse, for which arrangements were made by the organisers, while the presence of many foreign and overseas visitors, some 300 of the latter having applied for tickets, showed the wide appeal of this display of scientific medicine and surgery."

"The Medical Press," Oct. 15, 1924—

"The 14th of the series of the London Medical Exhibitions was held at the Central Hall, Westminster, London, from October 6 to 10. The attendance, which was exceedingly good, was confined to the medical profession, the general public not being admitted, and several thousands of medical men from all parts of the kingdom found ample to interest them in the displays made by the leading firms. The Exhibition, year by year, has become more professional, the exhibits being, so to speak, more technical, expressing the latest adaptations of medical discovery and the newest in remedies and appliances created by the specialists of the manufacturing houses, many of whom hold high scientific qualifications. It was noticeable on this occasion that the exhibits demanded more than one visit from many members of the medical profession, and there can be little doubt from the repeat inspections that practitioners found many of the demonstrations not only interesting and educational, but of immediate application in practice. Among the attendance during the week was a goodly number of medical men from Overseas, the Government Departments, embassies, legations and agents-general in London, co-operating to bring the Exhibition to the notice of those on leave in this country. Without particularising, it seemed to us that the Exhibition served to emphasise the importance electricity in various forms is taking as a therapeutic agent; some of the installations were on a big scale, although, having regard to the construction of the appliances they are not expensive. The range of organo-therapeutic substances now at command was also brought out, as well as the variety and excellence of surgical instruments. We need not speak further of the many new introductions resulting from laboratory research in chemistry, pharmacy, dietetics, bacteriology, &c., nor of the advances in radiological apparatus and hospital and operation theatre equipment; but we may conclude this brief review by remarking on the up-to-date treatments given at the several British spas to-day."

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OPIUM AS AN INTERNATIONAL PROBLEM.

The Opium Committee of the League of Nations recently concluded its discussion of the annual reports from various States. The notes published in The Lancet from time to time[1] have shown how difficult is the problem with which this Committee is grappling. Since The Hague Convention of 1912 the control of the traffic in dangerous drugs has been a matter of anxious and prolonged discussion wherever nations have gathered in congress. The second League Conference held 28 sittings, and any definite results were prejudiced by the regrettable withdrawal of the American and Chinese delegates. Much difference of opinion now exists as to the value of the advances made. Prof. Perrot, a French delegate, writes with some satisfaction in the *Revue Scientifique* of July 11th, while Sir William Collins in the August *Contemporary Review* doubts whether the proposed Permanent Central Board may not prove a means of procrastination rather than an agent for forward movement. The idea of this Central Board originated in the Opium Advisory Committee of the League of Nations, and was endorsed by the United States and Great Britain. Its principal business would be to gather information about the production of, and international traffic in, narcotics, and especially to watch the channels of illicit trade smuggling. It was intended by those who devised the idea of this Central Board that it should have very wide and drastic powers of inquisition and publicity, and it was to be in a position to ration raw material and manufactured narcotics among the nations, with strict reference to their needs and available supplies. In the preliminary discussions, the American, British, and certain other delegations sought to give this Board such powers, but the obstruction encountered was sufficient to whittle down the proposed powers to an authorisation, in the event of an excessive and unexplained accumulation of narcotics in any country, and a belief by the Board that this country was in danger of becoming a centre of illicit traffic, "to recommend that no further exports of the substances covered by the present Convention or any of them shall be made to the country concerned until the Board reports that it is satisfied as to the situation in that country." The Board would also be authorised to publish a report in any such situation; and the Convention also declares it to be the friendly right of any country party to the agreement to draw the attention of the Board to any matter which appears to it to require investigation.

Writing in the September number of the *World's Health*, the journal of the League of Red Cross Societies, Mr. John Palmer Gavit, who until recently was managing editor of the *New York Evening Post*, and was a close observer of the conflict of interests in the winter of 1924–25, attaches considerable importance to this Board. He hopes that the Governments concerned will ratify the Convention, but a reply in the House of Commons on June 17th last indicated that no ratifications had so far been deposited. Mr. Gavit believes that, given the will and the necessary powers, the production of manufactured narcotics can be controlled. There is only one place where this can be done, and that is the place whence every ounce of morphine, heroin, and cocaine must emerge at the outset of its search for victims—namely, the factory. Drug factories are relatively few, and the Governments know exactly where to find them. The character of the problem has, he contends, changed greatly since international agreement was first registered in 1912. The evil is not now an exotic affair of the Far East—the eating, drinking, and smoking of raw and prepared opium are injurious enough, but they are surpassed by the present-day abuse of the derivatives of opium and other highly concentrated drugs of addiction. These, being less bulky and more easily disguised, are more profitable to smuggle. Also, they have behind them the push of the Western genius for business organisation, and the subtle effect upon conscience of absentee ownership. It is not generally realised that, since the Hague Convention and during and after the World War, the situation has developed with appalling swiftness. The old enemy, opium, in a new and immensely more venomous and devastating form, with new allies and in overwhelming quantities, has become a very real menace to civilisation. Mr. Gavit gives some interesting and disquieting figures. It will be remembered that the Health Commission of the League of Nations, the Opium Advisory Committee, and a mixed subcommittee representing both gave an estimate showing the amount of raw opium and crude cocaine needed per capita per annum for medical and scientific use by the population of the world within reach of modern medical service. This amount was 450 mg. of raw opium and 7 mg. of cocaine. On the basis of an estimated 744,000,000 (of the world's assumed total population of 1,747,000,000) as the population represented in the phrase "medical and scientific needs," the total legitimate needs of the world work out in tons as follows: 100 for medicinal opium, 136 for morphine, 84 for codein, and 15 for heroin—a total of 335 tons. After bringing up this total to 340 tons by allowing for such of the natives of Asia and Africa as might get access to doctors, Mr. Gavit writes: "But let us 'go the limit' and allow 450 mg. of raw opium a year for every man, woman, and child in the world. That will give us the outside total as the conceivable medical and scientific needs of the whole world of 786 tons of raw opium per year." What is the actual amount of opium produced? No one knows. But conservative estimates converge with remarkable closeness towards a total production of about 8600 tons, including 5000 tons attributed to China. In other words, less than one-tenth of the total amount of opium produced is for legitimate medical and scientific purposes. Still less is known about the output of cocaine, of which only little more than 5 tons a year would be needed for the 744,000,000 of the population of the world supposed to be within reach of modern medical service. But a clue can be given to the liberality of the supply actually available by the fact that Japan alone in 1922–23 manufactured 15,432 lb. (*Times*, August 27th). It is evident, therefore, that the production of narcotics in the world is at least ten times as great as the most extravagant estimate of its legitimate needs.

While we wait for the efficient Government control of the drugs of addiction, it is to be hoped that voluntary associations, such as the national Red Cross Societies, may take up the educational side of the problem, teaching the public the nature and the immensity of the narcotic peril. Such a campaign would not only educate the public, but would also probably convert some of the static power of Governments into kinetic energy.

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[1] The Lancet, 1925, i., 878.

C. L.

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THE METROPOLITAN ASYLUMS BOARD.[1]

The annual report of the Metropolitan Asylums Board, which has just appeared, contains, as usual, a large amount of well-arranged information concerning the treatment of infectious diseases in the important area of its work, and it is to this section that the main attention, both of the medical profession and of the public, will be paid. The responsibilities of the Board, however—and it is sometimes forgotten—are of a much wider range than this section indicates. If we include the work in tuberculosis done by the Board under the heading of the care of infectious diseases, there still remain some six other principal directions in which services are discharged which are invaluable to the public; for the duties of the Board include the management of hospitals and institutions for children suffering from specified contagious diseases as well as for those requiring special treatment in hospitals or convalescent homes; the provision for certain classes of mental defectives and epileptics; the care of Poor-law lads in training for the sea, both for the Navy and the mercantile marine; while a certain proportion of the casual poor fall under their jurisdiction as an authority which was instituted more than half a century ago by an order of the then Poor-law Board. Arrangements have been made only this week with the Ministry of Health, under which cases of puerperal fever to be referred to the Board are to be grouped in certain hospitals for special care and study. The Board also furnishes London with ambulances. Under these headings this report makes a clear statement of work done and results obtained, and it is possible that the figures in connexion with the last-named activity will be a surprise to many, having regard to the frequent complaint that the metropolis is lacking in proper facilities for the transport of the sick. The ambulance service, by land and river, of the Board during the year in question, dealt with over 72,000 removals, an increase on the previous year of 10,000, while the distance covered in the combined journeys amounts to a total mileage of 725,000 miles, being an increase of about 40 per cent. over the mileage of the previous year. This increase is indicative of a growing practice on the part of the medical profession and the general public to employ the ambulances of the Board in lieu of less specialised means of transport for the conveyance of patients and invalids over considerable distances. This willingness to use the ambulances of the Board accentuates the fact that public comments on the dearth of ambulances in London nearly always have the same origin; they are aroused by some default in dealing with cases of accident in the street. The whole of this question has been under anxious consideration for some time, and was referred by the Minister of Health over two years ago to the Voluntary Hospitals Commission, when a conference was held on the position of ambulance services generally in the metropolitan area. The need for better organisation and supply of transport of the sick should be better met, and it is to be hoped that action is approaching.

The section dealing with infectious diseases leaves a rather mixed impression of satisfaction and the reverse, when we study the record of progressive work in the metropolis to provide for the treatment of the epidemic group. The story of scarlet fever is a cheerful one; it can be seen from the figures that the disease can now be regarded as one which is normally unlikely to end fatally, the case-mortality is considerably under half what it was 30 years ago, while the notifications are less, though the average population of the area concerned is greater by some 80,000 persons. Measles must always be a difficult disease to summarise in statistical terms, because of its sudden incidence in large epidemics and their rapid cessation. Further, the Board deals only with a proportion of the cases, as accommodation for measles is found elsewhere during the early stage of an outbreak, the demand for hospital treatment only occurring after a certain limit has been reached. Therefore an epidemic may make grave demands on the accommodation of the Board suddenly, which demand declines with proportionate rapidity. Reference to the statistical table supplied in this report will show how the help of the Board is sought with increasing urgency for brief periods, during epidemics of measles, and how promptly the need for assistance dies away. The figures for small-pox are satisfactory, the past year being the twenty-third in succession since the disease has secured any firm hold throughout the metropolitan area. A brief history of small-pox in London, so far as the activities of the Board have been concerned, is included in an appendix, and would make salutary reading at the present moment for a good many persons. The references to encephalitis lethargica are significant, and are supported by a note on the arrangements which have been secured for the treatment of cases, written by Dr. Gordon Pugh, chief medical officer of the Children's Service of the Board. The note shows that the need for institutional treatment in juvenile cases of encephalitis lethargica is great and may be increasing in urgency, having regard alike to the recent extension of the disease in London, the non-existence of facilities for dealing with the cases, and the special difficulties incidental to the mentality of patients in the later stages. During the second quarter of 1924 there was a high notification rate of the disease, 391 cases out of 611 occurring during that quarter, while it is now recognised that, quite apart from its intrinsic seriousness, apparent cure of the disease is frequently followed by obscure after-effects, developing into physical, and especially psychical, disturbances of an anxious nature. Abnormalities of conduct have been observed which might bring, and which possibly have brought, patients within the sphere of the criminal law, when their actions have been dictated by the remaining influences of the disease, and this is a state of affairs to the remedy of which attention should be directed at once.

We refer, finally, to the anxious position revealed by the figures in relation to diphtheria, whose prevalence is sometimes regarded with complacency because the antitoxin treatment, devised 30 years ago, produced such wonderfully favourable results. But steady though the progress, which can be recorded, may have been in the treatment of diphtheria, it has been too slow, for the figures show that, in London at any rate, the forces of the disease have latterly been gathering power. Compared with the septennial period 1897–1903, the septennial period 1918–1924, gives only superficially the idea of any progress at all, and none whatever is claimed in the report. The number of notifications, though higher in the latter of these periods, is not out of proportion to the increase which has taken place in the average population, and the death-rate per cent. is in the same period only still what it was in the earlier period. But in the intermediate 14 years the notifications were much less numerous, while figures indicating the seven year rate per 1000 persons living are considerably higher for the last septennial period than for the two preceding periods. The statistics and the words of the Board alike show that the offensive power of diphtheria is increasing in greater ratio than the defence, and it would seem that we have been lulled into inactivity by the gratifying experiences which followed the introduction of the antitoxin treatment. The fact that the position to-day is infinitely better in respect of diphtheria than it was 30 years ago is a legitimate source of satisfaction. In the matter of case-mortality a steadily declining rate reached its minimum in 1924. This is the lowest figure on record and proves, if proof were wanted, that the use of antitoxin has saved untold lives. But the continuance of a high attack-rate in the metropolis calls for anxious thought. It seems to the Board that the time has come for the adoption of measures calculated to restrict more effectively than hitherto the depredations of the disease, and in this connexion the recent figures for New York City, which are quoted in the report, should be studied by those taking an active part in the maintenance of public health. All will agree with the opinion of the Board that a case has been made out for strict consideration.

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[1] Annual Report of the Metropolitan Asylums Board, 1924–25. Pp. 364. Office of the Board. 5s.

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SUGAR AND ATHLETICS.

THE most entertaining function of modern scientific discovery in the departments of applied physiology, domestic science, and the like is to find out *not* what we ought to do, but why we do what we do. We know now—more or less—why we should eat cabbage; we know why a man cannot run a mile as fast as he can run 100 yards and cannot hope to do so; we have a rationale for loafing in the sun. We do not know why we use soap to clean ourselves with, nor how to wash woollen socks without shrinking them; science has addressed itself to these problems, but has failed to find a solution satisfying to the housewife. No serious attention appears to have been given to the problems of why no one can eat rabbit daily, and why a white silk shirt must not be dried in the open like a cotton one for fear it will go yellow. Still, much has been and more will be discovered, and we may expect in time a due recognition by the public who are curious about dietetics of the renaissance of healthiness which emerged from the discovery by the Dutch of cabbages which would stand the winter. There has been going on the annual lamentation at the lack of interest shown by the general public in the proceedings of the British Association for the Advancement of Science. The truth no doubt is in the first place that the public takes a great deal more interest in the Association than the Association thinks, while in the second place real scientific discoveries leave the public moderately unmoved, because they do not concern their familiar activities. It is very good to know about the shape and balance of the earth, or why the amoeba is of a more useful size than the rhinoceros, and it is wonderful that mere men should be able to find out such things, but these discoveries do not make much obvious difference to life, and most people would prefer a solution of the sock problem. A naïve contribution to the explanation of our habits is recorded[1] by Dr. S. A. Levine and his colleagues at Harvard. They found last year that some of the runners in a Marathon (or marathon—they print the word indifferently, and it is a nice point) who were particularly exhausted showed an abnormally low blood-sugar and symptoms comparable to those of an overdose of insulin. On further analysis it appeared that exercise such as running first somewhat increases the blood-sugar, but the percentage afterwards drops back to normal, at which it remains until, in some individuals, a further fall appears about the time when they get profoundly tired. On a repetition of the race this year these observers confirmed their findings, and got some of the runners to demonstrate that eating candies was very reviving when exhaustion began to appear. It is interesting to know that physical exhaustion is associated with a low percentage of sugar in the blood, and we are led to wonder whether the same is true of the tired, sleepy state which supervenes when a maximum discharge of adrenalin enables the subject to have a really violent emotion. But the most curious thing is that neither the authors nor the subjects at Harvard seem to have been aware that the consumption of sugar in one form or another is very widely known as preventive and curative of fatigue. Those who believe that white lump sugar really is sugar and not some artifice of a deceitful manufacturer will take it in that convenient form; others pin their faith on a bull's-eye about the sixteenth hole; a long-distance cyclist will start out with a long stick of barley-sugar in his mouth, and gradually incorporate it; sugar cakes are a sine qua non at an athletic tea-party. We almost suspect that the Harvard Marathonians have been taking advice about their diet from physiologists—a very dangerous thing to do—instead of from their mothers. However well science may explain diet it is apt to choose it badly, because it neglects the accumulated sum of human prejudices in the field which interests mankind more than anything else.

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THE NEW CONCEPTION OF LEPROSY.

THE conception of leprosy as a progressive and inevitably fatal disease is one well established in popular and to a great extent also in medical opinion; but, as is pointed out in a recent article in the *Medical Journal of Australia* (July 11th, 1925), this conception is not necessarily founded on fact. Some 20 years ago Dr. G. H. Taylor, who is at present medical officer to the New South Wales Government railways, in a systematic investigation of the patients in the general wards of the Coast Hospital, New South Wales, pointed out that thickening and tenderness of the ulnar and peroneal nerves and slight anaesthesia of the parts supplied were not uncommon in individuals, in some of whom healed leprous lesions were found post mortem. Unfortunately, this work appears to have received little recognition in official quarters, while Dr. Taylor himself at that time did not recognise the grave danger to the community of such cases. The recent writings of E. Muir (THE LANCET, Jan. 24th, 1925, p. 160) certainly confirm much of Taylor's work, for he has demonstrated leprosy bacilli in many persons who do not manifest leprous lesions, and in others who appear to recover spontaneously. It therefore becomes apparent that Dr. Taylor's original conception of the disease is one of considerable historical value.

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[1] S. A. Levine, Burgess Gordon, and C. L. Derrick: Some Changes in the Chemical Constituents of the Blood following a Marathon Race. Jour. Amer. Med. Assoc., 1924, lxxxii., 1778.

Annotations.

"Ne quid nimis."

THE NEW TUBERCULOSIS ORDERS.

STATISTICS compiled by Dr. Stanley Griffiths, of Cambridge, and other workers, both medical and veterinary, have demonstrated beyond dispute the dangers to child-life in this country from tuberculous milk, and for a long time it has been a crying disgrace that such milk should be sold without restriction. The situation will be somewhat improved from the first day of the present month onwards, for on that date an Order of the Ministry of Agriculture became law, by which the cow with the tuberculous udder (and its equally dangerous "visibly infected companion") is marked down for immediate destruction. For a long time the veterinary profession has, through the agency of the National Veterinary Association and its branches, been forwarding resolutions to the Ministry of Agriculture, the Ministry of Health, and other authoritative bodies asking that power might be given for the destruction of this very obvious source of danger, not only to its own kind, but also to man. The Animal Diseases Tuberculosis Order, 1925, illustrates well the value of coöperation between the human and the veterinary branches of medicine; the former to control the food of man and the latter to inspect and deal with its source of origin. Of the million tuberculous cows or thereabouts in Great Britain not all are used for dairy purposes, and those which are free from tubercle of the udder may not be an immediate source of danger to the milk consumer; yet at any moment the tuberculous dairy cow may become infected in its udder and pass on living tubercle bacilli in its milk. Under the terms of this Order every person having in his possession or under his charge (1) any cow which is, or appears to be, suffering from tuberculosis of the udder, indurated udder, or other chronic disease of the udder; or (2) any bovine animal which is, or appears to be, suffering from tuberculous emaciation; or (3) any bovine animal which is suffering from a chronic cough and showing definite clinical signs of tuberculosis, shall without avoidable delay give information of the fact to a constable of the police force for the area wherein the animal is, or to an inspector of the local authority, and the constable or inspector shall forthwith transmit the information to the local authority. The veterinary inspector is then empowered to order the destruction of the animal, allowing the owner a fair and mutually agreed sum as compensation. The premises are then dealt with as infected places, and the remainder of the herd also come under inspection. The main point, however, is that the cow with the tuberculous udder, and the cow which is obviously the subject of a general infection, is destroyed, instead of being, as was the case prior to the enforcement of this Act, allowed to be sold, either privately or in the open market, to disseminate her myriads of tubercle bacilli broadcast amongst her neighbours. The September issue of the *Veterinary Journal*, which is entirely devoted to public health work, contains an article by Prof. Gofton, chief veterinary officer to the City of Edinburgh, on the position of the veterinary profession in Scotland in regard to the inspection of milk and meat. Scotland has fully recognised the fact that it is the veterinary surgeon with his professional training in the diseases of animals who is the proper person to give an opinion as to when the cow and its products are suitable or otherwise for the food of man. The Public Health of Scotland Act, 1897, opened up the way for the utilisation of the veterinary surgeon in such work. The Milk and Dairies (Scotland) Act of 1914 imposed on him wider and more important duties in supervising the milk-supply, and a reinforcement of this Act, which also came into force on Sept. 1st last, gives the veterinary officer in Scotland power to order the destruction, not only of the cow with the tuberculous udder, but of any cow which is emaciated, has a chronic cough, or other symptom of severe tuberculosis.

SANITATION PAYS.

IN the annual report of the medical officer of health of the Port of Liverpool, a note on which we publish to-day, it is observed that the rat inspector is keeping down rat harbourage about the docks, that this involves some trouble and expense, but that some of the officials "even admit that it pays." In the July number of the *Military Surgeon* is a paper by Colonel H. C. Fisher, Medical Corps, U.S. Army, about the sanitary effect on the world of the methodical medical regulation of ships passing through the Panama Canal. He notes the educational effect of the risk of quarantine on neighbouring ports and on shipmasters. The former clean up their ports, the latter ask for rat fumigation, as they have now learned the comfort of being free of rats and other vermin. He adds, "We are receiving . . . words of commendation from shipping interests for the work done . . . shipping is realising that sanitation pays." Sir Malcolm Watson[1] calculated that certain estates in Malaya, employing 29,068 coolies, saved, through malaria prevention, £114,000 in one year, almost £4 per coolie, or 2*d.* per pound, or £3 10*s.* per acre on the cost of their rubber. It was estimated in the war that every man dead or invalided home from Palestine cost the nation £1000 for treatment and replacement. We have ourselves remarked that Lord Allenby's break through in 1918 was only made possible by reason of the malaria prevention of the preceding six months, and that to prevent the expected 60,000 fever cases due that autumn among the 70,000 men of that army did, in fact, cost only £40,000 (12*s.* per man), while treatment of the 60,000 would have cost £1 apiece for quinine alone. All who practise medicine have no doubt that sanitation pays, but there is still want of more economic and statistical teaching to drive this fact home into the minds of the public and of administrators at home. It is more fully grasped in the Empire overseas. Happily, the recent Public Health Act gave local authorities in this country greatly increased power to issue propaganda on health questions.

COLON LAVAGE.

ALTHOUGH injection of water into the bowel is an old and well-established medical practice the present technique of intestinal lavage is comparatively recent. The method known in England as the Plombières treatment was introduced by Dr. Maurice de Langenhagen about 27 years ago for the relief of muco-membranous colitis, and sprang into immediate popularity; since then, however, it has fallen into the disrepute which inevitably awaits a remedy too suddenly fashionable. Much criticism has almost led to its disuse in France; but in England the treatment retains many advocates, and is practised at Bath, Harrogate, Buxton, Llandrindod Wells, and other spas. At Harrogate, for instance, over 127,000 treatments have been given in the past ten years. Some interest will therefore be felt in the considered opinions, or "second thoughts," which Dr. de Langenhagen contributes to a symposium on Colon Lavage in the August issue of the *Archives of Medical Hydrology*. He attributes the failure of the treatment in the hands of his critics to a misunderstanding of his aims and technique. Lavage in colitis is to be regarded as essentially a *sedative* measure. The fluid is intended to act, not as an evacuant, but as an internal bath, which clears away mucus, reduces congestion at the orifices of glands, washes the mucous membrane, and reduces the excitability of nerve-endings. Any method which produces spasm or pain is inappropriate. The bowel is to be "persuaded" rather than stimulated, and to this end the injections must be small and must be made very slowly and at low pressure (12–16 inches). He recommends the use of weak (hypotonic) natural mineral waters, such as those of Plombières or Bath, or of plain boiled water with or without small quantities of common salt (7 per 1000) or bicarbonate of soda in solution. Medicated injections or strong mineral waters should not be employed, as they are likely to irritate the bowel. Two consecutive injections are given at a temperature of 110°–115° F., the first being rejected by the patient and the second retained for a few minutes. A sedative thermal bath or a warm application to the abdomen follows, and the treatment is not given more frequently than once every two or three days. Dr. de Langenhagen claims a measure of success for this treatment in at least 70 per cent. of cases of colitis, and whilst admitting that a certain number of people, perhaps 6 per cent., are intolerant of rectal injections—and in such cases they must be abandoned—he disagrees with those who say that lavage leads to constipation and atony, softens the intestinal wall, and increases the flow of mucus. Given with discretion, the treatment is neither dangerous nor hurtful. Another contributor to the symposium is Sir William Willcox, who states that he has found lavage of very great value in chronic colitis, and as a supplementary treatment in systemic diseases, such as arthritis and diabetes, in which colon toxæmia is an important causal factor. It may usefully be employed in private practice, and can be given by any intelligent nurse. Further contributors, describing the methods in use at Buxton, Harrogate, Bath, Chatel-Guyon, and other places, reveal a lack of unanimity which lends force to the plea that practitioners should carefully consider what may be the presumptive signs of intestinal toxæmia which justify colon lavage; how far liquefaction of the bowel contents affects toxin absorption; which cases require sedative and which require tonic lavage; and, lastly, what is the danger in any given case of adding to the morbid impressions of a nervous patient by local treatment.

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[1] Sir M. Watson: The Prevention of Malaria in the Federated Malay States, second edition, pp. 155–6. Murray. 1921.

LATHYRISM.

OF the forms of chronic poisoning with grain and vegetable food ergotism is probably the best known and most widely studied, although its occurrence, except in parts of central Europe, is something of a rarity. In certain districts in India, however, another form of grain poisoning, lathyrism, occurs with comparative frequency, and the disease has also been reported from Algiers, France, and Persia. This disorder, characterised by a spastic spinal paralysis, is usually ascribed to chronic poisoning by various kinds of common pulse, *Lathyrus sativus*, but recent research work by L. A. P. Anderson, A. Howard, and J. L. Simonsen [1] has shown in a striking manner that this is not the case. These workers had been struck with the fact that despite a popular theory associating lathyrism with an alkaloid in the seeds of *khesari*, the vernacular name for pulse, various chemical analyses of the seeds had given differing constitutions, some observers failing completely to find any poisonous bases in these seeds, while feeding experiments on animals had also given conflicting results. On further investigation it was found that the lathyrus crop was always contaminated with leguminous weeds, which were reaped and threshed with the pulse proper and the seeds of the contaminating plants very closely resemble the pulse seeds in appearance. A vetch, known as *akta*, occurring in samples of pulse from regions where lathyrism was prevalent, was particularly investigated, and it was discovered that while botanically pure *khesari* or lathyrus seeds contained no alkaloidal substances and were without any deleterious effects on animals, the reverse was the case when dealing with *akta*. Other weeds occurring in *khesari* fields proved harmless, so investigations were confined to the *akta* seeds. Chemical analysis showed that these seeds contained a substance called vicianin, closely related to amygdalin, and also a glucoside, vicin, which, on hydrolysis, yielded a sugar and a base divicine which proved to be an oxy-amino derivative of pyrimidine. Feeding experiments on ducks and monkeys were carried out, using pure *khesari* and contaminated specimens containing varying percentages of *akta*. The ducks received raw grain, both fresh and germinating, and the monkeys cooked pulse, various preparations being used to imitate the diet of the Indians. Careful control experiments were made to exclude starvation and vitamin deficiency, and the workers pronounce themselves absolutely satisfied that *akta* is the substance responsible for the production of symptoms in animals closely resembling lathyrism in humans. Divicine prepared by hydrolysis from vicin is toxic to animals in doses of from 0·4 mg. to 0·5 mg. per gramme of body-weight, and this is looked upon as the poisonous substance in *akta* responsible for the disease. It appears to be a comparatively simple matter to eliminate the contaminating weed from the lathyrus crop by a process of sowing *khesari* in lines a foot apart and removing the seedlings of *akta* in the early stages of growth. It should therefore be easy to prevent the occurrence of lathyrism in those districts where this disease has up to now been not infrequently seen.

AN AMERICAN CONVALESCENT HOME.

NEAR the city of White Plains, New York, there was established in 1915 an institution called the Winifred Burke Relief Foundation. Besides serving as a convalescent home for those discharged from hospitals, it was designed by the founder "for the relief of worthy men and women who, notwithstanding their willingness to support themselves, have become wholly or partly unable to do so by reason of sickness or misfortune." An account of the Foundation and its work has been published in THE LANCET,[1] and in the sixth report,[2] which has now been issued, there may be detected an undiminished ardour not wholly obscured to English ears by an unfamiliar vocabulary. The centre of the work is the home itself. It comprises 11 buildings standing in 60 acres of ground, and containing about 300 beds, which are divided amongst men, women, and the adolescent. The vast majority of the patients come from hospitals and dispensaries, but others are sent by private doctors, employers, and friends. A convalescent home of this kind, according to the report, "is an institution in the country which receives post-ill and preventive ambulant patients on medical diagnosis, and gives a short rest-exercise physical-mental upbuilding with nurse-medical care, sufficient to return them to normal or substandard life activities." This definition indicates one of the features which makes this home especially interesting. It aims at prevention as well as cure, and the directors believe that the pre-tuberculous, early cardiac cases, and many of those suffering from the milder grades of mental disorder and neurasthenia should be treated in such institutions. Twenty-five per cent. of the cases are chronic; but this is not considered good reason why they should be deprived of what benefit they can get. Convalescent homes on these lines are regarded by the Foundation as one of the most urgent medical needs of the United States, and it is suggested that they will solve a large number of problems. What, then, is the treatment at this model institution? "Homelikeness is not sought . . . a measure of frank institutionalism, with its democracy and anti-neurotic momentum, gives superior results." The individual is saved from his friends; "doctoring and doctor-thinking" are discouraged, and the attendants devote themselves to "courage therapy." Carefully prescribed games are interspersed with rest, and as the patients improve they undertake work in the garden or workshops, again according to prescription. They have to do none of the housework, and in this the institution compares favourably with some English convalescent homes, where tired mothers find a duller repetition of their home duties. In a word, it is clear that the success or failure of such a home depends not so much on organisation as on atmosphere. If indeed the heterogeneous patients "return to the surgeon and the social adjuster erect, colourful, courageous, crutch and whim-free persons," then the triumph is a personal triumph for the members of the staff. To read statistics of admission to this institution is to gain some idea of the number of foreigners in New York, and it is impossible not to sympathise with the ambition to make these largely undesirable elements fusible. In a convalescent home there exist golden opportunities to instil American ideals, and these are not missed at White Plains. But apart from this the Foundation is an interesting experiment, and is designed to solve problems which are English as well as American.

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[1] Indian Jour. Med. Research, 1925, xii., 613.

[1] THE LANCET, 1923, ii., 491.

[2] The Winifred Masterson Burke Relief Foundation, White Plains, N.Y., U.S.A.

SCANDINAVIAN VIEWS ON RENAL TUBERCULOSIS.

IN 1923, at the fourteenth meeting of the Scandinavian Surgical Society, it was decided that in the interval between this meeting and the next, to be held in the summer of 1925, Scandinavian surgeons should collect their cases of renal tuberculosis and should provide a digest thereof for discussion at the fifteenth meeting. A scheme was drawn up, so that the same data should be provided by the different Scandinavian countries, and while Prof. P. Bull undertook to collect the cases from Norway, Prof. Rovsing was responsible for Denmark, Prof. G. Ekehorn for Sweden, and Prof. Runeberg for Finland. In a communication we have received from Prof. Bull we learn that the fifteenth meeting took place between June 25th and 27th of this year in Copenhagen. The papers which were read on this occasion (some of which he has kindly sent us) give a very favourable impression of the value of this system of pooling the experiences of a great number of surgeons who have been given plenty of time to collect and study their material. Prof. Bull's Norwegian material consisted of 580 cases collected by 21 surgeons; Prof. Rovsing's Danish cases numbered 632, provided by 31 different hospitals; Prof. Ekehorn's Swedish cases numbered 1498, reported from 22 different hospitals, and Prof. Runeberg's Finnish cases numbered 213, all of which hailed from Helsingfors. It is interesting to note how uniform is the experience of practically every surgeon in Scandinavia with regard to certain features of tuberculosis of the urinary tract. It would seem, for example, that in every Scandinavian country this is a disease which is confined to the third and fourth decades of life in most cases. In Prof. Bull's material, for instance, 74·7 per cent. of all the cases were observed in this age-period, and much the same observation was made in the other Scandinavian countries. His ratio of males to females was as 59 to 41, while the corresponding ratio for the Swedish cases was as 57·6 to 42·4. Prof. Bull found that 40 per cent. of his male patients suffered from tuberculosis of the reproductive system, but, curiously enough, this complication of the tuberculosis of the urinary tract did not greatly impair the prognosis. With regard to the complications of nephrectomy, he found infection of the operation wound, which occurred in 27 per cent., the most important, and he emphasises the seriousness of any step which, when taken during the operation, is calculated to infect the wound with tubercle bacilli. Recovery could be claimed for 51·6 per cent. of his cases in which nephrectomy was performed. We have in these lines given but the scantiest of summaries of these important papers, the contents of which might justly be called encyclopædic. It is to be hoped that means will be found to provide a translation of them into English, French, or German, so that the information they contain need not be limited to the countries of their origin.

THE RÔLE OF THE BLOOD PLATELET.

CONCERNING the source, nature, and function of the blood platelet many theories have been put forward. It has been suggested that it is an entirely independent cell, the function of which is at present almost unknown (Achard, Morawitz, Deetjen, Aynaud, and others); that it is the primordial or embryonal stage of the red corpuscle, a view maintained by Hayem and his followers; or that it is a simple corpuscular element or rudimentary cell—one, however, which plays an important part in the coagulation of the blood, the retraction of the clot, and, as some recent researches seem to show, in the processes concerned with immunity. Again, it may be only a fragmentary protoplasmic residuum of other blood elements, or perhaps a pure artefact which has no existence in the circulating blood. In the course of a thesis[1] published at Rio de Janeiro, Dr. Arnaldo Cavalcanti Marques reviews each of these theories and unhesitatingly rejects the last. After considering the physicochemical properties, physiological functions, and probable source of the platelets, he discusses their relation to various pathological states, including internal parasitic affections, suppuration, protozoal infections, affections of the blood and blood-forming organs, and shock conditions. The following statement on variations in the platelet count due to certain morbid conditions is given as representing conclusions with which most observers would agree, and which are confirmed by Dr. Marques's own work. An excess of platelets is present in the blood (hyperglobulinæmia) in intestinal verminoses, suppurations, recovery from loss of blood (after a certain lapse of time from the loss), convalescence from acute illnesses, and in the course of chronic disease. The reverse condition (hypoglobulinæmia) is found in the acute stage of hæmorrhagic purpura, in pernicious anæmia, and in the active period of enteric fever. Dr. Marques considers, however, that globulinometry, or platelet counting, is at present of little value in diagnosis or prognosis. None of the methods used for the count (Hayem, Aynaud, Fusari, Giudiceandrea) are free from the liability to serious error, though those of Hayem and Aynaud, singly or combined, furnish approximate results accurate enough for clinical use. He is convinced that the blood platelet plays a very important part in therapeutics.

NEW YORK ACADEMY OF MEDICINE.

THE Academy of Medicine, which is about to move into a new building in Fifth Avenue, was founded in 1846. Since that time it has fulfilled its original objects by holding regular meetings, by maintaining a large library, and by interesting itself in public health problems. At first the Academy was homeless and used for its gatherings the premises of other medical institutions, but in 1875 it bought a house of its own, and in 1890 moved into its present quarters. It has now 12 sections which meet for discussions or to hear papers by distinguished visitors, and its increasing membership and activities long ago made it evident that the present buildings were inadequate. The library, which is the only public medical library in New York and contains over 140,000 books, cannot expand as it should, and its reorganisation has had to be deferred until new premises are found. This state of affairs attracted the attention of the Carnegie Corporation and the Rockefeller Foundation. They appreciated the potentialities of the Academy as an educational centre and decided to devote large sums to its development. About £300,000 has been given by the Carnegie Corporation for building purposes, and the Rockefeller Foundation has contributed towards the endowment fund of £500,000. These gifts are conditional, however, on an expansion of activities on rather new lines. A full-time director of the Academy's work has been appointed; the library service is to be developed, and a bureau of clinical information under the direction of a committee on public education is to be set up. Public health work at the Academy has hitherto been in charge of a committee which has made important studies in communicable diseases, quarantine, hospitals, dispensaries, day nurseries, convalescent homes, and the problems of chronic disease. That this side of the Academy's work will not be neglected is evident from the appointment as first director of Dr. Linsey R. Williams, who was Deputy Commissioner of Health for the State of New York, and for three years was at the head of the Rockefeller Commission on Tuberculosis in France. Associated with him in the reorganisation and management of the Academy will be Colonel Frederick P. Reynolds, M.D., the head of the Committee on Public Health, and Dr. E. H. Lewinski Corwin who has for some time been connected with the library. From the British point of view one of the most interesting features of the reorganisation is the proposed clinical information bureau, which is to publish a monthly bulletin. In travelling to or from Europe, American and foreign doctors generally pass through New York, and the bureau is to be a clearing house of information on every kind of medical study available in the States, and also on the facilities existing in Europe. New York itself, with its huge foreign population, is a big field for study and research, and it is felt that by coördination and information this field can be made to yield a far larger harvest. The Academy intends to supply efficient machinery.

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[1] Sobre o globulino e sua importancia em clinica (concerning the blood platelet and its clinical importance). By Dr. Arnaldo Cavalcanti Marques. Rio de Janeiro: Typ. Revista dos Tribunaes. 1924. Pp. 164 and 3 plates.

IODINE AND ENDEMIC GOITRE.

THE successful results obtained in different parts of the world in the treatment of endemic goitre by means of iodine are known, but the ætiology of the disease is not completely cleared up, and it seems to be going too far, as some authors have done, to say that a geographical deficiency of iodine in the air, food, or water is the specific cause of endemic goitre. The more information which can be obtained from different situations as to the distribution of this disease and the relation between this and iodine deficiency, the easier it will become to prove or disprove such a sweeping statement. Prof. D. B. Blacklock has now reported his observations on the occurrence of endemic goitre in Sierra Leone.[1] He endeavoured to put to the test the theory of a geographical distribution in relation to goitre by tracing the Bagwe river up to its sources in the mountains. Goitre occurs endemically over the area drained by this river, and it was expected that since a natural deficiency in iodine in the soil and water would probably be greater at higher levels, a definite increase in the incidence of goitre would be found in these upper regions. The whole expedition occupied three months and had to be done on foot, and so frequently was a village hut the only accommodation at the various stopping places that there was ample opportunity for observing the sanitary conditions of the population at close quarters. The total number of cases examined for goitre amounted to 2405, which included inhabitants of 37 villages. The incidence of goitre amounted to 10 per cent. among the males and 23 per cent. among the females examined. From the geographical point of view the results were interesting. At lower levels along the course of the river goitre was found to be prevalent, while it was absent at the highest villages; but the whole distribution was so irregular that it became necessary to search for some other factor in its causation. It was discovered that in certain villages pollution of the water by excreta occurred to a much higher degree than in others, and this marked pollution was associated with the highest goitre rates. Prof. Blacklock points out that mere deficiency of iodine in an otherwise unimpeachable water-supply does, no doubt, account for the occurrence of endemic goitre in certain areas, as in many parts of America, but at the same time he emphasises the fact that such iodine deficiency may, in other countries, be artificially produced by contamination. He suggests that the fæces which pollute the water-supply in the district he was investigating may fix or deviate the iodine in some way, or, alternatively, that "fæcal substances or substances formed from fæces by bacteria in the water before ingestion are absorbed and alter the metabolism in such a way as to increase the iodine requirement," thus producing a relative deficiency of this element. As Sir George Newman said in his recent survey of public health, the question of causation is at least a two-sided one, deficiency of iodine intake on the one hand and an abnormal condition preventing its proper assimilation on the other.

Although these and similar hypotheses have been suggested by many workers, it must be borne in mind there is little experimental proof to base conclusions upon. It has been shown that inorganic iodine is readily absorbed into the circulation, and is stored in the thyroid, mainly in the form of organic iodine compounds. However attractive these theories may be, they must be regarded with suspicion until definite chemical and experimental evidence is adduced to support them. It is important that a careful study of all suspected waters with a regard to their iodine content be made before any conclusions can be reached on this question. This has already been extensively investigated in America, but it also requires to be done in regions where the pollution factor is more prevalent. Dolbey and Omar have shown[2] that in certain of the Nile villages where pollution is present to a marked degree goitre is prevalent, although the iodine content of Nile water is higher than that of the metropolitan water-supply of London. It would appear that in Sierra Leone also the prevention of endemic goitre is more closely bound up with sanitation than with the administration of iodine.

The investigation of the distribution of endemic goitre in America is gradually being extended to cover most of the country, and a report[3] has been published on the occurrence of this disease in Colorado. Various surveys have been made from time to time in this State in approximately 57 localities, and on the whole the prevalence of goitre appeared to be greater in the western part of the State, where drinking water is obtained from mountain streams and not from wells as in the eastern districts. No information as to the iodine content of the different waters is, however, available, and in the report it is stated that "it is problematical whether the source of the drinking water has any considerable bearing upon the occurrence of endemic goitre in Colorado, except in so far as the water may be deficient in iodine." The combined results of four different surveys in Colorado, in which nearly 4000 boys and over 13,000 girls were examined, showed that 25·6 per cent. of the boys and 30·1 per cent. of the girls had some degree of thyroid enlargement. These results show a much smaller difference between the prevalence rates for boys and girls than in other parts of the country. For the moment the usual methods of iodine prophylaxis and treatment are to be instituted, but a more intensive survey of the State is suggested to discover the nature of the iodine deficiencies in different localities and their relation to the prevalence of goitre. All such information is of the greatest importance if the problem of the ætiology of endemic goitre is to be solved in as satisfactory a manner as the problem of its prevention appears to have been.

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[1] Proc. Royal Soc. Trop. Med., xviii., No. 8, 395.

[2] Dolbey and Omar: THE LANCET, 1924, ii., 610.

[3] Public Health Reports, Washington, Jan. 2nd, 1925, No. 1, vol. xl.

A SCHEME OF MIDDLE-CLASS INSURANCE.

A scheme of insurance has just been proposed which is likely to reduce the anxieties of illness for the middle-class family. There is no need again to point out that there is a most important class of the community which has in sickness neither the support of riches nor of the State. It is sufficiently obvious. Practically all the contributory hospital schemes restrict their benefits to those of fairly small income, and as the costs of more complicated medical methods grow larger they form an increasingly formidable sword of Damocles which in suspension whitens the hair and in falling may wreck the home. To insure each member of a family singly against the possibility of disease, in such a way as to cover all medical fees and nursing, is practically impossible for the average man with a small income. Moreover, although a person insured for £6 per week—at a premium of perhaps £6 per annum—may be entitled to claim £30 for disablement by an illness requiring operative treatment, the expense of the operation itself may be as much as £100–£200. The Family Medical Services, Ltd., has issued at Manchester a scheme intended to appeal to middle-class householders who have felt this difficulty. The proposers have the support and advice of Sir William Milligan, and the Association itself has no interest financially in the results of the insurance, which is necessarily speculative in an untried field like this. The policies are underwritten at Lloyd's, so that the security is unimpeachable, and, in contrast to those of some mutual associations which pay benefit only if funds permit, the policies of the Family Medical Services will be definite contracts. Two schemes are issued, the first of which covers only general practitioners' fees, and the second covers, in addition, specialists' fees and operation expenses. It is an essential feature of the scheme that the interests of the underwriters and the insured should be identical, so that the first few pounds paid out in fees, and one-fifth of the operation costs, are borne by the latter. All members of a family residing at home who are eligible must be offered for insurance, and the premiums charged vary, of course, with the number in the family and with the scale of fees and operation charges insured against. No insurance is accepted at any age over 50 at entry, and no child is included of less than 2 years old. At other ages below 12 and above 40 the premiums are larger, and there are certain excepted illnesses including those not common to both sexes; but these are merely the reservations. The benefits are undoubted. The rates charged mean that the average man can secure the services of his own general practitioner, subject to certain conditions, at from 3½*d.* to 9½*d.* a week per member of his family, and can cover four-fifths of the expenses of possible operations for a further 3*d.* to 9*d.* a week. The cost of the minor yet expensive surgery which corrects smaller defects in children, and is not so much vital as advisable, will also be defrayed under this scheme, and this will probably cause the householder to look less gloomily on such interference. The issue of such policies, indeed, seems calculated to lighten a real burden. No medical examination is required, and it is only to be hoped that the terms are not so generous that they will have to be modified.

PRESERVATIVES IN FOODS.

The opponents of the new Ministry of Health Regulations, prohibiting the use of all preservatives except two specified chemicals under rigidly defined conditions, are still dissatisfied and are not only carrying out an active campaign in some of our daily papers, but are proposing to take up the question in Parliament and endeavour to obtain a modification of these regulations. In particular, persistent efforts are being made to represent the boron group of preservatives as both harmless and necessary—like the domestic cat. The subject is of great practical importance, so we make no apology for returning to it and considering the grounds upon which it is suggested the regulations should be modified. These seem to be three in number: that there is inadequate evidence that the boron preservatives are prejudicial; that their elimination will send up the price of many foods in which they are now used; and that their suppression will cause a great increase in "food poisoning."

As regards the harmfulness of boric acid and its salts, there is a respectable body of evidence that when they are present in considerable quantity harm may result from their consumption, and the Departmental Committee on the Use of Preservatives, after carefully considering the evidence, came to a definite opinion on the subject. It is really beside the point to assert that the small quantities necessary for preservation have not been shown to be harmful, since experience has shown that these limits are not maintained, and when the salts are widely used they may be consumed almost daily in a number of articles, thus giving a considerable dose of a substance which is comparatively slowly excreted. The real point at issue, however, is that the use of preservatives is a substitute for cleanliness, and that their addition allows food to be collected, prepared, or stored under conditions which are prejudicial to health. The methods used are only practicable because the added preservative prevents the food decomposing, as it otherwise would under these unhygienic conditions. Their immediate suppression would no doubt dislocate trade and so cause a temporary rise in prices, but this point has not been overlooked in the regulations, which do not come into force immediately, not, in fact, until 1927. Scientific investigators are unanimous that cold storage is a preservative greatly superior to added chemicals and that it can with advantage to public health replace them. There is no trustworthy evidence that such a change will cause a general increase in cost, although certain special types of food may be affected.

The suggestion that the suppression of preservatives will cause an increase of food poisoning is hard to understand, for there does not appear to be a single argument to support it. Presumably the idea is that without preservatives more food will be eaten in a tainted condition, since there will be so much more food of this character thrown upon the market. The use of cleanliness and cold storage instead of chemical additions will probably diminish the quantity of food showing early decomposition changes, since the general effect will be a much higher standard of purity. This view shows a singular lack of appreciation of the cause of food poisoning, which has nothing whatever to do with tainted food, but is a definite infection of the food with specific bacilli belonging to the Salmonella and other groups. There is no evidence that boric acid or other chemical preservative has a selective action on these bacilli and will prevent this development, except in so far as their general action is antiseptic. On the other hand, the prevailing factor in the causation of these outbreaks is a defective standard of cleanliness and care of the food which has allowed the specific bacilli to gain access to it and contaminate it. A heightened standard of cleanliness is one of our most important preventive measures.

The Royal Society of Medicine will hold its first social evening of the session at 1, Wimpole-street, London, W. 1, on Tuesday, Oct. 27th.

Malton: A Hospital for 66 Parishes.—For the last 20 years the little town of Malton, in the North Riding, has possessed an inadequate cottage hospital housed in a converted private residence. A new building is now about to be erected upon an elevated site given by Earl Fitzwilliam, with larger accommodation and better facilities for dealing with the cases that come in from the 66 parishes in the district of which Malton is the centre, many of which at present have to be sent to Leeds. The new Malton, Norton and District Cottage Hospital will have a large operating theatre with the necessary annexes and an X ray room.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXXXIX.—THE SURGICAL TREATMENT OF EXOPHTHALMIC GOITRE.

PART I.—THE DECISION TO OPERATE.

IN dealing with a patient suffering from exophthalmic goitre or other form of hyperthyroidism, the practitioner will always have in mind the general plan of treatment set forth by Prof. G. R. Murray in this series in THE LANCET of August 11th, 1923, and by Sir Hector Mackenzie[1] and Sir William Hale-White.[2] Elimination of septic foci, rest, diet, drugs, X ray and radium treatment, each has its appropriate place, and in the majority of cases does the patient some good. For those patients who respond well to these measures the question of surgical treatment does not occur. Various reasons may, however, be present to cause the question of operation to be raised, and Prof. Murray has indicated them shortly in his concluding paragraph (p. 293).

A discussion of these reasons and of the methods by which the desired result may be achieved with the minimum risk to the patient will form the subject of this article. It is to be understood that the procedures indicated are only to be entertained when therapeutic measures have not been successful; or when, for other reasons, it is deemed inadvisable to delay.

At what Stage to Operate.

At what stage of the disease, then, should operation be performed? The chief consideration will be the fact that the patient is not improving—or is actually losing ground—at the end of a period of treatment, the length of which must vary according to the social position or the family responsibilities of the individual. No actual time limit can be laid down, though it is certain that operation is very rarely called for within the first six months of the disease. There is, however, a limit to the time during which a heart can endure the constant toxicity without failing in some respect, and when the failure begins it is usually progressive; also exophthalmos may become so extreme that its ultimate disappearance is unlikely, or it may lead to corneal ulceration; or, again, the restlessness associated with the disease may appear to be progressing towards mental instability. If conditions such as these are present when a patient first comes under the care of a practitioner, it is a matter for consideration whether there should be any delay in operating except such as is necessary for thorough investigation. Mental instability may even indicate that the time for operation has passed. If the surgeon can coöperate with a physician interested in these cases, some degree of heart failure should not be a bar to surgical intervention, for there is the certainty of great amelioration in the condition of the patient. The occurrence of corneal ulceration, due to extreme proptosis, should determine early surgical intervention, surgeon and ophthalmologist working intimately together.

The social position and family responsibilities of a patient will greatly influence a practitioner. When complications such as those indicated above threaten or are present, surgical treatment becomes imperative whatever the social position of the patient, but if the individual can afford to, and will, rest completely, there is less risk of visceral degeneration than in one who must work for a living or support a family. The time for operating on these patients can be chosen when they become weary of ill-health, or when the practitioner realises that enough time has been given to non-surgical treatment. With the poor patient the case is different. Even here operation should not be unduly hurried, but women earning their own living and working-class mothers or fathers of families can rarely rest at home, and there are not enough hospital beds available to give all of these patients continuous rest and nursing for a sufficiently long period. It is to be remembered that it is usually a matter of years and not of months. Furthermore, it is a fact that, because of this lack of facilities for rest, these patients lose ground more quickly, drift around from one out-patient department to another, with occasional periods of rest in hospital, and are not only unable to support themselves or their families, but become permanently ill. The economic factor, therefore, determines surgical treatment earlier in the less well-to-do classes of the community. A review of these factors will, in most cases, leave no doubt in a practitioner's mind when, in the patient's interest, the time has come to consider surgical intervention.

Special Operation Risks.

Such patients present some special operative risks not present in the average surgical case. The symptoms of the disease become incompatible with life if they are allowed to increase beyond a certain degree. Operation undoubtedly augments all of these, at least, temporarily. The knowledge that operation is impending, and the preparation for it, stimulate the activity of the gland, apart from the actual handling of it during operation. This cause was recently responsible for the sudden death of a young patient in the throat department of a hospital while she was waiting for her tonsils to be removed. Extreme mental unrest is a dangerous symptom. Glycosuria is not infrequently present and its type must be determined. If it can be, and is, controlled, it is not a contra-indication to operation, but if it cannot be checked operation should only be performed after careful weighing of the factors. No operation should be performed while the slightest catarrhal condition of the respiratory system is present, because the handling of the region of the laryngeal nerves and the trachea stimulates secretion and interferes with its efficient expulsion, and if catarrh has been present before operation much inconvenience and some danger result. A high basal metabolic rate, and a pulse-rate persisting at or above 130 per minute while a patient is in bed would indicate that operation should be postponed. These conditions can often be controlled temporarily, but sufficiently, to render operation safe (vide infra). Walton[3] has drawn attention to a fact recognised by all concerned—viz., that patients are decidedly more unhappy in warm weather. This is due to the fact that the skin is always hot and moist, and so heat cannot be eliminated rapidly enough for comfort or safety. Therefore no operation should be performed during a hot spell. C. Mayo has pointed out that it is not an emergency operation, and patients should always await the most suitable time. Lastly, loss of cardiac compensation brings its own dangers, and patients in this condition should only be handled surgically in coöperation with a physician who is accustomed to deal with this type of case, and whose judgment can be relied upon to determine what can and what cannot be done.

Preparation for Operation.

In spite of the general agreement that operation is only to be considered after efficient medical treatment has been carried out, it is essential—in the light of constant personal experience—to re-state the imperative necessity of attention to teeth and tonsils before operation. The frequency with which patients come for operation with large septic tonsils or septic teeth still present shows that the importance of buccal hygiene is not yet sufficiently appreciated by practitioners as being one of the chief factors in medical treatment.

A patient should be prepared to spend at least seven or ten days in bed before operation. During the first two days the pulse-rate is recorded while the patient is kept at complete rest, but without medication. This shows the drop that occurs as the result of rest and freedom from outside worries. Physical examination, measurement of basal metabolic rate, and urinalysis are carried out. Then iodine medication is given (Plummer,[4] Mellanby,[5] Fraser[6]), Lugol's solution, ♏ x., once a day being sufficient; often too much is given. The resulting drop in the pulse-rate and in the basal metabolic rate is definite, and reaches its maximum in about a week, and the excitability of the patient is usually decreased. The vascularity of the gland and the danger of operation are also reduced, so that the operative death-rate has been brought down from about 4 per cent. to nearer 1 per cent. in the hands of surgeons accustomed to operate upon cases of average severity. This does not mean that a severe case of Graves's disease, or an ordinary case which has undergone an exacerbation of the condition, may be given iodine treatment for a week and then operated upon with impunity; but it is a fact that some patients, who have not responded to rest and the drugs commonly used, do improve in a remarkable manner with small doses of iodine, and have been rendered fit for operation. Iodine must not be given unless the patient is in bed. Larger doses do harm, and no good purpose is served by continued administration. During these ten days of preparation the surgeon is gaining the confidence of his patient.

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[1] Mackenzie, Sir Hector: System of Medicine, Allbutt and Rolleston, vol. iv., part 1, 1908, pp. 383, 384.

[2] Hale-White, Sir William: Proceedings of the Royal Society of Medicine, Surgical Section, 1912, v., 81.

[3] Walton, A. J.: THE LANCET, 1923, i., 53.

T. P. DUNHILL, C.M.G., M.D. Melb.,
Assistant Director, Surgical Professorial Unit, and Assistant Surgeon to St. Bartholomew's Hospital.

(To be concluded.)

Special Articles.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 620.)

VIEWS OF TRADE-UNIONS.

(App. XCII. and Q. 21828–22183.)

EVIDENCE was submitted on behalf of the National Association of Trade Union Approved Societies by Mr. F. Kershaw, Mr. E. Corbey, Mr. G. W. Canter, and Mr. G. P. Blizard.

This Association has an aggregate membership of 1,162,130 insured persons. With regard to the working of the Approved Society system it was stated that 12 years' administration of the Act has led to the conclusion that the "fraternal" factor is a diminishing quantity where it does exist, and that it does not exist at all in the case of vast numbers of insured persons. Further—

> Under the present system the "unhealthy" society cannot provide additional benefits, while the "healthy" society can be made still more healthy by the treatment benefits provided through its surplus, which in their turn will produce still greater surpluses in future years.

As to medical benefit, the view of the Association is that while the panel doctors have, as a whole, rendered competent and conscientious service, the limitation of the range of service constitutes a grave defect, and that—

> The term "medical benefit" should mean everything that medical and surgical science can command for the prevention or cure of sickness, or, in terms of the individual, everything which the medical profession considers necessary in order to restore a sick person to health.

Medical benefit should also be extended to wives and dependants and the cost of the enlarged service met by contributions, as at present, and by grants from the local authorities, and also by economies to be effected through coördination.

If a valuable medical service were provided, the Trade Union Approved Societies were not afraid to go to their members for essential contributions.

> (Q. 22048.) *Do you think that under the present conditions of unemployment and depression in industry, and having regard to the new contributions and grant charges proposed under the Widows, Orphans and Old Age Pensions Bill, an increase in the charges for the Health Insurance Scheme is justifiable?*—We note that the question, before it was amended to incorporate pensions, has been put to many previous witnesses. Our reply at the time our evidence was decided upon would have been: Give us value for money and we are not afraid of the decision of our members.

It was not unreasonable to assume that if the trade-unions had recommended an increase of 8*d.* in the contributions—the amount of the new charge for pensions insurance—they would have been considered extravagant dreamers. While not recommending the abolition of Approved Societies, mainly because such an attempted step would give rise to insuperable political difficulties, the witnesses recommended that they should be confined to cash services only.

With regard to a whole-time salaried medical service the witnesses said that this was no essential part of their scheme, but they submitted that the history and traditions of the medical profession showed that it stands out as one in which devotion to duty, to science, and to public welfare takes first place, and they could not agree that medical men would change their characters "if they became public servants instead of the servants of the public."

All hospitals, it was contended, should be organised under one public authority with allied treatment centres. The Labour Party would give voluntary hospitals the option of being taken over by the health authorities entirely or of receiving grants from public funds conditional on efficiency. Pressure on hospital beds in the towns should be relieved by the transfer of convalescent cases to country homes.

EVIDENCE OF APPROVED SOCIETIES.

Grand United Order of Oddfellows (App. XCV. and Q. 22405–22597).—This evidence, which was given by Mr. W. McLean, accountant to this Society, was mainly on questions of machinery as affecting Approved Societies, and included a recommendation that dental treatment should be provided as a general statutory benefit to be administered by the Approved Societies, and a suggestion that the Minister's Consultative Council should be reconstituted on a more representative basis.

United Patriots' National Benefit Society and International Society of Medical Hydrology (App. XCVI. and Q. 22598–22730).—The evidence given jointly by these bodies was confined to the question of spa treatment, and was submitted by Mr. J. M. Roberts, Dr. Fortescue Fox, and Mr. John Halton. The Approved Society has been impressed by the large proportion of its own sickness claims due to rheumatism and allied disorders. They also quoted the Ministry of Health's report, as follows:—

> Nearly one-sixth of the industrial invalidity of this country is due to diseases classified as "rheumatic." Each year these diseases are costing Approved Societies nearly £2,000,000 in sick benefit, and the nation over 3,000,000 weeks of work from the insured population alone.

The importance of spa treatment was urged upon the Commission, and it was stated that the spas forming the British Spa Federation were prepared to put into operation a scheme for the treatment of insured persons. It was suggested that while such a scheme at the outset would require financial assistance from the Treasury, its cost would be reflected in large economies in sickness benefit. The suggested scheme included the certification for spa treatment by the panel doctors, examination by a small medical board at each spa, and the extension of existing accommodation by the establishment of hostels or approved lodgings.

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[4] Plummer, H. S., and Boothby, W. M.: Jour. Iowa State Med. Soc., 1924, xiv., 66.

[5] Mellanby, E., and Cowell, S. J.: Quart. Jour. Med., 1924, No. 69, p. 1.

[6] Fraser, Prof. F. R.: Brit. Med. Jour., 1925, i., 1.

* References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1369.

The witnesses appeared fairly confident as to the practicability of increasing the spa accommodation and the availability of the supply of waters, so as to afford adequate treatment to those of the insured population suffering from rheumatic diseases. It was thought that three-tenths of such cases were suitable for spa treatment.

Scottish Coöperative Friendly Society (App. LXXVIII. and Q. 20116–20341).—Mr. W. Thomson, secretary of this Society, gave evidence which included proposals that medical benefit should be extended to the dependants of the insured, and that sickness benefit should be raised at least to the level of unemployment benefit.

The advisability of increasing maternity benefit is doubtful unless steps were taken to limit the fee charged by doctors for attendance at confinements. In practice we understand this benefit is almost or wholly absorbed by the doctors.

Dental benefit, it was submitted, should be extended and made statutory; judging from inquiries received, optical benefit was thought to come next in popularity. It was suggested that where, on questions of medical certification, the State medical referee differed from the panel doctor, the difference, instead of being referred to arbitration, should be settled by the Board of Health bringing the parties concerned together, hearing the evidence, and deciding the matter as between the medical experts and the insured person.

(Q. 20269–70.) Would not that need a third medical man if you want an expert interpretation of the medical certificates?—I would have hopes that the two medical men, the State referee and the panel doctor, if brought together, would come to agreement.

One would have to admit he was wrong?—Yes, and one has to admit he is wrong under present circumstances.

Edinburgh Friendly Societies' Council (App. LXXXI. and Q. 20637–20759).—Mr. T. J. Addly gave evidence. This Council, representing 100,000 insured persons in Edinburgh and district, was opposed at present to the extension of the insured class, but thought that the benefits under the Act should be extended so as to include nursing, dental treatment, and the services of specialists and consultants. They were of opinion that the present method of administration by Approved Societies and Insurance Committees should be continued.

Nursing was regarded as the first essential extension, although the witness agreed that the services of specialists and consultants, as the natural complement of medical benefit, should logically come first. The Council, however, felt that these services could wait as part of an insurance scheme, because of the extent to which they were already available free to insured patients at hospitals.

Sons of Temperance (App. LXXXIX. and Q. 21305–21631).—The membership of this Society is 131,000. Evidence was given by Mr. T. W. Huntley. Recommendations with regard to specialist and consultant services included a suggestion that, in the first instance, there should be a freer and fuller use of the known abilities of those panel practitioners with exceptional qualifications. As the Regional Medical Staff of the Ministry were empowered to employ specialists in exceptional cases, it was thought that this provision might serve as the basis on which to build up such a service. Dental benefit, as a statutory benefit, was the subject of a somewhat qualified recommendation.

As regards the millions in the reserves of Approved Societies, it was stated that there was much misconception in many quarters.

As regards surpluses, similar misleading and exaggerated statements have been made. It seems to be overlooked that there are 11,000,000 or so of insured persons, and that even at the 1922 and 1923 valuations the average surplus declared as available for disposal is, roundly, £2 per insured person, and this sum is to be spread over five years.

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[*] In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247–8); The Provision of Medical Benefit (Feb. 7th, pp. 301–3; Feb. 14th, pp. 355–6; Feb. 21st, pp. 403–5); Financial Provisions of the Act (Feb. 28th, pp. 454–7); Medical Certification and the Regional Medical Staff (March 7th, pp. 505–6); The Approved Societies and the Money Benefits (March 14th, pp. 564–5; March 21st, pp. 623–4); Evidence of the Hearts of Oak Society (March 28th, pp. 677–9); Evidence of the National Conference of Industrial Assurance Approved Societies and of the Manchester Unity Approved Society (April 4th, pp. 731–3); Evidence of Independent Order of Rechabites, of National Association Friendly Society, and of Miners' Societies (April 11th, pp. 784–6); April 18th, p. 838; *Evidence of Mr. Alban Gordon* (April 18th, pp. 839–40); Evidence of Joint Committee of Approved Societies, of Stock Exchange and Lloyds' Health Insurance Societies, and of Group of Catholic Approved Societies (April 25th, pp. 889–91); Evidence of the National Insurance Beneficent Society (May 2nd, pp. 943–4); Evidence of the British Medical Association (May 9th, pp. 993–5); Evidence of the British Dental Association and other Dental Organisations (May 16th, pp. 1044–6); Evidence of the Insurance Committees (May 23rd, pp. 1097–8); Evidence of Various Approved Societies (May 30th, pp. 1155–6); Evidence of the British Medical Association (June 6th, pp. 1184–6; June 13th, pp. 1248–50; June 20th, pp. 1316–8); Evidence of other Medical Bodies (June 20th, p. 1316; June 27th, p. 1348); Individual Evidence (June 27th, p. 1348); Medical Services in the Factory, Ministry of Health Inquiry Room, Evidence of National Sailors' and Firemen's Union and of Loyal Order of Ancient Shepherds (July 4th, p. 36); Evidence of Friendly Societies' Medical Alliance, South Wales and Monmouthshire Alliance of Medical Aid Societies, Friendly Societies' Medical Officers' Union, Association of Approved Societies, Standing Committee of Scottish Insured Women, and Society of Medical Officers of Health (July 11th, pp. 86–8). Evidence of the British Hospitals Association, the Sheffield Joint Hospitals Council, and the Middlesex Hospital (July 25th, pp. 181–2); Evidence of Opticians' Associations (August 1st, pp. 224–6); Evidence of Council of British Ophthalmologists, of Ophthalmic Benefit Committee, of Chemists, and of Drug Store Proprietors (August 15th, pp. 348–50); Evidence of Chartered Society of Massage and Medical Gymnastics, of the Ivory Cross, of Scottish Panel Chemists, Practice among Highland Crofters, and of National Farmers' Union of Scotland (August 22nd, pp. 402–3); Evidence of Nursing and other Women's Organisations (Sept. 5th, pp. 519–20).

WOMEN'S MEDICAL SERVICE FOR INDIA.

THIS service is open to fully qualified medical women of British or Indian nationality who desire to carry on work in India. With the present amount of Government subsidy the number of medical officers is limited to 44. Medical women proceeding to India to join the Women's Medical Service receive a sufficient sum for a first-class passage to India. On landing they are posted to one of the larger women's hospitals to gain Indian experience and to learn the language. During this period (from six months to two years) private practice is not allowed. For a further period they are appointed to act temporarily for medical women on furlough, during which time private practice is allowed. They are then definitely appointed to the charge of hospitals. Private practice is always allowed after the first two years, provided it does not interfere with official duties. The only exception is in administrative or educational posts, when an allowance in lieu of practice is given. The amount obtained from practice varies according to the station, but in most cases it forms a fair addition to the salary, varying from £150 to £1000 a year.

Excellent opportunities for surgery—especially gynæcological—are found in the Women's Medical Service. To those who are not keen surgeons opportunities are likely to open in the future in connexion with maternity and child welfare; medical women with administrative ability are also needed for the inspection of women's hospitals and other medical institutions.

Rates of pay are as follows:—

Years of service.	Overseas allowance per mensem.	Salary per mensem.	English equivalent* per annum.
1 to 3	Rs.100	Rs.450	£440
4 to 6	"	Rs.500	£480
7 to 9	"	Rs.550	£520
10 to 12	"	Rs.600	£560
13 to 15	Rs.150	Rs.650	£600
16 to 18	"	Rs.700	£640
19 to 21	"	Rs.750	£680
22 to 24	"	Rs.800	£720
over 24	"	Rs.850	£760

* At rupee value 1s. 4d.

Furnished quarters are provided, representing an additional Rs.150 per mensem.

The cost of living in India is much higher than formerly, but it should be possible for a medical woman (with house provided) to meet actual household expenses for about Rs.200 per mensem, leaving the remainder of her salary for dress and personal expenses. To this must be added the necessary saving to meet additional expense for furlough and leave spent in the hills.

One month's privilege leave on full pay is granted each year. Furlough on half-pay at the rate of two months for every year of service is granted after every three years. Study-leave on two-thirds pay is granted to the extent of 12 months in the total service. There is a provident fund to which members of the service contribute 10 per cent. of their pay. The service contributes another 10 per cent. which accumulates at interest and is repaid on retirement.

Admission to the service is made by selection. Candidates in the United Kingdom should apply to the Hon. Secretary, United Kingdom Branch of the Countess of Dufferin's Fund, care of Major-General J. B. Smith, India Office, Whitehall, London.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Criminal Abortion in Germany.

THE problem of the increasing number of cases of criminal abortion was discussed at the annual meeting of the Association of Bavarian Medical Men recently held in Augsburg, where Dr. Hoeber read a paper on the subject. He stated that the birth-rate had decreased from 27·6 per 1000 in 1903 to 20·4 per 1000 in 1924. In 1906 two million living children were born as compared with 1,300,000 in 1924. While the decline of the birth-rate might be partly due to venereal diseases and to contraceptive practices, he attributed a large proportion of it to abortion. Dr. Hirsch, of Berlin, stated that the relation between miscarriages and normal births in the capital was 93 to 100, and Dr. Hansberg, of Dortmund, found that in Germany about 1,000,000 abortions took place annually, with a mortality of 6000. In Bavaria alone, in 530 cases of puerperal fever occurring after a normal birth the mortality was 104, while in 113 cases of puerperal fever occurring after an abortion there were 54 deaths, being a mortality of nearly 50 per cent. This record shows how much more liable to puerperal fever women are after abortion than after normal childbirth. The number of convictions for criminal abortions in Bavaria was, in 1916, 72; in 1918, 138; in 1919, 119; in 1920, 293; in 1921, 538; in 1922, 660; in 1923, 586; in 1924, 690. It is notable that abortions are less frequent in unmarried than in married women, especially where there are already children in the family and the parents feel unable on economic grounds to cope with more. In Germany the excess of births over deaths was 12·1 per 1000 in 1913 against 7·1 per 1000 in 1924. It has been proposed not to punish artificial abortion when performed for economic reasons, so that it might be performed by respectable medical men instead of by unqualified and disreputable persons or midwives. In this way a good many women might be saved from puerperal fever. Dr. Hoeber rejected that proposal and the Association endorsed his view. According to him, it would be a mistake to abolish or to reduce the penalties for criminal abortion without a reduction of penalties in general. It should be the duty of the State, he said, to help poor parents in bringing up their children by providing dispensaries, creches, free meals, and such like. Foundling institutions after the pattern of those existing in some southern countries were not recommended. The children brought up in those institutions without a home and without maternal care, he held, did not prosper. Illegitimate children should, as far as possible, have the same rights as egitimate offspring.

Diseases in the Navy.

Dr. Ruge, a naval surgeon, gave a historical survey in a recent issue of the *Marine-Rundschau* (Naval Review) of some morbid conditions which might be considered endemic in the navy. He first stated that drunkenness was gradually decreasing. Whilst in the "seventies" 0·28 per 1000 of the crew suffered from chronic alcoholism, that number had dropped to 0·08 per 1000 in the period of 1910–14 and had decreased still further during the war and after. Diseases due to acute drunkenness had decreased from 0·52 per 1000 in 1874 to 0·17 per 1000 in 1914. The diseases which he considers to be particularly prevalent in the navy are: colds, injuries, cellulitis, furuncles, and venereal diseases. Colds had been very frequent, the number being, in 1878, 940 per 1000, so that nearly every man had been infected during a year. The number had decreased to 490 in 1912, whilst after the war it had risen again to 570. Diseases connected with colds were tonsillitis, laryngitis, pharyngitis, pneumonia and pleurisy, rheumatism of muscles and joints. Engineers and stokers were especially liable to colds owing to the rapid change between hot and cold air to which they are exposed. In 1896, when wooden ships were still in commission, it was stated that the ratio of cases in such ships, as compared to iron ships, was as 3 is to 4. Among sailors the number of cases is lower than among stokers and engineers, while in the army the case-incidence is three times smaller than in the navy. An improvement had been obtained by compelling the men to change their wet clothes and to keep hardened by going bare foot and by providing cold baths and douches. According to statistical records, injuries are most frequent on Mondays and then decrease throughout the week, a fact in accordance with observations made by the Workmen's Insurance Offices, with regard to artisans being obviously in connexion with the relaxation occurring after the Sunday's pleasures. Formerly injuries were still more frequent and were particularly severe too in the heyday of sailing ships; one-third of the crews suffered from injuries, whilst now only 5 per cent. were affected. As to furunculi, the report states that those on the neck are very rare owing to the absence of collars in the navy, but it is striking that sailors suffer more than stokers, so that possibly the coal-dust may have a disinfectant action. Venereal diseases were a curse to the navy in foreign ports; in the former East Asia Squadron one-third of the men on an average suffered from venereal diseases. In the whole navy for the past year 17·4 per 1000 were syphilitic, as against 11·8 in 1913. After the war the number of syphilitic patients rose to 34·6 per 1000; this rate, however, was less than that of the merchant marine. Although no exact statistical records exist for the merchant marine, the officer of health of the port of Hamburg discovered 7000 cases of venereal diseases among the sailors within one year. Neurasthenia is not uncommon in the navy as a result of the severe duties, the influence of spirits, and of the climate of the tropics; it was almost unknown in 1877, where only 0·45 per 1000 were recorded, against 5·4 in 1923. Of tropical diseases, dysentery and yellow fever already before the war had nearly disappeared, while malaria had decreased from 78·1 per 1000 in 1877 to the insignificant incidence of 0·07 per 1000 in 1923.

Deaths from Electric Currents.

According to a report made by Dr. Alwensleben to the Berlin Medical Society about 300 deaths annually occur in Germany from electric currents. In Berlin alone 600 injuries are recorded of which ten on an average are fatal. Death from electrical currents cannot be confirmed by post-mortem examination, as the danger of electricity is dependent on the intensity of the current and the duration of its action. Experiments on animals showed that a current of 20 volts did not produce any symptoms, but that 120 volts caused fibrillation of the heart, leading to death, although occasionally the cardiac action could be restored. 2100 volts produced an immediate cessation of respiration, death occurring in one-fifth of a second. Currents of high tension produce severe burns. Two injured persons were shown to the society where currents of 15,000 volts had produced destruction by burning of an arm which was subsequently removed by operation. The direction of the current is, of course, essential for the prognosis. People with a so-called thymic constitution run greater dangers than others. Artificial respiration may sometimes save life, but the application of faradic currents to the vagus nerve is not advisable.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

The Irish Free State and the Medical Register.

As anticipated last week the controversy regarding the Medical Register has entered on a new and more encouraging phase. The meeting of medical practitioners, summoned to protest against the proposed action of the Government, contented itself with a less intransigent attitude. The principal resolution was one welcoming President Cosgrave's invitation to a fresh conference, and expressing the hope that the conference might lead to a solution of the problem. On the following day the Consultative Subcommittee met Mr. Cosgrave, together with Mr. McGilligan, Minister of Commerce, in a long conference. In a carefully worded communiqué subsequently issued it is stated that:—

> "At the conclusion of the proceedings it was understood that very considerable agreement on a line of policy had been arrived at consistent with the Government's decision to set up a separate Register and Council. It was generally felt that arrangements could be made to maintain existing rights and advantages of Irish practitioners qualifying in the Free State wishing to practise in England and elsewhere. It was also understood that the teaching schools would be in a position to assure their students that no hiatus would arise between the cessation of registration as at present and the adoption of a new scheme."

It is understood that the Free State Government is in hope of obtaining the consent of the British Government to a full measure of reciprocity between the Registers of the two countries. If they are successful in this then the main objections to the Government policy will fall to the ground. It is satisfactory at any rate that the Government and the representatives of the profession are now working in harmony.

Sept. 14th.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdrs.: A. R. Fisher to the *Columbine*, for R.N. Hospl., Queensferry; T. A. Smyth to the *Vivid*, for R.N. Barracks, Devonport; W. G. Edwards to the *Barham*, and as Squadron Medical Officer; and R. F. MacMahon to the *Malaya*.

Surg. Lt.-Comdrs.: F. E. Fitzmaurice to the *Vindictive*, and W. G. Thwaytes to the *Excellent*, both as specialists in Ophthalmology; F. G. Hunt to the *Champion*; and J. S. Elliot to the *Mackay*.

Surg. Lts.: W. G. F. Murray to the *Scarab*, and J. G. Maguire to the *Barham*.

ROYAL NAVAL VOLUNTEER RESERVE.

L. B. Hartley to be Surg.-Lt.

ROYAL ARMY MEDICAL CORPS.

Lt.-Gen. Sir C. H. Burtchaell, ret. pay, late R.A.M.C., is appointed Col. Comdt., vice Maj.-Gen. Sir H. R. Whitehead, ret. pay, late R.A.M.C.

Maj.-Gen. Sir W. G. Macpherson, ret. pay, late R.A.M.C., is appointed Col. Comdt., vice Maj.-Gen. Sir D. Bruce, ret. pay, late R.A.M.C.

SUPPLEMENTARY RESERVE OF OFFICERS.

Capt. N. H. Smith, late Temp. Capt., R.A.M.C., to be Capt.

ROYAL AIR FORCE.

Flying Officer T. V. O'Brien is granted a permanent commission in the rank stated.

The undermentioned are granted short service commissions as Flying Officers for three years on the Active List: J. McM. Wilder and H. G. Maguire.

Flying Officer H. W. D. Mackenzie is transferred to the Reserve, Class D. 1.

INDIA AND THE INDIAN MEDICAL SERVICE.

The King has approved the retirement of Lt.-Col. F. O. N. Mell.

Temp. Lt. Shiva Shankar Gupta to be Temp. Capt.

Behari Lal Chopra to be Temp. Lt.

The following have been granted leave: Maj.-Gen. S. F. St. D. Green, Deputy-Director of Medical Services, Western Command. Lt.-Col. A. Leventon, Superintendent, Campbell Medical School, Calcutta. Lt.-Col. A. W. Overbeck-Wright.

The following officers have been posted to Burma: Lt.-Col. E. T. Harris and Majs. S. T. Crump and H. A. H. Robson.

Maj. (actg. Lt.-Col.) (now Lt.-Col.) H. M. H. Melhuish relinquishes the actg. rank of Lt.-Col. on ceasing to comd. a Field Ambulance.

Maj. (actg. Lt.-Col.) (now Lt.-Col.) R. B. B. Foster relinquishes the actg. rank of Lt.-Col.

HOMES AND EMPLOYMENT FOR CONSUMPTIVES.—On Sept. 9th Dr. F. G. Bushnell addressed the Plymouth and District Trade and Labour Council on the need for the proper care of the tuberculous in Plymouth. He asserted that the tuberculosis medical service as it now exists leaves the problems half solved, and is wasteful of both life and money. A system which allows the patient to return to almost certain relapse, and spread of infection to others, is inhuman and unsound. The care and after-care of consumptives should include settlement, housing, and employment, the maintenance of the families of patients who cannot support themselves under ordinary industrial conditions, and their medical supervision. Dr. Bushnell impressed upon his audience of trade-unionists that the principle of employment he advocated is totally opposed to that of exploiting a trade by untrained persons, and that it is quite different from patching up a man so that he can return to his original occupation and infect other men. What must be grasped was that many ex-sanatorium patients can even earn their own living at their own trade, provided that the hours are regulated to their strength, and provided that dividend earnings are reduced or foregone and the large overhead charges taken off their shoulders. But the surroundings must be adapted to their physical and mental condition. To return to the conditions of outside industry usually meant disaster, and after the sanatorium treatment and adaptation to work patients should remain as members of special colonies. Where it was impossible for a person to support himself by his own efforts in such a protected colony, he might still work a reasonable number of hours a day; the balance of loss must be overcome by a subsidy. The only successful tuberculosis settlement was that at Papworth, Cambridgeshire, and amongst the lessons of this great experiment were the following: Patients cannot be trained to a new occupation and left to battle alone with the industrial conditions of commercial life; the wages paid to skilled men must be at the trade-union rate for the number of hours for which they can work without injury; there must be a prospect of promotion in the mind of every settler—e.g., from sanatorium to hut or hostel or cottage, and, in the workshops, from part to full-time employment at union rates and advancement to being head of a department. The products of the settlers must be sold in the open market under the usual conditions, and the medical treatment and supervision must be as efficient as obtains in the best sanatoriums. In conclusion, Dr. Bushnell pleaded for support of a scheme for Plymouth along such lines. Twenty overcrowded badly-housed families, with the (so-called) bread-winner a consumptive, might go into decent healthy wholesome quarters, and at the same time Plymouth would benefit by the reduction of its consumptive population.

THE MEDICAL REGISTER: UNTRACEABLE PRACTITIONERS IN 1925.

WE are requested by the Registrar of the General Medical Council to publish the following list of medical practitioners who have not replied to his inquiries as to the accuracy of their addresses. Anyone who finds his or her name included in this list should communicate immediately with the Registrar of the General Medical Council, 44, Hallam-street, Portland-place, London, W. 1, otherwise the name will be omitted from the next issue of the Medical Register.

Adams, Josiah Oake, 1866 (E).
Aitken, Charles, 1883 (S).
Alderdice, George Frederick, 1901 (I).
Alexander, William Nicholas, 1905 (S).
Arnold, Wilberforce John James, 1894 (I).
Arundel, Robert James, 1895 (I).
Attaoullah, Miss Hawa Khairul Nisa, 1922 (E).

Barry, John, 1867 (I).
Barton, Francis Alexander, 1887 (E).
Beaumont, Charles George, 1877 (S).
Bellot, Claude Herbert Lucien, 1910 (E).
Birch, Charles Ormond, 1880 (E).
Blair, Mrs. Nalini Heloise, 1899 (E).
Bloomenthal, Theodore, 1859 (E).
Boyd, John Alexander, 1907 (I).
Brennan, Charles Henry, *M.C.*, 1916 (I).
Briffaux, Philippe, 1915 (For.).
Browne, John Alexander, 1909 (S).
Brownlee, Arthur Oxland Innes, 1917 (S).
Butler, Charles, 1890 (E).

Cable, Walter George Hughes, 1906 (E).
Caley, Henry Albert, 1890 (E).
Campbell, Archibald Way, 1897 (Col.).
Campbell, Duncan, 1918 (E).
Campbell, Sir William, K.C.M.G., C.B., D.S.O., 1872 (S).
Cardozo, Elizabeth Mary, 1917 (E).
Carew, William King, 1914 (I).
Carter, Charles Noel, 1916 (E).
Cartwright, Robert Peploe, 1907 (S).
Castel, Adolphus Leo, 1887 (E).
Chapple, Aubrey Durant, 1885 (E)
Chittoory, Satyaraju, 1922 (Col.).
Cline, Eric Clarence, 1915 (E).
Coghlan, Harold Edward, 1899 (E).
Collyns, John Moore, 1900 (E).
Connolly, William James, 1907 (I).
Considine, Patrick Bernard, 1892 (I).
Cosgrave, Alexander Kirkpatrick, *M.C.*, 1909 (I).
Coutts, Duncan, 1905 (S).
Cowen, Alfred, 1893 (Col.).
Crowther, George Dobson, 1882 (E).
Crozier, George Rowland Henderson, 1903, (E).
Cullinan, Nicholas, 1897 (S).
Currie, George Burnett, 1884 (S).
Cuttle, Ronald, 1923 (Col.).

Dantes, Augustus Paul, 1912 (E).
Davidson, Herbert John, *M.C.*, 1916 (S).
Davidson, William Henry, 1901 (E).
Deamer, George Edwin, 1888 (E).
de Boer, Henry Speldewinde, *M.C.*, 1914 (E).
Denny, Charles John, 1865 (E).
de Saram, Herbert John, 1900 (E).
de Silva, Arthur Marcellus, 1905 (E).
De Watteville, Armand, 1876 (E).
Dickson, John Rhodes, 1890 (S).
Doolittle, Francis Xavier, 1916 (I).
Doudney, Edwin, 1870 (E).
Duke, Herbert Lyndhurst, O.B.E., 1910 (E).
Duke, Valentine de Saumarez, 1868 (E).

Eagleton, Arthur Joseph, 1913 (E).
Edey, Thomas Hugh, 1915 (E).
Ellacombe, Gilbert Henry Wemyss, 1896 (E).
Elrington, Nicolas, 1893 (E).
Etches, William Robert, 1883 (E).

FitzGerald, Gerald Hartas, 1918 (E).
Follit, Harold Harry Baily, 1908 (E).
Ford, Donald McNeill, 1901 (S).

Gaina, Nariman Jamshedji, 1915 (Col.).
Gardner, Robert, 1890 (S).
Garnett, Evelyn Alice, 1920 (E).
Ghaduri, Dwijendra Nath, 1921 (Col.).
Gilmour, Robert Thomas, 1892 (E).
Goode, George Ernest, 1900 (E).
Gordon, Henry Laing, 1889 (S).
Gracias, Cajetan Manuel, 1921 (Col.).
Grundy, Morris, 1905 (E).
Guinness, Ernest Whitmore Newton, 1892 (I).

Hamilton, Robert, 1901 (S).
Hanratty, Francis Vincent, 1911 (I).
Hardcastle, Alfred Herbert, 1893 (E).
Harcourt, Averyl, 1906 (S).
Hargrave, Herbert John, 1885 (E).
Harpur, James, 1900 (I).
Harris, Walter Terence Joseph, 1922 (Col.).
Harvie, James, 1904 (S).
Haynes, John Frederic, 1916 (E).
Hendricks, Hiram Porter, 1918 (Col.).
Hereford, Charles Francis Alexander, 1905 (E).
Hingston, Henry Sandiford, 1910 (E).
Hobson, Henry Overton, 1899 (E).
Hole, Richard Brassey, 1903 (S).
Hufton, Edith, 1915 (E).
Hunt, Edmund Langley, C.M.G., 1894 (I).

Ievers, Charles Langley, 1910 (S).
Infante, Ferdinando, 1923 (For.).
Ito, Koken, 1923 (For.).

Jackson, Oswald Egbert, 1900 (I).
Jamison, Robert, 1906 (I).
Jesudasan, Samuel, 1903 (Col.).
Johnston, James Alfred, 1880 (I).
Johnston, James Percy, 1910 (I).
Jones, Ralph, 1913 (E).
Joynt, Henry Noble Holton, 1888 (I).

Kaka, Dinshah Limji, 1924 (Col.).
Kelly, William Patrick, 1906 (I).
Keser, Jean Samuel, 1881 (E).
Kidd, Walter Aubrey, 1876 (E).
Kusumbeker, Gajanan Chintaman, 1915 (E).

Large, Stanley Dermott, D.S.O, *M.C.*, 1912 (S).
Leclezio, George Joseph Alexis, 1900 (E).
Lincoln, Joseph Maurice, 1894 (I).
Longhurst, Sidney Herbert, 1899 (E).
Lyon, George, 1891 (S).

McDonald, William Maclachlan, 1896 (E).
MacDonnell, Henry, C.B., 1861 (I).
Mack, Edmund Garvin, 1908 (E).
McKenny, Charles William, 1910 (I).
MacKenzie, Kenneth William, D.S.O., 1905 (E).
McQueen, Robert Martin, 1903 (E).
MacSwiney, Victor Howard Lucien, 1904 (I).
Maitland-Jones, Elizabeth, 1922 (E).
Mann, Alexander, 1909 (E).
Margenout, William Wendt, 1889 (S).
Marjoribanks, Eslyn Marcar, 1912 (S).
Martin, Louis Charles, 1900 (E).
Massey, Thomas Hunter, *M.C.*, 1906 (I).
Mathews, Charles, 1895 (E).
Mehta, Maneckji Sorabji, 1879 (E).
Mehta, Siavax Byramji, 1906 (Col.).
Meiring, Michael Ferreira, 1915 (S).
Michell, John Charles, 1885 (E).
Milne, William Stuart, 1902 (S).
Moody, Ludlow Murcott, 1918 (E).
Morgan, Edward Rice, 1871 (E).
Morrison, Michael Wellwood, 1911 (E).
Muir, David Clark, 1922 (E).
Mullen, Jarlath J., 1874 (I).
Mullick, Sarat Kumar, C.B.E., 1897 (E).

Neary, John Frederick, 1908 (I).
Newell-Roberts, Frederic Norman, 192 (E).
Nicolas, John Daly, 1904 (S).
Norris, Samuel Knight, 1897 (S).

O'Brien, John Aloysius, 1876 (E).
O'Grady, Donald de Courcy, D.S.O., 1905 (E).
Ohlmus, Walter Theodore, 1916 (E).
Oluwole, Akidiya Ladapo, 1915 (E).
O'Neill, Sydney, 1922 (Col.).
O'Reilly, Bertram Charles Noble, 1900 (E).

Patrick, Joseph Henry, 1885 (E).
Pawan, Joseph Lennox Donation, 1912 (E)
Petrovitch, Milorad, 1924 (S).
Peverley, Walter Augustus, 1897 (E).
Pickthorn, Alfred John, 1886 (E).
Pope, George William, 1917 (I).
Powell, Arthur Worsley, 1895 (S).
Power, John Lawrence, 1905 (S).
Power, Maurice Aloysius, *M.C.*, 1907 (I).
Power, Michael, 1908 (I).
Pratt, William Sutton, 1884 (E).
Pritchard-Airey, William, 1901 (S).
Profeit, Alexander Charles, 1899 (S).

Ramsay, William Millar, 1905 (S).
Ramsey, George Arthur Stuart, 1921 (Col.).
Reid, Alfred, 1900 (E).
Reynolds, Benn Roland, 1910 (E).
Riches, Reginald George, 1909 (E).
Robertson, John Wight, 1915 (S).
Rostant, Pierre Ange, 1916 (S).
Runting, Ernest Arthur, 1912 (E).

Schofield, George Taylor, 1875 (E).
Seed, William Pope, 1893 (E).
Sells, Charles John, 1869 (E).
Shaw, Thomas Claye, 1868 (E).
Shaw, Townsend Wharton, 1880 (I).
Shell, William Francis, 1918 (I).
Shepherd, Richard le Fleming, 1886 (S).
Shirgoakar, Jagannath Vishnu, 1910 (Col.).
Silvester, William George, 1897 (S).
Simpson, William Henry, 1918 (Col.).
Singh, Bawa Jiwan, C.I.E., 1889 (E).
Singh, Jung Bahadur, 1910 (S).
Sinha, Narendra Prasanna, 1884 (E).
Slack, William Augustus, 1919 (S).
Slaughter, Henry Lawrence, 1921 (E).
Smartt, Edward Nangle, 1886 (I).
Smith, Edward Arthur, 1906 (S).
Smith, Edward John, 1883 (E).
Smith, Ernest Sutton, 1879 (E).
Smith, Harry Emslie, 1900 (S).
Southwick, Michael Harold, 1922 (Col.).
Spence. John Buchan, 1882 (S).
Stevens, Mordaunt Augustus de Brouquens Capel, 1887 (E).
Stevenson, Walter, 1901 (I).
Stewart, John Symington, 1914 (S).
Stott, William Harle, O.B.E., 1897 (S).
Stuart, Forbes Jackson, O.B.E., 1906 (S).
Sully, Albert Max, 1887 (E).
Sutherland, Frederick Charles, 1894 (E).

Tatam, Edwin Charles, 1886 (E).
Taylor, Gerald Maberly, 1906 (E).
Tha, Richard Roland Htoon Oo, 1915 (E).
Thomson, Walter Proudfoot, 1920 (Col.).
Todd, Percy Everard, 1882 (E).
Tomkins, Arthur Wellesley, 1869 (I).
Totsuka, Bunkei, 1922 (For.).
Tucker, William Eldon, 1899 (E).
Twining, Edward Wing, 1913 (E).

Uniacke, John Joseph, 1904 (S).
Urquhart, George Theodore, 1921 (Col.).

Vernon, Robert Culbertson, 1901 (I).

Wallace, Gerald Douglas Hamilton, 1907 (E).
Ward, Francis, 1894 (E).
Waters, John Frank William, 1897 (E).
Waterston, George Fyfe, 1897 (S).
Watkins, Alan Percival, 1900 (E).
Webb, William Leslie, 1912 (E).
West, Percy Coulthurst, 1905 (E).
West, Stephen Harold, *M.C.*, 1904 (E).
Whichello, Harold, 1893 (E).
Williams, Cyril Mathias, 1915 (E).
Williams, Reginald, 1893 (S).
Williams, Ronald Edward, 1921 (E).
Wilson, Arthur William, 1901 (S).
Wilson, Mary Phœbe, 1920 (Col.).
Woodforde, George Arthur Herbert, 1884 (E).
Woollard, Herbert Henry, 1920 (Col.).
Wyndham, Thomas Lancelot, 1899 (E).

Young, John Franklin, 1908 (E).

Public Health Services.

SCHOOL MEDICAL SERVICE.

Name of district.	No. on roll.	Av. elem. school attendance.	No. of routine children examined.	No. of special examinations and re-inspections	Percentage of children found on routine examination requiring treatment.*
County areas—					
Cumberland .	—†	—†	7,912	11,725	15·0
Kent	74,413	—†	22,829	15,748	14·6
Notts	49,453	44,020	12,746	10,070	10·7
Urban areas—					
Bilston ..	—†	—†	1,727	27	13·08
Colchester ..	—	6,733	1,014	3,019	29·5
Coventry ..	21,288	19,161	5,860	9,618	21·5

* Excluding dental defects and uncleanliness.
† Not given.

Three County Areas.

Cumberland.—Dr. F. H. Morrison warmly praises the loyalty and support of his staff, medical as well as nursing, in carrying out their ever-increasing duties which have called for many hours of overtime. Depression of trade and unemployment, with their consequent lack of funds, produce more ailments among the children, coincident with lessened ability of the parents to obtain private medical treatment. Dr. A. H. Towers has drawn attention to the prevalent but unnecessary method of marching children into the class-rooms with much stamping of their feet—to keep time with the piano—and so raising clouds of dust which is highly injurious to the whole school population. He suggests that as little noise as possible should be the aim. Many methods for allaying dust are now in use in various places—e.g., the periodical spraying of floors with a dustless oil not only allays the dust, but decreases the cost of scrubbing, and prolongs the life of the treated floor. Dr. Morrison questions why there should be a bigger percentage of intermediates (17 per cent.) and of leavers (15 per cent.) requiring treatment than of entrants (14 per cent.). Is it not largely accounted for by the fact that the vision and hearing of entrants is very seldom tested at routine examination? The main causes of pathologically enlarged tonsils and adenoids are summarised as (1) bad teeth; (2) insanitary conditions of any kind; (3) impure water-supplies. All of these admittedly aggravate the condition, but the cause or causes lie deeper, as is evidenced by the *many* sufferers who have never been subjected to any such disadvantages. Since only one dentist is employed, none but the worst cases of dental caries can be referred to him.

Kent.—Among many interesting tables in Dr. A. Greenwood's report is one showing the percentages of dental caries in the various routine age-groups. The 8-year-old children, as is usually found, have the worst teeth. Mr. C. E. Thomas, one of the dentists, draws attention to the increase of dental caries at all ages. Much *propaganda* work is carried out by the dentists in lectures to mothers both at the schools and at the welfare centres. Dr. S. A. Tucker, in his inquiry on "the health of groups of school-children with special relation to breast-feeding," shows how, in almost every particular, the breast-fed child carries its early advantage well into school life. A smaller percentage of dental caries is present in breast-fed children than in hand-fed. Throat, nose, and ear trouble is less, and the percentage of breast-fed children having "*no history of illness*" is twice that of hand-fed children. Dr. F. Wolverson, in his investigation into malnutrition, finds that bread and margarine with tea is the common breakfast in Kent, and bedtime is "any old time." In a laudable endeavour to stimulate the interest of the parents he runs a voluntary "nutrition" clinic in his own time and without expense to the local authority. Dr. Greenwood remarks on the large amount of malnutrition recorded in secondary schools—378 cases among the girls and 126 among the boys. This is a disquieting feature and deserves the attention which Dr. Greenwood proposes to give to it. Dr. J. Selfe reports on the condition of tonsils and adenoids, for which he recommends treatment—only *local conditions are mentioned, but the local sepsis* may and often does have general ill-effects, and many anæmic and pretuberculous children have reacted extraordinarily well to the radical removal of septic tonsils and adenoids. Dr. W. Lessey finds there is a greater proportion of children showing marked anæmia in the country schools than in the town schools in his area. The macroscopic judging of anæmia is so dependent on the personal factor as to be misleading, and Dr. Lessey's percentages are very high—viz., 21 per cent. (slight and marked) in country schools and 19 7 per cent. in town schools. He associates the anæmia with four conditions: (1) Loss of blood from body parasites, mainly fleas, and from this cause he estimates that in the worst cases of flea bites some children were losing "pints of blood each year." (2) Diet—the iron-containing foodstuffs are largely omitted in the common dietary of these children. (3) Defective teeth. The proportion of dental caries is higher in country children than in town children, largely owing to lack of dental attention. (4) Ventilation and heating. The hygienic home conditions in the country are worse than in the towns.

Nottingham County.—Dr. T. E. Holmes, the school medical officer, contributes an introduction to a report by Dr. C. Tibbits, the senior assistant. The idea of furnishing the names of the 14 clean schools is an excellent one. Dental conditions and treatment are fully described—the quality of the work is evidently better than the quantity, but the reasons for the low percentage of defects treated (34 per cent.) are clearly stated. There is no special school of any kind in the area, except one which deals with mentally defective boys only, and the lack of a mentally defective girls' school is rather serious. For other types of exceptional children it may be said that a fair use appears to be made of special schools and institutions in other areas. There have been some excellent voluntary orthopædic clinics recently established by the Nottingham Cripples Guild, where all kinds of early treatment and after-care are carried on. A special investigation deals with goitre, as suggested by the Board of Education, but on more extended lines. The incidence is compared according to locality, environment, and geological formations, and it is shown that none of these have any marked influence in this county; in fact, limestone formations are actually associated with the lowest figures. The only definite difference is the higher figure for the western districts, and for this Dr. Tibbits discusses a possible explanation—namely, that the western side of the county is more shut off from the sea winds in which some at least of the iodine travels.

Three Urban Areas.

Bilston.—In his short report Dr. T. Ridley Bailey draws attention to the poor hygienic condition of many of the schools in the area. Structural defects are admittedly difficult of remedy in these financially stringent days, but mere lack of attention on the part of school caretakers is reprehensible. Since the S.M.O. is also M.O.H., and carries out his duties unassisted except by one school nurse, the work must of necessity suffer—the small numbers of special cases (13) and of reinspections (14) seem ample evidence of this, and is reflected in the lack of interest of the parents, only 28 5 per cent. being present at routine examinations. No school dentist is employed, and as Dr. Bailey states: "With 43 per cent. of children showing four or more teeth decayed and 37 per cent. with conditions less severe, the committee have abundant evidence that the appointment of a dental surgeon is extremely urgent." No case of bronchitis and only one cardiac (functional) defect is recorded in the return of defects found at medical inspection. Apparently no special provision is made for abnormal children in the area.

Colchester.—The comparative tables given by Dr. W. F. Corfield show at a glance the results of the work during the last few years. The progressive growth of cleanliness and the consequent decrease in "dirt" diseases is clearly shown. The percentage of clean heads has risen from 89·7 per cent. in 1922 to 94·7 per cent. in 1924, while scabies, impetigo, blepharitis, and conjunctivitis have all decreased in the same period. Appreciation of the benefits of the medical work is evidenced among the parents by the percentage who attend the inspections—viz., 77·8 per cent It was thought advisable to close many of the schools during epidemics, but it is extremely doubtful if this measure is at all effective in urban districts. To provide for those children with very defective eyesight a new "sight-saving class" with up-to-date apparatus was established. In spite of further provision being made for dental treatment, 60 per cent. of the children requiring treatment failed to get it.

Coventry.—Dr. E. H. Snell remarks that the increase of verminous heads from 1400 last year to 2200 this is more apparent than real, and is accounted for by the fuller inspection consequent upon the increase of nursing staff. Tuberculosis is comparatively rare amongst the school population, the percentage of definite cases of all forms being only 0·15 per cent., and more than half of these are cases of glandular affection. Visual defects were found in 7·6 per cent. of the children examined, and comment is made on the not uncommon discovery of children of 11 years with very bad eyesight. It is in such cases that observant teachers could render much assistance by bringing them to the notice of the S.M.O. Only 54 cripples of school age are known to the school medical department, and amongst them no case of cardiac defect is mentioned. This is an incredibly small number, as Dr. Snell himself admits. No case of malnutrition was noted during routine medical inspections, and only three cases of anæmia were seen—either the standards adopted by the examining officers are very low or Coventry is an unusually healthy place. Comment is made on the percentage of poor nutrition being highest in the intermediate group, and it is tentatively suggested that this may be due to war conditions falling heaviest on this group. In part it may be so, but the 7 to 8 year old period is essentially the "stretching" period when the children of that age are relatively taller and thinner. Two excellent open-air schools are held, but the accommodation is much too limited for the number requiring such treatment.

PORT SANITARY AUTHORITIES.

THE annual report of the medical officer of health to the port sanitary authority of *Liverpool* for the year 1924, signed by Dr. E. W. Hope, the former M.O.H., and by Dr. A. A. Mussen, his successor, gives a very full account of the discharge of great responsibilities of these officers in relation to the port. As regards infectious disease, only one case of small-pox (from Lisbon) was landed; from *one* ship eight cases of typhoid were recorded (from Bombay), one died on board, three were sent to Fazakerley Hospital, four were later reported from their homes; no cases of plague, cholera, or typhus occurred; 58 cases of phthisis came under notice, 29 in sailors and 29 in passengers. Several infectious cases were accommodated in the port sanitary hospital at New Ferry. Grain dermatitis caused by a mite (*Pediculus ventricosus*) in barley from Morocco occurred among dock labourers, and people living in adjacent houses into which the dust of this cargo was blown were also infected. Rats to the number of 62,953 were caught or destroyed; in the city, 1120 were black and 15,171 brown, but in the port the proportions were reversed, 14,809 being black and 326 brown—in all over 15,000 of each. Five ships were fumigated with hydrocyanic acid, averaging 21 rats killed in each, and in 106 ships sulphur dioxide was used, averaging 60 dead in each. The number killed by the Corporation staff is not a measure of the staff's activity, as its chief function is to keep moving on and taking samples for examination from all round the port in order to get early warning if the rats in any area are becoming plague-infected. Of 6506 rats inspected in 1924 all were free of plague. Rat-catching in ships is the duty of the owners. The number of rats ashore is diminishing by extended use of ratproof sheds. Rats find harbourage in temporary wooden offices, in accumulated sweepings, and in heaps of working gear. One inspector devotes most of his time to this problem; his standard is high, and he has secured the coöperation of the officials of the docks: "some even admit that it pays." An investigation on the destruction of vermin, particularly bedbugs, as carried out by Prof. R. Newstead and others, is reported in an appendix. As a result of the investigation, 3 per cent. hydrocyanic acid gas is recommended for the complete extermination in three hours of bedbugs and their eggs, but tongued and grooved wooden linings of the compartment must first be removed. Venereal diseases are being firmly tackled; there is a seamen's dispensary, with a staff consisting of a whole-time assistant medical officer and two orderlies, one of whom lives on the spot, and is on duty daily till 8.30 P.M. The average patient is very attentive to treatment, but many cease attendance prematurely. Printed cards of advice are issued to ships giving the address of the dispensary, and a small map showing its position. During its ten months of work 428 new cases have attended. The illustrations show the excellence of its equipment. 5194 ship inspections were made by inspectors, 732 by medical officers. Of the nuisances, 91 per cent. were due to lack of cleanliness, often because sailors when they leave ships leave them in a very dirty condition. It is becoming more usual now to take on an extra hand (called a "Peggy") to attend to the cleanliness of the crew spaces, so these dirty conditions may be less constant a feature in future. Many aliens (20,594) arrived in Liverpool during the year; four were rejected as weakminded or insane, two as suffering from communicable disease, one, a case of trachoma, deported from the United States, as "having a disease likely to cause him to become chargeable to the public." British emigrants numbered 86,693, more than half going to British North America; of the second and third-class passengers, who are all examined by Board of Trade inspectors, 18 were rejected as having infectious disease. Second and third-class passengers for the United States are inspected by a medical officer of the U.S. Public Health Service; if verminous they are disinfested, along with their baggage, at one of the city hospitals. There are seven trained food inspectors, so little delay is caused in the inspection of even the great quantity of food that passes through this port. During the year 89 tons of meat, 161 tons of canned goods, 1217 tons of fruit (partly due to a dock strike), and 3537 tons of cereals were found unfit for human consumption. As much as possible is released to be made up into poultry food, dog biscuit, and the like. In all, 5017 tons of food were condemned, but apparently all this material was utilised in one way or another, though not for food.

Dr. A. B. McMaster, medical officer of health for *Dover*, in his annual report for 1924, states that 3138 brown rats were caught in the town on bird-lime or in traps, 409 in the port, and 32 on board ships. During the year half a million passengers arrived from abroad, of whom 136,607 were aliens. Only two are mentioned as suffering from infectious diseases, one with measles and the other with enteric fever. The import trade of the port is chiefly concerned with fruit and yeast from France, and rabbits, yeast, and poultry from Belgium. Of 35,000 tons of foodstuffs landed 15 tons were condemned. With regard to the health of the town itself, Dr. McMaster reports that the number of families occupying only one or two rooms is increasing, owing to lack of housing. There was in his area in 1924 a milk-borne epidemic of enteric fever, due to the *Bacillus paratyphosus* B;

50 cases were notified, with one death. The source was with difficulty discovered, but the following story was finally elicited. Four retailers got milk from farm B; the report on this milk proved unsatisfactory. At this point Farmer B admitted that the milk came from his brother's farm, C. So now, late, the staff of farm C had to be examined. Farmer C and one of the milkers were found to be carriers, and would take no measure of security till forced, which meant further delay. The epidemic would have been much less extensive had there been water carriage of sewage at the farm, or if the milk had been properly cooled, or if there had been facilities for the washing of hands before milking—in other words, greater cleanliness. Dr. McMaster insists that clean milk can be produced on farms even if the buildings are old, provided that methods of thorough cleanliness are rigidly followed, and that if milk were sent clean from the farms pasteurisation would be unnecessary. The Necessitous Milk Scheme supplied 201 persons in 148 families, 15 taking dried milk.

Dr. A. N. Stevens, medical officer of health for *Great Yarmouth*, states the death-rate in 1924 as 10·8, infantile mortality-rate 63, birth-rate 18. Most deaths (48 per cent.) occurred after the age of 65. Malignant disease and heart disease each caused 77 deaths, and tuberculosis 62. Infectious disease did not call for any school closure in this year. The chief imports are timber and salt from abroad, stone and grain coastwise; the export is fish. Amongst other foodstuffs, 33 tons of fish were condemned and destroyed. 2403 rats were killed, apparently none in ships or in the port. A rat-catcher has been set to work under the rat officer. Sixty-two vessels were disinfected, and, apart from foul pickle, uncleanliness was the chief cause of complaint against ships inspected. The canal boats were all found clean and well kept.

MENTAL HOSPITAL REPORTS.

THE eleventh annual report of the *General Board of Control for Scotland* includes notes of each of the Royal, district, and private institutions in that country, most of which have already been reviewed in these columns. The general survey remarks on the increase in the number of voluntary boarders, and the gratifying fact that parish councils are showing an increasing tendency to pay the cost of voluntary boarders in district asylums, believing that early treatment on this basis may prevent patients from becoming permanent burdens on the rates. Edinburgh Parish Council has arranged for the Royal Edinburgh Asylum to supply 20 beds for voluntary inmates. The undesirable custom of confining adult mental defectives in asylums still continues, but there is evidence of change. The care of the mentally defective is essentially an educational, rather than a clinical or curative, matter, and the two types of mental care do not conveniently go together. It is hoped that the contemplated scheme for the establishment of colonies for adult defective patients will reduce the practice to a minimum. The report suggests the addition of a children's ward attached to the observation wards of infirmaries, for the reception of cases such as encephalitis lethargica. The aim of the Board is to bring their institutions up to the level of general hospitals, and they are able to record that practically every institution in Scotland has a thoroughly equipped dental room and the services of a visiting dentist, while the appointment of specialists in varying branches of medicine is proceeding. Bangour Asylum, which had the advantage of inheriting the most modern treatment apparatus installed when the building was used as a war hospital, has submitted plans for a pavilion where all varieties of hydrotherapy and light treatment will be provided. The problem of typhoid fever in asylums[1] is referred to in the report. The number of carriers in Scottish asylums is now 16, and elaborate precautions have been taken in disinfection and distribution of under-clothing and bed-linen. The institution where the majority of the carriers are resident is considering the erection of a separate villa for these cases. The statistical tables deal with 18,398 insane patients and 2452 mental defectives.

The *Down District Lunatic Asylum* at Downpatrick publishes an illustrated report. The average number resident during the year was 712; there was a slight decrease in the number of admissions on last year's figure. The majority admitted were melancholic, maniacal and delusional cases being next in number. The recovery-rate was 52·4 per cent. and the death-rate 5·9 per cent., a record figure for this institution. The dentist appointed last year has already treated 261 patients, including 1111 extractions. Two sets of wireless have been installed, and are much appreciated. Nine nurses obtained the M.P.A. certificate during the year, and the new regulations insist on attendants and nurses preparing for these examinations.

Hereford County and City Hospital at Burghill has 470 patients in residence, and, unlike most county hospitals, has a certain amount of vacant accommodation. The death-rate for the year has been 7·5 per cent. and the recovery-rate 20·0 per cent., with a further 10·9 per cent. discharged relieved. The arrears of dental work have been overtaken, and the dentist now finds one visit a month sufficient. A cinema apparatus is to be installed in the near future.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 5TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 32; scarlet fever, 1363; diphtheria, 738; enteric fever, 85; pneumonia, 116; puerperal fever, 44; cerebro-spinal fever, 8; acute poliomyelitis, 12; acute polio-encephalitis, 3; encephalitis lethargica, 43; continued fever, 14; dysentery, 6; ophthalmia neonatorum, 98. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 6 deaths from enteric fever, 22 from measles, 5 from scarlet fever, 28 from whooping-cough, 11 from influenza, and 10 from diphtheria. There were 290 deaths of children under 2 years from diarrhœa and enteritis, as compared with 218, 177, 136, and 108 in the preceding weeks. In London itself the deaths from diarrhœa and enteritis in children under 2 years numbered 88, as compared with 40, 28, 20, and 19 in the preceding weeks; there were 10 deaths from diphtheria, 5 from whooping-cough, and 1 from influenza.

DONATIONS AND BEQUESTS.—Mrs. Mary Ogden, who left £12,480, besides other bequests, gave £100 each to the Cottage Hospital, Colwyn; the Manchester Institution for the Blind; Manchester Institution for the Deaf and Dumb; the Cancer Hospital, Manchester; Manchester Ear Hospital; and the Oldham Institution for the Blind. The residue of her property she left to Oldham Infirmary and the Manchester Royal Infirmary.—Mr. William Wright Warde-Adam, of Frickley Hall, Doncaster, left £2000 to the Royal Infirmary and Dispensary, Doncaster; £1000 to the General Infirmary, Leeds; £500 to the Yorkshire Institution for the Deaf and Dumb, Doncaster.—Mr. James Sutcliffe, of Rochdale, left £1000 to the endowment fund of the Rochdale Infirmary and Dispensary, to be known as the "James Sutcliffe Bequest," and £1000 to the endowment fund of the Manchester Royal Infirmary, to be known as the "James Sutcliffe Bequest."—Mr. Sydney Mason, of Anglesey and Ashton-under-Lyne, left as a contingent reversion £15,000 to St. Dunstan's Hostel for Blinded Sailors and Soldiers.—An anonymous gift of £1500 has been made to the Sheffield hospitals.—Alderman Walter Henry Barrett, of Pendleton, left £1500 to the Royal Hospital, Salford, for the endowment of a bed.—Mr. Frank Atkin, of Sheffield, left £500 to the Sheffield Royal Infirmary, and £250 each to the Sheffield Royal Hospital, the Jessop Hospital for Women, the Sheffield Institution for the Blind, the Sheffield University, and the Sheffield Society for the Prevention of Cruelty to Animals.—Miss Lilian Suzette Gibbs, F.L.S., of Santa Cruz, Teneriffe, has, among other bequests, left to the University of London a sum to produce a net annual income of £150 for a studentship in cancer research, either on the physiological or the chemical side, to be called "The Laura de Saliceto Studentship" in memory of her mother.

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[1] THE LANCET, Sept. 12th, p. 560.

Correspondence.

"Audi alteram partem."

RHEUMATIC INFECTION IN CHILDREN.

To the Editor of THE LANCET.

SIR,—As in part responsible for the emphasis which has been recently laid on the association between the rheumatic infection in children and poverty, may I say that I used the term "poverty" only as denoting the class of children from which hospital patients are drawn as opposed to that dealt with in private practice. That acute rheumatism in its major forms is overwhelmingly a disease of the former group no one could possibly deny. At the B.M.A. meeting at Bath some criticised the use of the word "poverty" on the grounds that the infection is not so particularly common in the children of destitute and out-of-work families as in those of the working artisan class. With the truth of this I altogether agree, though I do not yet understand the reason of it. But it seems a pity to me to obscure the main issue by quibbling over the term "poverty"; surely this is broad enough to carry the sense of the contrast we desire to stress.

For the point is a very important one. Of all the outstanding rheumatic problems there is none of greater importance than that of the environmental influences which predispose to the infection in children, and here we have one great fact to go on—namely, the predilection of the disease for the poorer classes. Let us, therefore, do nothing to obscure this fact. In opening the debate on rheumatism at the Medical Section of the Portsmouth B.M.A. meeting two years ago I particularly emphasised the significance of this association and appealed to workers in public health to find out and tell us the reason of it. At the Bath meeting this year the Public Health Section met the Children's Section in a discussion on the rheumatic problem, and told us of their investigations. It was their presence which made the meeting so different from any previous ones, so significant and encouraging.

I am, Sir, yours faithfully,
REGINALD MILLER.

Harley-street, W., Sept. 12th, 1925.

QUININE IN PNEUMONIA.

To the Editor of THE LANCET.

SIR,—A record of over 200 cases of lobar pneumonia in the Wano Agency, North-West Frontier Province, India, treated with intravenous injections of quinine bihydrochloride, may be of more than local interest. In 1923–24 the death-rate of pneumonia in this agency was very high. It was noticed that there was a high incidence of malaria in the summer, followed by a high death-rate of pneumonia in the winter. As no other form of treatment seemed to lower the death-rate, I resolved to try intravenous injections of quinine. It was found that they had a very beneficial effect. The temperature came down, the restlessness subsided, and the pulse got better and stronger.

As soon as a case was diagnosed as pneumonia a blood film was taken (which by the way in every case was negative for malaria parasites) and intravenous quinine gr. 7 in 10 c.cm. distilled water given. Another injection was given on the third day, and another on the fifth day, after which no more were given. No injection was given during the crisis. Quinine did not shorten the course of the disease or expedite the crisis. In about 50 per cent. of cases the crisis did not take place till the seventh or eighth day. If the pulse was weak quinine was given with 5 minims of adrenalin.

The following points were noticed:—

(1) That patients with enlarged spleens, due to malaria, did not stand a good chance with the quinine treatment.

(2) That when *too much* quinine was given it had a tendency to make the sputum very viscid, and there was difficulty in expectoration. This was counteracted by tr. jaborand., ♏x, added to mist. stim. expect., ℥i.

(3) That quinine given when the crisis was expected had an unfavourable effect on the heart. The pulse was weak and thready, and the patient showed a tendency to collapse.

(4) That quinine injections given judiciously and in moderate doses definitely had a good pneumococcicidal effect on the disease even in very severe cases of double pneumonia.

(5) The mortality of chronic malaria cases was more than that of non-malarial cases, who had been free from fever during the summer.

The result of the injections was as follows: In Sarwakai, out of 40 cases of lobar pneumonia, there were three deaths only. In Sararogha (civil), out of 22 cases, there were three deaths. In Jandola there were no deaths amongst the first 30 cases treated, while the average of deaths amongst the remainder was 15 per cent. Those were very bad cases of pneumonia. On the other hand, in the brigade at Sararogha, where the cases of pneumonia were not treated by quinine, the case mortality averaged 25 per cent.

I am, Sir, yours faithfully,
R. KHAREGAT, M.B.,
Captain, I.M.S.; Agency Surgeon, Wano.

THE "COMMON COLD."

To the Editor of THE LANCET.

SIR,—The season of "colds" is at hand; indeed, an epidemic has been already reported. It is a curious fact that the general public has not realised that the common application of the word "cold" is a complete misnomer and, moreover, actually misleading. There is a disarming simplicity about the word, and in the public mind it is associated with "draughts," "cold winds," and so forth, and the idea is inherent that prevention and even cure lie in the piling on of additional clothing.

No doubt there is some connexion with atmospheric conditions, but the public mind has entirely failed to grasp that the symptoms which are grouped together under the name of a "cold" are due to invasion of the system with micro-organisms of varying virulence, and that the results of such invasion are often disastrous. The lengths of the obituary columns in the daily papers during the winter are due mainly to deaths from respiratory complaints, many of which owe their origin to the common cold, and, in addition, it is well known to the medical profession that numerous chronic and disabling diseases can be traced to the same source.

In consequence of this want of knowledge among the community few or no precautions are taken against spreading infection. Sufferers from "only a cold" fulfil their social functions as usual, and attend places of worship and of entertainment, quite regardless of the dangers to which they are subjecting their neighbours. The circumstances of many people suffering from colds are such that it is quite possible for them to remain in bed for the first few days, and if only they would do so, not only would their own disability be shortened, but many susceptible persons would be spared a similar infection. Moreover, it is certain that if such a course could be *generally* followed, the *total* number of "lost working days" would be diminished very appreciably.

The time is ripe for a campaign by the health authorities against a complaint whose effects are so far reaching, but the first stage in such a campaign against the "common cold" and its unrealised dangers must be the discarding of its present name and the substitution of another more expressive of its actual nature.

I am, Sir, yours faithfully,
JOHN ALEXANDER DRAKE, M.D. Lond.,
D.P.H.

Harley-street, W., Sept. 12th, 1925.

Obituary.

WILLIAM ODELL, M.D. DURH., F.R.C.S. ENG.

BY the recent death of Dr. William Odell, of Torquay, in his seventy-fifth year, the medical profession has lost a fine example of all that was best in the "old school" of family practitioners. William Odell was educated at St. Paul's School, Stony Stratford, and at Hertford Grammar School. He received his medical education at St. Bartholomew's Hospital, qualifying as licentiate of the Society of Apothecaries in 1872. He gained the M.R.C.S. Eng. in the same year and the Fellowship four years later, when resident surgical officer at Hertford County Hospital. In 1901 he became M.D. Durh. After holding hospital appointments for five years, he took up private practice in Hertford in 1878 and later in Toronto, until in 1880 he settled in Torquay. Dr. Odell held the appointments of honorary consulting physician to the Western Hospital for Consumption, honorary consulting surgeon to the Erith House Institute, and honorary physician to the Temple Lodge Home. He was an honorary life member of the St. John Ambulance Association, and did much work in connexion with the Epsom College Foundation, of which he was local secretary. During the war he was physician to the Western Auxiliary Military Hospital in Torquay. Throughout his professional career he took an active interest in medical education and politics, and was at one time president of the Torquay Medical Society. Dr. Odell made several contributions to medical literature, particularly with regard to the treatment of tuberculosis.

THE LATE DR. R. B. ESKRIGGE.—Richard Bertram Eskrigge, L.R.C.P. Edin., M.R.C.S. Eng., of Royston, Barnsley, Yorks, died on August 31st in his sixty-third year. He received his medical education at the Manchester School of Medicine, qualifying as L.R.C.P. Edin. in 1883, and obtaining the membership of the Royal College of Surgeons of England in the same year. For 37 years he practised in Royston, where he was held in the highest esteem.

THE LATE DR. G. LOVE.—Gilbert Love, senior, M.D. Belf., of Great Budworth, Cheshire, died at the age of 60 on Sept. 6th, as the result of a distressing accident when on holiday at Downpatrick in the north of Ireland. While out shooting, he passed through a hedge and a twig released the trigger of his gun, with the result that the charge shattered his leg. He lay bleeding for some time before he was removed to the local infirmary, where the limb was amputated. Dr. Love, who was one of the best-known practitioners in Cheshire, studied at Queen's College, Belfast, where he gained the medal in midwifery and diseases of women. He graduated M.D., Ch.B., B.A.O. in the Royal University of Ireland in 1888, and after serving as medical and surgical assistant in the Royal Hospital, Belfast, settled in Northwich, where he had an extensive practice, and was honorary surgeon to the Victoria Infirmary of that town. Dr. Love was a prominent Freemason, being Provincial Officer and Past Master of the Sincerity Lodge, Northwich. He was chairman of the Conservative Association, the Budworth Fête Committee, and the Northwich Infirmary Medical Board.

THE LATE DR. W. J. LEIGHTON.—William James Leighton, M.D. Belf., of Chorley, Lancs, was found dead beneath his two-seater car on the night of Sept. 8th in Lucas-lane, close to Chorley. The car was overturned broadside across the lane, with lights burning. How Dr. Leighton lost his life is entirely unexplained. Dr. Leighton was 42 years of age and had practised in Chorley for nearly 15 years. He had consulting-rooms in St. Ann-street, Manchester, where he was hon. assistant surgeon in the out-patient department of St. John's Hospital for the Ear and Nose. At Chorley he was hon. medical officer of the Rawcliffe Hospital and hon. secretary of the Chorley Medical Society. He received his medical education at Belfast and Dublin, and in 1906 graduated M.B., B.Ch., and in 1909 obtained the degree of M.D. at Belfast. Before going to Chorley he was house surgeon to Bedford County Hospital and resident medical officer of the Belfast Corporation Fever Hospital, and resident clinical assistant at the Richmond Hospital, Dublin.

Medical News.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A two weeks' intensive course in medicine, surgery, and the special departments begins on Monday, Sept. 21st, at the Westminster Hospital. On the same day the Brompton Hospital starts a special two weeks' course in diseases of the chest. Beginning in October the Fellowship of Medicine will hold a series of lectures on tuberculosis in the lecture room of the Medical Society, 11, Chandos-street. The first lecture will be given on Oct. 12th, at 5.30 P.M., by Dr. L. S. Burrell, on Tuberculosis from the Physician's Viewpoint. All members of the medical profession will be welcomed. Also during October will be held a special course in diseases of the throat, nose and ear at the Central London Throat, Nose and Ear Hospital (an operative surgery class will be held in addition); a course in tropical medicine consisting of eight clinical demonstrations on Tuesdays and Thursdays; a combined course in diseases of children; a course in urology at St. Peter's Hospital; and a course in dermatology at St. John's Hospital. Copies of any syllabus, together with the Fellowship programme, may be obtained from the Secretary, 1, Wimpole-street, London, W.1.

OPENING OF THE MEDICAL SCHOOLS.—The following functions will be held in connexion with the opening of the undermentioned London medical schools:—

St. Bartholomew's Hospital.—Old students' annual dinner, Thursday, Oct. 1st, in the Great Hall of the hospital. Chairman: Mr. J. Adams.

St. George's Hospital.—The school dinner, Thursday, Oct. 1st, at 7.15 for 7.45 P.M. at the Hyde Park Hotel. Chairman: Dr. Ashton Warner. The Rt. Hon. W. H. Bridgeman will propose the toast of the Medical School.

Guy's Hospital.—Address to the students, Tuesday, Sept. 20th, by Major J. H. Beith ("Ian Hay").

King's College Hospital.—The introductory address, Thursday, Oct. 1st, at 2.30 P.M., by Sir Arthur Keith, at the Medical School, Denmark Hill, S.E. 5. The annual dinner of past and present students will be held at 7 for 7.30 P.M. on the same day at the Connaught Rooms, Great Queen-street, W.C. 2. Chairman: Sir Lenthal Cheatle.

London Hospital Medical College.—Annual old students' dinner, Thursday, Oct. 1st, at 7.30 for 8 P.M., at the Trocadero Restaurant, Piccadilly Circus.

St. Mary's Hospital.—Past and present students' annual dinner, Monday, Oct. 5th, at the Connaught Rooms, Great Queen-street. Chairman: Mr. Leslie Paton.

Middlesex Hospital.—In the Queen's Hall, Thursday, Oct. 1st, at 3 P.M., prize distribution by the Hon. Sir Arthur Lawley; inaugural address by Dr. C. E. Lakin on Tradition in Medicine. Annual dinner, Thursday, Oct. 1st, at the New Criterion Restaurant, Regent-street. Chairman: Sir Arnold Lawson.

St. Thomas's Hospital.—Annual old students' dinner, Friday, Oct. 30th, at the Hotel Victoria, Northumberland-avenue. Chairman: Mr. Samuel Osborn.

University College Hospital.—Annual dinner of past and present students, Oct. 10th, at Hotel Cecil, at 7.30 P.M. Chairman: Dr. Herbert Spencer.

Westminster Hospital.—Inaugural address by Prof. A. B. Gardner, Thursday, Oct. 1st, at 3 P.M., in the board room of the hospital.

CENTRAL LONDON, THROAT, NOSE, AND EAR HOSPITAL.—The opening lecture of the winter session will be given at the hospital, Gray's Inn-road, W.C. 1, on Tuesday, Oct. 6th, at 4 P.M., by Dr. William Hill, who will take as his subject The Practice at "The Central" in the Late 'Eighties; a Period of Marked Advance and Foreshadowing Many Modern Improvements in Technique.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—The opening meeting of the next session of this society will be held in the society's rooms at the West London Hospital, Hammersmith, on Friday, Oct. 2nd. The chair will be taken at 8.30 P.M., when Dr. H. W. Armstead will read his presidential address entitled Thirty Years of General Practice.

UNIVERSITY OF DURHAM.—In connexion with the opening of the winter session of the University of Durham College of Medicine, Newcastle-upon-Tyne, an introductory address will be given in the Examination Hall of the College on Tuesday, Oct. 6th, at 4.30 P.M., by Sir Humphry D. Rolleston on Physic and Poetry.

Society of Medical Officers of Health.—The annual dinner of this society will be held at the Piccadilly Hotel on Friday, Oct. 16th, at 7 for 7.30 P.M. Dr. G. F. Buchan, the new President, will be in the chair, and the council hope that members will be present in large numbers. Ladies are invited, and members are asked to give early notice to the executive secretary, 1, Upper Montague-street, Russell-square, W.C. 1, of their intention to be present, with the names of their guests. A payment of 12*s.* 6*d.* for each ticket should be made with applications sent before Oct. 10th; after that date the cost of tickets will be 15*s.* each.

Society for the Study of Inebriety. — The eleventh Norman Kerr memorial lecture will be delivered by Dr. R. Hercod, director of the International Bureau against Alcoholism, Lausanne, Switzerland, on Tuesday, Oct. 13th, at 4 P.M., in the hall of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W. 1, when the subject will be Alcoholism as an International Problem. There will be a luncheon at 1.30 P.M. at the Welbeck Palace Hotel, Welbeck-street, Cavendish-square, W. 1, when Sir William Willcox, President of the Society, will preside, and Dr. Hercod will be present. Tickets 4*s.* each (exclusive of beverages). Members and associates desiring to be present are asked to send intimation to the hon. secretary, Dr. T. N. Kelynack, 19, Park-crescent, Portland-place, W. 1, with remittance before Oct. 7th.

People's League of Health.—The League, by kind permission of the London County Council, will give the Sims Woodhead series of constructive educational health lectures at the Regent-street Polytechnic. The series will commence on Friday, Oct. 9th, at 6 P.M., and be continued on the following five Fridays at the same hour. Among those who have promised to lecture are: Sir Harry Baldwin, Prof. Leonard Hill, F.R.S., Prof. H. R. Kenwood, Mr. E. B. Turner, Prof. M. S. Pembrey, F.R.S., and Prof. B. J. Collingwood. At the conclusion of the series there will be an optional examination for those who have attended the lectures, and certificates will be issued by the Medical Council of the People's League of Health (with a travelling scholarship prize award, consisting of a week's visit to a foreign country, with facilities for visiting its health centres). Tickets and further information regarding the lectures held may be obtained from 12, Stratford-place, W. 1.

Puerperal Fever and the M.A.B.—Arrangements have been made by the Metropolitan Asylums Board whereby in future the cases of puerperal fever referred to the Board will be concentrated as far as practicable in three of their institutions—namely, the Eastern Hospital, Homerton; the North-Western Hospital, Hampstead; and the South-Western Hospital, Stockwell—where special wards will be set aside for these cases and special medical and nursing staffs provided. The Board have also, with the approval of the Minister of Health, appointed an obstetric consultant at these three institutions. A circular (No. 622) has been issued by the Ministry to metropolitan borough councils in which it is recognised that suitable accommodation for cases of puerperal fever is available at other institutions, but expressing the hope that borough councils will take steps to secure, as far as practicable, that full use is made of the accommodation provided by the Metropolitan Asylums Board. The medical officer of health is requested to bring this point to the notice of general practitioners.

Death Certification and Coroners' Law.—In the course of his fourth presidential address to the Sanitary Inspectors Association, which recently held its thirty-eighth annual conference, Sir William Collins referred to the necessity of further reform in death certification and coroners' law. He recalled the disgraceful conditions which obtained during the last century, and speaking of untrustworthy verdicts, referred to the two classical examples: "Death from stone in the kidney which stone he swallowed when lying on a gravel path in a state of drunkenness," and "Child, three months old, found dead, but no evidence whether born alive." Though administration had effected much, legislation still lagged behind. "I remember," continued Sir William Collins, "in 1895, 1896, and again in 1907, voicing deputations to three successive Lord Chancellors, Lords Herschell, Halsbury, and Loreburn, urging reforms in death certification and coroners' law. From all we received promises of sympathetic and serious consideration, but practically nothing has been done. A Bill has, I understand, been introduced this session by a private medical Member dealing with certain reforms in the matter of death certification and disposal of the dead; but in view of a promise made by the Home Secretary of a Government Bill on the whole subject the prospects of the private Member's venture are not roseate. It is to be hoped," he added, "that the Home Secretary's assurances may prove more fruitful than those of the three Lord Chancellors."

Vienna Medical Faculty.—A comprehensive series of post-graduate courses has been arranged by the Faculty for the academic year 1925–26. A full syllabus and information regarding lodging, &c., in Vienna may be obtained from the offices of the Vienna Medical Faculty, Schlösselgasse 22, Vienna VIII. It is requested that the cost of return postage be enclosed with inquiries.

Patients' Payments to Hospitals.—A return issued by the London Hospital Sunday Fund states that last year the payments made by patients amounted to £860,000—almost exactly one-third of the total income (£2,590,000) of the metropolitan hospitals. The expenditure was £2,887,000. Just under half a million was received in legacies, and of the total of 13,625 beds, 11,234 were constantly occupied.

Casualties at the Royal Free Hospital.—Last year 1751 casualties were received, a number exceeded only by one other hospital. The completion of the first portion of the new home for nurses since the report was prepared will make it possible to open shortly single rooms for private patients of limited means.

Leicester Pensions Hospital.—This hospital, which during the war served as the Fifth Northern General Hospital, is to be closed in November. There are rather more than 100 men still there, and it is expected that they will be removed to Birmingham.

Cost of Tuberculous Patients.—The annual report of the Hospital for Consumption at Brompton shows that the average stay of its 2389 in-patients was 49 days, and that the cost per head was £24 7*s.* 10*d.* The 459 in-patients of the sanatorium at Frimley cost £58 12*s.* 4*d.* each. Of the 326 beds at Brompton 280 were constantly occupied.

"A. J. S. Radio" Luncheon.—The initials "A. J. S." are familiar to users of motor-bicycles, and it will not be long before they are equally familiar to users of wireless apparatus. On Sept. 10th "A. J. S. Radio (1914), Ltd." opened their London offices, showrooms, and demonstration rooms, and celebrated the occasion by a lunch. Mr. Edgar E. Lamb presided, and proposed the toast of "Our Guests," which was replied to by Mr. Otto Thomas and Prof. A. M. Low. Whilst manufacturing all sorts of wireless apparatus, including a fine-looking plant stand which is really a loud-speaker set, this company will specialise in compact sets for ordinary listeners-in.

Manchester's Street Accidents: A Poster Campaign.—Statistics for the year ending June 30th show that the number of persons killed in this period in Manchester was 59, 6 of these being at cross-roads, 11 at the approach to cross-roads, and 11 at the junction of side streets and main streets. The number of fatal accidents caused by stepping off the pavement in front of approaching vehicles was 21, involving 24 private motor-cars, 24 other mechanically-propelled vehicles, 7 tramcars, 4 taxi-cabs, and a number of other vehicles. In the non-fatal accidents 1855 persons were injured. Of these accidents 376 occurred at cross-roads, 493 at the junction of side streets and main roads, and 524 at other points. 427 of the accidents occurred through persons stepping off the footpath in front of approaching vehicles. In the non-fatal accidents were involved, among other vehicles, 588 private motor-cars, 380 other mechanically-propelled vehicles, 303 tramcars, and 70 taxi-cabs. Eighteen persons were hurt in pillion-riding accidents. On the suggestion of the chief constable it has been decided that the city shall be placarded with large posters warning against the dangers of street traffic, and also that posters warning children shall be placed on public buildings and on all schools in the city. Small forms containing warnings will be distributed to applicants for motor drivers' licences and to motorists' organisations. Similar forms will be supplied to the Director of Education for distribution to all the schools in the city, for the use of teachers so that they may consistently bring these safety rules to the notice of their scholars. There are injunctions to be observed by motorists—what they should do and not do, and a code for pedestrians. From the pedestrian's point of view perhaps the best thing in this poster is this: "Stand, look, and listen before crossing the road." The slogan "stand, look, and listen" ought to be memorised and practised by every pedestrian.

CONVALESCENT HOME FOR MERCHANT SEAMEN.—The Seamen's Hospital Society has for seven years maintained a convalescent establishment, the "Angas Home" at Cudham, near Orpington, Kent, for recovered patients discharged from the society's hospitals in London, but it has recently been found necessary to extend the accommodation. Such extension was made possible by the continued interest of Mrs. L. G. Angas, who gave the original house to the society in 1918, and on Sept. 11th a number of friends of the society gathered at Cudham, when Sir Arthur Clarke, chairman of the committee of management, asked Mrs. Angas to open the new buildings with a presentation gold key. In replying to a vote of thanks proposed by Admirals Sir Henry Jackson and G. R. Mansell, Mrs. Angas said she was glad to provide an extension to the buildings in memory of Captain the Rev. H. W. Angas, who devoted himself to relieving the hardships of seamen. Sir A. Clarke mentioned that, like the other establishments of the society, this building was now opened free of debt, but that £80,000 was wanted annually to keep the work going, and that subscriptions were welcomed. The home is a remodelled and extended country house, now able to take 40 patients, none of whom is chronic, in large grounds with lawns, trees, and gardens, 600 feet above the sea. Of the 40 beds, two, in separate rooms, are for officers; the others are in wards of various sizes. There are smoking rooms and a large billiard room with a piano and stage.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Sept. 21st, to SATURDAY, Sept. 26th.—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Charing Cross, W.C. Clinical demonstration every afternoon from 2 o'clock, with special demonstrations three times a week.—WESTMINSTER HOSPITAL, S.W. Special Post-graduate Course in General Medicine and Surgery, and the special departments. 10.30 A.M. to 5.30 P.M. daily. Demonstrations, lectures, &c. (first week).—HOSPITAL FOR CONSUMPTION AND DISEASES OF CHEST, Brompton, S.W. Post-graduate Course in Diseases of the Chest. Operations, lectures, lecture-demonstrations, demonstrations of surgical cases, of cases in wards, and in special departments (first week).—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Lecture-demonstration on Treatment by Electrotherapy on Wednesday, Sept. 23rd, and the three succeeding Wednesdays, at 5.30 P.M., by Dr. C. B. Heald. The Direct Current especially in Relation to Fractures and Injuries.

Appointments.

BINDLOSS, E. F., L.R.C.P. Lond., M.R.C.S., has been appointed Poor-law Medical Officer for Farnborough, Hants.

JONES, H., L.R.C.P. Lond., M.R.C.S., Certifying Surgeon under the Factory and Workshop Acts for the Maesteg District of the County of Glamorgan.

OGILVIE, W. H., M.D., M.Ch. Oxf., F.R.C.S. Eng., Assistant Surgeon to Guy's Hospital.

SAVORY, MARGARET B., M.B., B.S. Lond., House Surgeon to the New Sussex Hospital for Women and Children, Brighton.

Royal Northern Hospital: HUNTER, J. B., F.R.C.S. Eng., Surgeon, and BUTLER, H. O'NEIL, L.D.S. R.C.S., Assistant Dental Surgeon.

The Royal Alexandra Infirmary, Paisley: CALDWELL, J., M.B., Ch.B. Glasg., Senior Resident House Physician; POLLOCK, A. M., M.B., Ch.B. Glasg., Resident House Physician; MACARTHUR, J. C., M.B., Ch.B. Glasg., and GUNN, D., M.B., Ch.B. Edin., Resident House Surgeons.

Vacancies.

For further information refer to the advertisement columns.

Barnstaple, North Devon Infirmary.—H.S. £150.
Battersea General Hospital, S.W.—Med. Supt. £300.
Birmingham General Hospital.—Asst. S. £50.
Blackburn County Borough.—Asst. M.O.H. £600.
Buxton, Derbyshire, Devonshire Hospital.—Asst. H.P. £150.
Carmarthenshire Education Committee.—Asst. Sch. M.O. £600.
Chelsea Hospital for Women, Arthur-street, Chelsea, S.W.—S.
Colchester, Essex County Hospital.—H.P. £200.
Denbigh County Council.—Asst. M.O. £600.
Durham County Council.—Asst. Sch. M.O. £600.
East Ham County Borough Education Committee.—Temp. Asst. Sch. M.O. At rate of £600.
Edinburgh, Scottish Board of Health.—Dist. M.O. £1000.
Evelina Hospital for Children, Southwark, S.E.—H.P. At rate of £120.
Glasgow Royal Infirmary.—Supt. £800.
Hôpital Français, 172, Shaftesbury-avenue, W.C.—Sen. and Jun. Res. M.O.'s. £120 and £100 respectively.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. and H.P. At rate of £150 and £100 respectively.
Leeds Public Dispensary.—Jun. Res. M.O. £150.
Liverpool, David Lewis Northern Hospital.—Med. and Surg. Tutors and Registrars.
Macclesfield, Cheshire County Mental Hospital, Parkside.—Asst. M.O. £350.
Manchester, Ancoats Hospital.—Asst. Surg. Reg. £40.
Manchester and District Radium Institution.—Asst. Radiologist. £500.
Mental Hospitals Service under the L.C.C.—Eighth Asst. M.O. £432.
Miller General Hospital for South-East London, Greenwich, S.E.—H.P. £125.
Norfolk County Council.—Asst. Tub. O. £600.
Radium Institute, 16, Riding House-street.—Cancer Research Worker. £500.
Royal London Ophthalmic Hospital, City-road, E.C.—Refraction Asst. £100.
St. Bartholomew's Hospital and College.—Res. Asst. Phys.-Accoucheur and Demonstrator of Pract. Midwifery.
St. John's Hospital for Diseases of the Skin, Leicester-square, W.C.—Clin. Assts.
South London Hospital for Women, South Side, Clapham Common, S.W.—H.P., three H.S.'s. Each at rate of £50. Clin. Asst. £1 1s. per attendance. S. to Ear, Nose, and Throat Department.
South Shields County Borough.—Ven. Diseases M.O. £750.
South Shields, Ingham Infirmary.—Jun. H.S. £150.
Throat Hospital, Golden Square, W.—Two H.S.'s at rate of £100. Also Hon. Surg. Reg.
Weir Hospital, Grove-road, Balham, S.W.—Jun. Res. M.O. £100.
Whalley, near Blackburn, Calderstones Certified Institution for Mental Defectives.—Asst. M.O. £300.
Whipps Cross Hospital, Leytonstone.—Specialist Consultant in Light Treatment. £300.
Willesden General Hospital, N.W.—H.S. At rate of £100.

The Chief Inspector of Factories, Home Office, London, S.W., announces vacant appointments for Certifying Factory Surgeons at Nairn, Nairnshire, and Guildford, Surrey.

Births, Marriages, and Deaths.

BIRTHS.

HALES.—On Sept. 12th, at Lees Lodge, Sheringham, Norfolk, the wife of Henry Ward Hales, M.D., of a daughter.

HART.—On Sept. 8th, at Platt's-lane, Hampstead, the wife of S. L. Hart, L.D.S., of a daughter.

HASLETT.—On Sept. 6th, at Holmbank, Upper Halliford, Shepperton, the wife of Dr. W. Handfield Haslett, of a son.

HAWLEY.—On Sept. 11th, at Hazelbeech, Coventry, the wife of Thomas Hawley, F.R.C.S., of a son.

MOLLISON.—On Sept. 12th, at Devonshire-place, London, the wife of W. M. Mollison, M.Ch., of a son.

MARRIAGES.

ALLISON—STEEN.—On Sept. 9th, at Fitzroy-avenue Church, Belfast, Richard Sydney Allison, M.D., M.R.C.P., to Elizabeth Nowell Barnett (Betty), younger daughter of Mr. and Mrs. J. Barnett Steen, Eglantine-avenue, Belfast.

HOSFORD—RANDALL.—On Sept. 8th, at All Saints Church, Ryde, Reginald Walter Patrick Hosford, M.B., F.R.C.S., to Nora Kathleen, daughter of Mr. and Mrs. F. W. Randall, of Mayfield, Ryde.

MICHELMORE—CHILTON.—On Sept. 7th, at Salcombe Regis, Ralph Godfrey Michelmore, M.B., B.S., of Sidmouth, to Charlotte Macintyre Chilton, youngest daughter of Mr. and Mrs. Charles Chilton.

MORGAN—MITCHELL.—On Sept. 11th, at University Chapel, King's College, Old Aberdeen, George Roderick Morgan, M.C., M.B., Ch.B., second son of George Blacker Morgan, M.D., Sunderland, to Betty Mitchell, M.B., Ch.B., youngest daughter of Peter Mitchell, M.D., Old Aberdeen.

SHORE—HOARE.—On Sept. 12th, at St. Bartholomew the Great, Smithfield, Thomas Henry Gostwyck Shore, M.D., M.R.C.P., to Viola Edith, second daughter of the late Mr. Frederick Hoare, of Craiglands, Crouch End Hill, and Mrs. Hoare, of Stanhope-gardens, Highgate, N.

THOMPSON—WILKIE.—On Sept. 8th, at the Parish Church, Falmouth, Brian G. Thompson, M.D., to Elsie Katharine, daughter of Colonel D. Wilkie, Indian Medical Service (retd.), and Mrs. Wilkie, of Coolmore, Falmouth.

YOUNIE—MITCHELL.—On Sept. 11th, at University Chapel, King's College, Old Aberdeen, John Younie, Indian Civil Service, son of Mr. George Younie, Rothes, to Dorothy Mitchell, M.B., Ch.B., D.T.M., eldest daughter of Peter Mitchell, M.D., Old Aberdeen.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

SOME ACHIEVEMENTS OF INDUSTRIAL LEGISLATION AND HYGIENE.

Being an Address delivered to the Congress of Industrial Hygiene, Amsterdam, Sept. 12th, 1925,

BY SIR THOMAS OLIVER, M.D. GLASG.,
PRESIDENT OF THE BRITISH SECTION.

INDUSTRIAL hygiene is a comparatively recent branch of medicine. Although Ramazzini published his treatise on "Occupation Diseases" in 1700, it was the utilisation of steam as a motive power which stimulated the growth of modern industry. The manufacture of pottery, also of bricks for building purposes, is one of the oldest trades. Coal-mining, on the other hand, is one of the most important industries as it is one of the most dangerous. The Romans during their occupation of Great Britain made use of the coal obtained from "drifts" in the city and neighbourhood of Newcastle-upon-Tyne. There was no deep mining for coal in those days. It was in the early part of the thirteenth century that permission was granted by Henry II. to dig for coal in the North of England. During the early part of last century coal-mining in Great Britain was a procedure attended by great hardships, physical and social, upon those who followed the vocation. A hundred years ago the hours of work were long, 12 to 13 per day, boy labour was exploited, and female labour underground was utilised; there was only one shaft leading into the mine, which served both for men and material, and, as a consequence, not only was there no "through ventilation" of coal-mines, but in the event of the single shaft becoming blocked there were no means of escape for the men underground or their comrades above ground reaching them. It was the occurrence of such an accident at a pit a few miles from Newcastle, known as the Hartley Colliery Disaster, 60 years ago or thereabouts, which led to the compulsory provision of two shafts into a mine whereby there is the "through ventilation" which is in use to-day. The winning of coal has always been a hazardous occupation. It was therefore to be expected that the risks and dangers to life in coal-mining through accident and illness, also the long hours of work, would at the earliest opportunity engage the attention of the British Parliament.

Two months ago I was called professionally to see a retired coal-miner, aged 72, who told me that he began work in the mine at the age of 9; that he worked from 4 A.M. till 5 P.M., and for this 13 hours work per day he received 10*d*. He had to be wakened at 3 A.M., left the house at 3.30 A.M., and had to walk more than a mile to the mine where at the pithead he was obliged to be ready to descend at 4 o'clock in the morning. He often slept while he walked to and from his work, and like the boys younger than himself employed in the mine, he frequently fell asleep at his work, and for which he was ill-treated by the foreman. In the winter months collier boys never saw daylight except on Sunday. It is an interesting fact that as recently as the last decade of the eighteenth century, miners and salters—that is, men who obtained salt from sea-brine—were, practically speaking, serfs in Scotland. Those men could be bought and sold along with the purchase and sale of mines. It was not until 1799 that they received their freedom. The circumstance just mentioned may to some extent explain the deplorable conditions which prevailed in coal-mining in the early years of last century in Great Britain, also the unsatisfactory housing of coal-miners and their families.

Fatal Accidents.

It is impossible to say what the number of fatal accidents was three-quarters of a century ago, for statistics at that period were not kept, but the death-roll was heavy. Before 1814 it was not the custom for inquests to be held on colliers who met their death by an accident in the mine. As showing the death-rate from mine accidents during the latter half of 1800, the following data supplied to me by Prof. H. Louis, of the Mining Department, Armstrong College, are of interest. Taking quinquennial periods, the death-rates from mining accidents per 1000 men employed underground in Great Britain were:—

Year.		Year.	
1851–55	5·149	1876–80	2·709
1856–60	4·628	1881–85	2·312
1861–65	3·791	1886–90	2·042
1866–70	3·995	1891–95	1·704
1871–75	2·736	1896–99	1·479

If we take two later decennial periods for comparison, we find that the average annual deaths from accidents in British mines due to all causes were: 1873–82, per 1000 men employed 2·5, and from 1911–20 1·3.

With the exception of the United States of America the statistics of other countries also show a decline in the accident fatality-rates.[1] In Germany the rate, which was 3·18 per 1000 men employed in 1879, had fallen to 2·40 in 1914; in the United States the fatal accident-rate had risen from 3·5 per 1000 in 1890 to 3·62 in 1920, while during 1920 the rate for Belgium was 1·13, France 0·77, Great Britain 0·88, and 2·40 for Germany. Coal-mining in the United States is a comparatively modern industry; the men have not been so long trained as those in the older countries. In addition, many foreigners are employed and, as a consequence of difficulties incidental to language, orders given by officials may not be readily understood. The men, too, in order to make high wages work harder than in most countries. If the accident-rate is measured by the number of men killed for every million tons of coal raised, the figures for the United States compare most favourably with those of other countries.

Coal Mining.

Speaking generally for all countries, but especially for my own, the figures show that improvement has taken place in the reduction of fatal accidents in coal-mining, largely consequent upon freer ventilation, daily inspection of the mine for gas before the men descend, greater use of safety-lamps, substitution of the higher explosives for ordinary black gunpowder, also the employment of skilled men to place in situ the cartridges and fire them.

Although one of the most dangerous of occupations, coal-mining in Great Britain remained free from protective legislation until 1842, when owing to the serious condition of affairs revealed by a Royal Commission, women and girls were excluded from working underground. It was not, however, until 13 years afterwards that measures were introduced to protect the health, life, and limbs of the workers. For the saving of life in coal-mines we are indebted to the attention given to the subject by men engaged in chemical and physical research. The employment of the "safety-lamp" recommended by Sir Humphry Davy has prevented many explosions, just as the daily inspection by trained men of the areas at the working face of the mine before commencing to hew coal has been the means of saving many a miner from getting "gassed." One other important circumstance has added considerably to the safety of the miner's vocation. Three-quarters of a century ago the dangers of explosive gases in coal-mines had been recognised, but it was not until a few more decades had passed that Prof. Galloway and Mr. H. Hall showed that as widespread explosions frequently followed the firing of cartridges in mines, some of these explosions were due to the dry coal-dust which was raised into the atmosphere catching fire and travelling with explosive rapidity through the underground passages. Men were thus killed partly by gas, partly by burns, and in other instances, where death was not immediate, by pneumonia. Coal-mining on a large scale in France, Belgium, and Germany is of recent date compared with that of Great Britain. It was not, for example, until 1766 that coal-mining in Westphalia became a prominent industry. Other coal-producing countries have profited by the experience, the mistakes, and failures of British mining methods. As an illustration of how hygienic measures introduced to protect the workers in one direction may inadvertently lead to disaster in another, I cannot do better than reproduce the experience of the German mining authorities in the Ruhr a few years ago. Before the war several of the coal-mines in Central and Western Europe had become infected by ankylostomiasis. I visited the Belgian, German, and Hungarian coal-fields, and I descended into the Lothringen Mine near Bochum. I was much impressed by the excellent organisation, the sanitary measures which had been carefully prepared by Dr. Tenholt, and the adequate hospital provision made by the mine authorities for combating the disease in Westphalia. Although the parasite had gained entrance into the tin-mines of Cornwall, British coal-mines, fortunately, remained free. Ankylostoma ova and larvæ require heat and a considerable amount of moisture for their development. A few years previously to my visit to Westphalia there had occurred explosions in the German coal-mines for which high temperatures and the dry coal-dust were partly believed to be responsible. With the view of reducing such risks it was decided to introduce water-spraying into the mines. This, however, only caused fresh trouble, for the mines became infected by the ankylostoma parasite, which it was believed had been brought thither by Polish and Italian workmen, also probably by some of their own miners who during the summer months had worked in the brickfields

around Cologne and elsewhere. At any rate, in 1900 water-spraying of mines became general and the result was as follows:—

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[1] Kober: Industrial Hygiene, p. 145.

Year.	Cases of ankylostomiasis.	Year.	Cases of ankylostomiasis.
1896	107	1899	275
1897	118	1901	1030
1898	99	1903	1355

The rapid and great increase in the number of cases of ankylostomiasis after water-spraying can hardly be regarded as a coincidence.

As a class, coal-miners suffer less from pulmonary tuberculosis than most men employed in dusty occupations, but as Prof. E. L. Collis[2] remarks, "low as their phthisis mortality is, the experience for coal-miners displays certain statistical characteristics which are distinctive of dust phthisis," and these are "(1) an unusually late age of maximum incidence, and (2) an association with high mortalities from other respiratory diseases." Miners who are working at the coal face suffer from phthisis rather more than other miners below ground and workers above ground. Phthisis in coal-miners commences to express itself at and after 35 years of age, as the following figures show:—

Periods.	Age periods—			
	35	45	55	65 and over.
1890–92	1·45	2·07	2·22	2·03
1900–02	1·09	1·52	2·04	1·47
1910–12	1·02	1·31	1·43	1·02

The above data show the improvement which has taken place in the mortality-rate of coal-miners from phthisis.

Manufacture of Lucifer Matches.

There must be many in this audience who like myself, 20 to 30 years ago, were witnesses of the ill-health experienced by men and women who worked in match factories wherein white phosphorus was used. The men who dipped the matches in the phosphorus paste and the women who filled the boxes frequently suffered from necrosis of the jaw-bones or died from septic meningitis or broncho-pneumonia. In other instances where the poisoning was less severe the workers suffered from gastric trouble, anæmia, and albuminuria, or from a tendency of the long bones to become fractured owing to peculiar fragility. So great was the suffering of the persons who became affected that it became imperative that some united action should be taken by various Governments to produce matches which would strike anywhere without the workers incurring risk to their health. As far back as 1879 Switzerland introduced a Bill to prohibit the use of white phosphorus. In 1898 the British Government invited Sir Edward Thorpe, Dr. Cunningham, and myself to visit match works at home and abroad with the view of ascertaining how the workers might be protected against the risks they were exposed to. Like many of our Continental confrères, we were of the opinion that the time had come when a harmless substitute should be found for the dangerous white phosphorus. It was Lorinser, of Vienna, who in 1845 first drew attention to necrosis of the jaw-bones as an occupational disease, but in every country in which lucifer matches had been made from white phosphorus there had occurred cases of "phossy jaw." Chemists vied with each other to find a safe substitute for the dangerous metalloid. To French scientists fell the honour of showing how by employing sesquisulphide of phosphorus lucifer matches could be made without risk to the health of the workers. After a congress of the various Governments held in Berne in 1906, the match-producing countries of Western Europe decided to manufacture lucifers by the safe method, and so successful has been the result that the occupation is now free from the risks of three decades ago. Phosphorus necrosis has disappeared. This is one of the triumphs of industrial hygiene of which chemistry and medicine may well be proud and for which we are indebted to France.

Manufacture of Mirrors.

Chemical research has also proved helpful in other trades. It is not so long ago since quicksilver was used in the manufacture of mirrors. Many of the men then employed suffered from mercurial poisoning. Apart from the unhealthy conditions set up in the mouth through vaporisation of quicksilver, the workers became the victims of muscular tremor and occasionally of paralysis. Since making use of nitrate of silver preparations the men have had good health and the industry is now regarded as a healthy one.

Arsenical Pigments.

Just over 20 years ago I was a member of the Dangerous Trades' Committee of the Home Office to whom was given the task of investigating several trades which were regarded as inimical to health. One of these was the manufacture and use of wall-papers which contained arsenic, also the manufacture, mixing, and use of "emerald green." It had been found that much illness hitherto unrecognised was the result of sleeping in bedrooms with walls covered by paper containing arsenical pigment. Men employed in the grinding and mixing of such colours suffered from ulcers on their hands and fingers and upon the genitalia. In other instances a painful neuritis was established which occasionally ended in paralysis. In the United States, in Holland, and other countries the subject had also received attention. In Massachusetts, for example, a law had been passed in 1900 limiting the amount of arsenic in wall-paper to the extent of 0·1 gr. per square yard, but at the time of the British inquiry alluded to, we found manufacturers had been placing several grains in a square foot of wall-paper. The use of arsenical pigments in wall-paper in Great Britain was subsequently prohibited, their place being taken by aniline and other safe colours. To the fortunate results which have followed in all the trades wherein arsenical compounds are used, stringent regulations, improved ventilation, and the employment of means for the removal of dust have contributed.

As an illustration of the good effected I need only allude to the experience of Sir Thomas Legge who, in 1900, found in one of the London factories wherein "Paris green" was made, that 20 out of the 33 male workers employed therein had to be suspended—that is, 60 per cent.; but as a consequence of more stringent regulations, cleanliness, baths, &c., he found, 13 years afterwards, that the suspension from work were only 0·6 per cent.

Carbon Bisulphide.

Thirty years ago in the manufacture of india-rubber goods in Great Britain there was much serious illness among the men and women employed in the factories. The illness was traced to the use of carbon bisulphide as a solvent for sulphur monochloride in the vulcanisation of rubber. The vapour of bisulphide when inhaled causes intoxication not unlike that which follows the drinking to excess of alcoholic liquors. In the milder forms there are headache, vomiting, and a staggering gait; in the more pronounced form the symptoms, while primarily of the nature of aggravated hysteria, occasionally become those met with in acute mania; in other instances again there are indications of peripheral neuritis followed by paralysis of the limbs. Since new methods of vulcanising rubber by means of the incorporation of flowers of sulphur in a closed chamber under the influence of heat have been introduced, the trade has become healthier and there are no longer the distressing and crippling forms of illness which attacked the workers less than half a century ago.

Lead and Its Compounds.

If there is one metal more than others which since the rise of the modern industries has exacted in all manufacturing countries a high toll of human life it is lead and its compounds. One thing characteristic of industrial lead poisoning is the insidious manner in which it may develop; ill-health may gradually steal over the workers, or on the other hand, symptoms may rapidly show themselves, as, for example, by the sudden onset of acute abdominal pain, or loss of power in one or both hands, between night and morning. As lead and its compounds are used in over 130 industries, this circumstance renders lead one of the most important metals from an industrial point of view, just as, regarded medically, it is one of the most interesting. In Great Britain and in Western Europe lead is present in ore as galena or sulphide, and as this is rather insoluble in weak acid solutions, miners who blast the ore and are exposed to dust do not suffer from plumbism but from a dust disease of the lung called *silicosis*. In the Broken Hill Mines of Australia lead was present a generation ago in the form of *cerussite* or carbonate; this, when inhaled as fine dust, is readily soluble and becomes not only a source of plumbism but of the severer type of the malady known as saturnine encephalopathy. It was a fortunate circumstance for the owners of the Broken Hill Mines that after the cerussite layer had been worked out the subjacent ore was found to be galena, for the mining of this was followed by a marked declension in the number of cases of lead poisoning. A strange circumstance, however, has arisen at Broken Hill. Recently there has been a recrudescence of lead poisoning; this was found to be due to the lead ore in places having become changed into cerussite.

As regards lead, the dangers of industrial poisoning occurs during the smelting of the ore, the extraction of silver from the pig lead, plumbing and soldering, the manufacture of white and red lead, the mixing and use of paints, the use of lead compounds in the manufacture of pottery and of accumulators for electrical purposes, also in the dyeing of textile fabrics, &c. It is hardly likely, owing to fuller knowledge among the workers of the value of personal

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[2] Journal of Industrial Hygiene, May, 1925, p. 228.

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Fatal Accidents.

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Although one of the most dangerous of occupations, coal-mining in Great Britain remained free from protective legislation until 1842, when owing to the serious condition of affairs revealed by a Royal Commission, women and girls were excluded from working underground. It was not, however, until 13 years afterwards that measures were introduced to protect the health, life, and limbs of the workers. For the saving of life in coal-mines we are indebted to the attention given to the subject by men engaged in chemical and physical research. The employment of the "safety-lamp" recommended by Sir Humphry Davy has prevented many explosions, just as the daily inspection by trained men of the areas at the working face of the mine before commencing to hew coal has been the means of saving many a miner from getting "gassed." One other important circumstance has added considerably to the safety of the miner's vocation. Three-quarters of a century ago the dangers of explosive gases in coal-mines had been recognised, but it was not until a few more decades had passed that Prof. Galloway and Mr. H. Hall showed that as widespread explosions frequently followed the firing of cartridges in mines, some of these explosions were due to the dry coal-dust which was raised into the atmosphere catching fire and travelling with explosive rapidity through the underground passages. Men were thus killed partly by gas, partly by burns, and in other instances, where death was not immediate, by pneumonia. Coal-mining on a large scale in France, Belgium, and Germany is of recent date compared with that of Great Britain. It was not, for example, until 1760 that coal-mining in Westphalia became a prominent industry. Other coal-producing countries have profited by the experience, the mistakes, and failures of British mining methods. As an illustration of how hygienic measures introduced to protect the workers in one direction may inadvertently lead to disaster in another, I cannot do better than reproduce the experience of the German mining authorities in the Ruhr a few years ago. Before the war several of the coal-mines in Central and Western Europe had become infected by ankylostomiasis. I visited the Belgian, German, and Hungarian coal-fields, and I descended into the Lothringen Mine near Bochum. I was much impressed by the excellent organisation, the sanitary measures which had been carefully prepared by Dr. Tenholt, and the adequate hospital provision made by the mine authorities for combating the disease in Westphalia. Although the parasite had gained entrance into the tin-mines of Cornwall, British coal-mines, fortunately, remained free. Ankylostoma ova and larvæ require heat and a considerable amount of moisture for their development. A few years previously to my visit to Westphalia there had occurred explosions in the German coal-mines for which high temperatures and the dry coal-dust were partly believed to be responsible. With the view of reducing such risks it was decided to introduce water-spraying into the mines. This, however, only caused fresh trouble, for the mines became infected by the ankylostoma parasite, which it was believed had been brought thither by Polish and Italian workmen, also probably by some of their own miners who during the summer months had worked in the brickfields

around Cologne and elsewhere. At any rate, in 1900 water-spraying of mines became general and the result was as follows:—

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As a class, coal-miners suffer less from pulmonary tuberculosis than most men employed in dusty occupations, but as Prof. E. L. Collis[1] remarks, "low as their phthisis mortality is, the experience for coal-miners displays certain statistical characteristics which are distinctive of dust phthisis," and these are "(1) an unusually late age of maximum incidence, and (2) an association with high mortalities from other respiratory diseases." Miners who are working at the coal face suffer from phthisis rather more than other miners below ground and workers above ground. Phthisis in coal-miners commences to express itself at and after 35 years of age, as the following figures show:—

Periods.	Age periods—			
	35	45	55	65 and over.
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The above data show the improvement which has taken place in the mortality-rate of coal-miners from phthisis.

Manufacture of Lucifer Matches.

There must be many in this audience who like myself, 20 to 30 years ago, were witnesses of the ill-health experienced by men and women who worked in match factories wherein white phosphorus was used. The men who dipped the matches in the phosphorus paste and the women who filled the boxes frequently suffered from necrosis of the jaw-bones or died from septic meningitis or broncho-pneumonia. In other instances where the poisoning was less severe the workers suffered from gastric trouble, anæmia, and albuminuria, or from a tendency of the long bones to become fractured owing to peculiar fragility. So great was the suffering of the persons who became affected that it became imperative that some united action should be taken by various Governments to produce matches which would strike anywhere without the workers incurring risk to their health. As far back as 1870 Switzerland introduced a Bill to prohibit the use of white phosphorus. In 1899 the British Government invited Sir Edward Thorpe, Dr. Cunningham, and myself to visit match works at home and abroad with the view of ascertaining how the workers might be protected against the risks they were exposed to. Like many of our Continental confrères, we were of the opinion that the time had come when a harmless substitute should be found for the dangerous white phosphorus. It was Lorinser, of Vienna, who in 1845 first drew attention to necrosis of the jaw-bones as an occupational disease, but in every country in which lucifer matches had been made from white phosphorus there had occurred cases of "phossy jaw." Chemists vied with each other to find a safe substitute for the dangerous metalloid. To French scientists fell the honour of showing how by employing sesquisulphide of phosphorus lucifer matches could be made without risk to the health of the workers. After a congress of the various Governments held in Berne in 1906, the match-producing countries of Western Europe decided to manufacture lucifers by the safe method, and so successful has been the result that the occupation is now free from the risks of three decades ago. Phosphorus necrosis has disappeared. This is one of the triumphs of industrial hygiene of which chemistry and medicine may well be proud and for which we are indebted to France.

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As an illustration of the good effected I need only allude to the experience of Sir Thomas Legge who, in 1900, found in one of the London factories wherein "Paris green" was made, that 20 out of the 33 male workers employed therein had to be suspended—that is, 60 per cent.; but as a consequence of more stringent regulations, cleanliness, baths, &c., he found, 13 years afterwards, that the suspension from work were only 0·6 per cent.

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As regards lead, the dangers of industrial poisoning occurs during the smelting of the ore, the extraction of silver from the pig lead, plumbing and soldering, the manufacture of white and red lead, the mixing and use of paints, the use of lead compounds in the manufacture of pottery and of accumulators for electrical purposes, also in the dyeing of textile fabrics, &c. It is hardly likely, owing to fuller knowledge among the workers of the value of personal

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[1] Journal of Industrial Hygiene, May, 1925, p 228.

Notes, Comments, and Abstracts.

SOME ACHIEVEMENTS OF INDUSTRIAL LEGISLATION AND HYGIENE.

Being an Address delivered to the Congress of Industrial Hygiene, Amsterdam, Sept. 12th, 1925,

BY SIR THOMAS OLIVER, M.D. GLASG.,
PRESIDENT OF THE BRITISH SECTION.

INDUSTRIAL hygiene is a comparatively recent branch of medicine. Although Ramazzini published his treatise on "Occupation Diseases" in 1700, it was the utilisation of steam as a motive power which stimulated the growth of modern industry. The manufacture of pottery, also of bricks for building purposes, is one of the oldest trades. Coal-mining, on the other hand, is one of the most important industries as it is one of the most dangerous. The Romans during their occupation of Great Britain made use of the coal obtained from "drifts" in the city and neighbourhood of Newcastle-upon-Tyne. There was no deep mining for coal in those days. It was in the early part of the thirteenth century that permission was granted by Henry II. to dig for coal in the North of England. During the early part of last century coal-mining in Great Britain was a procedure attended by great hardships, physical and social, upon those who followed the vocation. A hundred years ago the hours of work were long, 12 to 13 per day, boy labour was exploited, and female labour underground was utilised; there was only one shaft leading into the mine, which served both for men and material, and, as a consequence, not only was there no "through ventilation" of coal-mines, but in the event of the single shaft becoming blocked there were no means of escape for the men underground or their comrades above ground reaching them. It was the occurrence of such an accident at a pit a few miles from Newcastle, known as the Hartley Colliery Disaster, 60 years ago or thereabouts, which led to the compulsory provision of two shafts into a mine whereby there is the "through ventilation" which is in use to-day. The winning of coal has always been a hazardous occupation. It was therefore to be expected that the risks and dangers to life in coal-mining through accident and illness, also the long hours of work, would at the earliest opportunity engage the attention of the British Parliament.

Two months ago I was called professionally to see a retired coal-miner, aged 72, who told me that he began work in the mine at the age of 9; that he worked from 4 A.M. till 5 P.M., and for this 13 hours work per day he received 10*d.* He had to be wakened at 3 A.M., left the house at 3.30 A.M., and had to walk more than a mile to the mine where at the pithead he was obliged to be ready to descend at 4 o'clock in the morning. He often slept while he walked to and from his work, and like the boys younger than himself employed in the mine, he frequently fell asleep at his work, and for which he was ill-treated by the foreman. In the winter months collier boys never saw daylight except on Sunday. It is an interesting fact that as recently as the last decade of the eighteenth century, miners and salters—that is, men who obtained salt from sea-brine—were, practically speaking, serfs in Scotland. Those men could be bought and sold along with the purchase and sale of mines. It was not until 1799 that they received their freedom. The circumstance just mentioned may to some extent explain the deplorable conditions which prevailed in coal-mining in the early years of last century in Great Britain, also the unsatisfactory housing of coal-miners and their families.

Fatal Accidents.

It is impossible to say what the number of fatal accidents was three-quarters of a century ago, for statistics at that period were not kept, but the death-roll was heavy. Before 1814 it was not the custom for inquests to be held on colliers who met their death by an accident in the mine. As showing the death-rate from mine accidents during the latter half of 1800, the following data supplied to me by Prof. H. Louis, of the Mining Department, Armstrong College, are of interest. Taking quinquennial periods, the death-rates from mining accidents per 1000 men employed underground in Great Britain were:—

Year.		Year.	
1851–55	5·149	1876–80	2·709
1856–60	4·628	1881–85	2·312
1861–65	3·791	1886–90	2·042
1866–70	3·995	1891–95	1·704
1871–75	2·736	1896–99	1·479

If we take two later decennial periods for comparison, we find that the average annual deaths from accidents in British mines due to all causes were: 1873–82, per 1000 men employed 2·5, and from 1911–20 1·3.

With the exception of the United States of America the statistics of other countries also show a decline in the accident fatality-rates.[1] In Germany the rate, which was 3·18 per 1000 men employed in 1879, had fallen to 2·40 in 1914; in the United States the fatal accident-rate had risen from 3·5 per 1000 in 1890 to 3·62 in 1920, while during 1920 the rate for Belgium was 1·13, France 0·77, Great Britain 0·88, and 2·40 for Germany. Coal-mining in the United States is a comparatively modern industry; the men have not been so long trained as those in the older countries. In addition, many foreigners are employed and, as a consequence of difficulties incidental to language, orders given by officials may not be readily understood. The men, too, in order to make high wages work harder than in most countries. If the accident-rate is measured by the number of men killed for every million tons of coal raised, the figures for the United States compare most favourably with those of other countries.

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Speaking generally for all countries, but especially for my own, the figures show that improvement has taken place in the reduction of fatal accidents in coal-mining, largely consequent upon freer ventilation, daily inspection of the mine for gas before the men descend, greater use of safety-lamps, substitution of the higher explosives for ordinary black gunpowder, also the employment of skilled men to place *in situ* the cartridges and fire them.

Although one of the most dangerous of occupations, coal-mining in Great Britain remained free from protective legislation until 1842, when owing to the serious condition of affairs revealed by a Royal Commission, women and girls were excluded from working underground. It was not, however, until 13 years afterwards that measures were introduced to protect the health, life, and limbs of the workers. For the saving of life in coal-mines we are indebted to the attention given to the subject by men engaged in chemical and physical research. The employment of the "safety-lamp" recommended by Sir Humphry Davy has prevented many explosions, just as the daily inspection by trained men of the areas at the working face of the mine before commencing to hew coal has been the means of saving many a miner from getting "gassed." One other important circumstance has added considerably to the safety of the miner's vocation. Three-quarters of a century ago the dangers of explosive gases in coal-mines had been recognised, but it was not until a few more decades had passed that Prof. Galloway and Mr. H. Hall showed that as widespread explosions frequently followed the firing of cartridges in mines, some of these explosions were due to the dry coal-dust which was raised into the atmosphere catching fire and travelling with explosive rapidity through the underground passages. Men were thus killed partly by gas, partly by burns, and in other instances, where death was not immediate, by pneumonia. Coal-mining on a large scale in France, Belgium, and Germany is of recent date compared with that of Great Britain. It was not, for example, until 1766 that coal-mining in Westphalia became a prominent industry. Other coal-producing countries have profited by the experience, the mistakes, and failures of British mining methods. As an illustration of how hygienic measures introduced to protect the workers in one direction may inadvertently lead to disaster in another, I cannot do better than reproduce the experience of the German mining authorities in the Ruhr a few years ago. Before the war several of the coal-mines in Central and Western Europe had become infected by ankylostomiasis. I visited the Belgian, German, and Hungarian coal-fields, and I descended into the Lothringen Mine near Bochum. I was much impressed by the excellent organisation, the sanitary measures which had been carefully prepared by Dr. Tenholt, and the adequate hospital provision made by the mine authorities for combating the disease in Westphalia. Although the parasite had gained entrance into the tin-mines of Cornwall, British coal-mines, fortunately, remained free. Ankylostoma ova and larvæ require heat and a considerable amount of moisture for their development. A few years previously to my visit to Westphalia there had occurred explosions in the German coal-mines for which high temperatures and the dry coal-dust were partly believed to be responsible. With the view of reducing such risks it was decided to introduce water-spraying into the mines. This, however, only caused fresh trouble, for the mines became infected by the ankylostoma parasite, which it was believed had been brought thither by Polish and Italian workmen, also probably by some of their own miners who during the summer months had worked in the brickfields

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[2] Journal of Industrial Hygiene, May, 1925, p. 228.

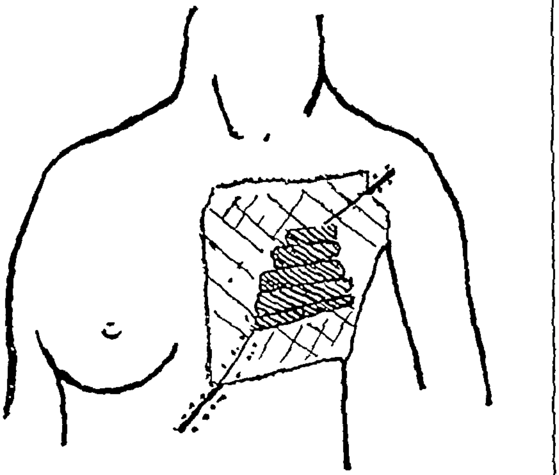
4. *On a Nutrient Beef-tea.*

Although milk is so nearly perfect as a fluid food, it is often desirable to have an alternative albuminous fluid food, for example, for patients who dislike milk.

Pound 2 oz. of fillet of beef in a mortar with 1 oz. of cold water, press the resulting paste through a wire sieve with the back of a wooden spoon or a vegetable presser. Return what comes through the sieve to the mortar. Pour into the mortar on top of the pounded meat 6 oz. of boiling bouillon, clear soup, or if nothing better is available, one of the commercial meat extracts. Stir this up and then pass it again through the sieve, which still has some particles of meat entangled in its meshes, which particles get washed through with the broth. The result is a reddish fluid which sets into a jelly after a few hours, and should measure about 8 or 9 oz.; that is to say, the whole of the 2 oz. of fillet of beef are contained in a tumblerful of liquid. The meat is very lightly cooked, but if the bouillon is skilfully prepared there is no raw taste. Other kinds of beef can be used, but they are inferior to fillet, as they contain more fat and fibrous tissue.

I have given this formula to Messrs. Withers, of 20a, Baker-street, who are prepared to supply this beef-tea to order, and as prepared by them it is an extremely palatable product. I have examined it microscopically and find that the beef is reduced practically to its ultimate fibres, and that many of these are actually broken up. Needless to say, this preparation will not keep and must therefore be freshly prepared daily.

FIG. 3.



A method of keeping Thiersch grafts in position.

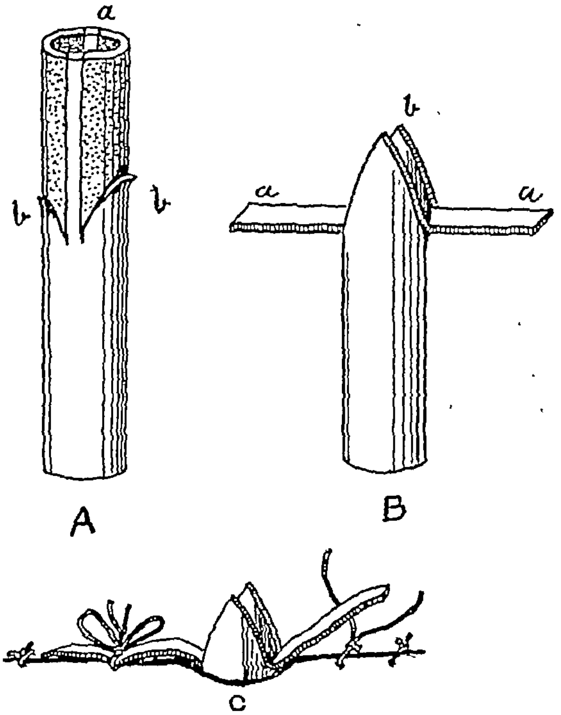
5. *On Keeping Thiersch Grafts in Position.*

In Fig. 3 the condition is represented in which the left breast of a patient has been removed for carcinoma and it has been found impossible to bring the skin together. The darkly shaded portion represents the skin grafts which have been applied subsequently. After this has been done a piece of sterilised mosquito-netting is gently laid over the grafts, stretched out flat on the chest wall and fixed in position with collodion all round the wound. The collodion is not painted on to the grafts, but merely on the skin around them, the tension of the netting serving to hold the grafts down. Over this any dressings that the surgeon may fancy can be applied. If there is much discharge this will escape through the mesh of the netting, and it will be found possible to renew the dressing without disturbing the grafts.

6. *On the Insertion of Drainage-tubes.*

It is important where a drainage-tube is to be inserted through a stab wound to see that the lines of the stab correspond with the lines of the cleavage of the skin or with the lines of tension of a flap. For example, after total amputation of the breast, if a drainage-tube is put in through a stab wound in the long axis of the body the hole will be dragged open and take a long time to heal. If, on the other hand, the incision for the drainage-tube is at right angles to the trunk the tension of the flap will tend to close it and it will heal rapidly. In putting a drainage-tube into the centre of an incision, for example after an operation for goitre, it is important to see that the edges of the incision lie evenly around the tube. The best way to do this is to put two sutures in the middle of the incision sufficiently far apart to admit the drainage-tube and so placed that there is exactly the same amount of skin above and below the incision. When the tube is removed the two edges fall together naturally, whereas if one had been a little longer than the other there would have been an ugly scar. After removing a tube, one sometimes desires to press the part to find out if there is any collection of pus within it. In the case of wounds of certain parts, for example of the neck, this can often be done by holding a swab against the wound and directing the patient to do the pressing for himself. Nervous patients appreciate this.

FIG. 4.

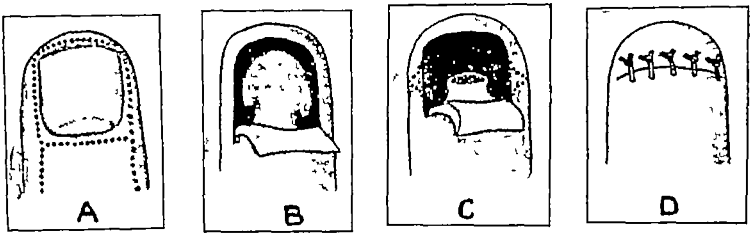


A drainage-tube for empyema.

7. *On a Drainage-tube for Empyema.*

This is a slight modification of a device which I have already published. The drainage-tube of the desired length and size is cut as in Fig. 4, A, two oblique cuts mark out the angular flaps (*b*), and the ends of these two cuts are joined to the open end of the tube by two pairs of cuts, marking out the two long narrow flaps (*a*), the dotted part coming away, leaving a tube as shown opened out in B. The tube is put into position and a stitch passed through the edges of the wound on either side, its ends being tied and left long. These long ends are then tied round the long flaps (*a*) holding the tube firmly in position. The triangular flaps hold the edges of the wound aside and prevent them from falling over the end of the tube. To remove the tube the bows are untied, the tube washed, replaced, and the bows retied (C). The sutures hold for a week or ten days, at the end of which it is usually easier to retain a tube of the ordinary pattern.

FIG. 5.

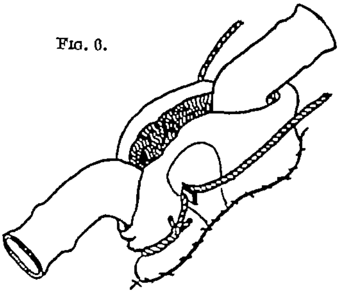


A method of removing finger- and toe-nails.

8. *On Removing Finger- and Toe-nails.*

The operation of removing a nail is usually called "avulsion," a term which suggests violence. The best way to do this little operation is to use a thin flat-bladed blunt dissector; the one sold under the name of MacDonald's raspatory is an excellent one. This is gently insinuated under the nail and moved from side to side so as to gradually separate the nail from its bed. The nail can then be lifted up and removed with a minimum of laceration of the underlying structures, and, consequently, a more rapid and less painful healing. The operation takes a little longer; but as the patient is, or should be, always under an anæsthetic this is of no importance.

FIG. 6.



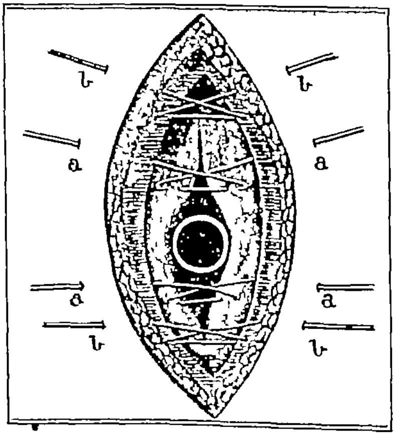
Showing the colotomy tubes in position.

In some cases, for example when the nail of the great toe is enormously overgrown, it is necessary to remove it completely, matrix-bed and all. The method illustrated in Fig. 5 will be found useful. The incisions are made as in A, surrounding the nail and running up on the phalanx for about half an inch. The little flap over the nail-bed is then dissected up and the nail-bed matrix and nail excised, leaving the terminal phalanx covered with a little fibrous tissue at the bottom of the wound as shown in B. The expanded end of the terminal phalanx is then cut off with a pair of bone forceps, leaving the condition shown in C. It is now quite a simple matter to sew up the whole wound completely as in D, leaving, when healing is complete, a painless rounded stump well calculated to bear pressure. Sometimes two little ear-like processes will be formed on either side of the incision. These can be removed by excising two little triangular flaps of skin as indicated by the dotted line in C. If the reflected flap over the matrix should prove to be too thin at its edge, this can be trimmed away.

9. *On Inguinal Colotomy.*

I practically always open the bowel in this operation immediately after fixing it in the wound. I carefully suture the bowel and the intervening mesentery to the skin with fine catgut and then pass two stout silk ligatures through the mesentery without interlocking them. I then pack round the bowel with gauze wet in 1 in 2000 perchloride of mercury to protect the wound. I next slit open the bowel, as shown in Fig. 6, clean it out, and pass a colotomy tube into each end. I then tie the two sutures one round each of the colotomy tubes and the bowel as tightly as possible, so as to hold them in position and completely avascularise the tissue beyond the ligature. As my hands are now soiled I remove my gloves, take away the wet gauze, and replace it by a cyanide gauze dressing wrung out of 1 in 40 carbolic acid. Colotomy

[FIG. 7.



Suturing of bladder and abdominal wall after prostatectomy.

tubes of india-rubber are tied over the glass tubes in the usual way. At the end of a week both tubes and the intervening piece of bowel separate cleanly without any hæmorrhage and a very satisfactory colotomy is obtained.

10. *On the Use of Figure-of-8 Suture after Prostatectomy.*

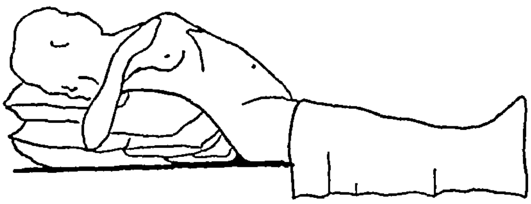
After removing the prostate I am in the habit of closing the wound around the drainage-tube as follows. *A stout silkworm-gut stitch is passed through the* muscular wall of the bladder on either side of the incision, avoiding the mucous membrane (Fig. 7 (*a*)). This is done above and below the tube, and the cut edges of the bladder are inverted around the tube. The sutures are then crossed and passed through the whole thickness of the abdominal wall—that which came from the right side of the incision into the bladder coming out on the left side of the incision in the skin and vice versa, so that when these are tightened up the bladder incision is turned in and the whole of the abdominal wound is approximated. But more superficial figure-of-8 sutures, as many as may be necessary, are put through the sheath of the rectus, crossed, and passed out through the skin (Fig. 7 (*b*)). When all these are tightened the abdominal wall is held well together, the edges of the bladder incision are inverted, and the bladder held well against the deep surface of the wound. These sutures are cut on the thirteenth day and removed on the fourteenth, thus leaving no buried sutures to cause trouble.

SOME PRACTICAL POINTS ON THE OPERATIVE SURGERY OF THE GALL-BLADDER.

1. In order to bring the biliary passages into a more accessible position, it is usual by some means or other to extend the spine into an arch, the summit of which is at the lower dorsal vertebræ. This may be done either by placing a firm. sandbag or a pneumatic pillow behind the patient in the lower dorsal region, by a "bridge" on the operating table, or by using a specially arranged operating table. All these positions are extremely uncomfortable to a conscious patient and are therefore a factor in producing discomfort after the operation. The method I have employed obtains exactly the same angulation of the spine in the lower dorsal region, but with much greater comfort. It is shown in Fig. 8.

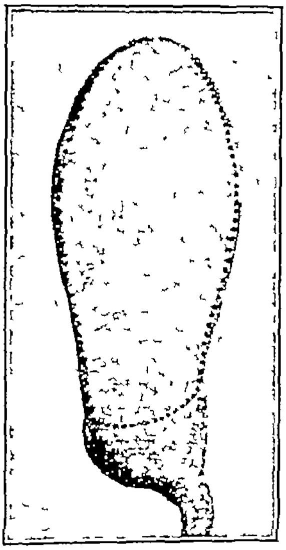
After the patient has been laid upon the table he is lifted up almost into a sitting position, and firm pillows or sandbags are pushed tightly up against the lower part of the spine and banked up as far as the lower dorsal region. The patient's head and shoulders are then allowed to fall back to the horizontal position and supported by further pillows. In all, about half a dozen are required. It will be noticed that not only is the angulation secured but that the abdomen is acutely inclined, making an angle of about 45° with the horizontal, so that on opening the abdomen the small intestines drop away to the pelvis and do not intrude upon the field of operation. It is only necessary to persuade a few normal, conscious individuals to try this position and compare it with the older ones to demonstrate how much more comfortable it is. Further, anæsthetists tell me it is a better position from their point of view, as it interferes less with the freedom of respiration. I have used this method now for a long time and have found that it gives good access with all the various incisions for exposure of the gall-bladder. I may mention, in passing, that, like many surgeons, I now usually attack this region through a paramedian incision.

FIG. 8.



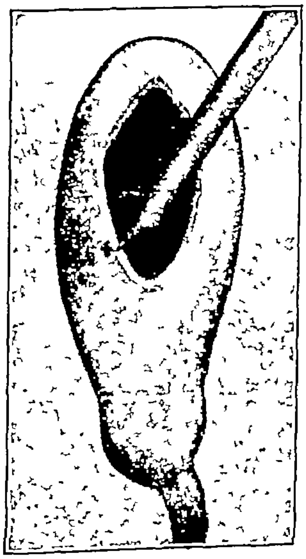
Position of patient on the operating table.

FIG. 9.



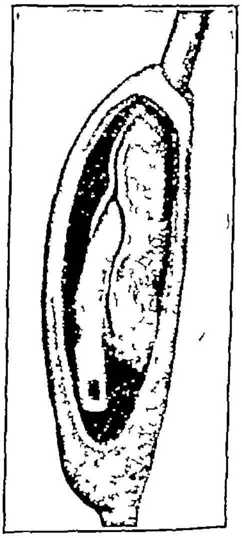
The line of the incision through the peritoneum over the gall-bladder.

FIG. 11.



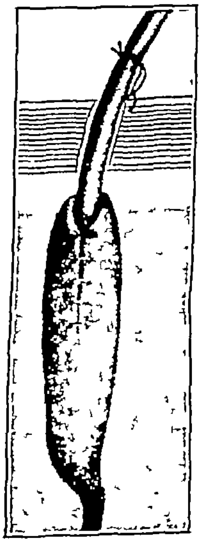
Incision into the gall-bladder with drainage-tube sutured to its margin.

FIG. 12.



Schematic view of the inside of gall-bladder as it would appear if viewed from the hepatic surface.

FIG. 13.

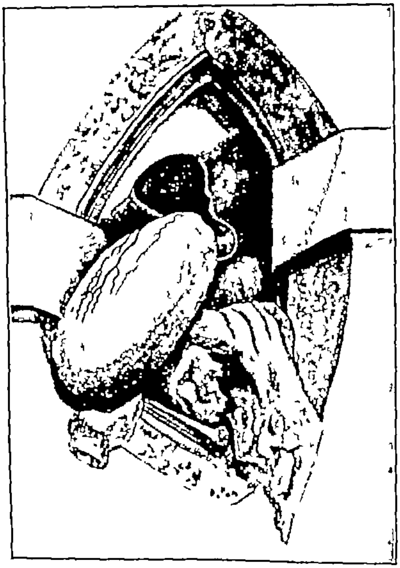


The drainage-tube in its final position.

2. In view of the accidents which have happened to the common duct in excising the gall-bladder, it is taught in most text-books that the dissection should commence over the cystic duct. In a thin patient, with a small gall-bladder, with lax hepatic ligaments, and a broad subcostal arch, this procedure is as easy as it appears to be in the illustrations in the

books on operative surgery. Unfortunately, however, a very large number of these cases are extremely fat, the gall-bladder is enlarged, obscuring the ducts, so that this method is difficult; and in such cases, even when it is possible, it can only be done by using a good deal of undesirable force. It is recommended in such cases that the gall-bladder should be aspirated before removal. In some cases this is, in my opinion, very undesirable and also unnecessary. The statement is made that it is almost impossible to remove the gall-bladder by commencing the separation from the liver at its fundus and at the same time to see distinctly the structures which are ligatured in the neighbourhood of the foramen of Winslow.

FIG. 10.



The separation of the gall bladder completed.

In such cases it is generally fairly easy, by incising the peritoneum, to separate the gall-bladder from the liver (Fig 9), starting at the fundus, care being taken, of course, to carry out the dissection at the proper level, and avoid lacerating the liver or the gall-bladder. The liver can now be held up by a retractor and a gauze pad packed over the raw area of the liver to control the hæmorrhage, if this is sufficient not to interfere with the operation. As a matter of fact, it is very rare that this is the case. The fundus of the gall-bladder is grasped, either with a piece of gauze or, if it is sufficiently lax, with a pair of ring forceps, and drawn downwards towards the right iliac fossa (Fig. 10). The incision between the liver and gall-bladder is then extended through the peritoneum from the lowest point on one side, transversely to the long axis of the gall-bladder until it meets the incision on the other side. It is immaterial whether this transverse part of the incision lies over the duct or over the lower part of the gall-bladder itself. This division of the peritoneum is quite easily carried out, provided that the peritoneum is drawn taut and a sharp knife is used. With a little blunt dissection it is now quite easy to push down the peritoneum between the transverse incision and the common duct. The gall-bladder is now connected only by its duct and its blood-vessels with a small amount of areolar tissue between. The cystic duct is separated from the remainder of the pedicle and traced downward as far as the surgeon thinks desirable. An aneurysm needle is passed around the remainder of the pedicle—that is to say, around the vessels, which are ligatured and divided—care being taken to leave a sufficient amount of tissue on the far side of the ligature to prevent it slipping off. The gall-bladder is left connected merely by the cystic duct which is ligatured and divided in the usual way. If the common bile-duct has not been exposed before, it is easy at this stage to do so, making gentle traction on the cystic duct and pushing the divided peritoneum aside.

To separate the gall-bladder from the liver, starting from the fundus and then to tie a string more or less blindly around a pedicle is certainly a dangerous procedure; but by this method we gain the advantage of a mobile gall-bladder and at the same time one can see exactly what is being ligatured Even when the transverse incision is made across the lower part of the gall-bladder it is usually quite easy to expose the whole of the cystic duct. Furthermore, if one has the consciousness that the duct has been well and truly ligatured a small escape of bile along the drainage-tube for the first 24 or 48 hours does not give the surgeon any apprehension that his ligature has slipped, as it will be evident that this escape is merely due to the lacerated bile-ducts on the surface of the liver.

3. Drainage of the gall-bladder is an operation less frequently performed to-day than formerly, but there are certain cases in which it is necessary. Some surgeons recommend the suture of the wall of the gall-bladder to the deeper part of the abdominal wall, while others recommend that a tube should be inserted and fastened in with a purse-string, the object of the purse-string being to invert the walls of the gall-bladder as the walls of the stomach are invaginated in a Kader's gastrostomy, so that when the tube is removed the gall-bladder will close rapidly.

Bickham recommends that when the incision into the gall-bladder is slit-like a few points of Lembert's sutures should be inserted and the drainage-tube brought out at the middle of the incision. The purse string method is very easily applicable when the gall-bladder is distended and has lax walls, but it is difficult to carry out in a contracted gall-bladder with thickened walls, especially if a large opening has been made in the gall-bladder in order that the surgeon may explore its interior with his finger, a procedure which, as Rutherford Morison says, should always be carried out. It is a good plan not to incise the gall-bladder actually at its fundus, but starting at a point about half an inch from its attachment to the liver, to carry the incision upwards as far as may be necessary to insert the finger, remove the stones, and clear the ducts (Fig 11) A drainage-tube about the size of a No. 12 catheter with several holes cut in its side is then pushed along the gall bladder towards the cystic duct and a non-absorbable suture passed through the gall bladder and tube. This suture is tied as tightly as possible, so that it will, in the course of a few days, cut through the tissues of the gall-bladder and liberate the tube, with which it ultimately comes away. The incision in the gall-bladder is then closed by several layers of Lembert's sutures, as many rows being inserted as possible, care being taken to tuck in the edges of gall-bladder between the tube and the liver The greater the amount of enfolding the more certainly will the gall-bladder fall together when the tube is removed and the less risk is there of the formation of a biliary fistula (Fig 12). The latter figure is a schematic diagram of the incision so sutured, viewed from within.

It is my experience that the discharge of bile in these cases ceases in 24 hours. The drainage-tube leading from the gall-bladder is brought out through the abdominal wall at a convenient point and fastened in position. To do this a silkworm-gut suture is passed through the skin and tied securely, but not too tightly. The loose ends are again tied together in a reef knot about half an inch from the skin, and the ends are now tied firmly round the drainage-tube (Fig. 13). The drainage-tube can be held very firmly in this way and it will take an appreciable tug to pull it out. Furthermore, by securing the drainage-tube in this way the lumen of the tube is not opened and the bile does not leak into the dressing, but runs away into the receptacle provided for it.

INSTRUCTION OF STUDENTS.

In order to make diagrams at the bedside I have had made for me sketch blocks of "poster paper" upon which I draw either with a carbon pencil or a "BB" carpenter's pencil, as sold by Winsor and Newton. To demonstrate cutaneous sutures I use spongiopiline. This is a sort of felt on one side of which is a black waterproof layer which represents the cuticle very well. If this is pinned on a blackboard incisions can be made into it and sewn up with thick white silk for class demonstrations. To illustrate plastic operations I use stockinette dress material, which is fastened loosely with drawing pins over a frame. Lines can be drawn on this with soft chalk, and sliding flap and other plastic operations can be readily carried out. The best material for the sutures is the thick real silk which is sold for knitting purposes. For demonstrating intestinal operations I employ a tube made of two thicknesses of flannel—the inside red flannel and the outside white flannel. With this all the ordinary methods of intestinal anastomosis can be quite readily demonstrated.

A CLINICAL STUDY OF DIABETIC COMA.*

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THE following 11 cases are recorded as illustrating some aspects of this complication which are worthy of note, and have a bearing on its present-day treatment.

CASE 1.—P. M., aged 25, male. Admitted under the care of Dr. A. P. Beddard. No history of illness till three weeks before admission. A sore-throat, thirst, and weakness were then noticed, and diagnosed by his doctor as influenza. The thirst and weakness increased, and some polyuria developed; he became constipated, and on the day before admission was drowsy. On admission he was semi-comatose and "dyspnœic," with a pulse of 110 (no note as to volume). The treatment and progress for the first four days are shown in Table I.

TABLE I. (Case 1.)

Date in Feb., 1924.	Blood.		Urine.				Treatment.	
	Sugar %.	Urea %.	Vol. oz.	Sugar.	Acetone bodies (FeCl$_3$).	Albumin.	Fluids.	Insulin. units.
6th	0·64	—	10 +C‖	+ +	+ +	+	See below.	50
7th	0·147	0·063	20 +C	+ + +	+ +	Nil		60
8th	—	—	34	—	—	—		60
9th	0·09	—	94	—	—	—		45

‖ C = One catheter specimen, volume not measured.

Fluids.—6th, 7th: 15 oz. hrly. gluc. and bicarb. rectally and mouth. 8th: Solid food started.

He was discharged "sugar-free" on 25 units of insulin night and morning, and on a fairly liberal diet.

Four months later he was readmitted for investigation. With no alteration in his diet and without insulin he remained sugar-free, and his blood-sugar at 5.30 P.M. was 0·135 per cent. He was discharged on a diet without insulin.

Notes.—Urine: There appears to have been a distinct drop in the volume of urine passed at the onset of coma, since he had been passing large quantities just before. Notwithstanding the considerable quantity of fluid given diuresis did not occur for two days, and then coincided with a complete return to consciousness. Blood-urea: On the second day, when the patient had almost recovered, the blood-urea was still twice the normal value. Subsequent history: This case is remarkable in that so severe a case of diabetes, requiring 50 units of insulin daily to keep the urine sugar-free, should have recovered to such a degree as to permit the omission of insulin, at any rate for the time being.

CASE 2.—E. K., aged 18, female. Admitted under the care of Dr. H. French. History of diabetes for two and a half years, treated by diet. Fourteen days before admission the patient complained of a sore-throat and became constipated. An enema was followed by some improvement. Two days before admission patient collapsed and vomited. The next day there was no improvement, vomiting continued, and there was much thirst. On the day of admission she became dazed, and when admitted she was comatose with some delirium, the respirations were deep and quick, and the pulse rapid and feeble. Treatment and progress are shown in Table II.

TABLE II. (Case 2.)

Date in Sept., 1924.		Blood.		Urine.				Treatment.	
		Sugar %.	Urea %.	Vol. oz.	Sugar %.	Acetone bodies.	Albumin	Fluids.	Insulin units.
7th:	8 P.M.	0·69	—	7	3·5	+ +	+	See below	40
	12 P.M.	—	—	4	—	—	—		
8th:	8 A.M.	—	—	10	2·9	+	—		40
	4 P.M.	—	—	4	3·5	±	—		60
	12 P.M.	—	—	Nil	Tr.	±	—		60
9th:	8 A.M.	—	—	¼	Tr.	Nil	+		20
	4 P.M.	—	—	1	Tr.	„	—		Nil
	12 P.M.	0·45	—	Nil	—	—	—		Nil
10th:	8 A.M.	—	—	2	Tr.	Nil	+		Nil
	4 P.M.	—	—	4	—	—	—		—
	12 P.M.	—	—	Nil	—	—	—		20
11th:	8 A.M.	0·50	0·198	4	F.tr.	Nil.	+		40

F. tr. = Faint trace.

Fluids.—7th: 25 oz. sodii bicarb., 50 oz. gluc., intrav. 8th: 20 oz. sodii bicarb. and gluc. 2-hrly. by nasal tube. 9th: 20 oz. gluc. intrav. 10th: 20 oz. fluid, 2-hrly., rectally.

Remarks.—7th: Comatose and vomiting. 8th: (8 A.M.) Conscious; (4 P.M.) still vomiting; (12 P.M.) comatose again. 9th: (8 A.M.) Sweating; (4 P.M.) air hunger, hot skin; (12 P.M.) vomited. 10th: No air hunger. 11th: Air hunger; commencing gangrene right big toe; (4 P.M.) died.

Post-mortem examination showed no naked-eye abnormalities in heart, lungs, kidneys, &c., but gangrene and perforation of the ileum had occurred, and there was some pus in the pelvis.

Notes.—Urine: A marked feature in this case was the oliguria. Although the blood-sugar was extremely high, only traces of sugar were passed in the last 73 hours. Albumin was constantly present. The absence of acetone bodies was probably due to the inability of the kidney to excrete them (vide Case 8). Blood-urea: The significance of so high a figure is doubtful, as the patient was moribund, in which condition a high blood-urea is sometimes found.[10] Vomiting: It is extremely difficult to assess the diagnostic importance of this persistent vomiting. It occurred in three other cases of coma (Cases 6, 10, and 11); but in view of the post-mortem findings it is impossible to rule out an intra-abdominal cause, although it is probable that the gangrene and perforation of the ileum was a terminal event comparable with the gangrene of the toe.

CASE 3.—L. B., aged 19, male. Admitted under the care of Dr. Beddard. History of diabetes for one and a half to two years. He had been having 5 units of insulin daily for the five months previous to his admission. On the day preceding admission the insulin was omitted and he had a tooth extracted. By the next day he was comatose, and when admitted there was definite air hunger. The treatment and progress are shown in Table III., with the exception of the fluid given, notes of which are available for the first 24 hours only. During this time 10 oz. saline, containing sodii bicarb. and glucose, were given every hour by nasal tube, and 20 oz. saline subcutaneously and 40 oz. saline rectally.

When discharged the patient was having 25 units three times a day, with a diet containing 2 oz. potatoes and 3 oz. bread. When seen six months later, apparently on the same régime, his blood-sugar was 0·28 per cent., and 120 units of insulin a day were required to render his urine sugar-free. When last seen in March, 1925, he was in excellent health, and his blood-sugar was 0·15 at 2 P.M. He was having only 50 units of insulin a day.

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* The chief points in this paper were communicated to a meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine.

TABLE III. (Case 3.)

Date in 1924.	Blood.		Urine.				Units of insulin.
	Sugar %.	Urea %.	Vol. oz.	Sugar.	Acetone bodies ($FeCl_3$).	Albumin.	
Oct. 25th	—	—	17(C)	—	—	—	140
,, 26th	—	—	40(C)	1·35 %	+	++	200
,, 27th	0·106	0·15	27(C)	Nil	—	++	25
,, 28th	—	—	45	+	+	+	30
,, 29th	—	—	30	Tr.	(+)	+	45
,, 30th	0·408	—	?	+	Tr.	Nil	45
,, 31st	—	—	104	++	Nil	,,	55
Nov. 6th	0·269	0·032	76	—	Nil	Nil	120

(C) = Catheter specimen.

Remarks.—Oct. 25th: Coma. 26th: Drowsy. 27th: Hypoglycæmia. 28th: Drowsy. 29th: Earache and aural discharge.

Notes.—Urine: A certain degree of oliguria is to be noted, and diuresis did not start for five or six days, the patient having completely recovered from the coma. Albumin was present until diuresis started. Blood-urea: Even on the third day the blood-urea was over five times the normal value. With complete recovery the blood-urea returned to normal. Coma: In this case although some sugar was given, at the end of 48 hours signs of hypoglycæmia appeared (noisy delirium, sweating, full pulse). On omitting insulin, within 24 hours the patient became drowsy again, as if diabetic coma were impending. Insulin treatment was restarted, less being given than before, and in a few days the effects of the coma had quite cleared up.

CASE 4.—L. S., aged 15, female. Admitted under the care of Dr. Beddard. History of two months' weakness. Tubercle being suspected, the patient was sent to a sanatorium about a week before admission to Guy's. While there she "caught a cold" and became tired and drowsy. She was sent home, and the next day she was admitted almost comatose with air-hunger. (Table IV.)

TABLE IV. (Case 4.)

Date in 1924.	Blood.		Urine.				Treatment.	
	Sugar %.	Urea %.	Vol. oz.	Sugar %.	Acetone bodies.	Albumin.	Fluids.	Insulin units.
August 27: 9.30 P.M. ..	0·36	N.N.	—	—	—	—	See below.	30
August 28th: 10.30 A.M. ..	0·24	—	33	4	++	+		
6 P.M.	0·070	—						90
August 29th ..	—	—	20	—	—	—		30
,, 30th ..	—	—	64	—	—	—		45
Sept. 1st ..	—	—	80	Nil	++	Nil		45
Sept. 18th: 5.15 P.M. ..	0·12	—	?	Nil	Nil	Nil		40

N.N. = Nearly normal.

Fluids.—August 27th: 20 oz. gluc. and $NaHCO_3$; stomach-tube. 28th: Fluids ad lib.; no record of quantity.

Remarks.—August 27th: Coma. 28th: Recovered consciousness.

Notes.—Urine: Slight oliguria is to be noticed. Albumin appears to clear up about the same time that the volume of urine increases. Coma: Although no symptoms of hypoglycæmia were noted, it is evident from the blood-sugar that within a few hours of coming out of diabetic coma the patient is close on an insulin reaction.

CASE 5.—R. E., aged 17, male. Admitted under the care of Dr. Poulton. History of one week's illness, starting with a sore-throat. On admission he was semi-comatose. He had well-marked air-hunger, but his pulse was good. (Table V.)

He was discharged Nov. 13th, 1924, in good health, having 50 units of insulin and an adequate diet. Six months later the urine was sugar-free, and the blood-sugar at 1 P.M. was 0·13 per cent., while he was taking 8 units of insulin at night.

TABLE V. (Case 5.)

Date in Sept., 1924.	Blood.		Urine.				Treatment.	
	Sugar %.	Urea %.	Vol. oz.	Sugar.	Acetone bod. es.	Albumin.	Fluids.	Insulin units.
24th: 12 P.M.	0·55	0·06	128	+	++	+	See below.	110
25th: 1 A.M.	0·10	—	104	—	—	+		40
2–5 P.M.	0·12	—	—	—	—	—		
26th	—	—	88	+	Tr.	—		35

Fluids.—24th: 100 oz. Saline by mouth for 5 hours. Vomited and fluids discontinued for 5 hours. 25th: 200 oz. Saline $NaHCO_3$ by nasal tube.

Remarks.—24th: Coma. 25th: Regained consciousness.

Notes.—Urine: No oliguria was present in this case. This probably is associated with the unusually good pulse. Blood-urea: Was twice the normal value, notwithstanding the quantity of urine secreted.

The subsequent history of this case is of interest. He was admitted in May, 1925, passing sugar and a fresh régime was arranged, but he did not keep to his diet. At the end of August he went to bed feeling unwell (no other details obtained), but got up on Sept. 4th, went out, and apparently ate unrestrainedly. He took no insulin that night, and the next day he was sleepy, and insulin was again omitted. Early on the 6th he was readmitted very drowsy, but able to answer questions. Energetic treatment was at once started, but in spite of 100 units of insulin and much fluid he died in a few hours. His blood-sugar shortly before death was 0·49 per cent. He passed no urine after an initial catheter specimen. Post mortem his bladder was empty and the kidneys were large with some fatty changes. No other abnormalities were found.

CASE 6.—M. J., aged 17, female. Admitted under the care of Dr. Beddard. Two or three months' history of lassitude, thirst, loss of weight and poor appetite. On the evening of the day preceding admission she suddenly vomited and became drowsy. The vomiting continued, and the drowsiness increased; on the next day she was admitted completely comatose, with deep but not rapid breathing. (Table VI.)

TABLE VI. (Case 6.)

Date in 1924.	Blood.		Urine.				Treatment.	
	Sugar %.	Urea %.	Vol. oz.	Sugar.	Acetone bodies.	Albumin.	Fluids.	Insulin units.
May 27th	—	—	12	+++	+++		See below	80
,, 28th	—	—	?	—	—	0·1 %		45
,, 29th	0·246	0·024	?	—	—	—		15
May 31st	0·243	—	10	—	—	Nil	—	40
June 20th	0·09	0·013	—	—	—	—	—	60

Fluids.—May 27th: 60 oz. per rectum, "several pints" by mouth of saline, with glucose and $NaHCO_3$.

Remarks.—May 27th: Coma. 28th: Recovered consciousness. 31st: Aural discharge noted June 6th.

The patient was discharged some weeks later quite fit on a diet and 60 units of insulin a day.

Notes.—Urine: The absence of reliable figures prevents any remark on the volume. Albumin was present and disappeared on the complete recovery of the patient.

CASE 7.—I. M., aged 16, female. Admitted under the care of Dr. Poulton. Admitted in coma. She did not regain consciousness, and died the next day. No record as to history was obtained. (Table VII.)

TABLE VII. (Case 7.)

Date in Sept., 1924.	Blood.		Urine.				Units insulin.
	Sugar %.	Urea. %.	Vol. oz.	Sugar.	Acetone bodies ($FeCl_3$).	Albumin.	
7th ..	0·5+	0·135	?	+	(+)	+	40
8th ..	—	—	?	++	Nil	—	120

Remarks.—7th: Coma. 8th: Death.

Note.—The main points of interest in this case are the high blood-urea a day before death, and the very small amount of acetone bodies in the urine.

CASE 8.—E. P., aged 29, female. This patient is Case 6 in a previous publication (THE LANCET, p. 777, 1923). Her history dates back two years. She had been having insulin treatment at home for some months. She was there seen by one of us in consultation with Dr. Wilson. She was then tired and had a bad cold. No sugar was found in the urine, and insulin had been omitted. Insulin was given again. The next day she became drowsy and had pains in her back. Sugar and acetone bodies appeared in the urine. On the following morning there was more drowsiness and some exophthalmos, and in the afternoon the patient became comatose and the breathing deep. Insulin continued to be given, but no urine could be obtained. A lumbar puncture was performed. Some improvement resulted which continued for some days, although there was some vomiting. A specimen of urine was obtained by catheter at the time of the lumbar puncture. The patient died a few weeks later, but no details were obtainable. (Table VIII.)

TABLE VIII. (Case 8.)

—	Vol.	Sugar.	Acetone bodies.	Urea.	—
Blood ..	—	0·46	—	—	—
Urine ..	?	Nil	Nil	—	—
C.S.F. ..	14 c.cm. removed.	—	$FeCl_3$ + Legal + +	0·16 %	Cells 0. Protein 0·05 %

Notes.—The striking points in this case were: (1) The high blood-sugar with no sugar in the urine. (2) Acetone bodies present in the C.S.F., but absent in the urine. (3) The high urea content of the C.S.F. (4) The pronounced oliguria.

CASE 9.—O. B., aged 19, female. Seen by one of us in consultation with Dr. H. P. Warner, of Woodford Green. Two years' history of malaise. Thirst was noticed two weeks previously, and four days previously the urine was found to contain 7 per cent. sugar, when the diagnosis of diabetes was made. She became drowsy early in the day, and by the evening was in coma. No urine was passed during the day. Sixteen months later she required 42 units of insulin a day, and with this the blood-sugar was 0·17 per cent., and the urine nearly always sugar-free. (Table IX.)

TABLE IX. (Case 9.)

Date in Dec., 1923.	Blood.		Urine.				Treatment.	
	Sugar %.	Urea %.	Vol. oz.	Sugar	Acetone bodies.	Albumin.	Insulin.	Fluids.
14th	0·45	0·077	13 (cath.)	1 %	+ + +	+	50 units at once, 30 units 4-hrly.	See below.
15th	—	—	60	—	—	—		
16th	—	—	70	—	—	—	—	
17th	—	—	65	—	—	Nil	—	

Fluids.—14th and 15th, 40 oz. saline with glucose and $NaHCO_3$, by nasal tube every hour.

Notes.—This case shows the preliminary oliguria with albumin in the urine and a raised blood-urea. With the onset of diuresis the albumin disappeared.

CASE 10.—K. A., aged 20, male. History of diabetes for two years. He was living at home on a protein-fat-vegetable diet, and was having 45 units of insulin a day. On this he was keeping very well, and was able to do all the work he wished to. On Wednesday, July 16th, 1924, he caught a chill and went to bed. He was still in bed on Friday, and he started to vomit. Insulin had been given as usual up to Friday morning, when it was omitted. On Friday night 30 units of insulin were given with some sugar, as he was drowsy. He died early Saturday morning. No other details were obtainable.

CASE 11.—J. W., aged 11, female. This child had had diabetes for about two years, and had done very well with insulin treatment at home. Her dose was 8 units in the morning and 16 units at night. On Thursday, July 31st, 1924, she had a temperature and was put to bed. Insulin was given as usual. On Friday she had a fluid diet and only 4 units of insulin. On Saturday the temperature became normal, but vomiting commenced and there was some air-hunger. The diet was still restricted to fluids and insulin was omitted. On Sunday some morphia was administered and the vomiting, which had been very persistent, ceased. At 8 A.M. she received 16 units of insulin, as there was much glycosuria. At midday 20 units of insulin and a rectal injection of glucose and sodii bicarb. were given, followed by 16 units of insulin and rectal glucose four-hourly, bringing the total amount of insulin to 68 units. On Monday she received 32 units of insulin, but became semi-comatose and her pulse began to fail. As she appeared to be in pain morphia was again administered. Death occurred at midday.

Notes (Cases 10 and 11).—There is a certain similarity in these two cases. In both a febrile attack was followed by vomiting, coma and death, and in both the dose of insulin was diminished. In both cases, when ultimately the seriousness of the condition became evident, the correct treatment of insulin and sugar was started, but in neither case were the quantities of insulin and fluids given as great as were found necessary in the cases treated in hospital.

Discussion.

Length of History.—Cases 1, 4, and 5 show the remarkable acuteness of onset of which diabetes is capable, the illness apparently dating back only seven days in Case 5.

Age.—In our series 9 of the 11 were between 11 and 20 years old, the remaining two being 25 and 28. This, however, is hardly a fair representation of the age-incidence of coma as the literature abounds with cases between 30 and 60, usually terminating a fairly long history of diabetes mellitus.

Onset.—The apparent cause of onset in many of our cases was a febrile disturbance such as a sore-throat or a cold. In three cases (3, 10, and 11) who were receiving insulin, coma started within a day of omitting insulin, either on account of a febrile disturbance or operative interference. Vomiting also appears often to precede coma (Cases 2, 6, 10, 11), this symptom occurring fairly frequently in histories of many reported cases.

Renal Element.—The renal element in diabetic coma appears to have escaped attention during the last few decades. Recently several investigators have recorded cases in which some renal failure is evident. Warburg [1] in particular has reported four cases and reviewed the literature with reference to diabetic coma as far back as 1844, when Bouchardat recorded two cases of diabetes who died in coma. In both of these before the onset of coma the urine contained much sugar, but during the 24 hours preceding death the urine contained no sugar. Between that date and 1897 there are many cases recorded in which diabetics died in coma with either anuria, or oliguria, or albuminuria with or without casts. The first record of definite urea retention in a case of diabetic coma was in 1868, when Colin notes that the blood from the veins at post-mortem contained a definite excess of urea. More recently Rosenblom,[2] Joslin,[3] Höst,[4] Rahlff,[5] Paddock [6] have recorded cases of coma in which the urine, while containing sugar, failed to show any ketone bodies; albuminuria was present in almost all cases. Mördre [7] has recorded a case in which the urine showed the presence of sugar and albumin with absence of ketone bodies, and in which the blood-urea was much raised, and Imrie and Skinner [10] record a similar case with anuria and a raised blood-urea.

These cases, except Warburg's and Imrie's and Skinner's, were treated before the days of insulin, and they all died, with the exception of Rahlff's case and two of Warburg's. The latter two cases showed some oliguria, albuminuria, absence of ketone bodies, and a raised blood-urea. The albuminuria disappeared and the blood-urea returned to normal with recovery. In Warburg's two fatal cases ketone bodies were absent from the urine. Brunton [11] has recorded two cases of diabetic coma successfully treated, in one of which there was a raised blood-urea which returned to normal. He also examined the blood-urea of several other diabetics not in coma and found figures within the normal range. No note as to the urine was made.

In a somewhat different category are the cases recorded by McCay and his co-workers.[12] He found that the Bengali leading a sedentary life and becoming obese was afflicted with a mild type of diabetes which often terminated in coma. He examined a number of cases and found a marked urea and non-protein nitrogen retention. The blood-sugar was raised. The urine showed albuminuria and casts and contained only small amounts of sugar, while the ketone bodies were present in traces only or were absent.

These cases were uniformly fatal, and McCay regards them as dying of uræmic coma following a prolonged deterioration of the kidney, but he had no opportunity of examining them before they were admitted in the early stages of coma, and apparently no microscopical examination of the kidneys was made. They may well have been, therefore, cases of diabetic coma with terminal renal failure.

An examination of the nine cases observed by us affords further evidence of the part played by the kidney in diabetic coma. In six cases oliguria was certainly present, and in eight cases there was albuminuria. The blood-urea was measured at the time of coma in seven cases, and in six of them it was abnormally high. Three of the cases (2, 7, and 8) observed by us terminated fatally in spite of insulin treatment, and in these the blood-urea ranged from 0·135 to 0·198 per cent. In only one case that recovered was such a high value found. In two of the fatal cases (2 and 8) the severe degree of renal failure was suggested by two further facts: (1) in spite of a very high blood-sugar, sugar was absent from the urine or present in traces only at some time during the coma; (2) the urine contained no acetone bodies.

In all the cases recorded up to date in which the urine showed no ketone bodies their presence in the body fluids has been assumed. In Case 8 this evidence was obtained by examination of the cerebro-spinal fluid. It has been shown also in a previous paper [12] that the kidney in coma does not concentrate ketone bodies as well as it does when coma is not present. (Table II. of the latter paper shows that in Cases 3 and 5 the concentration of ketone bodies in the urine was about ten times that of the blood, while in Case 4 in coma the concentration in the urine was only two or three times that of the blood.)

The cause of the renal failure is by no means clear. It is usually considered that the kidney, in common with other organs, is poisoned by the ketone bodies, and in particular by aceto-acetic acid. While this poisonous action undoubtedly exists it does not explain why a kidney which has for a long time successfully dealt with large quantities of ketone bodies suddenly fails and permits them to accumulate.

Other possibilities must therefore be considered. There are several.

1. The poisonous action exerted by the excess of sugar in the blood. The height of the blood-sugar in coma is indeed striking in some cases. Joslin [4] has recorded a blood-sugar as high as 1·37 per cent. There are records of cases in coma with blood-sugars below 0·4 per cent., and diabetics not in coma are fairly often seen with a higher blood-sugar than this. However a blood-sugar above 0·4 per cent. is undoubtedly very common in coma. In seven of our cases the blood-sugar was estimated at the time of coma. The lowest value was 0·36 per cent., and all the other values were above 0·4 per cent.

2. Other toxins may be formed (suggested by Paddock, Rosenblom, McCaskey). There is, however, very little evidence of them.

3. The ketone bodies may poison the heart muscle and the circulatory failure may cause renal failure with oliguria and further accumulation of poisons. (This cause for oliguria was pointed out by Frederick Taylor in 1880.) That circulatory failure is characteristic of diabetic coma is shown by the feeble pulse and diminished intra-ocular tension that occur so commonly. However, in Case 8 the pulse appeared to one of us perfectly normal, and yet the blood-urea was 0·66 per cent., so that circulatory failure will not explain this matter completely.

4. The preceding polyuria noted in many cases, or the vomiting in others, may completely deplete the water reservoirs of the patient, the kidney thus becoming unable to excrete the poisonous ketone bodies owing to lack of the necessary water. The almost constant marked dehydration of a coma patient adds support to this, and the recovery, if only temporary, which has frequently been noticed to follow the intravenous injection of large volumes of salines also points in the same direction. The diuretic effect of high blood-sugar [10] would also account for the close association between a high blood-sugar and coma.

5. The ketone bodies may be produced so very rapidly that the kidney is unable to cope with them. This is probably what occurs in the cases of coma occurring within the first few weeks of the disease.

The last three factors probably account together or separately for the majority of cases of coma, and also for the different types of case (cf. Dreschfeld [8] and Frerichs,[9] quoted by Warburg, and the report of the Insulin Committee.[11])

Prognosis.

All the cases of diabetic coma in this paper were young subjects. With efficient insulin treatment the most important immediate cause of death at the present day would appear to be renal failure, as indicated by prolonged oliguria, high blood-urea, and the excretion of mere traces of sugar or acetone bodies in the urine. Albuminuria is practically always present and so will not influence the prognosis. After recovery from coma there is no tendency to relapse into coma provided insulin treatment is continued. The ultimate severity of the case, as judged by the amount of insulin required, depends largely on the length of time the patient has had diabetes, if insulin has not been given previous to the coma, because the disease is naturally progressive in young subjects.

Our figures so far as they go support this view. The amount of recovery in Cases 1 and 5, where the history was short, is remarkable. Enocksson [14] has recorded an even more striking success in a child who, within three months of recovery from coma, showed a perfectly normal tolerance to carbohydrates. This was unfortunately broken down by carbohydrate overfeeding, but on a suitable diet returned almost to normal again.

Diagnosis.

In view of the above results it is obvious that some cases of diabetic coma closely resemble uræmic coma. Take, for example, Case 8, where the urine showed no sugar or ketone bodies and where there was also urea retention. Such a case seen for the first time without a history would undoubtedly be diagnosed as uræmia, and only the estimation of the blood-sugar would indicate the correct diagnosis, and even here care in the interpretation of the result is required, since in chronic nephritis the blood-sugar tends to be slightly high. Further points in favour of uræmia in young subjects would be a blood pressure over 150 mm. and the presence of retinal changes, since diabetic retinitis (even if it exists, which is doubtful, and is not merely secondary to a coincident hyperplastic sclerosis, senile calcification or Monckeberg's sclerosis) is never, in our experience, met with in young subjects. As we are now able to combat diabetic coma by means of insulin with a good chance of success it is important that cases should not be missed, and in all cases of suspected uræmic coma where the history is doubtful blood-sugar estimations should be made.

Prevention of Diabetic Coma.

L. Blum has pointed out that patients who have been treated with insulin may pass rapidly into coma if insulin is suddenly stopped. The explanation is that owing to the insulin such patients have put on much weight in the form of fat. But fat is the chief source of ketone bodies, so that the latter are immediately formed in large quantity if the carbohydrate metabolism is suddenly interfered with by omitting insulin. As a contrast the case may be cited of a man, aged 54, seen by one of us in consultation with Dr. Bent before the insulin days. As the result of a four years' history of diabetes, he had been reduced to a mere skeleton. The urine gave a very faint Rothera reaction four days before his death, which was not from coma, but rather from inanition. The ketosis was presumably absent because the body fat had practically disappeared. The elderly patient with diabetes is not in danger of diabetic coma, and such people are able to take a course of insulin treatment and obtain the full benefit from it, and they may then omit insulin when they like.

The risk that acute infection may precipitate coma has long been known. Out of ten of our cases where the notes are complete, a history of acute infection immediately preceding the coma was obtained in no less than seven, and this took the form of "sore-throat," "cold," "chill," or "temperature." It is thus obviously of great importance to protect patients with diabetes from acute catarrhal infections of the respiratory mucous membranes by means of face masks made of butter muslin, by Glegg's paraffin and vaseline treatment,[15] by prophylactic vaccination, &c. If infection occurs the insulin must be continued, and if glycosuria and ketosis supervene the dose should be increased and extra carbohydrates should be given for the time being. The bowels should be kept open and plenty of fluid should be taken by the mouth.

The Treatment of Diabetic Coma.

Our general views on the treatment of diabetic coma have already been given by one of us,[16] so that a brief summary is all that is necessary at present. Massive doses of insulin (20–40 units) are given every four hours, and at the beginning an intravenous injection of 10–20 units may be given if the case is urgent. The frequency of urea retention makes it important to give large volumes of fluid, so as to keep up the flow of urine. It is hardly ever necessary to give an intravenous injection of fluid because the latter can be absorbed rapidly and in larger quantity from the alimentary canal. If the patient cannot take one pint of fluid every hour by mouth, it should be passed directly into the stomach or duodenum through a nasal or Einhorn's tube, with the patient lying on the right side. The fluid should be isotonic, sugar, sodium bicarbonate, and a little salt being dissolved in tap water. A more accurate prescription is as follows: Dextrose 3 per cent., sodii bicarb. 0·5 per cent., potassium chloride 0·05 per cent., calcium chloride 0·03 per cent.

A look out must be kept on the bases of the lungs to see that œdema does not develop. The rapidity with which energetic treatment with insulin may cause diabetic coma to pass into hypoglycæmic coma without the patient recovering consciousness in between has been pointed out by Graham [17] and by one of us,[16] and is illustrated by Case 3 of the present paper. In the absence of blood-sugar examinations at frequent intervals, the plan of testing the urine at two-hourly intervals has been advocated, so that the administration of insulin may be temporarily stopped as soon as the urine is sugar free and only continued again when sugar returns. Such a plan would have failed in two of our cases, because the urine did not contain sugar even though the blood-sugar was high. It would be better to take account also of the ketone bodies of the urine by means of Rothera's and the $FeCl_3$ tests, because in hypoglycæmia both sugar and ketone bodies disappear from the urine; but even this plan would not have answered in our two fatal cases. Undoubtedly the safest plan is to continue giving sugar by mouth at frequent intervals until an abundant flow of urine is definitely established, and when this is the case sugar and ketone bodies will no longer be retained by the kidneys, and the urine will give a true index of the amount of hyperglycæmia and ketones in the body. The fluid intake may then be diminished and the sugar omitted, and the insulin should then be continued until the urine is sugar-free and free from ketones when tested at two-hourly intervals. Our subsequent treatment has been fully described elsewhere.[16]

Finally, we should like to thank the physicians at Guy's Hospital for facilities for examining their cases, and in particular we should like to thank Dr. J. H. Ryffel for permission to quote some of the analyses carried out by him. Part of the expenses of this investigation were defrayed out of a grant to one of us from the Medical Research Council.

Summary.

1. Eleven cases of diabetic coma have been reported and certain cases reviewed from current literature. 2. A definite renal element as shown by oliguria, albuminuria, and urea retention and failure to excrete ketone bodies, and occasionally sugar, is present. 3. In some cases this renal failure is so decided as to cause a marked resemblance to uræmic coma. 4. The cause of the renal failure has been discussed. 5. The treatment is carried out by means of large injections of insulin, and by the administration of much fluid, containing dextrose, by the mouth.

Note.—Since sending in this paper for publication, an interesting article by Dr. A. Clarke Begg has reopened the question (THE LANCET, July 11th, 1925, p. 69). In view of the present observations we would urge with Dr. C. G. Imrie (ibid., 251) that it is better not to divide up cases of diabetic coma into two distinct groups, since renal insufficiency in varying degree was present in practically all our nine consecutive cases. Further, we suggest that his cases, like our Case 8, were really acetonæmic, but that the kidneys fail to excrete the ketone bodies, and that the most rapid means of introducing fluid, which is urgently required by the body, is through the alimentary canal by nasal tube.

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THE TRANSMISSIBLE BACTERIAL LYSIN AND ITS ACTION ON DEAD BACTERIA.

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SINCE my first publication in THE LANCET in 1915 on the transmissible lysin to be found in association with micrococci and with bacteria of the dysentery-typhoid-coli group, a large number of papers have been published by different workers, and the literature on the subject at the present time is extensive. It is, however, not my purpose in this paper to do more than record a few additional experiments which I have carried out during the past six months.

No agreement has yet been reached as to the nature of the lytic agent, but, in the controversy that has centred round this important point, the absence of any definite action by this substance on dead bacteria has been used both in support of and against the view that it is an ultra-microscopic virus. It is therefore of interest to record that from my recent experiments it appears certain that dead bacteria, under special circumstances, are attacked and lysed.

A new strain of the lysable white micrococcus and fresh active lysin were obtained from vaccinia. The micrococcus was isolated free from lysin, and grown on agar slopes for 24 hours; from these a moderately turbid emulsion was made with normal saline. The emulsion was heated in a water-bath at 60° C. for one hour, then mixed with an equal quantity of ordinary sterile peptone-beef broth, and 2 c.cm. of the mixture pipetted into each of four sterile test-tubes.

Tube 1 received no addition.

Tube 2 was inoculated with a loopful of pure living micrococcus.

Tube 3 was inoculated with 2 drops of filtered lysin.

Tube 4 was inoculated with 2 drops of filtered lysin and a loopful of the living micrococcus.

The Standard Experiment.

This experiment throughout the paper will be referred to as the standard experiment. The four tubes were incubated at 37° C. After 24 hours tubes 1 and 3 showed no visible change. Tube 2 showed an increase of turbidity, while tube 4 showed a marked clearing of the emulsion. The experiment has been repeated a number of times with a similar result, although the time taken for tube 4 to clear may vary from one to three days according to the activity of the lysin used. It is worthy of note that a good result is also obtained if the coccus emulsion is prepared from cultures which are a week or more old, and with an emulsion heated at 75°–100° C., or when it is autoclaved at 120° C. for five minutes. Tube 4 in the experiment never seems to clear completely, but the opacity left is certainly in part due to the survival of some of the living bacteria, as can be proved by plating out the emulsion. The result is best shown when the dead coccus emulsion is not too thick, otherwise there will be insufficient fresh lytic agent produced to act on the maximum proportion of cocci in the emulsion. It is not essential to add broth to the saline emulsion of cocci, but without this the action is usually slower.

The experiments show clearly that there is *lysis of dead bacteria* when the lytic agent is being *freshly* produced in the presence of living bacteria of the same variety. In other words, that the lysin will act on both dead and living bacteria, but is only produced—*or possibly activated*—in the presence of the living. If the lytic agent is so activated or complemented by some thermolabile substance present in the living bacteria, it is a little surprising that the lysin, in the absence of living bacteria, does not act on the dead emulsion, seeing that the lytic agent in the experiments is mixed with broken-down products of living bacteria. It may, however, be that such a complementary agent, if present, is used up as fast as it is formed, and is therefore not free in sufficient quantity to produce any visible action. We know, from hæmolytic and many similar experiments, that such reactions are rarely simple in nature, and it seems probable from the experiments described here that the lytic agent consists of at least two portions, whatever the nature of these portions may be.

It may be recalled that d'Herelle in his work on the transmissible lysin—"bacteriophage"—claims to have separated a non-transmissible lysin from a transmissible virus, and if future experiments should prove the ultra-microscopic virus theory to be the correct one, then the experiments I have described might indicate that whereas the virus will grow only on the living bacteria, the lysin secreted by the virus will act on both the living and the dead, although the living may be first killed by the virus.

The Question of a Complementary Agent.

Some experiments were now carried out to test for the presence of a complementary agent that might be contained in living bacteria. The lysable micrococcus—free from the lytic agent—used in the standard experiment was grown in ordinary peptone-beef broth for three days at 37° C., and the culture then passed through a Doulton brown filter. The sterile filtrate was mixed with an equal quantity of fresh sterile broth, care being taken to avoid contaminations. This mixture was added to the emulsion of dead micrococci in place of ordinary broth which was used in the standard experiment, and the whole distributed into four test-tubes. Tube 1 was heated to 65° C. for an hour, and the tubes then inoculated as in the standard experiment—that is, tube 1 received no addition, tube 2 was inoculated with a loopful of living micrococcus, tube 3 received two drops of lysin, while tube 4 was inoculated with a loopful of coccus in addition to two drops of lysin. The experiment was repeated with slight variations. In some cases a much larger quantity of the filtered lysin was added, and in other instances, where an older broth culture was used, the filtrate of this was mixed with twice or three times its volume of fresh sterile broth before being mixed in equal quantity with the dead bacterial emulsion. In none of the experiments, however, was there any evidence of lysis in tube 3, the emulsion remaining as opalescent as in tube 1. Tube 4 in these experiments showed the same lysis of the emulsion as was observed in the standard experiment. It is clear from the absence of any lysis in tube 3, that the living micrococcus cannot be replaced by filtrates of the coccus growth. The experiments described, however, are not sufficient to prove that no complementary agent exists in the bacterial protoplasm, and it is intended to carry out further experiments to probe this question thoroughly.

In some other experiments a small quantity of fresh serum from a guinea-pig was added to the tubes which in other respects were set up in the manner of the standard experiment. This, however, did not activate the lysin in the absence of the living coccus. Tube 3 remained as opalescent as tube 1, while lysis took place only in tube 4.

Comparative Tests.

In carrying out these experiments comparative tests were usually made with emulsions of other bacteria which were killed at 60° C. and used in place of the lysable micrococcus. The bacteria included a slow-growing micrococcus also obtained from vaccinia, and giving a dense white heaped-up growth, the Shiga type of dysentery bacillus and *Bacillus phlei*. In each case four tubes were put up, and these were inoculated as in the standard experiment, and incubated as before. All the results were negative, there being no lysis of any of the emulsions, indicating that the lysin, in the presence of living cocci, is as specific in its action on dead bacteria as it is when they are living. This result is of particular interest in connexion with experiments that have been carried out by many workers who *appear* to have acclimatised a lysin for one bacterium to act upon another. If, however, the lytic agent is not of the nature of a virus, it would appear more likely in the acclimatisation experiments that a new variety of lysin, or possibly the specific portion of a double body, has been produced from the second bacterium, or the lytic agent may have always been present with the second bacterium, and been stimulated to start its cycle of activity. In any case it seems clear that the lysins associated with different bacteria cannot be identical, for while resistance of the bacterium may play a part in preventing any action in the case of the living bacterium, this cannot be so with emulsions heated as high as 120° C.

The Temperature at which Lysin is Destroyed.

In my original paper on the transmissible lysin, associated with the micrococcus to be obtained from vaccinia, it was stated that the lysin appeared to be destroyed at 60° C. Many workers have since given a higher temperature, while some have stated that there is not complete destruction at 65° C. In view of the different results obtained, I have recently carried out a large number of experiments to re-test this point. My original tests were carried out in the following manner: Agar streaks of the micrococcus showing well-marked lysis were taken and the growth washed off with 0.85 per cent. NaCl. This was made up to 200 c.cm. with a further quantity of saline and passed through a Doulton white filter. The filtrate was then run into long capillary tubes, and these placed, completely immersed, in a water-bath regulated at the temperature to be tested. On repeating the experiment in this way I have found that the lysin is usually destroyed at 60° C. in one hour. If, on the other hand, the filtrate is placed in a sterile test-tube plugged with cotton-wool, there is nearly always a small amount of lysin left undestroyed. Such a method, however, cannot be relied upon to give accurate results. It has been found also that if the lysed cocci are mixed with the condensation water of the agar tube, and the concentrated lysin drawn into capillary tubes, and heated to 60° C. for an hour, the lysin is probably never destroyed completely. Various other circumstances, which for lack of space cannot be considered in this paper, appear to affect to a small extent the temperature at which the lysin is completely destroyed. It is also possible that the lysins associated with different bacteria are not all destroyed at exactly the same temperature.

There is one additional point of some interest that has been observed when carrying out these experiments. When a diluted lysin, which has been almost completely destroyed, is pipetted down a number of agar slopes which are then streaked down with the coccus and incubated at 37° C., the growth obtained is often a continuous white streak entirely free from clear areas. When subcultures are made from the primary growths on to fresh tubes of agar, these may also give a good white growth; but in the third or fourth subcultures, and sometimes in the second, a few clear areas may appear, and from these the active lysin can again be obtained. Moreover, the clear areas appear much more frequently in the third and fourth subcultures than is the case with similar areas arising "spontaneously" in a pure stock culture of the micrococcus. This seems to show that a growth of micrococcus, apparently free from lysin, may contain the lytic agent, although its action be masked or held in suspense. Most workers have considered this as one of the possible explanations of the lysed areas which occasionally appear to arise spontaneously in stock cultures supposed to be free from the lytic agent. It may be noted that d'Herelle has always put forward this suggestion when the spontaneous appearance of the lysin has been used as an argument against the virus theory. The experiments certainly indicate that it may in some instances be the correct explanation, although it is not necessarily the correct one in all cases.

Conclusion.

In my past papers I have discussed in considerable detail the possible nature of the ultra-microscopic viruses, and the possible relation of the transmissible lysin to these viruses. It will therefore be sufficient for me to observe in concluding this paper that there appears to be no definite proof that the transmissible lysin is a virus, although there are many arguments that may be used in support of this view. On the other hand, there are also many that may be used against it. It is probable that the question will remain unsettled until we know for certain the nature of these viruses. The experiments described in this paper appear to offer scope for further investigations along similar lines, and these in the future may throw some additional light on the problem.

HOSPITAL AIDS.—During the past year nearly £3000 was distributed to London hospitals and other philanthropic institutions by the Lion Hospital Aid Society. This little known organisation was formed in 1898 by the employees of Messrs. Lion, Lion, and Son, an East End firm of boot manufacturers. Its income in the first year was £70; it now exceeds £6000. The money is raised by collecting boxes, entertainments, and social gatherings.—The object of the Samaritan Fund of St. Bartholomew's Hospital, which has just reported upon its last year's work, is to assist patients after their discharge. The fund, which was formed in 1833, through the benevolence of Mr. Alexander Bennett, has aided 74,000 patients at a cost of £56,000, of which a little more than £1000 was spent last year. The help takes the form of money grants, railway fares, instruments, appliances, and convalescent treatment.

CANCER AND ACQUIRED RESISTANCE TO TUBERCLE.

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A SUGGESTIVE feature in recent reports on public health from many parts of the world is the steady decline in the number of deaths from tubercle and the equally steady advance of cancer. In the first English records, more than 80 years ago, this reciprocal movement was already apparent, but at that time cancer was quite unimportant as compared with phthisis. By 1855 the phthisis-rate had fallen to 2000 per million, and the cancer-rate had advanced to 320. The two rates are now about equal in England and Wales. The changes which have taken place in the past 30 years and the percentage reduction and increase in the respective rates in each five-year period are as shown in Table I.[1]

TABLE I.—*Mortality Rates Per Million Living.*

Periods.	Phthisis.	Percentage reduction.	Cancer.	Percentage increase.
1871–5	2217	—	445	—
1876–80	2038	8·2	494	11·0
1881–6	1830	10·1	548	11·0
1886–90	1635	10·6	632	15·3
1891–5	1461	10·6	712	12·6
1896–1900	1323	9·4	800	12·3
1901–5	1218	8·0	867	8·4
1906–10	1106	8·4	939	8·3

The fact that the one disease appears to a large extent to be taking the place of the other may be a chance coincidence, and these figures cannot be applied to the problem without further analysis. Not only do the two diseases affect different periods of life, but in England the history of the rise of cancer and the decline of phthisis is different in the two sexes. While it is possible that occupation may have as great influence in the one case as in the other, this is at the present time little more than a surmise.

Perhaps the most important material bearing upon this question is the Supplementary Reports of the Registrar-General for the years 1891, 1901, and 1911. These contain an analysis of the deaths of all males over the age of 15 which were registered in the three consecutive years of each census period. Each report contains about half a million deaths classified by occupation, age, and causes of death. Table V. (Report, 1911, p. xxii.) gives the "Comparative Mortality Figures," or, in other words, the relative expectation of life, for most occupations. After deducting deaths by accident I selected occupations with approximately 200,000 deaths, half those with the best and half with the worst expectation of life. These may be arranged as under:—

	"Best" lives.	"Worst" lives.
Total deaths over 15 years ..	98,413	.. 100,011
Total deaths from cancer ..	9,745 (9·90 %) ..	9,306 (9·35 %)
Cancer under 65 years	5,011	.. 5,897
Deaths at 65 and over	52,366	.. 35,323
Cancer at 65 and over	4,734 (9·23 %) ..	3,409 (9·80 %)

When the cancer-rate is expressed as a percentage on the total number of deaths in each case it falls somewhat more heavily on the "best" lives. But cancer attains its greatest frequency about the age of 65, and a much larger proportion of the "best" lives reaches that age. If we express the rate for the age-period 65 as the percentage on all the deaths after 65 the rate is lower for the "worst" lives. Throughout this investigation the cancer-rate is calculated for any given age-period as a percentage on all the deaths from the beginning of that age-period to the end of life. In this way results are obtained as shown in Table II.

The large number of deaths from cancer in men following occupations corresponding to those represented by these "best" lives has probably created an

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[1] Table VI., Statistical Review, 1921, p. 35.

TABLE II.—*Age-Incidence of Cancer on 200,000 Deaths (1911).*

Age-periods	25–	35–	45–	55–	65– to end.
"Best" lives ..	0·18	0·60	1·8	3·9	9·0
"Worst" lives ..	0·21	0·81	2·7	5·2	9·8

impression that cancer selects those in easy circumstances and passes by the poorer and the working-classes. But Table II., comprising nearly half the deaths of men in England during three years, proves that this is not the case. Cancer selects the survivors of the occupations which have involved a hard struggle for existence. The worst lives are more heavily hit at every age-period.

In order to test whether these results applied generally, I turned to Social Class 1 of this report (p. 3). This is described as "Upper and Middle Classes," and comprises, after deducting accidents, 45,557 deaths over the age of 25. Of these 45·8 per cent. were over the age of 65. Corresponding figures from the coal-miners are 20,002 deaths, of which 38·8 per cent. were over the age of 65. The expectation of life was therefore much better in Social Class 1, but on analysing the two groups of deaths (Table III.) the results are quite the opposite from those of Table I.

TABLE III.—*Cancer-Incidence by Age: Coal-Miners and Social Class 1 (1911).*

Age-periods	25–	35–	45–	55–	65– to end.
Coal-miners	0·26	0·82	2·8	4·4	6·6
Social Class 1.. ..	0·23	0·75	2·6	5·0	11·1

Thus in the last two age-periods, which are all-important in regard to cancer, the coal-miners were much better off than the upper and middle classes, whereas from Table I. we should have expected the opposite to be the case. Amongst the differences in the causes of death in these two classes of men is the fact that Social Class 1 has about 15 per cent. more deaths from phthisis than the miners at all ages, and that when the two age-periods 25–35 and 35–45 are taken as the basis of comparison this excess amounts to more than 25 per cent. I found that the percentage of phthisis on these two age-periods formed the best available index for the incidence of this disease at all age-periods, and on this basis 58,000 deaths were compiled from occupations in which the index was less than 3·10 and more than 8·50 respectively. Deaths by accident, all deaths under 25, and occupations in which the total deaths were less than 1000 were omitted from the lists (Table IV.).

TABLE IV.—*Age-Incidence of Cancer in Relation to Phthisis (1911).*

Age-periods	25–	35–	45–	55–	65– to end.
58,806 lowest phthisis	0·11	0·42	1·38	2·47	9·23
56,716 highest phthisis	0·30	1·00	2·25	5·60	9·80

It will be seen that in all the age-periods except the last the incidence in the low phthisis group is only about half of that in the high phthisis group. But in contrast to this striking co-relation of the two diseases we find that amongst the occupations included in both lists there were some, such as solicitors and barristers, which had a low phthisis and high cancer-rate, and conversely tool-makers and others which had high phthisis-rates associated with low cancer. On attempting to chart the occupations on the basis of cancer and phthisis for 1891 the results were not satisfactory.

It then struck me that we were comparing unlike things, that resistance to tubercle is probably established or lost fairly early in adult life, and therefore the proper method was to compare the incidence of cancer with the incidence of tubercle in the same occupation 25 or 30 years earlier. Unfortunately the details in the earlier census reports do not include the ages as well as the causes of death, and that for 1891 is the earliest available material.

From the report for 1891 I arranged according to their phthisis index the occupation that could be traced forward to 1911. This index was taken from the two age-periods 25–35 and 35–45. The cancer index is the sum of the four cancer percentages from 25–35 to 55–65. As before, occupations with less than 1000 deaths, deaths under 25, and accidents were omitted. The number of deaths available for analysis is about 320,000. The drift of the two diseases may be seen from the following groups of occupations (Table V.).

TABLE V.—*Groups of Occupations.*

Group.	Number of deaths.	Phthisis, 1891.	Index, 1911.	Cancer, 1891.	Index, 1911.
A	45,712	3·87	2·37	3·60	5·01
B	52,835	6·47	4·50	4·83	7·17
C	66,076	9·83	7·01	4·51	8·12
D	74,736	12·08	7·93	6·18	9·92
E	26,018	10·20	12·13	6·76	12·05
Total ..	265,977				

These groups comprise the following occupations:—

Group A.—1. Farmers. 2. Clergy. 3. Farm workmen. 4. Wheelwrights. 5. Coal merchants and retailers. 6. Sawyers.

Group B.—7. Brickmakers. 8. Gardeners. 9. Coal-miners. 10. Railway platelayers. 11. Fishermen. 12. Blacksmiths. 13. Greengrocers. 14. Inn-keepers. 15. Bargemen.

Group C.—16. Labourers (other than farm labourers).

Group D.—17. Railway officers and clerks. 18. Railway drivers and stokers. 19. Railway porters, guards, and signalmen. 20. Coach and bus drivers and grooms. 21. Draymen and carters. 22. Watchmen and messengers. 23. Engineers and boilermakers. 24. Iron manufacturers. 25. Painters and plumbers. 26. Printers. 27. Dyers. 28. Butchers. 29. Gas workers.

Group E.—30. Hotel employees. 31. Musicians and theatre employees. 32. Commercial travellers. 33. Commercial clerks. 34. Wharf labourers. 35. Coal-heavers. 36. Brass workers. 37. Paperhangers. 38. Brewers.

The incidence of cancer by age-periods in these groups is set out in Table VI. For convenience of comparison the results for 1911 are printed in italic type.

TABLE VI.—*Age-Incidence of Cancer, 1891 and 1911.*

Age-periods ..		25–	35–	45–	55–	65 to end.
Group A	1891	0·09	0·37	0·90	2·3	4·9
	1911	*0·11*	*0·49*	*1·51*	*3·59*	*5·99*
Group B	1891	0·13	0·48	1·37	2·84	4·77
	1911	*0·19*	*0·69*	*2·13*	*4·16*	*5·32*
Group C	1891	0·14	0·44	1·12	2·51	4·21
	1911	*0·17*	*0·71*	*2·26*	*4·58*	*5·55*
Group D	1891	0·20	0·60	1·88	3·41	4·80
	1911	*0·27*	*0·89*	*3·60*	*5·76*	*10·00*
Group E	1891	0·23	0·66	2·02	3·8	5·4
	1911	*0·29*	*1·10*	*3·9*	*7·3*	*11·2*

Relationship of Decline and Increase Between Cancer and Phthisis.

From this analysis of more than 82 per cent. of the deaths available for this investigation the following results appear:—

1. When the groups are arranged on the basis of the phthisis percentage in 1891 the incidence of cancer in 1911 formed nearly a complete sequence for every age-period.

2. With few exceptions the occupations with both high phthisis and high cancer in 1891 increased at a much faster rate between these dates than those with the lowest phthisis and cancer-rates in 1891.

3. The incidence of cancer at all age-periods in 1911 was always light or heavy in accordance with the phthisis incidence on the same group.

4. During these 20 years there was no instance of an occupation which showed reduction in phthisis without showing increase in cancer.

This series of co-relations may be due to chance, for as the one disease is declining and the other increasing it is possible, though not very probable, that every occupation should be normal in both respects. If there is a causal relationship the cause must come out of phthisis and act upon cancer, for the one occurs early and the other late in life. The probability of cause and effect grows with each successive step, as we establish the following propositions:—

(*a*) A similar relationship of decline and increase cannot be demonstrated between cancer and any other disease or group of diseases.

(*b*) The co-relation of phthisis and cancer is found not only in the groups but in each of the 38 occupations which constitute the groups. Most of the occupations with less than 1000 deaths also fall in line. The few exceptions to this rule will be noticed subsequently.

(*c*) There is a recognisable element of proportion in the co-relation.

In a broad way we can say "a large increase in cancer means a large reduction in phthisis; little phthisis in 1891 and little cancer in 1911." I have not yet been able to define this element of proportion, but the following examples are sufficient to arrest attention. The course of the two diseases can be compared in a number of allied occupations. In such a group many variable factors are greatly simplified, such as the type of man, the question of inherited tendencies, the conditions of life and food-supply, and of wages. Such factors are more involved when we compare coal-miners with another social class than when we compare miners in Lancashire with those in Yorkshire (Table VII.).

TABLE VII.—*Phthisis and Cancer in Allied Occupations.*

		Phthisis index, 1891.	Cancer index, 1911.
Textile manufactures	Silk	37	41
	Hosiery.	77	62
	Wool	88	71
	Cotton..	113	73
	Dyers	110	98
Iron trades	Blacksmiths	72	74
	Ship-builders	88	77
	Iron manufactures	96	91
	Wagon works..	99	95
	Brass works	176	115
Building trades	Sawyer	46	66
	Carpenters	90	78
	Bricklayers	110	98
	Plasterers and paperhangers	113	119
	Slater, tiler	135	131

		Phthisis index, 1891.	Cancer index, *1911*, all ages.
Coal-miners	Staffordshire	44	133
	Lancashire	65	135
	Wales	69	142
	Durham, Northumberland ..	72	150
	Derby and Notts	74	*153*
	Yorkshire	*85*	*158*

(*d*) The same element of proportion is seen if a graph be prepared in which cancer in 1911 is plotted against phthisis in 1891. 95 per cent. of all the deaths are included in the occupations which fall within the area bounded by the lines which diverge at an angle of 12 degrees. It is possible that this angle would be less if the *phthisis index* could be built up from percentages of age-periods earlier than 25–35. The probability of chance becomes less as the angle becomes less. When the same occupations are plotted against phthisis *in 1911 the angle is 25 degrees.*

(*e*) By means of the percentage of cancer on the three youngest age-periods it is possible to foretell what the incidence will be in later life. The same factor decides the incidence in all the age-periods from 25 onwards. This rule is, I think, invariable and if established it almost precludes the possibility of chance. Take, for instance, the actual number of deaths from cancer in two *occupations* about equal in size in 1911—gardeners and clerks (commercial, law, bank, and insurance) (*Table VIII.*).

(*f*) A time element is found in the coördination of phthisis and cancer. *An inspection of the graph shows* that in 1891 all the occupations were nearer to the cancer base line than in 1911. *If* we could make a similar graph for earlier periods the dots would be still nearer this base line. In 1861 the cancer-rate in men was 220, as against 900 in 1911, and hence the factor which has determined the present rate of *increase* has apparently been in operation for about 65 years.

TABLE VIII.—*Deaths from Cancer in Gardeners and Clerks in 1911.*

Age-period.	Gardeners.		Clerks.	
	Quota.	Deaths.	Quota.	Deaths.
25–	9975	9	10,455	44
35–	9541	45	8830	102
45–	8951	162	7184	271
55–	*7993*	*324*	*5265*	*353*
65 to end.	*6230*	*639*	3155	303

(*g*) In men an increase in the cancer-rate of 17½ per cent. occurred in the five-year period 1881–6. This period was also marked by the first decided reduction in the phthisis-rates for men between the ages of 45 and 65.

When the three census periods are compared it is found that the reduction of phthisis and the increase of cancer has taken place by two methods. Some occupations have changed in both respects at a nearly *uniform rate, so that in a graph the three points are* joined by a straight line. In others a great reduction *in tubercle in the first ten years is followed* by a sharp rise in cancer in the second, so that the position for 1901 is the point of an obtuse angle. It is noteworthy that in very few cases is this a right angle, and in only two cases has there been an increase of phthisis between 1901 and 1911, so that the angle becomes less than a *right angle. In no case* whatever did a reduction in phthisis take place between 1891 and 1901 without an increase in cancer.

In the following group I presume that the reduction in phthisis has been a process which has occupied a longer time than usual. A great reduction in tubercle and a considerable increase in cancer had taken place by *1911, but I anticipate* that the sharp rise in cancer will be disclosed by the census of 1921.

Group F.—(34,707 deaths.)

Index 1891 : Phthisis, 1274; Cancer, 400
„ *1911* „ *780* „ *775*

Watchmakers and jewellers, toolmakers and cutlers, cabinet makers, cotton weavers, general storekeepers, booksellers, potters, bakers, teachers, tailors, drapers, private servants.

A small number of occupations, including about 12,000 deaths, have been rejected for a variety of reasons. Of these, the most important is the change of occupation which often occurs in a man's life-time.

In this investigation the deaths in each occupation have been treated as a self-contained unit of the population, which died out completely in the three years of the census period. No attempt has been made to connect them with the living members of the same occupations who filled in census papers. This method has given a high degree of uniformity to the results set out in this paper. For the last age-period, 65, the deaths from any given disease are expressed as a percentage of all the deaths after 65. For the next preceding age-period a quota is found by adding together all the deaths of the last two age-periods. The percentages are thus calculated on all the deaths which occurred after 55, and so on *for the earlier age-periods.* As an example, we may say from Table VI. that 4·88 per cent. of labourers over the age of 55 *died of cancer before they* reached the age of 65. The drawback of this method is the fact that in any year in which the *mortality* was excessive, as, for example, from influenza, all the percentages from cancer are too low, because the total number of deaths is excessive and the deaths from cancer are not *perceptibly* affected by influenza. *On the other hand,* the deaths from phthisis are greatly increased by influenza, and this percentage is higher than normal. This objection does not, however, apply to the comparison of occupations with one another at each census period, because they all have been in the same relation to any such disturbing factor. The Registrar-General's reports include deaths from 15 and upwards in each occupation, but the proportion of deaths in the *age-period* 15–25 is so variable to the total deaths in many of the occupations that I decided to begin with the age of 25. This compelled me to base the index for phthisis on age-periods which are probably too far advanced for the best results, because there are many indications that the age-period 10–25 is all important in regard to this disease.

I have given the data for phthisis throughout this paper, because other forms of tubercle are not set out in reports earlier than that for 1911; but in any case phthisis covers about four-fifths of the deaths and it is also the most important source of infection, so that it is possible that cancer rises and falls in relation to phthisis rather than to tubercle in general.

Significance of Cancer After the Age of 65.

With regard to the significance of cancer after the age of 65 the following points must be weighed. If these deaths are included in an estimate of cancer incidence during the whole life-time they tend to equalise the rate for all occupations. For the occupations with the *greatest proportion of deaths after* 65 are those which have the lowest incidence of cancer at all the other age-periods. Conversely, the occupations with the lowest proportion of deaths after 65 are those with the highest cancer-rates at all age-periods. The large numbers at the lower rate in the "best" lives more than balance the small numbers at the higher rate in the "worst" lives. In 1911 the cancer-rate for 65 + was about 10 per cent. in most occupations. There is no difficulty in the theory that more than 1 out of every 10 had become resistant to tubercle, even in such occupations as farm labourers. These considerations led me to close the index for cancer at the age of 65.

The foregoing results appear to be conclusive against the theory that cancer is simply one of the degenerations of old age, and that the present increase is due to the higher percentage of people that now reach old age. By the methods I have adopted it is easy to calculate the percentage that reached 65 in relation to the number that entered any given occupation at 25. If the occupations are grouped on this basis it is found that, in most cases, the higher the percentage that reaches 65 the lower is the cancer incidence at all age-periods. Thus, in 1911, 66·8 per cent. of the deaths in Group A were over the age of 65, while this percentage in Group E was 25·4. But the cancer-rate for Group E was higher than that for Group A at every age-period, whereas if cancer depended chiefly on old age the opposite should be the case. Again, if old age was the dominant factor we should expect the cancer-rate to increase steadily up to the end of life, as is seen in the deaths from cerebral hæmorrhage, but this is not the case. (Table IX.)

Table IX.—*Percentage of Cancer and Apoplexy in Men.*

Age-periods		55–	65–	75 to end.
Cancer	1911	4·7	6·7	6·1
	1921	6·0	8·6	7·9
Cerebral hæmorrhage	1911	2·4	5·2	8·0
	1921	2·2	5·3	9·5

There is perhaps an analogy between the two diseases in this respect. Apoplexy in early life may usually be explained by the presence of a predisposing factor which either raises blood *pressure or* weakens the wall of the vessel. Apoplexy late in life seems to have been common from the earliest times. Cancer at all ages over 35 has increased *so* much during the past 40 years that the disease *has* become a new problem in all civilised countries. This fact alone makes it probable that the old causes which produced a small number of cases in the past are now at work on a type of population that has been specially prepared for the disease.

Early Prevalence of Tubercle.

The history of tubercle in England shows that it was very prevalent during the early part of last century. In some localities hardly a family could be found which was not affected with the "strumous disposition." After allowing for some exaggeration in such generalisations there can be little doubt that the high figures of all the early annual reports are fully justified. With the marked improvement in food-supply and the slower amelioration of the other conditions recovery from a definite attack of phthisis would become more common. In some cases a high degree of immunity might be developed without the occurrence of a recognised attack of phthisis. Let us suppose that frequent contact with tubercle bacilli develops powers of resistance in the individual perhaps on lines similar to what is known to be the case in diphtheria and other diseases. If this resistance includes a quickening of the readiness to proliferation of cells in response to a special form of stimulus most of the facts discussed in this paper at once fall into line. The proliferation is seen in the typical epithelioid cells of the miliary tubercle. The development of powers of resistance to tubercle in people who did not succumb to that disease might thus form a predisposing cause of cancer in later life. The greater the percentage of phthisis in any occupation the greater the chance of any given individual either dying of the disease or else developing powers of resistance to it.

If phthisis acts as a predisposing cause of cancer I think it will be possible to a great extent to explain the difference in the history and incidence of cancer in women as compared with men. There are differences in the cancer-rates in different countries which may also be cleared up.

Further light on the relationship of cancer and tubercle may be obtained by reports on the family history of cancer patients. About 15 years ago Williams, of the Cancer Hospital, London, expressed the view that when several members of a family had died of phthisis the survivors were very apt to develop cancer. So far as I know no material exists at present for following up this line of inquiry. Post-mortem reports on cases of cancer should include a careful search for the signs of obsolete tubercle. Here, again, there are a few casual references to the association of the two conditions, but these do not cover a sufficient number of cases to be of much value. The facts I have brought forward may suggest lines along which a clinical test for early cancer may be worked out.

Finally, it should be possible to determine by experiment whether heightened resistance to tubercle has any effect upon the fate of transplanted cancer cells and upon the readiness with which irritation cancers can be produced. Under any circumstances cancer work is a slow and expensive process, but here is at least one definite problem the solution of which should be attempted without delay. The results of this statistical inquiry can be affirmed or refuted by experiment.

Clinical and Laboratory Notes.

BAKERS' DERMATITIS.

By N. Howard Mummery, M.R.C.S. Eng.,
MEDICAL OFFICER, MESSRS. J. LYONS AND CO., LTD.; MEDICAL DIRECTOR, FEDERATION OF MEDICAL AND ALLIED SERVICES; LIEUT.-COLONEL (LATE R.A.M.C.).

The intractable and relapsing skin eruptions commonly associated with the baking and confectionery trades have recently attracted considerable notice in both the medical and lay press, and, according to the report of the recent Conference of Operative Bakers and Confectioners published in the *Times* of August 10th last, the general secretary of their Union stated that there were 20 cases of bakers' dermatitis to-day where only one existed a few years ago. This may be true of some factories in Scotland and the north of England, but not, I think, of those in London.

In view, however, of this widespread interest in an industrial problem of much importance to employers and to their workpeople, it is possible that I may be assisting others, also engaged in seeking its solution, by making known the results so far attained in the course of investigations conducted during the past nine months in an up-to-date food factory. The investigations are incomplete, and doubtless some of the conclusions reached may have to be modified in the light of further experience and study.

These conclusions may be briefly summarised as follows:—

1. In spite of the opinions expressed at the meeting of the Section of Dermatology of the Royal Society of Medicine in October, 1924, it appears that there is a definite dermatitis to which persons engaged in factories manufacturing bread and pastry are peculiarly susceptible. It does not seem to be confined, however, to persons actually handling flour, dough, or sugar, but may, and does, affect workers in other departments of the same factory, thus suggesting that the causative agent may be carried in the dust of such factories. Certain mycelial fungus growths have, indeed, been cultured from this dust, but so far no definite connexion can be traced between these growths and those found in the skin lesions.

2. The skin lesion is primarily a vesicular eruption, similar in appearance to the sudamina or miliaria associated with obstruction of the sweat ducts, and is accompanied by intense itching, especially when the part is warm. That this irritation is due to distension of the vesicles is proved by the fact that it is immediately relieved by puncturing them. In the early stage the eruption is confined to the palmar aspect and inter-digital folds of one or both hands, the primary focus always being in the skin area most exposed to irritation or abrasion in the particular occupational process in which the patient is engaged. This primary vesicular lesion is rapidly followed by secondary lesions, the earliest of which are multiple fissures in the inter-digital spaces and on the dorsal aspects of the fingers. It quickly spreads at the periphery and, if not arrested at this stage, staphylococcic infection supervenes, and the condition then presents the clinical picture of eczema vesiculosum.

3. The primary vesicles contain a clear straw-coloured fluid. Microscopical examination of this fluid when obtained by aseptic puncture of the vesicles reveals the presence of numerous yeast-like mycelial growths.

4. The disease spreads by inoculation of abrasions in the surrounding area with the fluid from the original vesicles, these abrasions being caused, simultaneously with the rupture of the vesicles, by the scratching which the intense irritation incites.

5. The disease is communicable from one person to another by inoculation, which seems to take place through minute abrasions of the epidermis such as are common among manual workers. This is demonstrated by the fact that a small abrasion in the palm of my own hand, caused by a piece of stalk when rubbing up plug tobacco, became infected when collecting the fluid from a patient's vesicles, the same mycelial fungi being found in the vesicles which subsequently developed, although I had never handled flour or dough. I have kept this lesion "alive," though under control and confined to an area covered by a sixpenny piece, for eight months.

Prophylaxis.

As regards prophylaxis, my experience in a factory employing over 5000 persons, more than two-thirds of whom are directly engaged on food-producing processes, seems to indicate that the incidence of the disease can be effectually controlled by comparatively simple preventive measures. Those I have adopted—so far with conspicuous success, as in spite of the very large number employed only three persons are at present under treatment for this disease—are the following:—

(*a*) The exclusion as far as possible from dough and pastry handling of all persons with dry skins which render them liable to develop chaps and cracks in winter.

(*b*) Insisting that all minor skin lesions such as cracks, abrasions, and "hang-nails" are reported at once and treated with a solution of nitrate of silver or iodine.

(*c*) Weekly manicure on special lines, including the addition of "anosol" to the soap solution used for softening the finger-nails, for workers particularly liable to contract the disease.

(*d*) Providing all workers in contact with flour, dough, pastry, and sugar with a small towel suspended from a tape round the waist, these towels being collected and washed daily. The abolition of all "roller" or "common" towels.

(*e*) Supplying bowls of a weak, harmless antiseptic solution, such as sodium hypochlorite, in suitable positions in work-rooms, and encouraging employees to rinse their hands in this solution occasionally while at work.

(*f*) Every skin eruption, however trivial it may appear, has to be reported to the medical officer immediately, and any cases detected are suspended from duty and treated at the factory surgery until well.

Treatment.

After trying various methods of treatment I have found Metchnikoff's ointment (subchloride of mercury 33 per cent. in anhydrous lanolin) entirely satisfactory if applied freely, rubbed in, and covered to exclude air. When possible the evacuation of the vesicles greatly hastens healing. All cracks are painted with nitrate of silver, 15 gr. to the ounce of spiritus ætheris nit., before the ointment is applied. A case so treated in the early stage generally clears up entirely in a week, but, after resuming their ordinary work the patients continue to apply the ointment at night, when off duty, for a month or so in order to prevent relapses. Sometimes considerable patience is required to eradicate the disease, but the intelligent worker will at once report the appearance of a fresh vesicle which can then be evacuated antiseptically and aborted without further absence from duty.

I wish to acknowledge my indebtedness to Dr. Henry Semon and to Dr. Dennis Embleton for their help in the early microscopical investigations which have been carried out, partly by the latter and also in the fully-equipped biological laboratories at the firm's headquarters by Dr. L. H. Lampitt, F.I.C.

INTRADURAL ABSCESS SECONDARY TO FRONTAL AND ETHMOIDAL SINUSITIS.

BY H. ALEXANDER COWAN, M.R.C.S. ENG.,
REGISTRAR, ROYAL EAR HOSPITAL (EAR AND THROAT DEPARTMENT, UNIVERSITY COLLEGE HOSPITAL).

THE following case presents a number of points of interest. There was long-continued nasal obstruction and nasal discharge for over 20 years, which were relieved by opening up the ethmoidal cells and removing the polypi. Rapid recovery followed, and the patient was quite well afterwards for six weeks. There was then a sudden development of signs of increased intracranial tension, all within 24 hours after the patient was readmitted to hospital. These signs pointed to abscess of the frontal lobe, and a frontal abscess was diagnosed, but post mortem no pus was found in the brain substance.

Clinical History.

A pale, thin man, aged 41, came to the out-patient department of University College Hospital on Jan. 8th, 1925, complaining of nasal discharge, nasal obstruction, and frontal headache. He said that he had suffered from nasal polypi for 20 years, and had them removed on several occasions. On examination his nose was full of polypi on both sides; transillumination showed both antra dark. He was admitted to hospital on Feb. 1st and operated on next day by Mr. J. F. O'Malley.

A large number of nasal polypi were removed from both sides of the nose, the ethmoidal cells being already opened up. The naso-frontal ducts were curetted with rasps to provide adequate drainage. Both antra were punctured and washed out, but neither contained pus.

The patient went home apparently quite well on Feb. 7th. He attended the out-patient department weekly and seemed much improved, and was progressing well. On March 26th, after a week of intensely cold weather, he came again to the out-patient department and complained of having suffered very badly from headaches for the past few days. He had a profuse nasal discharge, worse on the left side, his temperature being 101·4° F.

He was readmitted to hospital on March 27th and treated with inhalations and weak iodine irrigations. On April 1st he was extremely restless and made several attempts to get out of bed; he also appeared to have difficulty in speaking. At 1 P.M. he was completely aphasic and could not understand anything said to him. Later in the afternoon slight hemiparesis developed on the right side. At 6 P.M. he was seen by Dr. F. M. R. Walshe; he then had slight but definite right hemiparesis, face, arm, and leg being affected, and some ptosis and external strabismus of the left eye. He appeared unable to express himself in answer to questions and showed a considerable defect in comprehension of spoken speech. He was somewhat stuporose and inclined to be restless. An abscess of the left frontal lobe was diagnosed.

Operation.

An external frontal sinus operation was performed on the same evening by Mr. O'Malley; the sinus was found to be full of pus, but no track into the skull could be found. The lining membrane was very much thickened and the naso-frontal duct partially blocked, which was then opened freely into the nose. The frontal bone was then opened just above the superciliary ridge, and as soon as the dura was exposed it was seen to bulge. On incising the dura over an ounce of thick yellow pus poured out, which seemed to come from the frontal lobe, as this presented in the wound. Drainage was established with two rubber tubes placed side by side. A tube was also put through the frontal sinus and carried into the nose. Throughout the night the patient's condition became worse and he died the next morning.

Post-mortem Examination.—The following was the condition found. There was pus in both frontal sinuses, a large intradural abscess was on the left side, producing pressure on the left frontal cerebral cortex; there was also a collection of pus at the base of the brain. No cerebral abscess was found, but there was pus in the left lateral ventricle.

I must thank Mr. O'Malley for permission to publish these notes.

Reviews and Notices of Books.

INTERNAL SECRETIONS.

The Chemical and Physiological Properties of the Internal Secretions. By E. C. DODDS, Ph.D., D.Sc., M.B., B.S., Professor of Biochemistry in the University of London; and F. DICKENS, M.A., Ph.D., Assistant in Biochemistry. London: Humphrey Milford, Oxford University Press. 1925. Pp. 214. *8s. 6d.*

THE object of this small volume is to present a summary of the literature dealing with the chemical aspects of the internal secretions. This includes the methods for preparing active extracts, the isolation and purification of the active principles, a discussion of their chemical constitution, and of the various methods used for standardising the products. Up to now information covering these various points was scattered very widely throughout scientific memoirs and had to be sought for sometimes even in the files of the Patent Office. The work has been done with great care and a highly technical subject is presented in such a clear and interesting manner that it can be followed without difficulty even by those who are possessed of only an elementary knowledge of biochemistry. A bibliography is appended to every chapter and all the references given have been consulted personally by the authors.

The book begins with the internal secretion of the pancreas—insulin—and the insulin-like substances obtained from other sources. This is followed by the various active substances obtained from the anterior and posterior lobes of the pituitary—tethelin, pituitrin, histamine. The next chapter deals with the various active preparations obtained from the thyroid. A brief but very interesting chapter is devoted to the ovarian hormone. Here the authors state that they have succeeded in confirming the observations of Hermann and Frinkel and of Allen and Doisy, who obtained active preparations capable of inducing œstrus. A chapter is devoted to adrenalin, and the final chapter deals with secretin, the parathyroid glands, and spermine.

The title of the book is somewhat misleading in giving the impression that the physiological properties of the internal secretions have received the same careful and exhaustive treatment as the chemical properties. If this had really been accomplished the book would have had to be greatly expanded. As it is the authors have dealt in considerable detail mainly with those problems in which they are especially interested. Thus the action of insulin is subjected to a clear and detailed discussion, and the conclusion is arrived at that no adequate explanation has as yet been offered. Pituitrin is also treated fairly fully. But the sections dealing with adrenalin and the thyroid hormone are short and far less complete. The former begins with the statement that the most important property of adrenalin is its pressor effect; the latter opens with the remark that the most important action of thyroid tissue is its ability to restore cretins and myxœdematous patients to normal. If we mean by physiological properties the part played by hormones in the normal organism then the properties quoted would appear to be among the least important. The statement that adrenalin produces no effect upon the pupil unless the superior cervical ganglion is excised applies only to local application, and we should have thought that the effect of toxic doses of adrenalin was not indefinite as stated, but clearly to be seen in intense pulmonary congestion and hæmorrhage. The action of adrenalin on metabolism is discussed in a few lines and summed up in the remark that "little general effect can be found except the glycæmic reaction." But this reaction requires very massive doses of adrenalin, exceeding probably the amounts secreted under physiological conditions, and no reference is made to the extensive literature based on the work of Cramer, Boothby and Sandiford, Aub and his collaborators, and more recently of Cannon, which shows a general agreement to the effect that adrenalin increases the metabolism, raises the heat production, and is secreted as a physiological response to cold, contributing to the heat regulation of the body.

In the section dealing with secretin no mention is made of the evidence presented by Prof. Dodds himself some years ago to the effect that the formation of secretin by acid may only be an unimportant factor in pancreatic secretion. In the section on the parathyroids reference might have been made to the work of Dragstedt and of Luckhardt on the intimate relation of diet and the function of the parathyroid glands as well as to the recent striking therapeutic results obtained by Scott in sprue, since they have a bearing on the function of these glands in relation to calcium metabolism. These little shortcomings, as we have felt bound to regard them, do not, however, affect the main object of the book, and can be readily rectified on revision.

As a readable and reliable work of reference on the chemistry and biochemistry of the internal secretions the book is strongly to be recommended. Literally, to repeat the cliché, it fills a long-felt want.

DENTAL STUDY AND PRACTICE.

The Anatomy of the Root Canals of the Teeth of the Permanent Dentition. By WALTER HESS, M.D., D.D.S., Professor of Operative Dentistry in the University of Zurich. *The Anatomy of the Root Canals of the Deciduous Dentition and the First Permanent Molars.* By Dr. Med. Dent. ERNST ZÜRCHER, School Dentist of Zurich. London: John Bale, Sons and Danielsson. 1925. Pp. 199. 10s.

THE conception of the root canal of a tooth as a funnel-shaped space of simple form, extending down the root of the tooth, is still tacitly assumed to be correct by many dentists. Were this so the problem of filling the root canal of a pulpless tooth would be comparatively simple. The examination of teeth by histological and other methods, dating as far back as 1844, has shown that this conception is inaccurate. But until a technique could be elaborated which would demonstrate the exact shape of the root canals of the teeth by a cast of their interior, the dental profession was content to ignore the scattered observations of this branch of dental anatomy. Hess, following up the work of Preiswerck, Fischer, and others, has devised an ingenious method of obtaining a cast of the root canals by filling them with vulcanising rubber, such as is used for dentures, under pressure, and then vulcanising it so that it became hard. The tooth was then dissolved in acid, leaving a solid cast of the canals.

Using this method on a large number of teeth Hess has established the fact that the root canals of the teeth are of surprising complexity. They possess numerous branches, and, instead of terminating in a single apical foramen, frequently break up into a series of fine branches like the delta of a river. Accounts of this work have been published in this country and Hess's work confirmed by Parfitt and others, but the complete text with the original illustrations now receives translation for the first time. The bearing on operative technique is obvious. The problem of filling a root canal so completely that infection cannot penetrate, already difficult, now becomes intensified. Mr. W. H. Dolamore, in his preface, suggests that some method of impregnation by metallic silver, as advocated by Howe, may provide the solution of this problem. An interesting point brought out by Hess is that the canals tend to become more complex as age advances by a process of intra-canalicular calcification which forms partitions of dentine in the course of the root canal.

The book is illustrated by many plates (rather confusedly numbered) showing the various forms of canals met with in each tooth of the human series at different ages. It is a notable and important contribution to dental anatomy. The unnamed translator has done his work well.

Bacteriology for Dental Students. By R. B. HERVEY WYATT, M.A., M.B., Ch.B., D.P.H., Lecturer in Bacteriology at Birmingham University. London: Humphrey Milford, Oxford University Press. 1925. Pp. 134. 6s. 6*d*.

THE problem of teaching bacteriology to a student whose curriculum is already crowded is not easy to solve. Obviously the dental student should at least know the elements of the subject, and rather more than the elements of that part of bacteriology which is concerned with infections of the mouth. This book, written by one who is engaged in lecturing to dental students, is a successful effort to provide a short manual of the subject which, though elementary, yet covers the ground in a readable and accurate manner. The book is intended to accompany a practical course such as is undertaken by the dental students at Birmingham University. So used it should prove of value. The chapter on the bacteriology of the mouth might with advantage be extended beyond the 11 pages given to it. The dental student should know all there is to know about the bacteriology of dental caries and pyorrhœa. It would have been helpful if the author had reviewed the literature in more detail. The work of McIntosh, James, and Lazarus-Barlow is mentioned, but the later work of Kilian Clarke on the *Streptococcus mutans* is not referred to. It is curious that nowhere are Koch's postulates given. The book is well produced and the price moderate. It fills a distinct gap in dental literature.

The Mathematics of Dental Prosthetics. By F. W. Rapp. London: John Bale, Sons and Danielsson. Pp. 42. 5*s*.

SINCE the days of Bonwill a considerable amount of attention has been paid to the mathematical side of denture construction, and there is no doubt that dental prosthesis has benefited by the scientific principles enunciated. This little book is evidently written by one who has expert knowledge of the prosthetic side of dentistry. The author has devised a set of instruments which, he claims, will make for greater accuracy and increased efficiency. Mr. Rapp considers the problem of denture construction to be an engineering one, and in a sense this is true, for a denture to be stable and efficient must conform to certain mechanical principles. But the stresses and strains of a denture in any given mouth cannot be calculated exactly in the same way that an engineer can calculate them when using steel or concrete, for the tissues of the mouth differ in different individuals. In spite of the elaborate formulæ which have been worked out by various authors for constructing dentures, prosthesis still remains as much an art as a science. Rule-of-thumb methods often give excellent results, but sometimes fail where more scientific methods may succeed. The non-mathematical reader need not be daunted by the title of this book, for only an elementary knowledge of mathematics is subsumed, while the technique outlined by Mr. Rapp is not difficult. Though it will not solve all the difficult cases met with in practice, this technique is worth a trial.

FAIR WINDS AND FOUL.

A Narrative of Daily Life Aboard an American Clipper Ship. By FREDERICK PERRY. London: Martin Hopkinson and Co. 1925. Pp. 204. 10*s*. 6*d*.

MR. PERRY writes with first-hand knowledge, for he served in the American Mercantile Marine and worked his way up from being a "Rufus Hatch cadet" to being a mate in the Pacific Mail Steamship Company and the California Clipper Ships Company. The voyages described in this book are those made by him during the period of his service from third mate to mate. His description of the voyage of the clipper *Continental* from New York to San Francisco is as thrilling as any description of rounding the Horn that we have ever read. These descriptions usually are exciting, and Mr. Perry's narrative is worthy to stand beside Mr. Jack London's "Mutiny of the *Elsinore*" and Mr. Basil Lubbock's account in "Round the Horn" of life before the mast. The *Continental* took 172 days to make out her voyage and she took 21 days to make her westing, water ran very short, and on the 150th day out scurvy appeared. Off the Horn the *Continental* spoke the *Flying Dutchman*—at any rate some ship whose attributes were sufficiently mysterious to have gained it that appellation in less sophisticated days. Mr. Perry mentions that the captain believed scurvy to be contagious and isolated the four cases which first appeared, when no more followed, which confirmed him in his opinion. He tells a gruesome story of an English ship, the *Baltic*, which was towed just behind the *Continental* into San Francisco, having been 185 days out; the *Baltic* had 39 out of a total crew of 42 dead from scurvy, the only survivors being the captain, the carpenter, and the cabin boy. Mr. Perry's narrative is simply and clearly written, and he gives an excellent description of the rigging and sails of a clipper, which makes comprehension of his story fairly easy for a landsman. Altogether a very good book.

INTERPRETACION DE LAS APÉNDICITIS.

Indicaciones Operativas. By Dr. JUAN MARIÑOX. Barcelona: Libreria Medica y Tipografia. M. Rojo. Pp. viii. + 92.

THIS small volume, which is the prelude to a larger one, deals mainly with the author's own experiences, who, however, gives no statistics to show the extent of that experience, nor does he indicate whether it was derived from private or hospital practice. We note that he seems only recently to have encountered a case of perforated appendix without rise of temperature or pulse, though he is familiar with most forms of appendicular trouble. In the indications for operation the rules are not laid down with sufficient clearness, giving the impression that the author has not always the courage of his convictions. He states that the first attack of appendicitis unfailingly prepares the soil for future attacks which are usually of a much more dangerous character, but later he agrees with Sonnenburg that many of the gastro-intestinal disturbances in the first two years of life are appendical in origin but do not call for interference and leave no ill-effects. The truth is that appendicitis is rare at that age, but when it occurs in definite form it is very dangerous and requires prompt intervention. The author agrees with all surgeons of experience that the ideal practice is to operate in the first 48 hours, but apparently after that would, if possible, leave an abscess to be absorbed in the absence of urgent symptoms. He lays stress on the unexpected difficulties and dangers incurred when operating on quiescent cases, and quotes with apparent approval the surprising doctrine attributed to Roux that no quiescent case calls for operation until it has been free from active symptoms for two years. It is difficult to imagine that many patients, after being free from symptoms for two years, would willingly offer their abdomens to the surgeon's knife, while the author gives his countrymen a bad name for promptitude in that respect. In the subchronic cases (p. 82) —the "grumbling" appendices which are never really acute or really quiescent, but always a source of danger—it would seem hard to find a suitable moment for intervention, if this doctrine is correct. The accepted practice surely is not to give appendicitis a second chance where good reasons exist for suspecting it.

Dr. Mariflon's arguments, including the incontrovertible statement that exact diagnosis is impossible without opening the abdomen, all really tend to the same logical conclusion—viz., that in the absence of serious contra-indications every case should be explored. It is to be hoped that in a future book, which he forecasts, he will make his position clear.

JOURNALS.

QUARTERLY JOURNAL OF MEDICINE.—The July number contains the following articles: Four Cases of Congenital Dextrocardia, including a Case with Sino-auricular Block, by Leonard Abrahamson. All of the cases here recorded showed dextrocardia with complete transposition of the viscera. The article is illustrated by a series of electrocardiograms, one of which reveals a state of sino-auricular block.—Acute Ileocolitis in Children, by Robert Cruickshank. By ileocolitis is understood a condition in which diarrhœa is present, accompanied by toxic symptoms, and in which mucoid stools containing blood and pus are passed. Clinically it is indistinguishable from bacillary dysentery, but occurs sporadically in this country. The stools of 12 cases were examined and *B. dysenteriæ* of Flexner-Y type was isolated in seven. It is suggested that the most appropriate treatment is the administration of magnesium sulphate, together with injection of antidysenteric serum.—The Mode of Inheritance of Hereditary Ataxia, by W. Russell Brain. In hereditary ataxia it is probable that the disease depends on the presence of two Mendelian characters, one of which is a dominant and the other a recessive. The mode of inheritance cannot be explained on the theory that the disease behaves as a single Mendelian character, whether dominant or recessive.—Heredity in Polycystic Disease of the Kidneys, by H. W. B. Cairns. An interesting account is given of the occurrence of polycystic diseases of the kidneys in three successive generations of a family living in the East End of London. Myopia was also found to be present in many members of the family, either together with the polycystic disease or separately. The literature dealing with the hereditary transmission of the disease is considered and reference made to several of the published cases. The article is illustrated by a plate showing a polycystic kidney and a liver cyst obtained from the same case.—Critical Review: Cholesterol in Health and Disease, by J. M. H. Campbell. An introductory account is given of the physiology of cholesterol. Various points are discussed, such as the distribution of cholesterol throughout the body, the relationship of cholesterol to fat and lecithin, cholesterol and lipæmia, cholesterol in the blood during pregnancy, and in various pathological states as jaundice, gall-stones, nephritis, arteriosclerosis, diabetes, and anæmia. The influence of cholesterol upon hæmolysis and the rate of sedimentation of the red cells is also considered.

BRITISH JOURNAL OF SURGERY.—The July number (No. 49) is noteworthy in that in it a series of special articles dealing with pathological anatomy has been commenced. The Editorial Committee announce that it is the intention in these articles—which will eventually form an "Atlas of Pathological Anatomy" —to describe some of the most instructive and historical specimens in the Hunterian Museum of the Royal College of Surgeons of England and in other metropolitan and provincial museums. Illustrations will be both in colour and in black and white, with X ray pictures and drawings of microscopical sections. In this issue nine specimens of sarcoma of the long bones are illustrated and described. There can be no doubt that this series will be of the greatest interest, and of great value as a permanent and convenient record of many supremely instructive specimens.—Sir D'Arcy Power contributes his XVIIth Eponym on Charcot's Joints, in which he describes with much interest Charcot's original contribution.—F. G. Bell discusses at considerable length the characteristics of the teratoid group of testicular tumours.—A. C. Perry has investigated the after-results in 653 cases of operations for malignant disease of the breast. His conclusions are the result of careful analyses, and are worthy of notice.—G. P. B. Huddy, having collected four clinical and four post-mortem cases of urethral pouches, gives an interesting account of their pathology, symptoms, and treatment.—H. Morriston-Davies describes his technique in the operation of extrapleural thoracoplasty.—W. M. Carrick contributes a short note on the pyelographic appearances in cases of polycystic disease of the kidneys.—H. W. B. Cairns publishes some observations on the ætiology and treatment of cystitis.—A. F. B. Shaw and R. P. Smith report six cases of Reidel's chronic thyroiditis; in view of the acknowledged difficulty of accurate readings of thyroid histology, this is a valuable contribution.—In Vol. IX., 1921, 16 cases of surgical treatment of aneurysms of the aorta by wiring were reported, and now five others—three at length—are put on record. The three in detail are by H. M. Colt, C. J. Marshall, and C. P. G. Wakeley. The two former were aneurysms of the abdominal and the latter of the thoracic aorta. It is instructive to note that Colt's and Marshall's cases died of acute dilatation of the stomach, and the post-mortem examination revealed the sacs full of firm clot.—V. Z. Cope's Hunterian Lecture on Extravasation of Bile is here reported.—E. H. Shaw comments upon the pathology of 11 cases of carcinoma of the vermiform appendix.—R. O. Ward contributes a paper on 11 cases of vesical diverticula, dealing with their clinical signs and treatment.—W. E. M. Wardill reports a case of polypi in the bowel causing intussusception.—Sir Cuthbert Wallace has a short note on two cases of advanced carcinoma of the breast treated by the interscapulo-thoracic amputation.—The following short cases are reported:—T. B. Mouat: Two cases of polypus of the stomach. E. T. C. Milligan: Intussusception of small intestine through a fæcal fistula. A. Rendle Short: Case of von Recklinghausen's osteitis fibrosa. C. P. G. Wakeley: Ossifying chondroma of a rib mistaken for sarcoma. H. W. B. Cairns: Renal colic as a late complication of nephrectomy. S. Pringle: Cyst adenoma of pancreas. Arthur Evans and S. Cade: Ectopic ovary. H. Drummond: A case of heart suture Sir Hugh Rigby: Snaring of caput cæci and appendix by a band. W. Adams: Two cases of foreign bodies in the alimentary tract. F. G. Ralphs: Sarcoma of renal pelvis.

PUBLIC HEALTH ADMINISTRATION.

ADMINISTRATIVE MACHINERY IN EUROPEAN COUNTRIES.*

I. THE NETHERLANDS.

HOLLAND is a constitutional and hereditary monarchy; the legislative authority is laid with equal responsibility on the Sovereign and the Parliament, the latter consisting of an Upper and a Lower Chamber. Each of the 11 provinces has a Commissioner, nominated by the sovereign, and a representative body whose members are elected for four years. The representative body elects a permanent commission of six members to administer the common laws. The provinces are further divided into 1100 communes, each with its communal council, and an executive body called the Communal College, which consists of the burgomaster, elected by the sovereign, and from two to six aldermen, chosen from among the members of the college.

The public health administration, as organised by the law of 1920, is under the control of a Director-General of Public Health, who is directly responsible to the Minister of Labour for the activities of his department. The Ministry is advised by a Public Health Council, comprising some 15 subcommittees dealing with special departments: general and social health work, infectious diseases, general pharmaceutical work, pharmaceutical and chemical work with particular regard to preparation of commercial chemical products, feeding, hygiene of childhood, tuberculosis, alcohol, cattle and meat examination, "water, field, and air," medical assistance and nursing, venereal diseases, housing problems, statistical researches, and ankylostomiasis.

The country is divided into health inspectorial districts, each with its personnel responsible for the observance of public health regulations. There are also 134 health committees, chosen from local inhabitants, and appointed by the Provincial Governor. Neighbouring communes appoint a special doctor for the schools or engage one of the doctors residing in the district to fulfil the duties of this officer. At Amsterdam there is a communal medical and sanitary service with a director and several senior officers. At The Hague there is a communal medical service and a school medical service, each with its director. At Arnhem there is a school medical service, but no communal medical service. At Rotterdam and at Utrecht the two services are amalgamated. There are no provincial services. The Government intends to lay before the National Assembly a Bill regarding the health services as soon as circumstances permit. It has been proposed to appoint school doctors in each district, but this proposal has not so far been carried into effect.

There are no provincial disinfection services in Holland such as exist in Belgium. Provincial services now exist in certain provinces (Gelderland, Friesland, Groningen, Northern Holland, Overyssel, and Limburg), but they have been established by associations such as the "Green Cross" or the "White Cross"; there exist also certain communal disinfection services approved by ministerial decisions. These associations maintain disinfection services approved by the Ministry, and receive a fixed subsidy on this account in the same way as the communes. The State grants to the communes a subsidy of 50 per cent. of the cost of establishing, extending, and maintaining the disinfection service.

Organisation of Health Inspection.

Article 2 of the law on Protection of Public Health (1919) provides for the establishment of a Health Council to advise the Government in regard to any measures it may take to promote public health. Article 3 of the same law entrusts the duty of health inspection to (*a*) the principal public health inspectors; (*b*) the public health inspectors and officials assisting them; and (*c*) the Health Commissions. The Burgomasters have to send to the Inspector-General a monthly return of the deaths which have occurred in their communes, and they are also bound to inform as soon as possible the appropriate inspector of the departure, death, or if they are aware of it, cessation of practice of any doctor, dentist, or chemist or midwife in their commune. Health Commissions are established for each commune which contains more than 18,000 inhabitants. Several communes, the joint population of which does not exceed 40,000, may have a Health Commission between them. The expenses of these Commissions are borne by the commune, but the salaries of their secretaries are paid by the State Treasury. The decisions of the communal councils regarding matters of public health may only be promulgated, supplemented, modified, or repealed if the Health Commission established by the commune has been consulted.

Members of the Health Council are entitled to enter all public buildings, schools, factories, hospitals, &c., throughout the kingdom in order to see that the law is properly applied, and to enter places of residence to obtain information regarding the state of such places. Members of the Local Health Commissions have the same rights within their respective district only.

Registration.

The statistical work is organised by a Central Bureau of Statistics, established in 1899. The bureau publishes at regular intervals information regarding the population, births, deaths, and notifiable diseases. Registration of births, deaths, and marriages is compulsory, and the system is based on the Code Napoléon. The declaration of a birth must be made within three days, and must include hour and place of birth, names and address and profession of both parents, name, address, profession, and age of the declarant and two witnesses, religion of parents, and time and place of their marriage. "Stillborn" children include premature infants and those dying before registration. The Communal Registrar is the sole competent authority for authorising burial and the death must be certified by the medical practitioner. If death occurred without medical attendance, the body has to be seen by the "médecin de l'état civil." Information required on the certificate includes names, age, address, civil status, religion and occupation of the deceased, of the husband or wife, of the declarant, and the place of death.

Both with births and deaths certain communes ask a larger or smaller number of further questions for statistical purposes. The information relative to infant mortality is remarkably complete.

II. BELGIUM.

The kingdom of Belgium, the most densely populated country in Europe, is an independent constitutional monarchy, and is divided into nine provinces, each having a governor, nominated by the King, and a Provincial Council, which is partly elected every four years and partly a permanent standing committee of six members. There are 41 arrondissements, which are groups of communes under Commissioners, each of the 2638 communes having self-government in all local matters, and comprising a burgomaster, nominated by the King, an elected council, and an executive "college," selected from the council.

The laws controlling public health administration fall into three main groups: (1) Those giving the National Government, provinces, or communes power to issue regulations within defined limits; (2) those specifically enumerating the rules and regulations that are to be observed; (3) certain international conventions.

The central public health administration is part of the functions of the Ministry of the Interior and of Hygiene, which has two quite separate divisions, the Administration of Public Health and the Central Statistical Department. There are also various technical services and advisory bodies.

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* Based on a Series of Reports on National Health Organisation to the Health Section of the League of Nations and on Statistical Handbooks prepared by the Section. Obtainable in Great Britain from Constable and Co.

Seventeen provincial medical commissions exercise a supervision over medical practitioners, midwives, and dentists, and are responsible for the observance of regulations relating to public health. Provincial inspectors of hygiene have recently been appointed, with wide executive responsibilities and duties. They visit and advise local administrations as to their obligations and public health interests, and inspect the services or institutions within the jurisdiction of local sanitary authorities. They forward monthly reports to the central administration dealing with their work, and special reports after any inspection which has reference to the sanitary condition of a particular area or the outbreak of a serious epidemic. Such reports include the results of laboratory investigations, prophylactic measures, and the tracing and disinfecting of carriers. The inspectors also forward every ten days summaries of all notifications received, with a short summary of the state of the public health in their area. Laboratory and disinfection services are reported on monthly.

The provincial authorities provide certain technical, laboratory, and disinfection services. Certain communes combine for public services, such as water distribution and hospitals, but there is no district arrondissemental public health administration. All communes that have three doctors or two doctors and a pharmacist have local medical commissions similar in their activities to the provincial medical commissions controlled by the central health administration. There are hygiene services in some of the towns and larger communes.

Statistical Work.

Every commune maintains registers of population, births, deaths, and marriages, and returns to the Central Statistical Department the basic tabulations from these registers. Births must be registered by the father, or other person present, before two witnesses, at the *mairie* within three days. In the towns and some of the communes there is a system of verification, whereby the father notifies the mairie within 24 hours, the official notifies the local "médecin de l'état civil," who visits the home to verify the data, fills up the certificate, and hands it sealed to the father, who then makes his declaration at the mairie within three days. "Stillborn" children include also those dying before registration—i.e., within three days of birth. They are recorded in a special register, separate from the ordinary births or deaths register. Deaths are notified by the nearest relative to the "officier de l'état civil," who is the sole competent authority to authorise burial. The registrar visits the house to satisfy himself that death has occurred, although in larger communes he delegates this duty to a "médecin de l'état civil." In some cases the certificate of the attending physician is accepted in lieu of this visit. Certification of the cause of death is not compulsory, but medical practitioners and other persons having knowledge of the cause of death are urged to give this information to the authorities. There is no system of medical verification of these particulars.

III. SPAIN.

The kingdom of Spain, with a population of 21 millions, is a hereditary and constitutional monarchy, the legislative authority being exercised by the sovereign in conjunction with the two houses of the Cortes. There are 49 provinces under their respective governors, who act under the direction of the elected provincial council. The council meets yearly, and is represented by a permanent "standing committee." Each commune has its own elected council, with a mayor, who acts as chief executive officer and justice of the peace. Neither the executive nor the Cortes may interfere with the provincial, communal, or municipal administrations, except when such authorities exceed their legal powers to the detriment of public interests.

The responsibility for the organisation of general health services rests on the General Health Department of the Ministry of the Interior, under a Director-General of Public Health. The four main sections are:

1. *The Section of Public Sanitary Institutions.*—This controls such health institutions as the National Institute of Hygiene of Alfonso XIII., the general sanitary epidemics organisation, and the special institutions for combating particular diseases—e.g., tuberculosis, cancer, malaria, leprosy, &c.

2. *The Health Section of the Interior.*—This section, under an inspector-general, controls and directs the activities of the 49 provincial inspectors, and also the medical, pharmaceutical, and veterinary services of the kingdom.

3. *The Health Section of the Exterior*, also under an inspector-general, is responsible for all sanitary measures at ports and frontiers.

4. *The Administrative Section* concerned with general measures.

The statistical office of the department compiles vital statistical data from the material received.

In each province there are sanitary corps, maintained by a 2 per cent. levy on each municipal or communal budget. Municipalities generally have their own municipal officers paid from municipal funds. Catalonia has a specially adapted health service of its own, combining under one administration the public health activities of the four Catalonian provinces.

The Royal Decree of March 8th, 1924, issued and signed by the Military Directory, provided for the reorganisation of municipal services and outlined their responsibilities towards public health matters, i.e.:

In Towns of not more than 15,000 Inhabitants (Art. 201).—Supervision of all drinking water; disposal of waste matter, excreta, &c.; inspection and improvement of dwellings, prohibition of insanitary habitations, &c.; sanitary supervision of public highways, stables, slaughter-houses, markets, lavatories, baths, and cemeteries; supervision and improvement of cesspools and prohibition of their use where they prove to be insanitary; inspection of schools and school-children; control of infectious diseases and measures to combat the outbreak of epidemics; vaccination of all children before the age of six months; revaccination of population where necessary.

In Towns of over 15,000 Inhabitants (Art. 204).—Removal of cesspools and gradual substitution of modern systems for dealing with waste matter and excreta; census of dwellings under direction of municipal medical officers of health; organisation of pure water-supply which will provide a minimum of 200 litres of pure water per day per person.

In Towns of over 30,000 Inhabitants (Art. 205).—Provision and maintenance of a municipal laboratory for the analysis of foods, drinks, drugs, and similar products, and for other duties in the interests of the inhabitants. Establishment of one or more disinfecting stations for beggars, &c., and one or more free bath-places.

In all Towns over 15,000 Inhabitants (Art. 200).—Compulsory vaccination against small-pox, provision of adequate services for combating outbreaks of infectious diseases, especially typhoid and typhus fevers, diphtheria, infantile cholera, trachoma, and tuberculosis.

The statistical work is under the control of the Director-General of Statistics, who is advised by a General Council of Statistics. Registration of births, deaths, and marriages is compulsory, and the magistrates of each commune are responsible for the custody and maintenance of the registers, the records being forwarded monthly to the Provincial Statistical Bureau. Births must be recorded within three days by the father or other person present at the time, with the age, profession, and nationality of the parents. The registration of stillbirths has been obligatory since 1919, and must be effected within 24 hours. "Stillbirth" includes babies dying within 24 hours of delivery. Deaths must be declared within 24 hours, accompanied by a medical certificate authenticating the fact and cause of death. In the event of sudden, accidental, or violent death a post-mortem examination is made by the judicial medical officer, usually assisted by a private practitioner.

(To be continued.)

Reports and Analytical Records.

B.D.H. CAPILLATOR.

(BRITISH DRUG HOUSES, LTD., 16–30, GRAHAM-STREET, CITY-ROAD, N. 1.)

THE pH value is a number used to express the active acidity or alkalinity of any fluid, the pH of pure water at 18° C. being taken as the standard of absolute neutrality, where the figure is usually given as 7. *The concentrations of H and OH ions here are exactly* balanced, and the balance will be upset by the addition of any acid or alkali. The colorimetric method is the most widely used one for determining pH values and in the hands of those who understand the procedure the technique is comparatively simple, little apparatus being required and the test taking practically no time. The *British Drug Houses have submitted* to us a pH capillator which provides an improved method. The capillator consists of a white card on which is mounted a series of capillary tubes in which buffer solutions containing an indicator are sealed. *The tubes are mounted three together, thus forming* a series of strips of colour, each strip being about ¼ in. wide and marked with its exact pH value. The series of colour standards on each card covers the complete colour change of the indicator. The determination of pH is carried out by using a capillary tube as a pipette and measuring by this means *equal quantities of the liquid under examination and indicator, mixing the two in a small watch-glass,* and then drawing the mixed liquids back into the capillary tube. The colour of the mixed liquids is then matched against the "Capillator" standards. Owing to the small quantity of fluid required for a test (one drop is sufficient), the capillator is invaluable *for the determination of the pH* of such liquids as urine, saliva, tears, plant juices, and innumerable other organic fluids. Another advantage of the capillator method is that the pH of slightly coloured fluids may be determined directly without the use of any compensating device, such as is necessary when using test-tubes for comparison purposes. Owing to the very thin layer of liquid in the capillary tubes, the inherent colour of urine and other similarly coloured liquids is negligible. To *determine* the pH of any liquid, it is necessary first of all to choose a suitable indicator. A preliminary test is made with B.D.H. universal indicator, the range of which is from 3·0 to 11·0; thereafter a suitable particular indicator is chosen, such as, say, thymol blue (pH 1·2–2·8), bromo-cresol purple (pH 5·2–6·8), or phenol red (pH 6·8–8·4), *and the accurate estimate* is thus made. The compactness of the capillator is such that a complete set comprising nine or ten colour standards of *an* indicator occupies a space of only 3 in. by 4⅝ in. by ¼ in. It is thus possible to carry in the pocket a number of capillators of different indicators covering a large range. This valuable *modification of the colorimetric* method is due to Dr. Henry A. Ellis.[1]

KHARSULPHAN.

(BURROUGHS WELLCOME AND CO., SNOW HILL BUILDINGS, LONDON, E.C. 1.)

In order to simplify the treatment of syphilis by the administration of arsenobenzol compounds, Kharsulphan has been manufactured under the licence of the Board of Trade and biologically tested under arrangements approved by that Board, while the Ministry of Health authorise the use of the preparation under the Public Health (Venereal Diseases) Regulations. The preparation is intended for subcutaneous and intramuscular injection only, and its advantage is that no elaborate technique is required either in preparing solutions or in making injections. The dose is simply dissolved in 1 c.cm., or *more, of saline or distilled water in the barrel of the* syringe and is then ready for immediate use. The dose for each patient must be prepared separately as required, and on no account be stored or allowed to stand. It is readily soluble and there need be no delay in preparing individual doses. For subcutaneous *or intramuscular* injection the commencing dose *should be 0·15 g. and the following range of doses is* given. Men, 0·15 g. to 0·6 g. (approximately 2–9 gr.); women, 0·15 g. to 0·45 g. (approximately 2–7 gr.); children, 0·15 g. to 0·3 g. (approximately 2–4 gr.); infants, 0·05 g. (approximately ¾ gr.). In intramuscular injection strict asepticity must be observed. The skin should be painted with iodine, and the *syringe and needle boiled for five minutes in a* 5 per cent. solution of carbolic acid. Treatment should commence with small doses at intervals of two or three days and as the dose is increased the interval should be lengthened. It may have to be continued for many months. The drug is contraindicated in cases of advanced visceral disease, and caution *is necessary in* cases of arterio-sclerosis, diabetes, advanced nervous disorders, and certain skin diseases.

CREAM OF NUJOL.

(ANGLO-AMERICAN OIL COMPANY, LTD., ALBERT-STREET, CAMDEN TOWN, N.W. 1.)

The properties of Nujol have been brought before our readers in these columns on previous occasions. We have now received from the firm a new product, Cream of Nujol, in which Nujol is combined with *agar-agar for use in constipation.* The preparation contains no cathartic ingredient, saccharin, or sugar, and therefore can be prescribed with *safety for obese* or diabetic patients, and others where anything like active purgation would be harmful. The preparation is directed to the needs of those with intestinal stasis particularly in atonic form, and it can be employed over extended periods in obstinate cases without risk. It can be diluted with milk or water if it proves *more palatable in this manner,* and the emulsion is pleasantly flavoured.

NOCTAL.

(W. DEDERICH, LTD., STANLEY HOUSE, DEAN STANLEY-STREET, WESTMINSTER, S.W. 1.)

Messrs. Dederich, Ltd., are the agents for the firm of J. D. Riedel of Berlin, from whom we have recently received for clinical trials a preparation of isopropyl barbituric acid termed noctal. We are informed that the clinical experiences of the specific under the hands of Berlin physicians have been satisfactory. Noctal is supplied in tubes of ten tablets of 1 gr. each, the dose being *from one to* two tablets.

MEAD'S RECOLAC.

Messrs. Mead, Johnson and Co. ask us to correct a statement made in our issue of June 6th in this column with reference to the above preparation, that "full instructions how to prepare these foods are issued with the preparation." The company say *that their* "*policy does not* permit them to issue directions on or with their foods to the general public, as directions are only supplied to the medical profession, and for their prescription only." Our note referred, of course, only to the position as between the company and our professional readers, and we learn that feeding instructions will be gladly supplied to doctors through the distributors: Brooks and Warburton (A. D. S. Co.), Ltd., 40–42, Lexington-street, London, W. 1.

TILBURY SEAMEN'S HOSPITAL.—Since the new wards were opened towards the end of June the daily average number of in-patients has increased by nearly 50 per cent. A unique feature of the hospital is a separate wing exclusively for the treatment of Indian seamen, which was provided by the generosity of Mr. P. G. Singhanee, of Poona, who gave a lakh of rupees for the purpose.

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[1] An Explanation of Hydrogen-ion Concentration. The Capillator Method for the Determination of Acidity and Alkalinity in General Practice. London: H. K. Lewis and Co., Ltd. 1925.

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Pharmaceutical Department, 68½, Upper Thames St., London, E.C.4,

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Ampoules (1.1 cc.) for hypodermic and intravenous use, boxes of 5, 20, & 100.

Liquid for oral administration, vials of 15 cc. and 100 cc.

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'Byno' Hypophosphites has for long been prescribed with great success in convalescence after acute infections and following surgical operations; in nervous and mental conditions due to overstrain or exhaustion; as an adjunct in the treatment of tuberculosis; in asthenia of the aged, and in a diversity of conditions where a general tonic and digestive is indicated.

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[See also p. 33.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 26, 1925.

THE PROBLEM OF THE MENTALLY DEFECTIVE.

THE Commissioners in Lunacy, one of the most valuable governing bodies in this country, have just issued their eleventh annual report, that is to say, the Report of the Board of Control. It is, as usual, full of useful information, and bears abundant witness to the keen industry of the Commissioners and their inspectors. Many of the points dealt with have been touched on in previous issues of THE LANCET.[1] The most important feature, however, of this report is the section on mental deficiency. The Commissioners apprehend a grave danger to the country unless the local authorities, and with them the general public and all governing bodies who bear the responsibility for defectives, regard their duty towards these unfortunate people very seriously, and put forth the utmost exertions to deal with their plight. The problem, like all national problems, is many-sided, but its two gravest aspects are undoubtedly, first, the provision of institutional accommodation, and, second, the coöperation towards one end of the four bodies who deal with mental defectives. On the whole, the local authorities are very active in their duty of ascertainment, and last year they discovered 12,300 new cases. Their returns, however, show that of those notified by local education authorities, 2197 remained undealt with at the end of the year, and that 1193 otherwise ascertained are still "subject to be dealt with." No action has yet been taken in these 3390 cases and the reason that suggests itself to the Board of Control is significant enough to rouse the most apathetic. Local authorities are disheartened by their constant inability to obtain vacancies. Some have applied in vain to 30 or 40 institutions—one, in fact, to 156—without success, and it is hardly surprising that efforts should at last be given up.

The provision of colonies for mental defectives was seriously hampered by the war, but many of the restrictions have since disappeared, and the Board of Control is always eager to consider well planned schemes. This is the only real solution—that every local authority should at once do its utmost to purchase a suitable estate and found a colony for its mental defectives. "Existing institutions," say the Board, "are full, and local authorities can no longer rely on charitable institutions or on the Poor-law for this provision. Unless, therefore, they give immediate consideration to this matter the beneficent intention of the Mental Deficiency Act will be hampered and will almost cease to operate. We take this opportunity of making an urgent appeal for immediate action, and we do so the more confidently because every year reveals clearly the terrible consequences of the neglect to afford this means of protection." These are strong words uttered by those who are best qualified to speak on the subject. Let us hope that those to whom they are addressed will see their truth and act on them. Many authorities have already done so, and the names are given of 20 who have colonies in existence, six who have purchased estates, and 17 who are taking steps towards this provision.

The second need, that of real coöperation between different governing bodies, is almost as urgent as the first. Besides the local authorities, who are the mental deficiency committees of the county or county borough councils, three others come into contact with defectives. They are the committees of mental hospitals, the staffs of H.M. prisons, and the governors of industrial schools and reformatories. The Board of Control points out that there are three ways in which coöperation between medical officers would greatly help towards the efficient control and care of mental defectives. One is that the medical officers of the local authority and the local mental hospital should meet and visit together the institutions for which each is responsible. It is the Board's policy to withdraw gradually all defectives from mental hospitals, beginning with children and young persons, and this policy would be much simplified if the understanding between these two departments were more complete. The melancholy progress of defectives in and out of mental hospitals, with intervals in prison or the workhouse, would become considerably rarer. A second way is for the medical officers of the local authority and those of the prisons to confer and visit one another's institutions. The wider range of study of mental deficiency which is available in a certified institution would be an advantage to prison medical officers, while the county medical officer might find in prison many types of defectives with whom he may have to deal on their discharge. Many forms of deficiency may be recognised by one authority and not by the other, and interchange of histories and free consultation would be of the utmost value. Thirdly, if the managers and medical officers of industrial schools and reformatories met the local authorities and their medical officers, the latter could take over young defectives and give them the protection and training without which they would certainly sink into pauperism and crime. A break in care and supervision, especially in early youth and adolescence, has led to periods in prison or in Poor-law institutions which are harmful to the defective, and render him less amenable to kindly control when he comes at last into an institution or a colony for defectives.

We have mentioned two only of the manifold facets of this vital problem; the others will be found in very great detail in the report itself. The present administration of the Mental Deficiency Act is a dark shadow on the social life of our country, and we shall be gravely at fault if we do not do our best to improve matters. We are fortunate in that our advisers and judges in this matter are as conscientious and as determined as this report shows them to be.

LONDON WATER.

MOST large cities now draw their water from unpolluted sources, some of them having laid hundreds of miles of aqueduct to remote and rainy mountain slopes. London has been content to drink from its own watershed, and after taking what is available from deep borings down to the chalk to obtain the remainder—being much the greater part—from three rivers, the Thames, the Lee, and the New, all highly polluted by human excreta. The labour involved in purifying this water is enormous, and to ensure safety constant vigilance is demanded from the Water Examination Department of the Metropolitan Water Board, which came into existence in November, 1905. SIR ALEXANDER HOUSTON, in his Nineteenth Annual Report to the Board[1] sets out the results of the chemical and bacteriological examination of the London waters for the 12 months ended March 31st, 1925, but although the results are duly set out as stated, the Report is much more than that, for HOUSTON has become the champion of London water as an abundant, cheap, safe, and palatable beverage, and his account of the doings of the Board becomes more and more of the nature of an epic. The opening of the great reservoir at Littleton by the KING on June 13th occurred since the period covered by the report, but HOUSTON foreshadows the value of increased water storage to the health of London. The reservoir doubles the storage capacity for Thames water and provides effectively against periods of drought. Procrastination facilitates enormously the purification of river water, and in this instance saves both time and money. The amount of solid matter contained in untreated Thames water is round about 100 pounds per million gallons, but in flood time it is still further increased, and during one January week in 1924 a ton of solid matter would have entered the Board's reservoirs with every four million gallons of water unless it had been possible temporarily to close the intake. The Littleton reservoir affords tremendous relief, for when full it would, in HOUSTON'S words, supply the whole world with a gallon of water per head for three days. These great settling tanks afford the opportunity of adequately sampling the London water before filtration, and the examination of the pre-filtration water goes on steadily. The loss of vitality to pathogenic microbes has now been correlated with certain physical, chemical, and bacteriological changes which occur in river water as a result of adequate storage, and it has become increasingly possible to deduce the margin of safety previous to liberation. The influence of time in destroying the vitality of pathogenic bacteria is well known to bacteriologists, and the new storage increases this safety period.

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[1] THE LANCET, 1921, ii., 723.

[1] London: P. S. King and Son. 15s.

In the opposite direction of rapid purification the work of the Water Examination Department goes steadily on. The country owes much to HOUSTON'S determined advocacy of chlorination as a safe and ready method of purification. Recently the matter has been carried one stage further in an exhaustive test of super-chlorination with subsequent dechlorination. The advantages of this process are that, even with a very short period of contact, sterilisation can be made effective and serious taste troubles avoided. A drawback is the constant supervision required which lays added responsibility on the staff. The average dose of chlorine now used for Thames river water is 1 in 2·3 millions, and, so treated, 78 per cent. of the samples passed the test of containing no colon bacilli in 10 c.cm. of water. In regard to taste troubles, HOUSTON is content to remark that two million people have used this chlorinated Thames water since May, 1916, and he has not heard a single complaint. The New River supply has now been chlorinated for the sixth consecutive year, taste troubles having been avoided by skilfully contrived doses of chlorine and permanganate. Now that Mr. B. A. ADAMS'S work has succeeded in tracking down the iodoform taste of chlorinated water to atmospheric impurity, it looks as though the problem is within sight of complete solution, and, as HOUSTON puts it, the bogy of taste will before long largely be eliminated.

The Report contains much else of value and interest. In one section HOUSTON sets out a simple test (quaintly called "the three-star presumptive test") for colon bacilli in drinking water which gives reasonably accurate results under conditions of extreme simplicity. The Water Board is interested in living organisms other than bacteria in relation to the Thames. HOUSTON still regards the Thames as a salmon river in a potential sense. The water at Hampton is well aerated at all seasons of the year; it is only in the lower reaches that no oxygen remains to maintain the possibility of fish life. Were it possible even temporarily to purify the tidal portion of the Thames during the descent of the smolts and ascent of the salmon, there is nothing in the state of the upper river to render salmon life impracticable. This is a great aim which not only keen fishermen may hope to see realised within their lifetime. Birds are not considered desirable visitors at the reservoirs. Gulls, so far as is known, do not suffer from the water-borne diseases that afflict human beings, but their droppings interfere with chemical control of the water. Considerable attention has been paid during the year to frightening gulls away from the West Middlesex works and other wild fowl from the aqueduct at the East London Works. But there is no page in the Report which does not contain interest for some class of reader, and we express again cordial regret that the Report is issued in the foolscap form so dear to precedent and so inimical to circulation. Every householder ought at least to read HOUSTON'S repeated declaration that drinking water should be obtained direct from the rising main and not after a more or less protracted sojourn in a tank in the roof. And he should see that he gets it.

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A CONFERENCE ON DRUG STANDARDS.

THE first international conference on the standardisation of biological products, which was held at Edinburgh in July, 1923, under the auspices of the League of Nations Health Organisation, adopted a programme of research into the best methods of testing various drugs and selected a certain number of laboratories in different countries where these methods could be investigated and the results compared. The National Institute for Medical Research of Great Britain was used as a clearing house for the investigation and correspondence this work entailed, and a second conference, under the presidency of Dr. H. H. DALE, of the Institute, has just been held at Geneva to review the work of the past two years. The main subject of discussion was the standardisation of such products as pituitary and thyroid extracts, insulin, digitalis, salvarsan, and ergot, and the conference attained in the end a remarkable degree of unanimity. For digitalis, pituitary extract, insulin, and salvarsan a system of international standards was agreed upon; the iodine content was considered sufficient index of efficacy in thyroid extract, and the questions of ergot, extract of male fern and other vermifuges, and the vitamin-content of cod-liver oil, were held over for further investigation. The article by Prof. J. C. DRUMMOND, on p. 679 of our present issue, indicates the wide limits within which the vitamin-content of cod-liver oil may vary. It is probable that a separate specialist conference will investigate vitamin standards. The discrepancy which at present exists between one preparation of pituitary extract and another is shown by the fact that in one country, where control conditions are particularly good, a series of commercial preparations showed a range of activity of from 1 to 80. At the conference it was decided that the dry (acetone) extracted substance of the fresh posterior lobe of the pituitary recommended by Prof. C. VOEGTLIN to the Edinburgh conference should be adopted as standard. The Health Organisation of the League will be responsible for the distribution of small quantities of this preparation which will form national standards; the physiological activity of ⅛ mg. of the above preparation is to constitute a unit of activity, and preparations should be labelled according to their potency. Insulin has from the first been relatively well standardised owing to the action of the Toronto committee who introduced it; but different workers have got optimal results with different methods, while variations in animal reaction and in climate have led to widespread discrepancy between units as determined in different countries. A dry, stable preparation of insulin hydrochloride, which has been made at the National Institute for Medical Research, London, has been accepted as the standard, and a unit of insulin, corresponding to that biologically measured by the Toronto committee, is now defined as the physiological activity of ⅛ mg. of the standard preparation. The international standard of digitalis is to be a dry powder of the leaves of *Digitalis purpurea*, similar to that proposed at the first conference. Experiment on cats is to define the activity, and further methods will be investigated; it is arranged that the standard shall be distributed internationally, and its activity will be annually controlled. The subject of salvarsan is of special interest, because the patents governing its production and that of its most important derivatives expire in the course of a few years, after which any factory in the world will be free to make them, and may flood the markets, legitimate and illegitimate, with products of widely varying toxicity. Standards for these substances are to be prepared and deposited in the original laboratory at Frankfurt, just as the standard samples of antitoxic sera are kept at the Copenhagen Serological Institute, those of pituitary extract at Washington, and those of insulin in the Hampstead Institute.

THE LATE SIR FRANCIS DARWIN.

REFERRING in 1912 to "The Life and Letters of Charles Darwin," Sir Charles Sherrington remarked that "by the vivid presentation of the life, character, and work of one of the greatest naturalists the world has ever seen, by the modest self-effacement of its author, and by its literary charm, it has undoubtedly had a quickening influence on the advance of science in modern times." Sir Francis Darwin will perhaps be remembered best by this admirable biography of his father, with whose later work he was most intimately connected. Although he graduated in medicine while at St. George's Hospital, he never practised, but returned to his father's home at Down, where for eight years he acted as assistant and secretary. His name appeared on the title-page of Charles Darwin's "Power of Movement in Plants," and later at Cambridge he devoted much of his energy to research on the same subjects and provided a wealth of experimental evidence justifying the idea of the localisation of sense organs, which is now generally accepted. His interest in plant physiology did much to advance Cambridge in this study, and his teaching by lectures and text-book was most helpful to students; the "Elements of Botany," although written for the preliminary medical course, was a safe introduction to the study of plant life. As President of the British Association in 1908, he discussed the problems of stimulus and reaction in plants, and by the mnemic hypothesis—the idea that stimuli are not momentary in effect, but leave a trace or record—somewhat expanded, and also supported, his father's views on the origin of species. By his death science loses a considerable personality. His distinction did not clash with his sense of humour, his hatred of insincerity, nor his appreciation of the good work of others.

Annotations.

"Ne quid nimis."

THE SURGEON AS A TECHNICIAN.

UNDER the modest title "De Minimis" Mr. Arthur Edmunds calls attention, in a communication appearing in our present issue, to an aspect of surgery which has of late been seldom made a subject of prominence—namely, the technical details of the surgeon's art. Every surgeon has his own special methods by which in years of practice he has learnt to facilitate his work, but the great surgeons early in the last century took infinite pains to build these methods into a technique having a virtuosity comparable to that of the pianist, by which they triumphed over difficulties and astounded the onlookers. Those were the days when theatre galleries were crowded to see Fergusson amputate a hip in 12 seconds, or to watch the faultless perfection of an operation by Dupuytren or Syme. These men worked when anæsthesia was unknown and when the slightest clumsiness meant the prolongation of the agony of the patient, and it was not for mere spectacular effect that they spent, in acquiring supreme manipulative skill, so much labour as they did. When the enterprising young operators went over to Paris, where bodies were cheap and where perhaps for that very reason the surgeons led the world in technical brilliance, the aim to gain pace and precision was always humane in origin. One English surgeon, not even now an old man, went to Paris to tie the common iliac artery 10 times, so that he might learn to avoid wounding the peritoneum, naturally held in pre-Listerian days to constitute an almost fatal disaster. To-day the whole situation has changed. With the perfection of anæsthetics and of asepsis, the urgent necessity for such manipulative dexterity and speed has gone. The surgeon's work has been made so much easier in one sense—though so much harder when its range is remembered—that he is apt to forget that it really does matter how an operation is done; and authors have chronicled in our pages before now the details of surgical procedures where unimpeachable as the objects have been, the methods have had no reason for commendation. The results in such cases may have been generally good, or unfortunate issues may have not been traceable to faulty technique, for the human body is amazingly tolerant; but none the less the operation that is performed with an accurate knowledge of anatomy and a precise conception of the projected steps must remain the proper ideal. But there are difficulties in obtaining the experience thus necessitated. The old surgery consisted largely of amputations and of operations easily carried out on the cadaver. To-day the teachers cannot get the cadavers for the students, and if they could, they would be of little practical use for the carrying out of instruction in the operations on the viscera, which form now so large a bulk of surgery. It is only on living animals that the student could be taught real technique exactly, and such studies are most strictly prohibited in this country, where even the trained surgeon is not allowed to develop his skill in this way. In America, in some of the medical schools at any rate, regular animal hospitals have been organised, in which the student is taught the technique of his art. He is taught to operate upon anæsthetised animals, and to care for his animal patients. The modern surgeon is assisted by anæsthesia and asepsis, adjuvants of far-ranging power, and every day there are being placed in his hands some new products of mechanical or optical skill; but for the development of personal dexterity the medical curriculum makes little provision. Are the difficulties of filling this gap insuperable? The pessimistic view, that we have seen taken in more than one place, that the modern student, wearied with the burden of an overgrown curriculum, reaches the final examinations unable to outline the simplest amputation, and without ever having been taught how to hold a knife or to tie a knot—this view is exaggerated, but there is no doubt that the importance of technique is no longer sufficiently insisted upon by teachers. Their responsibility here is difficult to discharge, and we may see the employment of elaborate dummies or models. Rightly used these could be of enormous service.

NOTIFIABLE DISEASES THROUGHOUT THE WORLD.

THE second annual report on the prevalence of epidemic diseases prepared by the Service of Epidemiological Intelligence and Public Health Statistics of the Health Section of the Secretariat of the League of Nations[1] reviews the statistics for 1924 of the diseases notifiable in 29 European, 17 African, 20 American, and 16 Asiatic countries, together with Australasia. The tables collected in this volume are prepared from the current records published in the Monthly Epidemiological Reports of the League, and are sent to the National Health Services for verification. The short summaries of the movement of the various epidemic diseases during the year provide a review of the general situation. The incidence of plague has been higher than in any of the five preceding years, mainly on account of its prevalence in Northern India. On the other hand, Egypt, Iraq, and East Africa record fewer cases than in 1923. Cholera was rare outside India and entirely confined to Asia, except for nine cases in European Russia. In India it was more prevalent than in the two previous years. Yellow fever reappeared in Central America and 18 cases were reported from British West Africa. The incidence of typhus was lower in all parts than at any time since the war; it would seem that the great pandemic has now run its course. There was a serious epidemic of relapsing fever in Nigeria, but elsewhere the incidence diminished rapidly. Small-pox markedly increased in North Africa and North America, particularly among the natives. The fatality, however, was very low, only two deaths being reported from Africa. In South America there has been a definite decline of this disease. In Europe the situation has improved, although England and Poland report an increased incidence. Enteric fever remains as in previous years, except for a slight increase in Europe; the steady decline observed between 1894 and 1914 appears to have ceased for the time. Serious epidemics occurred in the Balkans. Malaria still constitutes a serious problem in Russia and the Balkan States. The Commission believes that the rise during recent years is due to climatic conditions favouring the spread of the mosquito; and to mass movements of peoples carrying with them new strains of plasmodia. Reliable information on Malta fever is only available for a few countries; it has been reported as far south as Southern Rhodesia and the Union of South Africa, as well as in the West Indies and United States. The great influenza pandemic of 1918–19 has been followed by recrudescences of varying intensity; the epidemic of 1924 was less severe than that of 1921–22, and was most marked in Western Europe. The incidence of encephalitis lethargica was lower in America and in Europe, with the exception of Great Britain, where it was unusually prevalent. In former years most cases occurred in winter, but in 1924 the majority were encountered during the spring. In spite of the serious epidemic in this country the death-rate was low, about 20 per cent., and abortive attacks were frequent. Japan suffered from an unidentified epidemic of the central nervous system, with a mortality of 55 per cent. A severe epidemic of acute poliomyelitis occurred in Iceland, with a mortality of 37 per cent. A large number of cases were recorded in Sweden and in England and New Zealand. Cerebro-spinal fever is notifiable in almost all parts of the world. A period of high prevalence followed the war, but since then there has been a decline. Several important outbreaks have occurred in the grass lands south of the North African desert belt. There seems to have been a slight but by no means general decline of measles during 1924, but, like scarlet fever, whooping-cough, and diphtheria, the disease is not completely reported, and definite conclusions cannot be drawn from the statistics collected here. The seasonal distribution of measles is seen to vary in different countries, and it tends to cause widespread epidemics periodically. The report is lavishly illustrated with maps and diagrams. The compilers admit that for several reasons it is not absolutely complete, but none the less it is an extremely valuable source of information for the student of epidemiology.

THE ROTUNDA HOSPITAL REPORT.

THE clinical report of the Rotunda Lying-in Hospital for the year 1923–24 appears in the August number of the *Irish Journal of Medicine*. As in previous years the report is full and comprehensive and includes a detailed statement made by the Master, Dr. Gibbon FitzGibbon, who summarises the year's work and discusses the various forms of treatment adopted. This summary should be read by all who are interested in midwifery, as it contains many original observations and gives an excellent idea of the work carried out at this well-known Dublin hospital. Attention is here called to a condition, arising wholly in primiparæ, "and described as persistent primary uterine inertia"; its pathology and the treatment adopted are reviewed, and notes appended of eight illustrative cases. In touching upon his method of inducing labour by a soft rubber tube, Dr. FitzGibbon takes exception to the description given of this method by Dr. T. Watts Eden,[1] who writes: "as much of the tube as possible is then gradually passed through the cervix. The excess should be cut off and the vagina packed to keep the tube in place." Dr. FitzGibbon affirms in the treatment of over 100 cases by this means he has never failed to pass the whole of the tube into the uterus. His object in devising the method was to have nothing passing from the uterine cavity into the vagina and to avoid having even iodoform gauze in the vagina to interfere with free drainage. Contrary to usual practice forceps are advocated in the report for the delivery of the breech, and the author considers them particularly suitable in the usual position of delay, at the perineum, more especially when the legs are extended, and greatly preferable in that position to any attempt to pass the hand up to flex the leg. During the year forceps were applied to the breech on five occasions with most satisfactory results. In discussing "contracted pelvis," it is stated that almost every primiparous patient is given a trial of labour up to rupture of the membranes before deciding on delivery by section. Internal pelvimetry was only done once in the year as dependence was placed far more upon the application of the head to the pelvic brim, as made out under anæsthesia, and by noting the progress of labour than on the actual dimensions of the pelvis. It is interesting to note that pubiotomy was only done in one instance. Cæsarean section, however, was performed on 19 occasions; there was no maternal mortality, but five cases were morbid and two infants died. The classical method was followed with the modification that the abdominal incision was begun below the umbilicus, the uterine incision being correspondingly low, generally encroaching for an inch or more on the lower uterine segment. During the year nine cases of eclampsia occurred; these were treated by the routine method of the hospital, morphia only being given if the patient was restless in labour or when returning to consciousness; the maternal mortality was nil but four infants were born dead. Of the 1703 cases confined within the hospital 102 were morbid according to the B.M.A. standard, giving a percentage morbidity of 5·9. There were ten maternal deaths, and 7·9 per cent. of the infants were either born dead or failed to survive the first week. Included amongst the maternal deaths were three cases of rupture of the uterus, one full-term ectopic which died just after a laparotomy, and four cases of acute sepsis. There was also one case of concealed (and revealed) accidental hæmorrhage, associated with pre-eclamptic symptoms and marked albuminuria. This case was treated on conservative lines. At the necropsy hæmorrhages were found under the peritoneum and broad ligaments and the whole of the uterine wall was infiltrated with extravasated blood. There were well-marked degenerative changes in both the liver and the kidneys. In the extern maternity 2001 patients were attended in their confinements, 210 of these being abortions or miscarriages under the twenty-eighth week. There were 11 maternal deaths, and 3·1 per cent. of the infants were either born dead or failed to survive the first week. Amongst the maternal deaths there was one case of post-partum hæmorrhage, one of rupture of the uterus, and one of placenta prævia. During this year 270 patients were admitted for antenatal investigation and treatment and 407 cases were received into the gynæcological wards. Of the latter 320 were operated upon with a mortality of less than 1 per cent. The last 20 pages of the report are allocated to an excellent set of tables giving a statistical synopsis of the various cases met with. Although this statistical enumeration is not as complete as certain of the tables given in some other maternity hospital reports, the deficiency is more than made good by Dr. FitzGibbon's very full opening summary. He and his colleagues at the Rotunda are to be congratulated on an excellent year's work.

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[1] Constable and Co., 10–12, Orange-street, London, W.C. 2.

[1] THE LANCET Special Supplement, Modern Methods in Abnormal and Difficult Labour, No. 1, p. 26.

PLEURAL EMPYEMA.

THE threatened advent of an early winter, with its attendant visitation of pulmonary infections, brings the subject of empyema once more to a prominent position amongst the anxieties of our readers. So long as such epidemics persist this dangerous complication will continue to take its toll amongst patients who have successfully withstood the first shock of an attack of pneumonia. Difficulty of diagnosis is the factor which perhaps makes empyema most dangerous, and in this connexion the observations of a physician of long experience are always valuable. Such are to be found in an article recently published by Dr. F. J. O'Donnell,[1] who epitomises the experience of many years in an essay dealing with 20 recent cases of pleural empyema. Concerning the diagnosis the writer lays particular stress on four points: the persistence of marked debility, the early onset of facial pallor, an increase in the pulse-rate, and a demonstrable leucocytosis. Irregular pyrexia is almost invariably present, but Dr. O'Donnell finds this to be less constant than the increased frequency of the pulse, and it is worthy of note that fever occurring only for brief periods daily may far more easily escape observation than a rapid pulse, which can be detected at all hours. As to the physical signs, difficulty is experienced in probably the majority of all cases, for though a large collection of fluid at the base of one lung gives characteristic signs, the presence of a small collection of pus in an abnormal situation is not only confusing because of its position, but is often accompanied by the breath-sounds suggestive of consolidation of the lung. The rule adopted by Dr. O'Donnell is "to percuss the chest with a view to finding any area possessing the characteristic flat note suggestive of underlying fluid, and, if found, to explore that area regardless of the nature of the breath-sounds, if any, present there." "In doubtful cases," wrote Locke, "needle the chest early and often," and it may be said that one of the cardinal characteristics of the sound practitioner is that he does not allow the reluctance of the patient or his friends to deter him from insisting on the use of the exploring syringe in every uncertain case. Amongst the infrequent causes of difficulty in diagnosis are abscess of the lung and liver abscess rising to a high level; the discovery of pus in such conditions is still of great importance though the treatment is not necessarily the same. As to the treatment of pleural empyema, Dr. O'Donnell shares the caution of all experienced physicians and prefers to aspirate during the more acute phases of the disease, reserving resection for a later period. He finds that children withstand operation under local anæsthesia particularly well, and he urges the importance of open-air treatment in all severe cases during the period following drainage.

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[1] Medical Press and Circular, August 19th.

MEDICAL DEFENCE.

THERE are forms of insurance which hold out such compensations for misfortune as to make disasters almost desirable; there are others, of a negative sort, which offer as their greatest inducement the reflection that things might have been very much worse. Few people feel actual pleasure in paying rates towards the upkeep of the police force which, though it may save them from the worst features of burglary, is unlikely to distribute bonuses to its supporters; and the same reluctance is manifest in paying subscriptions to medical defence societies which are merely protective in function. The Council of the Medical Defence Union, which has just published its annual report,[1] welcomes 1118 recruits to its membership during the past year—the membership is now 12,017—but speaks regretfully of this reluctance of medical practitioners to avail themselves of its services. The Union can, however, find little else to deplore in its present position, for it was never so thriving before. Its amenities have also increased. Following the case of Harnett *v.* Bond and Adam, it has been decided to offer unlimited indemnity to members for any damages sustained in a case undertaken by the Union. The Union is enabled to propose these terms by an arrangement with an insurance company by which any excess charges over 25 per cent. of the Union's annual income are borne by the company. The premium for this indemnity insurance amounted to £3377 last year; but the assets of the Union are now nearly £10,000, and this sum is so large that from January next the Union will only insure for charges in excess of 50 per cent. of the income, and the premium will presumably be smaller. This unlimited protection of members in cases which the Union feels it right to take up is offered in return for the small subscription of £1 per year, although the cost of defence last year was in one case as much as £787. Ninety-seven cases were referred to the solicitors, and ten of these were withdrawn soon after the Union agreed to defend them. Only one case was lost and here the damages were greatly reduced. In seven the Union defended its members before the General Medical Council, and in none of these was a name removed from the Register; but the Union finds a difficulty in that the Council's methods are not in accordance with legal procedure. The Council, however, does not pretend to prosecute under criminal law; it tries to discover whether conduct imputed to a medical man infringes the standard which it is the duty of the Council to maintain for registered doctors. Among other matters to which the report draws attention are the services of the general secretary of the Union in adjusting difficulties between medical men; the danger of granting interviews to dissatisfied patients, who may afterwards misrepresent the conversations; the desirability of putting the cases before the Union before taking steps which it may be unable to authorise; the inadvisability of criticism by one doctor of another; and the unwisdom of settling disputes privately rather than facing publicity. It also mentions the fact that the Lunacy Laws only require the exercise in good faith of reasonable care, in contrast to Common Law, which insists in addition on reasonable skill. In the course of its report the Union discusses its relation to the British Medical Association's scheme of defence, and denies that the existing defence societies

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[1] Report and Statement of Accounts of Medical Defenc Union, Ltd. 1925.

"have been given every opportunity of entering into coöperation," although there have been suggestions that members of the Association should receive favourable terms from the societies. In his special report the Union's solicitor says: "The practice of the profession of medicine undoubtedly entails considerable risk of litigation, as in no other profession is the personal element so predominant and the expectation and ignorance of the public so profound." At a time when challenge of professional conduct is increasingly frequent personal insurance against such risks is practically indispensable, and a recent case has made it clear that in the opinion of the profession at large an unprotected colleague who suffers at the hands of the public has only himself to blame.

FUNGI.

THE great division of flowerless and chlorophyll-free plants known as fungi represent a somewhat neglected source both of food and drugs, for in this country it has been estimated that there are at least 200 edible forms of fungi, and this is but a small proportion of the total species of these plants, of which there are over 5000 in Great Britain. Certain of the species represent a danger to our existing food-supply; the parasites on wheat and on potato plants have of recent years been the object of study by scientific agriculturists. The chief edible species is the mushroom proper, *Agaricus campestris*, and other fungi which are safe for eating purposes and not likely to be confused with poisonous varieties are the parasol mushroom, the inkcap, the beefsteak fungus, and the hedgehog mushroom. A fungus growing on the elder, *Fungus sambuci*, has been used as a local application in conjunctivitis; the puff-ball has a reputation in country districts for arresting hæmorrhage, and a 25 per cent. tincture is sometimes used as a nervous sedative; preparations from certain members of the species of *Polyporus* in the form of agaric acid and its derivatives are sometimes employed in the belief that they check profuse sweating; but ergot alone represents these plants in the Pharmacopœia. In ancient times the eating of fungi was a common practice. The Romans especially favoured the *boleti*, while Celsus has allusions to the use of certain edible varieties. Throughout Europe and in the East fungi are much more widely used as food than in Great Britain, and with the object of remedying this neglect Mrs. Grieve has produced a little book on "Fungi as Food and in Medicine" (price 1*s.* 6*d.* post free from the author, Whins' Cottage, Chalfont St. Peter, Bucks). She first deals with the methods of discriminating between edible and poisonous fungi, and it seems that certain of the traditional ideas with regard to "mushrooms" and "toadstools" are liable to lead to dangerous results, for it must be admitted that the average city dweller is very much at the mercy of vaguely remembered information, usually culled from the "odds and ends" column of some domestic journal. They do these things better in France, however, where the préfecture de police has established a centre of inspection for mushrooms at the "Halles" of Paris. Not only is every consignment of mushrooms entering this market inspected and passed before being put up for sale, but Parisians returning from an afternoon's excursion in the country may have their gatherings of fungi classified by the inspector free of charge. The British mushroom gatherer must acquire for himself a good working knowledge of the appearance of the edible varieties to be really safe, but generally speaking, fungi with evil smells or which turn a deep blue or greenish on being cut or bruised, or with a bitter taste, or which exude a milky juice should be avoided, and it is also important that fungi should be cooked and eaten while fresh. Mrs. Grieve goes on to describe the botanical features of the principal fungi, and follows her description of the plants with either a list of tasty recipes or poisonous symptoms according to their edible properties. The popular names of many of the fungi are in themselves attractive; "rough-legged boletus," "Jew's ear," "tinder bracket," "horn of plenty," are some examples, while among the recipes "procera pie" and "deliciosus pie" (from the "milky orange mushroom") look as if they deserved greater popularity. Truffles are more used in France and Italy than in this country mainly because the French truffle has a superior flavour to that of the English variety, and those sold over here being mostly imported and far from fresh give only a faint idea of the true truffle flavour. The fungus season begins at the end of April with the appearance of St. George's mushroom, and throughout the year until the end of October various varieties may be gathered. A most useful addition to our food resources in this country seems to be almost entirely neglected, and medicinal properties attributed by tradition to certain species of fungi may possibly represent an untapped source of therapeutic virtue.

PNEUMOCOCCUS IMMUNITY.

RESEARCH on pneumonia, which has been so well carried out by American workers during the last few years, has recently been advanced a further stage by the publication of a monograph on pneumococcus immunity[1] by R. L. Cecil, G. I. Steffen, H. S. Baldwin, and Dorothy R. Rhoades. The first part of the report consists of experiments by Dr. Cecil and Dr. Steffen with a view to producing active immunisation of monkeys against pneumococcal pneumonia. Intratracheal injections of monkeys with three doses of pneumococcus vaccine rendered the animals immune, in the majority of cases, to subsequent injection with pneumococci of homologous type, but administration of the vaccine by means of a spray did not produce so satisfactory a resistance. Little or no protective substance against the pneumococcus could be detected in the blood serum of the animals vaccinated by intratracheal injection, the immunity apparently being rather cellular than humoral. Experiments were also made by the same authors to demonstrate the effect of treatment of experimental pneumonia in monkeys with pneumococcus antibody solution prepared by the method of Huntoon. This antibody solution proved to be effective when used as a curative agent intravenously in monkeys injected with Type I. pneumococcus, less so with Type II., and ineffective with Type III., and with the one strain of Group IV. tested. Pneumococcus antibody solution was also effective in the treatment of Type I. pneumonia when injected subcutaneously. The report further contains a record of some investigations made by Dr. Rhoades on the fate of pneumococcus protective bodies when injected into normal animals and man. For this purpose two methods of obtaining the protective substance were employed—viz., Huntoon's and Felton's—both of which consist in separating out the globulin fraction from antipneumococcus serum. When solutions of this antibody are injected intravenously into the normal rabbit or man, protective substances against Type I. pneumococcus are demonstrable in the peripheral blood immediately after the injection and for a short period following; when animals were injected intraperitoneally, similar results were obtained, but when the subcutaneous route was used the appearance of protective substance was more variable. No protective substances could be elicited by the administration of these antibody solutions by trachea, mouth, or rectum. Finally, Dr. Baldwin and Dr. Rhoades report on bacteriæmia in pneumonia and its relation to the crisis. One hundred and seven cases were investigated from the wards of Bellevue Hospital, New York. The tabulated results show that with all types of pneumococcus the death-rate is much higher in cases with positive blood cultures than in cases with sterile blood. They find that pneumococci and protective antibodies rarely appear simultaneously in peripheral blood. The same workers record work done on the use of ethylhydrocuprein in lobar pneumonia. They write guardedly of their results, but consider that there is some evidence of bactericidal effect.

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[1] Studies on Pneumococcus Immunity, IV. to VII., Bulletin No. 141, Hygienic Laboratory, Treasury Department, United States Public Health Service, Washington, 1925.

TUBERCULOSIS IN THE ITALIAN NAVY.

Surgeon-General Filippo Rho, formerly Medical Director-General of the Italian Navy, and a leading authority on naval hygiene, discusses, in a paper reproduced in the *Military Surgeon* for July, the question of tuberculosis in the Italian Navy, in which service there are always more cases than in the Italian Army, the experience here being also that of France. In Surgeon-General Rho's view the chief factors accounting for the discrepancy are infection and healthy carriers, and neither predisposition nor the often-quoted hard work and exposure; while he is confirmed in this, his long-held opinion, by the experiences of the war, which did not increase the incidence of tubercle among the soldiers. For seven years he was medical officer to the Naval Academy at Leghorn and in that time saw only two cases. But in 1919 a case appeared, followed during the same year by six others, always in the same class and dormitory, though each was promptly isolated as it appeared. There must, he thinks, have been a healthy carrier, and we may suggest that an attendant was perhaps the peccant subject. Many appear to hold that the tuberculous are more likely to recover from consumption on board a ship than on shore, but this is a mistake, at any rate as regards men-of-war, as the Italian figures show. The morbidity from tubercle in 1893–97 in the Italian Army was 1·9, and in the Navy 2·0 per mille—surely called "percentages" in error. But the liability is not uniform for all men in the naval service. The liability of sailors, in 1893–97, was 1·6; that of writers, firemen, and attendants on the sick was between 3·2 and 3·5, or about twice as much. Small cubic space increases the incidence of tuberculosis, the narrow environment being more favourable for the growth of the tubercle bacillus. Surgeon-General Rho hopes much from the new copper compounds, double cyanides, which have shown good results in Japan and Italy, and not only against tubercle, but against leprosy, in the hands of Matta and Devoto, at Cagliari. His paper is worth close consideration.

CHRONIC PEPTIC ULCER IN CHILDREN.

IN a recent thesis for the degree of Master of Science in Surgery at the University of Minnesota, Dr. Oscar S. Proctor[1] discusses the subject of chronic peptic ulcer in children with a review of the literature and a record of three hitherto unpublished cases observed at the Mayo Clinic. Study of the literature showed that there were only 10 undoubted cases and two which were questionable. The patients included in this series were aged 14 years and under. The cause of chronic peptic ulcer in children is probably the same as in the adult. Two-thirds of the recorded cases were in females. The situation of nearly all the gastric ulcers was on the lesser curvature at or near the pylorus as in the adult. Approximately one-third of the ulcers were associated with definite stenosis of the pylorus. There was no indication that any of the gastric ulcers became malignant during childhood. The onset may be sudden with hæmorrhage or perforation, but this is very exceptional, and there is usually a history of gastric disturbance extending over months or years. The symptoms may be mild and attract little attention, consisting in pallor, anorexia, loss of weight, and vague abdominal pain, but as a rule they are very definite and sometimes severe. Epigastric distress or pain of varying degree is present in practically all cases, lasting from a very short period to several hours. Nausea and vomiting are present in most cases. Constipation is the rule and is often obstinate. Retarded development is often apparent and may sometimes amount to complete cessation of growth. The figures are, of course, too small to draw exact deductions, but bleeding was present to some extent in about 40 per cent. of the cases. Perforation occurred in about 25 per cent. General peritonitis in such cases was almost always present, and the mortality has been about 50 per cent. As regards diagnosis, chronic or recurrent dyspepsia in a child should suggest the possibility of peptic ulcer, especially if the growth is retarded or if the child is under weight or pale. Hyperchlorhydria is usually absent; when present it may be helpful in diagnosis. Blood may be found in the gastric contents or in the stools, especially on repeated examination. X rays are of great assistance in diagnosis, as was exemplified in two of the writer's cases. Unless there are definite contra-indications such as marked pyloric stenosis, repeated hæmorrhage, or perforation, medical treatment should always have a thorough trial, and if it fails the simplest operations are best, such as pyloroplasty or gastro-enterostomy.

THE LATE DR. LOUIS STARR.

Dr. Louis Starr, who died recently at Dinard at the age of 76, was one of the best known authorities in the United States upon the diseases of children. Born in Philadelphia, he graduated at his native University in 1871, and in the famous American city he conducted for many years one of the largest practices in the world in pediatrics, writing also widely on his specialty as well as editing the works of others. Since his retirement from practice Dr. Starr has been living at Dinard, and some of our readers may have seen his delightful etchings illustrating scenes in the immediate neighbourhood, especially in Dinan. An old friend writes: "Dr. Louis Starr's health had for some years been precarious, and the loss in the war of his only son remained an abiding source of grief to him, although those who visited him at his beautiful villa will remember that no word of complaint either of his grief or of his physical pain ever passed his lips." We tender our sympathies to his widow and devoted companion.

WE regret to record the death of Dr. James William Russell, joint professor of medicine at Birmingham University, on Sept. 20th, after a short illness, in his sixty-third year.

THE King has granted a charter to the Medico-Psychological Association of Great Britain and Ireland, which will henceforth be entitled to the prefix "Royal."

THE annual meeting of the Fellows and Members of the Royal College of Surgeons of England, which takes place on Nov. 19th, will be an occasion of interest, as the Council of the College, we are informed, has decided to lay before the meeting the exact terms of the petition for a proposed new charter, an interesting point in which is the suggested admission of women Fellows on the same status as men Fellows.

THE University Court of St. Andrews University has appointed David Rutherford Dow, M.D., D.P.H. St. And., of Crail, Fife, to the Chair of Anatomy in University College, Dundee, rendered vacant by the retirement of Principal J. Y. Mackay. Since 1913 Prof. Dow has been lecturer in regional anatomy at the United College, St. Andrews, and assistant successively to Profs. J. Musgrove and D. Waterston. He has published several papers on research work in anatomy.

INFANT CARE.—A series of elementary lectures on infant care for creche nurses and probationers will be given by Dr. Stella Churchill at Carnegie House, 117, Piccadilly, W. 1, under the auspices of the National Association for the Prevention of Infant Mortality and the National Society of Day Nurseries, on Thursday evenings from Oct. 15th to Dec. 17th. Full particulars may be obtained from the secretaries of either of the above societies at Carnegie House.

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[1] *Surgery, Gynecology, and Obstetrics*, July, 1925.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXL.—THE SURGICAL TREATMENT OF EXOPHTHALMIC GOITRE.

PART II.*—THE OPERATION AND ITS DANGERS.

THE surgeon who is practised in operating upon patients with Graves's disease can judge from his experience how much should be done at one operation in each individual case. The same surgeon will, in one case, simply ligature and divide an artery; in another he will remove one lobe and the isthmus; in a third he will remove one lobe, the isthmus, and from half to two-thirds of the second lobe. A surgeon who is not practised will begin by ligaturing one artery and dividing it. He will do this for several reasons. It tests the patient's reaction to operation by something smaller than the extirpation of a lobe, and the reaction is, to some extent, an unknown quantity in Graves's disease. It will also temporarily improve the patient's condition, so that a bigger operation can be undertaken later with more safety. An operator unpractised in these cases may kill a patient by mere length of time taken, together with the unavoidable handling and the hæmorrhage, if he attempts too much at the first operation. But no one should operate upon a case of Graves's disease at all unless he is prepared to do ultimately all that is necessary to cure the patient. To remove one lobe is comparatively easy. To slice through the second lobe may present many difficulties; but to do the former only and to leave the patient at that stage is to bring into disrepute the operation for the cure of exophthalmic goitre.[7]

Steps of the Operation.

The steps of the operation may be briefly recapitulated.[8] A "collar" incision is made following Kocher's plan. This incision is always adhered to no matter how large the goitre. The flaps, including the platysma, can be dissected up and down sufficiently to give good access, whether the lobe is approached subsequently through the mid-line, or by an oblique division of fascia in front of the sterno-mastoid. My own plan after the reflection of the flaps is to make a stab through the lower flap for subsequent insertion of a drainage-tube. The infrahyoid muscles and fascia are separated in the mid-line; if this is carried out from the larynx to the sternum the muscles can be retracted sufficiently for the enucleation of almost any lobe without lateral division of the muscles. Nevertheless, if the patient is very ill, or the lobe is big, division of these muscles will permit of enucleation with less manipulation. The superior vessels are clamped in two places and divided; these vessels should never be ligatured in continuity, for the upper pole is drawn down so far that any simple ligature may easily slip. Enucleation is carried out by peeling back the fascia from the lateral aspect of the lobe with plain forceps, while the lobe is gently rotated on its longitudinal axis towards the other side. It is wise to leave a thin shaving of thyroid overlying the region of the recurrent laryngeal nerve so that this may be protected. I believe that more damage is done by stretching the nerve in rough manipulation, or by infiltration following the damage to the surrounding structures, than by actual cutting it across or catching it in forceps. The latter may occur unless the surgeon keeps very accurately to the right plane, and unless hæmostasis is meticulously carried out as the operation progresses. The isthmus should be removed with the first lobe unless the patient is too ill, as this facilitates the second operation. Otherwise the isthmus becomes buried in scar tissue, and its subsequent removal is accompanied by much bleeding and consequent blurring of the field. On the other hand, if it is left at the first operation, and not completely removed at the second, so much of the gland remains that the patient does not receive the maximum benefit from the operation.

The second lobe will probably be dealt with some months later. The original incision is opened, the flaps are reflected as before, but the vertical incision through the deep fascia and infrahyoid muscles will be made laterally, and not in the mid-line, in order to approach the lobe at a place free from the scar tissue of the first operation. The whole field must be clearly defined before the lobe is cut into. Enucleation will be commenced at the lower pole for several reasons; it is the larger pole and it is easily rotated forward on its attachment to the trachea by the scar tissue of the previous operation. Therefore its resection can be commenced by cutting into it from behind, and a large part of the lobe removed while the upper pole with its blood-supply is undisturbed. The procedure is as follows: a row of pressure forceps are placed on the capsule of the lobe, the lower ones being behind the lower pole, the remainder in a line approaching the lateral surface in front of the region of the recurrent laryngeal nerve and gradually coming forward on to the anterior surface as the upper pole is approached. These forceps grip vessels and arteries in the capsule and act as guy-ropes, so that the bleeding from the cut surface is under control until it is dealt with. Hæmostasis must be absolutely complete, and I believe that fine silk (or thread) is the only safe ligature for this reason—catgut loosens too readily through movements of the larynx and trachea in swallowing or coughing, and late hæmorrhage is a very serious matter.

Drainage at both operations is provided for by a split drainage-tube passed through the stab down to the bed of the thyroid. The infrahyoid muscles and fascia are brought together above this, the flaps of the collar incision are united by buried catgut sutures, which pick up the platysma, and the skin is closed by interrupted horse-hair sutures. These sutures and tube are removed in 48 hours, the flaps being held in position by the deep catgut sutures.

Dangers.

There are dangers peculiar to operation on patients suffering from this disease, and these must be given due consideration. In the first place, the selection of the case is important. Patients are not operated upon unless they are ill enough to warrant it; on the other hand, some are too ill. To operate upon a patient with increasing pulse-rate, high basal metabolic rate, mental agitation and emaciation is to invite disaster, and yet patients and friends, when they realise that ground is being lost, will often plead for operation.

Anæsthesia has some dangers. The heart is already suffering from intoxication, so that its margin of safety is a narrow one. Chloroform is absolutely contra-indicated. A skilled anæsthetist may give it with comparative safety, but many lives have undoubtedly been lost through it. If the surgeon has the complete confidence of the patient, local anæsthesia, preceded by omnopon ⅓ gr. and scopolamine 1/150 gr., is ideal; but to an anxious patient general anæsthesia should be given. I prefer ether administered by an endotracheal tube, but the method may be left to a capable anæsthetist who appreciates the conditions, and can manage his apparatus so that it does not hamper the surgeon. Ether should be preceded by a hypodermic injection of atropine to lessen secretion. Waiting in the anæsthetic room should be avoided.

While there should be no undue haste, a prolonged operation and the hæmorrhage associated with it definitely increases the risk. As Sir Berkeley Moynihan has so aptly pointed out in reference to gastric surgery, speed should be attained not through hurry, but through the precision which comes with practice.

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* Part I. appeared in this series in THE LANCET last week.

[7] Dunhill, T. P.: THE LANCET, 1917, ii., 883.

[8] Same author: Brit. Jour. Surg., 1919, vii., No. 26, p. 195.

Two dangers associated with technique are injury to one or both recurrent laryngeal nerves, and to the parathyroid glands. The former of these is much more common than is usually recognised. If one alone is injured functional recovery of voice is good. If there is delay in this it has been demonstrated that re-educational methods rapidly improve the patients' comfort (Cortlandt MacMahon). If both nerves are injured the last state of the patient is worse than the first.

A danger not sufficiently recognised is that of slow hæmorrhage occurring beneath the deep fascia and the infrahyoid muscles after the patient has returned to bed. This may happen either through incomplete hæmostasis during the operation or afterwards through movements of the larynx and trachea in coughing or vomiting, which may dislodge one of the numerous ligatures. The danger is not from loss of blood, but from increasing pressure on the trachea as the blood collects in the cavity between the vertebræ and deep fascia. The small drainage-tube soon becomes blocked with clot and fails to relieve the pressure.

Results of Operation.

The risks may appear to be so many that the practitioner may wonder if operation should be entertained. If the right time is chosen, due precautions observed, and the operation performed with precision, the results are striking, and the relief to the patient very great. There are those who believe that the signs of exophthalmic goitre are only the manifestation of general endocrine disturbance, but the result of the operation is so obvious that we are compelled to believe that whatever the primary cause of the disease may be the immediate seat of the evils which make the patient's life so unhappy is the disturbed thyroid gland. After operation the pulse-rate drops quickly, the skin becomes cool, the mental agitation subsides, there is always some recession of the eyeballs, and the feeling of strain at the back of the eyes disappears If amenorrhœa has been present the periods become regular.

It is known that in the later stages of thyrotoxic disease, when cardiac compensation has been lost, auricular fibrillation not infrequently results. It has been shown recently that after a sufficient removal of pathological thyroid gland in this condition the auricular fibrillation disappears spontaneously and the heart rhythm becomes normal in many cases. In those patients in whom the pulse does *not* return to normal rhythm after partial thyroidectomy alone, it can be rendered normal by the administration of quinidine, and will, in most instances remain so; whereas without operation normal rhythm cannot be maintained by the use of quinidine alone.[9] [10]

T. P DUNHILL, C.M.G., M.D Melb.,
Assistant Director, Surgical Professorial Unit, and
Assistant Surgeon to St. Bartholomew's Hospital.

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[9] Fraser, Prof. F. R.: Quart. Jour. Med., 1924, No. 68, xvii.
[10] Dunhill, T. P.: Brit. Med. Jour., Oct. 4th, 1924.

A CONFERENCE ON LIBRARIES.—A conference is being held over the present week-end (Sept. 25th–28th) at Balliol College, Oxford, under the auspices of the Association of Special Libraries and Information Bureaux. The Association exists to facilitate the use and coördination of all sources of information for scientific, technical, commercial, and public purposes. Sessions will be devoted to the present position of the special library movement; to informational work in politics, business, science, engineering, transport, medicine, and patents; and to public and university libraries, &c. A large mass of printed information lies idle through lack of coördination, and this fact naturally makes many and varied bodies interested in the conference. A number of Government departments will be represented, and also learned societies, research associations, the political parties, and many other organisations. The Minister of Labour (Sir A. Steel-Maitland) is opening the proceedings, and a long list of speakers includes Sir Horace Plunkett, Prof. Gilbert Murray, Prof. A. F. Pollard, and Dr. Chalmers Mitchell. The address of the Association is 38, Bloomsbury-square, London, W.C. 1.

Special Articles.

AMERICAN HOSPITALS.

BY LIONEL G. PEARSON.

(*Adams, Holden & Pearson, Architects, Knightsbridge.*)

AMERICA is a good country to visit—people are extremely friendly, hospitable, and ready to show everything to the visitor from across the Atlantic, and anyone who wishes to study their buildings is sure of a very pleasant experience.

Of course the ground to be covered is immense, and the amount of hospital building so great that it is somewhat difficult to make a choice of what to see, especially as authorities have a way of differing as to the relative merits of various cities and buildings. New York City makes the best starting-point without any doubt, for though the Americans deny that it is a typically American city, the fact remains that the best examples of recent architecture are to be found there, whether it is a question of banks, railway depôts, hotels, apartment houses, or hospitals. The pace at which New York (or other cities to a lesser degree) is being rebuilt is astonishing, and it is this extraordinary building activity, the result of commercial prosperity, which makes America at the present moment the most exciting country in the world architecturally. After New York the big new cities of the Middle West probably contain the most interesting examples of recent buildings. California, which has developed on rather different lines from the rest of the country, was too far off to visit in the time at my disposal.

One of the first things that strikes a visitor from England is the importance of mechanical means of heating and ventilation in America. In summer the electric fans and cooled air, in winter the use of radiator and heated air, have had the result that even in hospitals the open window which we consider the first consideration of health is not quite so much the matter of course over there.

The Pavilion Type Obsolete in America.

In any case the pavilion type of hospital with the cross-ventilated ward of between 20 and 30 beds no longer meets present-day requirements in America. Even where the large wards exist, the tendency now is to divide these with glazed screens so that cases can be classified and segregated. The Vanderbilt University Hospital at Nashville, Tennessee, is typical of present-day requirements. (Fig. 1.) Here a ward unit of 30 beds is made up as follows: open ward of 16 beds divided into four cubicles of four beds each, and the remaining 14 beds into four-bed, two-bed, and single bedrooms. Dr. Winford Smith, of the Johns Hopkins Medical School, Baltimore, Maryland, who acted as consultant for this scheme, advocates the use of wards 40 ft. wide, so that the patients' beds may be at right angles to the window in order to avoid light in the patients' eyes, and this width also is useful in planning the lower floors for other departments.

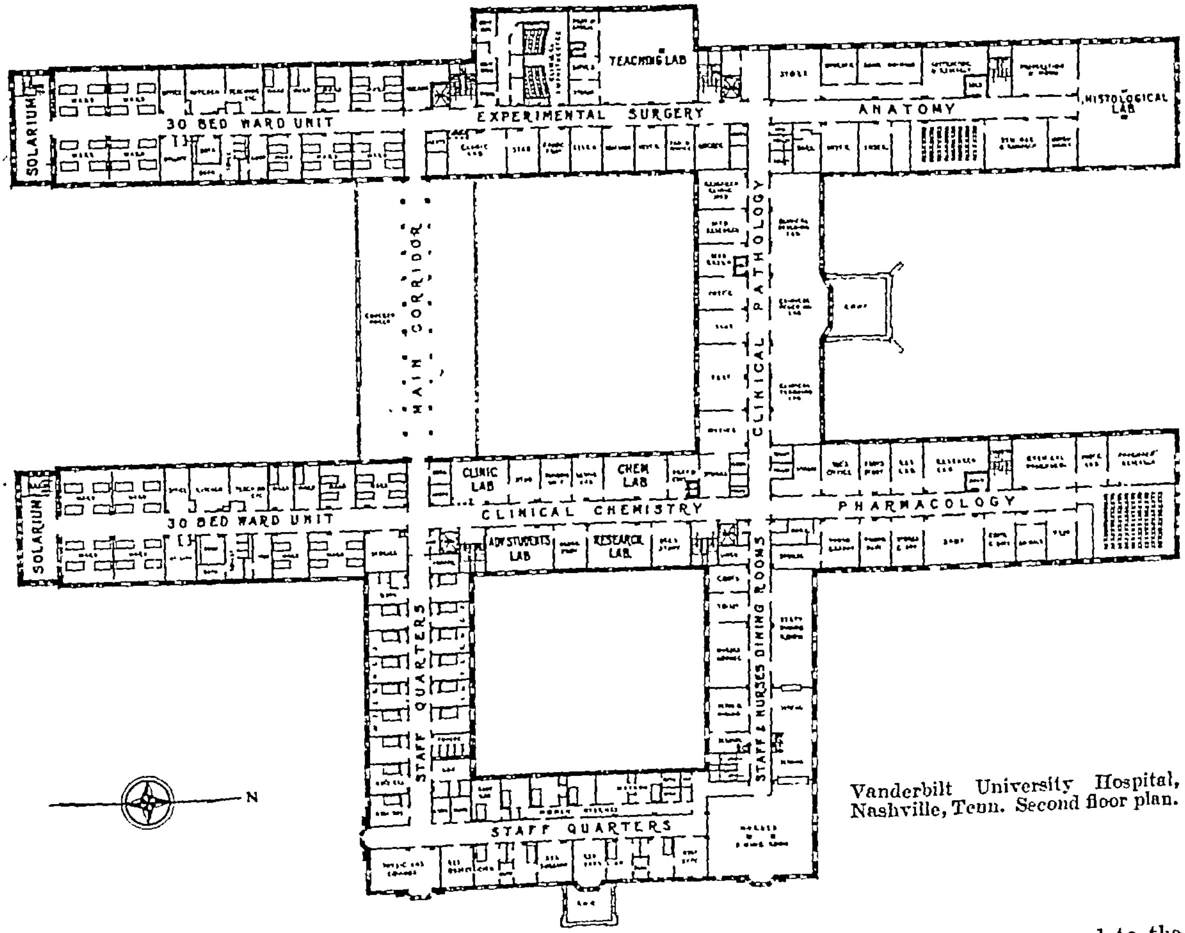
Provision of Private Rooms.

There are, of course, hospitals such as the Henry Ford Hospital, Detroit, Michigan (400 beds) (Fig. 2), and the Fifth Avenue Hospital, New York City (420 beds) (Fig. 3)—the latter being probably the best planned and equipped city hospital in the world at the present time—which consist entirely of private rooms, but these are still the exceptions, and it is more usual for a hospital to erect a pavilion of private rooms for paying patients. A very good example of this is to be seen at Mount Sinai Hospital, New York City, which was erected under Dr. Goldwater's direction for 131 patients, and embodies most of the best ideas of the day in this class of building. The low pavilion type of ward building is also unsuited to the city site where the majority of hospitals are of necessity located.

Vertical Height in Relation to Concentration.

The new Columbia Presbyterian Hospital in New York City is to be 15 storeys. The Fifth Avenue Hospital, N.Y.C., is 10 storeys; St. Luke's Hospital, Chicago, 19 storeys; and even on a comparatively open site it is not uncommon to have a 6-storey building. This is not only a question of the value of the site, but also very much a question of service. The American believes very strongly in concentration, and vertical buildings are much more suitable to the elevators and shutes and all the mechanical equipment of the present day than the spread-out horizontal type of building where the staff must walk long distances, and the plumbing, heating, refrigerating, and drainage services must be less concentrated and efficient.

FIG. 1.



Vanderbilt University Hospital, Nashville, Tenn. Second floor plan.

The elevator plays an important part in modern American life, and in hospitals, as in other buildings, the staircase is relegated to an inferior position and used mainly for fire-escape and floor-to-floor services. The elevators must, of course, be near the main entrance hall, which is generally made as attractive as possible architecturally, and follows the lines of the hotel as far as possible. This idea is also noticeable in the waiting-room, which is invariably comfortably furnished in the style of a hotel lounge, and the private room adjoining the superintendent's office, where financial matters may be discussed without disturbance. But perhaps the most characteristically American side of the administration is the record system to which a great deal of attention is directed. A large room near the entrance is usually assigned to this department, and in the out-patients' department of the Boston City Hospital there is a Lamson system of carriers for conveying the records to various departments, such as X ray, skin, &c., on different floors of the building.

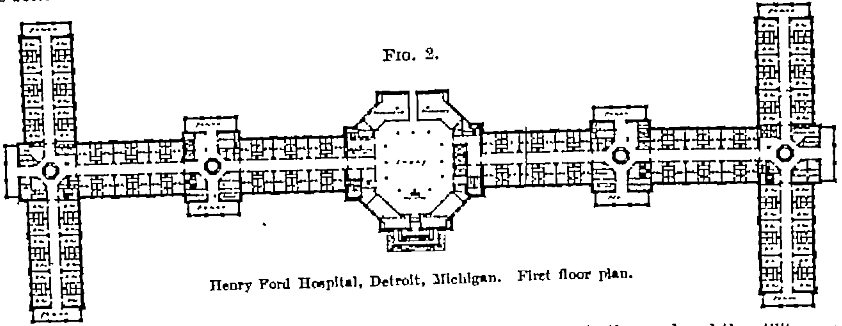
The Food Service.

The food service is usually very efficient, and as great attention is paid to diet a portion of the main kitchen is frequently separated for this purpose under a special dietitian. In the case of the larger hospitals the food is conveyed from the kitchen (which is as near as possible to the elevators) to the diet kitchens on the ward floors in electrically-heated trucks, but in the smaller hospitals where the food trays are set up in the main kitchen, these are conveyed to the diet kitchens in dumb-waiters (small service lifts). The main kitchen is too often in the basement, and it is questionable whether this is good for the health of the staff, however perfect the mechanical ventilation may be. The kitchen at the Peter Bent Brigham Hospital, Boston, Mass., which is on the top floor, is a pleasant contrast in this respect. In this section it may be noted that the food is stored in refrigerators, and the same applies to kitchens on the ward floors. The nurses and staff dining-rooms are frequently arranged as a cafétería (this is a popular form of self-service restaurant throughout the States), but it is doubtful whether the tired nurse altogether appreciates this system in spite of many advantages.

Labour-saving Arrangements.

Laundry arrangements are, as one would expect, very up to date and efficient, and the system of dealing with linen and surgical dressings is thoroughly considered in the planning of the building. The linen shute is a feature of American hospitals, and consists of a circular glass-lined tube 2 ft. in diameter, with a port-hole opening on every floor and a flushing ring at the top with drain connexion at the bottom. This is a labour-saving device much in use in hotels and private residences, but it has the objection that it may convey foul air from the disinfecting room at the bottom of the shute to the various floors. However, there is no doubt that as far as labour-saving devices are concerned, America leads the way, though one feels that in a hospital the health of the patient is even more important than the question of service economy. The system of "signal lights," by which patients summon the nurse at night and the doctor is "warned for duty," is another device without any drawbacks.

FIG. 2.

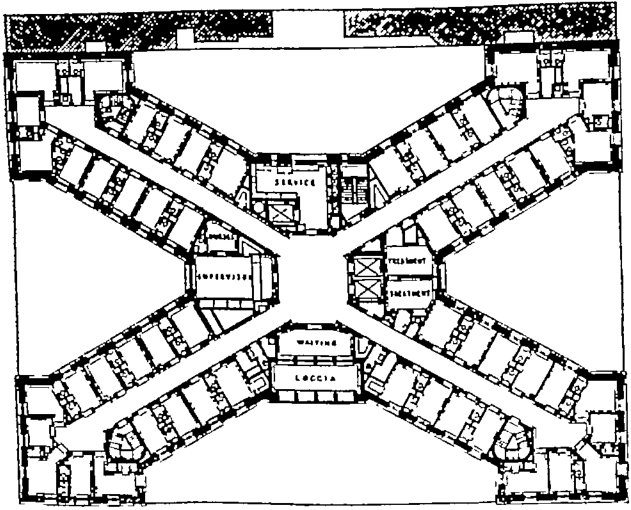


Henry Ford Hospital, Detroit, Michigan. First floor plan.

Sanitary Arrangements.

The sanitary arrangements are fundamentally different from those in this country. The chief cause of difference is that the soil and waste pipes, partly on account of the severe winters, are placed on the inside walls of all buildings, and it is not considered objectionable to open a toilet room direct off a bedroom and to rely on mechanical means of ventilation rather than a window direct to the open. This attitude to plumbing has profoundly influenced the planning of hospitals, where the sanitary tower with cross-ventilated lobby is almost unknown. In the case of the ordinary ward, the toilet and bathrooms open off the corridor leading to the ward, and the utility room (which contains the sinks, bed-pan steriliser, &c.) is also placed in a similar position. In the case of the private room, in some cases there is a separate toilet and bathroom to each room; in others the bathrooms are shared between two or more, but there is usually a lavatory basin (termed "running water") in every room and the w.c. is provided with a jet or special swivel tap, so that the bed-pan can be emptied without any travelling. As regards baths, Dr. Daugherty, of the Brooklyn Lewin Hospital, found these were unnecessary in his paying patients' block, as he only admitted acute cases.

FIG. 3.



Fifth Avenue Hospital, New York City. Typical floor plan.

Another fundamental difference between English and American plumbing is that in the latter case the pipes are not usually exposed on the surface of the wall or ceiling, but are "buried," in the case of the wall in a wide cavity, and in the case of the ceilings covered by a sub-ceiling. This results in a very smart appearance, especially in the case of operating theatres, and is undoubtedly excellent from the point of view of cleaning. But several medical superintendents spoke rather sadly of the results when a pipe burst, when the ceiling has to be "torn down," or the wall opened up at great expense, although this can be obviated to some extent by inspection openings at junctions, &c.

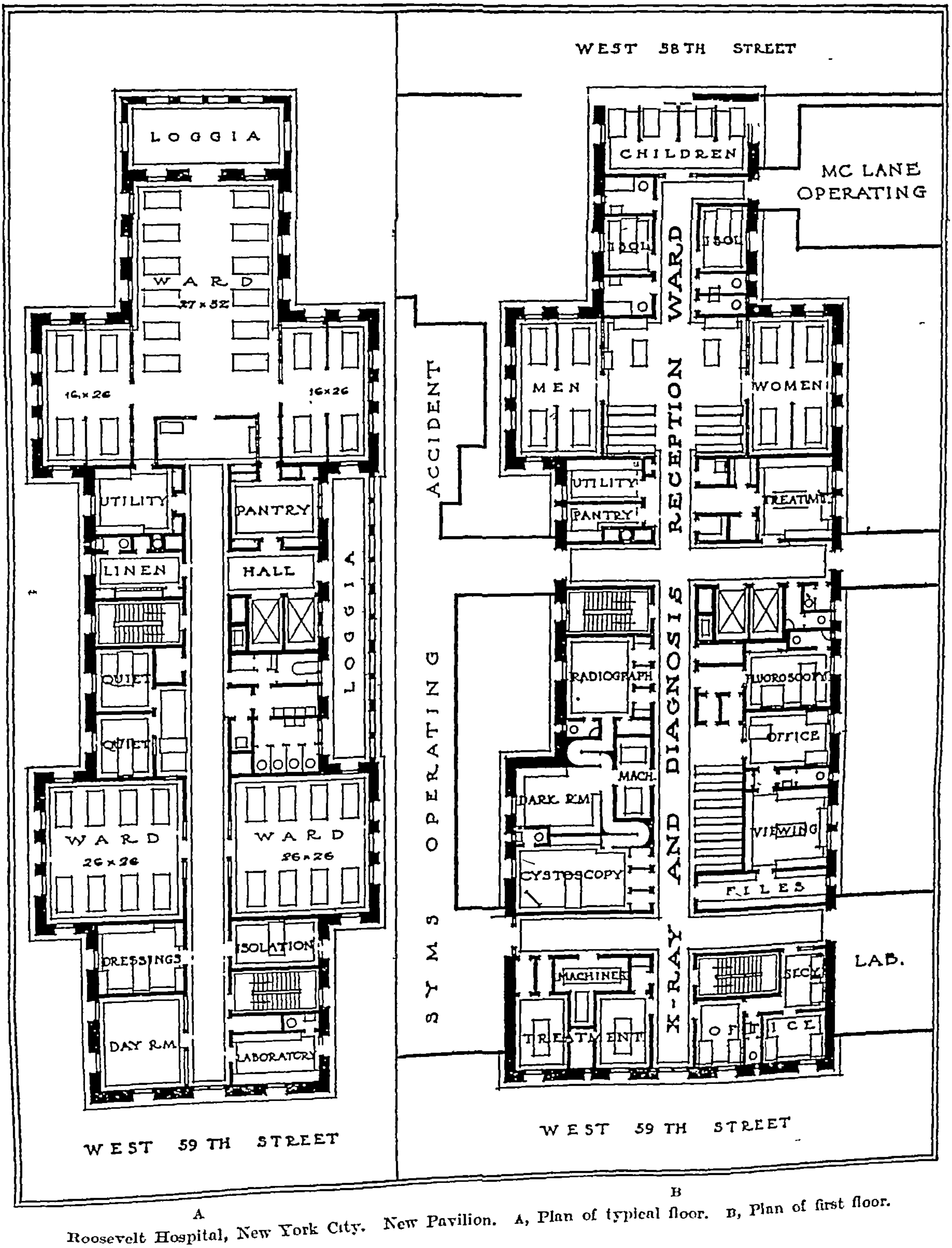
The nurses' station in the case of large wards overlooks the wards; in the case of private rooms is placed centrally either in the corridor or in a room divided from the corridor by a glazed screen. The provision of scrubbing rooms, flower rooms with sinks, a laboratory for routine work, and a comfortable waiting-room, is usual on every floor.

Operating Theatre.

The operating theatre suites are very much on the same lines as the English model. There is usually a sterilising room and a scrub-up room (with borrowed light) between two operating theatres, and the instrument cases are neatly arranged sunk into the wall flush. The floors and walls (up to door height) are now invariably covered with light grey or light green tiles, as this is considered more restful in the eyes of the operator; in one instance—at the Crile Hospital, Cleveland, Ohio—the floors and walls of the operating theatres are covered with rubber tiling, but this is not considered so sanitary as the tiling or terrazzo. The window is usually double up to transom level and the air between the two windows is warmed, so that there is no draught on to operating table.

There are various types of electric light in use, such as "Scanlan-Morris Noshadowite" (eight con-

FIG. 4.



Roosevelt Hospital, New York City. New Pavilion. A, Plan of typical floor. B, Plan of first floor.

verging lights in a ring), "Frink Operating Table Reflector" (with automatic ventilation to counteract heat generated), and the "Operay-multibeam" (adjustable light with lenses and mirrors), but the "Portable Scialitique" seems the favourite at the moment. The American surgeon appears to have little use for natural light, and operations are usually performed by artificial light. Dr. John Clark, of Philadelphia, has arranged an operating theatre at the University Hospital with a falling shutter of the shop-front type, behind which the patient is prepared, while the operator can use the front of the shutter for slides and diagrams facing the students' seats—at the time of operation the shutter is, of course, raised.

X Ray Departments.

The increasing importance of X ray work is nowhere more fully recognised than in America, where the use of X ray for diagnosis has reached such a point that in one important hospital over 75 per cent. of the patients are now X rayed. The result is that there are now many well-planned and splendidly equipped X ray departments, and one of the best of these is to be found at the Roosevelt Hospital, New York City (Fig. 4), where the architects (Messrs. York and Sawyer, who also designed the Fifth Avenue Hospital and many other well-known public buildings) worked out a plan in conjunction with Dr. Steiner. The department is situated on the ground floor near the operating block, and conveniently placed for the out-patients, and consists of a radiographic room, dark room with special light-excluding pass-boxes of a revolving type, cystoscopic room, fluoroscopic room, viewing room, with an excellent set of viewing boxes made of enamelled steel and filled with Cooper-Hewitt lights, and a room for files. The treatment rooms are in a corner of the building cut off by corridors from the rest of the department, and special precautions are taken against rays, as the whole of the walls and ceilings are treble-lined with lead, wire-mesh, and finally glazed tiles, and the floor is lead and cork.

There is another very fine X ray department at the Boston City Hospital in the New Thorndike Memorial Building. This department is on two floors—on the ground floor are waiting-rooms, radiographic rooms, viewing room, and records; in the basement are the treatment rooms (with machines enclosed in a room 6 feet wide between two treatment rooms in every case), an exceptionally fine dark room with smaller rooms for wet plates, plate loading, &c. Special attention has been paid to the ventilation, an important point, unfortunately too often overlooked with resultant damage to the health of the assistants. There is a lecture hall at the end of the corridor two floors in height for the use of the department, so that altogether this is in many ways a model of what an X ray department should be. The colour of the walls found to be most satisfactory by the X ray men is orange or buff, and several departments have plastered walls coloured to these tints, and the floors are usually tiled like an operating theatre or covered with battleship linoleum with a border and skirting of terrazzo.

Open-air Arrangements.

The exposure of patients to fresh air and the sun's rays has affected the design of American hospitals considerably. The covered-in balcony at the south end of the ward block is still a favourite arrangement, as it is in England, but there is a development of this idea which is in many ways preferable, by the provision of a loggia in a central position, as in the Fifth Avenue Hospital, where it does not shut off any light or air from the patients' rooms, or more frequently by the use of a sun-room on the top of the hospital, furnished with easy chairs and with French windows opening on to a flat roof. In the case of private pavilions, a separate small balcony is quite often allowed to each room so that the patient's bed can be partly in the open air.

American and English Hospitals Compared.

In conclusion the question might be asked, "How do American hospitals compare with English?" and though differences of climate and custom account for many things that seem strange to us, the general impression remains that the ideals aimed at are the same in the two countries (the English hospital tradition must have had considerable influence over there), but that in some ways they have gone ahead of us. The love of system and business efficiency which is characteristic of the modern American business man (not necessarily of the Babbit type) has been applied to hospital planning with good results. The course of the patient from the time he enters the building to the time he leaves it (dead or alive) is traced just as Henry Ford traces his car production, and the same may be said of the food service, &c., and a considerable saving in running costs is effected in this way though, of course, this usually means increased capital outlay.

As to the tendency to rely more and more on mechanical contrivances there is certainly a reverse side to this, as Americans themselves realise in industry, for "the human touch," which is specially necessary in the treatment of disease, may suffer as a result. Perhaps it is lucky for us in some ways that our comparative lack of money makes us spend less on these things. Also we are more sceptical about new inventions, and not so eager to scrap old methods and adapt new ideas as the Americans. They take the risk as one of them once said to me, "of making great big mistakes sometimes."

The question of the paying patient (whose advent has resulted in the private room and individual sanitation) is partly an economical one, and we have not such a large class of comparatively well-to-do middle-class patients to draw on in this country. But in England, too, the future will see considerable developments in this direction, and in working out our own problems we can undoubtedly learn much from the study of the fine work carried out by the hospital committees, medical men, and architects in America.

INDUSTRIAL HYGIENE.

AMSTERDAM CONGRESS, SEPT. 6TH–13TH.

THE international congress held from Sept. 6th to 13th at Amsterdam and The Hague was the fourth concerned with industrial accidents and diseases. The permanent committee in recommending the series of meetings, the last of which was held at Rome in 1912, acted wisely, first in combining the two sections into one congress, and secondly, in selecting neutral, but central, territory for the representatives of nations to come together again. The countries sending official delegates were America, Australia, Austria, Belgium, Brazil, Britain, Bulgaria, Canada, Chili, Cuba, Czecho-Slovakia, Denmark, Finland, France, Germany, Holland, Hungary, Ireland, Italy, Japan, Norway, Poland, Spain, Sweden, South Africa, Switzerland, Roumania, Russia, and Turkey. The list is testimony to the spread of industrialism over the world with its post-war development in fresh centres.

Apart from official delegates many others were present whose reputations would alone have made the congress a notable gathering; among them may be mentioned Prof. B. Cuneo, France; Dr. Carozzi, International Labour Office, Geneva; Dr. L. Teleky, Vienna; Sir T. Oliver, Newcastle; Prof. F. H. Albee, U.S.A.; Prof. J. Glaister, Glasgow; Prof. L. Devoto, Italy; Dr. A. Trimble, Belfast; Prof. D. Koelsch, Germany; Mr. S. Alwyn Smith, Cardiff; Dr. W. Watkins-Pitchford, Johannesburg; Prof. E. L. Collis, University of Wales; and Prof. S. Kaplun, Russia. Great Britain was well represented, although the committee, under the presidency of Sir T. Oliver, which organised its membership and contributions had many difficulties to face and but few months to do its work; in this matter thanks are due to Dr. H. Menko, an able and indefatigable secretary, whose knowledge of Holland made him invaluable.

Holland is an entrancing and unique country to visit, which owes its very existence, lying below the sea-level, to the untiring activity of its population.

Its main industry, of course, is agriculture particularly applied to cattle and dairy produce, to market gardening and bulb-raising, but pottery is made at Delft, and diamonds are polished at Amsterdam, while Rotterdam possesses shipbuilding and docks second to none, and the Dutch glass industry flourishes. Hence those who attended the congress had opportunity of studying old problems in unfamiliar environment and of learning by inspection as well as by interchange of ideas.

The number and subject-matter of the papers contributed gave eloquent evidence of the scope of modern industrial hygiene. One criticism may be offered—the papers were too numerous and too diverse, and also too unequal in quality, to permit of adequate consideration and discussion. They numbered 147, and frequently time only allowed of their presentation at the meetings in the form of summaries too short to do them justice, particularly having regard to the diversity of languages employed.

Reference may be made to some of the more notable papers. Not the least interesting was an able résumé of the legal and ethical aspects of industrial insurance in Great Britain, prepared by Prof. Glaister, who, in concluding, stressed the need for compulsory medical examination when choosing a trade or profession—a subject which was further elaborated on the basis of German experience by Dr. W. Pryll. Dr. A. Kutschera pointed out the economic value of treatment of injuries; while Prof. Julliard summarised the different systems of dealing with financial claims for invalidity, whether by periodic payments, lump sums, or deferred claims. Sir T. Oliver in the address which we published last week related some recent achievements of industrial hygiene.

The treatment of accidental injuries, a matter of increasing importance to insurance companies, many of whom had sent their medical officers to the congress, was discussed from many aspects. Here Prof. Albee held his audience entranced with an exposition of bone-grafting by his new methods; Prof. L. Imbert made a valuable contribution on the treatment of fractures; Prof. Ch. Lenormant dealt with the treatment of wounds by suture; Dr. A. Oller described the Spanish institute where injured men are made fit to work again; Mr. Alwyn Smith pointed to the social and economic importance of dislocation of semilunar cartilages; Prof. Elsching handled the subject of industrial injuries to the eyes; and Mr. P. Mitchiner discussed injuries to the carpus and metacarpus and the value of stereoscopic X ray examination.

A link between accidents and diseases was provided by the relation between tuberculosis and occupational trauma which, Dr. F. Zollinger held, was difficult to prove satisfactorily, a view independently propounded by Prof. S. Diez, but Dr. Trimble produced evidence of a definite connexion. Closely associated in subject-matter were the papers by Prof. Collis summarising recent advances in knowledge on pneumonoconioses with special reference to silicosis, and by Prof. M. Sternburg on new views of this subject, and the less definite contribution by Prof. J. G. Sleeswijk. Other papers dealt with such occupational troubles as nystagmus, dermatoses, and tar cancer. The influence of overheated and damp atmospheres was dealt with from different viewpoints by Dr. C. S. Thomson and Dr. J. Torres Fraguas, which were reinforced by Dr. H. M. Vernon's evidence that invalidity increases as the mean temperature falls below or rises above an optimum of about 62° F.

The publication of the transactions in which these and the other papers will appear in full must be awaited before the full value to experts of the fruits of the congress can be appraised. But already the social success can be acclaimed. Throughout the week the hosts of the congress were perfect; their unstinted hospitality was notable, even for Holland; their tact, amounting almost to insistence, determined that national animosities should be suspended for one week at any rate, that national aloofness should be laid aside, and national friendships cemented. The cause of international meetings, as well as that of industrial hygiene, has thereby been placed deeply in debt to the Netherlands.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

The Irish Free State and the Medical Register.

IT is understood that, owing to the absence on holidays of many members of the Medical Consultative Subcommittee, there has been no meeting of that body since its interview with President Cosgrave on Sept. 9th (THE LANCET, Sept. 19th, p. 621). Conversations will probably be resumed early in October, and an attempt will be made to draft a scheme satisfactory both to the Government and to the Medical Subcommittee. Last week Dr. F. C. Purser, President of the Irish Medical Association and a member of the subcommittee, made a report to the Council of the Association of the negotiations up to the present. The policy of the Association in regard to the Medical Register was laid down at the annual meeting held in June, 1924, when the hope was expressed "that no change will be made in the system of medical registration in the Irish Free State which would interfere with the right at present possessed by medical men qualified in Ireland to practise in Great Britain and the Dominions." The representatives of the Association—Dr. Purser and Senator W. O'Sullivan—were thanked for their services and requested by the Council to continue to work for the policy of the Association as laid down in the above resolution.

The Senate Elections.

At the time of writing the count of first preferences in the Senate elections is not quite complete, though one can form, from the figures published, a fair estimate of the support given to the several candidates. It is expected that the quota for election will be about 15,000, and it is not likely that anyone will reach the quota on the first count. Of the medical candidates, so far, Mr. H. L. Barniville, an outgoing Senator, has done best, and of the others Sir Edward Coey Bigger has also done well. The remaining medical candidates appear in the following order, which may, however, be altered by further counts: Sir Arthur Chance, Mr. Denis Kennedy, Dr. A. MacBride, Dr. S. P. MacEnri, Prof. E. P. McLoughlin, Mr. P. McCartan. The medical candidates have been so far more fortunate than the legal. There were only two barristers among the candidates, and neither of them appears to have much likelihood of election.

MANCHESTER: POST-GRADUATE COURSES.—Post-graduate work, except for diplomas of public health and psychology, has not developed in recent years in Manchester. There is, perhaps, some feeling that a large influx of doctors from outside into the principal hospitals might damage the sound practical training which students receive. There have, however, been at several of the hospitals many courses of afternoon lectures open to and specially prepared for practitioners in the surrounding populous district. This year lectures are announced at Ancoats Hospital and at the Royal Infirmary. At Ancoats Hospital a series of lectures will be given by Mr. E. E. Hughes and Mr. Harry Platt on urinary symptoms and the treatment of fractures respectively. At the Infirmary members of the acting honorary staff take each one lecture on various subjects in turn, and there are also lectures by Dr. A. McDougall on epilepsy, Prof. W. L. Bragg on the nature of X rays, Prof. J. S. B. Stopford on the sympathetic nervous system, and by Sir William Milligan on foreign bodies in the food and air passages. This year the Lloyd Roberts Lecture will be given at St. Mary's Hospital, Whitworth-street, on Tuesday, Nov. 17th, by Dr. T. Watts Eden, on What We Can Do for the Unborn Child. This lecture is given at St. Mary's Hospital and at the Royal Infirmary alternately.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics of one English and two Scotch cities for 1924:—

Name of city.	Estimated mid-year population.	Birth-rate.	Death-rates per 1000 of the population. All causes.	Tuberculosis.	Cancer.	Resp. Diseases with Influenza.	Death-rates per 1000 births. Neonatal mortality.	Infant mortality.	Maternity mort. from childbirth.
Sheffield	525,000	18·5	11·6	1·02	1·24	2·4	44	90	1·6
Edinburgh ..	426,305	19·7	14·8	1·33	1·60	2·5	36	89	6·0
Aberdeen.. ..	160,387	21·4	14·4	1·33	1·13	2·3	40	122	5·5

Sheffield.

Dr. Fred. E. Wynne reports as the outstanding feature of the year a very serious outbreak of encephalitis lethargica, which began towards the end of the first quarter and continued throughout the year. The incidence of the disease was heavier in Sheffield than in any other town. There were 837 notifications, in which the diagnosis was confirmed, and 40 deaths. Fifty-eight per cent. of the notifications were males, 42 per cent. were females, and 56 per cent. were under the age of 21. The after-effects of the disease have in many cases been tragic, and these after-effects are at present being investigated by the newly formed Medical Advisory Committee. The formation of this committee, say Dr. Wynne, is an event of first-rate importance to the city, mobilising, as it does, all classes of medical workers for the study of modern problems in preventive medicine. The committee will issue a detailed report dealing with possible factors in the causation and spread of the disease, and with its clinical manifestations, pathology, and after-effects.

A table deals with the prevalence of tuberculosis in the 17 towns of England and Wales having populations over 200,000, and brings out the fact that the Sheffield death-rate, both from respiratory and other forms of tuberculosis, is less than that of any other of these towns, and, in addition, that the percentage reduction in the death-rate from tuberculosis, under both headings, during the past ten years is the highest —namely, 42·6 per cent. for all forms of tuberculosis and 40 per cent. for respiratory tuberculosis. As Dr. Wynne says, these results are particularly gratifying in view of the nature of the principal industries of Sheffield. He refers to the better conditions under which various classes of grinding and abrasive industries are now carried out, and to the detection and treatment of early cases under the Silicosis Regulations as important factors in the improvement, but states that the conditions under which much of this industrial work is done are still profoundly unsatisfactory. Properly organised factories are needed to replace the dark insanitary "wheels" still in use. The work of the tuberculosis dispensary, where an enormous number of suspects and contacts are examined and supervised, is cited as perhaps the most important factor in the decline of tuberculosis in Sheffield. The King Edward VII. Sanatorium for surgical tuberculosis with its out-patient department is also responsible for the saving of many young lives and the prevention of crippledom.

Dr. Wynne states that the hospital isolation of measles and whooping-cough is more urgent than that of scarlet fever and diphtheria. Most cases of scarlet fever could be successfully treated at home and the hospital beds allocated to this disease could be usefully devoted to measles and severe cases of whooping-cough. The death-rate from infantile diarrhœa is less than one-fifth of what it was ten years ago, and Dr. Wynne gives as the most important factors in bringing about this decline "the wide substitution of dried for so-called fresh, but highly contaminated, milk" and the educative work of the child welfare centre. He is definitely of the opinion that until methods in the milk industry have been revolutionised "liquid milk should be banished from the dietary of infants." A table is given showing that the mortality-rate at ages 1 to 5 has improved during the last 25 years just as much as the infant mortality-rate, thus disproving the suggestion that the result of the efforts made is merely to postpone the deaths of feeble and degenerate infants from the first year to a slightly later period.

Overcrowding in the city is still deplorable. The waiting-list for municipal houses became so hopelessly unwieldy that for a time it was closed. Last year 1942 new houses were certified, the largest number since 1921. The list has now been reopened, and about 4000 new applicants have been registered. Of the 1942 new houses certified 305 were erected by the corporation.

The veterinary staff found 23 cows with tuberculous udders during the year in the 2848 stalls used for milch cows within the city. As regards the country milk coming into the city by road and rail, 950 samples were examined for tuberculous infection and 72 gave a positive result. In following up these tuberculous milks 47 cows with tuberculous udders were discovered. At 29 of the country farms visited no tuberculous udders were found, but in most of these cases cows had been sold during the period between the taking of the sample and the date of inspection. The latter period was shortened in many instances when the microscopical examination of the milk gave a positive result. Thus 20 country cows were condemned on the microscopical examination of the milk alone. Of the 75 cows proved to have tuberculous udders 58 were slaughtered, but 17 were sold by the owners and lost sight of.

Edinburgh.

Dr. William Robertson points out that the figures of density-rates for particular areas will be altered by the improvement schemes which are in hand. This applies to the wards in Edinburgh and Leith respectively, in which the death-rates are highest—namely, St. Giles and North Leith. Infant mortality has always been highest in the wards where the density is greatest and the one- or two-roomed houses predominate. The future progress of these wards after the improvement schemes are completed will be watched with much interest, says Dr. Robertson. Four arc lamps have been installed at the hospital for the treatment of surgical tuberculosis, and mercury-vapour lamps have been provided for the use of the child welfare clinics. Dr. Robertson is convinced that there is a great future for artificial light treatment and proposes to ask the Health Committee to extend the employment of artificial sunlight to other institutions. He thinks it will be found especially useful for children convalescing from various infectious and non-infectious illnesses. Greater encouragement is now given to the treatment of scarlet fever in the home. The hospital report shows, however, that the type of scarlet fever has recently become more severe. Thus the hospital mortality-rate, which was 1·9 per cent. in 1922, increased to 5·2 per cent. in 1923, and was 4·2 per cent. in 1924. Among the complications occurring there was an unexpectedly fatal type of nephritis. Edinburgh was the first town in this country to attempt the immunisation of school-children from diphtheria on a large scale. Twenty-six schools were taken in hand and 3507 children immunised without a single untoward event being recorded. The scheme is to be extended to the pre-school age, the period when the incidence of diphtheria is greatest. Measles and whooping-cough became epidemic in the later months of the year. Two fever-trained nurses were appointed to visit the homes and a large number of beds at Colinton Hospital were set aside for the reception of the more serious cases as well as of cases where the home circumstances were unsatisfactory. The tuberculosis death-rate showed a slight increase in 1924, and Dr. Robertson draws attention to the need for education in personal hygiene. For example, the citizens must be taught to appreciate that it is not so much the amount of food, but the correct selection and cooking of food that counts in building up and maintaining the body in good health and repair.

The report on the venereal diseases scheme shows that there is a progressive decrease in the percentage of patients who fail to complete their treatment. Thus in 1920 the percentage of defaulters was 40, in 1921 26, in 1922 it was 18·5, in 1923 15·6, and in 1924 11·9. Dr. David Lees, the V.D. medical officer, points out that this comparatively low percentage of 11·9 represents in the Edinburgh scheme a total of over 800 patients. The standard of cure adopted is high and many of these patients may be free from disease, but there are others who undoubtedly still have communicable disease and the problem involved requires careful consideration. Dr. Lees reports that the experiment of treating married women and children without specifically labelling them has been an unqualified success. Under this scheme 146 patients received in-patient treatment and subsequently put in 1452 attendances as out-patients. The percentage of those who failed to continue treatment was only 2, and more beds need to be allocated to this type of work. One of the drawbacks to the Edinburgh scheme is the lack of a hostel for unmarried girls who have contracted disease and lost their situations. The need for a V.D. centre in Leith has been recognised for long, but the Leith Hospital could not provide the accommodation required. Suitable premises have now been purchased quite close to the docks and the new clinic will be at work during 1925.

Dr. Robertson draws attention to the disparity between the rents at present paid by the slum-dwellers and the rentals of the cheapest of the new houses. Thus in the St. Giles Ward there are 1706 houses let at rentals of £5 to £10 per annum, while the cheapest of the new houses are rented at £12 and £15. Dr. Robertson goes on to bemoan the difficulty in convincing "many people who live in slums that a £15 house provided with such conveniences as electric light, gas boiler, hot-water system, washhouse, tub and sink, coal-cellar, drying green, and open air all round is in every possible direction worth £5 more than the dungeon-like slum devoid of almost every comfort that a human habitation should possess." There is a lack of skilled tradesmen in Edinburgh and houses have been kept waiting for plasterers. Dr. Robertson would like to see a chance given to mass production, and says, "there is surely much to be said in favour of a type of house that can be erected and made ready for habitation in six weeks time."

Progress has been made towards a cleaner milk-supply and a clean milk competition has been held. The amounts of designated milks at present sold daily in the city are as follows: Certified, 185 gallons; Grade A (tuberculin tested), 83 gallons; pasteurised, 2181 gallons, making a total of 2449 gallons. The daily consumption of undesignated milk amounts to 20,255 gallons. The cow population of the city numbers 4430, and among these the veterinary staff found 23 tuberculous udders and four cows with advanced tuberculosis. Mr. A. Gofton, the chief veterinary inspector, draws attention to one of the difficulties experienced by the owners of tubercle-free herds. If such an owner makes a purchase from any but a certified herd, he has no assurance that a cow which passes the test will also pass a second test applied after an interval of several months. The explanation is that the purchased cow may have been exposed to infection immediately before purchase and is therefore harbouring infection, which is at too early a stage to cause a reaction to the first test, but has time to develop between the first and second test. Mr. Gofton advises that when such an owner cannot make his herd self-supporting by breeding, he should segregate all new purchases for two or three months and then re-test.

Aberdeen.

Dr. J. Parlane Kinloch explains that his 1924 report is of the nature of a five-yearly survey. The report is a document of 200 pages and deals at some length with the methods which the health department has found most useful in preventing and curing disease, and also with the impending expansion of the statutory health services. It is only possible to refer to a few of the interesting points raised in this lengthy report, which will no doubt be of great value to the members of the town council and of all the other statutory and voluntary bodies interested in the health of the city. Under the heading "typhoid fever," Dr. Kinloch tells us that Aberdeenshire experience during the past 30 years suggests that this is now almost entirely a food-borne disease, due to the infection of milk or other foods by typhoid carriers, and that diminution in the number of typhoid carriers, due to the absence of the epidemic form of the disease, explains the diminishing amount of milk infection. As regards puerperal fever, Dr. Kinloch thinks it is of the utmost importance that routine bacteriological examination of expectant mothers about the seventh month should be carried out, with a view to determining what proportion of them have streptococci in the urethra or cervix. Methods of disinfection are to be modified. More visits will be paid in the case of infectious diseases nursed at home to secure immediate disinfection of infected articles, and some of the routine terminal disinfections will be discontinued.

In previous annual reports it has been shown that the death-rate from cancer is higher in the three east coast towns, Edinburgh, Dundee, and Aberdeen, than in the three west coast towns, Glasgow, Paisley, and Greenock. Dr. Kinloch, however, shows that when correction is made for age and sex of the populations of these six towns the difference in the cancer death-rate straightway disappears. Aberdeen experience shows that diabetic patients receiving insulin treatment fail to benefit to anything like the full extent owing to lack of adequate supervision and control. The city council in April, 1924, decided to make insulin treatment available for necessitous cases, and Dr. Kinloch thinks that the small additional expenditure involved in establishing a diabetic clinic, in order to see that the insulin treatment gives the best possible results, would be well worth while. Two years ago a biochemist was appointed at the laboratory of the City Hospital, and, in view of the results obtained by the application of methods of nutritional science to the dieting of the sick and the well, Dr. Kinloch hopes that the contemplated development of a nutritional laboratory will not be unduly delayed.

Some measure of improvement in the deadlock with regard to housing has to be recorded, as the result of the decision of the town council to erect 300 three-romed dwelling-houses on the Hilton estate. Dr. Kinloch urges the appointment of a town-planning committee. A town-planning scheme is called for by 1929 and the committee needs to get to work at once. In August, 1924, the council made a strong protest against the proposals in the Factories Bill, 1924, to remove the supervision of the sanitary condition of workshops from the sanitary authority to the Home Office, and urged the desirability, on the other hand, of transferring the sanitary supervision of factories from the Home Office to the sanitary authority. A considerable proportion of the report is taken up with the discussion of the joint hospital scheme and its relation to the University and to the municipal health services. Nearly every branch of the municipal health services is in need of extension and a capital expenditure of £227,000 is foreshadowed. The annual payment for interest and sinking fund is estimated to be equivalent to a rate of 2*d.* in the £, and the increased maintenance expenditure is estimated as equal to a rate of 8*d.* in the £. In addition to this expenditure the voluntary hospital service needs extension. The Royal Infirmary has 290 beds and is in a position to maintain them. An increase to 600 beds is said to be essential. It is thought that the required capital might be found, but that it would be difficult to obtain from voluntary sources sufficient money for the maintenance of 600 beds. The services of the municipal laboratory at present cover a wide ground, and Dr. Kinloch thinks it would be prejudicial to both parties if the University laboratories were to absorb the work of the municipal laboratory.

Dr. Kinloch is opposed to the farming out of municipal statutory services to voluntary bodies, and instances the inadequacy in Aberdeen of the schemes for dealing with venereal diseases and antenatal work. The existing state of knowledge with regard to light treatment is dealt with fully in the report, and Dr. Kinloch points out that even heliotherapy is possible in Aberdeen, with a fair degree of regularity, from the beginning of April to the end of October. The report concludes with coloured photographs of children receiving heliotherapy in Aberdeen on April 4th, 1925. The reasons for the excessive infant mortality-rate in Aberdeen are discussed and admitted to be somewhat obscure in the present state of knowledge.

SCHOOL MEDICAL SERVICE.

THE following are some of the school health statistics for Cardiff, Hull, and Leeds for 1924:—

Name of district.	No. on roll.	Av. elem. school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.*
Cardiff	30,305	—†	9,922	8,005	16·8
Hull	—†	—†	11,054	11,117	9·0
Leeds	—†	—†	19,309	53,006	20·1

* Excluding dental defects and uncleanliness.
† Not given.

Cardiff.

"The absolute limit of the capacity of the present staff and accommodation has been attained. . . . At the time of writing 622 cases are awaiting preliminary examination at the throat and nose clinic; 42 are awaiting operation for enlarged tonsils and adenoids; 237 are on the list for examination at the vision clinic; and 382 must take their turn for notice to attend the ordinary inspection and minor ailment clinic." So reports Dr. R. M. F. Picken, and nothing could further describe the inadequacy of provision for the school medical service. Only one dentist is employed in a vain endeavour to cope with a school population of 30,305. No provision as yet exists for physically defective children, though an orthopædic scheme has been approved by the board. Fifty-one partially blind and 27 partially deaf children are in attendance at ordinary elementary schools. No open-air schools are provided for delicate and pretuberculous children to the number of more than 200, and the provision for mental defectives is totally inadequate.

In a special report Dr. Picken outlines the minimum provision required to cope with school inspection, but states, "there is some concern at the expansion of this 'unremunerative department.'" On merely material grounds we think that "unremunerative" is entirely a misnomer. Many school medical officers have proved that inspection and early treatment of school-children directly pays for itself by increase of grant to the local authority, quite apart from the economic gain to the community, which should be apparent to any far-seeing authority.

Much good work has been done under great difficulties by Dr. Picken and his colleagues. Dr. H. L. Coulthard reports on the grave sequelæ of encephalitis in the few cases that have occurred in the district. He also points out how X ray treatment of ringworm has reduced the loss of school attendance from 98 days to 61 days on the average. On following up 287 cases of enlarged tonsils and adenoids, he finds that subsequent to operation there is marked relief from colds, sore-throats, earache, deafness, and otorrhœa, but that there is no evidence of increased innate intelligence apart from the increased vivacity and response due to improved health and hearing. In the course of the statutory school examinations for mental defectives, 77 were classed as mental defectives, 52 as imbeciles, and 18 as idiots; the proportion of imbeciles and idiots is so high as to suggest that the standard adopted is unusual.

Hull.

Dr. J. W. Fraser's report contains so much of special value that we are obliged to pass over the more ordinary topics to leave space for some unique features. There is in force at Hull the excellent and unusual practice of testing the vision and hearing of every child at the age of 6 years. The school for the physical defectives is conducted on somewhat exceptional but most beneficial lines, the objective being the care, and not only the safe-guarding, of those permanently crippled. Remedial treatment is given and 20 operations were performed there in the year. The orthopædic surgeon's report deals with the working of the school since its inception and deserves more extended notice. One of his conclusions is that if the children were brought early enough some types of defects would almost cease to exist. During the four and a half years that the school has been in operation 37 cases were discharged, and 70 per cent. of them are now practically fit. On this question of after-history Dr. Fraser gives authoritative statistics of those leaving the deaf and the mentally defective schools. Since 1914 32 children who have left the deaf school have been followed up, and 26 of them—i.e., over three-quarters of the whole number—are in some kind of work. Thirteen of these are earning between £1 and £2 a week, and only two are permanently unemployed. When we consider the useless and unhappy lot of the ordinary uneducated deaf person, this record is most significant and encouraging.

A similar careful account was kept of persons discharged from the mentally defective school in the ten years. Of 177 whose after-histories could be traced, 56 are in institutions, including 6 in Poor-law institutions; 60 are living at home without definite employment, but 33 of these are females, and are, no doubt, more or less engaged in housework; and 51 are in some kind of paid employment. Twenty-nine others are in precarious occupations, as, for instance, errand boys and newspaper boys, in which, however, many of them make a good sum weekly. A table gives details of the nature of the occupation and the wages earned. Dr. Fraser states that just over 10 per cent. of all discharged are earning over £1 a week. We can, perhaps, say that there are three groups: (1) Those in institutions or living uselessly at home. (2) Those who are following precarious or doubtful occupations. This would include the 29 boys selling newspapers, &c., some of the girls at home, and the persons earning less than 10*s.* a week. (3) Those who maintain themselves more or less satisfactorily. It is the second group who are difficult. The most economical alternative appears to be, to train them when older in institutions and then licence them out to work, as is done in the American system, or to transfer them to schools for older children where there is much manual training of vocational type. Subsequently they should be kept under strict supervision. In Hull "craft" classes for the dull and backward are successful and are being extended; we wonder if somewhat similar training might be tried on the higher grade and older mentally defectives. Dr. Fraser concludes, after a special inquiry, that if a boy, on discharge from a mentally defective school, has an intelligence quotient of 50 per cent. or more, with an annual average gain of six months or more in mental age, and if his character is good and he has some manual ability, he will probably do well. There is much value in this kind of investigation. The whole report is evidence of the enthusiastic work carried out by the school medical officer and his colleagues, supported by an enlightened authority.

Leeds.

In his full report Dr. A. Wear draws attention to the great increase in attendance at the seven school clinics—viz., 32,399 more than last year, which makes a grand total of 214,902 attendances during the year under review. Ringworm of the head, while showing a diminution, is still very prevalent. Ionisation for discharging ears is still under trial at the public dispensary. Notice is drawn to such conditions as flat-foot, accompanying malnutrition. At present no payment is made to the local hospitals for the operative treatment of tonsils and adenoids, but it is hoped that this will be altered in the near future. The recommendations of the Board of Education and the Ministry of Health *re* school closure have been carried out, and Dr. Wear suggests that more parental care is necessary to reduce the amount of infectious sickness. "A case of scarlet fever should be looked upon as a source of danger for at least a fortnight after return from hospital or disinfection of the home, and the child should not be permitted to mix with other children until after plenty of exercise in the open air."

Sir G. Newman, in his last report, stated that the average number of dental fittings is about 75 for every 100 children treated. In Leeds the proportion is 72 for every 100, and Dr. Wear regrets that the parents do not take more advantage of the excellent facilities for dental treatment which exist in the city. The dental tables show the amount of work done among the elementary school population; 48,858 were examined by the dentists. 31,609 required treatment, and 13,792 actually received treatment. On the other hand, in the secondary schools 4276 children were examined, 2402 required treatment, and only 103 accepted treatment. Such figures as these raise the question whether secondary school-children are not sacrificed at the shrine of respectability to the detriment of their physical welfare. Adequate provision is made for day-school education of mental defectives, but considerable difficulty is experienced in placing children who require residential treatment. Dr. Wear believes that increased manual education will considerably help in the solution of the employment outlook of mental defectives—a view which is rapidly gaining ground generally—and few will disagree with him when he states that more manual work in the cripple school will improve the wasted muscles and the stiffened limbs. The popular desire for decent living conditions is shown by the granting of prizes by the *Yorkshire Evening Post* for "mothercraft," "care of the teeth," and for essays on the latter subject. Many hundreds of mothers and children in the district entered for these and much good has resulted both directly and indirectly.

At the camp school, financed by the Leeds Elementary Schools Athletic Association, over 1400 children spent an enjoyable and profitable week; but a week is all too short to obtain the full increase in physical and mental vigour which invariably results from such a change.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 12TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 30; scarlet fever, 1510; diphtheria, 835; enteric fever, 106; pneumonia, 417; puerperal fever, 36; cerebro-spinal fever, 6; acute poliomyelitis, 19; acute polio-encephalitis, 2; encephalitis lethargica, 40; continued fever, 1; dysentery, 6; ophthalmia neonatorum, 114. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 4 deaths from enteric fever, 7 from measles, 3 from scarlet fever, 31 from whooping-cough, 11 from influenza, and 30 from diphtheria. There were 210 deaths of children under 2 years from diarrhœa and enteritis, as compared with 230, 218, 177, and 136 in the preceding weeks. In London itself the deaths from diarrhœa and enteritis in children under 2 years numbered 43, as compared with 38, 40, 28, and 20 in the preceding weeks; there were 8 deaths from diphtheria, 5 from whooping-cough, and 1 from influenza.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdrs.: A. I. Sheldon and J. P. Shorten to the *President*, for R.N. Medical Store Depôt, Deptford.

Surg.-Lt. (D) D. C. Lamond to be Surg.-Lt. Comdr. (D).

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Sub-Lt. L. P. Spero to be Surg.-Lt.

Proby. Surg. Sub-Lt. A. T. G. Thomas to be Surg. Sub-Lt.

ROYAL ARMY MEDICAL CORPS.

Capt. H. T. Findlay is granted the temp. rank of Maj. whilst empld. as a Dep. Asst. Dir. of Pathology.

Capt. W. E. Tyndall is granted the temp. rank of Maj. whilst empld. as a Dep. Asst. Dir. of Pathology and Hygiene.

ARMY RESERVE OF OFFICERS.

Capt. A. L. Taylor, from R.A.M.C., T.A. Res., to be Capt.

Capt. I. Aubrey, late R.A.M.C., Spec. Res., to be Lt.

TERRITORIAL ARMY.

Maj. P. D. Warburton (Capt., Res. of Off.) resigns his commn. in the T.A.

ROYAL AIR FORCE.

F. B. C. L. B. Crawford is granted a short service commission as a Flying Officer for three years on the active list.

Flight Lt. F. E. Johnson is promoted to the rank of Squadron Leader.

Flying Officer L. P. McCullagh is promoted to the rank of Flight Lt.

Flight Lt. J. S. Wilson is transferred to the Reserve Class D.2.

INDIAN MEDICAL SERVICE.

Capts. J. Findlay, W. C. Spackman, N. M. Mehta, and C. H. P. Allen to be Majs.

Bhalchandra Kondopant Phatak and Gurbakhsh Dhamrait Rai to be Temp. Lts.

The King has approved the retirement of Col. F. L. Blenkinsop.

Lt.-Col. J. McPherson, civil surgeon, Peshawar, and Agency Surgeon in the Khyber, has been appointed Residency Surgeon, Mysore, vice Lt.-Col. R. Standage, proceeding on leave pending retirement. Lt.-Col. H. A. J. Gidney has resigned his seat on the Legislative Assembly. Lt.-Col. J. W. McCoy, civil surgeon, Lakhimpur, has been transferred to Sylhet. Maj. D. L. Graham, civil surgeon, Sadiya Frontier Tract, has been transferred to Sylhet. The following are granted leave: Capt. G. D. Malhoutra, Indian Station Hospital, Allahabad; Maj. A. C. Anderson, Jail Department, Madras; and Lt.-Col. R. P. Wilson, Officiating Surgeon-General with the Bengal Government.

The Future of the Service.

With reference to the optimistic views which have appeared in THE LANCET with regard to the future of the I.M.S., it is interesting to note that only a few weeks ago the editorial columns of the *Pioneer*, which represents more or less the official view of Indian affairs, had the following remark: "Sir James Roberts, who had an exceptionally prosperous career in India, is strongly of opinion that the future of his old service, the I.M.S., is promising for Europeans. In a letter to the *Times*, indeed, he makes a general protest against ex-officials dissuading young Englishmen from entering the Indian Services, where, according to Sir James, 'a fine career awaits them.' As for the I.M.S., it provides 'just the life to suit an Englishman—responsibility, position, sport, and adventure.' The fact remains that there is no desire shown by young doctors at home to enter this fascinating service, while European members of the I.M.S. actually serving in India, so far from sharing Sir Robert's enthusiastic optimism, apparently consider that a service which has done magnificent work for the people of this country is doomed."

In a Royal Warrant recently signed it is laid down that in the interests of the Service an officer of the Indian Medical Service, holding the appointment of Director, I.M.S., in India, shall be placed on the retired list on attaining the age of 60. This decision involves a reversion to an arrangement which was altered some time ago. On attaining the age of 57 a Major-General of the I.M.S. was compelled to retire by the change referred to, but now, when he becomes Director of Military Services, he will not be placed on the retired list until he reaches the age of 60.

The Government of Madras have approved of the proposal of the Principal of the School of Indian Medicine to give stipends to women students of the School. The stipends will be granted at the rate of Rs.20 per mensem, and the number of stipends awarded in one year will be subjected to a maximum of five. The stipendiaries will be supplied with books and instruments at the cost of the Government, and, on the completion of the course, they are liable to serve the Government, if required, for a period of not less than five years.

Sanction has been accorded, with approval of the Secretary of State, to the employment of six specialists in medicine with specialists pay at Rs.75 a month. Sanction has also been accorded to the employment of one additional specialist in surgery, and one specialist in electrical science, in the Waziristan district.

TINNED FOOD IN THE BRITISH ARMY.

Recent Army Orders in reference to messing enjoin that all tins containing food must be thoroughly examined and none accepted which bears traces of rust round the joints or which is badly dented. Emphasis is laid on the fact that tinned salmon, herrings, potted meat, and fish-paste will quickly become unfit for consumption if left in the tins after they have been opened. It is also pointed out that the necessary ingredients for making fish-cakes and similar dishes should be prepared before the tins containing the fish are opened, and that these dishes, when prepared, should be cooked without delay.

Correspondence.

"Audi alteram partem."

THE CONTROL OF VENEREAL DISEASES.

To the Editor of THE LANCET.

SIR,—Some four years' experience in the industrial towns and county districts of Lanarkshire has convinced me that it is in our large cities that the solution of the venereal diseases problem must be found, and that the health of rural communities can best be protected by the effective control of these diseases in urban areas. On p. 43 of the Annual Report of the Scottish Board of Health for 1920 the following statement is to be found: "When in every district in the country a patient can secure treatment with reasonable convenience and due promptitude, the Board will be free to turn to . . . the problem of considering whether in the interests of the community it should not be made a matter of compulsion that persons contracting these diseases shall have recourse to treatment and shall continue in attendance for a period sufficient to ensure full results therefrom." To-day adequate facilities for treatment are provided. Is it not time that something more was done to stamp out venereal disease?

Treatment has done much, and venereal diseases are rightly believed to be diminishing; but those intimately connected with clinical work best know how unsatisfactory and inadequate is our control over them. The infected individual, the uninfected public, the qualified practitioner, the unqualified quack, and, last but not least, public health authorities—all these are playing a part in postponing the day of victory in the antivenereal campaign. Some infected persons never come for treatment at all because their symptoms are slight and tend to disappear spontaneously; others abandon treatment as soon as it has removed the obvious manifestations of the disease; few report early enough. All these classes of case are liable to pass on the disease to others, and interrogation reveals that the average male patient is even ignorant of the uses of the simplest prophylactic measures. These are some of the shortcomings of the patient himself; a further obstacle to his proper treatment is the unenlightened state of public opinion. Attendance at a clinic by venereal sufferers is a public duty designed to protect the health of the community, and the performance of this duty must be encouraged. There is something to be said for the idea of doing away altogether with the term "venereal," inventing some fresh name, proclaiming it as a deadly disease, and treating the victims as in-patients in isolation hospitals.

Gonorrhœa is still far too lightly regarded by many medical practitioners, who delay sending patients to a clinic until the ordinary palliatives (and provocatives) have failed, and, notwithstanding the Regulations of 1917, quack treatment of venereal disease has not been completely stamped out. There are some unscrupulous persons who are evading the law; and this reflection naturally leads to the fifth class of offender—those responsible for public health administration. Failure to prosecute the first detected case of unqualified treatment is short-sighted leniency, because by its very nature the offence is one which but seldom comes to light. Slackness in giving effect to the provisions of the Mental Deficiency Act of 1913 allows feeble-minded females to indulge in sexual promiscuity and to spread venereal disease. It is also regrettable that the civil authorities should tolerate without protest the discharge from the Navy of uncured cases of gonorrhœa, and condone the system which virtually makes the acquiring of gonorrhœa grounds for discharge from the Service. In our prisons, too, full advantage is not being taken of the opportunity to treat by modern methods prisoners with latent or active venereal infection.

The question of what further measures are needed to hasten the ebb of the tide of venereal disease seems to divide medical opinion. All are agreed on the desirability of raising the general standard of sex morals. For the rest, the hope of many seems to lie in further advertisement of the necessity for early treatment and of the provisions made therefor, in a higher standard of treatment of gonorrhœa, and in good advice given to patients at clinics regarding the prevention of marital and congenital infection. Short of applying legal compulsion to infected persons, is there anything further that might be done to prevent the spread of venereal disease? In some cases defaulting patients might be persuaded to resume treatment if visited in their homes by plain-clothes members of the sanitary staff; the prohibition of the sale by chemists of ad hoc preventive disinfectants might, with suitable safeguards, be removed; the sale of drugs or appliances of known or reputed value in treatment might well be prohibited except on qualified prescription, and more thorough supervision by local authorities of mentally defective girls and moral imbeciles, with routine examination for disease on admission to institutions, is urgently required. All these measures will doubtless tend to a slow reduction of venereal disease. But if gonorrhœa and syphilis are ever to cease to be endemic something more than our present methods is required. The essential problem is to get at a comparatively small number of infected men and women in our big cities who are responsible for keeping the disease going. Careless of everything they go on spreading the poison. How are they to be dealt with?

In Scotland opinion has got so far as discussing what form notification should take; but notification is relatively worthless by itself unless the onus of notifying is laid on the infected person and unless failure to undergo satisfactory treatment can be adequately penalised. Any attempt to punish those who discontinue treatment, without also penalising failure to report symptoms, would defeat the object we have in view. To compel infected persons to present themselves for treatment may be contrary to common law, but, if so, it is obvious that the law can be altered. So long as we go on dealing with only those who come voluntarily for treatment to our clinics, and so long as a big percentage of these patients leave off treatment while still potential sources of infection,

5. It is consequently necessary, as I have already pointed out, that the after-care of the patients be continued sometimes for one or two months. During this time the characteristic symptoms of the disease are gradually disappearing and a general improvement in health becomes manifest.

Let us consider now the action of smalarina. Since this compound is not a febrifuge, it is hardly reasonable, for all practical purposes, to expect that the fever should abate after its administration. I have never maintained the febrifuge action of smalarina. Dr. Low and Dr. Gregg have done well in giving quinine in their cases, but quinine would have not been either advantageous or necessary in the subacute, chronic, masked, and latent malaria forms. Although no clinical control was carried out by using quinine alone, the rapid recovery which the patients made on the administration of quinine, and the rapid diminution of the splenic enlargement in the cases reported, should surely cause some surprise if that effect is attributed to the quinine. Either the recovery is a symptomatic one, manifested in the cessation of fever and the disappearance of the parasites from the peripheral blood-stream, but leaving the patient still infected with malaria, or it may be considered as sterilisation with a rapid improvement of the subject and rapid diminution or disappearance of the splenic enlargement. In the first alternative the quinine may really be the effective factor, in the other this drug may not play any part, but we may be dealing with the self-protective action of the tissues, as in recoveries which are spontaneous or are provoked by a biological stimulus. If Dr. Low and Dr. Gregg follow up their three patients they will discover that the splenic enlargement has entirely disappeared and that the fever will not recur. This result never occurs after such brief treatment with quinine. The whole malaria problem belies such optimism.

To obviate certain mistakes in such clinical experiments I should like to make the following points clear. When we treat a patient with smalarina, we must forget our ideas on the pharmaceutical therapy, particularly on the usual method of treatment. The practitioner usually takes note of the most evident symptom, the fever, which indeed does not represent the disease (nor when it disappears has the disease been eradicated), but he does not take note of the deep-seated constitutional lesion which is produced by an hereditary defect. The new biological therapy produces an organic reaction occurring at various times according to the organism in question. It represents, therefore, a result of a natural law and arises when Nature wishes. If we treat a patient with the new method and expect some determined results at a fixed time, that means we claim that our law is superior to natural law.

By limiting himself to observation of results the malariologist will not only see his patient's recovery but also a series of very interesting and unexpected phenomena, as did those colleagues who have obtained fortunate results by following the method according to the rules that I have suggested. Treatment will not be successful if carried out under wrong conditions. The bad results, however, that we obtain in these cases appear to be only transitory, and the proof of this lies in the fact that we clearly see the advantages of the new method when we follow up the patients for some time after treatment. Chemical therapy, as rapid as it is ephemeral, has made us accustomed to expect some prompt results, and when these are not forthcoming we say the therapy has failed. If, however, a therapeutic method can produce an organic reaction (feverish reaction) after 10–15 days of treatment and a sterilisation after one or two months, it is evident we are dealing with something which is not a "pharmaceutical" treatment. Until we have thoroughly and at length experimented with this "something," we cannot say it has failed to produce the desired results.

The cases and method of application of Dr. Low and Dr. Gregg do not conform to the postulates I have established—namely, a rigorous application of some therapeutic rules that I have published after many years of diligent research.

I am, Sir, yours faithfully,

Rome. GUIDO CREMONESE.

JOURNALS FOR MEDICAL MISSIONARIES.

To the Editor of THE LANCET.

SIR,—May I, through your columns, make known the need of medical literature for members of the medical profession who work in hospitals scattered over the world? I have at the moment three requests for THE LANCET, and would gladly supply addresses to which such literature should be sent regularly.

I am, Sir, yours faithfully,

JANET BRADBURY,
S.P.G. Sec. for Medical Literature.

Darenth House, Sandgate, Kent, Sept. 10th, 1925.

MACLEAN'S "LAG" BLOOD-SUGAR CURVE.

To the Editor of THE LANCET.

SIR,—MacLean has specially called attention to a peculiar disturbance of blood-sugar regulation characterised by what he calls the "lag" blood-sugar curve.[1] By this name he denotes a condition in which, when a sugar-tolerance test is performed in the way he describes,[2] blood-sugar rises above the normal threshold value of about 0·18 per cent. within half an hour after the ingestion of sugar, but goes down again very quickly and is quite normal within two hours (or, in the old, within three hours) after the ingestion of sugar. A more or less important glycosuria is also produced.

A point of great practical importance is the prognostical significance of this type of blood-sugar curve. For the present, MacLean takes the view that "a patient who gives this lag type of curve, but *who shows no delay in the return of blood-sugar to normal after ingesting sugar,* is probably not suffering from a defect which is likely to prove prejudicial to his carbohydrate metabolism."

I have recently seen a case which has, I believe, some interest from this prognostical point of view.

J. M., aged 66. Thirty-six years ago sugar was found in the urine. A slight food restriction banished the glycosuria, which was constantly found absent so long as the food restriction was maintained. A few years later both food restriction and urine examinations were discontinued until 1918, when a urine analysis was again performed and sugar was found. Since then the analyses have been frequently repeated and glycosuria has always been found, varying from traces up to 3·0 per cent. Changes in glycosuria have been found to correspond with those in the diet. Food restriction was never very serious, bread and potatoes, for instance, being never omitted. No diabetic symptoms were noticed at any time. The patient has always felt very well and vigorous. At present he is an exceedingly healthy-looking old gentleman, is not, and has never been, over weight, and his blood pressure is 120/75.

A blood-sugar tolerance test, with 50 g. sugar, performed on Sept. 2nd, 1925, gave the following figures:—

	Blood-sugar per cent.		Urine sugar per cent.
Fasting	0·11	....	Nil
30 minutes after ingesting sugar	0·205	....	—
2¼ hours " " "	0·10	....	1·3

The main interest of this case lies in the fact that a blood-sugar regulation disturbance of the "lag" curve type has existed for at least 36 years, neither being the cause of any clinical disturbance except glycosuria, nor showing any tendency to pass into a true diabetes, despite the fact that no serious diet has ever been kept and that, probably, glycosuria has constantly been present, except for a short number of years after it was first discovered. This

so is therefore strongly in favour of MacLean's timistic opinion on the prognostic significance of e "lag" blood-sugar curve. It is also of interest remark that in this case of non-diabetic dextros- ia, as, probably in all those of the same type, anges in diet are followed by changes in the daily cretion of sugar of the same type as those met ith in true diabetes, in opposition to what is seen typical renal glycosuria and other non-diabetical ycosurias. This fact emphasises the importance of rforming sugar-tolerance tests, with blood-sugar terminations, in all cases of glycosuria in which the abetic nature of this symptom is not quite evident, ven when it may seem possible to exclude renal ycosuria and other non-diabetic glycosurias, such s lævulosuria, pseudo-lævulosuria, &c.

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[1] Hugh MacLean: Modern Methods in the Diagnosis and Treatment of Glycosuria and Diabetes, second edition, London, 1924, p. 42.

[2] Loc. cit., p. 31.

I am, Sir, yours faithfully,
R. CARRASCO-FORMIGUERA.

Barcelona (Catalonia), Sept. 12th, 1925.

LUMINAL IN EPILEPSY.

To the Editor of THE LANCET.

SIR,—I have read, with great interest, the letter of r. Hildred Carlill in THE LANCET of Sept. 19th on case of luminal poisoning. For the last three years have had the opportunity of studying the action of uminal and I have found that, except in cases of pilepsy, in which cases the number of fits was reduced ery considerably, the drug was very disappointing. he dose we give here is 2 gr. twice daily. Larger oses when tried as a sedative or hypnotic have not iven satisfactory results, in fact very disappointing, s the patient becomes stuporous, restless, and in few cases the sphincters were relaxed. Gradual ecrease in the dose of luminal is essential, but sudden cessation may cause the same symptoms s a large dose.

I am, Sir, yours faithfully,
S. GROSSMAN,
Assistant Medical Officer, Cardiff City Mental Hospital.

Sept. 22nd, 1925.

Medical News.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The Fellowship of Medicine will hold a series of lectures on Tuberculosis in the Lecture-room of the Medical Society, 11, Chandos-street, in October. The opening lecture will be delivered on Oct. 12th at 5.30 P.M. by Dr. L. S. Burrell on Tuberculosis from the Physician's Viewpoint. There is no fee for this series, and all members of the medical profession will be welcomed. During October there will also be held the following course: Diseases of the Throat, Nose, and Ear at the Central London Throat, Nose and Ear Hospital (an operative surgery class will also be held); a course in Tropical Medicine, consisting of eight clinical demonstrations on Tuesdays and Thursdays; a combined course in Diseases of Children at the Paddington Green Hospital, Victoria Hospital, and Children's Clinic; a course in Urology at St. Peter's; and a course in Dermatology at St. John's. Copies of any syllabus, together with the Fellowship programme, may be obtained from the Secretary, at 1, Wimpole-street, W. 1.

CHARING CROSS HOSPITAL MEDICAL SCHOOL.—The distribution of prizes to students by Sir Herbert Waterhouse will be made in the out-patients' hall of the hospital on Monday, Oct. 5th, at 3.30 P.M.

UNIVERSITY OF LONDON: UNIVERSITY COLLEGE.—On Monday, Oct. 5th, and Tuesday, Oct. 6th, 10 A.M. to 1 P.M., first-year students of the Faculty of Medical Sciences will be received by the Senior Tutor, the Dean of the Faculty, and the Sub Dean. On Monday, Oct. 5th, 2.15 to 4 P.M., students of the Faculty of Medical Sciences other than first-year will be received; on the same day at 3.15 P.M. candidates for the Diploma of Public Health will be received by Mr. Delafield, Acting Head of the Department. The new buildings for anatomy, anthropology, embryology, histology, and physiology, provided by the gift of the Rockefeller Foundation of New York, are now in full use. The list of public lectures includes six on the Study of Man by Prof. G. Elliot Smith and Dr. C. F. Sonntag, and one on the Photochemistry of Vision by Prof. Fritz Weigert of the University of Leipzig. There will also be eight lectures on the Physiology of Hearing and Vision, which will be given by Mr. R. J. Lythgoe on Mondays and Wednesdays at 5 P.M., starting on Oct. 12th.

LECTURES AT KING'S COLLEGE.—A course of ten lectures on the Histology of Nerve Tissues and Paths of Conduction in the Central Nervous System will be given by Dr. C. Da Fano at King's College, at 5 P.M., on Thursdays during the present session, beginning on Oct. 8th.

THE People's League of Health has awarded a travelling scholarship to Miss Alice Gilby, who is a second-year medical student at the London School of Medicine for Women.

AT the third annual general meeting of the British Provident Association for Hospital and Additional Services, held on Sept. 21st, a resolution was passed expressing the Association's appreciation of the services of the late Dr. J. F. Gordon Dill in the cause of the voluntary hospitals of this country.

IMPERIAL SOCIAL HYGIENE CONGRESS. — The British Social Hygiene Council, which was lately the National Council for Combating Venereal Diseases, is organising a congress to be held at Wembley from Oct. 5th to 7th under the presidency of Sir Auckland Geddes. Distinguished representatives of the Dominions have agreed to take part in the discussions, and addresses will be given by Mr. L. S. Amery (Colonial Secretary), Mr. Neville Chamberlain (Minister of Health), and Lord Willingdon. The problem of venereal disease as it affects the Empire will be fully discussed.

CORK DENTAL HOSPITAL.—The honorary staff of this hospital, which forms part of the North Infirmary, have resigned in a body on a number of grounds. The staff complain, generally, that the committee of management have "persistently ignored" their recommendations, even upon matters regarding which they are especially qualified to advise, and, more specifically, that they were not consulted upon the opening of the hospital at night, and that two salaried appointments were recently made in face of their opposition. The honorary staff has been invited to a conference with the committee of management and has been asked to continue duty in the meantime.

LONDON MEDICAL EXHIBITION.—From Oct. 5th to 9th the medical profession will again have an opportunity to taste, see, or handle the products of our leading drug houses and scientific manufacturing firms at the Central Hall, Westminster, S.W. The London Medical Exhibition, which is open to medical men only, will comprise the most recent organo-therapeutic, bacteriological, and pharmaceutical remedies and prophylactics; electro-therapeutic apparatus; scientific dietary; surgical instruments; hospital furniture and medical appliances, diagnostic material, and apparatus; pathological and physiological apparatus; artificial limbs, aids in invalidity and deformity; sick-room requisites; natural and artificial hydrotherapy; professional literature; hygienic clothing, and so forth. Invitation cards can be obtained from the secretary of the exhibition, 191-200, Bishopsgate, London, E.C., or at the Central Hall during the exhibition. The exhibition is exclusively for members of the medical profession.

DONATIONS AND BEQUESTS.—By the will of the late Mrs. Catherine Ada Potter, of Llandaff, the testatrix left £1000 to Cardiff Royal Infirmary "to endow a bed in a ward to be called the Catherine Ward," and £100 in addition "on condition my grave is kept in good order and looked after by such infirmary." Among other bequests she left £100 to the Cardiff Blind Institution.—The Manchester Royal Infirmary has received £10,000 on account from a legacy by the late Miss Ann Russell.—Mrs. Ellen Margaret Smith, Aughton, Lancashire, who left £12,014, besides other bequests, including certain sums to her husband, left on his death £500 each to the School for Indigent Blind, Liverpool, the Hospital for Women, Liverpool, and the Ormskirk District Nursing Association.—The Christie Hospital, Manchester, has received a donation of £1000 from Mrs. Taylor, of Whalley Range, to endow a bed in memory of her husband and brother-in-law, Mr. Henry Marsland Taylor and Mr. James Henry Taylor, two of Manchester's oldest solicitors.

5. It is consequently necessary, as I have already pointed out, that the after-care of the patients be continued sometimes for one or two months. During this time the characteristic symptoms of the disease are gradually disappearing and a general improvement in health becomes manifest.

Let us consider now the action of smalarina. Since this compound is not a febrifuge, it is hardly reasonable, for all practical purposes, to expect that the fever should abate after its administration. I have never maintained the febrifuge action of smalarina. Dr. Low and Dr. Gregg have done well in giving quinine in their cases, but quinine would have not been either advantageous or necessary in the subacute, chronic, masked, and latent malaria forms. Although no clinical control was carried out by using quinine alone, the rapid recovery which the patients made on the administration of quinine, and the rapid diminution of the splenic enlargement in the cases reported, should surely cause some surprise if that effect is attributed to the quinine. Either the recovery is a symptomatic one, manifested in the cessation of fever and the disappearance of the parasites from the peripheral blood-stream, but leaving the patient still infected with malaria, or it may be considered as sterilisation with a rapid improvement of the subject and rapid diminution or disappearance of the splenic enlargement. In the first alternative the quinine may really be the effective factor, in the other this drug may not play any part, but we may be dealing with the self-protective action of the tissues, as in recoveries which are spontaneous or are provoked by a biological stimulus. If Dr. Low and Dr. Gregg follow up their three patients they will discover that the splenic enlargement has entirely disappeared and that the fever will not recur. This result never occurs after such brief treatment with quinine. The whole malaria problem belies such optimism.

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By limiting himself to observation of results the malariologist will not only see his patient's recovery but also a series of very interesting and unexpected phenomena, as did those colleagues who have obtained fortunate results by following the method according to the rules that I have suggested. Treatment will not be successful if carried out under wrong conditions. The bad results, however, that we obtain in these cases appear to be only transitory, and the proof of this lies in the fact that we clearly see the advantages of the new method when we follow up the patients for some time after treatment. Chemical therapy, as rapid as it is ephemeral, has made us accustomed to expect some prompt results, and when these are not forthcoming we say the therapy has failed. If, however, a therapeutic method can produce an *organic reaction* (feverish reaction) after 10–15 days of treatment and a sterilisation after one or two months, it is evident we are dealing with something which is not a "pharmaceutical" treatment. Until we have thoroughly and at length experimented with this "something," we cannot say it has failed to produce the desired results.

The cases and method of application of Dr. Low and Dr. Gregg do not conform to the postulates I have established—namely, a rigorous application of some therapeutic rules that I have published after many years of diligent research.

I am, Sir, yours faithfully,

Rome. Guido Cremonese.

JOURNALS FOR MEDICAL MISSIONARIES.

To the Editor of The Lancet.

Sir,—May I, through your columns, make known the need of medical literature for members of the medical profession who work in hospitals scattered over the world? I have at the moment three requests for The Lancet, and would gladly supply addresses to which such literature should be sent regularly.

I am, Sir, yours faithfully,

Janet Bradbury,
S.P.G. Sec. for Medical Literature.

Darenth House, Sandgate, Kent, Sept. 19th, 1925.

MACLEAN'S "LAG" BLOOD-SUGAR CURVE.

To the Editor of The Lancet.

Sir,—MacLean has specially called attention to a peculiar disturbance of blood-sugar regulation characterised by what he calls the "lag" blood-sugar curve.[1] By this name he denotes a condition in which, when a sugar-tolerance test is performed in the way he describes,[2] blood-sugar rises above the normal threshold value of about 0·18 per cent. within half an hour after the ingestion of sugar, but goes down again very quickly and is quite normal within two hours (or, in the old, within three hours) after the ingestion of sugar. A more or less important glycosuria is also produced.

A point of great practical importance is the prognostical significance of this type of blood-sugar curve. For the present, MacLean takes the view that "a patient who gives this lag type of curve, but *who shows no delay in the return of blood-sugar to normal after ingesting sugar*, is probably not suffering from a defect which is likely to prove prejudicial to his carbohydrate metabolism."

I have recently seen a case which has, I believe, some interest from this prognostical point of view.

J. M., aged 66. Thirty-six years ago sugar was found in the urine. A slight food restriction banished the glycosuria, which was constantly found absent so long as the food restriction was maintained. A few years later both food restriction and urine examinations were discontinued until 1918, when a urine analysis was again performed and sugar was found. Since then the analyses have been frequently repeated and glycosuria has always been found, varying from traces up to 3·0 per cent. Changes in glycosuria have been found to correspond with those in the diet. Food restriction was never very serious, bread and potatoes, for instance, being never omitted. No diabetic symptoms were noticed at any time. The patient has always felt very well and vigorous. At present he is an exceedingly healthy-looking old gentleman, is not, and has never been, over weight, and his blood pressure is 120/75.

A blood-sugar tolerance test, with 50 g. sugar, performed on Sept. 2nd, 1925, gave the following figures:—

	Blood-sugar per cent.		Urine sugar per cent.
Fasting	0·11	....	Nil
30 minutes after ingesting sugar	0·205	....	—
2¼ hours ,, ,, ,,	0·10	....	1·3

The main interest of this case lies in the fact that a blood-sugar regulation disturbance of the "lag" curve type has existed for at least 36 years, neither being the cause of any clinical disturbance except glycosuria, nor showing any tendency to pass into a true diabetes, despite the fact that no serious diet has ever been kept and that, probably, glycosuria has constantly been present, except for a short number of years after it was first discovered. This

case is therefore strongly in favour of MacLean's optimistic opinion on the prognostic significance of the "lag" blood-sugar curve. It is also of interest to remark that in this case of non-diabetic dextrosuria, as, probably in all those of the same type, changes in diet are followed by changes in the daily excretion of sugar of the same type as those met with in true diabetes, in opposition to what is seen in typical renal glycosuria and other non-diabetical glycosurias. This fact emphasises the importance of performing sugar-tolerance tests, with blood-sugar determinations, in all cases of glycosuria in which the diabetic nature of this symptom is not quite evident, even when it may seem possible to exclude renal glycosuria and other non-diabetic glycosurias, such as lævulosuria, pseudo-lævulosuria, &c.

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[1] Hugh MacLean: Modern Methods in the Diagnosis and Treatment of Glycosuria and Diabetes, second edition, London, 1924, p. 42.

[2] Loc. cit., p. 31.

I am, Sir, yours faithfully,
R. CARRASCO-FORMIGUERA.

Barcelona (Catalonia), Sept. 12th, 1925.

LUMINAL IN EPILEPSY.

To the Editor of THE LANCET.

SIR,—I have read, with great interest, the letter of Dr. Hildred Carlill in THE LANCET of Sept. 19th on a case of luminal poisoning. For the last three years I have had the opportunity of studying the action of luminal and I have found that, except in cases of epilepsy, in which cases the number of fits was reduced very considerably, the drug was very disappointing. The dose we give here is 2 gr. twice daily. Larger doses when tried as a sedative or hypnotic have not given satisfactory results, in fact very disappointing, as the patient becomes stuporous, restless, and in a few cases the sphincters were relaxed. Gradual decrease in the dose of luminal is essential, but a sudden cessation may cause the same symptoms as a large dose.

I am, Sir, yours faithfully,
S. GROSSMAN,
Assistant Medical Officer, Cardiff City Mental Hospital.

Sept. 22nd, 1925.

Medical News.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The Fellowship of Medicine will hold a series of lectures on Tuberculosis in the Lecture-room of the Medical Society, 11, Chandos-street, in October. The opening lecture will be delivered on Oct. 12th at 5.30 P.M. by Dr. L. S. Burrell on Tuberculosis from the Physician's Viewpoint. There is no fee for this series, and all members of the medical profession will be welcomed. During October there will also be held the following course: Diseases of the Throat, Nose, and Ear at the Central London Throat, Nose and Ear Hospital (an operative surgery class will also be held); a course in Tropical Medicine, consisting of eight clinical demonstrations on Tuesdays and Thursdays; a combined course in Diseases of Children at the Paddington Green Hospital, Victoria Hospital, and Children's Clinic; a course in Urology at St. Peter's; and a course in Dermatology at St. John's. Copies of any syllabus, together with the Fellowship programme, may be obtained from the Secretary, at 1, Wimpole-street, W. 1.

CHARING CROSS HOSPITAL MEDICAL SCHOOL.—The distribution of prizes to students by Sir Herbert Waterhouse will be made in the out-patients' hall of the hospital on Monday, Oct. 5th, at 3.30 P.M.

UNIVERSITY OF LONDON: UNIVERSITY COLLEGE.—On Monday, Oct. 5th, and Tuesday, Oct. 6th, 10 A.M. to 1 P.M., first-year students of the Faculty of Medical Sciences will be received by the Senior Tutor, the Dean of the Faculty, and the Sub Dean. On Monday, Oct. 5th, 2.15 *to* 4 P.M., students of the Faculty of Medical Sciences other than first-year will be received; on the same day at 3.15 P.M. candidates for the Diploma of Public Health will be received by Mr. Delafield, Acting Head of the Department. The new buildings for anatomy, anthropology, embryology, histology, and physiology, provided by the gift of the Rockefeller Foundation of New York, are now in full use. The list of public lectures includes six on the Study of Man by Prof. G. Elliot Smith and Dr. C. F. Sonntag, and one on the Photochemistry of Vision by Prof. Fritz Weigert of the University of Leipzig. There will also be eight lectures on the Physiology of Hearing and Vision, which will be given by Mr. R. J. Lythgoe on Mondays and Wednesdays at 5 P.M., starting on Oct. 12th.

LECTURES AT KING'S COLLEGE.—A course of ten lectures on the Histology of Nerve Tissues and Paths of Conduction in the Central Nervous System will be given by Dr. C. Da Fano at King's College, at 5 P.M., on Thursdays during the present session, beginning on Oct. 8th.

THE People's League of Health has awarded a travelling scholarship to Miss Alice Gilby, who is a second-year medical student at the London School of Medicine for Women.

AT the third annual general meeting of the British Provident Association for Hospital and Additional Services, held on Sept. 21st, a resolution was passed expressing the Association's appreciation of the services of the late Dr. J. F. Gordon Dill in the cause of the voluntary hospitals of this country.

IMPERIAL SOCIAL HYGIENE CONGRESS.—The British Social Hygiene Council, which was lately the National Council for Combating Venereal Diseases, is organising a congress to be held at Wembley from Oct. 5th to 7th under the presidency of Sir Auckland Geddes. Distinguished representatives of the Dominions have agreed to take part in the discussions, and addresses will be given by Mr. L. S. Amery (Colonial Secretary), Mr. Neville Chamberlain (Minister of Health), and Lord Willingdon. The problem of venereal disease as it affects the Empire will be fully discussed.

CORK DENTAL HOSPITAL.—The honorary staff of this hospital, which forms part of the North Infirmary, have resigned in a body on a number of grounds. The staff complain, generally, that the committee of management have "persistently ignored" their recommendations, even upon matters regarding which they are especially qualified to advise, and, more specifically, that they were not consulted upon the opening of the hospital at night, and that two salaried appointments were recently made in face of their opposition. The honorary staff has been invited to a conference with the committee of management and has been asked to continue duty in the meantime.

LONDON MEDICAL EXHIBITION.—From Oct. 5th to 9th the medical profession will again have an opportunity to taste, see, or handle the products of our leading drug houses and scientific manufacturing firms at the Central Hall, Westminster, S.W. The London Medical Exhibition, which is open to medical men only, will comprise the most recent organo-therapeutic, bacteriological, and pharmaceutical remedies and prophylactics; electro-therapeutic apparatus; scientific dietary; surgical instruments; hospital furniture and medical appliances, diagnostic material, and apparatus; pathological and physiological apparatus; artificial limbs, aids in invalidity and deformity; sick-room requisites; natural and artificial hydrotherapy; professional literature; hygienic clothing, and so forth. Invitation cards can be obtained from the secretary of the exhibition, 194-200, Bishopsgate, London, E.C., or at the Central Hall during the exhibition. The exhibition is exclusively for members of the medical profession.

DONATIONS AND BEQUESTS.—By the will of the late Mrs. Catherine Ada Potter, of Llandaff, the testatrix left £1000 to Cardiff Royal Infirmary "to endow a bed in a ward to be called the Catherine Ward," and £100 in addition "on condition my grave is kept in good order and looked after by such infirmary." Among other bequests she left £100 to the Cardiff Blind Institution.—The Manchester Royal Infirmary has received £10,000 on account from a legacy by the late Miss Ann Russell.—Mrs. Ellen Margaret Smith, Aughton, Lancashire, who left £12,914, besides other bequests, including certain sums to her husband, left on his death £500 each to the School for Indigent Blind, Liverpool, the Hospital for Women, Liverpool, and the Ormskirk District Nursing Association.—The Christie Hospital, Manchester, has received a donation of £1000 from Mrs. Taylor, of Whalley Range, to endow a bed in memory of her husband and brother-in-law, Mr. Henry Marsland Taylor and Mr. James Henry Taylor, two of Manchester's oldest solicitors.

we are merely playing the part of public health quacks—treating the symptoms but neglecting the cause of what is both a social and a physical disorder. Clamant as are the calls for housing and economic improvements, and desirable as is the raising of the general standard of sex morals, it should be recognised that venereal disease need not remain with us until Utopia arrives. It is a question not of morals but of medicine. Disease is merely an unfortunate accidental accompaniment of venery, and such accidents will *not* happen in well-regulated communities. The problem of sexual immorality is not identical with that of venereal disease, and we must take the risk of making the world safe for profligacy. Venereal disease is the most easily preventable of all diseases, and it should not be beyond the power of medical science to stamp it out. The virus is short-lived outside the body; infection is possible only by close contact. Early thorough treatment prevents the disease being passed on to others. We have the knowledge; all that is required is the will and the courage to make practical use of that knowledge.

Let the transmission of venereal diseases be made an offence against the law of the land. Let each individual case of fresh infection be followed up ruthlessly and inquisitorially, with as much thoroughness and as much determination as is shown now in eradicating other and less harmful diseases. To do less is wicked wastefulness and cowardly procrastination.—I am, Sir, yours faithfully,

ROBERT FORGAN, M.D., D.P.H.,
Executive Medical Officer, Lanarkshire
Joint V.D. Scheme.

Sept. 14th, 1925.

⁂ In Edinburgh the percentage of patients who fail to complete their treatment at V.D. centres fell from 40 in the year 1920 to 11·9 last year. Among certain classes of patients the leakage was very small indeed, as may be seen from the report on p. 670.—ED. L.

RHEUMATIC INFECTION IN CHILDHOOD.

To the Editor of THE LANCET.

SIR,—In the investigation of the problem of rheumatism which is engaging so much attention at the present time there appears to be a danger lest the fundamental nature of the disease should become obscured. While the possible influence of some "germ" cannot be ignored, it is essential that there should be clear recognition of certain features of rheumatism in its broadest sense which are constant, easily detected, and very suggestive. Sufferers from rheumatic affections have a temperature that is normally subnormal, they have skins which are habitually inactive, and they are liable to short attacks of fever always accompanied by increase of pain and acid sweating. These attacks may be slight and overlooked, or they may present the classical symptoms of acute rheumatic fever. Rheumatic fever left to itself burns itself out in the course of a few weeks, the more severe the symptoms the sooner they disappear; though the illness leaves permanent heart-scarring it must be credited with a tendency to self-cure.

By physical measures this self-curative process may be stimulated and hastened. If artificial fever and sweating are induced there is a temporary increase in the severity of the symptoms quickly followed by rapidly progressive relief. That this view of rheumatism is not merely theoretical is abundantly proved by the results of treatment upon these lines; chorea, "rheumatic fever," subacute and chronic rheumatism in child and in adult yield to the application of moist warmth, and consequent pyrexia and sweating without the use of any drug. It would seem that the basic factors in rheumatism are an error of metabolism leading to the storage of lactic acid compounds in the tissues, and a failure of the skin to expel this poison except under the stimulus of fever.

This conception of the disease suggests t
tion is to be sought in measures th

skin action and freedom from the depres·ing influence of cold, damp, and malnutrition. Other factors may play a part in some cases, but a study of the problems of prevention and cure that does not take into account the aberration of skin activity and lactic acid metabolism is likely to be sterile or misleading in its results.
I am, Sir, yours faithfully,
C. E. SUNDELL.

Queen Anne-street, W., Sept. 21st, 1925.

To the Editor of THE LANCET.

SIR,—The meaning of "poverty" in the dictionary is given as want, necessity, defect, and its derivation is from the Latin pauper. Dr. R. Miller (THE LANCET, Sept. 19th, p. 626) applies this term to the working or artisan class, an indictment that calls for immediate action on the part of the community, if what Dr. Miller says is correct. What I tried to emphasise was that the majority of post-rheumatic and post-choreic heart cases are to be found in those who partake of neither of the great lime-bearing foods—milk and eggs—amongst the poor, because they cannot afford them, and amongst the well-to-do because of a great dislike to those foods.

I am, Sir, yours faithfully,
Swansea, Sept. 19th, 1925. G. ARBOUR STEPHENS.

PERSISTENT DIARRHŒA IN PHTHISIS.

To the Editor of THE LANCET.

SIR,—One of the most serious complications of a pulmonary, peritoneal, or general tuberculosis is persistent diarrhœa. This enteritis is not necessarily tuberculous; it may be in part or altogether septic, but in any case it is a happening of evil omen. Fishberg speaks of that form of diarrhœa which comes on late in pulmonary tuberculosis as almost invariably fatal and rapidly fatal. It is peculiarly disappointing to the practitioner treating pulmonary tuberculosis by artificial pneumothorax, when this diarrhœa, at first casual, then frequent but intermittent, and finally persistent, attacks a patient whose lung has been collapsed, apparently to a stage of complete arrest. Then may come this sequela, a rapid extinction of vitality, and then death.

I have sometimes wondered whether artificial pneumothorax has, in one or two cases out of a large number, produced this diarrhœa; but I have then remembered that it is so common a sequel where no such treatment has been tried that I have not been able to see cause and effect in the chain of occurrences. Treatment may be successful in slight cases, but may utterly fail, and I think it generally does where the enteritis is of vast extent. A recent French remedy is salicylate of alumina. I have only tried it in very advanced cases, and I am not frowning on its use when I say that in these very advanced cases it has done no good. Acetate of lead and opium, sulphate of copper and opium, and pulv. confect. arom. cum opio are all of value. Washing out the bowel with large enemata is advised by some, but may cause intense pain.

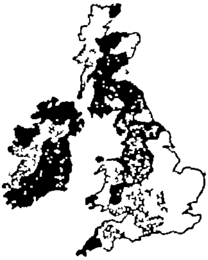
The remedy which I have found of the most value has been bismuth subcarb. in elephantine doses; I have given single doses of from ʒiv. to ℥ii. (In giving such a dose of bismuth subcarb. it must be guaranteed practically free from arsenic.) I have found no remedy to equal this. One large dose taken in milk, the patient drinking it slowly and taking, perhaps, two hours in swallowing one dose, has often cut short an attack of this distressing diarrhœa. It cannot be repeated for three days, but other remedies, especially pulv. confect. arom. cum opio, can be continued. I have known this treatment to be of great benefit in persistent mucous colitis. It is hypothetically possible that such a large dose of bismuth may produce intestinal obstruction. I have met with no such result.

I am, Sir, yours faithfully,
Leeds, Sept. 21st, 1925. H. DE CARLE WOODCOCK.

THE GEOGRAPHICAL DISTRIBUTION OF HEART DISEASE.

To the Editor of THE LANCET.

SIR,—The interesting map published in your last issue by Dr. Matthew Young recalls in a striking way the distribution in these islands of a number of other phenomena. I give as examples the yield of turnips per acre, the proportions of land occupied by cereal crops which are used for oats and wheat respectively, the distribution of the snails *Hygromia fusca* and *Theba cantiana*, and of the pearl-mussel *Margaritana margaritifera*, and lastly, the rainfall, which, though a commonplace, is often overlooked. Historians also remark that in the Civil War the country to the south and east of a line from Hull to Gloucester and Plymouth was for Parliament, and that to the north and west for Charles. The distinction between north-western and south-eastern is evidently of wide and varied biological significance, and its explanation is probably discoverable by careful statistical analysis, such as Dr. Young's, though the pitfalls in correlating variables are sufficiently illustrated by the examples I have given; it is unlikely that the parasite which causes acute rheumatism lives in the turnip, or that there is an anti-rheumatic emanation from *T. cantiana*. Taken in a broad way it seems much more likely that the dominating factors are dryness and what we may call civilisation. The actual rainfall in the south-east is much less, the calcareous strata of which it is largely composed are more permeable, a more intensive and thorough agriculture helps to keep the surface dry, which is, indeed, the effect of many modern improvements like street paving and tarred roads; there is much evidence that the south and east of England has become progressively drier during the last 100 years. Associated with this dryness in many such ways is a different standard of living. When Cæsar came to Britain he found culture at its highest level in the south-east, and, excepting, of course, Manchester, the same remains roughly true to-day; it may be because the south-east is nearer the Continent, or because its sunshine is more cheering than the rain of the north-west, or because, for a variety of reasons, it is more prosperous. But it is only necessary to travel across England from west to east, say from Hereford to London, and look out of the railway carriage window to appreciate that the conditions of life are not the same, and it is not difficult to believe that ugly (but waterproof) modern cottages and well-tilled clean fields may be better for the health of the inhabitants if they leave little "real country" for holiday-makers. These very brief indications show the inter-related complexity of the subject. Temperature seems to have relatively little influence; in winter the country is progressively cooler from west to east, and in summer from south to north, and there is no period at which the distribution of temperature corresponds for any length of time to the biological divisions.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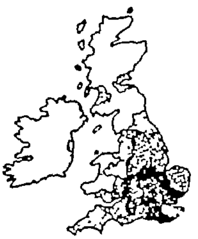
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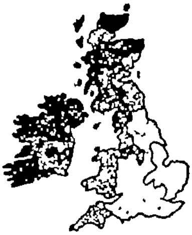
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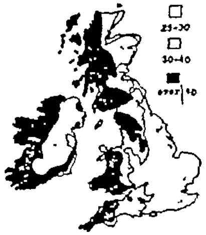

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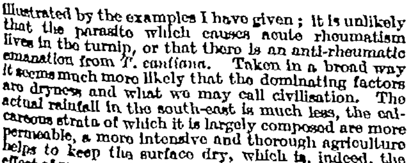
Distribution of three molluscs: (1) *Hygromia fusca*; (2) *Theba cantiana*; (3) *Margaritana margaritifera*

I am, Sir, yours faithfully,

Radlett, Herts, Sept. 10th, 1925. A. E. BOYCOTT.

"SMALARINA" IN MALARIA.

To the Editor of THE LANCET.

SIR,—In your issue of June 27th I read a brief clinical report by Dr. G. C. Low and Dr. A. L. Gregg on my method of malaria therapy with smalarina. There are, however, some slight mistakes in that note in connexion with the practical application of this method as reported, and these I should like to discuss. Dr. Low and Dr. Gregg, when treating their patients, had probably not read my papers and pamphlets or had forgotten the rules I suggested for carrying out the treatment. From their report I gather that:—

1. The patients, when the smalarina treatment was started, were feverish, that is, in an acute stage or in a state of relapse.

2. Smalarina was administered in order that the fever might abate at a fixed time.

3. Since the fever did not abate, quinine was given, and in a (relatively) short time this treatment established a rapid convalescence with the disappearance of the parasites from the peripheral blood-stream, of fever, and of splenic enlargement. These fortunate results were *attributed* to the administration of a few doses of quinine.

It is to be noted that no treatment with quinine alone was carried out as a control.

The points I wish to raise in regard to the above results are as follows:—

1. *In all my publications I have clearly maintained* that the new therapy is a "biological therapy," that is, it produces an organic reaction and immunity, and is by no means a pharmaceutical, symptomatic, febrifuge treatment. *Quinine will suffice to fight* the fever.

2. So far as smalarina treatment is concerned, it must be remembered that it is not suited for the acute stages of malaria because there the administration of quinine is necessary to reduce the fever. Smalarina tends to provoke an immunity against malaria.

3 The therapeutic action of smalarina manifests itself sometimes a little late. This action appears very *often* associated with a feverish reaction, which on analogical grounds I have named Herxheimer's reaction

4. One of the first symptoms in connexion with the reaction to the smalarina *stimulus* is the *rapid* diminution of the splenic enlargement.

5. It is consequently necessary, as I have already pointed out, that the after-care of the patients be continued sometimes for one or two months. During this time the characteristic symptoms of the disease are gradually disappearing and a general improvement in health becomes manifest.

Let us consider now the action of smalarina. Since this compound is not a febrifuge, it is hardly reasonable, for all practical purposes, to expect that the fever should abate after its administration. I have never maintained the febrifuge action of smalarina. Dr. Low and Dr. Gregg have done well in giving quinine in their cases, but quinine would have not been either advantageous or necessary in the subacute, chronic, masked, and latent malaria forms. Although no clinical control was carried out by using quinine alone, the rapid recovery which the patients made on the administration of quinine, and the rapid diminution of the splenic enlargement in the cases reported, should surely cause some surprise if that effect is attributed to the quinine. Either the recovery is a symptomatic one, manifested in the cessation of fever and the disappearance of the parasites from the peripheral blood-stream, but leaving the patient still infected with malaria, or it may be considered as sterilisation with a rapid improvement of the subject and rapid diminution or disappearance of the splenic enlargement. In the first alternative the quinine may really be the effective factor, in the other this drug may not play any part, but we may be dealing with the self-protective action of the tissues, as in recoveries which are spontaneous or are provoked by a biological stimulus. If Dr. Low and Dr. Gregg follow up their three patients they will discover that the splenic enlargement has entirely disappeared and that the fever will not recur. This result never occurs after such brief treatment with quinine. The whole malaria problem belies such optimism.

To obviate certain mistakes in such clinical experiments I should like to make the following points clear. When we treat a patient with smalarina, we must forget our ideas on the pharmaceutical therapy, particularly on the usual method of treatment. The practitioner usually takes note of the most evident symptom, the fever, which indeed does not represent the disease (nor when it disappears has the disease been eradicated), but he does not take note of the deep-seated constitutional lesion which is produced by an hereditary defect. The new biological therapy produces an organic reaction occurring at various times according to the organism in question. It represents, therefore, a result of a natural law and arises when Nature wishes. If we treat a patient with the new method and expect some determined results at a fixed time, that means we claim that our law is superior to natural law.

By limiting himself to observation of results the malariologist will not only see his patient's recovery but also a series of very interesting and unexpected phenomena, as did those colleagues who have obtained fortunate results by following the method according to the rules that I have suggested. Treatment will not be successful if carried out under wrong conditions. The bad results, however, that we obtain in these cases appear to be only transitory, and the proof of this lies in the fact that we clearly see the advantages of the new method when we follow up the patients for some time after treatment. Chemical therapy, as rapid as it is ephemeral, has made us accustomed to expect some prompt results, and when these are not forthcoming we say the therapy has failed. If, however, a therapeutic method can produce an organic reaction (feverish reaction) after 10–15 days of treatment and a sterilisation after one or two months, it is evident we are dealing with something which is not a "pharmaceutical" treatment. Until we have thoroughly and at length experimented with this "something," we cannot say it has failed to produce the desired results.

The cases and method of application of Dr. Low and Dr. Gregg do not conform to the postulates I have established—namely, a rigorous application of some therapeutic rules that I have published after many years of diligent research.

I am, Sir, yours faithfully,

Rome. GUIDO CREMONESE.

JOURNALS FOR MEDICAL MISSIONARIES.

To the Editor of THE LANCET.

SIR,—May I, through your columns, make known the need of medical literature for members of the medical profession who work in hospitals scattered over the world? I have at the moment three requests for THE LANCET, and would gladly supply addresses to which such literature should be sent regularly.

I am, Sir, yours faithfully,

JANET BRADBURY,
S.P.G. Sec. for Medical Literature.

Darenth House, Sandgate, Kent, Sept. 19th, 1925.

MACLEAN'S "LAG" BLOOD-SUGAR CURVE.

To the Editor of THE LANCET.

SIR,—MacLean has specially called attention to a peculiar disturbance of blood-sugar regulation characterised by what he calls the "lag" blood-sugar curve.[1] By this name he denotes a condition in which, when a sugar-tolerance test is performed in the way he describes,[2] blood-sugar rises above the normal threshold value of about 0·18 per cent. within half an hour after the ingestion of sugar, but goes down again very quickly and is quite normal within two hours (or, in the old, within three hours) after the ingestion of sugar. A more or less important glycosuria is also produced.

A point of great practical importance is the prognostical significance of this type of blood-sugar curve. For the present, MacLean takes the view that "a patient who gives this lag type of curve, but *who shows no delay in the return of blood-sugar to normal after ingesting sugar*, is probably not suffering from a defect which is likely to prove prejudicial to his carbohydrate metabolism."

I have recently seen a case which has, I believe, some interest from this prognostical point of view.

J. M., aged 66. Thirty-six years ago sugar was found in the urine. A slight food restriction banished the glycosuria, which was constantly found absent so long as the food restriction was maintained. A few years later both food restriction and urine examinations were discontinued until 1918, when a urine analysis was again performed and sugar was found. Since then the analyses have been frequently repeated and glycosuria has always been found, varying from traces up to 3·0 per cent. Changes in glycosuria have been found to correspond with those in the diet. Food restriction was never very serious, bread and potatoes, for instance, being never omitted. No diabetic symptoms were noticed at any time. The patient has always felt very well and vigorous. At present he is an exceedingly healthy-looking old gentleman, is not, and has never been, over weight, and his blood pressure is 120/75.

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	Blood-sugar per cent.		Urine sugar per cent.
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2½ hours " " "	0·10	....	1·3

The main interest of this case lies in the fact that a blood-sugar regulation disturbance of the "lag" curve type has existed for at least 36 years, neither being the cause of any clinical disturbance except glycosuria, nor showing any tendency to pass into a true diabetes, despite the fact that no serious diet has ever been kept and that, probably, glycosuria has constantly been present, except for a short number of years after it was first discovered. This

case is therefore strongly in favour of MacLean's optimistic opinion on the prognostic significance of the "lag" blood-sugar curve. It is also of interest to remark that in this case of non-diabetic dextrosuria, as, probably in all those of the same type, changes in diet are followed by changes in the daily excretion of sugar of the same type as those met with in true diabetes, in opposition to what is seen in typical renal glycosuria and other non-diabetical glycosurias. This fact emphasises the importance of performing sugar-tolerance tests, with blood-sugar determinations, in all cases of glycosuria in which the diabetic nature of this symptom is not quite evident, even when it may seem possible to exclude renal glycosuria and other non-diabetic glycosurias, such as lævulosuria, pseudo-lævulosuria, &c.

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[1] Hugh MacLean: Modern Methods in the Diagnosis and Treatment of Glycosuria and Diabetes, second edition, London, 1924, p. 42.

[2] Loc. cit., p. 31.

I am, Sir, yours faithfully,
R. Carrasco-Formiguera.

Barcelona (Catalonia), Sept. 12th, 1925.

LUMINAL IN EPILEPSY.

To the Editor of The Lancet.

Sir,—I have read, with great interest, the letter of Dr. Hildred Carlill in The Lancet of Sept. 19th on a case of luminal poisoning. For the last three years I have had the opportunity of studying the action of luminal and I have found that, except in cases of epilepsy, in which cases the number of fits was reduced very considerably, the drug was very disappointing. The dose we give here is 2 gr. twice daily. Larger doses when tried as a sedative or hypnotic have not given satisfactory results, in fact very disappointing, as the patient becomes stuporous, restless, and in a few cases the sphincters were relaxed. Gradual decrease in the dose of luminal is essential, but a sudden cessation may cause the same symptoms as a large dose.

I am, Sir, yours faithfully,
S. Grossman,
Assistant Medical Officer, Cardiff City Mental Hospital.

Sept. 22nd, 1925.

Medical News.

Fellowship of Medicine and Post-Graduate Medical Association.—The Fellowship of Medicine will hold a series of lectures on Tuberculosis in the Lecture-room of the Medical Society, 11, Chandos-street, in October. The opening lecture will be delivered on Oct. 12th at 5.30 P.M. by Dr. L. S. Burrell on Tuberculosis *from the Physician's* Viewpoint. There is no fee for this series, and all members of the medical profession will be welcomed. During October there will also be held the *following* courses: Diseases of the Throat, Nose, and Ear at the Central London Throat, Nose and Ear Hospital (an *operative surgery class* will also be held); a course in Tropical Medicine, consisting of eight clinical demonstrations on Tuesdays and Thursdays; a combined course in Diseases of Children at the Paddington Green Hospital, Victoria Hospital, and Children's Clinic; a course in Urology at St. Peter's; and a course in Dermatology at St. John's. Copies of any syllabus, together with the Fellowship programme, may be obtained from the Secretary, at 1, Wimpole-street, W. 1.

Charing Cross Hospital Medical School.—The distribution of prizes to students by Sir Herbert Waterhouse will be made in the out-patients' hall of the hospital on Monday, Oct. 5th, at 3.30 P.M.

University of London: University College.—On Monday, Oct. 5th, and Tuesday, Oct. 6th, 10 A.M. to 1 P.M., first-year students of the Faculty of Medical Sciences will be received by the Senior Tutor, the Dean of the Faculty, and the Sub Dean. On Monday, Oct. 5th, 2.15 to 4 P.M., students of the Faculty of Medical Sciences other than first-year will be received; on the same day at 3.15 P.M. candidates *for the* Diploma of Public Health will be received by Mr. Delafield, Acting Head of the Department. The new buildings for anatomy, anthropology, embryology, histology, and physiology, provided by the gift of the Rockefeller Foundation of New York, are now in full use. The list of public lectures includes six on the Study of Man by Prof. G. Elliot Smith and Dr. C. F. Sonntag, and one on the Photochemistry of Vision by Prof. Fritz Weigert *of the* University of Leipzig. There will also be eight lectures on the Physiology of Hearing and Vision, which will be given by Mr. R. J. Lythgoe on Mondays and Wednesdays at 5 P.M., starting on Oct. 12th.

Lectures at King's College.—A course of ten lectures on the Histology of Nerve Tissues and Paths of Conduction in the Central Nervous System will be given by *Dr. C. Da Fano* at King's College, at 5 P.M., on Thursdays during the present session, beginning on Oct. 8th.

The People's League of Health has awarded a travelling scholarship to Miss Alice Gilby, who is a second-year medical student at the London School of Medicine for Women.

At the third annual general meeting of the British Provident Association for Hospital and Additional Services, held on Sept. 21st, a resolution was passed expressing the Association's appreciation of the services of the late Dr. J. F. Gordon Dill in the cause of the voluntary hospitals of this country.

Imperial Social Hygiene Congress.—The British Social Hygiene Council, which was lately the National Council for Combating Venereal Diseases, is organising a congress to be held at Wembley from Oct. 5th *to* 7th under the presidency of Sir Auckland Geddes. Distinguished representatives of the Dominions have agreed to take part in the discussions, and addresses will be given by Mr. L. S. Amery (*Colonial Secretary*), Mr. Neville Chamberlain (Minister of Health), and Lord Willingdon. The problem of venereal disease as it affects the *Empire* will be fully discussed.

Cork Dental Hospital.—The honorary staff of this hospital, which forms part of the North Infirmary, have resigned in a body on a number of grounds. The staff complain, generally, that the committee of management have "persistently ignored" their recommendations, even upon matters regarding which they are especially *qualified* to advise, and, more specifically, that they were not consulted upon the opening of the hospital at night, and that two salaried appointments were recently made in face of their opposition. The honorary staff has been invited to a conference with the committee of management *and* has been asked to continue duty in the meantime.

London Medical Exhibition.—From Oct. 5th to 9th the medical profession will again have an opportunity to taste, see, or handle the products of our leading drug houses and scientific manufacturing firms at the Central Hall, Westminster, S.W. The London Medical Exhibition, which is open to medical men only, will comprise the most recent organo-therapeutic, bacteriological, and pharmaceutical remedies and prophylactics; electro-therapeutic apparatus; scientific dietary; surgical instruments; hospital furniture and medical appliances, diagnostic material, and apparatus; pathological and physiological apparatus; artificial limbs, aids in invalidity *and deformity*; sick-room requisites; natural and artificial hydrotherapy; professional literature; hygienic clothing, and *so forth*. Invitation cards can be obtained from the secretary of the exhibition, 194–200, Bishopsgate, London, E.C., *or* at the Central Hall during the exhibition. The exhibition is exclusively for members of the medical profession.

Donations and Bequests.—By the will of the late Mrs. Catherine Ada Potter, of Llandaff, the testatrix left £1000 to Cardiff Royal Infirmary "to *endow* a bed in a ward to be called the Catherine Ward," and £100 in addition "on condition my grave is kept in good order and looked after by such infirmary." Among other bequests she left £100 to the Cardiff Blind Institution.—The Manchester Royal Infirmary has received £10,000 on account from a legacy by the late Miss Ann Russell.—Mrs. Ellen Margaret Smith, Aughton, Lancashire, who left £12,911, besides other bequests, including certain sums to her husband, left on his death £500 each to the School for Indigent Blind, Liverpool, the Hospital for Women, Liverpool, and the Ormskirk District Nursing Association.—The Christie Hospital, Manchester, has received a donation of £1000 from Mrs. Taylor, of Whalley Range, to endow a bed in memory of her husband and brother-in-law, Mr. Henry Marsland Taylor and Mr. James Henry Taylor, two of Manchester's oldest solicitors.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Thursday, Oct. 1st:

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.

Specimens:

Mr. Beckwith Whitehouse: (1) Endometrioma invading Bladder, from a patient who had never menstruated. (2) Intra-ligamentary Endometrioma.

Short Communications:

Mr. A. C. Palmer: Acute Purulent Salpingitis at the Third Month of Pregnancy.

Dr. A. P. Thomson and Dr. Lamb: Malignant Endometrioma with Metastases in the Lungs.

Paper:

Dr. I. C. Rubin, of New York (introduced by Mr. Clifford White): Diagnostic Value and Therapeutic Application of per-Uterine Insufflation of the Fallopian Tubes in Cases of Sterility.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.

MONDAY, Sept. 28th, to SATURDAY, Oct. 3rd.—WESTMINSTER HOSPITAL, Special Post-graduate Course in General Medicine and Surgery, and the Special Departments. 10.30 to 5.30 daily. Demonstrations, lectures, &c. Second week.—HOSPITAL FOR CONSUMPTION AND DISEASES OF CHEST, Brompton. Post-graduate Course in Diseases of the Chest. Operations, lectures, lecture-demonstrations, demonstrations of surgical cases, of cases in wards, and in special departments. Second week.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Lecture-demonstration on Treatment by Electrotherapy on Wed., Sept. 30th, and the two succeeding Wednesdays at 5.30 P.M., by Dr. C. B. Heald: The Diathermy Current—Its Uses and Application.

OPENING OF LONDON MEDICAL SCHOOLS.

TUESDAY, Sept. 29th.—GUY'S HOSPITAL. Address by Major Ian Hay Beith (Ian Hay).

THURSDAY, Oct. 1st.—ST. BARTHOLOMEW'S HOSPITAL. Old Students' Annual Dinner in Great Hall of Hospital. Chairman: Mr. J. Adams.—CHARING CROSS HOSPITAL. Annual Dinner.—ST. GEORGE'S HOSPITAL. School Dinner at Hyde Park Hotel. Chairman: Dr. Ashton Warner.—KING'S COLLEGE HOSPITAL. 2.30 P.M., Introductory Address by Sir Arthur Keith. 7 P.M., Annual Dinner of Past and Present Students at Connaught Rooms, Great Queen-street.—LONDON HOSPITAL. Annual Old Students' Dinner, Trocadero Restaurant, Piccadilly Circus.—MIDDLESEX HOSPITAL. 3 P.M., Prize Distribution in Queen's Hall by Hon. Sir Arthur Lawley; Inaugural Address by Dr. C. E. Lakin on Tradition in Medicine. Annual Dinner, New Criterion Restaurant, Regent-street. Chairman: Sir Arnold Lawson.—WESTMINSTER HOSPITAL. 3 P.M., Inaugural Address by Prof. A. E. Gardner in Board Room of Hospital.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, Sept. 29th.—4.15 P.M., Mr. H. H. Rayner: A Survey of the Treatment of Duodenal Ulcer.

FRIDAY, Oct. 2nd.—4.15 P.M., Dr. E. M. Brockbank: High Blood Pressure as a Cause of Disablement in Workers.

Appointments.

DOW, D. R., M.D., Ch.B. St. And., D.P.H., has been appointed to the Chair of Anatomy, University College, Dundee.

GIRI, D. V., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg., .O. Oxf., Honorary Surgeon to the Royal Eye Hospital, Eastbourne.

HEWAT, A. F., M.B., Ch.B. Edin., F.R.C.P. Edin., Acting Physician to the Chalmers Hospital.

MUIRHEAD, JANET L. A., M.B., Ch.B. St. And., Tuberculosis Officer for the Burgh of Arbroath.

WOLFENDEN, H. F., M.D., F.R.C.S., Honorary Surgeon, Royal Infirmary, Liverpool.

Queen Charlotte's Maternity Hospital: LANKESTER, A. L., M.R.C.S., L.R.C.P. Lond., Senior Resident Medical Officer, and NELKEN, G. J. V., B.S. Lond., Assistant Resident Medical Officer.

Vacancies.

For further information refer to the advertisement columns.

Bath, Royal United Hospital.—H.P. £125.

Belgrave Hospital for Children, 1, Clapham-road, S.W.—H.S. and Asst. H.P. Each at rate of £100. Also Asst. S. 50 guineas.

Birmingham General Hospital.—Asst. S. £50.

Chelsea Hospital for Women, Arthur-street, Chelsea, S.W.—S.

Colchester, Essex County Hospital.—Radiologist.

Delhi, India, Lady Hardinge Medical College and Hospital.—Radiologist. Rs.750.

Eastern Dispensary, Leman-street, E.—P. £65.

Hackney Hospital, 230, High-street, Homerton, E.—Jun. Asst. M.O.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. and H.P. At rate of £150 and £100 respectively.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S., H.P., and Asst. Cas. O. Each at rate of £50.

King's College Hospital, Denmark-hill, S.E.—Clin. Assts. Med. and Surg. Out-patient Officers, &c.

Lucknow University.—Prof. of Surgery. Rs.1200–50–1400.

Manchester, Ancoats Hospital.—Asst. Surg. Reg. £40.

Manchester Babies Hospital, Burnage-lane, Levenshulme.—Res. M.O. At rate of £125. Also Clin. Asst. At rate of £50.

Manchester Royal Infirmary.—Res. M.O. and Asst. M.O. At rate of £200 and £100 respectively.

Mental Hospitals Service under the L.C.C.—Eighth Asst. M.O. £432.

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Asst. Cas. O. At rate of £100.

Miller General Hospital for South-East London, Greenwich-road, S.E.—Pathologist. £500.

Norfolk County Council.—Asst. Tub. O. £600.

Norwich City.—Temp. Asst. Sch. M.O. £11 11s. weekly.

Paddington Green Children's Hospital, W.—H.P. and H.S. Each at rate of £150.

Royal Chest Hospital, City-road, E.C.—Res. M.O. and H.P. At rate of £150 and £100 respectively.

Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Registrar. £100 guineas.

Royal Northern Hospital, Holloway, N.—P.

St. Luke's Hospital, Chelsea, S.W.—Third Asst. M.O. £325.

St. Pancras Metropolitan Borough.—Asst. M.O. £600.

Salford Royal Hospital.—Radiologist. £300. Also Med. Reg. £250.

South Shields County Borough.—Ven. Diseases M.O. £750.

South Shields, Ingham Infirmary.—Jun. H.S. £150.

Throat Hospital, Golden-square, W.—Two H.S.'s. At rate of £100. Also Hon. Surg. Reg.

Torquay, Torbay Hospital.—Res. M.O. £200.

Whipps Cross Hospital, Leytonstone.—Specialist Consultant in Light Treatment. £300.

Willesden Urban District Council.—Two M.O.'s. Each £600.

York City Mental Hospital, Fulford, York.—Asst. M.O. £440.

Births, Marriages, and Deaths.

BIRTHS.

BUCHANAN.—On Sept. 13th, at a nursing home, the wife of John V. Buchanan, M.B., Ch.B., Dale House, Shaw, Lancs, of a daughter.

COLLINS.—On Sept. 11th, at Garden Reach, Buckhurst Hill, the wife of Dr. F. Garland Collins, of a daughter.

LYNHAM.—On Sept. 10th, the wife of Dr. J. E. A. Lynham, of The Moorings, Matham-road, East Molesey, of a son.

MARRIAGES.

DUGUID—BENZIE.—On Sept. 17th, at King's College Chapel, Old Aberdeen, John Bright Duguid, M.D., Lecturer on Morbid Anatomy, Manchester University, to Agnes Mildred Emslie, M.B., Ch.B., D.P.H., elder daughter of Mr. and Mrs. A. Emslie Benzie, of Morkeu, Cults, Aberdeenshire.

DEATHS.

GATLEY.—On Sept. 20th, at Surbiton-road, Kingston-on-Thames, Henry Ralph Gatley, M.R.C.S., aged 67.

KIRKNESS.—On Sept. 19th, at The Haven, Pembury, Tunbridge Wells, suddenly, of pneumonia following influenza, William Ronald Kirkness, M.R.C.S., L.R.C.P.

RUSSELL.—On Sept. 20th, at Haytor, Devonshire, James W. Russell, M.A., M.D., F.R.C.P., of Chad-road, Edgbaston, Birmingham, in his 63rd year.

RYAN.—On Sept. 18th, at The Laurels, Crumlin, Mon., Edmond Ryan, M.D.

SALAMAN.—On Sept. 19th, at Bayswater-terrace, London, Colonel S. M. Salaman (I.M.S., retd.), aged 81 years.

STEELE.—On Sept. 15th, Henry Francis Arthur Steele, M.R.C.S., aged 75.

WEBB.—On Sept. 13th, at Haverstock-hill, Vere George Webb, M.R.C.P.I., aged 73.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

SELECTION OF COD-LIVER OILS FOR MEDICINAL USE.[1]

By J. C. Drummond, D.Sc., F.I.C.,
PROFESSOR OF BIOCHEMISTRY, UNIVERSITY COLLEGE, LONDON.

It is almost generally accepted at the present time that the beneficial influence exerted by cod-liver oil on certain conditions of malnutrition is due largely to the presence in relatively high concentrations of at least two organic substances provisionally classed as vitamins. Older theories that ascribed the action to the peculiar nature of the unsaturated fatty acids in fish liver oils, or to the traces of iodine which they frequently contain, have been disproven by the demonstration that the material which resists saponification when the oils are treated with an alcoholic solution of caustic alkalies, and which can then be separated by extraction of the soap solution by suitable solvents, contains all the active substances. Such material from the method of its preparation can contain no unsaturated fatty acids, nor is it found to contain even minute traces of iodine.

Source of Vitamins in Cod-liver Oil.

In collaboration with Dr. Zilva, of the Lister Institute of Preventive Medicine, the writer has for a number of years past carried out an exhaustive series of researches to ascertain the source of the vitamins in cod-liver oil, and the cause of the variations which occur in the amount present. The result of these studies is not without some practical interest to the medical practitioner, because quite a number of views seem to be still widely held that have been found by us to have no foundation in fact.

In the first place may be mentioned the old idea that the almost black or dark brown oils prepared by the now almost obsolete process of "rotting" the livers were much more valuable than the clear white oils that are generally sold to-day. For this view we found not the slightest experimental support; indeed, we were inclined to believe that the exposure of the "rotting" oils in vats to the open air and sunshine for considerable periods tended to decrease their vitamin content by causing oxidation.

The introduction of the modern method of steaming the absolutely fresh livers and thereby obtaining a clear white oil rapidly brought about the disappearance of the dark brown oils as medicinal agents, and led to a demand for higher grade products. Although the "steaming" process appears first to have been used by an Englishman, Charles Fox, as early as 1848 in Newfoundland, its widespread adoption is probably due more to the labours of Peter Möller in Norway during the second half of last century. He operated factories in the neighbourhood of the Lofoten Islands, and a few years after the introduction of the improved method of extraction Norway was producing clear white oils of a much higher grade of quality than formerly. The Norwegian industry, largely centred at that time in the Lofoten Islands, when putting their oils on the market made a strong point of the fact that only livers of the cod were used, and that the oils were extracted from the livers removed from the fish very shortly after they were caught. From this has grown the idea, still widely held especially in trade circles, that only oils from the liver of the cod are of medicinal value, and that Lofoten oils are the best that can be obtained.

"Pure" Cod-liver Oil.

At an early stage in our researches Dr. Zilva and I found that the oils yielded on steaming the livers of other gadoid fish—pollock, haddock, ling, coalfish, &c.—are quite as rich in vitamins as that from the cod's liver. There is, therefore, no justification for demanding that an oil to be used for therapeutic purposes should be a "pure" cod-liver oil. In some cases to make such a demand is to run the risk that a product of rather low vitamin value may be obtained, because, as we have fully described elsewhere, in Norwegian waters "pure" cod-liver oil is only made in the Lofoten and Romsdal areas early in the year when this species is spawning on the shallow sandy banks—a period in the life of the fish when there tends to be a transference of vitamins from the liver to the gonads. There seems to be no doubt from our investigations on the fishing grounds in Norway, Newfoundland, and the North Sea that the chief factor governing the amount of vitamin in the liver of the gadoid fish is their food-supply. When the fish are actively feeding their livers are usually rich in vitamins and yield clear, pale yellow oils of very high medicinal value; on the other hand, when they are practically starving during the spawning period, and are at the same time transferring much fat and vitamin to the reproductive cells, the livers yield an almost white oil of relatively low potency.

It cannot be too strongly emphasised that it is not undesirable that oils should possess a pale lemon-yellow colour. On the other hand, it has been my experience to find that such oils usually possess a higher medicinal value than "white" oils. Only dirty yellow and brown oils, indicating unsatisfactory preparation, are undesirable.

Of the oils derived from Norway, therefore, we have usually found those from the Finmarken coast, where the fishing is carried on from June to August, while huge shoals of mixed gadoid fish pass slowly along the northern coast of Norway feeding actively on smaller species, mainly the caplin (*Mallotus villosus*), to possess the highest vitamin value. Generally speaking, they are found to be from five to ten times more valuable than the average oil prepared in the Lofoten area, although wide variations may occasionally be encountered.

High Value of Newfoundland Oils.

It is of considerable interest in the light of these observations to point out the value of the oils prepared in the Dominion of Newfoundland. Until recently the sale of oils from this source for medicinal purposes was relatively small, and they were practically ousted from the market by the strong preference for Norwegian, especially Lofoten, oils. Dr. Zilva and I ascertained, however, that the Newfoundland oils possess a very high average value as sources of vitamins, and an investigation carried out on the fishing grounds there enabled us to understand why this is so. The main fishing season, during which over two-thirds of the entire annual catch are taken, is in the summer months when the fish are off the east coast of the island, the remainder being caught in spring and winter in the Gulf of St. Lawrence, the Straits of Belle Isle, or off the Labrador coast. During the whole of the main fishing season the fish are actively feeding, early in the summer on the caplin, later on squid and herring. The oils made during this period are, therefore, found to be of high vitamin value, and comparable with the oils made in summer in the Finmarken area of Norway, with the exception that the Newfoundland oils are prepared practically entirely from cod.

Compared with Norwegian oils the proportion made during periods when the fish are spawning is very small in Newfoundland, and it is to this that Dr. Zilva and I are inclined to ascribe the high average value of the Dominion products.

Quality of the Oil from the Trade Aspect.

There remains, however, one important question that is frequently raised when the superior nutritive value of the oils from our oldest colony is emphasised—namely, the quality of the oil as viewed from the trade aspect. In the past the Norwegians have undoubtedly captured the market by the obvious superiority of their products. Their oils have been clear, free from marked coloration, and more particularly from the unpalatable characteristics of oils prepared from old livers or by unsatisfactory processes. To a large extent this superiority was the cause of the strong prejudice against oils other than Norwegian which still survives, but matters are very different at the present time. In 1916, by an Act of the Newfoundland Legislature, the production of all cod-liver oil in the Dominion was put under the control of the Ministry of Marine and Fisheries. Every manufacturer is now required to hold a Government licence, to conduct his preparation according to certain rules laid down to ensure cleanliness, &c., and to permit his factory to be open to Government inspection and supervision. Great care is now taken by manufacturers to comply with the regulations, to see that no discoloured or stale livers are placed in the vats, to remove the gall-bladders, to maintain strict cleanliness of utensils, and in all ways to produce a product of high technical and market quality. A fuller description of the actual process, as now being worked in the Dominion, is given in our report in the *Journal of the Society of Chemical Industry* (1923, lii., 185 T and 250 T).

There should no longer be any prejudice against oils from Newfoundland, and it is fully time that medical men realise that we have within the Empire a source of medicinal cod-liver oil of very high quality in every sense. It may here be remarked that an American group of scientists visited Newfoundland shortly after our investigation had been made and confirmed our conclusions in all essentials. An immediate result of this has been that a number of the chief firms in the United States interested in cod-liver oil, or preparations containing this oil, have decided to erect their own factories in Newfoundland or to employ only oil from that source.

I am indebted to Major Victor Gordon, the High Commissioner for the Dominion of Newfoundland, and to Mr. W. A. Munn for the following figures representing the annual production since 1913. If they be compared with the figures representing the Norwegian output, for which I am indebted to H.B.M. Consul at Bergen, it will be seen that there is generally an inverse relationship. This opens up an economic question which it is inappropriate to discuss here, but it is certain that Newfoundland could supply much larger quantities of oil for medicinal use in this country if its uniformly high nutritive value were sufficiently appreciated by the medical profession and the public.

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[1] This communication was written at our request, as it was found that information concerning Newfoundland cod-liver oil was needed by the medical profession.—Ed. L.

Comparison of Production of Medicinal Cod-liver Oil in the Dominion of Newfoundland with the Export from Norway for the Years 1913–24.

Year.	Newfoundland.		Norway.	
	Gallons.	Value (dollars).	Hectolitres.	Kroner per hectolitre.
—	41,000	18,122	—	—
1913	45,990	69,000	45,990	69·00
1914	26,000	17,010	63,025	55·00
1915	47,700	35,837	112,800	180·00
1916	142,000	254,562	56,010	360·00
1917	214,000	471,620	23,399	240·00
1918	321,000	674,093	12,425	240·00
1919	342,000	832,352	35,283	344·00
1920	291,000	726,852	49,347	275·00
1921	48,000	79,982	71,478	92·00
1922	48,000	28,265	65,860	92·90
1923	51,000	36,967	98,290	100·70
1924	42,000	31,462	115,263	—

Oils Prepared in Great Britain.

In conclusion, brief mention should be made of the oils prepared in this country. Until quite recently the amount of medicinal oil prepared from fish landed at ports in Great Britain was negligible, the livers usually being thrown away or landed in a state of decomposition so advanced as to render them unfit for the manufacture of any form of oil other than commercial "cod oil," a technical product used mainly in the leather industry or for conversion into soap. Within the last year or two certain manufacturers have made arrangements for steaming the fresh livers on board the trawlers at sea, and an appreciable quantity of oil of quite good market quality is now being made for medicinal use. As far as Dr. Zilva and I could determine the average vitamin value of these oils is fairly high, but we have not had the opportunity of making so extensive an examination as we had in Norway and Newfoundland. The fish are caught over a wide area, extending beyond the North Sea to the Faröe Islands, Iceland, and even as far as the White Sea. Probably no great proportion of spawning fish are present in the catch, even in the early months of the year, but we have no definite information on this point. It is certain, from a considerable number of samples that we have examined, that cod-liver oils of good trade quality and high medicinal value can be placed on the market by manufacturers in this country if they are prepared to go to the trouble of working up the livers immediately after the fish are caught. Usually this means the installation of steaming plants, which, however, may be of very simple construction on the trawlers, as the majority of the boats are away from port for periods of from one to six weeks.

PUBLIC HEALTH IN BOMBAY.

THE population of Bombay at the 1921 census numbered 1,175,914, and at the middle of 1923 was estimated at 1,220,120, on which latter figure the birth and death ratios have been calculated. The birth-rate was 17·20 per 1000; or, if calculated on the census population, the ratio would be 17·85. In that year the birth ratio for the Presidency, as a whole, was 33, and for the city 16. The explanation of this low ratio is stated by Dr. J. E. Sandilands, Executive Health Officer, who presents this report, to be due partly to the custom whereby married women leave the city for their confinement, and so register their children in the mofussil districts where they are born, and partly because some births in the city are not registered. 1487 births were inquired into in 1922 and 1923, and it was found that 68 per cent. only of these infants were born in Bombay, [illegible] having been born elsewhere; and, out of 8632 [illegible] during the year, 31 per cent. occurred in [illegible] "Of the [illegible] born outside [illegible] more be [illegible] where"; [illegible] be

JANET L. A[illegible] the Burgh [illegible] E., M.D., one-third [illegible] erpool. registered, [illegible] Maternity 100. Th[illegible] 1000

Lingaits is obviously due to an understatement of the Lingait population in the census returns." The registered births numbered 146, and the deaths 339; the Lingait population is stated to be 866. Disregarding this group, the death-rate varied from 8·81 among Banias, and 11·45 among Europeans, to 29·24 for Hindus of all castes, 32·10 for Indian Christians, 34·23 in Jains, 34·89 in Anglo-Indians, and 43·73 in Mussulmans. Jains suffered most heavily from plague (2·75 deaths per 1000), the general plague mortality being only 1·08 per 1000; for Hindus of all castes 1·20, and for Europeans 0·13. "The liability to plague is not improbably due to the fact that Jains do nothing to prevent rats entering and living in their houses." Enteric fever was most fatal to the Parsees (0·64), Bhatias (0·53), and Europeans (0·45), the general enteric mortality being only 0·11 per 1000.

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In regard to the mortality from all causes in the different wards and sections of the city, the ratios varied from 16·56 per 1000 (Fort South section of Ward A), and 10·05 (Walkeshwar in Ward D), to 36·90 in Worli section (Ward G), and 42·06 in 2nd Nagpada section (Ward E). The infantile mortality varied from 236 per 1000 births in 1st Nagpada section of Ward E, and 264 in Walkeshwar section (Ward D), to 521 in 2nd Nagpada (Ward E), also in Mandvi (Ward B), 534 in Sion section (Ward F), and 548 in Byculla (Ward E). As the registration of births is faulty, the infantile deaths in relation to the *total population* at all ages are separately stated. This ratio varied from 1·86 per 1000 in Fort South (Ward A) to 9·77 in Byculla section (Ward E), and was 7·07 for the city as a whole. The excessive mortality is largely due to overcrowding; 14,302 births (68 per cent. of the total) took place in families living in a single room or sharing it with others, the infantile mortality being 524·1 per 1000 births. In families occupying two rooms the mortality was 394·5; in three rooms, 255·4; in four or more rooms, 246·5; in hospitals, only 112·2. Much work has been done to remedy this deplorable state of things by visits of nurses, attendance on confinements, provision of necessaries, of maternity homes, milk depôts, and infant welfare centres. The municipal nurses paid 54,102 visits, and attended 1014 confinements. Besides this 1773 cases were admitted to the municipal maternity homes; two infant milk depôts have been established, and the Maternity and Child Welfare Scheme of the Infant Welfare Society has made much progress.

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The notifications of infectious diseases numbered 4575, of which total 1501 were for plague, 1274 for tuberculosis, and 978 for small-pox. Plague was epidemic from Feb. 17th to June 2nd, and caused 1320 deaths (1·08 per 1000 population, as compared with 0·67, the quinquennial average). Of these 1202 occurred within the dates mentioned. The case mortality was 89 per cent. No fatal cases occurred in 1st Nagpada section of E Ward, and only one in Upper Colaba. All the other sections suffered more or less, most deaths occurring in Worli (251) and Mahim (172) sections (both in G Ward); and the highest mortality ratios falling on Mahim (3·31), Mahalakshmi (2·[illegible]2), and Worli (1·98 per 1000). The usual preventive and precautionary measures were continued during the year; infected dwellings were evacuated and disinfected, and temporary health camps established; 15,749 inoculations were performed; 725,574 rats destroyed, of which 305,283 were examined at the Parel laboratory, 2·77 per cent. being found to be infected. The percentage of infection rose from 1·63 in January and 3·55 in February to 6·75 and 7·42 in March and April. It then declined to 2·10 in June and 1·27 in July, and was below 1·0 per cent. for the rest of the year.

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Influenza was registered as causing only 250 deaths (0·20 per 1000), as compared with 1·77 per 1000, the quinquennial average; but respiratory diseases, to which influenza deaths are frequently attributed, caused 14,099 deaths, as compared with 13,614 in the previous year. Tuberculosis caused 1871 deaths (1·12 per 1000), a satisfactory continuation of the improvement during recent years. In the decennium 1913-22, the mortality had averaged 1·95, and in 1922 it was 1·22 per 1000. The work carried on by the King George V. Antituberculosis League was taken over by the municipality in July. There are two dispensaries in the city, and a sanatorium with 82 beds on Bhoiwada Hill, Parel, known as the Turner Sanatorium; 1129 cases were treated at the dispensaries, and the medical officers visited 1258 patients too ill to attend personally.

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INFANT prodigies are always interesting in their infancy, but very few of them remain at all noteworthy in their later years. William Robert Grossmith, the son of a Reading picture-frame maker, was something of an exception to this rule. After an astonishing career as a child actor at 6 years old he lived to give his name to the firm of W. R. Grossmith, of Burleigh-street, Strand, which continues to make artificial limbs under its auspices. William Robert Grossmith (1818-99) was the elder brother of George Grossmith, the journalist and entertainer, who founded the branch of the family celebrated as humorists and actors. In many ways William was the more remarkable child. His abilities astounded his family before he could lisp, and when he was 6 years old his father took him to London to see James Jones, the founder of the Coburg Theatre, which has now become the Old Vic. Jones was so struck with his precocity and brilliance that he was allowed to appear at the Coburg in 1824 with songs as a Jew and as a country bumpkin. In a later appearance as Richard III. he got an excellent press. Even the *Times* was moved to remark: "We were much gratified with the performance of the Infant Grossmith, who really exhibits a most wonderful theatrical talent, and which, if well cultivated, will at a future period produce some brilliant acting." He then performed for a week each at the Surrey and Sadler's Wells; but his father declined further engagements, and he returned home. His development could not, however, be stayed, and in a short time he increased his repertory to include violin-playing, recitations, and mimicry, the acting of several Shakespearean characters, and the playing of "musical glasses." A small movable theatre was built for him and he set out on a series of tours of England, starting in his native town, where he entertained 300 people for nearly three hours with dance, drama, and song. His remarkable powers won him the title of The Young Roscius, in contrast to that of The Infant Roscius, conferred on William Betty (1791-1874), who made a fortune and retired at 17. Grossmith became so famous that a short book ("The Life and Theatrical Excursions of William Robert Grossmith, the juvenile actor, not yet nine years of age," 1827, Reading) ran through at least two editions. It is not known when he left the stage, although it is certain that he did not continue on it in manhood. He was apprenticed to the business of an artificial limb-maker with John Henry Sleath, the inventor of the kneeling artificial knee, who had started business in 1760. Grossmith succeeded to the business in 1813, and in 1857 set forth his story in a pamphlet entitled "Amputations and Artificial Limbs," dedicated to William Lawrence, F.R.S., President of the Royal College of Surgeons. He became a charming old man, and throughout his life retained the sense of humour which had made him a comedian at six years of age.

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THE Sleeping Car (Wagons-Lits) Company announces the preliminary arrangement for its winter service from Calais direct to the Riviera. The Calais-Mediterranean Express (the Blue Train) will commence running in connexion with the 10.45 A.M. Pullman train from Victoria on Friday, Nov. 6th, and will run via Paris until Feb. 9th, after which date it will run daily direct from Calais to the Riviera without calling in Paris, a separate "Blue Train" being run from Paris daily from Feb. 10th. Six other daily services will run to the Riviera from Calais, and from Paris, with improved sleeping cars. Plans for the return journeys of these services will be kept in London to enable passengers to secure the required accommodation for the homeward journeys before leaving London. Bookings may be made at 20, Cockspur-street, London, S.W. 1.

APPARATUS FOR ACTINO-THERAPY.

WE have reached the season when the sun is below the horizon for half or more of the 24 hours, and the oblique rays, even when there is no cloud, are largely absorbed by water-vapour and atmospheric impurities. Hence all the supplies of artificial light are of enhanced value.

The tungsten arc lamp made by the Medical Supply Association (167-185, Grays Inn-road, London, W.C. 1.) is very well and elaborately constructed, and is useful for ultra-violet radiation when only a low amperage current is available. The electrodes used are either carbon or tungsten. The method of interchanging the electrodes could be simplified. The electrodes are adjusted by a simple, hand-controlled, regulating screw, and a spring release for adjusting the distance between them. This gives a steady burning arc, but the length of the flame and voltage across the arc varies as the carbons burn away. The lamp is made of a highly polished metal; the inner side of the lamp reflector tarnishes rapidly and gets a white deposit of metallic salts, which is difficult to clean. The focusing of the arc is not well centred, and the arrangement of the quartz lens adapter for localised treatment might be improved. The ultra-violet energy is good for near distances up to 18 in., but falls off rapidly beyond 24 in., owing to the diffused scattering of the rays.

The mercury-vapour lamps manufactured by Messrs. Kelvin, Bottomley and Baird, Ltd. (51-52, Fenchurch-street, London, E.C. 3) are of the atmospheric type. When the current is switched on, the arc is started by means of a small heating coil which surrounds a limb of mercury projecting from the arc tube. The mercury is heated up in this limb by means of the heating coil; when the mercury boils the arc is established, and the heating coil is automatically cut out of the circuit. Lamps of many descriptions and different shapes are made for local and general light treatment. They are very steady in burning and require no attention when started. The ultra-violet energy is very high, and is very constant. The quartz is made by the Thermal Syndicate, and is of a good quality. The lamp is economical and easy to run, and shows very little deterioration with prolonged use. Up to the present such lamps can only be made for direct current, but it is anticipated shortly to supply alternating current burners. The K.B.B. lamps are exceptionally useful for all work when a steady and constant service of ultra-violet energy is required.

The Hilger spectrometer is a useful apparatus for detecting ultra-violet rays in artificial sources of light. The spectroscope is a small type, and the rays after passing through the system of prisms is focused on to a uranium glass. The apparatus is still in an experimental stage, and many small alterations are necessary before it will be possible easily to adopt its use.

The interesting catalogue of the Cox-Cavendish Electrical Co., Ltd. (105, Great Portland-street, London, W.,1), collects together the most useful types of lamps now available for artificial sun treatment. It is of great guidance to the practitioner, and each type of apparatus is clearly described and well illustrated. Every endeavour is made to indicate the advantages and best way of utilising these lamps. The catalogue includes all the standard types of lamps, and should be of great assistance in helping to provide for "light" clinics. The literature is well produced, and much useful reference to current literature is adopted. The description of the flaming open carbon arc is clearly expressed and the biological standards are quoted. It is a complete and briefly classified catalogue on photo-therapy.

figures representing the Norwegian output, for which I am indebted to H.B.M. Consul at Bergen, it will be seen that there is generally an inverse relationship. This opens up an economic question which it is inappropriate to discuss here, but it is certain that Newfoundland could supply much larger quantities of oil for medicinal use in this country if its uniformly high nutritive value were sufficiently appreciated by the medical profession and the public.

Comparison of Production of Medicinal Cod-liver Oil in the Dominion of Newfoundland with the Export from Norway for the Years 1913–24.

Year.	Newfoundland.		Norway.	
	Gallons.	Value (dollars).	Hectolitres.	Kroner per hectolitre.
—	41,000	18,122	—	—
1913	45,990	69,000	45,990	69·00
1914	26,000	17,010	63,025	55·00
1915	47,700	35,837	112,800	180·00
1916	142,000	254,562	56,010	360·00
1917	214,000	471,629	23,399	240·00
1918	321,000	674,093	12,425	240·00
1919	342,000	832,352	35,283	344·00
1920	291,000	726,852	49,347	275·00
1921	48,000	79,082	71,478	92·00
1922	48,000	28,265	65,860	92·90
1923	51,000	36,967	98,290	100·70
1924	42,000	31,462	115,263	—

Oils Prepared in Great Britain.

In conclusion, brief mention should be made of the oils prepared in this country. Until quite recently the amount of medicinal oil prepared from fish landed at ports in Great Britain was negligible, the livers usually being thrown away or landed in a state of decomposition so advanced as to render them unfit for the manufacture of any form of oil other than commercial "cod oil," a technical product used mainly in the leather industry or for conversion into soap. Within the last year or two certain manufacturers have made arrangements for steaming the fresh livers on board the trawlers at sea, and an appreciable quantity of oil of quite good market quality is now being made for medicinal use. As far as Dr. Zilva and I could determine the average vitamin value of these oils is fairly high, but we have not had the opportunity of making so extensive an examination as we had in Norway and Newfoundland. The fish are caught over a wide area, extending beyond the North Sea to the Faröe Islands, Iceland, and even as far as the White Sea. Probably no great proportion of spawning fish are present in the catch, even in the early months of the year, but we have no definite information on this point. It is certain, from a considerable number of samples that we have examined, that cod-liver oils of good trade quality and high medicinal value can be placed on the market by manufacturers in this country if they are prepared to go to the trouble of working up the livers immediately after the fish are caught. Usually this means the installation of steaming plants, which, however, may be of very simple construction on the trawlers, as the majority of the boats are away from port for periods of from one to six weeks.

PUBLIC HEALTH IN BOMBAY.

THE population of Bombay at the 1921 census numbered 1,175,914, and at the middle of 1923 was estimated at 1,220,120, on which latter figure the birth and death ratios have been calculated. The birth-rate was 17·20 per 1000; or, if calculated on the census population, the ratio would be 17·85. In that year the birth ratio for the Presidency, as a whole, was 33, and for the city 16. The explanation of this low ratio is stated by Dr. J. E. Sandilands, Executive Health Officer, who presents this report, to be due partly to the custom whereby married women leave the city for their confinement, and so register their children in the mofussil districts where they are born, and partly because some births in the city are not registered. 1487 births were inquired into in 1922 and 1923, and it was found that 63 per cent. only of these infants were born in Bombay, 37 per cent. having been born elsewhere; and, out of 8632 infantile deaths during the year, 31 per cent. occurred in children who had been born outside the city. "Of the infants living and dying in the city it may therefore be assumed that, roughly, one-third were born elsewhere"; if added to the numbers registered, the birth-rate would be increased from 17 to 26 per 1000. The total birth-rate being, however, assumed to be 17·20 per 1000, the variation among different castes ranged from [illegible] and 6·50 [illegible] caste [illegible] and Lingaits is obviously due to an understatement of the Lingait population in the census returns." The registered births numbered 146, and the deaths 339; the Lingait population is stated to be 866. Disregarding this group, the death-rate varied from 8·81 among Banias, and 11·45 among Europeans, to 29·24 for Hindus of all castes, 32·10 for Indian Christians, 34·23 in Jains, 34·89 in Anglo-Indians, and 48·73 in Mussulmans. Jains suffered most heavily from plague (2·75 deaths per 1000), the general plague mortality being only 1·08 per 1000; for Hindus of all castes 1·20, and for Europeans 0·13. "The liability to plague is not improbably due to the fact that Jains do nothing to prevent rats entering and living in their houses." Enteric fever was most fatal to the Parsees (0·64), Bhatias (0·53), and Europeans (0·45), the general enteric mortality being only 0·11 per 1000.

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In regard to the mortality from all causes in the different wards and sections of the city, the ratios varied from 16·56 per 1000 (Fort South section of Ward A), and 19·05 (Walkeshwar in Ward D), to 36·90 in Worli section (Ward G), and 42·06 in 2nd Nagpada section (Ward E). The infantile mortality varied from 236 per 1000 births in 1st Nagpada section of Ward E, and 264 in Walkeshwar section (Ward D), to 521 in 2nd Nagpada (Ward E), also in Mandvi (Ward B), 534 in Sion section (Ward F), and 548 in Byculla (Ward E). As the registration of births is faulty, the infantile deaths in relation to the *total population* at all ages are separately stated. This ratio varied from 1·86 per 1000 in Fort South (Ward A) to 9·77 in Byculla section (Ward E), and was 7·07 for the city as a whole. The excessive mortality is largely due to overcrowding; 14,302 births (68 per cent. of the total) took place in families living in a single room or sharing it with others, the infantile mortality being 524·4 per 1000 births. In families occupying two rooms the mortality was 394·5; in three rooms, 255·4; in four or more rooms, 240·5; in hospitals, only 112·2. Much work has been done to remedy this deplorable state of things by visits of nurses, attendance on confinements, provision of necessaries, of maternity homes, milk depôts, and infant welfare centres. The municipal nurses paid 54,[illegible]02 visits, and attended 1914 confinements. Besides this 1[illegible]73 cases were admitted to the municipal maternity homes; two infant milk depôts have been established, and the Maternity and Child Welfare Scheme of the Infant Welfare Society has made much progress.

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APPARATUS FOR ACTINO-THERAPY.

WE have reached the season when the sun is below the horizon for half or more of the 24 hours, and the oblique rays, even when there is no cloud, are largely absorbed by water-vapour and atmospheric impurities. Hence all the supplies of artificial light are of enhanced value.

The tungsten arc lamp made by the Medical Supply Association (167-185, Grays Inn-road, London, W.C. 1.) is very well and elaborately constructed, and is useful for ultra-violet radiation when only a low amperage current is available. The electrodes used are either carbon or tungsten. The method of interchanging the electrodes could be simplified. The electrodes are adjusted by a simple, hand-controlled, regulating screw, and a spring release for adjusting the distance between them. This gives a steady burning arc, but the length of the flame and voltage across the arc varies as the carbons burn away. The lamp is made of a highly polished metal; the inner side of the lamp reflector tarnishes rapidly and gets a white deposit of metallic salts, which is difficult to clean. The focusing of the arc is not well centred, and the arrangement of the quartz lens adapter for localised treatment might be improved. The ultra-violet energy is good for near distances up to 18 in., but falls off rapidly beyond 24 in., owing to the diffused scattering of the rays.

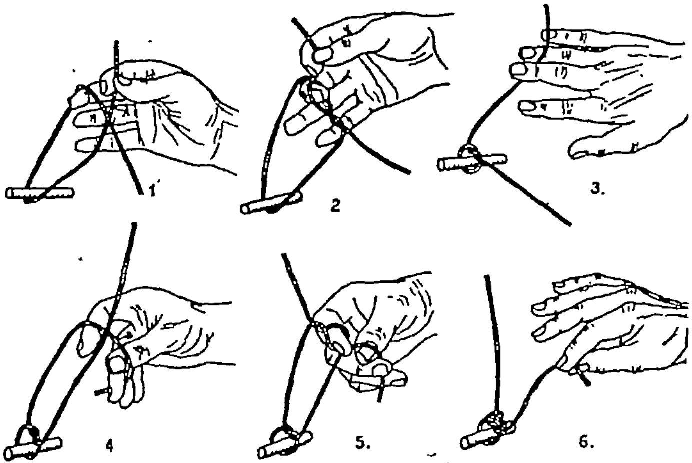
The mercury-vapour lamps manufactured by Messrs. Kelvin, Bottomley and Baird, Ltd. (51–53, Fenchurch-street, London, E.C. 3) are of the atmospheric type. When the current is switched on, the arc is started by means of a small heating coil which surrounds a limb of mercury projecting from the arc tube. The mercury is heated up in this limb by means of the heating coil; when the mercury boils the arc is established, and the heating coil is automatically cut out of the circuit. Lamps of many descriptions and different shapes are made for local and general light treatment. They are very steady in burning and require no attention when started. The ultra-violet energy is very high, and is very constant. The quartz is made by the Thermal Syndicate, and is of a good quality. The lamp is economical and easy to run, and shows very little deterioration with prolonged use. Up to the present such lamps can only be made for direct current, but it is anticipated shortly to supply alternating current burners. The K.B.B. lamps are exceptionally useful for all work when a steady and constant service of ultra-violet energy is required.

The Hilger spectrometer is a useful apparatus for detecting ultra-violet rays in artificial sources of light. The spectroscope is a small type, and the rays after passing through the system of prisms is focused on to a uranium glass. The apparatus is still in an experimental stage, and many small alterations are necessary before it will be possible easily to adopt its use.

The interesting catalogue of the Cox-Cavendish Electrical Co., Ltd. (105, Great Portland-street, London, W., 1), collects together the most useful types of lamps now available for artificial sun treatment. It is of great guidance to the practitioner, and each type of apparatus is clearly described and well illustrated. Every endeavour is made to indicate the advantages and best way of utilising these lamps. The catalogue includes all the standard types of lamps, and should be of great assistance in helping to provide for "light" clinics. The literature is well produced, and much useful reference to current literature is adopted. The description of the flaming open carbon arc is clearly expressed and the biological standards are quoted. It is a complete and briefly classified catalogue on photo-therapy.

A "SINGLE-HANDED" SQUARE KNOT.

Dr. F. G. Meynen, in a current issue of the *Journal of the American Medical Association* (August 22nd, p. 579), describes a simple and easy method of tying a square knot which, once the knack is acquired, possesses the following advantages: It is rapid and cannot fail to tie "square"; only one hand (the right) is directly used; at no time is it necessary to drop either end of the suture—each movement leading naturally with the succeeding one without rearranging the grasp. It is adaptable to all purposes and positions. Dr. Meynen describes the procedure thus: "It is essential to remember that the long end (if there is a choice) should always be grasped by the left hand. In the drawings, for the sake of simplicity, the long end is left free without indicating the left hand. Assuming that the long end comes out of the wound on the far side from the surgeon about to tie the knot (as is the case, for example, when the first knot in a continuous suture is tied by an assistant for the operator), it is grasped by the left hand, while the short end is grasped about 1 inch from the end between the thumb and index finger of the right hand with the palm down. The palm is immediately turned upward with the suture lying across the fingers and the longer end brought into the position shown in Fig. 1. The middle finger is then hooked under the portion of the suture marked *A*, as in Fig. 2; this is drawn through the loop by grasping it between the middle and ring fingers, and first single knot drawn tight as in Fig. 3. The same firm grasp being kept with the middle and ring fingers, the palm is turned somewhat upward, the thumb and first finger being placed under the suture and the long end in the position shown in Fig. 4. The tip of the index finger is then hooked under the portion marked *B*, as in Fig. 5, drawing it through the loop and grasping it between the thumb and index finger as soon as it is through, and the knot is drawn tight and completed as in Fig. 6. Should a third knot be desired, the hand will be found in a position ready to repeat the first manœuvre from Figs. 1 to 3. Should the surgeon be desirous of tying his own suture (in which case the short end will come out on the far side of the wound and the long end on the near), he has only to begin with the manœuvres depicted in Figs. 3 to 6 and end with Figs. 1 to 3.



Steps in tying the knot.

"This method is particularly suitable and rapid for ligating vessels with a long ligature wound around the fingers of the left hand. It must be remembered, however, to begin with Fig. 1, when the long end comes up on the far side of the clamp, and with Figs. 3 to 6 and then Figs. 1 to 3 when the long end comes up on the near side of the clamp. This decision will come instinctively with practice. The knot can be tied easily in two seconds."

"DORMA" EAR PADS.

THESE pads are designed to relieve sufferers from head noises. They are to be placed in front and behind the ear—there are both single and double pads—where they are retained in position by elastic bands. A point is made of the free circulation of air between the meatus and the pillow on which the patient is resting, and it is claimed that throbbing noises due to heart action, which are sometimes very distressing, are much or wholly suppressed. Under the advice of a medical man the apparatus should prove useful, and our readers might have cases in which they could be employed. The apparatus in the single form costs 15*s*., and in the double form 25*s*., from the Dorma Manufacturing Co., 25 and 27, Quadrant Chambers, New-street, Birmingham.

THE UNMARRIED MOTHER.

THE National Council for the Unmarried Mother and her Child, which has issued its seventh annual report, has to contend against public apathy, and against those whose anxiety for public morality makes them pretend that unmarried parents do not exist. There are also those who think illegitimate children poor specimens best out of the world; those who would fight for the child's welfare, but care nothing for the mother, and those who wish to "rescue" the mother but would allow the child to be adopted. The Council is strongly against separation of the mother and child, from the point of view of both. The death-rate of illegitimate children in their first year (132 per 1000 births in 1923 in England and Wales) is twice that of children born in wedlock, and the Council attributes this partly to artificial feeding or early weaning encouraged by the idea that the child can be adopted. Besides activity on behalf of actual cases—628 during last year—the Council is attempting to get the existing Bastardy and Affiliation Acts reformed. The Legitimacy Act, now almost law, and Captain Bowyer's Bastardy Bill represent some of its aims, which include the hearing of affiliation cases before the child's birth, payment by the father towards pregnancy and confinement expenses, and improvement of the legal position of adopted children. The offices are at Carnegie House, 117, Piccadilly, London, W. 1.

A USEFUL CATALOGUE.

WE have received from Messrs. May and Baker, Ltd., Battersea, London, an interesting catalogue of their pharmaceutical specialties. The catalogue gives information concerning a number of pharmaceutical products supplied by the manufacturers which have been noted in our columns at different times. The indications for the employment and the technique for the administration of such well-known drugs as arsenobillon, novarsenobillon, and stovarsol are clearly set out, the last two preparations of the firm having been tested biologically by the Medical Research Council and approved by the Ministry of Health. The firm supplies also vaccines for the treatment of gonorrhœa which have been prepared by the pathological laboratory of the London Lock Hospital, as well as some well-known preparations of bismuth.

THE PRIVATE COUNSELLOR.[1]

IN writing this work the author's desire has been to provide the layman with a book dealing with the more common diseases and derangements of the male generative organs. That there is a deplorable amount of ignorance on the subject of sex with much resulting harm we are convinced. At the same time it is probable that this work by an anonymous medical writer will in the end leave his readers in a worse state than that in which it found them. The pages contain vivid descriptions of the ravages of untreated syphilis and of the deplorable condition of individuals who persist in self-abuse. Thus, in the chapter on syphilis we hear that this disease "breaks down the vigorous and lusty youth, covering the body with loathsome ulcers or destroying the bones, and thus defacing the manly beauty of the human face divine." We fear that the work is calculated to precipitate a breakdown in the person whom it is intended to help. A morality built on fear is a poor thing, and fear is the mainspring of this work. Even if the author does not intend to frighten he will do so. No layman can read a medical work without the risk of believing himself to be the victim of some of the disorders described within its covers, and many a sexual neurosis has resulted from an unwise excursion into medical literature. Whilst believing that the author's intentions are excellent, we deplore the result of his efforts.

Col. J. S. Riddell, A.M.S. (T.), O.B.E., M.V.O., has been appointed a Deputy-Lieutenant for Aberdeen.

T. L. A., with whose views we have considerable sympathy, has omitted to enclose his address.

T. D.—There seems no room for hypnotic phenomena in the interesting case related, although hypnotists have been known to use light chloroform anæsthesia to aid the induction of a hypnotic state. The case is probably one of a delusional system related to paranoia, inasmuch as intellect is unimpaired and there are no neurotic symptoms. Time will show.

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[1] The Private Counsellor. By a Medical Practitioner. London: Educational Press. 1925. With 24 plates. Pp. 197. 6*s*. 6*d*.

THE
Origin and Significance
OF
POSTURAL (ORTHOSTATIC) ALBUMINURIA.

By JAMES W. RUSSELL,* M.D. Camb., F.R.C.P. Lond.,

PHYSICIAN TO THE BIRMINGHAM GENERAL HOSPITAL; JOINT PROFESSOR OF MEDICINE IN THE UNIVERSITY OF BIRMINGHAM.

By *the term postural (or orthostatic) albuminuria* I mean nothing more than an albuminuria which develops in the upright position and ceases when the patient lies down. It is commonly used to imply a special form of albuminuria, "functional" or mechanical in origin, constituting a more or less defined clinical condition and tending to affect a special type of patient—children or young adults, often of poor physique, with low blood pressure and cold extremities, excreting globulin in excess of albumin. Whilst admitting the convenience of using the name only for the cases in which urine secreted in bed is free from albumin, I do not agree that the condition is always "*functional*" in nature, or is to be found in any particular type of patient, and I think that the limitation of the conception of the effect of posture on albumin excretion to the cases in which the bed urine is entirely free from albumin robs the symptom, as I would prefer to regard it, of much of its significance. The object of this paper, the outcome of five years' study of the subject, is to bring forward evidence in favour of the view that many cases of purely orthostatic albuminuria are the result of infection, and secondly to establish the point that the orthostatic reaction, in the true sense of the term, is common alike to the supposedly functional cases and to most, if not all, cases of nephritis, and, indeed, possibly to most forms of albuminuria.

In the *Quarterly Journal of Medicine*, January, 1923, I published a study of a series of cases of orthostatic albuminuria, based upon graphic records of the albumin output. The results were not altogether in accordance with the views usually held as to the functional nature of these cases, and it was especially noted that the orthostatic response, in nearly all its features, was met with in certain cases of mild nephritis. On this, as well as on other grounds, the provisional suggestion was made that orthostatic albuminuria might, in some instances at any rate, be the outcome of a past renal infection of mild degree. Since writing that paper I have continued to investigate all the cases of the condition occurring in my wards and in private practice, and I have now some fresh evidence to offer in support of the suggestion.

METHOD OF MEASUREMENT OF ALBUMIN.

The albumin measurements recorded in the *Quarterly Journal* and in the present communication have all been obtained by the method of estimation described in detail in the former paper, and more briefly in THE LANCET of Oct. 27th, 1923. Its advantages are that it makes possible the measurement of any quantity of albumin, down to the smallest trace. It would take too long to repeat here the description of the method. I may merely say that it depends upon the number of dilutions needed to reduce a cloud of coagulated albumin to the point at which it matches a standard haze. Further that the standard I now use is made by mixing together half a cubic centimetre each of a 0·014 per cent. solution of barium chloride and magnesium sulphate respectively, and adding, after the haze has developed, 10 c.cm. of distilled water pigmented so as to imitate the colour of a pale urine. (The solutions are kept in bottles previously treated with strong hydrochloric acid in order to neutralise the alkali of the glass.) The haze so produced constitutes the "unit" of albumin, and is practically the smallest haze recognisable in a good light against a dark background. For various reasons it is inadvisable to assign to the unit any absolute value. The object aimed at is the study of the relative output of albumin under different conditions and at different times; the absolute amount passed is rarely a matter of importance. Indeed, it is open to each observer to work with the unit with which he feels that he can obtain the most accurate results, and with myself this is the smallest recognisable haze. Although, in order to save reproduction, only two charts are included in this paper, all the cases recorded have been studied by means of exact observations obtained in this manner.

THE ORTHOSTATIC REACTION.

I will not burden my paper with any long account of the natural history of the orthostatic reaction. It will be enough to enumerate the chief features, as follows: The urine secreted in bed is ordinarily free from albumin, whilst that of the upright position is more or less albuminous, the amount of albumin varying directly with the time spent in the upright position, and in inverse direction, though not, I think, exactly in inverse amount, with the quantity of urine in process of secretion. Artificial lordosis, produced in bed by means of pillows, may or may not give rise to the passage of albumin, but standing upright usually, and standing in the position of lordosis invariably, produces an albuminuria, except during a period of diuresis. Standing in the leaning forward position abolishes the excretion of albumin.

SOURCES OF FALLACY.

There are two sources of fallacy with which I must deal before recording my evidence, inasmuch as they often interfere with the recognition of cases that are strictly orthostatic in nature, and one, at least, may easily lead to misinterpretation of my results.

(1) It is usually held that the urine passed immediately on getting out of bed by a patient suffering from orthostatic albuminuria is invariably free from albumin, and that any deviation from this behaviour excludes the case from the orthostatic group. But this statement is untrue of many genuine cases, and for an obvious reason. The albuminuria set going by the upright position continues, and sometimes increases, for half an hour or more after the return to bed, and Chart 1 shows what often happens when a patient, the subject of a postural albuminuria, gets out of bed, stands for a few minutes, and then resumes the lying-down position. In this case a boy with an obvious orthostatic albuminuria got out of bed and passed albumin-free urine. He then stood for seven minutes, returned to bed, and passed urine as soon as possible afterwards. This urine was highly albuminous. Twenty minutes later he again passed urine, being still in bed, and this urine was yet more albuminous than before. An hour after the return to bed a trace of albumin was still present. An actual increase in the albumin excretion on lying down does not always occur, and probably does not take place at all when the patient goes to bed at the end of the day with a definite albuminuria. (This he generally does, for the cessation of the albuminuria during the late afternoon and evening, supposed to characterise the orthostatic cases, is, according to my experience, altogether the exception.) But the albuminuria with which he goes to bed continues for half an hour or more after lying down, though gradually diminishing, and the retention in the bladder of this albuminous urine contaminates the night's collection and registers itself in the morning urine as a definite haze. The case is then apt to be wrongly rejected as one in which the albuminuria is not of the orthostatic variety.

This point is of sufficient importance to bear illustration by two cases.

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* An obituary notice of the late Dr. Russell, who died shortly after this paper reached us, appears in another column.—Ed. L.

A lad, aged 16, in whom an albuminuria had been discovered *on routine examination preliminary to application for admission into the Air Force*, was admitted into the Birmingham General Hospital under Dr. L. G. Parsons, to whom I am indebted for the opportunity of examining him. The albuminuria had been regarded as almost certainly of the postural variety, but *a small amount of albumin had been* persistently present in the night's collection of urine—he was up and about all day.§ On May 2nd–3rd the following *observations* were *made* :—

	c.cm. urine.		Albumin units.
9 P.M.—On going to bed	20	......	375
11 P.M.—Two hours after lying down	120	......	18
7 A.M.—On getting up	230	......	0
9 A.M.—Two hours up	30	......	220

On this occasion the bladder was emptied afresh two hours after going to bed and the morning urine was then free from albumin. Had the 11 P.M. urine been retained, the *morning specimen* would *have* contained from 6 to 7 units of albumin, a small, but quite recognisable haze.

CHART 1.

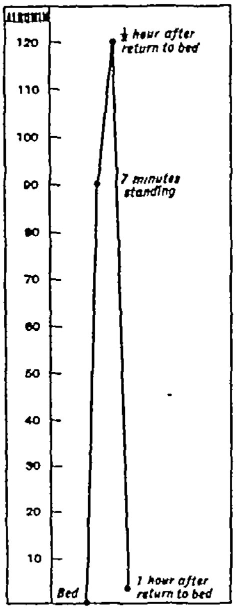
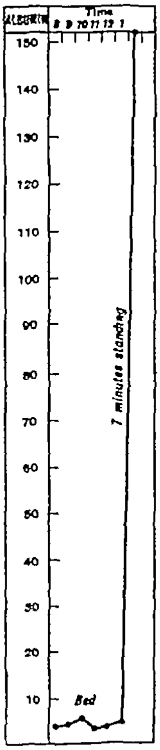


CHART 2.



The second case was that of a girl, aged 11, who was in my ward in May, 1924, with a postural albuminuria of large degree. A year later she was readmitted for further investigation, and now the morning urine regularly contained a haze of albumin. But on April 11th, after being up all day, she went to bed with an albuminuria of 90 units, and an hour later was made to pass urine again. Next morning the night's collection was entirely free from albumin.

This source of fallacy will receive further illustration in others of my cases. It is one that is not, I think, generally recognised, but unless it is kept in mind many strictly orthostatic cases will pass undiagnosed.

(2) The second source of fallacy lies in the fact that during diuresis the upright position loses its effect on the excretion of albumin. For this reason in a suspected orthostatic case it is never safe to depend upon the absence of albumin from a single plentiful specimen of urine. And even in the absence of diuresis it must always be remembered that the sitting posture also abolishes the albuminuria.

INFECTIVE ORIGIN OF MANY CASES OF ORTHOSTATIC ALBUMINURIA.

In the paper already referred to the first case studied was that of a girl in whom the albuminuria had first been discovered immediately after an attack of diphtheria. I have now to bring forward evidence pointing to a connexion between the orthostatic condition and a past attack of scarlet fever. I am aware that the origin of the condition in a former attack of scarlatinal nephritis has often been suggested, but, as will be seen, that is not exactly my contention.

CASE 1.—I am indebted to Dr. H. Savage, my former house physician, for bringing this case to my notice, and for permission to publish the details. The patient was a girl, aged 8, who was seen by him when in practice in Coventry. Two months previously the child had been admitted into *the Fever Hospital with an attack of scarlet fever, and she* was discharged at the end of six weeks, without any known abnormality of the urine. A week after her return home she was brought to Dr. Savage with œdema of the left leg and the left side of the face; the urine contained a thick cloud of albumin, and casts were found in the deposit. The girl was put to bed, and the œdema and albuminuria *at once came to an end. After a further period of rest in* bed the œdema did not return on getting up, but from that time, whilst the bed urine was invariably free from albumin, 10 minutes' standing always produced a definite cloud. On Dec. 2nd, 1923, some four months after the onset of the fever, two specimens of urine were brought to me for examination. One, passed immediately after getting out of bed in *the morning, was quite free from albumin. The other*, passed soon after standing upright for 10 minutes, contained 110 units, a fairly thick cloud. On occasions, during the next 12 months, further specimens were examined with the same result, but by the end of 1924 the immediate response *to standing had practically ceased*. Whether or not the urine of the rest of the day was albuminous I do not know, *as the case passed out of reach*.

CASE 2 was that of a young man, aged 25, who contracted scarlet fever in the army in 1918. He was treated for six *weeks in the Fever Hospital*, and was discharged without any suspicion of renal disease. A fortnight later he was examined for some routine purpose and albumin was discovered in the urine, and eventually he was discharged from the army with the diagnosis of nephritis. From that time onwards his doctor had found an "intermittent albuminuria." He consulted me in May, 1925. The blood pressure was 85/142, but I thought that the rather high systolic reading might be partly the result of excitement. The heart was not recognisably enlarged and I could find no casts in *the urinary deposit. On May 23rd he sent me a series of* specimens of urine passed at hourly intervals throughout the morning, together with one passed on going to bed the night before, with the following results :—

		c.cm. urine.		Albumin units.
11 P.M.—On going to bed..	..	42	......	90
8 A.M.—On getting up ..	..	300	......	6
9 "	..	35	......	70
10 "	..	46	......	65
11 "	..	40	......	70
12 noon	..	55	......	36
1 P.M.	..	50	......	28

The trace of albumin in the early morning specimen is easily explained by the fact that the urine was heavily loaded *at bedtime the night before, and the bladder had not been* emptied again during the night.

The two following cases suggest that a definite scarlatinal nephritis may ultimately be represented by a postural albuminuria.

CASE 3.—A girl, aged 13, was *sent into* my ward on account of an albuminuria discovered in the out-patient room. Two years previously she had had an attack of scarlet fever and her mother was informed that the kidneys were slightly affected and that the urine was "not quite right." The albuminuria was entirely postural in occurrence, though the immediate response to standing was but slight.

CASE 4 was that of a young man, aged 24, who consulted me for "nephritis." At the age of 10 he had had an attack of scarlet fever which was not at first diagnosed. In consequence he went about *for some* days and a nephritis developed. From that time albumin had been almost always found in the urine, and a year ago a very serious prognosis had been given. When I saw him in May, 1924, he was somewhat pale and complain*ed of being easily tired*. The heart was not enlarged and the blood pressure was 80/130. The urine passed in my room contained a cloud of albumin, but neither in this specimen nor in others subsequently examined was I able to find any casts. Next morning the urine passed on getting out of bed contained 8 units of albumin, and 10 minutes' standing produced a dense cloud of over 500 units. On other *occasions* the same trace of albumin was found in the bed urine, but that this was due to the continued excretion of albumin during the first period after getting to bed at night is shown by the fact that on one occasion when the bladder was emptied afresh an hour after lying down the urine next morning was absolutely albumin-free.

Post-Scarlatinal Orthostatic Albuminuria.

These cases seem to suggest, not only that a scarlatinal nephritis may eventually be represented by a postural albuminuria, but that the same condition may sometimes occur after an attack of scarlet fever in which no question as to the soundness of the kidneys has been raised during the period of retention in bed, and I thought that some further information might be obtained at the fever hospital. I accordingly took the problem to Dr. E. H. R. Harries, the medical superintendent of the Birmingham Fever Hospitals, and he most kindly gave me every facility for investigating the matter. He referred me to Dr. W. M. MacFarlane, the medical superintendent of the Lodge-road Scarlet Fever Hospital, to whom I am much indebted for placing two children's wards at my disposal, as I am also to the sisters and nurses in charge of the wards for much trouble taken in procuring the necessary specimens. Dr. MacFarlane allowed me to examine a series of specimens of urine passed some three hours after getting up in the morning by a number of children convalescent from scarlet fever, none of whom had shown any sign of albuminuria so long as they had remained in bed. On the first occasion on which this was done 10 urines were collected for my examination, and of these four contained a material quantity of albumin. Three of the albuminurias proved to be fleeting; at any rate, no albumin was discovered in any of the three two days later. But the fourth gave on that day a definite response to the standing test, the bed urine being albumin-free, and an hour later a larger albuminuria had developed. This boy went home next day, the subject, for the time at all events, of a moderate postural albuminuria.

I have now examined the urines of 83 of these children, the conditions being exactly similar in each case. Of these 83 urines, 22 contained a considerable quantity of albumin on the first examination; I have omitted several others in which the amount of albumin was very small. Seven of the 22 patients went home to my knowledge with an albuminuria of the orthostatic type, found to be present on more than one occasion, and I have added to the list five others in whom discharge from hospital prevented me from making more than one examination. The rest I have discarded—three because no albumin was found on a second examination, and others because the second examination showed only a small amount. In discarding all these I am probably altogether understating my case, for a single negative or slight result is rarely safe ground for excluding an orthostatic albuminuria, but it is better to err on that side. What has especially struck me has been the unvarying regularity with which these albuminurias have been found. I paid in all nine visits to the fever hospital and examined on an average nine urines at each visit. There was not a single occasion on which I did not obtain from two to four or more positive results. As will later be stated, such results have not been obtained in examinations made in other conditions. Particulars of the cases that have not been discarded are as shown in the table following.

The slight bed albuminurias noted on single occasions in Cases 3, 4, 5, and 7 have probably the usual explanation of contamination by the albumin excreted shortly after getting to bed the night before, for in all these cases on another day, or on other days, this urine has been found to be free from albumin. Case 6, with a slight bed albuminuria, rests on a single examination, but the same explanation probably holds. It has not been possible, however, to put the explanation to the proof which I have applied to such cases in my own wards. It is further to be regretted that I have not so far been able to follow up the after-history of these cases. There are considerable difficulties in the way, but, should opportunity offer, I shall avail myself of it. It may be, of course, that some or even all of the albuminurias may have cleared up after the return home, and this gap in the evidence is unfortunate. But the results may fairly be looked at in connexion with the first and second of my recorded cases. In these an exactly comparable orthostatic albuminuria was discovered a week and a fortnight respectively after discharge from hospital, and the albuminuria is known to have persisted for at least a year in the one case and for seven years in the other.

No. of case.	—	Units of albumin in bed urine.	Units of albumin after getting up.
1	May 24th	—	Cloud (not measured).
	„ 20th	0	9 after standing.
			20 an hour later.
2	June 7th	0	240 3 hours up.
	„ 14th	0	75 1 P.M.
			11 4 P.M.
			13 7.30 P.M.
3	„ 7th	0	130 3 hours up.
	„ 8th	0	100 1 P.M.
			50 4 P.M.
			40 7.30 P.M.
4	„ 20th	35	380 3 hours up.
	„ 28th	0	100 „
	July 5th	0	100 „
5	June 28th	0	130 „
	July 5th	0	140 „
	„ 12th	7	95 „
	„ 10th	0	160 „
6	June 28th	—	180 2 hours up.
	July 7th	0	65 3 hours up.
7	„ 12th	9	120 „
	„ 19th	0	7 „ (Urine plentiful).
8	„ 12th	0	300 3 hours up.
9	„ 12th	15	210 „
10	„ 25th	0	60 „
11	„ 25th	0	36 „
12	„ 25th	0	48 „

These cases seem to establish the fact that patients who have passed through an attack of scarlet fever without showing any albuminuria so long as they remain in bed, not infrequently develop, at any rate for a time, an orthostatic albuminuria on getting up. The interpretation remains for discussion. Four possibilities occur to me—there may be others of which I have not thought. The explanation may be one of coincidence, and all these patients may have been the subject of an orthostatic albuminuria previous to their attack of scarlet fever. Or, again, it may be that in any series of children getting up after a few weeks' illness in bed, a certain number will develop a temporary postural albuminuria—a sort of protest by the kidney against resuming work under harder conditions.

The only way of testing the truth of these suggestions is by examining a control series of children, roughly of the same age, convalescent from illnesses other than those due to specific infections. This I have attempted to do, but it has been difficult to obtain any material number of suitable cases, and for most of those that I have been able to examine I am indebted to my colleague, Dr. K. D. Wilkinson, who has found them for me at the Children's Hospital. I have now examined 35 cases and have found amongst them three instances of albuminuria of the orthostatic type. Two of these children had been in the fever hospital a few months previously with an attack of scarlet fever, and may, I think, fairly be excluded. The third had an active suppuration of the glands of the neck, and was therefore not really convalescent from her infection. If I accept this case as an example of coincidence and not the result of infection, I get a percentage of 3·1 positive results

A lad, aged 16, in whom an albuminuria had been discovered on routine examination preliminary to application for admission into the Air Force, was admitted into the Birmingham General Hospital under Dr. L. G. Parsons, to whom I am indebted for the opportunity of examining him. The albuminuria had been regarded as almost certainly of the postural variety, but a small amount of albumin had been persistently present in the night's collection of urine—he was up and about all day.] On May 2nd–3rd the following observations were made :—

	c.cm. urine.	Albumin units.
9 P.M.—On going to bed	20	375
11 P.M.—Two hours after lying down	120	18
7 A.M.—On getting up	230	0
9 A.M.—Two hours up	30	320

On this occasion the bladder was emptied afresh two hours after going to bed and the morning urine was then free from albumin. Had the 11 P.M. urine been retained, the morning specimen would have contained from 6 to 7 units of albumin, a small, but quite recognisable haze.

CHART 1.

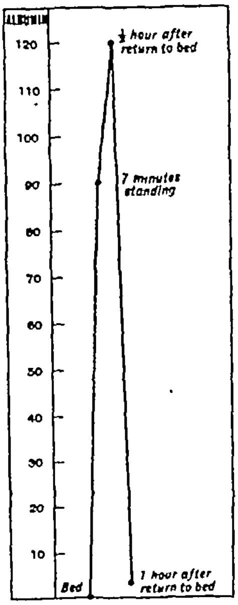
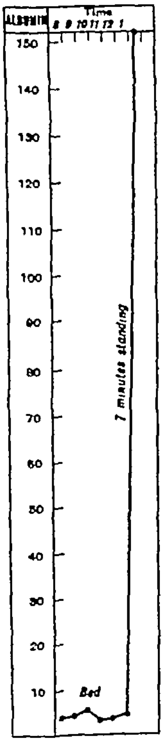


CHART 2.



The second case was that of a girl, aged 11, who was in my ward in May, 1924, with a postural albuminuria of large degree. A year later she was readmitted for further investigation, and now the morning urine regularly contained a haze of albumin. But on April 11th, after being up all day, she went to bed with an albuminuria of 90 units, and an hour later was made to pass urine again. Next morning the night's collection was entirely free from albumin.

This source of fallacy will receive further illustration in others of my cases. It is one that is not, I think, generally recognised, but unless it is kept in mind many strictly orthostatic cases will pass undiagnosed.

(2) The second source of fallacy lies in the fact that during diuresis the upright position loses its effect on the excretion of albumin. For this reason in a suspected orthostatic case it is never safe to depend upon the absence of albumin from a single plentiful specimen of urine. And even in the absence of diuresis it must always be remembered that the sitting posture also abolishes the albuminuria.

INFECTIVE ORIGIN OF MANY CASES OF ORTHOSTATIC ALBUMINURIA.

In the paper already referred to the first case studied was that of a girl in whom the albuminuria had first been discovered immediately after an attack of diphtheria. I have now to bring forward evidence pointing to a connexion between the orthostatic condition and a past attack of scarlet fever. I am aware that the origin of the condition in a former attack of scarlatinal nephritis has often been suggested, but, as will be seen, that is not exactly my contention.

CASE 1.—I am indebted to Dr. H. Savage, my former house physician, for bringing this case to my notice, and for permission to publish the details. The patient was a girl, aged 8, who was seen by him when in practice in Coventry. Two months previously the child had been admitted into the Fever Hospital with an attack of scarlet fever, and she was discharged at the end of six weeks, without any known abnormality of the urine. A week after her return home she was brought to Dr. Savage with œdema of the left leg and the left side of the face; the urine contained a thick cloud of albumin, and casts were found in the deposit. The girl was put to bed, and the œdema and albuminuria at once came to an end. After a further period of rest in bed the œdema did not return on getting up, but from that time, whilst the bed urine was invariably free from albumin, 10 minutes' standing always produced a definite cloud. On Dec. 2nd, 1923, some four months after the onset of the fever, two specimens of urine were brought to me for examination. One, passed immediately after getting out of bed in the morning, was quite free from albumin. The other, passed soon after standing upright for 10 minutes, contained 110 units, a fairly thick cloud. On occasions, during the next 12 months, further specimens were examined with the same result, but by the end of 1924 the immediate response to standing had practically ceased. Whether or not the urine of the rest of the day was albuminous I do not know, as the case passed out of reach.

CASE 2 was that of a young man, aged 25, who contracted scarlet fever in the army in 1918. He was treated for six weeks in the Fever Hospital, and was discharged without any suspicion of renal disease. A fortnight later he was examined for some routine purpose and albumin was discovered in the urine, and eventually he was discharged from the army with the diagnosis of nephritis. From that time onwards his doctor had found an "intermittent albuminuria." He consulted me in May, 1925. The blood pressure was 85/142, but I thought that the rather high systolic reading might be partly the result of excitement. The heart was not recognisably enlarged and I could find no casts in the urinary deposit. On May 23rd he sent me a series of specimens of urine passed at hourly intervals throughout the morning, together with one passed on going to bed the night before, with the following results :—

	c.cm. urine.	Albumin units.
11 P.M.—On going to bed	42	90
8 A.M.—On getting up	300	6
9 ,,	35	70
10 ,,	46	65
11 ,,	40	70
12 noon	55	36
1 P.M.	50	28

The trace of albumin in the early morning specimen is easily explained by the fact that the urine was *heavily loaded* at bedtime the night before, and the bladder had not been emptied again during the night.

The two following cases suggest that a definite scarlatinal nephritis may ultimately be represented by a postural albuminuria.

CASE 3.—A girl, aged 13, was sent into my ward on account of an albuminuria discovered in the out-patient room. Two years previously she had had an attack of scarlet fever and her mother was informed that the kidneys were slightly affected and that the urine was "not quite right." The albuminuria was entirely postural in occurrence, though the immediate response to standing was but slight.

CASE 4 was that of a young man, aged 21, who consulted me for "nephritis." At the age of 10 he had had an attack of scarlet fever which was not at first diagnosed. In consequence he went about for some days and a nephritis developed. From that time albumin had been almost always found in the urine, and a year ago a very serious prognosis had been given. When I saw him in May, 1924, he was somewhat pale and complained of being easily tired. The heart was not enlarged and the blood pressure was 80/130. The urine passed in my room contained a cloud of albumin, but neither in this specimen nor in others subsequently examined was I able to find any casts. Next morning the *urine passed on getting out* of bed contained 8 units of albumin, and 10 minutes' standing produced a dense cloud of over 500 units. On other occasions the same trace of albumin was found in the bed urine, but that this was due to the continued excretion of albumin during the first period after getting to bed at night is shown by the fact that on one occasion when the bladder was emptied afresh an hour after lying down the urine next morning was absolutely albumin-free.

Post-Scarlatinal Orthostatic Albuminuria.

These cases seem to suggest, not only that a scarlatinal nephritis may eventually be represented by a postural albuminuria, but that the same condition may sometimes occur after an attack of scarlet fever in which no question as to the soundness of the kidneys has been raised during the period of retention in bed, and I thought that some further information might be obtained at the fever hospital. I accordingly took the problem to Dr. E. H. R. Harries, the medical superintendent of the Birmingham Fever Hospitals, and he most kindly gave me every facility for investigating the matter. He referred me to Dr. W. M. MacFarlane, the medical superintendent of the Lodge-road Scarlet Fever Hospital, to whom I am much indebted for placing two children's wards at my disposal, as I am also to the sisters and nurses in charge of the wards for much trouble taken in procuring the necessary specimens. Dr. MacFarlane allowed me to examine a series of specimens of urine passed some three hours after getting up in the morning by a number of children convalescent from scarlet fever, none of whom had shown any sign of albuminuria so long as they had remained in bed. On the first occasion on which this was done 16 urines were collected for my examination, and of these four contained a material quantity of albumin. Three of the albuminurias proved to be fleeting; at any rate, no albumin was discovered in any of the three two days later. But the fourth gave on that day a definite response to the standing test, the bed urine being albumin-free, and an hour later a larger albuminuria had developed. This boy went home next day, the subject, for the time at all events, of a moderate postural albuminuria.

I have now examined the urines of 83 of these children, the conditions being exactly similar in each case. Of these 83 urines, 22 contained a considerable quantity of albumin on the first examination; I have omitted several others in which the amount of albumin was very small. Seven of the 22 patients went home to my knowledge with an albuminuria of the orthostatic type, found to be present on more than one occasion, and I have added to the list five others in whom discharge from hospital prevented me from making more than one examination. The rest I have discarded—three because no albumin was found on a second examination, and others because the second examination showed only a small amount. In discarding all these I am probably altogether understating my case, for a single negative or slight result is rarely safe ground for excluding an orthostatic albuminuria, but it is better to err on that side. What has especially struck me has been the unvarying regularity with which these albuminurias have been found. I paid in all nine visits to the fever hospital and examined on an average nine urines at each visit. There was not a single occasion on which I did not obtain from two to four or more positive results. As will later be stated, such results have not been obtained in examinations made in other conditions. Particulars of the cases that have not been discarded are as shown in the table following.

The slight bed albuminurias noted on single occasions in Cases 3, 4, 5, and 7 have probably the usual explanation of contamination by the albumin excreted shortly after getting to bed the night before, for in all these cases on another day, or on other days, this urine has been found to be free from albumin. Case 9, with a slight bed albuminuria, rests on a single examination, but the same explanation probably holds. It has not been possible, however, to put the explanation to the proof which I have applied to such cases in my own wards. It is further to be regretted that I have not so far been able to follow up the after-history of these cases. There are considerable difficulties in the way, but, should opportunity offer, I shall avail myself of it. It may be, of course, that some or even all of the albuminurias may have cleared up after the return home, and this gap in the evidence is unfortunate. But the results may fairly be looked at in connexion with the first and second of my recorded cases. In these an exactly comparable orthostatic albuminuria was discovered a week and a fortnight respectively after discharge from hospital, and the albuminuria is known to have persisted for at least a year in the one case and for seven years in the other.

No. of case.	—	Units of albumin in bed urine.	Units of albumin after getting up.
1	May 24th „ 26th	— 0	Cloud (not measured). 9 after standing. 20 an hour later.
2	June 7th „ 14th	0 ·0	310 3 hours up. 75 1 P.M. 11 4 P.M. 13 7.30 P.M.
3	„ 7th „ 8th	0 0	130 3 hours up. 100 1 P.M. 60 4 P.M. 40 7.30 P.M.
4	„ 20th „ 28th July 6th	35 0 0	380 3 hours up. 100 „ 100 „
5	June 28th July 6th „ 12th „ 19th	0 0 7 0	130 „ 110 „ 93 „ 100 „
6	June 28th July 7th	— 0	180 2 hours up. 65 3 hours up.
7	„ 12th „ 19th	9 0	120 „ 7 „ (Urine plentiful).
8	„ 12th	0	300 3 hours up.
9	„ 12th	15	210 „
10	„ 25th	0	60 „
11	„ 25th	0	30 „
12	„ 25th	0	48 „

These cases seem to establish the fact that patients who have passed through an attack of scarlet fever without showing any albuminuria so long as they remain in bed, not infrequently develop, at any rate for a time, an orthostatic albuminuria on getting up. The interpretation remains for discussion. Four possibilities occur to me—there may be others of which I have not thought. The explanation may be one of coincidence, and all these patients may have been the subject of an orthostatic albuminuria previous to their attack of scarlet fever. Or, again, it may be that in any series of children getting up after a few weeks' illness in bed, a certain number will develop a temporary postural albuminuria—a sort of protest by the kidney against resuming work under harder conditions.

The only way of testing the truth of these suggestions is by examining a control series of children, roughly of the same age, convalescent from illnesses other than those due to specific infections. This I have attempted to do, but it has been difficult to obtain any material number of suitable cases, and for most of those that I have been able to examine I am indebted to my colleague, Dr. K. D. Wilkinson, who has found them for me at the Children's Hospital. I have now examined 85 cases and have found amongst them three instances of albuminuria of the orthostatic type. Two of these children had been in the fever hospital a few months previously with an attack of scarlet fever, and may, I think, fairly be excluded. The third had an active suppuration of the glands of the neck, and was therefore not really convalescent from her infection. If I accept this case as an example of coincidence and not the result of infection, I get a percentage of 3·1 positive results amongst these children, as compared with one of 26·5 amongst similar single examinations made in the convalescent scarlet fever cases. If I give the decision wholly, and, I think, wrongly against myself, and include the two children who had recently been discharged from the fever hospital, the percentage is 8·6 against 26·5. I do not think, therefore, that either of the above suggestions will account for my results. I suppose that a third explanation might lie in some obscure vaso-motor effect of the scarlatina. But such an explanation seems too vague for serious discussion, unless one starts out with the assumption that orthostatic albuminuria must necessarily be functional in nature, and it is this assumption that I am combating.

The only other explanation that I can see is one that falls in with the impression that has gradually grown up in my mind as the result of a long study of the orthostatic reaction—namely, that this type of albuminuria is in many cases the expression of a past renal infection of mild degree, and the suggestion would then be that in these post-scarlatinal postural albuminurias we are meeting with the very smallest degree of infection of the kidney. The conception of an infection so slight that it never translates itself into an albuminuria so long as the patients are kept in the horizontal position may seem far-fetched, but I can see no inherent impossibility in the idea. It postulates a damage to the kidney far short of anything so far described in the post-mortem room, but such degrees of damage must surely exist. Whatever the explanation, the facts are as I have stated them.

My results raise a further question—namely, whether it is not possible that cases of orthostatic albuminuria, with no known history of scarlet fever, may yet have had a scarlatinal origin. Dr. Harries tells me that in his opinion many cases of scarlatinal infection probably pass unrecognised as an "ordinary" sore-throat without rash. If that is so, the absence of a history of scarlet fever in genuine post-scarlatinal orthostatic cases would be easy to understand. We are accustomed to speak of the "adolescent type" of albuminuria, as though it were only to be expected that the adolescent kidney should at times leak albumin. I see no reason why the adolescent kidney should behave in this manner, but I do recognise that childhood and adolescence are the periods of special susceptibility to specific infections.

THE CONNEXION BETWEEN ORTHOSTATIC ALBUMINURIA AND PREVIOUS SCARLATINAL NEPHRITIS.

The connexion between orthostatic albuminuria and a past attack of scarlatinal nephritis has been previously suggested. Bass,[1] in 1912, gave an abstract of three papers dealing with the subject. Weiss-Eder[2] allowed 40 children with scarlet fever to kneel in a position of lordosis, with the result that 28 developed an albuminuria. The writer concludes that children convalescent from scarlet fever are not more disposed to nephritis than other children, and that such children, having nephritis, often show an orthostatic albuminuria, "which may be due to weak muscles." Nothman[3] found that 12 out of 13 cases of scarlet fever in which at an earlier date the lordotic experiment was positive, albumin appeared later in the urine, but that in those in which lordosis did not cause albuminuria, albumin never appeared spontaneously later on. He concludes that, just as nephritis may terminate in orthostatic albuminuria, so conversely an orthostatic albuminuria may be the first sign of nephritis. Schick[4] says that orthostatic albuminuria following scarlet fever has a good prognosis, and refers to Jehle, who examined 17 children in various stages of scarlet fever. In 12 there occurred a marked albuminuria in the position of lordosis, upright and prone, but none developed a nephritis. In each case I quote from Bass's abstract.

On the other hand, Hansborg,[5] of the Blegsdam Fever Hospital, Copenhagen, after a very careful study of the after-history of a large number of patients who had suffered from scarlatinal nephritis, rejects the idea that there is any special connexion between such nephritis and the subsequent development of orthostatic albuminuria. Among 226 children and young people, who had all had scarlatinal nephritis, he found 23 (10 per cent.) with orthostatic albuminuria, "which is even a lower figure than is generally quoted in examinations of arbitrarily chosen individuals of the same age" (I quote from a translation). I gather, therefore, that Hansborg looks upon these patients as likely to have been the subjects of an orthostatic albuminuria previous to their attack of scarlet fever. While holding that no single explanation hitherto propounded accounts alone for the condition, he supports the usual view that lordosis plays, at any rate, a chief part in its causation, though he admits that in only 6 of his 23 cases was a "pathological" lordosis to be discovered. But, he adds, "what can be considered as pathological here must be *a matter* of expert opinion."

While it is desirable to include a reference to these various opinions, it is to be noted that they largely deal with two matters with which my paper is not particularly concerned—namely, the occurrence of orthostatic albuminuria as the result of scarlatinal nephritis, and the effect of artificial lordosis in patients convalescent from scarlet fever. My point is that this type of albuminuria appears to develop on getting up in patients who have not shown any sign of nephritis during rest in bed, and for this it has not been necessary to assume any position of lordosis, which, after all, is only the extreme of the upright position. That lordosis is the essential cause of orthostatic albuminuria I do not believe. The evidence in its favour has never seemed to me very conclusive, and so many of my cases have shown an absence of material lordosis on X ray examination that I have long discarded it as an adequate explanation. Hansborg's cases, again, hardly seem to afford it much support. It may be, however, that there is a type of case into the causation of which it enters, as suggested at the end of my paper.

INFECTIONS OTHER THAN SCARLATINAL.

I come now to infections other than scarlatinal. I have already alluded to a case in which the condition was discovered immediately after an attack of diphtheria, and Dr. Chalmers, of the Little Bromwich Fever Hospital, very kindly collected for me one day the urines of 18 children convalescent from diphtheria; out of over 300 cases then in hospital these were the only ones in which no albumin had been discovered during the bed period. The children had all been up three hours, and the urines were therefore strictly comparable to those of the scarlet fever series. In these 18 urines I found one with a big albuminuria (560 units) in the upright specimen, the bed urine being albumin-free. One other urine showed a trace of albumin comparable to those discarded in the scarlet fever cases. These observations are again opposed to the explanation of the post-scarlatinal orthostatic albuminurias on the ground of coincidence. I know of a man, 49 years of age, with a postural albuminuria who dated his condition from an attack of syphilis occurring many years previously, and I have come across the case of a woman with an albuminuria of the same type who had had eclampsia two years ago. But both of these cases rest on a single examination only, and I cannot attach any great importance to them. Lastly, I have under observation two boys who were in my ward with a mild attack of acute nephritis of ordinary type, and who left hospital with a bed urine that was almost free from albumin and a big upright albuminuria. They were readmitted for 24 hours, three and two years respectively after their acute attack. In one the bed urine was nearly, but not quite, free from albumin; in the other no trace of albumin was found in the bed specimen. Both developed a large albuminuria immediately on getting up. While, therefore, I think that there is a special tendency for orthostatic albuminuria to develop, at any rate for a time, in patients getting up after an attack of scarlet fever, I am far from holding that the reaction is specific to that infection.

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[1] American Journal of Diseases of Children, 1912.

[2] Wiener med. Wochenschrift, 1909, No. 18.

[3] Arch. f. Kinderheilk., No. 49.

[4] Nothnagel's System, p. 141.

[5] Acta Medica Scandinavica, Feb. 12th, 1925.

Two further points have impressed me as possibly bearing on the question of the infective origin of orthostatic albuminuria. The first is the frequency with which cases come under notice on account of symptoms of ill-health. A certain number of my cases have been discovered on routine examination for some purpose or other, but the majority have come complaining of headache, fatigue, lassitude, and occasionally some little swelling of the face. With a few days' rest in bed these symptoms have disappeared or a slow improvement has taken place. Secondly, it not uncommonly happens that a case in which such symptoms are present on admission shows at first an exaggerated response to the upright position, which also diminishes with rest in bed. For example, a boy, aged 13, was admitted from the out-patient room complaining of general ill-health. On Nov. 20th, 1924, seven minutes' standing gave rise to an enormous albuminuria (650 units), whilst on Dec. 1st eight successive hourly specimens passed in bed were all entirely free from albumin. A fortnight later he was up with quite a moderate albuminuria—a maximum of 40 and 50 units, whilst standing now produced but a small response. But I would add that the variations in the response to the upright position in these cases are often so extraordinary that I must not attach too much importance to an apparent improvement such as is shown in this case. It may be that a few more observations would have upset the conclusion, and I have one case in mind in which a similar apparent improvement was suddenly reversed during the patient's stay in hospital.

RELATIVE PROPORTIONS OF GLOBULIN AND ALBUMIN.

I may briefly refer to the question of the preponderance of globulin over albumin in the urine, almost universally accepted as marking off the orthostatic cases from those of albuminuria of organic origin. My experience does not support the distinction. Certainly, if it holds, the organic nature of most of my cases of orthostatic albuminuria is definitely proved, but the relationship seems to me altogether too variable for use in diagnosis. I am far from denying that in the great majority of cases of nephritis albumin is enormously in excess of globulin, but I have come across a few cases of definite acute nephritis in children in which the reverse relationship has been present. On the other hand, of 11 apparently non-scarlatinal cases of orthostatic albuminuria in which I have kept notes on the point, in four globulin was in excess, and in the remaining seven a big excess of albumin was registered. In the scarlatinal cases examined at the fever hospital the same inconstancy of relation was noted. Two of the urines showed an undoubted excess of globulin, but in most of the others there was an equally undoubted preponderance of albumin. I did not, however, remember in every case to make the necessary observations. Each of the two positive diphtheritic cases showed an excess of globulin.

POSTURAL ALBUMINURIA A SYMPTOM.

I began by stating that I would regard postural albuminuria as a symptom only, and that the limitation of the term to the cases in which the bed urine is entirely free from albumin, convenient as it may be, tends to rob the symptom of much of its significance. The fact is that in many, and possibly all, forms of albuminuria the albumin output is susceptible to the influence of posture, though in very varying degrees in different cases. This is, I think, certainly true of the "parenchymatous" varieties of nephritis, acute and chronic, and several of the charts published in the *Quarterly Journal* show an albuminuria in mild acute nephritis which came down to a very small amount with the patient in bed, but was present in gross quantity in the upright position. I would therefore regard the complete cessation of albumin excretion in the horizontal position, characteristic of "orthostatic albuminuria," merely as the extreme example of the influence of posture. The following records are taken from the case of a man with chronic nephritis, a somewhat raised blood pressure, and numerous casts in the urine:—

	Albumin units.
On going to bed..	1100
One hour after going to bed ..	120 (urine plentiful)
On getting up next morning ..	530 (urine concentrated)
Three hours after getting up ..	700
Seven hours after getting up ..	1275

The very big drop in albumin content an hour after going to bed is to be somewhat discounted by the fact that during the hour a plentiful urine was secreted, and, on the other hand, the relatively high morning reading is largely accounted for by the concentration of the urine of the rest of the night, due, of course, to the absence of fluid intake. But the influence of posture seems undeniable. Whether this influence is exerted in the chronic interstitial types of nephritis I am not so certain, but this is a matter which I have not carefully investigated.

Finally, cases are met with in which the albuminuria is almost, but not quite, "orthostatic" in nature, and these seem to me to form a possible connecting link between the completely orthostatic cases and cases of nephritis responsive to posture. Chart 2 (p. 681) gives an example of such a case. The patient, a boy aged 14, was in fairly good health when one day he fainted at school. Examination of the urine showed a large cloud of albumin, and he was put to bed, with the result that the albuminuria at once very nearly came to an end, but never quite ceased. When I saw him he had been in bed for some weeks. The blood pressure was a shade high for the age (130, systolic), but no casts were at any time found in the urine. As shown in the chart (one record out of many is alone included), he was intensely sensitive to the upright position, and seven minutes' standing always produced a big response. When he got up in the morning a very large albuminuria developed, but getting up in the afternoon gave a much smaller result—an approach to the "cyclical variation." Yet the bed urine invariably showed a slight albuminuria. It is difficult, I think, on this ground to separate the case from the more complete forms of postural albuminuria.

I do not claim that all cases of orthostatic albuminuria have the same or a similar origin. I believe that cases exist in which the symptom is due to mechanical embarrassment, possibly of the left renal vein, and in THE LANCET of Oct. 27th, 1923, I have myself recorded a case of unilateral oedema with an albuminuria probably coming from one kidney only, for which I suggested a purely mechanical explanation. Will it eventually be found that the cases of mechanical origin are those in which the albumin comes from one kidney only? A certain number of cases of orthostatic albuminuria have been recorded in which catheterisation of the ureters has demonstrated that this was the case. I have some suspicion that these may prove to be the really "functional" cases, and that they own a totally different pathology from that of the cases dealt with in this paper. It may be that here lordosis is of importance. I may add that in five of my orthostatic cases I have tried by postural experiments—standing leaning first to one side and then to the other—to obtain evidence of the unilateral origin of the albuminuria, but in none has there been any material difference in the results.

SUMMARY AND CONCLUSIONS.

1. Many patients suffering from scarlet fever, who present no albuminuria during the period of rest in bed, develop an orthostatic albuminuria immediately after getting up. Some, at any rate, of these albuminurias persist for a considerable time, or even permanently.

2. Some cases of recognised scarlatinal nephritis are ultimately represented by an albuminuria of the orthostatic type.
3. Orthostatic albuminuria may follow other forms of specific infection, or even, though rarely, arise as the end-result of a mild acute nephritis of ordinary type.
4. The proportions of serum globulin and serum albumin are not constant in cases either of orthostatic or nephritic albuminuria, and do not enable a differential diagnosis to be made.
5. It is suggested that in many cases the orthostatic reaction is the result of slight renal damage. But cases probably exist in which the reaction is the result of mechanical causes. As a matter of speculation, it is suggested that in these cases the albumin comes from one kidney only.
6. Some response to posture occurs in most cases of nephritis, and possibly in all forms of albuminuria. All degrees of diminution of the output of albumin during rest in bed are met with, down to the complete cessation of the typical orthostatic cases.
7. Orthostatic albuminuria is probably of more frequent occurrence than is generally supposed. It may pass unrecognised owing to (1) the presence of a small quantity of albumin in the morning specimen of urine, due to the continuance of the upright albuminuria for half an hour or so after going to bed the night before, and the consequent contamination of the night's collection; (2) the cessation of albumin excretion during diuresis, even in the upright position; and (3) the cessation of albumin excretion in the sitting position. Extreme variations in the albumin output, with at times complete cessation, are therefore to be expected.

An Address

ON THE

CURES OF ÆSCULAPIUS.

Delivered to the Students of Westminster Hospital at the Opening of the Winter Session

BY PROF. ERNEST A. GARDNER, LITT. D.,
VICE-CHANCELLOR OF THE UNIVERSITY OF LONDON.

AN interesting chapter in the history of ancient medicine is offered by the cures of Æsculapius, or Asclepios, as the Greeks called him; and the subject is one upon which the students of medicine and archæology meet upon common ground. It has been much discussed whether the priests and descendants of Asclepios, the Asclepiadæ, were the depositories of a traditional skill in medicine and surgery; and in this connexion we must remember that Hippocrates himself was one of the Asclepiadæ, of Cos. The remains of an enormous plane tree in the market-place of the town are still shown to visitors as the place where he gave consultations to his patients. The sacred precinct of Asclepios at Cos is situated in a delightful position on a terrace overlooking the sea, and there it is still possible to trace the remains not only of temples and altars, but also of the rows of cells which must have served as quarters for the invalids who came to consult the god or his attendants. Many such shrines of Asclepios existed upon various sites in ancient Greece, most of them in similar positions and surroundings. But two of these are of especial interest to us because we have actual records in literature and inscriptions of the method of consulting the god and the means by which cures were effected. These two are at Athens, where the precinct underneath the south side of the Acropolis referred to by Aristophanes may still be seen; and at Epidaurus, where there have been found not only the remains of the buildings, but two of the six great slabs mentioned by the traveller Pausanias as recording the cures effected by the god.

These two precincts of Asclepios were very similar in their arrangement, though that at Epidaurus was by far the more extensive. Both alike containe more than one temple and one great altar of sacrifice as well as springs or sacred wells. But the mos distinctive building in each was a large portico in tw floors, partly closed and partly open to the air, an it was in this building, called in inscriptions th "abaton," that patients who came to be cured spen the night. How they spent it may be partly judge from the well-known description in the Plutus o Aristophanes; for though this description is o course burlesque, and may well appear lacking i reverence, it must have had sufficient resemblance t what actually took place to give point to the jests In the play Plutus (Wealth) is represented as blind and his friends resolve to take him to the shrine o Asclepios in Athens "to help him of his blindness.' The slave Karion, who attends him during his visit gives a full account of it, which may be summarised a follows:—

> "First we took him to the sacred spring and washed him then we entered the precinct of the god, and after offerin cakes and the other preliminary sacrifices, we duly put hir to bed, among a number of others suffering from diver diseases, and we ourselves had shakedowns beside him Then a minister of the god came in and put out the light and bade us go to sleep, and keep silent if we heard any sound. So we all lay quiet. But I could not get to sleep and I saw the priest going round the sacred tables and altars, picking up the figs and cakes and consecrating them into a bag. Then the god appeared, accompanied by his two attendant maidens, Iaso and Panacea. I hid my head under my cloak in fear, but I watched through the holes in it. And I saw the god going the round of the cases in due order, and an acolyte set beside him a stone pestle and mortar and a medicine chest. He first approached Neoclides, a blind man who excels those who can see at thieving, and he mixed and ground an ointment for him of garlic and fig-juice and squills with vinegar, and anointed his eyelids, turning them back to increase the smart. And the patient shrieked and cried out and tried to run away; but the god laughed and told him to sit still with his plaster. Then he came to Plutus and sat beside him, and first he felt his head, then he took a clean napkin and wiped his eyelids; and Panacea covered his head and face with a purple cloth. Then the god whistled, and two enormous snakes issued from the temple and gently crept under the cloth, and as it seemed to me, licked round his eyelids; and immediately Plutus stood up with his sight restored; and I clapped my hands for joy, and the god vanished with his snakes into the temple. And those who were lying beside Plutus congratulated him and remained awake all night till dawn."

Here we see many of the incidents that are repeated in the records of the cures at Epidaurus; but there is some confusion in both cases as to what actually took place and what was seen in a vision or a dream. But in the Plutus it seems distinctly to be suggested that the priest of Asclepios actually personated the god, a custom not at all unusual in Greek religion; and we know from other sources that large snakes were usually kept in the shrines of Asclepios, and were even in some cases regarded as the god himself.

ANCIENT GREEK RECORDS.

Before proceeding to enumerate the cures recorded at Epidaurus, a few words must be said as to the documents on which they are recorded. These are large slabs of marble headed "Cures of Apollo and Asclepios," discovered and first edited by M. Cavvadias, the Greek Inspector-General of Antiquities. Among medical authorities who have written about them, I would especially mention Sir Clifford Allbutt, Dr. Caton, and Dr. Alexander Cavvadias, son of their discoverer. The slabs were inscribed some time about 300 B.C., but they cannot be regarded as contemporary records of cures. They were evidently compiled at one time, and as we shall see, the source from which they were derived was partly the votive offerings with inscriptions that had been set up by the patients to testify their gratitude to the god, and partly the traditions of the temple; and the fact that one of the most curious cases is recorded by a Greek writer of nearly 200 years earlier in a slightly different form shows that this temple tradition did not deal only with recent cures. Such stories doubtless improved by repetition. Whether some of them had a basis of fact or not is a matter as to which I express no opinion. But, in a general way, many of them seem to have similar essential features, and to agree with the description given by Aristophanes. In nearly all cases the patient comes to the shrine of Asclepios, sleeps in the "abaton," has a vision or a dream, in which some action is taken by snakes or dogs, or else something similar happens to him while he is awake; and as a result he goes forth whole in the morning. Naturally, cases that are not so cured are not recorded, except in instances where the god showed his divine power by punishing an unworthy worshipper—just as in the Plutus happened to the thief Neoclides.

I now proceed to cite a selection from the cases, without any attempt at classification, in the order in which they are recorded on the slabs.

1. Cleo was with child for five years, and in the fifth she came to the god as suppliant and slept in the abaton; and immediately on leaving it and going outside the precinct, she gave birth to a male child, who directly he was born washed himself with water from the sacred spring and went about with his mother. And Cleo, being thus favoured, inscribed on her dedication: "It is not the size of the picture (or relief) that is wonderful but the divine power, since Cleo was pregnant and bore the burden in her womb for five years, until she slept in the sanctuary and the god made her whole."

This is important as evidence, for Cleo's inscription probably existed, and the rest of the tale may well have been made up to explain it. Possibly Cleo and the child were represented in the picture or relief, and a later generation might not understand the custom in early art of representing young babies as much too mature in form.

2. A man with all his fingers but one paralysed came as a suppliant to the god, and seeing the pictures in the precinct he disbelieved the cures and jeered at the inscriptions. He slept in the abaton and saw a vision. He seemed to be playing knucklebones in the precinct, and the god appeared and seized on his hand and stretched out his fingers. And when he went out he fancied he clenched his hand and stretched out his fingers one by one. And when they were all straightened the god asked him if he still disbelieved. He said no, and the god advised him to distrust his scepticism in future. And when day came, he went out whole.

3. Ambrosia of Athens, with one eye, having come as a suppliant to the god, went round and ridiculed some of the cures, saying it was improbable or impossible that the lame and the blind could be cured merely by seeing a dream. She slept in the abaton, and saw a vision. She thought the god stood by her and said he would cure her, but as his fee she must dedicate in the precinct a silver pig as a reminder of her stupidity. And then he cut open her diseased eye and poured some drug into it; and when day came she went out whole.

Here again we have an indication of the source of the story. The pig was doubtless on show, and the true explanation may be quite different.

4. A dumb boy came as a suppliant for speech, and made the preliminary sacrifice; then the acolyte of the god said, looking at the boy's father "Do you promise within a year, if he gets his wish, to pay the fee?" And the boy suddenly said "I promise." His father was astonished, and bade him repeat it; he did, and was cured from that moment.

This is a case which is, I believe, easily paralleled from modern experience. The next two are evidently edited with a purpose. I summarise them briefly:—

5. Pandaros had certain spots on his forehead. The god appeared to him in a dream, and put a bandage on them, bidding him on leaving to dedicate the bandage. When day came he took off the bandage and dedicated it in the temple, and his spots were gone. Echedorus, who suffered from the same complaint, came with a sum of money from Pandaros to dedicate to the god. He saw a vision in a dream. He thought the god asked him about this money, and he denied it, but promised to dedicate a picture if he were cured. The god put Pandaros' bandage on his forehead, and bade him when he went out to wash his face from the sacred spring, and look in the water. He did so, and saw that Pandaros' spots were added to his own previous ones.

6. This case is of a boy suffering from stone. He thought the god stood by him and said: "What will you give me if I cure you?" and he said "Ten knucklebones." The god smiled and said he would cure him; and when it was day he went out whole.

7. A man came to the god as a suppliant so blind in one eye that only the empty socket was left; some pointed out his folly in thinking he could come to see when there was no eye there. He slept and saw a vision; he thought the god mixed a salve and opened his eyelids and poured it in; and when day came he went out seeing with both eyes.

Here a comparatively common case seems to have been improved by the priests to increase the wonder of the cure. The next is a quaint story, not medical at all, but apparently intended to show the general powers of the god.

8. A porter fell down more than a mile from the precinct, and found some vases in his satchel were broken, including a cup his master used to drink from. He was distressed and sat down trying to piece together the fragments. A stranger passing by said, "That is no use, not even Asclepios could make that cup whole." He went on to the precinct, and when he opened his satchel he found the cup whole. He told the tale to his master, who dedicated the cup to the god.

I fear I can offer no explanation of this story, which shows we must admit some items to be pure invention. But doubtless the dedicated cup was on view to convince sceptics. Another case shows a human touch which reminds us of an incident in the Acts of the Apostles.

9. Æschines, when the patients were sleeping in the abaton, climbed a tree to look into it. He fell, and struck his eyes on some stakes. He was blinded, but he became a suppliant to the god, slept in the abaton and was made whole.

The next case looks like a simple example of surgery, possibly improved in detail, especially as to the quickness of recovery.

10. Euhippus carried a spear-head in his jaw six years. While he slept in the abaton the god took out the spear-head and placed it in his hands. And when day came he went out whole with the spear-head in his hands.

11. A man of Torone suffering from leeches slept in the abaton and saw a vision. He thought the god cut open his chest with a knife, took out the leeches and placed them in his hand, and sewed up his chest again. And when day came he went forth with the creatures in his hand and was made whole. He had swallowed them in a potion given him craftily by his step-mother.

12. Hermodikos was paralysed. When he slept in the abaton the god cured him and bade him when he went out to carry the biggest stone he could into the precinct, and he brought the stone that now lies in front of the abaton.

Here again the visible stone may have suggested the story.

13. Nikanor, a lame man, was seated; and a boy while he was awake stole his staff and ran away. He jumped up and pursued the boy, and from that time he was cured.

14. A man had his toe healed by a snake. Suffering greatly in his toe from a malignant wound, he was brought in the daytime by his attendants and sat down on a bench. He fell asleep, and a snake coming out of the abaton cured his toe with its tongue, and then went back into the abaton. When he awoke and found himself well he said he had seen a vision. He thought a beautiful youth applied some medicine to his toe.

This last reminds us of the cure of Plutus in Aristophanes; it is also interesting from the curious correlation of the vision in a dream with what actually happened; a confusion of the two may explain other cases. A belief in the healing power of the snake is of course common enough.

15. Alcetas, being blind, saw in a dream the god approach him and open his eyes with his fingers, and he saw the trees in the precinct. And when it was day he went forth whole.

This curiously reminds one of the blind man in the Bible, who saw "Men as trees walking."

16. Heræus had no hair on his head and a bushy beard; ashamed of being a laughing-stock to others he slept in the abaton and the god anointed his head with a preparation that made his hair grow.

It is to be noted it is not stated in this case that the cure was instantaneous.

17. Thyson, a blind boy, was licked on the eyes while awake by one of the dogs in the precinct, and went forth whole.

Here there is no vision or dream, as in the case of the man cured by a snake. Dogs also are commonly reputed to have this healing power, possibly because they lick their own wounds. Sacred dogs and snakes were evidently kept in the precinct for the purpose

I have given a practically complete version of this inscription because I think the form and details of the cures quoted are of importance in forming any just estimate of the value of the record. The other slab is not so well preserved, and the records of many of the cases are only fragmentary. I do not therefore propose to reproduce them in detail; in general character they are similar to those on the first slab. But two or three of the cases are of a special interest, and I add them in summary form.

18. The mother of a girl at Sparta consulted the god on behalf of her dropsical daughter. She dreamt that the god cut off her daughter's head and hung her body neck down; when much liquid ran out, he sewed the head on again. She returned to Sparta and found her daughter, who had had the same dream, restored to health.

This kind of vicarious incubation is unusual.

19. A somewhat similar case is that of Aristagora who had a worm in her intestines. She slept in the shrine of Asclepios at Troezen, and had a dream. She thought the sons of the god, who was himself away at Epidaurus, cut off her head, and being unable to replace it, sent for the god. Meanwhile day came, and the priest saw the head separate from the body. The following night she had again a dream that the god came and replaced her head, and then cut open her abdomen, removed the worm, and sewed her up again.

Here there is obvious confusion between dream and reality, and the priest, seeing head and body apart, seems to be a corroborative detail. But the chief interest in this case lies in the fact that the same story, with some variation, is told by a writer some two centuries earlier than the inscriptions, Hippys of Rhegium. According to his version, the lady came to the precinct of Asclepios at Epidaurus, not the one at Troezen; the temple attendants attempted the cure, cut off her head, removed a gigantic worm, and then could not put the head on again. The god came and blamed them for their presumption, and put things right. It is evident that the priests would not tolerate a record of such blundering in their own temple. One or two other cases have features of interest.

20. A man having what is described as a wound or sore in his belly was lashed down when he resisted operation. Asclepios cut open his abdomen, removed the sore, and sewed him up again. He was cured, and the floor in the abaton was covered with blood.

21. A man suffering from headaches dreamt that the god gave him some training for the pancration; he was cured, and soon after won the pancration at the Nemean games.

22. Finally, a lady suffering from indigestion dreamt that the god gave her some medicine in a cup to drink which made her sick, so as to fill her basin. And when day came there was her basin full of vomit, and she was cured.

In this last case the dream seems to correspond with the fact.

These inscriptions have been much discussed, and some think them a mere tissue of superstitions and absurdities. But so high an authority as the late Sir Clifford Allbutt says that—

> "by pomp, splendour, and ancient enchantments the senses were captured, and the springs of nervous energy unsealed. . . . It is supposed that mesmerism was a potent means in the hands of the priesthood; that patients were subjected to hypnotic suggestion we know with some fulness."

I am not, of course, competent to criticise the evidence from a medical point of view, but I have studied both the records and the psychology of the ancient Greeks, and I think that, allowing for some improvement in editing on the part of the priests, above all of some confusion of dreams and facts, many of the cases above may be attributed either to medical or surgical skill, and that among them are also cases of faith-healing or of sudden impulse or suggestion due to nervous excitement. However this may be, the priests of Asclepios certainly changed their practices in later times, and seem to have taken to running sanatoria and no longer depending on instantaneous cures, for which faith no longer was forthcoming. A good example of this later treatment is offered by the case of M. Julius Apelles, in the second century A.D., who suffered from chronic dyspepsia, and was ordered by the god to take a kind of rest cure, with prescribed diet and regular exercise. Such prescriptions are not uncommon, and show that the various shrines of Asclepios had become centres of medical and even surgical therapeutics.

INCUBATION SHRINES.

Asclepios was not the only god or hero in whose shrines the custom of incubation was prevalent. In the precinct of Amphiaraus at Oropus it was customary for invalids who consulted what was practically a dream oracle to cast gold and silver coins into the sacred spring. They sacrificed a ram, and slept on its skin in the temple or a portico attached to it; they then related their dreams to the priests, who gave expert interpretations. We have unfortunately no information as to what these were like, but they may have given opportunity for medical advice. The shrine was a popular one, and therefore must have met with some success.

In another shrine, that of Trophonius at Lebadea, there were elaborate arrangements which seem to imply some mechanical devices and trickery. The traveller Pausanias, who himself went through the process, gives an elaborate description of it. After some days of preparation, with sacrifices, special diet, and cold baths, on the night chosen the patient was bathed in the river, led to the two springs of Forgetfulness and Memory, of which he had to drink, and then he descended by a ladder into an artificially constructed hole in the ground. Here he lay down with his feet up to the knees in a hole at the side. His whole body was immediately drawn through the hole by an irresistible force; the oracular response was either by sight or hearing, and he returned again through the hole feet first. The priests took him, placed him on the seat of Memory, and interrogated him as to what he had seen or heard, and then returned him to his friends, in a state of terror and unconscious of his surroundings. But he soon recovered and laughter returned to him. The priests, here also, gave expert interpretations of the sounds or visions. The oracle was mostly, though not exclusively, consulted by invalids, to whom it must have been a sore trial, though Pausanias declares none of them were ever killed by it, except a soldier who went in hope of loot, and whose body was found some distance away.

Shrines for incubation are by no means extinct in Greek lands at the present day. In conclusion, I should like to describe one of those which I have myself more than once visited. The great church and precinct of the Panagia (Our Lady of the Annunciation) in the island of Tenos is visited at her annual festival by crowds of people from all Greek lands, bringing with them many men and women suffering from all sorts of diseases, especially the blind, the lame, and the paralysed. These are laid, in their beds, on the floor of the church and of the crypt beneath it, which they fill, so that there is barely room to pass along between them. The sight must be very like the abaton in the precinct of Asclepios in old times. The patients are placed here on the eve of the Annunciation, and so spend the night. Every year some two or three so-called miraculous cures take place; one year when I was there a woman who had crawled painfully up to the church with paralysed limbs threw away her crutches and danced back to the harbour amid the rejoicings and congratulations of her friends. I do not think that fraud or collusion plays any considerable part in such cases. It is to be remembered that only two or three out of hundreds are so cured; and those who are not so forget their own state in rejoicing at the healing of another, just as the rest of the patients surrounded Plutus in the play. The many are forgotten, and the few are remembered and recorded. The case of Lourdes is, of course, similar, and I believe nobody now doubts the instances of faith-healing that have occurred there, especially in nervous or hysterical cases. A certain number of such cases, together with some examples of successful surgery or medical treatment, may well form the nucleus around which the sometimes fanciful records of the cures of Asclepios have accumulated.

An Address

ON

THE HUMAN TOUCH IN PROFESSIONAL LIFE.

Delivered to the Students of Guy's Hospital at the Opening of the Winter Session

BY MAJOR J. H. BEITH, C.B.E., M.C.

"IAN HAY."

GENTLEMEN,—First of all let me say how greatly honoured I am by your invitation to me to address you this afternoon. My pleasure, however, is somewhat diluted by the fact that I am not in any way qualified to address a medical audience—except to this extent, perhaps, that once, long ago at Cambridge, I took a course of chemistry and physics, as a sort of antidote to a prolonged dose of the classics; and also, because during those far-off undergraduate days my circle of acquaintance lay very largely among gentlemen who *kept a human skull* on the mantelpiece and a skeleton, or portions thereof, in the cupboard, and whose soaring spirits only drooped—and *that for a* moment—when their thoughts turned towards a mysterious and awful ordeal which lay waiting for them about the end of their third year, called the Second Part of the Second M.B. Moreover, it was in that noble company that I first *made* the acquaintance of my friend—your friend—our friend—Dr. H. C. Cameron, through whose offices, good or bad, I find *myself* here this afternoon.

We were a band of brothers in those days, with all things in common. Some of us were studying classics, some mathematics, some theology, some medicine, and some, of course, were merely hoping to be excused the General, or be allowed an ægrotat in botany; but just as you can distinguish the voice of the saxophone above all the other *instruments in a jazz* band, so medical interests and medical shop overtopped everything else. If one of our medical friends performed the *feat* of "passing his bones," we celebrated the event together, theological students and all. I became well versed in the airy chatter and gossip of what were called in those days, and I suppose are still called, the meat shops; and I shall never forget the scene of enthusiasm which occurred one evening, the first evening of term, when an excited second year man—one of those busy persons who are always full *of* what we will call, not inappropriately, inside stuff—burst into my room, where I was entertaining a few medical friends, seized Cameron by the *hand*, shook it warmly, and said to him: "Congratulations, old man! You've got a head and neck!" It is upon such *slender foundations* as these that I am endeavouring to build up sufficient courage to address you this afternoon.

PERSONALITY AND TRAINING.

I have labelled my discourse the Human Touch in Professional Life, by which I mean character, or personality, as compared with technical knowledge and ability. Of course, the one must not be regarded as a substitute for the other. No force of character, no attractiveness of personality in the world, can ever compensate for ignorance of one's job—in your profession of all professions. Personality is a useful, and sometimes invaluable, appendage to a man's professional equipment, but it can never constitute an equipment in itself.

I *emphasise* this rather patent fact because there is a general and dangerous tendency in the world to-day to exploit this *personality* stunt to an absurd degree, to the neglect and detriment of real training and thorough knowledge. In other words, we live in an age of advertisement—in an age, that is, where people are tending more and more to expend their energies, not upon putting quality into their goods, but upon thinking out ingenious and profitable methods of disposing of those goods. The theory appears to be that if you advertise them long enough and loud enough it does not matter whether your goods are good or not. So the art of advertising has now been elevated to one of the high and solemn mysteries. There are actually colleges and institutions in the world to-day at which *you can receive instruction, and* win diplomas, in this art—the art of ascribing to an article virtues which it does not possess so persistently and so convincingly that ultimately you succeed in unloading it upon someone who does not want it. I speak with some feeling in the matter, because I myself am the possessor of, I think, 28 volumes, in half-morocco, *of an obsolete encyclopædia* which I was recently dragooned into buying, on the instalment system, by those exact methods.

From this you will realise that the whole aim of modern advertising, whether you are selling encyclo*pædias* or merely trying to get elected to Parliament, is to delude your hearers into confusing promise with performance; and the *odd* part about it is that the advertiser often ends by deluding himself. For instance, upon the promises of our most progressive railway companies you may possibly have observed pictorial posters depicting an express train, in three colours, *dashing along a* highly burnished permanent way at 70 miles an hour, supported by alliterative captions on the subject of *Sunny Southern Sunshine* Specials, or something of that kind. The railway companies in question obviously regard that poster as a perfectly adequate substitute for an efficient train service; and what is more, they can hypnotise some of their *passengers* into agreeing with them. We succumb to political wiles in the same fashion. One politician gets up and promises us *that he* will take a shilling off the income-tax. A second gets up and promises to make it two shillings; and so *fascinated* are we by the glamour of advertisement that we promptly vote for the second candidate, although we know perfectly well that neither of them has the slightest intention of taking anything off the income-tax at all.

So you see, if you want to get on in this world quickly you must advertise. And if you want to advertise *successfully*, the best way is to get into personal contact with your victim; and, of course, in personal contact it is your *bearing and* your manner which will count. Therefore, to be a successful man of business nowadays you must have personal magnetism or charm; and if you have not got charm you must acquire it—in other words, you must apply to persons who can sell it to you. And there are such persons. The other day I came across a most invaluable book, obviously of American origin, in which *was* set forth the whole art of making yourself attractive, and even lovable, to people to whom you want to sell something. In anticipation of my next interview with my publisher, somewhat overdue, I studied this little volume very carefully.

Personal Questions.

It started with a sort of *examination* paper, in which you were asked 40 questions about yourself, which you had to answer honestly and to the best *of* your ability, *and* then allot yourself marks for each. Here are a few. I pass them on to you, because I feel that it is not fair to keep such pearls to myself:—

1. Do you wear colours that are best suited to your type? If so, credit yourself with five marks.

2. Do you start to work every morning with clean finger-nails, clean boots, shaved, trousers pressed, suit and linen spotless? If so, credit yourself with five marks.

3. Can you walk across a room full of guests, speak to the hostess, and conduct yourself without awkwardness or embarrassment? If so, credit yourself with five marks.

4. Do you gesture from your shoulders instead of from your elbows? (See p. 135.)

Being entirely baffled by this question, I turned to p. 135, and discovered that to make gestures with your elbows is wrong, because if you do, "you do not include all the persons in a room." I had never known that. Anyhow, not knowing which part of my anatomy I do gesture with, I gave myself no marks and passed on.

5. Do you avoid using cheap, boastful expressions? Are you making some effort to improve your vocabulary? Do you own a good dictionary? If so, credit yourself with five marks.

I did not quite grasp the connexion between these questions, but I gave myself three marks. After all, *I do own a dictionary.*

6. Do you give a certain amount of thought in advance to your conversation with people you know you are to meet, so that you will be sure to talk of things that are of interest to them? *(See Chapter 7.)*

I looked up Chapter 7. It said :—

Here are some general questions with which to open a business conversation. Others, equally interesting, will occur to you.

(*a*) How far back can you remember?
(*b*) Do you fear death?
(*c*) How is your wireless working?
(*d*) How far do you consider you are indebted to your parents for all they have done for you?
(*e*) Do you think doctors should charge their patients in proportion to their incomes, or should they have a standard fee for their services?

I did not think that any of these topics would really interest my publisher, so I abandoned that chapter, and passed on to the seventh question.

7. Do you avoid making a public display of your affection for your wife or sweetheart?

I unhesitatingly credited myself with five more marks, and closed the book. There were 33 more questions, all as good as that, but I need not trouble you with further extracts. However, I think I have made it sufficiently clear to you what a complicated job it is in these days to fit yourself to be a really successful and lovable salesman.

THE ART OF HANDLING PATIENTS.

Still, at the back of all this rather fantastic stuff there is a real strain of common sense. Of course, it is of importance—enormous importance—to be able, on the top of all your intrinsic and technical merits, to suit yourself to your company and employ your natural gifts to their best advantage. And in the cultivation of the healing art—your art—I think you will admit that the human touch is of incalculable importance. I suppose it is true to say that as much healing is produced by suggestion as by physic, and that many a patient gets well simply because he believes in his doctor. We need not go all the way with Samuel Butler, who tells a story somewhere of a man who swallowed a doctor's prescription in the belief that it was actual medicine, and was immediately cured of a dangerous illness, but the human touch does count, all the time. A doctor is above all things a propagandist. To a certain extent he is always playing a part—backing up the resources of science by the arts of the skilled advocate; mixing the powder and the jam in such proportion that the powder escapes notice yet achieves its purpose; doing everything, in fact, that is morally justifiable to create, maintain, and increase the confidence of the patient in his own chances of speedy recovery.

This brings us to the real heart of our subject—the consideration of the gentle art of handling patients. I can say something about this, because, although I have never been a doctor, I have occasionally been a patient; and I agree with you, right away, that patients are a most unreasonable tribe of people. You can divide them into many classes, but three will suffice here :—

1. People who are really ill. We need say no more about these, because they give little or no trouble.

2. Patients who are rather ill, but do not believe in doctors, and tell you so quite frankly. You know the man who says to his doctor :—

"I only called you in because my wife insisted on it. I know as well as you do that the whole medical business is mere mumbo-jumbo, mere quackery; so don't start taking my blood pressure or doing any conjuring tricks with thermometers and stop-watches. I know how my inside works much better than you do, because it's my inside and not yours. You can leave me some medicine if you like, just to save your face; but I warn you I shall throw it out of the window."

That's the bluff, honest, hearty type of patient, the type that has made the name of Englishmen respected all over the world.

Well, the simplest and most profitable way to handle this individual is to employ the soft answer. You say :—

"My dear fellow, I agree with every word you utter. Of course, you are quite right; all medicine is nine parts faith and one part colouring matter. You and I both know that, so there is not the slightest use in my prescribing for you in the ordinary way. If I may say so, it is a treat to encounter a patient with whom a doctor can be absolutely frank—a patient who doesn't want things wrapped up in meaningless phrases. You, as of course you probably know without my telling you, are suffering from ——."

Here you give him the name of his disease in Latin—two longish words, with a false concord thrown in. You add a few scientific terms about reflexes and secretions, and so on, and wind up, if possible, with an incorrect chemical formula. After that, he will simply eat out of your hand. Technical terms are the medicine he wants. Many a man will positively enjoy a tennis elbow if he is allowed, when he talks about it at the club, to refer to it as "my synovitis."

Then we come to a third class of patient—the patient who thinks he is going to die forthwith, if not sooner, and has to be cheered up. In that connexion I cannot resist calling, or recalling, to your notice one of W. W. Jacobs's stories about that immortal trio Sam, Peter Russet, and Ginger Dick. I want to read you an extract. Sam, you may remember, was taken ill.

"And," continues the Night Watchman, who tells the story, "like most 'ealthy men who get a little something the matter with 'em, 'e made sure 'e was dying. 'E sent Peter out for a doctor, and in about 'arf an hour Peter came back with a sandy-'aired young man with red eyelids and a black bag. 'Am I dying, sir?' ses Sam, after the doctor had listened to his lungs and 'is 'art, and prodded 'im all over. 'We're all dying,' ses the doctor, 'only some of us 'll go sooner than others.' Peter and Ginger Dick took turns to be with Sam that morning, but in the arternoon the landlady's mother, an old lady who was almost as fat as Sam 'imself, came up to look arter 'im a bit. She sat on a chair by the side of 'is bed and tried to amuse 'im by telling 'im of all the death-beds she'd been at, and partikler of one man, the living image of Sam, who passed away in his sleep. It was past 10 o'clock when Peter and Ginger came 'ome, but they found poor Sam still awake and sitting up in bed propping 'is eyes open with 'is finger."

Well, that's a good example of how not to do it. What a patient of that kind wants is to be reassured; and that is where technical knowledge will not avail you so much as a cheerful presence and a confident manner. And here, speaking from my experience as a patient, may I drop a hint to future G.P.'s? Humanity fears one thing above all others—the unknown. What frightens a patient most of all is to have nothing definitely wrong with him. Once a definite cause has been assigned to his ailment, once you have hung a label on it marked in plain figures, and given him something physical to hold on to, he will endure almost anything. So if you can, be explicit with him upon this point, even though you may not have the slightest idea what is the matter with him. Tell him something—anything that will keep his imagination from soaring into the regions of unhealthy speculation. Anything will do: a man is never frightened of a thing he knows *all about*, or thinks he does. It is a good plan sometimes to be symbolic—to illustrate the patient's condition, or supposed condition, by some mechanical analogy. You can refer to trouble in his engine-room, or explain that his dynamo requires tuning up, or his accumulators recharging, or that an overstrained spring must be relaxed. Something tangible and concrete like that—something he can bite on. Tell him that he has a Rolls-Royce body, but that there is water in the carburettor, or the petrol pressure is faulty. That will cheer him up much more than to tell him baldly that his malady is functional and *not organic*. It is a strange thing, the amount of solid comfort a nervous person can derive from having his interior compared to that of a motor-car; but the comfort is there—especially if you tell him he's a Rolls-Royce.

THE SENSE OF RESPONSIBILITY.

Now, gentlemen, you must not think, because I am referring lightly at times to your responsibilities, that I do not realise very thoroughly how great and solemn those responsibilities will be. Yours, I suppose, is, with the possible exception of the teaching profession, the most responsible profession in the world. And for that reason you may be proud and thankful that you spring from the race you do, because our race possesses in a peculiar degree a quality which is indispensable to men of your calling—initiative; ability to act without running to someone else for instructions; readiness to assume responsibility as a mere matter of course. An Englishman possesses an extraordinary capacity for reliable work in a subordinate position, or perhaps I should say capacity to perform a task efficiently and conscientiously without any sort of supervision from higher up. Who are the men who keep the wheels of our Empire running? You may safely say they are not the people at the top. As a nation, we have seldom been well led or wisely directed in all our history. The main strength of our country lies, and always has lain, in our men-at-arms—our Other Ranks, as they call them in the army—whether those ranks be military or industrial, or administrative, or professional. Most of our successes, whether in war or peace, have been what we are proud to call soldiers' battles—the victories of the average man—the average Englishman. He is not brilliant, he is not spectacular, but you can rely on him. In South America they have a phrase, *Palabra Inglesa*—"on the word of an Englishman," and it means, with them, "Honour Bright!" That is the most splendid compliment ever paid by one nation to another, and it is addressed in the main to the man whom we are considering now. We ourselves depend on him to such an extent that we pay him the compliment of taking him as a matter of course—and we are seldom disappointed. The Civil servant, the platoon commander, the head clerk, the junior form master, the slum curate, the country doctor—these are they that propel the ship of State. Up above upon the quarter-deck, looking portentously wise and occasionally quarrelling for the possession of the helm, you may behold their superiors; but these friends of ours remain below the water-line—unheeded, uncredited, and to a large extent unsupervised, and that is the main point—and see to it that the wheels go round. They grumble and grouse, of course, and tell one another they are fed up—and usually they are—but they carry on, because initiative and responsibility are in their blood. They expect no thanks, and they are not disappointed. But the ship goes forward, and that is all they care about. Win or lose, sink or swim, in good times or in bad, that is what counts—the ship, the cause, the job, and not themselves.

Our Empire, like most of our institutions, came into existence in the most casual fashion. It was never acquired officially; it was never built up upon the ambitions or intrigues of kings and ministers. It was founded upon the efforts and sacrifices of common men—men whose very names have perished—who went out from our little island because the spirit of adventure bade them go out and better themselves, and who planted the seeds of enterprise and justice all over the world, to the complete effacement of themselves, and too often at the sacrifice of their own lives—men, in other words, who set the cause above the prize. It was only when through their efforts our interests in this quarter of the globe, or that, grew too unwieldy or important for private control that the British Government, with a deep sigh and an anxious eye on the taxpayer at home, reached out a reluctant hand and took official command.

To-day, all over the world wherever our flag flies, men you never heard of, and never will hear of, are shouldering responsibilities, making rapid decisions, improvising working expedients, getting the wheels round somehow—not for any special honour or glory that is going to accrue to them, but because it is their job, and it is up to them and them alone to do it. So they do it, by sheer force of character, personality, and the human touch. These are the things which bring them through. And foremost among those men I salute the members of your profession, because that profession bears as heavy and as proud a share of those burdens and those responsibilities as any.

THE FUTURE OF THE MEDICAL STUDENT.

Now I think I have said all I intended to say—or something like it—and it only remains for me to wish you good luck in the career that you have chosen. Many branches of that career are open to you, and no one of you knows exactly what the future holds in store for him. It may ultimately land you in Harley-street or at the head of some great hospital. It may make you a student of research, devoting your life to the study of a single disease or the isolation of a single germ. It may send you overseas as a medical soldier or a sailor, or as a member of some scientific expedition to a far tropical country. Or it may simply plant you down as a general practitioner in a manufacturing town, working 18 hours out of 24, with a large, troublesome, and for the most part unremunerative family of patients running to you all day long to have their hurts healed or their fears allayed. But wherever fate may place you, however high or low; however hard you may have to work; whatever difficulties and discouragements you may encounter—and you may be sure they will come—nothing can take away from you the sheer greatness of your chosen profession. Yours is one of the few essential trades on earth; it goes right down to the roots of human existence. You are the standing army and navy of humanity. Your life is one long campaign on behalf of other people, against ignorance, and dirt, and cruelty, and disease. We can never do without you. You bring us into the world; you attend us upon our voyage through life; at any moment we may call upon you to dry-dock us, or more frequently assist us to carry out that most ticklish of undertakings, the execution of repairs while under steam. And when the time comes for us to pass beyond the horizon of human life, we call upon you again, for the last time, to assuage our sufferings and soften the pangs of death.

You see, we depend upon you in all things; and we trust you implicitly. To your hands we commit the innocence of our children and the honour of our womanhood; and it is the special glory of your profession that those commitments are made without question, as the merest matter of course, because we know that they will never be abused. For generations that tradition has been passed down, and it is to that tradition and heritage that you are now about to succeed. Here in Guy's Hospital you have a great history and a wonderful record. You were at work 200 years ago, and to-day your activities are greater than ever. Only a few years ago Guy's men were doing their duty on every fighting front in the war, and Guy's nurses too. I well remember at the Battle of Loos, almost ten years ago to-day, a specially constructed communication trench for stretcher-cases only, which was called "Guy's Avenue." And you have a proud reputation here for team-work and esprit de corps, whether in your work or in your play, as those who have encountered the Guy's Football Fifteen have cause to remember. Altogether, a great tradition and a great heritage. So I say, go on and prosper!

And one last reminder on the matter of my text. You will note that I have heroically refrained throughout this rambling discourse from urging you to cultivate what is known as an "agreeable bedside manner." I still refrain, but let me remind you once more that a few words of cheery common sense and unprofessional informality will often do more for the average patient than the whole British Pharmacopœia. So, steep yourselves as deeply as you like in the knowledge and lore of your craft, but do not forget the Human Touch!

An Address
ON
THE STUDENT-HABIT.

Delivered at the Opening of the Winter Session at King's College Hospital

By Sir ARTHUR KEITH, M.D. Aberd.,
HUNTERIAN PROFESSOR, ROYAL COLL. OF SURGEONS OF ENGLAND.

Of all the men it has been my fortune to meet in the flesh, Clifford Allbutt, Regius Professor of Medicine in the University of Cambridge, came nearest to my ideal of the real student and the perfect gentleman. He died in February of the present year, having reached his eighty-ninth year. For 70 of those years he was a professed student, and yet at the end of his term he carried his load of learning with ease and comfort as if it were a garment which had become part of him. He never suffered, so far as one can learn, from that fell disease which so often wrecks the lives of budding students, mental dyspepsia. For his brain managed its affairs as a good woman runs her household; every article admitted to his mind had first to be sampled; when admitted the right place was found for it; every article admitted had to add to the efficiency and comfort of his mental household; every room had to be furnished and used. And yet at the end of a lifetime of toil—a toil which had been his constant pleasure—he still continued to make additions and alterations to his mental furniture. His mental household, like that of a thoughtful, happy, generous housewife, prospered in that which it gave away. The giving away kept the rooms of his mind sweet and living.

I have cited the example of Clifford Allbutt in order that I may make clear to you what I mean by the "student-habit." He could sit down by the hour and apply himself with a sense of pleasure to gleaning knowledge from the written or printed page, drinking in and assimilating facts observed or explanations given by men who had toiled in years long gone by. He applied himself with equal ease to the writings of his contemporaries, men who were still toiling in their laboratories or in their wards. The men or women who can acquit themselves thus have acquired the student-habit. Of all the struggles men undertake, that which ends in making the brain the willing slave of study is the most arduous. Of all mental habits it is the one most difficult to come by, and the one which is most easily lost.

Many men who are masters of research, who force secrets from Nature by experiment, who prefer to glean their knowledge at first hand and are, I admit, the rarest and highest form of scholars, often despise the habit I wish to extol—the student-habit. There have been, and there are, successful medical men who turn aside from books, who leave their medical papers unopened in their wrappers, who prefer to be guided in thought and action by what their fingers have felt and their eyes seen. If by neglecting the student-habit they gain something, they also lose much, and it would go ill with their harvest of knowledge if their successors treated them in the same selfish way as they have done their predecessors. I do not claim for my ideal student, Clifford Allbutt, that he was a pioneer who opened up great new fields of knowledge, but he attains to my ideal because he checked what he saw and what he suspected against the observations and the theories of the great minds which have paved the highways of medicine. Nature had endowed him richly, but he could never have done what he did nor been what he was unless he had acquired the student-habit. I speak as an old student of ordinary ability, to young students born into the same happy estate, and I say that the acquisition of the student-habit is one of the most valuable assets that a man or woman can carry into any line of life.

At what age Clifford Allbutt acquired the student-habit I do not know, but I can assure you that if it came to him by the age of 20 it had come in due time, for with the best of students the twentieth year is in sight before the real purposes of life dawn on their minds. Nor do I know of the struggles which he went through before the habit of study became his second nature—such biographical details are usually overlooked—but I am certain that, even in his case, there had been a struggle, for of all human habits that of the student is the most unnatural and the most forced; it is a hot-house plant which can thrive only when enclosed in the glass houses of the highest civilisations.

Our Illiterate Forbears.

The student-habit is comparatively new amongst the peoples of North-Western Europe. A thousand years ago our British forbears, although rich in the knowledge of life, were in the full meaning of the term illiterate; for many thousands of years their forefathers had been hunters, fishers, crofters, and livers in the open air, drinking in traditional knowledge by word of mouth. The peoples of Western Europe produce the highest form of students the world now has, and yet the student-habit is for them a recent importation. It was otherwise in the East; 6000 years ago, perhaps 8000 years ago, young men in Babylonia and Egypt were acquiring the student-habit; it began as soon as the human mind conceived that knowledge could be inscribed on stone or brick; with that discovery was instituted the student-habit. If there is aught of truth in the inheritance of acquired faculties it is from the peoples of the East we should get our finest scholars; they come of long lines of descent in which study has been endemic for countless generations. It is true that amongst the peoples of the East, from Egypt to China, we do often find those who have a marvellous facility to memorise the written or printed page and yet amongst them the Clifford Allbutt type of scholar is rare—almost unknown—the scholar who assimilates what he reads and makes his learning a part of his manhood. Learning thrives in Western Europe just because it has fallen on a strong and virgin soil, one which has not been wasted by the exhausting crops of a long-continued literate civilisation. We have still in us the virility and the energy which are inherent in men and women bred for life in the open air.

It is because you and I have the aptitudes and instincts of our primitive forefathers so strong within us that we find it needs an effort—an internal struggle—to settle ourselves to our books of an evening. Our difficulties are even greater when the sun shines and a longing for the open country stirs our blood; it is then that we have to struggle with the original Adam which is present to a greater or lesser degree in the hearts of all of us. English teachers, beyond those of any other country, have recognised the needs of those primitive faculties which well up in the breasts of scholars young and old; we encourage play and sports of all kinds in our schools and universities in order that the inheritance which has come down to us from savage ancestors may find vent in exercise. Golf is one means of allaying the beast; walking another. It is so difficult for the modern student to weld the needs of our present-day life to his inborn predilections. There are cards, billiards, and theatres ever ready to tempt the unwary student from his stool. For if study is to prosper, is to become a second nature, we have to make sacrifices; dances, festivities, and pleasant company have to be kept within the bounds of moderation. To dance, to sing or play, to feast, to gossip are the outlets of the natural man; ever since our distant ancestors emerged from the jungle these instinctive outlets for enjoyment have been clung to and cultivated; they have come down to us in an undiminished vigour. Before the student-habit can be acquired they have to be—not vanquished or eliminated—but disciplined. That is why it is so difficult to become a real student.

Reaction of Brain and Stomach.

You will not be a student for many years before the most natural of all human appetites begins to give you concern. Amongst the prerogatives of life we count the enjoyment of food; we expect to eat with relish and to enjoy the results of repletion. We are not quite certain what our brain cells live on, but we do know that they need very little to do the heaviest work we throw on them; the energy in an ounce of sugar would be enough, I suspect, to produce any of Shakespeare's plays, if it found its way to a brain gifted as his was. Everyone of us has been given the appetite, not of the brain-worker, but of the muscle-user. The professional student, in his earlier years, expects to satisfy his appetite just as fully as if he were using his muscles all day in the open air, and sooner or later his stomach has to pay the price of his acquired habit of study. Carlyle, Darwin, Huxley, and Herbert Spencer suffered from this "student's disease"; it is true all were moderate eaters and yet their stomachs were in a state of continual upset and rebellion, yet they all lived to a ripe age. Modern physiology has given the stomach a secondary place in the hierarchy of bodily organs. And yet somehow, as students know to their cost, sooner or later, brain and stomach react furiously upon each other. It is true that we do come across eminent students who have the physique, complexion, and appetite of yeomen. They are exceptions and should count themselves fortunate. Most of us who take to habitual study have to pay the price and the more we give our stomachs to do the higher is the price we have to pay. To become a real student you have to be prepared to make sacrifices. For your encouragement I would say this, that I know of no student who would exchange a regulated brain for the healthy appetite of the mental sluggard.

Many of us, perhaps most of us, have grown up under the belief that it is a natural thing for young men and women to give themselves to study. It is only when we approach the problem of the acquisition of the student-habit from the long-range historical point of view that we see how foreign the habit is to our nature and how recently the need for it has arisen. Some can claim that their family has produced scholars, learned men and women, for many generations; such are the exception rather than the rule. The majority of eminent scholars have no scholarly lineage. They come from highland glens, Welsh hillsides, English county villages, the first of their kind, so far as they can tell, who ever devoted their lives to the cause of learning. There must be throughout the length and breadth of our land immense and virgin fields of untapped scholarly talent. I am not speaking now of those rarely gifted minds which can imagine things which are new and true, which know the way to make Nature yield up her deepest secrets or discover how to harness new forms of energy for man's benefit, but of the rank and file which make up the learned army of a country. To join that army every recruit must learn the student step—the habit of study. It may at first sight seem surprising that there should be such an abundance of potential students in a population of manual labourers. But when one looks into the quality, which is needed above all others to make a man a master-student, it is no longer surprising, for we see that the essential qualification is a power of steady application in any line of endeavour whatsoever. The potential student must have method and foresight as well.

BRAINS ANCIENT AND MODERN.

When the modern student compares his outfit of brain with that which was given to his ancestor in remote times he meets with another surprise. The men who lived in Europe 20,000 years ago were just as well equipped as he is as far as concerns size and form of brain. What did those ancient hunters do with so big a brain? They had no professional examinations to pass, no briefs to master, no leaders to write, no mathematical problems to solve, no ancient classic to translate, no sermons to prepare and preach. If brains were given to us merely for such purposes then those ancient hunters had somehow come by a superfluity. Brains, however, serve the needs of much more than the intellectual side of our lives; beneath the intellectual centres lie a myriad of others which subserve more menial duties—by the exercise of which we fill the cup of life's enjoyment. But even this explanation is but partial; the full explanation lies much deeper and has to be sought in a strange law which regulates the construction of all living structures. All such structures have been framed on the rule which provides a large margin or factor of safety. All our organs—our hearts, our lungs, our stomachs, and our brains—have been built to meet not the daily routine of life, but emergencies which occur only at critical junctures. The heart on an occasion can rise to ten times its usual output; the lungs, if pressed, can nearly do as well. As for the stomach, the less said the better; modern civilisation tends to throw an unfair burden on it. But as for the brain, the factor of safety law holds good; we have, and our ancestors had, about ten times more than ordinary occasions require; our superfluity was given us for emergency. It is just this emergency ration that the modern scholar has to depend on, and there are few, if any of us, who use this extra allowance to its full capacity. You may study to the utmost limit of your endurance, and by the mere act of study you may rest assured that you will do your brain no injury. Infinitely greater harm is done by misuse and disuse of the brain than by overuse.

Let me make certain that you realise that the brains I am speaking of are not those of children; to push education upon an immature brain is cruelty; I am speaking of the mature brain, the state reached by most of us about the nineteenth year; it is then that the brain cells have come to their complete outfit and connexions. By habitual study you may overtax your physical endurance; you may damage your bodies if you neglect to exercise them, but you certainly will not damage your brain. You will never succeed in using your brain up to its full capacity. At the age of 74 James Watt acquired a knowledge of German, and at 64 Goethe, the German, mastered several Oriental languages. For my own part I use sleep as my barometer; when I begin to find that sleep comes to me with sluggard steps or if there is a tendency for my mind to "race" when I lie down I slack off. There is no greater nonsense talked than that brain-work may bring on "brain-fever."

HOW TO ATTAIN THE STUDENT-HABIT.

I have been speaking to you about the student-habit—seeking to explain why it is so difficult to acquire, but I have said nothing about how it is to be attained. There is nothing to be said; no one can teach it you; there is no royal and no easy road. Each one has to come by it for himself or herself by self-effort and by self-application. Nor have I said anything about a matter which every student soon discovers. Our brains have moods and tempers; like horses or the engines of motor-cars, they have to "warm up" before they will run smoothly and easily. The start is always the most difficult phase to manage. And often we are uncertain, when our brains start sluggishly, whether pressure will warm them up to study pitch or whether it is wiser to lay science or stiff reading aside and take to fiction. The healing power of a debauch of fiction is often marvellous in its results. The best brains are not like cart-horses which will do a turn at any hour; like race-horses they have their times off and times on. Therein each student is a law unto himself.

If I have been speaking to you who have still examinations to face I have also in mind those happier men and women who have left such ordeals behind them. Sooner or later they will discover that the student-habit, which is gained only by great and continuous effort, is soon and easily lost if not exercised. And they will also discover, as I found to my cost, that it is terribly difficult to get it back again. The medical man or woman who has lost the student-habit has become but a camp-follower in the great professional army to which we should all belong and in the activities of which we should all take a part if medicine is to prosper.

NOTES ON THE SURGICAL TREATMENT OF BRACHIAL BIRTH PALSY.

BY JOHN GILMOUR, M.S. DURH., F.R.C.S. ENG.,
HON. ASSISTANT SURGEON, ROYAL VICTORIA INFIRMARY, NEWCASTLE-ON-TYNE.

THE treatment of brachial birth paralysis, especially of the Erb-Duchenne variety, first attracted my attention at the Children's Hospital two years ago. Since then I have had the opportunity of treating several cases and of examining a number of others at the Royal Victoria Infirmary.

After having seen 25 cases of the palsy, one may safely say that the general impression that they mostly recover well, in time, is very misleading. It is said that one only sees the worst cases in hospital, and that there are numbers which do well at home. Up to the present I have not come across any evidence of this. On the contrary, an honorary colleague at the Children's Hospital, who has records of 40 cases, informs me that very incomplete recovery is the rule. Doctors are much more in the habit than formerly of referring their cases to hospital in the early months of the child's life. It is not surprising, therefore, to find that over two-thirds of the number under review did attend for examination and treatment before the end of the third month, most of them in the second month, when the ultimate result was still in doubt or before full recovery might reasonably be expected. Of the 17 who reported early only two can be described as having made a spontaneous recovery, while the others have not shown up much better than the last third who only attended at later dates after domiciliary measures had failed.

Whether it is admitted or not that one is justified in drawing conclusions from these facts, it is evident that there are numbers of children attending hospital with one or both arms crippled from birth for the treatment of which the unaided efforts of the masseur are inadequate.

Varieties.

Of those examined there were 23 of the Erb-Duchenne variety, two of the general arm variety, but none showing a pure Klumpke paralysis. On the obstetrical side all but three of the births were described as long or difficult. In one case the period of labour was short (five to six hours), and in two delivery was natural and unassisted. In the rest chloroform was used to facilitate instrumental or manual delivery. Three infants were said to have been asphyxiated and to have required prolonged resuscitation. The presentation was "vertex" in 16 cases, "breech" in four cases, and irregular in type in five cases. This analysis agrees roughly with that which Stransky made of 94 cases collected from the literature up to 1902. He blames direct pressure or traction upon the plexus in cases of difficult or prolonged labour in which anæsthesia was used, and in which a final rapid delivery was required for asphyxiated infants. Bailey states that overstretching will occur when the head and shoulder are separated more than 120°; and Peter and Bullard add that the stretching is increased by the rotation of the aftercoming part.

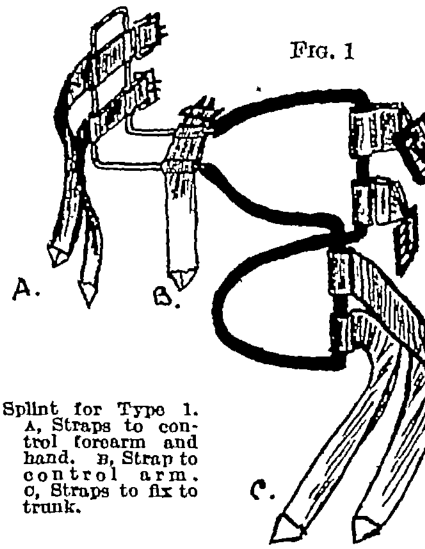
Ætiology.

It is not possible here to discuss the ætiology of the condition at any length, but it is worth reporting that in each of the four plexuses which were exposed by operation a definite lesion was found. Of late years a considerable literature has grown up on this subject since T. Turner Thomas propounded the theory that the palsy is only a pseudo-paralysis dependent upon injury of the shoulder-joint produced at birth. Lange supports this view, and Binnie is inclined to credit it; but the weight of evidence of an experimental, operative, and post-mortem nature is all against it, and in favour of overstretching of the plexus as the primary lesion.

Experimental Lesions of the Brachial Plexus.

Fieux, Shoemaker, Prout, Sever, and Adson were all able to produce lesions of the plexus, when exposed in the cadaver, by traction. In the Erb type of paralysis they found that the nerves rupture from above downwards. The importance of the suprascapular nerve which frequently tears first because of its close peripheral attachment was indicated, and the need for its repair stressed because of its control of the external rotator muscles of the arm. Adson states that there is first a laceration of the deep cervical fascia, then of the unsupported epineurium and its vessels, and finally a separation of the nerve-fibres which occurs in the first instance between the ganglion of the fifth cervical root and the upper trunk, and if more force is used results in a partial avulsion of the ganglion itself along with the spinal root. Further strain causes avulsion of the sixth, then seventh cervical roots, and finally laceration of the fascia over the eighth root. He concludes by saying that "Inasmuch as injuries of the plexus are produced in the roots or ganglia, they seem primarily to be lesions of the nerve rather than secondary to lesions of the shoulder-joint. Minor injuries may be expected to recover partly or wholly; severer injuries rarely recover even with surgical treatment."

FIG. 1



Splint for Type 1. A, Straps to control forearm and hand. B, Strap to control arm. C, Straps to fix to trunk.

A. S. Taylor corroborates the impracticability of operating on the intraspinal lesions, although he is a strong advocate of early exploration in the less severe varieties. It is obvious that many degrees of injury occur, and that clinical varieties may be looked for which correspond to the gravity of the lesion. The cases under review illustrate this very well. In age they range from 7 weeks to 15½ years. Several distinct types can be distinguished.

Types of Brachial Birth Palsy.

Type 1. The Typical Case.—This is usually seen soon after birth with the characteristic "vertical arm" in which there is paralysis of the deltoid supra- and infra-spinati, teres minor, biceps, brachialis, and supinators. The arm is held in a position of internal rotation, the elbow is fully extended and cannot be flexed, and the wrist is often palmar and ulnar flexed. The arm cannot be abducted actively from the shoulder. Of this variety only three cases were seen, and in two early recovery is taking place. One of these came for treatment when nearly 2 months old, and the history is interesting.

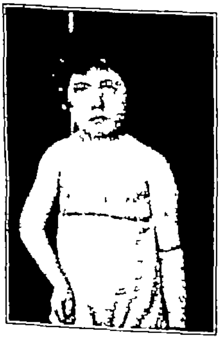
CASE 1.—She is a second child, was born by the breech before the doctor came, and had the typical deformity in the right arm. When examined there were distinct signs of movement and a tendency to take up the position characteristic of Type 3 (to be described later). This could be overcome by manipulation easily, but the importance of preventing contractures was realised, and the mother was instructed to move the arm in such a way as to produce: (1) External rotation of the humerus (with elbow at 90°) (2) Forceful abduction of the arm and backward extension of the elbow to push the humeral head forward. (3) Full supination of the forearm and free movement at all the joints. To keep the paralysed muscles at rest a platform splint of thin metal made after A. S. Taylor's pattern (see Fig. 1) was applied, and it was only removed for massage and movements for ten minutes twice a day. Marked improvement in power and in movement had occurred in one month, and during the second the splint was left off for increasing intervals during the day to allow the arm to be exercised. It is worn at nights now until recovery is considered complete. This baby tolerates the splint without a murmur.

If a splint is objected to, the position which it secures of abduction and external rotation of the arm, flexion of the elbow, and supination, can be obtained by fixing the wrist over the top of the head by a strip of gauze passed under the opposite axilla.

The principles involved in this line of treatment are three cardinal ones: (1) Relaxation of paralysed muscles (splint); (2) maintenance of nutrition in these muscles (massage); (3) prevention of contractures (movement). Neglect of the first and third is a sure way to court the onset of complications which transfer the case to Type 3.

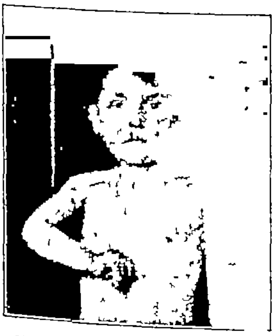
Type 2. The Irritable Type.—This is similar to the first type, but is complicated by an irritable "neuritis" of the plexus, and considerable fretfulness on the part of the infant who, as a result, tends to fix the arm closely to the side and to resist treatment. The prognosis is correspondingly less favourable, and unless adequate measures are adopted it will pass into Type 3. In this series eight of the children were described as irritable, particularly whenever the arm was touched. Six of these passed into the third group, two were subjected to operation on the plexus, and one was seen for the first time a few days ago.

FIG. 2.



Posture of Type 3

FIG. 3.

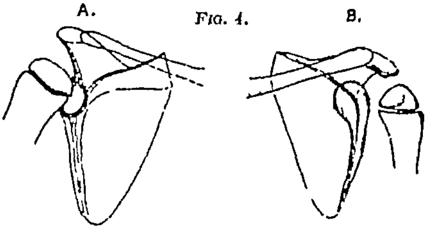


Showing total elevation of right arm

Early fixation on the splint is therefore most important to relax the irritated muscles and prevent contractures, and to allow the inflammatory reaction in the neck to subside. Gentle massage keeps the weak muscles in tone meanwhile. After two months' rest gradual movement is practised and increased as toleration is established, and then the case is treated as in Type 1

Type 3. Cases showing Contractures and the Progressive Deformities associated therewith.—These occur where treatment has been inadequate or neglected, and naturally develop only in those in which the lesion is neither too slight nor too great, since in the former recovery is likely to follow, and in the latter none will occur. Fairbank, in a study of 40 cases, found that 60 per cent. showed a definite tendency to muscle recovery, but also that 75 per cent. of them tended to develop contractures. This proportion is not an exaggeration, and it is a strong *indication of the importance of proper early management* of every case of Erb's paralysis. Seventeen of the cases I have examined have become thus complicated—a proportion of 68 per cent. The characteristic attitude of Type 1 is *now* replaced by a second posture which is fairly typical in Type 3. In this the arm is held slightly abducted from the side and slightly flexed forward and fully rotated internally; the elbow is flexed about 20° or 30° from full extension and cannot be extended; the forearm is usually fully pronated and cannot be supinated more than 20°; the wrist may or may not be dropped, and the hand retains some of its ulnar adduction. The effect of these contractures *on* the function of the arm is very crippling. With the elbow fixed at the side, for instance, the hand cannot be carried from the front of the body laterally to the line of the arm because there is no external rotation of the humerus possible. The absence of supination is therefore very marked, and as a result the hand is almost useless.

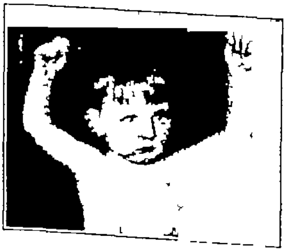
FIG. 4.



A, Normal shoulder. B, Subluxated shoulder.

Abduction and forward elevation of the arm are also weak so that the hand, even pronated, cannot be raised to the mouth. Further scapular rotation, assisted by throwing the affected shoulder backwards to raise the ribs in front, adds but little more elevation to the level of the hand. (See Figs. 2 and 3.)

FIG. 5.



Showing recovery after suture—right arm.

With the absence of functional activity disuse of the limb naturally follows very soon, the contractures become consolidated, vascular changes occur in the extremity of the limb, and an important subluxation is produced in the shoulder-joint. Frequently there is a subluxation of the head of the radius. Growth of the shoulder girdle and of the limb bones is seriously impeded, so much so that the child is apt to lose his balance and often stumbles from this cause.

The subluxation of the shoulder-joint appears after several months. It is easily overlooked in fat infants, but the rounded prominence of the humeral head, behind instead of in front of the tip of the acromion process, is characteristic. The humeral head looks backwards and lies on the postero-inferior margin of the glenoid cavity. It is held there by the strong internal rotation of the contracted subscapularis and pectoralis major, and by the downward and backward traction of the teres muscles.* The lack of support from the paralysed external rotators, the spinati, assists in this displacement and the joint capsule yields accordingly behind, whilst it contracts up in front.

As time elapses bony changes occur which "fix" the subluxation. The glenoid cavity remains small and undeveloped. It may become flat or even convex. The head of the humerus develops into a cone with a flattened side towards the glenoid. It lies at a lower level than normally. The acromion process, and sometimes the coracoid process, becomes bent forwards and downwards—probably from the unsupported weight of the arm, and forms a true bony obstacle to the reduction of the subluxation. (See Fig. 4.)

Radial subluxation is much less frequent, but must be considered due to the combined paralysis of the supinators and the contracting pull of the pronator teres. Contracture of the biceps may also tend to displace the head of the bone forwards and inwards. Turner Thomas described a case in his series of "Neglected Erbs," and was inclined to argue that this was a congenital injury just as he said the subluxation of the shoulders was, but such an explanation is not necessary in the presence of contractures. I have seen the same deformity follow contractures in infantile paralysis. In older children the crippled arm looks particularly small beside the healthy one, which may show a compensatory development. Other interesting features have been observed.

In one case the scapula was drawn up to the humerus by a contraction of the teres major and latissimus dorsi muscles, and this prevented the deltoid from using its full power on the arm, abduction to 50° only being possible. In another case the only residual weakness is in the external rotators of the right arm. This boy complains that he cannot write at school for long without "cramps" near the shoulder, and writes as well with the left as with the right hand. He has an interesting sympathetic paresis which has left him with distinct underdevelopment of the right side of the face, enophthalmos with pseudo-ptosis and a contracted pupil. In this case sympathetic involvement has not had its usual unfavourable significance.

When supination has recovered there is usually only a minor degree of weakness in the shoulder muscles, but contractures and subluxation when present convert this into a much more disabling condition. Recovery takes place from below upwards as a rule, so that in the Erb type of palsy any lingering paralysis in the forearm or hand means a grave prognosis.

The *electrical reactions* of the muscles of this group are not typical when partial recovery has ensued. I have generally found that the posterior fibres of the deltoid, the spinati, and the supinators give a feeble response with faradism and a brisk response with galvanism when the polar reaction may be normal or reversed. Thomas disputes any change in his attempt to substantiate his shoulder-joint theory of origin.

Sensory disturbances have only been found in the whole arm type, and then usually over the ulnar side of the hand and lower forearm. In such cases sensation to "pain" seems to be lost over almost as wide an area as "touch." Sherren has shown that section of the fifth cervical root is not usually accompanied by anæsthesia, and even the sixth cervical may be cut in some cases without any appreciable change in sensation. This, of course, accounts for the absence of disturbance in the Erb type of paralysis.

Operative Treatment.

Expectant measures are only justified in cases where full recovery is anticipated, or when no operative interference is contemplated. Once it is evident that only partial recovery will result, the question of operation should be considered. A. S. Taylor states that recovery should occur, if spontaneous, within three months. Wyeth and Sharpe advocate operation at one month if the lesion remains complete, and at three months if full power is not then regained. In 1903 the late Robert Kennedy, of Glasgow, advocated operation at 3 months of age, and his results are without doubt the most convincing of any. I have never explored the plexus at this early age. The three infants upon whom I operated were $1\frac{1}{2}$, $1\frac{3}{4}$, and $^{11}/_{12}$ years of age respectively, and the fourth was a boy of 9 years. There is no doubt, however, that the longer one waits the more firm is the scar-tissue about the roots of the plexus, and the greater is the actual gap, after a resection, between the nerve ends. At the same time growth changes have occurred which a successful early operation will eliminate. Operation was undertaken when the electrical reactions indicated a nerve block, and in each case was looked upon as an exploratory procedure. In two of the four cases it was possible to proceed further and to resect damaged nerve roots and unite the free ends accurately; but in the other pair it was only possible to dissect adherent and scarred fascia from the front of the plexus.

Clinical Records.

Case 2.—First child. Male. Very difficult labour. Instrumental delivery with chloroform. Markedly asphyxiated. Vertex presentation. Left arm showed Type 1 paralysis. Attended hospital first when 3 months old. Contractures beginning to form. Splint ordered and worn from fourth month. Massage and electrical treatment given for a year. No improvement of any importance. Electrical reactions taken gave nil response to faradism in deltoid and weak response to faradism in spinati. Operation when 18 months old (8/3/24). External neurolysis. Dense cervical fascia removed exposing only atrophic strands in place of fifth and sixth cervical roots. No repair possible. Latest report on arm shows: General posture of paralysis remains but without contractures. Arm can be elevated forwards to 90°. Elbow flexed to nearly 90° and forearm supinated beyond mid-position. There is still some internal rotation but no subluxation. Child can use hand to steer a scooter.

Case 3.—Fifth child. Male. "Shoulder presentation." Long labour. Chloroform and manipulation. Right arm shows Type 2 paralysis. First attended hospital when 3 months old. Sent to me by Dr. Glen Davison when 9 months of age. Arm had become Type 3. Splint ordered, with massage and movements. Electrical reactions continued to show no response to faradism in deltoid, spinati, and biceps, and only a feeble response to galvanism in biceps. At this time he could abduct the arm forward to 45°, supinate to mid-position, flex elbow fairly well, but had no external rotation. Operation when $1^{9}/_{12}$ years old (26/4/24). Thick fascia removed. Fibrosed fifth cervical root and twig from fourth cervical found and resected with suture of cut ends. (See Fig. 5.) Latest report is illustrated by accompanying photograph, where it is seen that he can abduct and elevate arm beyond 90°, externally rotate, and supinate.

Case 4.—Vertex presentation; delayed shoulder. Chloroform and instruments. Asphyxia. Type 2. Irritable. Attended hospital at 1 month. Massage given. Referred to me by Dr. Davison at 11 months with no improvement. Electrical reactions showed nil response to faradism in deltoid, biceps, and brachialis, but biceps and all others reacted to galvanism. Immediate operation (20/9/21). Severe lesion of fifth and sixth spinal roots, with a second tear distal to upper trunk all involved in dense scar tissue. Fifth cervical root atrophic. Tension suture inserted to approximate distal nerves to stump of sixth cervical root. Re-exploration two weeks later to attempt to secure a nerve suture, but this was at once found to be impossible and wound was closed. Latest report: Arm hangs in position of Type 1, and can be moved very little. Sympathetic pupillary change is present in this case, and the prognosis is hopeless.

Case 5.—Nine years. Male. Thirteenth child. Vertex presentation. Short labour. Both arms paralysed at birth. Right recovered in one month. Left shows clinical picture of Type 3. Contractures and subluxation present. Electrical reactions. To faradism: very weak response in posterior fibres of deltoid, some inactive. Doubtful response in supraspinatus. No response in infraspinatus.

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* The teres minor has been shown to draw down the humerus and keep the head of the bone in the glenoid cavity when the deltoid comes into action.

Supinators both feeble. Flexors active to galvanism. Brisk response with A.C.C.>K.C.C. in affected muscles. Operation, 5/5/25. Taylor's combined operation on shoulder-joint and plexus. With regard to the plexus a firm area of fibrous tissue was found in an attenuated fifth cervical root. This was resected and suture of nerve ends found possible. It is too early, of course, for results.

In each of the cases the weak arm is raised in a plaster case and fixed with the head inclined towards it to take tension off the sutured nerve ends.

Treatment of Contractures and Subluxation of Shoulder.

It will be seen that in the last case an attempt was made to deal with the complications of contractures and the subluxation. This represents a useful line of attack to improve the function of the limb. Indeed, so great an improvement is said to follow this that Thomas claims to cure the disability and the palsy by so doing.

Most of the patients exhibiting these complications were still below the age of 9, but two were 9 and one 15½ years of age. In the younger patients the bony changes are less marked, but in the older group the subluxation is very prominent, and the acromion and coracoid processes act as bony obstacles to reduction and elevation of the humerus. The manipulative method of Whitman is applicable, therefore, to the younger children, or one or other of the operations described by Fairbank, Sever, Thomas, and Taylor may be utilised in any of the cases.

I have treated three by open operation, in each case combining the division of the pectoralis major and subscapularis insertions (Sever's method) with section of the inner part of the capsule of the joint (as Fairbank suggested), because without it full replacement of the humeral head was found to be impossible. In Case 5 the coracoid process had to be partly removed, and the coraco-humeral ligament divided to allow of full external rotation. The short head of the biceps was, therefore, sutured to the side of the coracobrachialis and pectoralis minor. The after-treatment of these cases is still progressing. Plaster is applied with the arm externally rotated and abducted, the elbow flexed and forearm supinated, and after three weeks a Taylor's splint replaces this so that movements, at first passive, and massage may be practised once a week. When the new joint is consolidated and the muscles have regained control the splint will be discarded. In these cases Taylor now combines exploration of the plexus, and instead of plaster he uses a special head and arm brace for three months.

One small group of cases remains in which complete atrophy of the deltoid and spinati is present. If scapular movement is present arthrodesis of the shoulder-joint will improve the usefulness of the limb. Such a procedure has not yet been tried.

This communication is a preliminary one, and will be followed by a further report on the cases under treatment. My thanks are due to Dr. W. Ogden and Dr. Glen Davison for their cases, and to Dr. George Hall and Mr. H. M. Johnston for the opportunity of examining their cases.

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A REPORT UPON NINETY-TWO CASES OF RHEUMATIC DISEASE IN CHILDHOOD.

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THE Horsfall hospital wards of St. Mary's Home, Broadstairs, have, since 1921, a period of three and a half years, admitted 92 cases of rheumatism, carditis, and chorea. Their treatment has been the provision of fresh air, sunlight, warmth, and good food, combined with an amount of rest varying in accordance with the amount of active infection; this entails regular medical supervision and good nursing management to ensure contentment of the children while under considerable restraint. The treatment aims at preventing or arresting the progress of rheumatic infection, especially in the heart. At the end of certain periods, depending at best upon clinical and at worst upon financial considerations, the children are returned home. Subsequently, by means of circulars, the discharged cases are sent for and re-examined in London. In May, 1925, about two-thirds of those circularised arrived for this purpose, and I may here remark that the proportion of patients so responding is bound to fall as time goes on—an illustration of the disadvantages with which one works single-handed, compared with advantages possible under some such system of team-work as I venture to recommend below.

The report falls into two parts: (*a*) The results of observations of the children while in the wards; (*b*) the results of subsequent re-examination of discharged cases.

In estimating results, the subjective sensations of the patients and their parents' opinions are of very slight help, except in severe carditis and in chorea; experience points to the following three criteria as furnishing the most useful indications of progress or the reverse: (1) Quiescence or recrudescence of symptoms; (2) constitutional signs; and (3) cardiac physical signs.

(*A*) *Observations in the Wards.*

(1) *Recrudescence of symptoms* may be summarised as follows:—

(*a*) *Acute Rheumatism.*—There has, in three and a half years, been only one case that has had any severe arthritis with fever, and this was a girl with very severe pancarditis, who died later on. Only one other case complained of occasional pains in the limbs, and this was without fever.

(*b*) *Chorea*, once abolished, has recurred in three cases only—in all of them as a result of a definite emotional upset. In two other cases the movements were never completely got rid of; they appear to be more difficult to check in girls of ample physical proportions.

(*c*) *Tonsillitis* is more common and is troublesome, and the cases are quickly isolated owing to their being very infectious; in the first "epidemic" that occurred the hearts of at least two children seem to have suffered severely.

(*d*) *Simple Pyrexia* occurs occasionally and, as it yields to salicylates in most cases, is probably rheumatic; it has twice been accompanied by fresh carditis.

(*e*) *Scarlet Fever* occurred in one case and was followed by fairly severe scarlatinal rheumatism without further carditis.

(2) *Constitutional signs* are noted as follows:—

(*a*) *Pallor* seldom persists; if it does so it is a bad sign, but "a good colour" is often a sign that flatters.

(*b*) *Weight* goes up in all but rapidly deteriorating cases; only a very rapid putting on of weight can be taken as a really good sign by itself.

(*c*) *Pyrexia.*—The nearer the temperature tracing approaches to a straight line, the better a case appears to be doing.

(*d*) *Heart Failure* occurs only in the severest cases; a heart may be able to respond to a considerable degree of effort while being slowly and progressively infected. Response to effort is therefore no criterion.

(*e*) *Tachycardia.*—The rheumatic poison has an especial effect in producing a rapid and excitable heart-beat, quite apart from gross cardiac lesions; in such cases there is little or no respiratory variation in the pulse-rate. Correct charting of the pulse-rate is of the utmost importance, since the visit of the doctor may cause a temporary tachycardia. There is no effect of treatment so definite as the change, after a longer or shorter period of time, from this rapid excitable pulse-rate, to one of a more deliberate and uneven rhythm, the first sign of improvement being a noticeable slowing of the rate on instructing the patient to expire slowly after taking a deep breath; as recovery proceeds the sign becomes more and more marked. Digitalis is successful in slowing the rate of these hearts in a certain number of cases, but the effect is usually lost on discontinuing the drug. While it is possible that a slowing of the pulse might also be obtained in children allowed to get up and to go about, I feel that the questions of immunity which determines the progress or arrest of infective carditis are more safely dealt with under the conservative methods of rest in bed.

(3) *Physical Signs in the Heart.*—Dilatation of the heart borders should be regarded, when following an attack of rheumatism, as evidence of an infected myocardium. It is often accompanied by a systolic murmur which sufficient rest in bed abolishes. The mitral diastolic bruits, described by Dr. W. B. Cheadle, are very common and are of the utmost importance in prognosis, especially as regards mitral stenosis and ultimately auricular fibrillation. As in the case of tachycardia, the difficult question of valvular infection seems to me to be more safely dealt with by rest in bed until constant auscultatory signs and a quiet pulse-rate show the endocarditis to have been arrested. Aortic murmurs do not appear to undergo any favourable modification.

The result of the work as organised in the wards is that there is a slow but steady stream of children passing from the rest wards to the convalescent ward. Out of the 92 cases under treatment 73 have been girls; the average age on admission was 9·8 years, the youngest child having been 4½ years old. The average stay of the patients was six months. Beginning in October education will be given in the wards by a fully certificated mistress.

(*B*) *Examination of Discharged Cases.*

Of 75 cases discharged before the spring of 1925, six had died; all were cases of severe and advancing cardiac rheumatism and were, practically speaking, sent home to die. Of the remaining 69 cases just two-thirds were re-examined, and of these 46 cases 15 showed, or had shown, subsequent signs of active rheumatism, chorea, or carditis. In eight of these there had been fresh acute rheumatism, shortly after returning home; in two cases mitral disease had slowly developed along with continual chorea; in two cases there was progressive evolution towards mitral stenosis in spite of reports of perfect health from the patients and their mothers; and in three cases there had been chorea off and on for from one to two years without any carditis. The remaining 31 cases had held their own and had had no relapse.

While some of these cases appear to have justified the results of the treatment they have had, one is bound to admit that other cases, who, after a short period of treatment, were withdrawn against advice, had done equally well; on the other hand, certain cases, thought to have done well at Broadstairs, were disappointments. There are, I think, so many variations in the conditions to which these cases are exposed, that in order to investigate fairly the results of any type of treatment for rheumatism in childhood, it would be desirable to select a series of cases as uniform as possible.

Some of these variable factors may here be reviewed.

(1) Number of attacks of rheumatism *before* beginning treatment.

(2) Presence or absence and severity of carditis.

(3) Mode of onset of disease—acute, insidious, or choreic.

(4) Home conditions of the patient, especially after returning from treatment. One of my most disappointing cases said that the damp stood upon the walls of her home.

(5) Length of time under treatment.

(6) Performance or otherwise of tonsillectomy as part of the treatment.

Doubtless many of the variations in the onset and virulence of rheumatic infection are bound up with questions of individual and tissue immunity, to which at present we have no answer. Nevertheless, it should be possible by careful selection from a large number of cases to form groups for observation in which all the above variable factors should be as uniform and as favourable as possible. For such a purpose the following organisation would seem to be required:—

(1) A *central building* in London (or other city), by means of which: (*a*) Accurate histories could be obtained from patients' relations. (*b*) Cases could be taken, if desired, by reference from the general hospitals. (*c*) Visitors could report on home conditions and endeavour to get house repairs effected in special cases. (*d*) Physicians could select and group fresh cases, probably giving preference to early cases, as in tuberculosis. They would also be able to re-examine cases returned from rest homes. (*e*) Records could be kept.

(2) *Rest homes* for carrying out treatment.

From re-examination of these discharge cases one cannot fail to learn that the most accurate prognostic signs are to be found in repeated examinations of the heart; quiescence of symptoms is deceptive, and in America they have learned that even three years must elapse before it can be assumed that a favourable case is likely to be free from recrudescence. Similarly, constitutional signs are unreliable. I saw a boy in May, 1925, who had a really healthy colour, and had recently been running about; he has had about two attacks of rheumatism yearly since 1921, the heart is greatly enlarged, and shows mitral systolic and diastolic bruits, and an aortic diastolic murmur; his last attack had been in February, 1925. If, however, by any management, such unfavourably developing physical signs can be arrested, then, as the period of life approaches at which the heart is less susceptible to infection, the chances of an active and useful life are increased.

Clinical and Laboratory Notes.

TWO CASES OF LATERAL SINUS THROMBOSIS.

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The following cases of lateral sinus thrombosis may be considered worthy of record, as in each instance I performed a radical mastoid operation and ablated the infected lateral sinus without tying the internal jugular vein, with successful results.

Case 1.—B. E., a girl aged 14, was admitted to hospital with a history of discharge from the left ear for four years. She complained of pain over the left side of the head and in the left ear, and gave a history of attacks of shivering and vomiting. On admission the patient was very ill, with a temperature of 97° F., pulse-rate 120, and she had tenderness over the left mastoid process. A mastoid operation was performed and a large extradural abscess evacuated. There was thrombosis of the lateral sinus down to the jugular bulb; the sinus was opened and a septic clot evacuated. The jugular vein was not tied. On the following day the patient's condition was still bad, but there had been no rigors; on lumbar puncture the cerebro-spinal fluid was found to be normal. Two days later the temperature rose to 101° F. and the pulse-rate to 140. She vomited several times during the night. There were no rigors. The wound was reopened and more septic clot was turned out of the lateral sinus. From this date the patient made an uninterrupted recovery.

Case 2.—I. A., a woman aged 21, was admitted to hospita with symptoms of acute mastoiditis on the left side. He temperature was 103·6° F. and her pulse-rate 130. mastoid operation was performed; the bone was ver sclerosed, and a perisinus abscess was present. The latera sinus was exposed for one inch, and the wall of the sinus wa seen to be healthy and felt to pulsate. Her conditio improved after the operation for three days, when he temperature rose again. On lumbar puncture the cerebro spinal fluid was found to be normal; a blood count gave leucocytosis of 12,500 per c.mm. Two days later she had tw rigors; the cerebro-spinal fluid was still normal, and th leucocyte blood count was 15,000 per c.mm. The wound wa reopened and the lateral sinus was further exposed; the wall was found to be covered with grey granulations. The sinus was opened and a septic clot evacuated; there was free bleeding from both ends of the cut sinus. The internal jugular vein was not tied. Three days later the leucocyte blood count had come down to 6000. She made a slow but uneventful recovery.

Comments.

The tendency of recent writers, particularly in America, in dealing with the surgical treatment of lateral sinus thrombosis, has been to advocate ligation of the internal jugular vein in every case. The two cases here reported show that no hard-and-fast rule should be laid down about the necessity for invariable ligation of this vein. These patients are usually so gravely ill that it is eminently desirable for the surgeon not to undertake measures of greater severity than are absolutely necessary. Mr. Richard Lake has emphasised the importance of speed in carrying out surgical procedures in such cases. Ligation of the internal jugular vein does not necessarily prevent extension of the infection to the systemic circulation because of the establishment of collateral venous circulation. Laurens,[1] moreover, points out that the statistics of ligation and non-ligation show equal percentages of recovery.

I desire to express my thanks to Mr. Lake for the opportunity of operating on these two cases in his wards at the Royal Ear Hospital.

A CASE OF
ATROPHY OF RENAL ORIGIN IN A YOUNG INFANT.

BY CATHERINE CHISHOLM, M.D. MANCH.,
AND
EDITH F. WILLOCK, M.B., B.CH. DUB., F.R.C.S. IREL.

IT seems probable that the following case of renal atrophy in a young infant is worthy of record.

A female infant, aged 5 weeks, was admitted to hospital with a history of dyspepsia and loss of weight. She was an eight-months infant and had been almost entirely breast-fed. On admission she weighed only 4 lb., and showed signs of recent wasting; no cardiac, respiratory, or other abnormalities were detected; the urine was not examined as maintenance of warmth and careful handling were essential in her existing condition.

The patient was given breast milk feeds but failed to make much progress, though dyspepsia was not evident, and after a month she was placed for three weeks in an oxygen cot, in which she breathed air with 40 per cent. oxygen and the accumulation of her own expired carbon dioxide for some eight hours out of each 24.[1] With this treatment satisfactory progress and gain in weight commenced and continued for six weeks after removal from the cot, although during this period the breast milk was discontinued.

Improvement was so satisfactory that the infant was vaccinated, and lactified milk feeds were being changed to simple milk and water preparatory to discharge, when an attack of dyspepsia supervened. The attack was not severe but it apparently sufficed to upset the balance, and for the ensuing eight weeks the infant remained obstinately stationary in weight, and the clinical picture was definitely one of atrophy.

There were occasional manifestations of mild dyspepsia, the appetite was poor, and the skin developed a curiously yellow tinge, though no bile was present in the urine. At this time a blood count showed 3,630,000 red cells and 20,000 white cells, with hæmoglobin 45 per cent. A second period of treatment in the oxygen cot was then given for a month during which some general improvement and gain in weight occurred. Some diarrhœa was present at times. Improvement continued for a short period after removal from the cot, but a relapse then took place, with anorexia, dyspepsia, and general deterioration. Dietetic treatment had no effect, and finally pulmonary complications developed and death ensued (aged 7 months).

The blood count a few days before death showed 5,500,000 red cells, 22,000 white cells, with 55 per cent. hæmoglobin. Von Pirquet reactions were negative, and X rays, at the age of 6 months, showed no bony changes.

Post-mortem examination revealed some pulmonary consolidation, a dilated stomach, enlarged mesenteric glands, and exceptionally small, finely granular kidneys with adherent capsules. Microscopically both kidneys showed well-marked fibrosis and atrophy, due to long-standing chronic nephritis, probably fœtal in origin.

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Albuminuria was present in all of these cases in which the urine was examined (20), except one, and in this case the urine was only examined by a nurse; in one of Barber's cases no albumin was present at the age of 3½ years, but appeared later. Bony deformities, mainly genu valgum, were present in eight out of Barber's ten cases; these usually developed later than those of ordinary rickets, but radiologically resembled them. Osseous changes were also present in Thursfield's case, and in those of Greene in which radiographs were taken. Post mortem the kidneys examined were all very small and granular and showed marked chronic interstitial nephritis, probably of long standing.

Commentary.

The case recorded in this note undoubtedly belongs to the class of renal atrophies; clinically, the infant was definitely atrophic, and was, indeed, selected in consequence as a good experimental case in which to observe the effects of oxygen on atrophic infants. It is unfortunate that no record of the presence or absence of albuminuria was made; there was never any œdema or polyuria to call attention to renal disease, and albuminuria may have been absent, as in the case described by Barber referred to above. The absence of osseous changes, as shown by X rays, in the case described may be accounted for by a late development of these changes.

It is extremely uncommon to find any record of this rare condition at such an early age; Greene has collected only three cases under 1 year of age from the literature, and in none of these had any X ray examination been made. Our case suggests that the bony changes arise later, as these have been almost invariably recorded in older children, if examined by X rays.

References.—1. Botwood, Raper, and Willock, Brit. Med. Jour., 1925, i., 730. 2. Barber: Quart. Jour. of Med., 1920–21, xiv., 205. 3. Greene: Amer. Jour. Dis. of Children, 1922, xxiii., No. 3, p. 183. 4. Thursfield: See Wyllie, Proc. Roy. Soc. Med., 1924, xvii.

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HOSPITAL ACCOMMODATION AT LEEDS.—Dr. J. Johnstone Jervis, medical officer of Leeds, reports that the hospital accommodation of that city is inadequate in the sense that it is badly distributed rather than insufficient. All the voluntary institutions have long waiting-lists, while the Poor-law infirmaries are only partially occupied. "Some of the latter," he says, "are buildings of comparatively modern structure, well situated and well equipped, and would make ideal hospitals for the treatment of the sick of all classes of the community, including those who are able to pay a reasonable fee for their treatment." He therefore suggests that the law should be so altered as to allow of the doors of the Poor-law infirmaries being opened to the whole community.

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[1] G. Laurens: Chirurgie de l'Oreille, 1924, p. 265.

of the pulse-rate is of the utmost importance, since the visit of the doctor may cause a temporary tachycardia. There is no effect of treatment so definite as the change, after a longer or shorter period of time, from this rapid excitable pulse-rate, to one of a more deliberate and uneven rhythm, the first sign of improvement being a noticeable slowing of the rate on instructing the patient to expire slowly after taking a deep breath; as recovery proceeds the sign becomes more and more marked. Digitalis is successful in slowing the rate of these hearts in a certain number of cases, but the effect is usually lost on discontinuing the drug. While it is possible that a slowing of the pulse might also be obtained in children allowed to get up and to go about, I feel that the questions of immunity which determines the progress or arrest of infective carditis are more safely dealt with under the conservative methods of rest in bed.

(3) *Physical Signs in the Heart.*—Dilatation of the heart borders should be regarded, when following an attack of rheumatism, as evidence of an infected myocardium. It is often accompanied by a systolic murmur which sufficient rest in bed abolishes. The mitral diastolic bruits, described by Dr. W. B. Cheadle, are very common and are of the utmost importance in prognosis, especially as regards mitral stenosis and ultimately auricular fibrillation. As in the case of tachycardia, the difficult question of valvular infection seems to me to be more safely dealt with by rest in bed until constant auscultatory signs and a quiet pulse-rate show the endocarditis to have been arrested. Aortic murmurs do not appear to undergo any favourable modification.

The result of the work as organised in the wards is that there is a slow but steady stream of children passing from the rest wards to the convalescent ward. Out of the 92 cases under treatment 73 have been girls; the average age on admission was 9·3 years, the youngest child having been 4½ years old. The average stay of the patients was six months. Beginning in October education will be given in the wards by a fully certificated mistress.

(*B*) *Examination of Discharged Cases.*

Of 75 cases discharged before the spring of 1925, six had died; all were cases of severe and advancing cardiac rheumatism and were, practically speaking, sent home to die. Of the remaining 69 cases just two-thirds were re-examined, and of these 46 cases 15 showed, or had shown, subsequent signs of active rheumatism, chorea, or carditis. In eight of these there had been fresh acute rheumatism, shortly after returning home; in two cases mitral disease had slowly developed along with continual chorea; in two cases there was progressive evolution towards mitral stenosis in spite of reports of perfect health from the patients and their mothers; and in three cases there had been chorea off and on for from one to two years without any carditis. The remaining 31 cases had held their own and had had no relapse.

While some of these cases appear to have justified the results of the treatment they have had, one is bound to admit that other cases, who, after a short period of treatment, were withdrawn against advice, had done equally well; on the other hand, certain cases, thought to have done well at Broadstairs, were disappointments. There are, I think, so many variations in the conditions to which these cases are exposed, that in order to investigate fairly the results of any type of treatment for rheumatism in childhood, it would be desirable to select a series of cases as uniform as possible.

Some of these variable factors may here be reviewed.

(1) Number of attacks of rheumatism before beginning treatment.

(2) Presence or absence and severity of carditis.

(3) Mode of onset of disease—acute, insidious, or choreic.

(4) Home conditions of the patient, especially after returning from treatment. One of my most disappointing cases said that the damp stood upon the walls of her home.

(5) Length of time under treatment.

(6) Performance or otherwise of tonsillectomy as part of the treatment.

Doubtless many of the variations in the onset and virulence of rheumatic infection are bound up with questions of individual and tissue immunity, to which at present we have no answer. Nevertheless, it should be possible by careful selection from a large number of cases to form groups for observation in which all the above variable factors should be as uniform and as favourable as possible. For such a purpose the following organisation would seem to be required:—

(1) A *central building* in London (or other city), by means of which: (*a*) Accurate histories could be obtained from patients' relations. (*b*) Cases could be taken, if desired, by reference from the general hospitals. (*c*) Visitors could report on home conditions and endeavour to get house repairs effected in special cases. (*d*) Physicians could select and group fresh cases, probably giving preference to early cases, as in tuberculosis. They would also be able to re-examine cases returned from rest homes. (*e*) Records could be kept.

(2) *Rest homes* for carrying out treatment.

From re-examination of these discharge cases one cannot fail to learn that the most accurate prognostic signs are to be found in repeated examinations of the heart; quiescence of symptoms is deceptive, and in America they have learned that even three years must elapse before it can be assumed that a favourable case is likely to be free from recrudescence. Similarly, constitutional signs are unreliable. I saw a boy in May, 1925, who had a really healthy colour, and had recently been running about; he has had about two attacks of rheumatism yearly since 1921, the heart is greatly enlarged, and shows mitral systolic and diastolic bruits, and an aortic diastolic murmur; his last attack had been in February, 1925. If, however, by any management, such unfavourably developing physical signs can be arrested, then, as the period of life approaches at which the heart is less susceptible to infection, the chances of an active and useful life are increased.

Clinical and Laboratory Notes.

TWO CASES OF LATERAL SINUS THROMBOSIS.

BY DOROTHY J. COLLIER, M.B., B.CH. OXF.,
ASSISTANT, EAR, NOSE, AND THROAT DEPARTMENT, UNIVERSITY COLLEGE HOSPITAL; REGISTRAR, CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL.

THE following cases of lateral sinus thrombosis may be considered worthy of record, as in each instance I performed a radical mastoid operation and ablated the infected lateral sinus without tying the internal jugular vein, with successful results.

CASE 1.—B. E., a girl aged 11, was admitted to hospital with a history of discharge from the left ear for four years. She complained of pain over the left side of the head and in the left ear, and gave a history of attacks of shivering and vomiting. On admission the patient was very ill, with a temperature of 97° F., pulse-rate 120, and she had tenderness over the left mastoid process. A mastoid operation was performed and a large extradural abscess evacuated. There was thrombosis of the lateral sinus down to the jugular bulb; the sinus was opened and a septic clot evacuated. The jugular vein was not tied. On the following day the patient's condition was still bad, but there had been no rigors; on lumbar puncture the cerebro-spinal fluid was found to be normal. Two days later the temperature rose to 101° F. and the pulse-rate to 140. She vomited several times during the night. There were no rigors. The wound was reopened and more septic clot was turned out of the lateral sinus. From this date the patient made an uninterrupted recovery.

CASE 2.—L. A., a woman aged 21, was admitted to hospital with symptoms of acute mastoiditis on the left side. Her temperature was 103·6° F. and her pulse-rate 136. A mastoid operation was performed; the bone was very sclerosed, and a perisinus abscess was present. The lateral sinus was exposed for one inch, and the wall of the sinus was seen to be healthy and felt to pulsate. Her condition improved after the operation for three days, when her temperature rose again. On lumbar puncture the cerebrospinal fluid was found to be normal; a blood count gave a leucocytosis of 12,500 per c.mm. Two days later she had two rigors; the cerebro-spinal fluid was still normal, and the leucocyte blood count was 15,000 per c.mm. The wound was reopened and the lateral sinus was further exposed; the wall was found to be covered with grey granulations. The sinus was opened and a septic clot evacuated; there was free bleeding from both ends of the cut sinus. The internal jugular vein was not tied. Three days later the leucocyte blood count had come down to 6000. She made a slow but uneventful recovery.

Comments.

The tendency of recent writers, particularly in America, in dealing with the surgical treatment of lateral sinus thrombosis, has been to advocate ligation of the internal jugular vein in every case. The two cases here reported show that no hard-and-fast rule should be laid down about the necessity for invariable ligation of this vein. These patients are usually so gravely ill that it is eminently desirable for the surgeon not to undertake measures of greater severity than are absolutely necessary. Mr. Richard Lake has emphasised the importance of speed in carrying out surgical procedures in such cases. Ligation of the internal jugular vein does not necessarily prevent extension of the infection to the systemic circulation because of the establishment of collateral venous circulation. Laurens,[1] moreover, points out that the statistics of ligation and non-ligation show equal percentages of recovery.

I desire to express my thanks to Mr. Lake for the opportunity of operating on these two cases in his wards at the Royal Ear Hospital.

A CASE OF
ATROPHY OF RENAL ORIGIN IN A YOUNG INFANT.

BY CATHERINE CHISHOLM, M.D. MANCH.,
AND
EDITH F. WILLOCK, M.B., B.CH. DUB., F.R.C.S. IREL.

IT seems probable that the following case of renal atrophy in a young infant is worthy of record.

A female infant, aged 5 weeks, was admitted to hospital with a history of dyspepsia and loss of weight. She was an eight-months infant and had been almost entirely breast-fed. On admission she weighed only 4 lb., and showed signs of recent wasting; no cardiac, respiratory, or other abnormalities were detected; the urine was not examined as maintenance of warmth and careful handling were essential in her existing condition.

The patient was given breast milk feeds but failed to make much progress, though dyspepsia was not evident, and after a month she was placed for three weeks in an oxygen cot, in which she breathed air with 40 per cent. oxygen and the accumulation of her own expired carbon dioxide for some eight hours out of each 24.[1] With this treatment satisfactory progress and gain in weight commenced and continued for six weeks after removal from the cot, although during this period the breast milk was discontinued.

Improvement was so satisfactory that the infant was vaccinated, and lactified milk feeds were being changed to simple milk and water preparatory to discharge, when an attack of dyspepsia supervened. The attack was not severe but it apparently sufficed to upset the balance, and for the ensuing eight weeks the infant remained obstinately stationary in weight, and the clinical picture was definitely one of atrophy.

There were occasional manifestations of mild dyspepsia, the appetite was poor, and the skin developed a curiously yellow tinge, though no bile was present in the urine. At this time a blood count showed 3,550,000 red cells and 20,000 white cells, with hæmoglobin 45 per cent. A second period of treatment in the oxygen cot was then given for a month during which some general improvement and gain in weight occurred. Some diarrhœa was present at times. Improvement continued for a short period after removal from the cot, but a relapse then took place, with anorexia, dyspepsia, and general deterioration. Dietetic treatment had no effect, and finally pulmonary complications developed and death ensued (aged 7 months).

The blood count a few days before death showed 5,500,000 red cells, 22,000 white cells, with 55 per cent. hæmoglobin. Von Pirquet reactions were negative, and X rays, at the age of 5 months, showed no bony changes.

Post-mortem examination revealed some pulmonary consolidation, a dilated stomach, enlarged mesenteric glands, and exceptionally small, finely granular kidneys with adherent capsules. Microscopically both kidneys showed well-marked fibrosis and atrophy, due to long-standing chronic nephritis, probably fœtal in origin.

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Commentary.

The case recorded in this note undoubtedly belongs to the class of renal atrophies; clinically, the infant was definitely atrophic, and was, indeed, selected in consequence as a good experimental case in which to observe the effects of oxygen on atrophic infants. It is unfortunate that no record of the presence or absence of albuminuria was made; there was never any œdema or polyuria to call attention to renal disease, and albuminuria may have been absent, as in the case described by Barber referred to above. The absence of osseous changes, as shown by X rays, in the case described may be accounted for by a late development of these changes.

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Reviews and Notices of Books.

APPLIED MEDICINE.

Social Aspects of Mental Hygiene. Addresses by Frankwood E. Williams, C. Macfie Campbell, Abraham Myerson, Arnold Gesell, Walter E. Fernald, Jessie Taft. London: Humphrey Milford; Oxford University Press. New Haven: Yale University Press. 1925. Pp. 150. 7*s.* 6*d.*

An Approach to Social Medicine. By Francis Lee Dunham, M.A., M.D., Lecturer on Social Medicine, Johns Hopkins University. Baltimore: The Williams and Wilkins Co. 1925. Pp. 242. $4.00.

The psychiatric social worker is a species peculiar to the North American continent where, however, it flourishes abundantly. In the *Mental Hygiene Bulletin* for June, 1925, there were described courses of instruction in no less than 11 schools, colleges, and universities which are organising summer teaching in psychiatry and mental hygiene for lay women. The students at these courses will for the most part have been college graduates. By this time they have been taught about complexes and fixations, about adenoids and tuberculosis, and some of them have even had some superficial experience of the use of a stethoscope. Thus equipped, they have no difficulty in finding professional employment; courts, prisons, hospitals, asylums, industrial corporations, and innumerable voluntary health agencies demand their services. The average doctor they feel, and perhaps reasonably, is rather less well equipped than themselves to deal with behaviour problems, though he may be consulted when it is desired to rule out adenoids. For the most part they will treat the psychiatrists with respect, for thence comes their learning—but they are a profession sui generis and responsible not to the medical profession, nor to any ministry of health, but only to the lay organisation which happens to employ them. The lectures collected under the title Social Aspects of Mental Hygiene are examples of the tuition which the psychiatric social worker is getting; selected examples it must be admitted, for the writers are among the best known and rightly respected of American mental hygienists. It is as such that English doctors should read them, not expecting to learn anything about the origins of behaviour that they had not heard of before.

Dr. Dunham's book goes much deeper. A practising psychiatrist, living, one imagines, in an atmosphere of philosophy and sociology, he has been brought to examine very fundamentally the tendencies both of social service and of psychiatry. "The aim of preventive science, applied to welfare," he finds, "embodies a synthetic reconstruction of the existing situation, in the accomplishment of which an analysis of the various social fields is fundamental." Society is a laboratory wherein, if we would learn, the experimental method must be rigidly applied and the resulting knowledge reduced as far as may be to comparable, measurable, data. Among the basic factors of social life which we must learn increasingly how to estimate—and estimate quantitatively—are health, intelligence, and character. The greatest of these and the hardest to assess is character. But the analytical method, derived from much experience and insight, which Dr. Dunham describes, does indeed constitute an approach. In spite of an unfortunate addiction to four-syllable words, Dr. Dunham's book is easily read and full of stimulating and well-organised ideas.

Personal and Community Health. By Clair Elsmere Turner, Associate Professor of Biology and Public Health in the Massachusetts Institute of Technology. St. Louis: C. V. Mosby Co. 1925. Pp. 426. $2.50.

This book differs from the numerous other college text-books of hygiene at present rife in America, in that it combines public with personal health. In this respect it registers an advance. The layman is likely to get a more wholesome as well as a more useful knowledge of hygiene when he considers the subject as a social reformer rather than as a valetudinarian. Moreover, as this text-book shows, it is possible to write more convincingly about the principles of preventive medicine than about the rules of private well-being. The latter are so numerous, so varied, many of them so ill-founded, that any writer must be constantly on his guard lest he preach to the less critical college student doctrines that he knows would be challenged in a society of physiologists. Such a doctrine is the rule that we should drink six glasses of water a day, and it is here presented (p. 33) without regard to the heat of the day or the activity of the drinker.

Three-quarters of the book is occupied with the teaching of preventive medicine. The outline followed is as orthodox as the teaching. There is a short history of preventive medicine in which the origins of epidemiology are curiously introduced after the work of Pasteur. There is very properly a chapter on immunity which contains some ingenious guesses, as, for example, that anaphylaxis explains a possible inherited susceptibility to tuberculosis; chapters on water-supply and waste disposal, which are the best in the book, and as an appendix the 1916 report of the Committee on Standard Regulations of the American Public Health Association, which describes briefly the commoner communicable diseases and the methods of control then available.

The book contains few errors for a first edition, is well printed and bound, and as readable as college text-books are wont to be.

SURGERY.

A Synopsis of Surgery. Seventh edition. By E. W. Hey Groves, M.S., M.D., F.R.C.S., Surgeon to the Bristol General Hospital, and Professor of Surgery, Bristol University. Bristol: John Wright and Sons, Ltd. 1925. Pp. 671. 17*s.* 6*d.*

Three years have elapsed since the sixth issue of this useful synopsis, and throughout the book there is frequent evidence of careful revision, the subject-matter as presented being absolutely abreast of modern surgical advances. The section on abdominal disease, by Mr. D. G. Tasker, is a good example of the general standard of excellence. It is pleasant, for example, to find Barnard's classification of subphrenic abscess clearly given, and a compendious account of diverticulitis of the colon. A number of new line drawings are designed to elaborate the necessarily short description of certain subjects. It is really extraordinary what an amount of up-to-date surgical knowledge Prof. Hey Groves has compressed into so small a volume.

Infections of the Hand. Fifth edition. By Allen B. Kanavel, M.D., Professor of Surgery, Northwestern University Medical School; Attending Surgeon, Wesley Medical Hospital, Chicago. Philadelphia and New York: Lea and Febiger. 1925. Pp. 449. $5.50.

It was largely owing to the work of Kanavel in Chicago that this subject began to attract more widespread attention in this country, and his monograph is now well known. The book is happy alike in the practical research upon which the clinical work is founded and in the presentation of the diagnosis and treatment of these grave infections. The present edition has been improved in one very important respect. In previous editions, though the more serious disasters following inefficient treatment were described, their treatment (apart from prophylaxis) was not made very clear. A new section has now been introduced. dealing exhaustively with the treatment of stiff fingers, large scars with contractures, and so on. Continuous elastic traction on fingers fixed either in flexion or extension is excellently illustrated. How to make good skin defects from the abdominal wall is also given in greater detail. The book should certainly form part of the student's and practitioner's armamentarium.

Diseases of the Rectum and Pelvic Colon. Second edition. By MARTIN L. BODKIN, M.D., F.A.C.S., Rectal Surgeon, St. Catherine's Hospital, Associated Surgeon, Broad Street Hospital, and late Rectal Surgeon of the Bushwick, Williamsburg, and St. Mary's Hospitals, New York. New York: E. B. Treat and Co. 1925. Pp. 487. $6.

THIS edition is improved by the addition of three chapters and by general revision. There is a new chapter on the relation of the intestinal flora to the simple catarrhal diseases of the colon and one on the irrigation of the colon, which emphasises the principles of a treatment which has been much abused. The author recalls the original and correct technique and rationale. There are admirable introductory chapters on general examination of the patient which will teach the student how to approach a case of rectal disease, and no reader can forget the value of digital examination. The stress rightly laid on this recalls the teacher who, for the sake of his students, has a finger-stall hanging at every bedside. The work of English surgeons, it is pleasant to find, has not only been noticed in America, but is evidently thought worth mention in a text-book. Both students and practitioners will find this well-printed and illustrated book useful.

Minor Surgery. By L. R. FIFIELD, F.R.C.S. Eng., Surgical First Assistant and Registrar; Demonstrator of Minor Surgery, London Hospital. London: H. K. Lewis and Co., Ltd. 1925. Pp. 431. 12s. 6d.

THE author has yielded to the importunities of his friends in writing a book on minor surgery as it is taught at the London Hospital and the interest centres largely in the local colour of the teaching. He closely follows Kanavel in treating infections of the fingers, and this section might with advantage have been given in even greater detail. There are numerous illustrations and the line-drawings are not uniformly good. The book will have to compete with a considerable number of other handbooks on minor surgery already on the market.

MALIGNANT DISEASE OF THE TESTICLE.

By HAROLD R. DEW, F.R.C.S. London: H. K. Lewis and Co., Ltd. 1925. Pp. 168. 21s.

THIS book is the author's Jacksonian essay on the pathology, diagnosis, and treatment of testicular new growths. After dealing with the anatomy and development of the testicle he discusses, what has long interested and at the same time puzzled pathologists, the morbid anatomy and histology of new growths of the testicle. The multiplicity of references given in this chapter is alone sufficient to show the industry with which the author has foraged amongst works bearing on this subject, and taking into consideration the confusion that still exists, his method of classification and description is remarkably clear. In the final chapters dealing with prognosis and treatment he puts in a strong plea for the radical operation. In his opinion the results of simple orchidectomy have long been a reproach to surgery, and in all cases, except those in which a palpable mass can be felt, an effort should be made to remove the lumbar glands as well as the diseased testicle. Although far removed from the testicle the glands are readily accessible, and in about 60 per cent. of cases admit of removal. The work contains many excellent illustrations and five coloured plates, and is certainly the best monograph on this subject that we have come across in the English language.

EMPLOYMENT AND WELFARE OF JUVENILES.

A Handbook for those Interested in Choice of Employment and After-care. By O. BOLTON KING. London: John Murray. 1925. Pp. 244. 6s.

THE theme of this book is the after-care of children who have passed the school age, and probably most readers will be surprised at the very wide net spread by after-care agencies, whether official, through State or local municipal provision, or through more or less private non-official societies. In the author's own words, "After-care takes the whole of the youth's life within its province, looks after his education, his amusements, his moral health—aims at making the man and the citizen." And besides this general welfare movement, there are the numerous "choice of employment" schemes, which are aimed at fitting square pegs into square holes. In respect to these Britain lags behind Germany, Belgium, and the United States, but in matters of general social welfare Britain may fairly claim to lead. The author deals with the subject in a very comprehensive way; few agencies can have escaped his notice. On this account the book is invaluable to all social workers. Its chief scientific interest is in dealing with vocational selection by means of tests. It is already clear that general intelligence tests alone are of little value, that tests of specific capacities are essential, and, in addition, that temperamental qualities require study. Having decided what specific capacities are required in any particular branch of trade, and having devised certain tests for these qualities, there still remains to discover how far the results obtained correlate with the actual working capacities of the workers. Much experimental work, therefore, is still necessary, and, as Mr. King points out, even with a perfect system of tests it not infrequently happens that the work for which a man has great aptitude is not congenial to him. Mechanical efficiency must be supplemented by contentment. An appendix gives valuable information regarding a large number of common trades.

The practitioner called upon to express opinions on the physical fitness of youths for certain trades will find here a basis for a much wider view than the purely medical.

NURSING.

Handbook for Queen's Nurses. First edition. By "Some Queen's Superintendents." London: The Scientific Press, Ltd. Pp. 76. 1s. 6d.

A HANDBOOK of district nursing has long been a desideratum, and this one, written by "Some Queen's Superintendents," although a modest volume, should help trained nurses who are beginning work on the district. So interesting is the reference to the history of district nursing that one regrets its brevity. The chapter on the duties of the district nurse reveals at once the enormous opportunities presented to those who undertake the nursing of the sick in their homes. "Her task is not only the treatment of disease but the education of her patient and his friends in the essentials of hygiene, so as not only to prevent all avoidable infection, but to raise the standard of health in each household she visits." It is this aspect of district nursing that makes it attractive to nurses whose gifts in these directions fit them for posts of responsibility.

A Reference Handbook for Nurses. Fifth edition. By AMANDA K. BECK, R.N. London and Philadelphia: W. B. Saunders Company, Ltd. Pp. 288. 7s. 6d.

THIS handbook of convenient size for quick reference should achieve the end for which it was designed, being well produced and containing well-selected information invaluable both to student nurses and to private nurses called upon to meet emergencies. The subject-matter is based upon a collection of notes made by the author throughout her training and nursing experience, and is obviously the result of intelligent observation and the careful record of facts. In addition to the notes collected are several articles by eminent physicians and superintending nurses, and the whole comprises a book eminently suitable to the needs of a nurse, and one which in time would come to be regarded as a friend and support. The chapters on the Preparation of Foods and Food Constituents are noticeably good, and there are a few clear illustrations.

Medikamentenlehre für Krankenpfleger und Krankenschwestern. Fifth edition. By Dr. PAUL FLEISSIG, Apothecary to the Hospital and Lecturer in Practical Pharmacy in the University, Basle. Berlin and Vienna: Urban and Schwarzenberg. Pp. 197.

THIS book should form a useful addition to a nurse's library. It is concerned with the drugs and apparatus connected with drugs used in hospital and in practice, and gives a simple account of their origin and use which will make the work of the nurse more interesting. It is by no means a book to be learnt off by heart, but is full of useful facts and hints, given by one who likes to have things done properly and who has at his command a large number of contrivances to meet contingencies arising in the wards. The chapter on Winke, the expressive German word for "tips," has evidently been congenial work to the author. We are not astonished to note that the work has reached a fifth edition.

THE LIVING EYE.

Microscopie de l'Œil Vivant. Diagnostic Précoce et Séméiologie des Affections du Segment Antérieure de l'Œil. Par F. ED. KOBY, Bâle. Paris: Masson et Cie. 1924. Pp. 240. Fr.25.

Slitlamp Microscopy of the Living Eye. Early Diagnosis and Symptomatology of Affections of the Anterior Segment of the Eye. By Dr. F. ED. KOBY. Translated by CHARLES GOULDEN, O.B.E., F.R.C.S., and CLARA LOMAS HARRIS, M.B. London: J. and A. Churchill. 1925. Pp. 221. 10*s.* 6*d.*

Dr. Koby's treatise on the use of the *slitlamp*, especially as it is now available in English, should prove of great value to ophthalmologists interested in what is a most promising innovation in methods of examination of the eye. The slitlamp is rather more of a novelty in this country than it is abroad, and until lately all the apposite literature has been in German. It was avowedly in view of this that Dr. Koby wrote his book for the French ophthalmologist. He has produced a clearly written work in a language inherently suited to the expression of scientific thought, a book which no one interested in the microscopy of the living eye can afford to miss. Precise details of apparatus and technique are given with explanations of the optical conditions present. Certain points, such as the thermal currents in the anterior chamber, the structure of the lens, and the changes in pigmentation of the cornea, are dealt with more fully than in any other book on the subject. The illustrations are good, but lose something in the French edition by the type of paper on which they are printed. In the English edition this fault disappears.

The translators have had a difficult task in dealing with terms of which the English equivalents were often doubtful, but there are a few avoidable errors. On p. 142, the sentence beginning, "In this case the design of the sutures . . . ," conveys a meaning the opposite of the French, and three pages later, dealing with the lens shagreen, the translators use "spherules" for "éléments," thereby losing the nuance of vagueness which is desirable, since these objects are really only appearances. "Markings" would perhaps convey the author's meaning better. These little defects scarcely detract from the usefulness of the English edition, which is on the whole a faithful rendering, and has in one or two particulars improved on the original. The points of the lamp on p. 10, for instance, are brought out much more clearly than in the figure on p. 24 of the French edition, which it replaces. The description of Fincham's apparatus brings the first chapter of the English edition fully up to date.

MORE THINGS THAT MATTER.

By Lord RIDDELL. London: Hodder and Stoughton, Ltd. 1925. Pp. 318. 7*s.* 6*d.*

THIS volume is made up of articles which appeared originally during 1922–24 in *John O'London's Weekly*, and which are now republished in response to requests from readers who have desired their issue in more permanent form. The book is uniform with a previous volume, "Some Things that Matter," whose witty common sense over a wide range of subjects was pointed out in our columns upon its appearance.

None of the chapters in the new volume has any strictly medical bearing, save perhaps two which make up a tolerant discussion of that controversial subject, alcohol. Considering it now as a poison and now as the reverse, Lord Riddell's attitude is almost startlingly fair. He writes as one whom teetotalism suits, "having been accustomed to it all my life," but, though fully aware of the evils and dangers that follow abuse, or even use by the suggestible subject, he is so unbiased as to ask at the conclusion of the first of these chapters the following question: "One thing is certain; a teetotal world would be a very critical one. Would this make for increased happiness? I wonder!" The second of the chapters notes that the temperance movement in this country, as in the United States, has been a necessity arising out of social exigencies created some hundred years ago, when to abstain from intoxicants was almost a social slur. In this little discourse misconceptions regarding prohibition in America are set right, particularly the notion that the legislation was hasty or panicky; while it is still on trial the author, like a sound lawyer, comes to no decision on insufficient evidence as to whether its great object—namely, the increased efficiency of workmen—has been obtained. But he brings to notice the fact which too often escapes attention, that we in this country have for some years been engaged in considerable experiments towards, at any rate, the profound moderation of alcoholic habits. The figures that he quotes are, in his own words, imposing and gratifying:—"the production of beer and spirits has fallen nearly 50 per cent. in ten years, and the proceeds of taxation have risen from £33,000,000 in 1910 to £155,000,000 in 1923. Delirium tremens has practically disappeared, and the death-rate from alcoholism has been largely reduced."

A similar knowledge of detail and fairness of judgment is exhibited by the author through some 40 small chapters, all illustrating pregnant questions and supplying clear-cut and pithy reflections in answer.

JOURNALS.

THE JOURNAL OF PHYSIOLOGY. Vol. LX., Nos. 1 and 2. 1925.—The Influence of O_2-tension in the Inspired Air upon the O_2-tension in the Tissues, by J. Argyll Campbell. It is still generally believed that the O_2-tension in the tissues is nil. The previous researches of the author on the injection of gas under the skin and into the abdominal cavity of rabbits and cats showed that the normal O_2-tension under the skin is about 20–30 mm. Hg, and in the abdominal cavity about 30–40 mm. Hg. These tensions may be regarded as the tensions present in the fluids which exist immediately outside, and bathe the cells of the subcutaneous tissue and the cells of the peritoneum of the abdominal cavity Decrease of O_2-tension in the air breathed markedly decreases the O_2-tension in the tissues. Increase of O_2-tension in the air breathed markedly increases the CO_2-tension in the tissues, probably because the increase of O_2-tension in the blood decreases the rate at which

CO_2 is removed from the tissues; perhaps the respiratory centre is also concerned.—The Direct Action of Insulin on Fat Metabolism, by H. S. Raper and E. C. Smith. The possibility that insulin might, in addition to its influence on carbohydrate metabolism, exert a direct action on fat metabolism is suggested by the fact of the immediate reduction of lipæmia and acetonuria in the diabetic on administration of insulin. Direct evidence of the actual synthesis of fat under the action of insulin has never been obtained. The views on the subject are conflicting. The authors used mice, as their small size permits of an estimation of the total fat in the body, and they found that in decapitate eviscerate animals, with constant infusion of glucose, no change in the fat-content of muscle occurred under the action of insulin. The evidence obtained does not support the view that fat synthesis in the liver is associated with insulin hypoglycæmia.—The Effect of Pituitrin on the Fatty Acid of the Liver, by R. Coope and E. N. Chamberlain. It was found that injection of extract of posterior lobe of the pituitary body in rabbits and rats is followed by a well-marked increase in the amount of fatty acid in the liver.—Insulin and the Pituitrin "Fat Liver," by R. Coope. The pituitrin effect described in the previous paper—fatty infiltration of the liver—is not accompanied by damage to the liver cell, nor do the injections cause hyperglycæmia or glycosuria. A single dose of insulin given simultaneously with pituitrin profoundly modifies, and, in many cases, completely prevents the pituitrin effect on the liver-fat—evidence of an antagonism, probably of significance in the normal animal.—The Mechanism of Pancreatic Digestion—the Function of Secretin, by J. Mellanby. A secretion of pancreatic juice may be evoked by appropriate stimulation of the vagus only. Vagal juice is generally scanty in quantity, but rich in proteins and enzymes; secretin juice is copious in quantity, but relatively poor in protein and enzymes. The author determined the quantitative composition of this juice under a variety of conditions. The hypothesis is put forward that the enzyme content of pancreatic juice is determined by the vagus nerves, whereas the quantity of bicarbonate solution in which these enzymes are contained is determined by secretin. On this hypothesis secretin may play a subsidiary part in pancreatic digestion, since it only ensures the presence in the intestine of an optimal reaction for the activity of the pancreatic enzymes.—The Influence of the Spleen in Carbon Monoxide Poisoning, by J. Barcroft, C. D. Murray, D. Orahovats, J. Sands, and R. Weiss. In an atmosphere which receives a continuous accession of coal-gas it was found that guinea-pigs from which the spleens have been removed die sooner than either normal guinea-pigs, those from which omentum has been removed, or those from which one horn of the uterus has been excised. Having regard to the fact that in fatal pressure of carbon monoxide the spleen contracts, expelling its contents into the blood, it is suggested that the longer life of the normal animals is due to this accession of hæmoglobin into the blood. The percentage saturation of the blood with CO is almost the same in all the categories of animals.—The Relation in Diuresis between Volume of Urine and Concentration of a Diuretic with the Influence of Temperature upon It, by E. J. Conway. The experiments were made on rabbits under urethane narcosis; the urine was collected from a bladder cannula, and the necessary injections given through the jugular vein. In an animal which has received a large injection of glucose it was found that the rate of flow of urine and the concentration of glucose are related to one another by a formula which is given by the author. A similar formula is found to apply to the concentration of chloride and the rate of flow in saline diuresis. The effect of body temperature on the constants in these formulæ is to cause an increase of 10 per cent. per degree. A similar increase is found with urea.—The other papers are: On the Effects of Different Salts on the Heat-production in Muscle, by E. Sereni. Hæmochromogen and the Relation of Protein to the Properties of the Hæmoglobin Molecule, by M. L. Anson and A. E. Mirsky. The Maximum Work of the Several Muscles of the Forearm, by J. H. O. Reijs, and a Closed Circuit Heart Lung Preparation, by I. de Burgh Daly, to show the effects of alterations in blood volume. An increase in the volume of circulating blood produces, with the exception of minor differences, the same effect as an increase of venous inflow in the open circuit heart lung preparation.

BRITISH JOURNAL OF CHILDREN'S DISEASES. Vol. XXII. July–September.—In his paper on Scarlet Fever, with Special Reference to Susceptibility as Determined by the Dick Intracutaneous Test, which forms his M.D. thesis for the Queen's University, Belfast, Dr. W. A. Brown records his observations on 487 cases of the common infectious diseases—namely, scarlet fever, diphtheria, whooping-cough, measles, rubella, and varicella, on which he performed the Dick test. His principal conclusions are as follows: (1) The Dick test is an index of susceptibility and immunity to scarlet fever. (2) It is a valuable aid to diagnosis. A *strongly* positive reaction in the first 48 hours of a scarlatiniform eruption should make one hesitate before forming a diagnosis of scarlet fever. (3) When a patient who has recently shown a positive Dick reaction develops a scarlatiniform attack the reappearance of the red area at the site of the original inoculation confirms the diagnosis of scarlet fever. (4) Age-susceptibility for scarlet fever is highest at the pre-school age, whereas age-incidence is greatest during the first few years of school life. Immunisation, therefore, if adopted as a prophylactic measure in State medicine, should be carried out in the first few years of life. (5) The Dick test confirms the well-recognised fact that an attack of diphtheria increases the patient's susceptibility to scarlet fever. (6) The use of different dilutions of toxin may show widely divergent results. The use of a 1 in 6000 dilution seems to underestimate the susceptibility, while the use of a 1 in 1000 dilution tends to overstate the incidence.—Dr. Vincent Coates contributes a paper on Lipodystrophia, in which he records two personal cases in boys aged 7½ and 7¼ years, with notes on all the previously reported cases arranged in tabular form. He points out that the cause of this curious condition is entirely obscure. With the exception of a case reported by Napoleon Boston no claim has been made of cure or arrest of lipodystrophia.—Dr. Norah H. Schuster records a case of cerebral degeneration in an infant, in which the symptoms closely resembled those of a case reported by Paterson and Carmichael in 1924, owing to the onset of anorexia, amentia, and muscular weakness at an early age, a rapidly fatal issue and amaurosis. Pathologically the essential lesion was the same in all three cases—namely, a degeneration chiefly localised in the basal ganglia, combined with excessive production of blood-vessels and neuroglia. Wilson's disease could be excluded, as there was no cirrhosis of the liver. Dr. Schuster attributes the condition to a toxæmia of unknown origin, with no evidence of bacterial infection.—Dr. W. M. Feldman reports two cases of Occlusion of Bile-Ducts in Infants, whose ages were 8 weeks and 10 weeks respectively. He maintains that if surgical measures were adopted immediately the jaundice manifests itself they might be successful.—Dr. Angelica Panayotatou, of Alexandria, records a case of Ascaridiasis with Benign Jaundice in a boy of 8 years. The ova of *Ascaris lumbricoides* were found in the stools, and under treatment by santonin and calomel pills, followed by castor oil the next morning ten round worms were passed, and rapid recovery took place. The writer urges that in Eastern countries, especially those in which intestinal parasites are so frequent, the possibility of their presence should be considered in all illnesses of the intestinal canal.—The abstracts from current literature are devoted to ophthalmology.

Reports and Analytical Records.

(1) CHOCOLATE "IODOSTARIN"; (2) ALLONAL.

(Hoffmann-La Roche Chemical Works, Ltd., 7–8, Idol-lane, E.C. 3.)

(1) Chocolate Iodostarin is a preparation for the administration of iodine in the prophylaxis of goitre. The chocolate tablets in which the drug is contained are sold in boxes of 50 which, on experience gained in Switzerland and the United States, appears to be a sufficient quantity for prophylactic employment in the case of a child or young person for a period of six months. Each tablet contains the equivalent of 5 mg. of iodine, and it is necessary to note the distinction between this preparation and ordinary iodine tablets which are employed in syphilitic affections.

(2) Allonal was reported upon in The Lancet early last year. The full name of this preparation showing its composition is allyl-isopropyl-barbituric acid with phenyl-dimethyl-amino-pyrazolon. It is an hypnotic and analgesic which can be employed in substitution for morphine as it seems to have no habit-forming propensities. Numerous clinical reports have been published in the American medical press but the drug is still new to the English market, for which reason it may be serviceable to recall its characteristics. American experience goes to support the claims of the manufacturers that it is a remedy of real value for controlling insomnia and pain. As the preparation contains a derivative of barbituric acid it comes within the scope of the Poisons Schedule and is only supplied to registered practitioners and pharmacists. Recent evidence has been sent to us of the particular value of Allonal in certain cases as an hypnotic, for American physicians have put it to practical use in the breaking of drug addictions such as morphinism and alcoholism, although they allow that it is too early to speak dogmatically. Certainly further experience here would be worth recording, and there seems to be an opening for some extended inquiry under controlled circumstances.

(1) DIBROMIN; (2) SILVER NITRATE SOLUTION CAPSULES; (3) STORAXOL; (4) OLGAR.

(Parke, Davis and Co., Beak-street, London, W. 1, and Detroit, Michigan, U.S.A.)

(1) Dibromin is a crystalline synthetic compound containing approximately 56 per cent. of bromine in loose combination. When its solutions are brought into contact with infected tissues the bromine is slowly liberated and exerts a powerful germicidal action. It is stable in the dry state and solutions are easily made of definite strength; these do not stain or irritate and are practically non-toxic. Dilute aqueous solutions, ranging in strength from 1 in 10,000 to 1 in 2500, may be applied by continuous irrigation in the treatment of extensive wounds or ulcerations, and for infections of the urethra, bladder, or uterus. Weak solutions are suitable for use as mouth washes and as collyria in eye infections. The preparation is supplied in 6 gr. capsules (in bottles of 10 or 50 capsules) for convenience in making solutions without weighing—the contents of one capsule added to 7 pints of water forms a 1 in 10,000 solution.

(2) Silver nitrate solution capsules provide in aseptic condition the 1 per cent. solution of nitrate of silver for application to the eyes of infants at birth. They are formed of a special wax, and each contains about 5 ♏ of the solution, which is easily expelled by pressing the capsule between thumb and finger after an aperture has been made with a sterile needle. Two of these capsules are supplied in a tin together with a puncturing needle and directions for use.

(3) Storaxol is a combination of storax, resorcin, menthol, camphor, carbolic acid (5 per cent.), and precipitated sulphur in an emollient base. As the ointment is penetrative it forms a good parasiticide. Its antipruritic, antiseptic, and analgesic properties indicate its use in chronic eczema, ringworm, pruritus, urticaria, impetigo, psoriasis, scabies, and parasitic affections of the scalp. It can be employed as a serviceable dressing for foul ulcers and in the itching of piles. It is supplied in convenient collapsible tubes, also in jars containing 1, 5, or 10 pounds.

(4) Olgar consists of highly purified liquid paraffin emulsified with agar. It has the appearance and consistence of thick cream and is agreeably flavoured. The paraffin is rigorously tested to ensure freedom from injurious by-products. The administration of Olgar is indicated in cases of chronic fæcal stasis and the various forms of auto-toxæmia resulting therefrom; in catarrhal conditions of the intestine and hæmorrhoids. Its lubricating and therefore soothing action is purely mechanical; it softens the intestinal contents and facilitates peristalsis. The dose for an adult is one tablespoonful night and morning. It is supplied in 16-ounce bottles.

LACTOBYL.

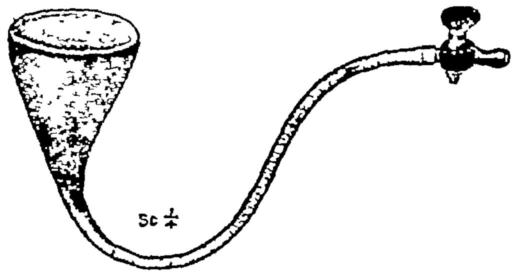
(J. Legrand, 21, Rue Theodorè-de-Banville, Paris, 17e; and The Continental Laboratories, Ltd., 22d, Ebury-street, S.W. 1.)

This preparation is a combination of agar, biliary extract, extract of the intestinal glands, and lactic ferments, and is designed to regulate the biliary and intestinal secretions, replacing the habitual use of purgatives. A physiological theory, set out by the literature, which meets the ætiology of every case of chronic constipation, would have some difficulty of establishment, but the value of agar on intestinal residues is well known, while promotion of a flow of bile is the object of all preparations similar to lactobyl, and there is evidence that that object is achieved. It is supplied in tablets in which the dosage is calculated so that one to six tablets can be taken without causing any colic. The treatment should be commenced with one or two tablets, the dose being increased or diminished according to the results.

New Inventions.

MODIFICATION OF DE RIBES'S BAG.

The illustration shows a modification of De Ribes's bag which I have suggested. By a special device the broad end of the bag, when filled, is concave, so that it does not displace the fœtal head. The pressure also is evenly distributed outwards against the inner side of the cervix, thus producing more speedy dilatation. The object of this, like any other form of De Ribes's bag, is to play the part of the membranes in those cases where the membranes rupture early in labour. The bag, when folded, can be introduced into the uterus when the cervix is the size of a shilling by means of long ovum forceps. It is pear-shaped, 2¼ in. in diameter at the broad end, and 4 in. long, and it is made of rubber of medium thickness. When the bag has been introduced a Higginson's syringe is fitted to the tap and the bag partially filled with water. The bag remains in position until the cervix is fully dilated.



The bag can be obtained from Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, W.

J. E. Hepper, M.R.C.S. Eng., L.R.C.P. Lond.,
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THE LANCET.

LONDON: SATURDAY, OCTOBER 3, 1925.

YESTERDAY, TO-DAY, AND TO-MORROW.

WE publish to-day three of the introductory addresses delivered this week at the opening of the winter session of the Metropolitan medical schools, when Prof. E. A. GARDNER introduced his audience at Westminster Hospital to the very beginnings of medical art in ancient Greece, while Major J. H. BEITH spoke to the students at Guy's Hospital on the necessity of cultivating in professional life sympathy with the personal attributes of the sick subject. Major BEITH, it will be seen, draws his humorous and pointed illustrations from the working of a Rolls-Royce car, while Prof. GARDNER lays stress on the influence of the mind over the body as evidenced in the days when not to believe in magical manifestations would have been a confession of ignorance, and the two addresses between them illustrate the practice of medicine as carried on in conformity with accepted knowledge throughout a period of over 2000 years, during which time we cannot fail to see that human nature has remained much the same thing, and that the part played by medicine has shown a similar applicability to circumstances. The more intimate that the doctor's comprehension is of the patient's mental make-up, the more successful will be his choice and application of remedies for his physical ills. So it was in the yesterday of ancient Greece, so it is to-day in our hospital and private practice, and so it will be in any of those great developments of to-morrow, in which the progressive nature of our science and art warrants belief.

Prof. GARDNER in his disquisition on the cures of ÆSCULAPIUS surveys common ground upon which the students of archæology and medicine meet, and it is archæology which has revealed to medicine the sources of the wisdom of HIPPOCRATES, the Father of our calling. The ancient Greek records, notably those at Epidaurus, though compiled apparently at one date, were based upon votive offerings received over a long series of years, and the traditional wisdom thus placed at the disposal of HIPPOCRATES led to the compilation of the first great medical system. In this the practice of medicine was for the first time based upon the principles of inductive philosophy, and while the knowledge of anatomy, of physiology, and, therefore, of pathology was defective, the observations on the natural history of disease were masterly. He was evidently able to sift the wheat from the chaff in the votive offerings, as well as in the many contributions from all sorts of sources, authoritative and other, which must have gone to the compilation of the numerous treatises. The story was carried on, as all know, by the development of medicine in Greece, the rise of the Alexandrian school, and the teachings of CELSUS and especially of GALEN, and when after the dark ages the classical literature was brought to light, all that stood the proof of clinical trial remained as the structure upon which have been erected the immense developments of the scientific medicine of to-day. Here fundamental discoveries have worked veritable revolutions in conception as in practice, but the mind of man in relation to his body remains substantially unaltered. We are reminded by Prof. GARDNER that Sir CLIFFORD ALLBUTT estimated that in the Æsculapian centres by pomp, splendour, and enchantments the senses of the patients were captured and the springs of nervous energy unsealed. The same thing happens to-day; and while the mass display of the power of suggestion, that can be seen at Lourdes, is in many respects a return to the methods at Epidaurus as described by Prof. GARDNER, the need for estimating the relations between the physical and mental qualities of the patient is to-day recognised by every medical practitioner as of paramount importance. The eulogy of Sir CLIFFORD ALLBUTT which Sir ARTHUR KEITH gives in the third address which we publish suggests the ideal fusion of the man and the student which makes the physician. His plea for disciplined minds is appropriate, and a sense of proportion is stimulated by his statement that 20,000 years ago European man was as well equipped in size and form of brain as he is to-day.

Major BEITH'S address, though deliberately cast in a light and humorous mould, conveys a similar serious message—a message foreshadowed in its title, for his thesis is that, while no force or attractiveness of personality can compensate the doctor for ignorance, yet, unless the doctor's personality be sympathetic he will be deprived of an invaluable adjuvant to his labours. Major BEITH'S counsel to medical students that, if they want to get on in the world quickly, they must advertise, would have been dangerous in its implications if he had not immediately qualified his words by making hay of the methods employed in the specialised world of advertising, while his comments on the art of handling patients conceal real shrewdness under a humorous cloak. And his closing words, when applied to the responsibilities which lie upon the shoulders of the medical practitioner, will find general endorsement.

EXPERIMENTAL EPIDEMIOLOGY.

IN pre-bacteriological days epidemics were things of themselves, with origins, structures, and natural histories characteristic of each variety in the same way that each kind of animal and plant has a specific anatomy and specific habits and relationships to the rest of the world. With the recognition of parasites, epidemics were, as it were, materialised into reactions between the host on the one hand and the bacillus or protozoon on the other; the "cause" of an epidemic of a disease became the parasite which was related to that disease. Writers like HIRSCH and CREIGHTON were looked on as curious out-of-date mystics, and Sir WILLIAM HAMER'S gentle raillery failed to convince as many bacteriologists as it should that they had no real explanation of the natural phenomena in their talk of cultures and immunity. Experience has shown, as it has so often done before, that the flood of the new knowledge of parasites did not of itself explain all that its devotees expected and by implication claimed, and as more accurate experience of the facts of epidemics has accumulated it has become clear that the older point of view really needed attention. That the older epidemiology is really discrepant with parasitology is unthinkable if it is assumed that parasites are a necessary factor in the causation of the diseases concerned; it is evident, however, that much more knowledge is required before the two lines of thought and explanation can be brought into harmony. Observation has its limits of usefulness in unravelling such problems ; there is, indeed, little hope of success unless the questions can be dissected and simplified by experiment. The recent progress of experimental epidemiology, associated chiefly with the work of Prof. W. W. C. Topley in this country and of Dr. L. T. Webster in America, is, therefore, to be heartily welcomed and their work deserves close study. In the latest instalment[1] of the Manchester work the careful experiments made by Prof. Topley are analysed and discussed by Dr. M. Greenwood as if they were the returns of a medical officer of health, and their joint paper makes an exceptionally readable and interesting document. The particular infection examined is the pasteurellosis of the mouse, and the particular problem here dealt with is the effect of adding normal animals to an infected population. It had previously been shown that if an epidemic is started in a mouse community it spreads through it and then dies away, leaving a certain number of survivors, and that if at this stage a number of normal animals are added to the community the epidemic blazes up again and involves not only the fresh mice but also the survivors of the first outbreak. In the present experiments fresh normal animals were added at various intervals of a few days, and in this way an epidemic was maintained for more than three years. The mortality was not regular but in waves, usually of a length of about three weeks, though sometimes three times as long, and the course of the mortality varied with the number of fresh mice coming into the population and the rate at which they came in. The outstanding fact, as the authors point out, is the encouragement of an epidemic in a community by the *immigration of non-infected individuals*. It has generally been assumed that the admission of normal animals to an infected herd is not dangerous to that herd (though it is, of course, dangerous to the normals coming in). This is shown to be unsound. The explanation remains to be worked out. At present one can assume only that in the decline of an epidemic some sort of balance is reached between the parasites and the hosts such that the parasites can do no further harm unless they can get into some normal non-immune individuals in whom they can breed up a race which is capable of attacking the resistant residue of the epidemics. These are questions at the very fundamentals of epidemiology, and we may look to the experimental method to help substantially towards their solution. Meanwhile we may reflect on the wisdom of the ancients who knew that the best thing to do with an epidemic was to shut it up and have nothing to do with it. We now know that they were thinking of others as well as of themselves.

SCARLATINAL OTITIS.

Mr. T. B. Layton's report[2] to the Metropolitan Asylums Board on ear disease in scarlet fever is a continuation of that sent in by him in July, 1921, as a result of one year's work, and the present report deals with the 13 months from September, 1923, to September, 1924, inclusive. In that period 290 scarlet fever patients suffered from suppurative disease of the middle ear, a percentage of 8·61 ; the incidence in scarlet fever of simple type was 7·13, and in septic scarlet fever 24 per cent. ; the statistical tables also show that otitis is more frequent, and recovers less rapidly, in the first quinquennium than at a later age. Mr. Layton refrains from giving an opinion as to the potential infectivity of the ear discharge, and refers to the awkward position which might occur if a mastoid operation were advised at a fever hospital, because the discharge is a danger to others, rather than for the welfare of the patient. The conclusions at which he arrives in regard to treatment are not always in accordance with the practice accepted in general otological work ; but it must be remembered that the management of scarlatinal otitis, especially in institutional treatment, differs from that of otorrhœa in general practice.

Paracentesis of the drum was only performed 26 times out of a total of 379 ears in which discharge occurred ; this low figure is partly due to the absence of symptoms, for pain is far less frequent than in ordinary otitis, and routine inspection of the ears in the absence of symptoms is hardly practicable in large institutions ; but chiefly is it due to the short period that elapses between bulging and rupture. In fact, the difficulty is to ensure the operation being carried out in time under the conditions which regulate its performance in the Board's infectious hospitals, the time necessary to obtain the consent of the parent being, in many cases, responsible for the delay. This is an administrative difficulty which would not occur in private practice and might perhaps be obviated by an alteration in the regulations ; in any case, it does not detract from the value of the operation, when it can be performed, a value of which Mr. Layton is firmly convinced, though this is the one point on which his Board do not agree with him. A remarkable point is Mr. Layton's tribute to the value of Wilde's incision ; this operation was performed 16 times ; eight cases left the hospitals without any further operative treatment and with dry ears. Of these Mr. Layton says that " under any other plan all these children would have been submitted to the complete mastoid operation " ; this remark is inaccurate, as by the " complete " is usually meant the " radical " mastoid operation, but presumably he means antrotomy, and his statement that " they would not have shown a better result " is justified. Of these eight cases one was aged 6 and one aged 5 ; none of the others was over 3 years old. But the other eight cases, of whom five were under 4 years of age, were later submitted to a mastoid operation ; of these, one died from septicæmia and two left hospital with active disease still present. This result must be considered good ; if 50 per cent. of acute otitis with retro-auricular swelling in young children can be got well with Wilde's incision, it is possible that as good results might be obtained in non-scarlatinal cases, at any rate under the age of 4 years. Surprisingly poor results are shown by antrotomy performed for ear discharge only ; of six cases the first alone was a complete success ; the second, operated on two months after onset, remained with a moist perforation ; and the third, operated on after three months, with a discharging ear ; the other three are catalogued as failures, but the date of operation is not mentioned. This is in marked contrast to the results obtained in ordinary otological practice, where operation after two or three weeks is usually successful ; the date of operation is only given in these two cases, but it is possible that better results would have been obtained if they had been operated on sooner. Mr. Layton's opinion is that those cases do badly which show no signs of disease in the mastoid at operation, that it is impossible to distinguish by ordinary examination which cases have disease in the mastoid, and that an X ray examination is likely to be helpful in this respect. Accordingly he has recommended to the Board that an X ray apparatus be installed at one of the fever hospitals for examination of the mastoids of these cases, and this the Board has agreed to do at the North-Eastern Hospital.

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[1] Journal of Hygiene, 1925, xxv., 45.

[2] M.A.B. Annual Report. 1924-25. Pp. 187-217.

An important problem is presented by the cases discharged with active otorrhœa; there were 35 of these, of whom 17 had discharge before contracting scarlet fever. Of the remaining 18 cases, 11 had either septic scarlet fever or a mixed infection, leaving seven only of the ordinary type of scarlet fever. Surely no better tribute to the excellence of the management of these three hospitals could be desired than that only seven cases contracted an uncured scarlatinal otitis in the 13 months under review. But it is naturally desired to reduce the number still further; recognising that scarlet fever leaves the patient with a resistance profoundly lowered to the ordinary organisms of suppuration, Mr. LAYTON believes that heliotherapy should be employed, and the Board has adopted his suggestion, and proposes to set apart a ward of 12 to 20 beds for experimental sunlight treatment with an ultra-violet apparatus for use on dull days and during the winter months. Needless to say, the result of the treatment of pyogenic infections, in cases of lowered resistance, by this method will be watched by those interested in many different departments of medicine and surgery.

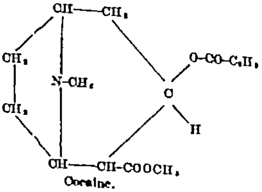
Annotations.

"Ne quid nimis."

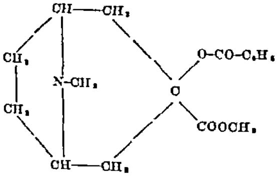
LOCAL ANÆSTHETICS AND CHEMICAL CONSTITUTION.

LOCAL anæsthetic substances have hitherto usually been employed in the form of hydrochlorides which have a definite acid reaction and are largely ionised in solution. Such solutions are fairly satisfactory in producing local anæsthesia when injected, particularly in conjunction with adrenalin, but they have little surface anæsthetic action, and on this account have not proved satisfactory substitutes for cocaine in ophthalmic surgery. For this surface action the free base appears to be far superior to the ion, and substances which undergo hydrolytic dissociation are greatly to be preferred to those undergoing electrolytic dissociation. Salts formed by combination of the base with weak acids when dissolved in water undergo very little ionic dissociation and much hydrolytic dissociation, and hence show the strong surface anæsthetic action of the base itself. At the time of the Bath meeting of the British Medical Association Dr. A. J. Copeland communicated[1] the results of experiments and tests, made by him as Ernest Hart Memorial Scholar, with the borates of these local anæsthetic bases. The work, which was carried out in conjunction with Mr. H. E. F. Notton, B.Sc., at the laboratories of pharmacology and chemistry of the University of Cambridge, is now set out at length in the *British Medical Journal* for Sept. 26th. The borates show the desired surface action in a high degree, and the local anæsthetic action of a large number of them has been measured on the cornea of the rabbit. In this way several of these borates were found to have a surface anæsthetic action equal to, and in some cases greater than, that of cocaine hydrochloride. Owing to the satisfactory results obtained with the borate of "ethocaine" (of which novocaine is the hydrochloride), special attention was paid to this substance. Not only has it a stronger surface anæsthetic action than most of the borates tested, but it also has the advantage of greater stability. It acts rapidly, both as a surface and a hypodermic anæsthetic, its surface action being more powerful than that of cocaine hydrochloride in solutions of equivalent concentration. It is practically free from any toxic action, and is non-irritant. Its solutions keep well and do not precipitate in contact with the tissues and body fluids. It is, as would be expected from the salt of a moderately strong base with a very weak acid, slightly alkaline in solution, the alkalinity of the solutions of the strength used being equivalent to pH 8. This substance, ethocaine borate, is now manufactured by the British Drug Houses, Ltd., and is available for clinical use under the name "borocaine." For convenience it is supplied in tablets together with a small quantity of adrenalin and sufficient sodium chloride and pure glucose to make an isotonic solution when dissolved in the prescribed quantity of sterile water to make a 2 per cent. solution, this being the usual strength for producing surface anæsthesia. Of the other borates that of β-eucaine is the most noteworthy, as it has the highest surface anæsthetic power of all. Further information concerning this interesting and possibly very valuable substance will be welcomed.

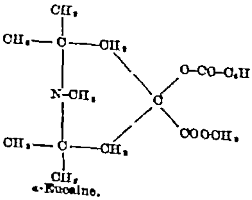
The local anæsthetics form a very interesting group from the point of view of the relation between chemical constitution and physiological action. Although the first substance to be widely used as a substitute for cocaine itself, α-eucaine has a structure somewhat resembling that of cocaine, it was soon replaced by β-eucaine, which has a structure less like that of cocaine, and subsequent developments were concerned entirely with substances, such as anæsthesine, novocaine, butyn, stovaine, tutocaine, &c., which have very little resemblance at all to cocaine from the standpoint of chemical structure. It is very curious in this connexion to note that α-cocaine resembles cocaine itself in structure far more closely than does α-eucaine, but differs from these in being quite devoid of local anæsthetic action. The more recent local anæsthetics of the ethanol, propanol, and butanol series, such as novocaine, butyn, and tutocaine, are of simpler chemical structure than cocaine, though closely related to one another, as can be seen from the structural formulæ of many of these compounds given by Mr. E. Watson-Williams in a recent account[2] of the pharmacology of tutocaine.



Cocaine.



α-Cocaine.



α-Eucaine.

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[1] THE LANCET, 1925, ii., 100.

[2] THE LANCET, 1925, i., 914.

EMBRYONIC DIFFERENTIATION.

The old doctrine of preformation held that the organism was present in the germ-cell, only requiring growth and slight alteration of its parts to attain to its proper state. When it became evident that, to account for successive generations, this belief entailed the assumption that these miniature forms were contained within one another ad infinitum like Chinese boxes, the doctrine naturally fell into disfavour. It was succeeded by Wolff's theory of epigenesis, which postulated a real development or evolution from unformed matter; in its essentials correct, as a description of what takes place, founded on observed facts, but not, of course, an explanation of development. To-day we hold, in some sense, the two conceptions. We know enough of the detail of formation of an organism to recognise its epigenetic development, and at the same time we are driven to admit a more subtle form of preformation in the shape of predetermination; the organism is not there in an excessively minute but practically perfect shape, but potentially, in a form which can only reach its specific end by the long succession of epigenetic stages through which it will pass. These are basic ideas which have been and are being consolidated, while the battle has gone ahead into other regions, and concerns itself with things which were not within the horizon of the older fighters.

Embryonic development, however, is not only the expression of a prefixed potentiality showing through a series of morphological changes, but is also under the influence of interactions between these and the environment. Experiment can give us some apparently simple examples of the play of these forces. In some of the lower forms the outgrowing optic vesicle has been transplanted under the ectoderm of another part of the body, with the result that a lens has been formed in this new situation from the outer layer; evidently the power of lens formation is not a specific possession of the ordinary lens area of the ectoderm, and the power is called into action by the contiguity of the optic vesicle—i.e., by the environment. On the other hand, the optic vesicle deprived of its lens covering still invaginates to form the optic cup, thus showing that this power is inherent in it, and does not depend on the presence of the lens which, normally, occupies the hollow of the cup. Other examples of the effect of environment in the wider sense are to be seen in the well-known experiments in which the results on developing eggs of the addition of, e.g., certain salts to the surrounding media have been recorded. There is evidently predetermination, but there is also evidently in some cases a wide potentiality of development. Experiments on some of the lower animal forms have shown equipotentiality for the earlier stages of embryonic development, but other forms demonstrate, as certainly, early predetermination of parts, and in some cases, as in Driesch's experiments on the blastula of the sea-urchin, it would seem to be suggested that the localisation of special powers in one part means its removal from the rest. The cells of this blastula are at first equipotential, but, as soon as those at one pole have budded off the mesenchyme cells, they alone have the power to form the gut invagination; they cannot reform into a blastula, and the remaining cells, though they can reform into a blastula, cannot invaginate to make the gut-cavity. There has been, evidently, a rearrangement of the substances within the cells forming the blastula, and specialisation has replaced apparent non-specialisation. When such cases are considered, it is not surprising that two seemingly opposed views should be held about the nature of the developing organism. One maintains that this is fundamentally equipotential in all its parts, depending on the formative stimuli of the circumstances for the result, as in the case of the lens rudiment mentioned above; the other postulates a mosaic-like arrangement of organ rudiments present from the beginning in the ovum and undergoing expansion and evolution in the processes of further development, such, indeed, having been shown to exist in certain eggs. It seems not impossible that the future will reconcile these two views and establish a via media for general purposes.

In the meantime evidence accumulates on one or other side, and among the latest contributions to the question in England is the short but very interesting account by Dr. P. D. F. Murray and Dr. J. S. Huxley, of Oxford,[1] of the self-differentiation in an experimental graft. A small basal piece of the posterior limb-bud from a four-day chick was grafted on to the chorioallantoic membrane of a seven-day incubated egg. It was removed and examined after five days. It showed a normal and well-formed femur, ossifying, with a cartilaginous patella and a small piece of pelvic cartilage, and no sign whatever of any attempt to form the distal portion of the limb. This, as the authors point out, is against the conception of equipotentiality of the tissues of the four-day limb-bud, although its structure at that time is microscopically undifferentiated. There is reason to suppose there has been regeneration of the femur in part, so that the authors suggest that it is the region that is predetermined. It would seem to follow that, within the area of the "regional mosaic," there is some amount of pluripotentiality present in the bud. In a postscript Dr. Murray and Dr. Huxley refer to more recent work by P. Weiss, who has shown that, in the newt, each segment of the limb-skeleton is totipotential as regards its own regulation, but the limb-skeleton as a whole is a mosaic of regions with different potentialities. The contribution gives a good mental picture of the uncovering of potentialities one after the other, and foreshadows a time when two conflicting views will be found to harmonise.

EXTENDED SPA TREATMENT.

It is only by studying the figures showing the total invalidity for which insurance benefit under the National Health Insurance Act is paid that the prevalence of rheumatism amongst insured persons is really appreciated. The Special Committee investigating the incidence of rheumatism, whose report (No. 23) was published in March, 1924, found that nearly one-sixth of the total benefit paid was due to diseases classed as "rheumatic," the actual cost in 1922 being estimated at £1,000,000. Of these cases half were due to various forms of chronic arthritis. It is no wonder that the approved societies pressed for a special inquiry into the causation of rheumatism amongst the insured workers. In certain occupations the crippling forms of arthritis are more prevalent, but even there the insistence on and facilities for personal hygiene have led to some measure of control. The ætiology of these conditions will not be understood until the nature of the infection is determined, but the recent investigation clearly showed a close association with a septic focus which in so many cases is only too obvious. The proper care of the teeth and the thorough provision of dental benefit should have a great effect in reducing the incidence of these diseases, and the provision of the services of a bacteriologist and a laboratory accessible to insured persons will be a further step in the same direction. Recently the demand for spa treatment for insured persons has grown in volume, as at present it is only through charitable help that such persons can be sent to any of the treatment centres. Unfortunately, however, if assistance could be given to all the suitable cases it is certain that the present available accommodation would be quite inadequate. The special hospitals at Bath, Buxton, and Harrogate can only deal with 5000 patients each year, while statistics show that something like 370,000 insured persons seek advice for some form or other of "rheumatics" annually. Dr. Matthew B. Ray, the secretary to the British Subcommittee on Rheumatism (International Society of Medical Hydrology), has suggested that much of the treatment might be given in the workers' homes; it is not easy to instal vapour baths in an artisan's cottage, yet there is no reason why a special department should not be installed in the municipal baths. Turkish baths are, in fact, provided by certain local authorities. Sir George Newman, in his report for the year 1921, has given an admirable summary of the case for the immediate provision of treatment centres. He points out that at the present time these cases, which are not admitted into general hospitals because of their chronic nature, arrive eventually in the Poor-law infirmaries, where facilities for investigation and treatment are not adequately provided. The work of research and investigation should be undertaken at a much earlier stage in the disease, and this is only possible if cases are admitted to specially equipped institutions as soon as they are incapacitated. "Essential for research," writes Sir George Newman, "is an institution where enough cases can be concentrated in conditions to make it possible to employ a team of medical officers, where treatment and observation are systematised and represent continuous investigation." This is a great ideal, both for the medical profession and the country, an ideal which, in view of the issue at stake, should become a practical creed.

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[1] Journal of Anatomy, July, 1925.

PROTEIN SHOCK THERAPY FOR FIBROSITIS.

A FEW years ago Dr. W. Ponndorf, of the Inoculation Institute of Weimar, set forth the claims of cutaneous inoculation of vaccines by scarification in the treatment of the "mixed infections" of tuberculosis, under which term he included almost every infectious disease to which man is prone. He prepared two vaccines: "A," which was used for pure tuberculosis, consisted of concentrated Koch's Old Tuberculin with the addition of an empirically determined amount of human and bovine autolysed tubercle bacilli; "B," for the mixed infections, was similar to "A," plus the endotoxins of streptococci, staphylococci, pneumococci, and influenza bacilli. Inspired by the effect which Ponndorf's vaccines seemed to have on rheumatic conditions, Dr. Gustav Paul, director of the State Inoculation Institute of Vienna, began some four years ago to test the clinical value of that method of treatment, and in a recent issue of the *Wiener Klinische Wochenschrift* (Sept. 3rd, p. 984) he records his results in nearly 600 cases of rheumatism where he administered vaccine by scarification.

The ætiology and history of Dr. Paul's enthusiasm for the treatment is not without interest. The story, as he himself tells it, is as follows. Although he had been familiar with Ponndorf's theories for many years, he had never tested them in practice owing to lack of suitable material. As a result of a visit to Weimar in 1921, however, he was so impressed with the possibilities of Ponndorf's claims that he obtained facilities to carry out this method of inoculation in the sanatorium for children suffering from surgical tuberculosis in Grimmstein, Lower Austria. In addition to over 800 cases of tuberculosis of the bones and glands in children, in which the treatment proved satisfactory, Dr. Paul was able to observe what he terms the "amazing" (*verblüffend*) curative powers of the vaccine in some 50 adults, nurses, and officials of the sanatorium, who suffered from rheumatism. In 1923 the Grimmstein sanatorium was closed down, and as Dr. Paul had no private practice of his own wherewith to continue his observations, he feared that further investigation on his part might lapse. Fortune favoured him, however, and the successful treatment of a "lady of quality" in Austria formed the nucleus of a private clinic for ambulatory cases of rheumatism, which up to the present has furnished him with some 600 cases. Dr. Paul does not describe his technique in detail, but indicates that a small area of skin is scarified, without drawing blood, and then the vaccine is applied in a carefully regulated dosage, which depends on the size of the field of inoculation, the number of scarifications, and the amount of the vaccine. The superiority of his method over the more usual methods of protein shock he ascribes to: (1) the happy combination of toxin and bacterial protein; (2) the manner in which they are assimilated; and (3) the correct choice of absorption routes—which should be by the lymphatics. The first application of the vaccine serves to sensitise the patient, and the subsequent allergy and local reaction furnishes a valuable indication in estimating the amount of individual tolerance. The results Dr. Paul has obtained in his completed cases are reproduced in the following table:—

Condition.	Case-incidence.	Cured.	Considerably improved.	Unchanged	Worse.
Arthritis deformans . .	35	11	18	4	2
Chronic rheumatoid arthritis	147	95	48	3	1
Arthritis of shoulder-joint	35	27	7	1	—
Muscular rheumatism	26	19	6	1	—
Sciatica	44	34	9	1	—
Chronic lumbago . .	23	15	8	—	—
Neuralgias	32	19	9	4	—
Total	342	220	105	14	3

He has thus 65 per cent. of cures and 95 per cent. of improvements to record, and in a further series of 257 uncompleted cases improvement already reached 75 per cent. Dr. Paul points out that these high percentages are all the more noteworthy as the majority of cases classified as chronic rheumatoid arthritis represented transition stages towards arthritis deformans, and further, most of these patients had come to him as a last resort, having been previously treated unsuccessfully by every other known therapeutic agent. He attributes the failure of other methods, such as balneo-therapy, drug treatment, and radiation, to the over-energetic and heroic manner in which they are exhibited, quoting Prof. Bier's views on the over-sensitive state of the chronically inflamed tissues which require the smallest possible stimulus to promote the activity of the cell.

Dr. Paul's method, therefore, falls into the category of non-specific protein shock therapy, in which the touchstone is not "quale" but "quantum"; and he regards the effective substitution of some other antigen for Ponndorf's tuberculin as within the bounds of possibility, "for," as he says, "the medical world is somewhat tuberculin-weary." His claims are very large and in view of the official position he holds are hardly likely to pass unnoticed. They should certainly be tested by those who are dissatisfied with their own results in the big group of fibrositic maladies.

PROF. RICHET'S RETIREMENT.

THE retirement of Charles Richet from the chair of physiology in the Paris Faculty of Medicine, after 47 years of devoted teaching and brilliant research, recalls to mind the enormous strides made in his subject during the span of his professional life. Fifty years ago the renaissance of physiology was but just beginning and the young Richet was the pupil of such masters as Berthelot, Marey, Vulpian, and Claude Bernard. The field was ripe to the harvest, and Richet and his contemporaries piled discovery on discovery, and what to them were new facts wrung from Nature by hours of patient research are to us almost banal. The diuretic properties of sugar, for instance, the refractory period of the nervous system, the salt-free diet for epilepsy, the virtues of chloralose, the influence of anæsthesia on respiration —with all these points the name of Prof. Richet is associated, as well as first and foremost with the discovery of anaphylaxis. In his recent farewell address [1] to the Faculty, the aged professor reviewed the work of the physiological laboratory since 1881 with particular reference to five of his most significant lines of research.

The essential principles of temperature regulation were first explained by Prof. Richet in 1884, an almost accidental result of some experiments on electrically produced pyrexia in dogs. The rapid breathing of the dog in hot sunshine was called by him "polypnœa" in recognition of the fact that it was no laboured panting or "thermal dyspnœa" as older physiologists called it, but an evaporation process whereby the temperature of the animal's body was kept level in extremes of environmental heat, just as the human being is kept cool by evaporation of sweat from the naked surface. A muzzled dog, to whom this protection was forbidden, would die of heat in half an hour. Prof. Richet also demonstrated that two mechanisms regulate this thermal polypnœa, a reflex and a central. The reflex panting or sweating stimulated by simple contact with warm air prevents rise of temperature; when it is inhibited by an anæsthetic, such as chloral, the blood temperature may go as high as 108·5° F. before its heat stimulates the bulbar centres and panting or sweating is initiated centrally so that the temperature falls. The parallel mechanism of shivering to prevent loss of heat from the body was shown to require a temperature of 93° before the central stimulation occurred. The application of these physiological facts to the clinical phenomena of fever has revolutionised our attitude to temperature states. Perhaps most epoch-making of all the work emanating from the Paris laboratory was that on serotherapy, which began with some speculative remarks in a lecture delivered by Prof. Richet in 1883. Commenting on the comparative immunity to anthrax of Algerian sheep and the susceptibility of French breeds, he suggested that injection of Algerian blood might confer immunity on French animals. Some years later the well-known experiments on *Staphylococcus pyosepticus* were carried out, in collaboration with Prof. Héricourt, and in 1888 it was established that the blood of an immunised animal will confer immunity on one that was previously susceptible. Their further researches led them along a road of which the end is not yet in sight—the search for a satisfactory serum for tuberculosis. Their principle has been amply corroborated by contemporary and later workers, who followed the more promising lines of diphtheria and tetanus. A clinical offshoot of the tuberculosis experiments was the discovery of the virtue of raw meat-juice in this disease. Its value is admittedly restricted to early cases, but Prof. Richet claims that the administration of the correct quantities—somewhat large ones—is followed by a gain in weight and strength and an increase of azote and phosphoric acid in the urine. Genetics received a contribution from the researches of Richet and H. Cardot into lactic fermentation, out of which arose the discovery that micro-organisms cultivated in certain media acquire new characteristics and transmit them to their offspring. Anaphylaxis is one of the most unexpected of all physiological phenomena, and the original researches of Prof. Richet and Dr. Paul Portier into this subject arose from an unexpected and piquant direction. It was while accompanying one of the deep-sea expeditions of Prince Albert of Monaco that their experiments with poisonous actinia revealed this phenomenon. To their profound surprise dogs that had recovered from a sublethal dose succumbed in two minutes to a trifling second injection.

Prof. Richet's career is one of which his countrymen and fellow-workers may well feel proud. Like all great discoverers he confesses the debt he owes to happy chance, but he adds, as every worker knows to be true, that that good luck must be the benison of the gods on labour, on faith in science, on enthusiasm for research. It is because he has passionately loved physiology that he has rendered to it and to the world such fruitful service. He passes into retirement full of years and honour, and accompanied by the cordial good wishes of scientists and medical men in every part of the world.

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[1] Presse Médicale, July 29th.

THE MEASUREMENT OF ATMOSPHERIC DUST.

THE importance of atmospheric dust as a cause of respiratory disease has long been recognised. Certain forms, such as coal-dust, flour, and dust from grain elevators may be so finely divided as to become highly explosive in suitable concentration; whilst it has long been known that dust plays a part in the condensation of water from the atmosphere to form clouds and fog. These facts make it necessary to have some means of measuring dust, and many have been devised. The well-known method utilised by John Aitken [1] depends on the condensation of water vapour on the suspended particles, by which only the hygroscopic nuclei are taken into account and the rest are neglected. Another principle was brought into service in an instrument devised by Dr. J. S. Owens three or four years ago for the Advisory Committee on Atmospheric Pollution. The air to be examined is caused to impinge at high velocity upon a microscope cover-glass, the jet being ribbon-shaped and the velocity of impact approximately that of sound; the jet is formed by an air-pump of 50 c.cm. capacity, which serves thus to measure the volume, and the reduction in pressure brought about in the jet causes condensation of water upon such particles as have an affinity for it. With their load of water, these impinge upon the cover-glass wetting the point of impact and thus causing all particles which strike the glass to adhere. The air approaches the jet through a chamber with damp walls to assure the presence of sufficient vapour to bring about adhesion of the dust. The record thus obtained is mounted for microscopic examination and counted under a 1/12 in. oil-immersion objective with the aid of a micrometer eye-piece. This instrument takes account of all dust particles, whether hygroscopic or not. In the "konimeter" devised by Sir R. N. Kotze for the Miners' Phthisis Prevention Committee of South Africa (1916) and since used extensively for the examination of silicious mine dust, a round jet of air is caused to strike a glass plate on which vaseline is smeared and the particles which adhere are counted. There are, in fact, many methods and it is hard to estimate their relative efficiency. A bulletin [2] just published by the United States Public Health Service, describes some comparative tests. The efficiency of six different instruments was compared for dust produced artificially from iron, grain, silica, coal, and limestone, and was determined by an ingenious application of the Tyndall beam method. Two jets of air, one of which had passed through the instrument to be tested and one of which had not, were viewed side by side against a black background under brilliant illumination. The dust-laden air was diluted with measured amounts of dust-free air until the two streams matched each other in intensity of reflected light, and the amount of dilution required provided a measure of the efficiency. The instruments tested were the sugar tube, in which air is drawn through a filter of fine sugar, subsequently dissolved, and the trapped impurity separated for weighing, or counted in the solution; the Palmer apparatus in which the air is automatically agitated with water spray in a special glass bulb, the resulting suspension being examined gravimetrically or by microscopical counting; the konimeter above referred to; the paper thimble, a little cup of filter-paper used to filter the dust out of a measured volume of the air for subsequent weighing; and the dust determinator, an instrument in which the air is drawn through a filter-paper disc and the quantity of dust estimated from the variation of resistance to flow as the pores become choked with dust. This last instrument could not be compared with the others, its results being in terms of resistance to air-flow. The sixth instrument, called an impinger tube, consists of a tube entering a small flask of about 500 c.cm. capacity and containing about 200 c.cm. of water. The tube ends in a number of small orifices under the surface of the water, whilst at a distance of a few millimetres from these orifices a plate is fixed against which the jets impinge. The air is caused to flow from these orifices by means of an aspirator. There was a great variation in the results obtained by the different methods. Three selected examples of such variation are given, the figures being in dust particles per cubic centimetre for the same air:—

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[1] Collected Scientific Papers (Cambridge, 1923).

[2] Comparative Tests of Instruments for Determining Atmospheric Dusts. Public Health Bulletin, No. 144. Treasury Department. United States Public Health Service. Washington. 1925.

	Iron dust.	Silica.	Coal.
Sugar tube	3,798	5,791	519
Palmer apparatus ..	7,107	3,310	541
Konimeter	3,209	1,417	1070
Impinger	22,811	11,532	1167

The investigation related mainly to dense dusts such as are liable to cause explosions and was not concerned with the smaller and less concentrated particles found in the open air. The Palmer apparatus was considered useful for insoluble dusts, but its efficiency is stated to be low. The konimeter was found to be impossible to use when the dustiness exceeded 600 to 800 particles per cubic centimetre, and this conclusion is supported by investigations by Dr. Owens, in whose experience the use of an adhesive in such instruments makes high efficiency impossible. Impact methods require a very high velocity jet, and if an adhesive is used it is blown away from the point of impact.

THE VALUE OF LUMINAL.

THE number and diversity of the measures that have been advocated in the treatment of epilepsy are a pretty good indication of their ineffectiveness. Psycho-analysis is now ranged with cerebral surgery as of value only in a small group of cases. Good general hygiene and appropriate environment are of great importance but often difficult of attainment. Most practitioners, faced with cases of epilepsy, are chiefly interested in the control of the seizures by medicines. Have any of the new remedies established themselves sufficiently to be worth a trial? Or does bromine, in one form or another, hold the field to the exclusion of everything else? The answer is not a simple one. The good old remedies, borax and belladonna, still have their place. Borax would appear to lessen the number of fits, but rarely to arrest them; while belladonna may give brilliant results in a special group of cases. Peptone therapy, endocrines of various sorts, colloidal palladium are on their trial; it looks as if the verdict is not to be favourable. But in luminal we seem to possess a valuable weapon. In Germany, America, France, and this country much has been published about its use in epilepsy. The evidence is considerable, but more should be made available. For this reason we welcome the publication by the Metropolitan Asylums Board of the collected experience of its use in four of their institutions, the drug having been given for periods of three months and upwards, in doses of from 1–4 gr. daily, to nearly 200 patients.[1] The results, like those of other observers, have been diverse, but a study of the fit-incidence leaves no doubt that the drug is well worthy of a trial. Nor is its benefit confined to fit-reduction; improvement in the associated mental state is also noted in many cases. It must be remembered that all, or nearly all, of the patients in this series were certified mental defectives, and it is probable that the recorded results on a similar number of what may be called normal epileptics would be a good deal more encouraging. The answer to the question as to which cases are likely to benefit by luminal is not yet forthcoming. There is a general consensus of opinion that it is most useful when the fits are of the major type and where the disease has only shown itself recently. Dr. O. G. Misquith's experience (see p. 728) is typical in this respect. But much the same is true of bromide or any other drug that reduces fit-incidence. Certain general observations may now be made about the use of luminal. It is of no value in hysterical fits. In cases of epilepsy, tolerance is apt to occur, so that the results in the first three months of luminal treatment may be the best. An alarming increase of fits may occur on withdrawal of the drug which should therefore be gradually effected and carefully watched. Where luminal arrests the fits, especially in children, there may be a change in mental character; irritability has often been noticed, sometimes of a high degree. Even with small doses, rather formidable morbilliform or scarlatiniform rashes have occasionally appeared. Other toxic symptoms do not occur, unless the dose given be larger than that mentioned. But above this, as Dr. S. Grossman pointed out last week, stupor and restlessness may soon be the result. Outside a resident institution the practitioner will be well advised to make 3-4 gr. the maximum for 24 hours, and not be tempted to increase it if this amount seems to lose its effect. The alarming result of giving (inadvertently) 10 gr. daily for 12 days was set out by Dr. Hildred Carlill in an interesting clinical note a fortnight ago.

ACTIVE IMMUNISATION AGAINST DIPHTHERIA.

LAST autumn our Vienna correspondent described[1] an outbreak of diphtheria in a home for infants and young children at Baden, near Vienna, where as a precautionary measure active immunisation was carried out with a 20 per cent. toxin-antitoxin mixture in about 40 children. Six of these children promptly died with typical local and general symptoms of diphtheritic intoxication, and several others showed areas of skin necrosis of various sizes. The mixture had been tested before being issued on guinea-pigs and had been found non-toxic, and the suggestion offered for its subsequent toxicity was that a dissociation of the toxin and antitoxin had taken place. The cause of this dissociation was not forthcoming. There did not appear, however, to have been any question of accidental freezing of the mixture as in the cases reported in Massachusetts earlier in the same year.[2] Under the circumstances the Austrian Ministry of Health referred the matter to Prof. Pirquet for further inquiry, and in a recent article[3] Dr. E. Helmreich, assistant to Prof. Pirquet, discusses the present position in Austria of active immunisation against diphtheria. During the last 15 years diphtheria in Austria has, it appears, assumed so mild a form that no energetic measures have been taken for dealing with it. Prof. Pirquet himself maintains that the immunity conferred by toxin-antitoxin lasts at most a few years and certainly does not persist throughout life. He is therefore in favour of continuing the method of immunisation which has been practised in the Vienna University Children's Clinic for the last few years in lieu of toxin-antitoxin—viz., careful clinical examination of children exposed to diphtheria, immediate injection with antitoxin of those presenting symptoms suggestive of diphtheria, and Schick testing the rest. Those who gave a negative reaction required no further attention, while those with a positive reaction received 500 units of antitoxin. Should a severe epidemic occur, or new facts be brought to light showing that an absolutely harmless toxin-antitoxin mixture could be supplied, the matter might be reopened. In the meantime he proposed that active immunisation against diphtheria by toxin-antitoxin should be discontinued. Prof. Pirquet's proposal was adopted by the Austrian Ministry of Health, and the performance of active immunisation is now forbidden in Austria. Unfortunately we are still in the dark as to origin of the Vienna tragedy, which has had no parallel in other countries where the use of toxin-antitoxin mixture as a prophylactic is on the increase. We hope that the Austrian authorities will insist on tracing the accident to its source with a view to its avoidance in future rather than simply prohibit one of the most promising avenues of preventive medicine.

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[1] M.A.B. Annual Report, 1924–25, pp. 253 et seq.

[1] THE LANCET, 1924, ii., 1070, 1080.

[2] Journal of the American Medical Association, 1924, lxxiii., 16, 5–9.

[3] Klinische Wochenschrift, August 27th.

WHAT CONSTITUTES A CURE IN PSYCHOTHERAPY?

THERE is an urgent need for some definite standard of "cure" in psychotherapy, if this form of treatment is to take its place with the established therapeutic procedures. Psychotherapists are divided into several schools and the symptoms grouped under the vague term "neurosis" are very elusive, so that the criterion of cure is much more difficult to determine than in organic disease. Dr. Otto Veraguth has collected[1] definitions of cure from a number of leading psychotherapists. Freud says briefly, "a cure is the restoration of productive ability and the capacity for enjoyment." Stekel defines it as, "the conquest by the neurotic of his tendency to isolation, a regained capacity for work and sexual activity, and abandonment of phantasy in favour of reality." Jung claims that his method produces "a maturity of character, due to conscious understanding and assimilation of the undeveloped parts of the personality enabling the patient to adapt himself to the claims of life which he had hitherto—wittingly or unwittingly—failed to face." Frank distinguishes between a "scientific" cure and a "practical and social" cure. In practice, a cure is claimed when pathological symptoms are no longer seen, although this may be only the result of improved environmental conditions. Bezzola regards a cure as the removal of the bad suggestions induced by education, environment, and psychic trauma, so that the individual is free to educate himself. Maeder distinguishes between the strictly medical and the pedagogic attitude towards the patient. The latter includes, as well as removal of symptoms and restoration of ability, the synthesis of the personality and the integration of the individual as a member of the cosmos. Dr. Veraguth points out that the drive of life may be divided into four main branches from a common stem: The preservation and development, respectively, of the individual and of the species. The drive towards individual evolution, towards differentiation and progress, has received inadequate recognition, but its existence is self-evident. When its activity is limited to somatic processes the individual is an uneducable idiot, but its presence in normal men is reflected in the peculiar plasticity of the human brain; such characters as Faust or the hermit show instances of men whose flow of life energy is disproportionately strong along this channel. The drive towards development of the species expresses itself psychically in the higher forms of affectivity; the man in whom it is excessively energised is the prophet. In the healthy man the four principles should be evenly balanced within the limits of individual and age variation; in the neurotic there is, or has been in the past, a lack of this balance. Dr. Veraguth's definition of psychotherapeutic cure is the restoration of the balance, and he goes on to discuss how it is manifested. The objective signs are the permanence of the result achieved and the freeing of the patient from dependence on his doctor. He quotes a number of cases to show the caution that must be exercised in estimating these signs. "Permanence" must take into consideration the cyclical fluctuation of manic-depressive types; the passage from one psychic phase to another may easily give a false impression of cure. Renewed ability to work must only be taken as a criterion of cure when judged both qualitatively and quantitatively. Renewed capacity for enjoyment must include all aspects of life: the preponderance of sexual difficulties among psychotherapeutic patients has misled some practitioners into regarding restored enjoyment of this function as a sign of cure. Freedom from the doctor's influence must not be confused with a negative transference which is a sign that cure has not been effected. More important, however, than these, in Dr. Veraguth's opinion, is the subjective conviction of the erstwhile patient that his personality has grown, a feeling not of ability to work, but of self-application to work; not of capacity for enjoyment, but of determination to enjoy; not of adaptation to the demands of life, but of a personal choice between adaptation and resistance. A further and peculiar sign of cure is the sense of gratitude for his former symptoms. The patient finds that he has been cured of so much more than he originally complained of that he can rejoice in his former tribulations, since they led him to the treatment that opened up to him new fields of life. Dr. Veraguth ends with a plea, which we cordially endorse, for the publication by experienced psychotherapists of quantitative statistics.

FOULING OF FOOTWAYS BY DOGS.

IN the Royal Borough of Kensington there are many flats and maisonettes to which no gardens are attached, with the result that dogs are exercised on the footways. Owing to the fouling of the footways as a result of this practice, the borough council in 1921 obtained the sanction of the Home Secretary to the following by-law:—

> "No person being in charge of a dog in any street or public place and having the dog on a lead shall allow or permit the dog to deposit its excrement upon the public footway.
>
> "Any person offending against this by-law shall be liable to a penalty not exceeding 40*s*."

The by-law was made in pursuance of Section 23 of the Municipal Corporations Act, 1882, Section 16 of the Local Government Act, 1888, and Section 5 of the Local Government Act, 1899, for the good rule and government of the Royal borough. Two officers of the public health department report breaches of the by-law detected by them to the Health Committee. These officers are engaged on other outdoor duties and make their observations whilst passing from place to place in the borough. A leaflet calling attention to the requirements of the by-law has been delivered to a large number of dog owners, a poster in similar terms has been exhibited in the borough, and a printed slip has been attached to the rate demand notices. During 1922 two offences were reported to the Public Health Committee and a warning was issued in each case. In 1923 two warnings were issued and in the case of a third offence a summons was taken out, the defendant being fined 5*s*. In 1924 a conviction was obtained in each of the four summonses issued; in one case the fine was 5*s*. and in each of the other three 10*s*. Dr. James Fenton, borough medical officer of health, tells us that the condition of the footways in the borough has improved very considerably since the by-law came into operation, and that several other boroughs have adopted a similar measure. As Dr. Andrew Balfour has pointed out,[1] the traffic in London streets is now such that the dog can no longer use the roadway for his calls of nature and is obliged for purposes of safety and comfort to resort to the sidewalk. Mr. T. W. M. Cameron, M.R.C.V.S., of Edinburgh, has discussed[2] the dog as a carrier of disease to man, mentioning several roundworms and cestodes which might come into question apart from the dangerous hydatid. The Wellcome Bureau of Scientific Research examined numerous samples of excreta, presumed to be those of the dog, on London pavements in the neighbourhood of Gordon-square. Eggs of helminths were found in a small proportion of cases, the type being that of ascaris in 3 per cent., of *Tænia serrata* in 2, and of ankylostoma in 1. In nearly 5 per cent. cysts of giardia were found and a new coccidium of the dog was discovered. The inquiry revealed no evidence of hydatid disease, and Dr. Balfour then expressed the opinion that the presence of dog excrement, however offensive on æsthetic grounds, was not to be regarded as disquieting from the point of view of public health. He admitted, however, that apart from the work of the Wellcome Bureau little, if anything, seemed to be known as to the dangers which might lurk in the fæces of dogs.

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[1] Schweizerische Medizinische Wochenschrift, August 27th.

[1] THE LANCET, 1922, ii., 1165.

[2] THE LANCET, 1922, i., 564.

A CHANCE FOR THE AMATEUR PHILOSOPHER.

IT is supposed that philosophers can retire at will to some higher world where the air is so rarefied that they are undisturbed by the presence of the populace and where everything is so vague that it cannot be offensive. There are none who would find the gift of voluntary translation more useful or more enjoyable than members of the medical profession; but without long practice it is impossible to live in the atmospheric conditions of the abstract world. The novice only too frequently can be heard puffing and blowing in the air just above our heads, and though he may see more than the rest he appears uncomfortable and inadequately balanced. There is, however, a certain number of professionals (so to speak) who are willing to descend from their pinnacles and prescribe suitable exercises which are helpful without being ridiculous. Though nobody imbued with the scientific spirit willingly believes authorities, they can at least show the way by which they got to where they are; and no man can do more. The British Institute of Philosophical Studies is willing to arrange such assistance, and it suggests that certain courses of lectures would be particularly helpful to the medical man who comes back perforce to his material patients from time to time. During the next sessions there will be lectures by Prof. T. H. Pear on Psychology, by Prof. James Johnstone on Life and Mind, and by Prof. Leonard Russell on the Conception of Matter, and each of these is calculated to be of great interest to doctors. The Institute, which is under the presidency of Lord Balfour, will provide courses of lectures on the more important subjects coming within the scope of philosophy; will arrange classes under tutorial guidance; will give assistance to individuals in their reading and encourage research in philosophy, and will form a library. The temporary office is at 88, Kingsway, London, W.C., and it is to be hoped that members of the profession will avail themselves freely of the admirable facilities provided by the Institute. Details of the times and places of the lectures will be found on reference to our advertisement columns.

THE MOTOR EXHIBITION, 1925.

THE annual motor exhibition at Olympia, organised by the Society of Motor Manufacturers and Traders, Ltd., in connexion with the Royal Automobile Club, will be held from Oct. 9th to 17th. This great exhibition, which has always been international in character, promises this year to be one of the largest assemblies of everything pertaining to motor-cars that has ever been gathered under one roof, and additional importance attaches to the show as the Paris motor exhibition will not be held this autumn. Whatever gloomy views may be taken of certain British trades and industries, one can hardly feel despondent about the manufacture of motor-cars and their accessories, and in the last four years the number of motor vehicles registered in this country has increased by over 100,000 annually. On the one hand, the market for cars has greatly widened its boundaries, the difficulties attending mass production methods have been largely eliminated, and improved plant has increased output; on the other hand, labour is more costly, taxation heavier, and expenses higher, but nevertheless the balance is on the right side and car value to-day has never been approached at any period of the industry. The car that appeals to the average medical man may be said to be that of the £300 to £100 class, and it is in this class that the keenest competition on the part of the manufacturers has resulted in the maximum advantage to the purchaser. Although no revolution in price, design, or construction is foreshadowed, the process of evolution will be in evidence, not the least in these apparently minor details the perfection of which makes for the difference between owning a car and being owned by it. The exhibition will remain open daily from 10 A.M. to 10 P.M.

SUMMER-TIME in Great Britain ends at 3 A.M. on Sunday, Oct. 4th, when the clock will be put back to 2 A.M. In France the return to normal time takes place on Oct. 4th at midnight (zero hour), the change therefore being practically simultaneous on the two sides of the Channel. Belgium follows the French practice.

SOME idea of the admirable work done in Iraq during the past two years may be gained from the abstract of the report of the Director-General of Health Services, which appears on p. 733. Reversion to the "simplified" hygiene of purely Eastern government would be especially disastrous since railways and motors have opened up the country to the ravages of epidemics. It would be most regrettable if the British officers in the service should have to cease work before they can build up a local organisation whose members are ready and willing to do the personal work amongst the tribes which is so urgently needed in this disease-ridden country.

THE first social evening of the new session of the Royal Society of Medicine will be held on Tuesday, Oct. 27th, at 8.30 P.M., when Fellows and their guests will be received by the President, Sir StClair Thomson, who, at 9.30 P.M. will give a short address on "Shakespeare as a Guide in the Art and Practice of Medicine." The library will be open, and there will be an exhibition of the drugs which are mentioned in Shakespeare's plays; the display will be lent by the Wellcome Historical Medical Museum and arranged by Mr. C. J. S. Thompson, the curator.

SOCIETY OF SUPERINTENDENTS OF TUBERCULOSIS INSTITUTIONS.—It has been impossible to arrange to hold the proposed Provincial Meeting of this Society at Leeds. The ordinary meeting will be held in London in October. The exact date will be announced later.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A series of lectures on Tuberculosis will be held in the Lecture-room of the Medical Society, 11, Chandos-street, during October, November, and December. The first lecture will be given on Oct. 12th at 5 30 P.M. by Dr. L. S. Burrell, on Tuberculosis from the Physician's Viewpoint. There is no fee for attendance at this series, and all members of the medical profession will be welcomed. On Monday, Oct. 5th, the Central London Throat, Nose and Ear Hospital will begin a three weeks' course in Laryngology, Rhinology, and Otology. The clinical course will be from about 9 A.M. to 5 P.M. daily, and an operative surgery class will also be held. The operative surgery and the clinical classes may be taken together or singly. The London School of Hygiene and Tropical Medicine have the first two of their series of eight clinical demonstrations on Tuesday, Oct. 6th, and Thursday, Oct. 8th, at 2 P.M. Dr. G. C. Low and Dr. P. Manson-Bahr will consider the more important diseases of tropical countries. Other courses in October will commence as follows: Oct. 12th, a combined course in Children's Diseases at the Paddington Green Hospital, Victoria Hospital for Children, and Children's Clinic; Oct. 10th, a course in Urology at St. Peter's Hospital; Oct. 26th, a course in Dermatology at St. John's Hospital. Copies of any syllabus, together with the Fellowship programme, may be obtained from the Secretary, 1, Wimpole-street, London, W. 1.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXLI.—THE TREATMENT OF VISCEROPTOSIS.

A DIAGNOSIS of visceroptosis is one which it is only too easy to make on insufficient evidence, and which is only too readily accepted by the patient. To the lay mind the fact that the viscera are dropped or misplaced offers a reasonable explanation to account for symptoms of any and every kind; moreover, it is an idea which it is much easier to implant than to eradicate from the mind of the patient. Hence, it is most important to beware of informing patients that they have visceroptosis, whether general or of special organs such as the kidney, unless the clinical condition is explicable on no other pathological basis; further, when such a diagnosis is made it must be explained clearly that the condition is not a serious one and is readily amenable to treatment.

Possible Organic Lesions.

Before attempting any treatment for visceroptosis the possibility of other organic lesions such as peptic ulcer must be excluded as far as possible, and the diagnosis should never be made apart from radiographic evidence. Even when the latter appears to support the diagnosis, it must be remembered that many individuals who are apparently in perfect health can be shown to have considerable ptosis of such organs as the stomach or colon. In fact, the position of the viscera depends largely on the habitus or general bodily configuration of the patient. Individuals with a long chest and narrow intercostal angle almost invariably have their viscera considerably lower than the broad-chested type with a wide intercostal angle.

The viscera are retained in their normal positions by the abdominal muscles, which maintain a positive intra-abdominal pressure, rather than by the support of the various mesenteries and peritoneal ligaments. Hence, in the treatment of visceroptosis it is to the abdominal muscles that attention must be paid. In this disease, as in all others, prevention is better than cure. Perhaps the most common cause of visceroptosis as a clinical syndrome is pregnancy or particularly a series of pregnancies at relatively short intervals. When the uterus is emptied and contracts down within a few days from a large abdominal tumour to a small pelvic organ, the intra-abdominal pressure is much decreased, and if the patient is allowed to get up too early the abdominal muscles, which have long been on the stretch, are unable to maintain themselves in a sufficient degree of tonus to counteract the tendency of the abdominal viscera to drop downwards and forwards. Hence, in the prophylaxis of visceroptosis it is most important to insist on a patient after delivery remaining in bed or at least recumbent for a fortnight or longer if the abdominal wall is thin or if pregnancies have been frequent.

Restoration of Tone in Abdominal Muscles.

The ultimate cure of visceroptosis is dependent on the restoration of tone in the abdominal muscles, and it is therefore to this end that treatment must be directed. In too many cases abdominal massage is the sole method employed. Though massage may have its uses, particularly in the cases in which constipation is a marked feature, as far as the development of the abdominal musculature is concerned, it is vastly inferior to active movements. The patient should be given a series of exercises designed to bring these muscles into play; in severe and long-standing cases at the beginning the exercises will have to be comparatively light in character, but as the condition improves they can be increased in duration and severity. Where it is possible the patient should be placed under the charge of an expert in remedial exercises; moreover, it is always more satisfactory if these can be done in a class rather than individually, as the presence of other patients in a class tends to produce a competitive spirit and renders the maintenance of discipline more easy. It is impossible in the compass of these notes to describe the exercises in detail; in general, it may be said that they should consist mainly of active movements by the abdominal muscles and the diaphragm, which in most visceroptotic patients is unduly low with a restricted respiratory excursion. Breathing exercises are carried out lying on the back with the legs drawn up and the thorax partially fixed by the arms folded over the chest; the breathing is thus rendered mainly diaphragmatic in type. The recti muscles are exercised by raising the head and neck with the patient on the back and by flexion and extension of the hips with the patient in the same position. It is most important that the patient should be closely supervised especially in the earlier part of the training, in order to ensure that the movements are being carried out correctly and that they are not beyond the patient's strength. Moreover, in addition to the regular exercises done under supervision the importance of carrying out the treatment daily in the home must be impressed on the patient.

Constipation.

One of the most constant and troublesome symptoms in visceroptosis is obstinate constipation. In most cases this is due originally to the lax abdominal muscles having insufficient power to produce a complete evacuation. As a secondary result of this a condition of dyschezia results, in which the rectum becomes insensitive to distension with fæcal material. For the cure of the constipation it is essential that the patient should be re-educated in defæcation; it must be insisted that at a fixed hour after breakfast an attempt should be made to obtain a movement, and that the use of strong purgatives should be discontinued. At the beginning of treatment a daily soap-and-water enema may be necessary, but this should be gradually diminished in bulk from day to day. Massage of the colon is also useful in the treatment, and where possible this should to begin with be carried out by the masseuse with the patient on an X ray couch after a barium meal has been taken on the previous day to outline the large intestine; the masseuse is thus able to be sure of the exact position of the colon. If this procedure is not feasible the masseuse should be provided with a sketch or X ray photograph showing the outline of the colon.

Abdominal Support.

In severe cases an abdominal belt should be worn. This may be either of elastic and webbing material, or a leather and metal instrument such as the Curtis abdominal support. Although the latter is heavier and less comfortable to wear it gives better support and is free from the liability of the elastic type to stretch unduly. In either case the belt must be so adjusted that the direction of pressure must be upwards and backwards. It need not be worn when the patient is in bed or lying down, and when it is being applied the patient must invariably be in a recumbent position with the pelvis raised, as otherwise there is a grave risk of its tending to hold the viscera down rather than up. In cases where a belt is ordered the physician must be careful to explain to the patient that it is not in itself a cure and must not be made an excuse to discontinue the exercise treatment, which should be carried out with the belt removed.

In all true cases of visceroptosis all the organs, rather than a single one such as the stomach, colon, or kidney, are ptosed. Consequently, attempts to deal with individual organs are doomed to failure, though in some cases the most distressing symptoms are occasionally attributable to one particular organ, especially the kidney. In rare cases undue mobility of the latter may lead to severe attacks resembling renal colic, but where these so-called Dietl's crises occur there is often an aberrant renal vessel which obstructs the ureter. In the vast majority of cases with nephroptosis any attempt at nephropexy only aggravates the condition. As a general rule surgery should never be advised unless there is undoubted evidence of ureteric obstruction.

Diet.

As regards diet, patients with visceroptosis are, as a rule, thin and should be encouraged to take a nourishing mixed diet of small bulk. As an intestinal lubricant to enable the fæces to be more readily expelled liquid paraffin is most invaluable and should be taken in small amounts at least twice a day. In cases with marked gastroptosis the patient should be instructed to lie down on the right side for half an hour after meals, as this tends to accelerate the passage of food from the stomach into the intestines.

In very severe cases with marked laxity of the abdominal wall the patient may be kept in bed for some weeks, the foot of the bed being supported on blocks. This takes the tension off the stretched abdominal muscles and allows them to some extent to recover their tone.

The Mental State.

Patients with visceroptosis are usually highly neurotic and often their main occupation in life becomes the minute observance and recording of their symptoms. This aspect of the case is often the most difficult to deal with, and quite apart from other considerations makes any operative treatment extremely undesirable. An attempt must be made to gain the patient's confidence and, if possible, to alter the general mental outlook. Naturally, the most difficult cases are those where the attention of the patient has been focused on some particular organ, such as the kidney, by the ill-judged remarks of the medical attendant.

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Special Articles.

PUBLIC HEALTH ADMINISTRATION.

ADMINISTRATIVE MACHINERY IN EUROPEAN COUNTRIES.*

(Continued from p. 653.)

IV. GERMANY.

THE German Reich (realm) is a national entity formed by the federation of 18 States, which, so long and in so far as the Reich does not use its legislative power, possess the right of enacting their own laws. Under various Articles of the Constitution of August 11th, 1919, the Reich has legislative authority in regard to matters affecting the population, the care of mothers, nurslings, children and the young, and health. The Reich Government supervises the execution of Reich laws by the authorities of the various States of which it is composed.

Questions of health affecting the Reich are dealt with mainly by the Reich Ministry of the Interior and the Reich Ministry of Labour. Department II. in the former conducts all business connected with public health, including medical staff, medical examinations and preventive measures against diseases, attempts to procure abortion, infantile mortality, tuberculosis, and the abuse of alcohol and tobacco; the supervision of public food, the advanced training of doctors, pharmacies, the foodstuffs trade, veterinary surgery, and, to a certain extent, industrial hygiene and poor relief come under this department. A special sub-department is directed by a medical counsellor in the Ministry, and two medical secretaries are employed. Department III. deals with education, child welfare, physical training, and training of professional welfare workers. The Reich Ministry of Labour deals with all matters affecting the care of workers and employees.

The Reich Health Office.

The Reich Health Bureau, which is under the control of the Ministry of the Interior, was founded in 1876 to assist the Chancellor and the Ministries in the drafting of legislation and in supervising the execution of laws concerning health. This Office keeps closely in touch with German scientific associations and the central health authorities of foreign countries, compiles medical and veterinary statistics, and promotes, by means of publications, knowledge of public and domestic hygiene. The works published by the Reich Health Office give the results of researches carried on by its members; the Medical Statistical Notes (Medizinalstatistische Mitteilungen) contain calculations based upon the annual statistics, while the Reich Health Office Bulletins (Veröffentlichungen aus dem Reichsgesundheitsamt) give current information as to the situation in Germany in respect of contagious diseases, the proceedings of legislative bodies, associations, &c., and the weekly and monthly statistics; an appendix is also published containing all relevant legal decisions. The Reich Health Office promotes popular education in hygiene by issuing a popular work entitled "Health Manual," as well as memoranda and pamphlets.

The Reich Health Office consists of four departments, the medical, chemical hygiene, bacteriological, and veterinary departments. Auxiliary to it is the Reich Health Council, an advisory body of which the individual members (numbering, at the present time, 75) are chosen by the Reichsrat for a period of five years from among men of prominence in the medical and veterinary spheres (men of science, practising doctors, and technical experts), the President and his deputy being chosen from among the members by the Reich Minister for the Interior. This Health Council is divided into 11 committees, viz.: (1) health matters in general (including questions relating to the health staff); (2) the control of foodstuffs; (3) the prevention of epidemics; (4) water-supply and the removal of waste products; (5) social and school hygiene; (6) factory and industrial hygiene; (7) marine and tropical hygiene; (8) population and race hygiene; (9) provision of medicaments (including the traffic in poisons); (10) veterinary matters (including questions affecting the veterinary personnel, and the inspection of slaughter-houses and meat); (11) statistics. It is the duty of the Reich Health Council to give advice, on request, to the authorities of the several States.

The laws regarding public health are executed by officials of the various Federal States, on lines laid down in the executive regulations issued by the Reich authorities.

Health Administration in the Federal States.

Where the Reich authorities have refrained from promulgating laws regarding public health, the German States, with Prussia at their head, have by their own laws organised a public health service on admirable lines. The highest Prussian health authority is the Ministry for Public Welfare. Department I. of this Ministry, which is under a doctor, deals with public health matters (including police sanitary regulations); Department II. deals with housing and land settlement, and Department III. with the care of the young and general welfare work. The Ministry also has control of the Robert Koch Institute for Infectious Diseases, the State Hydropathic Institute, two hygiene institutes, 10 medical analysis stations, two typhoid laboratories, and the State foodstuff laboratory. The Ministry is assisted by a State Health Council; for the provinces joint boards have been set up composed of lawyers and doctors. The police authorities of the provinces and districts (the Ober and Regierungspräsidenten) are advised by the Regierungs und Medizinalräte. The law of Sept. 19th, 1899, regulated the official duties of the medical officer of the "Kreis" (county), and established health committees in the communes (in places of over 5000 inhabitants). The work of the medical officers is regulated by the local police authorities (the Landrat, the Commissioner of Police, or the magistrate). It is the duty of the health committees to carry out a joint system of inspection, to support measures taken by the police authorities, to give expert advice and to make suggestions.

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* Based on a Series of Reports on National Health Organisation to the Health Section of the League of Nations and on Statistical Handbooks prepared by the Section. Obtainable in Great Britain from Constable and Co.

In the other German States the health authorities are organised on similar lines. In many instances the technical advisory body has the title of "State Office of Health," and is, in most cases, under the control of the Ministry of the Interior (in Thuringia it is under the Ministry of Commerce). Special Health Ministries under medical administration do not exist in the Reich or in any of the States.

The work of public instruction in matters of hygiene has been energetically taken in hand by a Reich Committee and by State Committees with their subsidiary organisations. The work of welfare and health offices specially concerned with care work (on behalf of infants, tuberculous persons, persons suffering from venereal disease, cripples, &c.), which have recently been established in large numbers by the Kreis and municipal authorities, is carried on by the public medical officers, specially appointed communal doctors, practising doctors, and a carefully trained staff of care workers. The competent State authorities direct this work.

The Medical Staff.

Prussia has, at the present time, at its disposal some 449 Kreis medical officers, of whom 274 receive full-time and 175 only part-time salaries. The medical officers of the Kreise are, for the most part, recruited from Kreis assistant medical officers (rarely from practising doctors), provided that they have passed the prescribed State medical examination; "Regierungs und Medizinalräte" are recruited from Kreis medical officers; while the Ministerialräte in the medical department of the Ministry for Public Welfare are mostly chosen from among the Regierungs und Medizinalräte. The whole territory of the Reich had in round numbers 950 medical officers of the categories mentioned at its disposal. In general the service is regulated as in Prussia.

In most of the States appointment as a State health official or medical officer is conditional upon passing the examination for State doctors, the regulations for which vary but little in different States. In Prussia, which is fairly typical, the candidate must not only have followed a course of lectures on forensic medicine and taken part for at least six months in the practical work of a psychiatric clinic, but he must also have completed a full course of study in social hygiene at Breslau, Charlottenburg, or Düsseldorf. In addition, he must have taken courses of pathological anatomy, bacteriological hygiene, and forensic medicine, each of at least three months' duration; and he must have acted as assistant in a psychiatric clinic for at least three months. The candidate may not be re-examined more than once. In Prussia it is a condition of appointment as Kreis medical officer that the candidate should have worked five years as an independent medical practitioner after passing the examination.

Special regulations apply to posts as tuberculosis expert or as medical officer in charge of infants, small children, cripples or persons suffering from alcoholism, or as school doctor. It is recommended that the communal medical officers, whose duty it is to advise the communal administration in all matters of public health and social hygiene, should be required to pass the examination prescribed for Kreis medical officers. In rural Kreise the communal medical work can be carried out by the Kreis medical officer, who also takes charge of the public health and social hygiene section of Kreis welfare centres. In the larger towns appointment of special communal medical officers is necessary, subject to the control of the medical officer of the Kreis or district. Among the assistants of medical officers in combating epidemics are disinfection officials. In many Kreise special disinfection officials have also been appointed to act as "health inspectors."

The medical organisations which have been formed in all the States of the Reich are, as a rule, representative professional bodies (associations of doctors, which, in some States, are legally regulated, and often have disciplinary powers in regard to their members). Their participation in the work of public health is of importance, inasmuch as they send representatives to the various State organisations of a technical medical character, the health councils, &c. The latter utilise their services for the purpose of bringing recommendations and proposals relating to special health questions to the notice of individual doctors.

V. AUSTRIA.

The organisation of the Imperial Health Service is maintained in its essentials in the Republic. The Health Department in the Ministry for Internal Affairs has been abolished, and a special section of the Federal Ministry for Social Administration, the Public Health Office, is now the highest authority in health matters. The organisation comprises a principal board of health, provincial boards of health, district commissionerships, divisional medical officers, municipal medical officers, communal and district medical officers. The provinces (formerly Crown lands) are Vienna, Lower Austria, Upper Austria, Salzburg, Styria, Carinthia, Tyrol, Vorarlberg, and the Burgenland. Each province has its own health officers, and a provincial board of health which acts as scientific and technical adviser. Each province is divided into administrative districts (113 throughout Austria) —under a district commissioner (Bezirkshauptmann), with a divisional medical officer attached. Towns possessing a separate statute are administered politically by the mayor, instead of the district commissioner, with a municipal council. To this council is attached a municipal health officer (Stadtphysikus), while in boroughs or villages the administrative organ and scientific expert are represented by the communal medical officer (Gemeindearzt) or by a district medical officer in charge of several communes (Distriktarzt).

The law of April 20th, 1870 (Imperial Gazette, No. 68, of the "Imperial Public Health Law"), amended and supplemented, still forms the main basis of the organisation of the public health services. It places the supreme control over the whole health organisation and of all medical affairs under the direction of the Government, acting either directly or indirectly through the provincial authorities. The Government is thus responsible for the records of the health personnel and for its supervision; for the supervision of all hospitals, including lunatic asylums, vaccination establishments, and of spas; private institutions may not be established without permission from the State. The application of the laws regarding infectious diseases, the control of traffic in drugs and poison, the supervision of vaccination—these and all cognate duties are vested in the Government. The responsibility for the actual carrying out of the law, and for the promotion of activities of the public health services, rests on the communes, on lines laid down by provincial legislation which in turn are framed to give effect to the laws issued by the Government to apply to the whole Republic. Included in the duties of the communes, which are carried out by municipal or district medical officers, is the drawing up of periodical health reports and submitting them to Government authorities.

The health administration of Austria, like its political administration, is thus carried out by authorities of three grades, of which the highest is the Office of Public Health previously referred to.

The first or lowest grade are the municipal, communal, or district medical officers. Officers of the second grade are the medical officers attached to Provincial Governments. In these two grades the executive work in connexion with public health is carried out by medical men, acting under the administration of the corresponding local authority.[1]

Constitution of the Office of Public Health.

The Office of Public Health in the Federal Ministry for Social Affairs (third grade) combines executive powers with the duties of supervising and giving expert opinions and is, as has been said, the central authority on all health matters. At the present time the Office of Public Health consists of the four following departments:—

Dept. 1.—General health administration, dealing among other with matters affecting the professional standing of medical men; the education of doctors in general as well as of State medical officers; the organisation of public health under the Federal authorities. The public health aspects of social and private insurance, industrial hygiene, statistics, and health propaganda also come under the control of this department, which is further charged with the editorial work of the "Mitteilungen des Volksgesundheitsamtes" (Bulletin of the National Public Health Office).

Dept. 2 has control of measures for the maintenance of public health, including, for example, prophylaxis against and prevention of infectious diseases; bacteriological institutes for the manufacture of vaccines; the campaign against tuberculosis, venereal diseases, and alcoholism; water-supply; domestic hygiene and the hygiene of nutrition. The professional training of chemists and druggists and their status is supervised by this department as also the Institute of Chemico-Pharmaceutical Research.

Dept. 3 has the general control of hospitals administered by the State, and of schools for the training of nurses and midwives, also the care of mothers, infants, and young children, including school hygiene. Red Cross and first-aid arrangements are here dealt with.

Dept. 4, under a trained lawyer, deals with the legal aspects of public health questions, including lunacy administration.

A medical officer of the Federal Ministry of War serves as a representative of that Ministry on the Office of Public Health. In 1922 this Office had 82 doctors among its members. The procedure adopted in connexion with sanitary legislation is that the Central Office issues circular decrees to all the provincial offices, which transmit instructions to the district authorities. The Office of Public Health has no laboratories of its own for scientific research.

The Central and Provincial Boards of Health.

Over and above this administrative administration the Imperial Public Health Law provides for the establishment of a Central Board of Health, whose duty it is to assist the administration as an advisory and expert organisation. The "ordinary" members have the right to the title of Public Health Councillor and are unpaid. Extraordinary members include specialists called in as occasion requires. There are corresponding provincial boards of health whose members include the chief sanitary officials of the Provinces. The chief public official of each province makes journeys of inspection throughout his district in order to supervise the application of sanitary law. The communal doctors, or municipal medical officers as the case may be, are also required to make journeys through their districts for the same purpose. On the outbreak of epidemics they must take any measures which they deem to be necessary on their own responsibility, and under inter-State agreements they are now empowered to cross the frontiers and to enforce urgent measures in association with the frontier authorities of any other country concerned. Since the National Sanitary Department forms a branch of the political administration and holds a place amongst the organisations the medical officials are subordinate in purely sanitary matters to the non-medical heads of these organisations. In the event of discord no legal guarantee is provided that the views of the medical officials will prevail. As a matter of fact, however, no disputes have arisen.

In 1918 the duties of the Army Health Service were transferred to the Office of Public Health. The present army administration has no hospital of its own and sick soldiers receive treatment in civilian hospitals.

The Training of the Health Personnel.

The professional training of all doctors, dental operatives, midwives, and pharmaceutical chemists is regulated by the State, and the requirements for courses of study and examinations are indicated in this report. Post-graduate training in order to obtain a post as doctor in the Public Sanitary Service is required, and the passing of an examination in hygiene and sanitary law, medical jurisprudence, including forensic psychology; pharmacology, including a knowledge of the commoner poisons; veterinary police regulations. The length of special training required is not specified, but it is stated that a reform of the district medical officers' examination is contemplated. As to the higher training of senior State medical officers, special courses are held from time to time in university towns. All State medical officers are Federal officials and their work under the State health administration must be conducted as their main profession. Medical officers of the first degree are not forbidden private practice.

Pharmaceutical Chemists.—A distinction is drawn between public pharmacies on the one hand and the private pharmacies of doctors and emergency pharmaceutical installations on the other. Public pharmacists are either licensed or proprietary. The applicant for authority to carry on the business of a public pharmacist must have undergone technical training for a minimum period of five years after taking his degree of Master of Pharmacy, or in the case of establishment of new pharmacists for 15 years. A doctor may only maintain a house pharmacy if there is no public pharmacy near his place of residence.

Dental Operatives.—The legal status of fully qualified dental practitioners and that of dental operatives is laid down by the State. Owing to the shortage of dental operatives just after the war special concessions were made to certain dental operatives who began a three years' course of training before Oct. 1st, 1920, but since these concessions do not apply to those who began their training after this date, the dental operative in Austria with a recognised professional status must necessarily disappear in the course of a few decades.

Midwives.—There is as yet no uniform law on midwifery applicable to the whole country. Women who wish to become midwives have to take a ten months' course of instruction in one of six Austrian instructional institutes and to pass an examination, and they are then entitled to practise midwifery as an independent profession throughout the territory of Austria. Before beginning practice they have to report to the administrative authorities and are placed under the supervision of the district medical officer. No State midwifery system has been instituted. The communes and towns have to provide midwives for prospective mothers without means. A proposal for a general midwifery law, which has been drawn up with the assistance of Prof. L. Piskacek, is awaiting consideration by Parliament.

GUY'S HOSPITAL MEDICAL SCHOOL: SENIOR SCIENCE SCHOLARSHIPS.—The following awards have been made at Guy's Hospital Medical School: O. A. Beadle, New College, Oxford, War Memorial scholarship, £80; L. T. Ride, New College, Oxford, £80.

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[1] In Vienna the first and second grade are in the hands of the single authority, the Municipal Council.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Lymphogranulomatous Tumour.

AT a recent meeting of the Surgical Society of Vienna, Dr. Steindl demonstrated a tumour obtained from a woman aged 38, with a history of vague pains in the abdomen and continuous loss of flesh for a year. Clinical investigation confirmed the diagnosis of cancer of the stomach, but on operation it was found that the muscular layers of the stomach were hypertrophied, while the mucosa was replaced by a brownish, soft, cushion-like tissue, showing small yellowish nodules in its substance; the pyloric end in particular was thus affected. No ulcerations were visible, and on operation there was nothing of a pathological nature to be noted in the intestines, the liver, pancreas or the mesenteric glands. The microscopic sections of the parts removed, also of some of the glands taken from the gastro-iliac ligament and the smaller omentum, showed the typical picture of lymphogranulomatosis. Two months after operation the percentage of both mononuclear and eosinophil leucocytes had gone down considerably, while the lymphocytes had increased threefold to 36·7 per cent. Dr. Steindl claimed that this was the first case of lymphogranulomatosis localised in the stomach which had been successfully operated upon. A second case was reported by Prof. Ewald, who stated that ten years ago he had seen a woman with an inoperable and fixed malignant growth who suffered from attacks of severe dyspnœa, but showing no other symptoms of malignant disease. The surgeon attempted to diminish the size of the tumour by a partial resection, but the operation had to be abandoned and a tracheotomy was performed. Microscopic examination of portions of the tumour showed the presence not of the suspected sarcoma, but of lymphogranulomatosis. After-treatment with tuberculin and X rays caused a rapid diminution of the tumour. Since then the patient has undergone a course of X ray treatment twice or three times a year, but this is sufficient to keep the condition in check. The struma has not reappeared, and there are no enlarged glands in the neck, although a swelling sometimes appears in the mediastinum, causing attacks of dyspnœa.

Flora and Fauna of Hot Springs.

Prof. Hans Molisch, who for the past three years has been working in the botanical and physiological institute of the University of Tokio (Japan), read a very interesting paper in the Biological Society of Vienna on his return to this city. In certain districts of Japan, he said, nearly every house has its own hot spring. He investigated the flora and the fauna of these springs and found that, up to the temperature of 69° C., living organisms, such as bacteria, algæ, amœbæ, infusoria, rotifers, and eels, could exist therein. The most interesting organism, however, is the cyanophyceæ. This group of algæ flourishes in water at a temperature which kills off, in a short time, all other living organisms. They can also live in ordinary water, and the spores of these plants are present in nearly all springs and rivulets in large numbers. Prof. Molisch thinks that the thermophile bacteria and algæ are the direct descendants of the aboriginal organisms which inhabited the earth at a time when its surface and its waters were very hot.

Outbreak of Typhoid near Vienna.

Typhoid fever in our city is such a rarity, thanks to our mountain water-supply, that many students of medicine here never see a case in the hospitals. There was some excitement, therefore, when it became known that in a small holiday resort near Vienna a few cases had occurred; 25 persons were infected and four died before radical measures for the control of the outbreak were instituted by the local authorities, a rather regrettable delay. It appears that the epidemic has been introduced by visitors returning from Italy. This year many holiday makers and "sun-seekers" travelled from Austria to Italy, especially to the eastern coast, and it is presumed that the unwonted kind of food, as well as the large quantity of fruit consumed there, upset the digestions of many of these excursionists, and in addition was responsible for the original cases of typhoid. In connexion with this occurrence very marked attention is being paid now to a new possible source of contamination of the Vienna water-supply; 40 per cent. of the water is supplied by wells and springs originating in the Rax mountains, which lie about 60 miles south-west from Vienna, and are some 6500 feet high. The wonderful scenery of this Alpine district attracts enormous numbers of visitors yearly, and a funicular railway to the summit of the Rax plateau is now under construction. The Board of Health of Vienna, however, has recently pointed out that the influx of visitors following on the construction of the railway will constitute a potential source of contamination of these springs, and thus threaten the health of Vienna. The Board advises either the cessation of the railway work until all springs are adequately protected, or else the construction of a new water-supply. It must be added, however, that geological experts nevertheless regard such fears as groundless, since the geological strata intervening between the course of the railway and the springs are more than sufficient to guarantee perfect sterility of all water that might possibly trickle through to the springs.

MEMORIAL TO HIPPOCRATES.

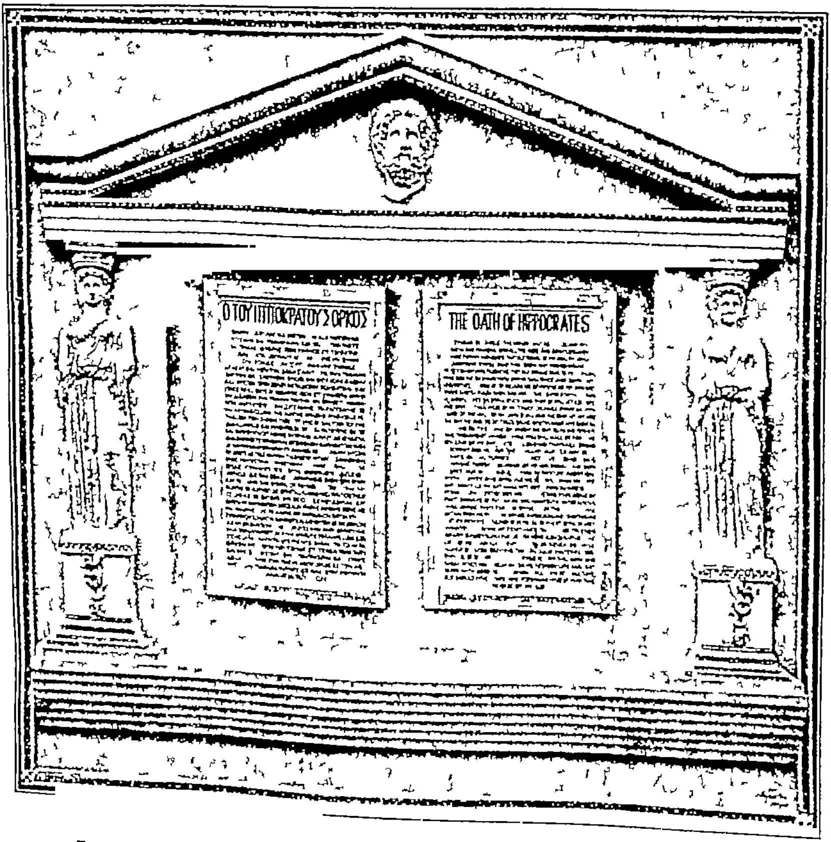
Dr. Ernest Mayer Neville, of Ealing, London, W., has conceived, designed, and executed personally a memorial to "Hippocrates, the Father of Medicine." The memorial is a presentation of the "Oath of Hippocrates" in a setting of classic Greek antiquity. It will be seen from the reproduction given below that this conception is expressed through the medium of a Greek temple, at the entrance of which are placed two tablets, bearing the oath engraved in Greek and English.

The Hippocratic oath is given in the original classic Greek form (Ionic dialect, edition Littré) side by side with the English translation. The spatial distribution of the texts has been arranged in a symmetrical, compact, and organic manner, in correspondence with the general architectonic design of the memorial. They are engraved in classic Greek fashion on oblong tablets which have ornamental borders and corners of classic Greek design. In the English translation the author has striven to keep as close to the original text as is compatible with English phraseology and meaning. The initial part of the oath has been emphasised by treating it separately as a kind of preamble, and the end of the oath *has also* been accentuated by letting it stand out quasi as a finale, a warning memento. (T'ANANTIA TOYTEON—REVERSE BE MY LOT.)

The tablets are flanked by caryatids, draped figures from the temple of Erechtheus (Erechtheion) on the Acropolis of Athens, a building in pure Ionic style (original specimen now in the British Museum, of which they are direct copies). They are raised on pedestals, which are replicas in style of the original wall on which the caryatids of the Erechtheion stood. The face of each pedestal is guarded by a snake, the symbol of medical art and perspicacity, copied directly from the original statue of Apollo Citharoedus (Cyrene) in the British Museum. These snakes are conspicuous through their natural and graceful poise and the other reptilian characteristics. The caryatids support the entablature and the pediment, Ionic in order. The centre of the pediment is held by the dominating head of Asclepius, the God of Medicine, expressive of exquisite physical beauty, serene wisdom, and divine benevolence; it is a direct copy of the original in the British Museum. The snakes mentioned above have their gaze fixed upon this head, as if compelled by its magnetism. The whole structure of the temple rests, in accordance with classic Greek feeling, on steps, of which there are seven, a number symbolical of spiritual values. The background of the memorial is bordered by classical ornamental design.

The original is in plaster-of Paris, 5 ft. by 5¼ ft., weighing 250 lb., and has been on private exhibition to leading British medical men. It was also inspected on the occasion of the visit of the Inter-State Post-Graduate Assembly of America. As a result of suggestions made, a large-size photogravure de luxe of the tablet will be reproduced by a well known house and published in limited numbers for the medical profession only.

THE MEMORIAL TO HIPPOCRATES.



Translation of the Oath.—I swear by Apollo the healer and Asclepius and Hygieia and Panacea, and all the gods and goddesses—and I make them my witnesses—that, according to my ability and judgment, I will keep this oath and this covenant: to reckon him who taught me this art even as dear to me as those who bore me, to share with him my substance and supply his necessities if need be, to regard his offspring as my own brethren and to teach them this art if they should wish to learn it without fee or stipulation, and that by precept, lecture and every other mode of instruction, I will impart a knowledge of the art to my own sons and the sons of him who taught me and to disciples bound by covenant and oath according to the law of medicine, but to none other. The treatment which I will follow shall be for the benefit of my patients according to my ability and judgment, and not for their injury nor for any deleterious or evil purpose. I will not give a deadly drug to anyone though it be asked of me, nor suggest any such course nor will I aid a woman to procure abortion. With purity and with holiness I will pass my life and practise my art. I will not cut a person who is suffering with a stone, but will leave this to be done by practitioners of this work. Into whatever houses I enter I will go into them for the benefit of the sick, and will abstain from every voluntary act of wrongdoing and corruption, and further from the seduction of females or males, bond or free. Whatever in my attendance on the sick or even apart therefrom, I may see or hear concerning the life of men which ought not to be revealed, I will never divulge, deeming that on such matters we should be silent. While I continue to keep this oath and break it not, may it be granted me to enjoy life and art alike with good repute among all men for all time. But should I trespass and forswear myself, may the reverse be my lot.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 619.)

Joint Tuberculosis Council.

(App. XCIII. and Q. 22184–22251.)

THIS Council claims to represent the collective views of medical men engaged, officially or otherwise, in combating tuberculosis. Sir Henry Gauvain and Dr. Lissant Cox presented the evidence.

It was submitted that the special measures adopted in fighting tuberculosis, in association with the general advance in other public health work, have done their part in reducing the mortality from this disease, and that, apart from the actual fall in the death-rate from this disease, the number of "carrier" cases was diminishing, and also that—

> The education of tuberculous patients in elementary hygienic methods and the isolation in hospitals of infective cases from overcrowded and insanitary homes is having, and is bound to have, a beneficial effect on the number of new cases occurring.

All tuberculosis work now centres in the dispensary, which is not ordinarily a centre for treatment but for diagnosis, with the aid of the special facilities which exist at the dispensary, and for consultation between the tuberculosis officer and the general practitioner. The Council urged that there should be a special extension of sickness benefit for tuberculous persons, as their premature return to work is positively harmful to themselves and to their families. The opinion was expressed that societies should use their surpluses to aid specially research and care work in connexion with tuberculosis.

The return of patients from the sanatorium to their original occupations was advisable, the insured person being given part-time employment and continuing to receive sickness benefit, subject to more or less continuous medical supervision.

> Would you expect any trade-union objections to such part-time arrangements?—No, not so long as the arrangements were not abused.
>
> Would you anticipate that employers would willingly meet the difficulties of organisation of their work consequent upon taking on part-time men who probably would require special arrangements in view of their medical history?—We do not suggest that employers should be expected to alter their arrangements for odd cases, but most cases, we think, could be fitted in without special arrangements upsetting other workers.

The witnesses said that the part-time employment of men in their ordinary occupations should have a sympathetic public opinion behind it, and that it was preferable to establishing colonies—indeed, they doubted if the Papworth experiment, while in itself a brilliant success, could be reproduced generally under public management.

Cambridgeshire Tuberculosis After-Care Association.

(App. LXXXIII. and Q. 20856–20931.)

Dr. P. C. Varrier-Jones and Mr. Bunnett gave evidence. They pointed out that the Insurance Act presupposes that insured persons will either be wholly incapable of work or else will be able to earn a normal wage, and that, in the special case of the tuberculous person, to limit cash payments to those who are wholly incapable of work is definitely harmful to the treatment of this disease, and brings with it serious and expensive consequences.

> One of two things happens at the present time: either the patient is afraid to work at all (a six months' stay in a sanatorium makes it the more difficult to begin again), because he fears that he will be unable to stand the strain; or the patient attempts a full day's work under commercial conditions and almost immediately breaks down.

The longer the ex-sanatorium patient is kept as a productive unit of society, the less fear is there of the family's resistance being lowered and of the spread of the disease among them. This point has been proved at the Papworth Village Settlement, where up to the present, with graduated sheltered employment for the bread-winner, no case of pulmonary or other tuberculosis has been discovered in the children.

The payment of sickness benefit to a partially incapacitated tuberculous person could be justified on the ground that the gradual employment of the tuberculous person prevents the spread of infection. Certificates should be given signed by the general practitioner and countersigned by the tuberculosis officer. Such partial employment can best be carried out under sheltered conditions in a colony such as Papworth.

> We do not attempt to train a man to be a carpenter, or whatever it may be, and return him to the outside world, because the competition is too great; but we are able to set him up in workshops in the Village Settlement and provide him and his family with proper housing conditions, and they remain there for the rest of their lives, earning wages in the industries which now have a turnover of over *£50,000 a year.*

About 75 to 80 per cent. of the men in the Village Settlement are ex-Service men in receipt of a pension, and Dr. Varrier-Jones is anxious, by the operation of a scheme of sickness benefit for partly employed tuberculous men, to place the ordinary civilian in the same economic position as the ex-Service men.

The London County Council on the Treatment of Tuberculosis.

(App. LXXXIV. and Q. 20932–21050.)

This evidence, given by Mr. G. H. Walmisley, did not differ in any material respect from the evidence given by the Joint Tuberculosis Council and the Cambridgeshire After-Care Association.

Grants from the National Health Insurance Funds were recommended to be made in aid of approved work-centres at which post-sanatorium cases could be employed under the medical supervision of the tuberculosis officer, and it was also proposed that the surpluses of Approved Societies should be applied in part for the assistance of tuberculous persons on a similar basis to the provision made for ex-Service men by the British Red Cross and United Services Fund.

The experience of the Council, generally, and the operation of an experimental scheme at *Hatton* Garden in particular, and also the discouraging result of efforts to find suitable employment for tuberculous persons in the open market, have led the Council to the view that work-centres offer the most favourable opportunity for the employment of many such persons. As to persons suffering from other complaints the witness said that he knew of none to which the same arguments would apply with equal force.

> Have you ever considered whether there is a practicable case for doing something for the blind man to get half a day's remunerative work on the lines of your tuberculosis scheme?—I think the cases are similar to a certain point, but you do not, in the case of the blind, get the result, by doing this part-time work, of improving the man's health.

Financial aid was essential to place the ordinary civilian in the same economic position as the ex-Service man with his pension.

British Social Hygiene Council.

(App. LXXXII. and Q. 20700–20855.)

The National Council for Combating Venereal Diseases, founded as a voluntary organisation in 1914, has, since 1918, been in receipt of an annual grant from the Ministry of Health for certain approved forms of propaganda work. It became an incorporated body in 1922. It is now known as the British Social Hygiene Council.

Evidence was given by Mr. E. B. Turner, Dr. Otto May, Mr. Leonard Bowden, and Dr. P. A. Clements.

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* References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1369.

It was pointed out that there is no permissive clause in the National Health Insurance Act by which Approved Societies or Insurance Committees, if they so desire, may contribute from their benefit fund to the funds of the National Council or, indeed, any society engaged in research or health propaganda. It was also urged that the medical benefit regulations should be amended to provide for more detailed certification, and also that efforts should be made to improve the equipment of the general practitioner so as to enable him to make adequate modern diagnosis and give the required treatment.

Of the whole of the practitioners in London there are only 400 men who are qualified to be supplied with free salvarsan, and those 400 are the result of a very intensive campaign which was carried on in 1917 to 1918. . . . The ideal we should like would be that the practitioners throughout the whole country should be the first line of defence against these illnesses, that they should be encouraged in every way to become absolutely *au fait* with modern up-to-date methods, and that they should then employ them the moment they come across their cases.

The London Insurance Committee.

(App. XCVIII. and Q. 22838–22074.)

Mr. Henry Lesser gave evidence as to the working of the medical benefit scheme in London. He urged that the whole of the skill of every insurance practitioner should be available for his patients without charge, and he agreed that it was essential that this recommendation should go hand in hand with the Committee's wider proposal that a complete general practitioner service with a coördinated hospital service should be made available to insured persons at the earliest opportunity.

The Insurance Committee should have power, it was suggested, to refuse admission to the panel when, after consultation with the Panel Committee, they thought this to be desirable. The largest panels should be further limited with the advantage, amongst others, of enabling young practitioners to get a footing in the service. The witness said that the Committee were not in possession of evidence to show that the London medical service was inferior to that given elsewhere. He said that it was a fair and an improving service.

Amongst minor recommendations the Committee said that power should be given to the Medical Service Subcommittee to require witnesses to give evidence on oath, and that in the case of an appeal made by a practitioner against a decision of the Committee costs should be awarded to follow the result of the appeal.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. A. F. Fleming is placed on the Retd. List with the rank of Surg. Capt.

Surg. Lt. A. G. Bee to be Surg. Lt.-Comdr.

R. C. Foster to be Surg. Lt.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Lt. (D.) C. H. A. Fido to be Surg. Lt. (D.).

ROYAL ARMY MEDICAL CORPS.

Maj. W. C. Nimmo, from half-pay list, retires on ret. pay on account of ill-health.

Maj. R. C. Wilmot to be Lt.-Col., vice Lt.-Col. F. W. W. Dawson, ret.

Capt. G. L. K. Finlay to be Temp Capt., and relinquishes the rank of Capt.

ARMY RESERVE OF OFFICERS.

2nd Lt. J. V. Dockray, from the Buffs, Reg. Army Res. of Off., to be Lt.

TERRITORIAL ARMY.

Capt. J. Walker to be Maj.

ROYAL AIR FORCE.

Flying Officer S. G. Gilmore and R. H. Stanbridge are granted permanent commissions in the rank stated.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

The following are some of the health statistics of a city, six county boroughs, and one Scotch burgh for 1924:—

Name of town.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Coventry C. ..	132,000	16·0	9·6	1·11	1·12	1·8	37	70	4·2
Stockport C.B. .	126,000	16·4	13·9	1·16	1·33	3·6	29	87	5·8
Preston C.B. ..	123,100	18·0	13·9	1·13	1·29	3·0	42	97	6·0
Huddersfield C.B.	111,800	14·5	14·0	1·08	1·57	3·8	48	97	3·7
Halifax C.B. ..	98,750	14·9	15·3	0·71	—	—	57	90	4·0
Northampton C.B.	93,590	16·4	11·1	1·10	1·39	2·2	25	62	4·0
Paisley B... ..	86,047	21·6	16·1	1·06	1·25	3·7	47	130	9·0
Warrington C.B.	78,120	21·0	11·6	1·41	1·07	2·6	30	84	4·3

C. = city. C.B. = county borough. B. = burgh.
— = not given.

Coventry.

Dr. E. H. Snell reports that the usual re-inspection was made of all the houses which have been converted from "back-to-back" to "through-ventilated" houses since 1909; and these houses were, without exception, found to be properly occupied as through-ventilated houses. In discussing the cause for the rise in the infant mortality-rate in 1924, as compared with the previous year, Dr. Snell points out that in addition to the increase of 2·5 for whooping-cough and 2·9 for bronchitis, there is a rise of 4 per 1000 births for diarrhœa. The summer of 1924 was cold and wet and an increase in the diarrhœa-rate was not to be expected. Dr. Snell says it is impossible to avoid the conclusion that some of this increase in the infant mortality-rate is due to the set-back in the work of the health visitors, caused by the reduction of their number from ten to five at the beginning of 1923. The number has now been increased to eight by the last addition to the staff in October, 1924. Only 18 specimens of milk were examined for tubercle, the results being negative; and Dr. Snell points out that the absence of legislation forbidding the movement of cows found to be giving tuberculous milk almost nullifies the advantages of the milk clauses, although this will, it is hoped, be remedied by the re-introduction of the Tuberculosis Order.

Dr. J. McG. Williams reports as the most notable event of the year the opening of the King Edward VII. Memorial Sanatorium, which occupies a fine position on the high ground of Hartford Hill, about two miles from Warwick. The sanatorium accommodates 66 men, 50 women, and 34 children, and is intended for early cases only. The institutional treatment of tuberculosis is carried out by the Warwickshire and Coventry Joint Committee for Tuberculosis which also used the Bramcote Sanatorium as their second institution. Dr. Snell thinks that one of the greatest objections to such delegation of the institutional treatment of tuberculosis to a special committee with its own medical officers, is the fact that there is thus formed a more or less water-tight compartment with a tendency to regard the treatment of the patient as the beginning and end of the campaign against tuberculosis. The Ministry of Health have always advised that tuberculosis officers should be closely associated with the preventive measures of the local authority. With a view to bringing about such an association, the Joint Committee have forwarded to the various sanitary authorities of the county the recommendation of the Ministry that the tuberculosis officers should be also appointed assistant medical officers of health. Some of the sanitary authorities fell in with the proposal, but others, amongst which was the city of Coventry, did not.

Stockport.

Dr. Arthur G. Jenner records 37 notifications of encephalitis lethargica with eight deaths. In two cases there was evidence of direct infection. The borough maternity home, "Glebe House," with its eight beds, admitted 192 cases during the year. The average stay of each patient was 14 days, and no maternal deaths occurred. As the accommodation at Glebe House is inadequate, the corporation have purchased the Mile End Hall Estate where, after the necessary alterations have been carried out, there will be accommodation for 15 cases. The number of new houses erected during 1924 was 241, as compared with 176 during the previous year, and the number in course of building at the end of the year was 351. In spite of this improvement, Dr. Jenner calls attention to the lack of houses of the smaller type. Only 11 samples of milk were examined for tubercle, a positive result being obtained in one instance. Six cases of typhoid fever were notified, two of which were traced to the eating of mussels, but the names of the vendors of the mussels could not be ascertained.

Preston.

Dr. F. A. Sharpe says the pollution of the atmosphere by industrial smoke demands more attention from his committee than it has hitherto received and recommends the appointment of an inspector, trained in boiler management, with the suppression of smoke as his one duty. The beauty of the town revealed in the clear smokeless weather prevailing last Whitsuntide was, he says, a matter of universal comment and delight. The Preston Committee still adopt the over-generous limit of five minutes black smoke in a half hour observation.

Dr. Sharpe gives an interesting account of an unrecognised outbreak of small-pox at a boys' home. On Feb. 16th he was asked to see a girl resident at a laundry and gave his opinion that the patient was suffering from chicken-pox, but he arranged for her removal to the isolation hospital. In a day or two the symptoms became suggestive, and after consultation, Dr. Sharpe decided that the case was one of small-pox. Inquiries showed that the laundry did work for a boys' home, and it was found that at the boys' home there had been 15 cases, the first beginning on Christmas Day and the last on Jan. 12th, of an ailment considered to be chicken-pox. The outbreak at the boys' home infected all but one of eight boys who were not protected by vaccination; it also infected 7 out of 56 boys who were protected by vaccination, and it immunised the boys who were attacked against successful revaccination. All the cases were of a mild type.

Captain R. Finch, the veterinary surgeon, shows that energetic efforts are being made to improve the milk- and meat-supply of Preston. Out of 162 samples of mixed milk examined for tubercle, 19 gave a positive result. In each case the positive sample was followed in order to eliminate the cow or cows giving tuberculous milk. In 16 cases the cows with tuberculous udders were found. At two of the farms there were two cows with tuberculous udders. In the three remaining cases where the tuberculous udders could not be found, animals had been sold off the premises prior to the visit of the veterinary surgeon. There are no Grade A producers in Preston and there is one retailer licensed to sell Certified Milk.

Huddersfield.

Dr. S. G. Moore reports that 323 new houses were erected during 1924. Of these 69 were built by the corporation and 254 by private enterprise. Of these latter 156 were built with State assistance and 174 were suitable for members of the artisan class. Nevertheless Dr. Moore tells us that no one in possession of adequate information can question that at the present time there is grievous lack of dwellings for the people of the borough. Under the scheme for the voluntary notification of pregnancy 568 notifications were received, the total births being 1627. Four "home helps" are employed to take over the household duties in the homes of maternity cases, and two charwomen for the washing and heavy cleaning. Seventy-two samples of milk were examined for tubercle and five were found to be infected.

Halifax.

Dr. Cyril Banks reports that the deaths in Halifax (1511) exceeded the births (1481). Ten cases of typhoid fever were notified with one death. When blood tests were carried out the type of disease was found to be paratyphoid B. Five of the cases occurred at an unusual time of the year—namely, in the first half of May. Similar outbreaks occurred in other parts of the West Riding and the medical officers of health pooled their experiences, but no origin could be assigned and no particular article of diet was incriminated. There were 38 notifications of diphtheria with five deaths. Of the four deaths which occurred in the fever hospital, three of the patients were admitted in a moribund condition, illustrating the need for immediate medical advice for sore throat and the early administration of antitoxin. Dr. Banks is doubtful as to the value of hospital treatment for broncho-pneumonia complicating measles. The outlook when pneumonia has set in is not good. Wards set aside for such cases would remain idle for long periods and the difficulty of securing nurses at short notice is considerable. Influenza reached its height about the middle of March. In this epidemic the illness began suddenly with shivering and pains in the head or back. There was great prostration and in many cases vomiting with or without abdominal pain. Diarrhœa was frequently present. The temperature was high for three or four days and recovery was slow, there being loss of appetite, irritability, loss of temper, and great mental depression. There were 73 deaths recorded, being more than the deaths from all forms of tuberculosis. The suggestion is put forward that certified midwives should wear a badge, in order to distinguish them from untrained women.

Northampton.

Dr. J. Doig McCrindle reports that scarlet fever of a mild type was very prevalent; 1056 cases were notified with six deaths. A table shows that this is the largest number of notifications since 1904, when there were 2224 cases with 40 deaths. The provision of new dwellings does not keep pace with the needs of the people and the unsatisfactory housing conditions continue with little alleviation. The methods of scavenging and refuse disposal are commented on adversely. Only a small portion of the refuse is dealt with at the destructor, which is situated in a populous district and is a frequent cause of complaint. Most of the refuse is deposited on tips, which are a source of nuisance to the surrounding inhabitants. The maternity and children welfare committee obtain the milk which they need from a company with a Grade A licence. The clinical tuberculosis officer, Dr. Stephen Rowland, does not accept the conclusion of the Medical Research Council that phthisis is especially prevalent in the boot and shoe industry, and instances the fact that the phthisis death-rate for Northampton is the same as that of the whole country. In a recent issue it was pointed out, however, that Sheffield has the lowest death-rate from phthisis of the 17 towns with a population exceeding 200,000, in spite of the proneness of the grinder to develop phthisis. One is led to the conclusion that apart from these two trades conditions of life in both Sheffield and Northampton are less liable to produce phthisis than the average conditions of other towns.

Paisley.

Dr. G. V. T. McMichael says the exceptionally high death-rate was due to the excessive prevalence of diseases affecting the respiratory system, such as pneumonia, bronchitis, influenza, measles, and whooping-cough. Arrangements have now been made for Paisley to use the West Renfrewshire Small-pox Hospital, thus enabling the Gockston Hospital to be reserved solely for tuberculosis. Dr. McMichael favours the home treatment of mild cases of scarlet fever, thus leaving hospital accommodation for more serious diseases, such as acute pneumonia, measles, and whooping-cough. Of the 23 maternal deaths associated with childbirth, four were assigned primarily to tuberculosis and three to influenza. The incidence of rickets in Paisley is steadily rising and the rise was specially marked during 1923 and 1924. Dr. McMichael attributes the rise to the distressing economic conditions and the lack of a sufficiency of milk for infants and young children. When the Russell Institute is opened, facilities for the treatment of rickets by artificial sunlight will be available. The Scottish Board of Health has expressed its appreciation of the work of the Barshaw Maternity and Child Welfare Hospital. Dr. McMichael suggests that some public-spirited citizen should come forward and erect a convalescent home for young children. The very large proportion of houses of one or two rooms in Paisley makes the work of the tuberculosis dispensary very difficult. Thus, of 170 notifications of tuberculosis investigated during the year, 111 patients shared a bed, 87 had a bed to themselves but shared a room, and 22 cases had a room to themselves. The housing difficulties are still further brought out by the birth records. Thus there were 420 births in one-roomed houses and 783 in two-roomed houses. Further, there were eight births in one-roomed houses where the parents were lodgers, and 170 births in two-roomed houses where the parents were lodgers. The total number of births during 1924 was 1893.

Warrington.

Dr. G. W. N. Joseph reports that the scheme for obtaining a water-supply from North Wales did not materialise and that a joint committee representing many water authorities in South-West Lancashire, with a representative of the Ministry as chairman, is considering the water requirements of this area, and how such requirements can best be met. There were 13 notifications of encephalitis lethargica with seven deaths. During 1924 60 new houses were built by private enterprise, none by the local authority. One hundred and eight municipal houses, however, are in course of erection and expected to be tenanted during 1925. Many applicants on the waiting-list for houses are purchasing houses erected by private enterprise and taking advantage of the Small Dwellings Acquisition Act. Of the 1662 applicants on the waiting-list there are 735 living in overcrowded houses. The committee have not been able to deal at all with 216 applicants who live outside the borough but are working in Warrington. Ninety-two tenants of corporation houses have received permission to take lodgers, but it is pointed out that all the houses concerned have three bedrooms and that there is no overcrowding. There were 88 samples of milk examined bacteriologically and seven were found to contain tubercle bacilli; five of the cows which were giving tuberculous milk were found and dealt with.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 19TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 28; scarlet fever, 1888; diphtheria, 953; enteric fever, 91; pneumonia, 578; puerperal fever, 29; cerebro-spinal fever, 8; acute poliomyelitis, 13; acute polio-encephalitis, 1; encephalitis lethargica, 40; dysentery, 12; ophthalmia neonatorum, 91. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 3 deaths from enteric fever, 12 from measles, 9 from scarlet fever, 40 from whooping-cough, 26 from influenza, and 35 from diphtheria. There were 220 deaths of children under 2 years from diarrhœa and enteritis, as compared with 210, 230, 218, and 177 in the preceding weeks. In London itself the deaths from diarrhœa and enteritis in children under 2 years numbered 65, as compared with 43, 38, 40, and 28 in the preceding weeks; there were 7 deaths from diphtheria, 5 from whooping-cough, and 7 from influenza.

Obituary.

JAMES WILLIAM RUSSELL, M.D. CAMB., F.R.C.P. LOND.

James William Russell, whose death occurred on Sept. 20th at Hay Tor, Devonshire, was senior physician to the General Hospital, Birmingham, and joint professor of medicine at the University. Born in 1863 into a well-known Birmingham family closely connected with the medical profession, and educated at the Edgbaston Proprietary School, he went up to Cambridge where he graduated with honours in mathematics and took his M.A. degree in 1890. His medical studies were continued at Queen's College, Birmingham, and Guy's Hospital. Qualifying in 1890 with the M.B., B.Ch. Camb., he obtained the M.D. in 1893 and in the same year became a Member of the Royal College of Physicians of which he was elected a Fellow in 1905. After filling the posts of resident obstetrician and house physician at Guy's Hospital he returned to Birmingham as resident medical officer to the General Hospital in 1891, and 15 months later became assistant physician. He had an unusually long wait before becoming full physician in 1912. For several years he was assistant to the chair of medicine at the University, and subsequently became joint professor of medicine, a post which he held to the time of his death.

The number of consulting posts he held at hospitals in the Midlands testifies to the wide regard paid to his eminence as a physician. He was consulting physician to the Birmingham and Midland Ear and Throat Hospital, the Royal Institution for the Blind, the Midland Counties Asylum, the Sutton Coldfield Cottage Hospital, the Nuneaton Hospital, the Guest Hospital, Dudley, the Smallwood Hospital, Redditch, and the Corbett Hospital, Stourbridge. He served a term on the Council of the Royal College of Physicians and was one of the examiners for the Conjoint Board. Locally, he had a special interest in the Birmingham Medical Benevolent Society.

Although he was not a voluminous writer, he at one time edited the *Birmingham Medical Review*, and was on the editorial board of the *Quarterly Journal of Medicine*. From the fullness of his knowledge he could have contributed much to medical literature, but his characteristic modesty and self-criticism prevented publication until the material had been worked up in great detail and he had subjected it to every possible criticism. It is not sufficiently recognised that he was the first in this country to describe a case of polycythæmia rubra. In a paper published in THE LANCET, Feb. 22nd, 1902, under the title of "An Unexplained Condition of Chronic Cyanosis," he gave the details of a case which he had watched for ten years and of three similar cases recorded by others. He pointed out that the condition was a distinct clinical entity. Osler's well-known paper did not appear until a year later. He was especially interested in nervous diseases and published papers on chorea and epilepsy. In a paper in The Lancet, 1904, he gave the after-history of many cases of gastric ulcer with the object of deciding the criteria for surgical interference. More recently he had been interested in the problems of renal disease, and published in the *Quarterly Journal of Medicine*, January, 1923, a noteworthy study of orthostatic albuminuria by means of graphic records, based upon his Ingleby Lectures delivered in the University of Birmingham the previous year. He reached the conclusion that there was a group of mild kidney lesions which revealed themselves chiefly by the inability of the kidney to bear, without leakage of albumin, the circulatory disturbance brought about by the upright position, and that the orthostatic albuminurias belong to this group though at its mildest extremity. Some further studies on this subject are embodied in a paper which appears elsewhere in this issue of The Lancet.

Apart from his professional interests, he had two great sources of pleasure and recreation—music and mountains. He was a violinist above the average and was one of the chief promoters of the promenade concerts at the Theatre Royal, Birmingham. Even greater was his love of mountains. Initiated by his uncle, Sir Alfred Wills, whose first ascent of the Wetterhorn in 1854 was the beginning of the sporting side of mountaineering, he became in his younger days an expert rock climber. He never made any ice climbs, but except during the war there were few years that he did not visit the Alps. His career was unfortunately interfered with at times by spells of ill-health. During his undergraduate days he was a martyr to asthma, and although this became less after his return to his native town, the demands of a large consulting practice, and especially the added strain during the war of his work at the 1st Southern General Hospital, to which he was attached as major, R.A.M.C.T., were too much for his spare frame; signs of pulmonary tuberculosis showed themselves and necessitated a prolonged rest. Although he recovered he was obliged to restrict his practice and take precautions to avoid the attacks of bronchitis and asthma to which he became subject in recent years.

By the University and General Hospital his loss will be greatly felt, as in an unobtrusive way his devoted service, high ideals, and intellectual capacity did more than he ever realised to guide policies and influence conduct. Among a number of letters we have received one signed "General Practitioner" speaks of unselfishness carried to a fine art and uncompromising devotion to principle. His colleagues and a wide circle of doctors and patients mourn the loss of a courageous and inspiring friend. Dr. Russell was unmarried, and to his two surviving sisters we offer sincere sympathy.

Liverpool Psychological Society.—The third session of this Society will begin on Oct. 6th, when Mr. G. C. Field, the President, will deliver his inaugural address at the University. The proceedings of the Society are of a strictly scientific character, and due prominence is given to the medical and psycho-analytical aspects of the subject; an unusually interesting syllabus has been arranged for the winter. Particulars may be obtained from the Secretary, the University, Liverpool.

Donations and Bequests.—The governors of the Royal Manchester Children's Hospital have received £1893 from the Manchester and Salford Medical Charities Hospital Sunday Fund, and a legacy of £1000 to endow "the Eliza Entwistle cot."—Mr. John Stephen, of Hessle, Yorks, bequeathed £2000 to the University of Aberdeen, "in memory of a happy boyhood spent in that city," for scholarships, and £2000 "in memory of a happy life spent in my adopted city of Kingston-upon-Hull, for the endowment of university scholarships to boys from Hymers College, Hull."—Towards the £500,000 required for rebuilding part of the Middlesex Hospital, £201,000 has been raised. Recent gifts include £500 from the Hon. John Nivison, £250 from the Middlesex Hospital Club, £105 from Messrs. D. H. Evans and Co., Ltd., £100 from Lady Salomons, and £100 from Messrs. Chappell and Co., Ltd.

Correspondence.

"Audi alteram partem."

THE REGULATION OF NURSING HOMES.

To the Editor of The Lancet.

Sir,—In view of the introduction last February by Mr. Gerald Hurst, K.C., of the Nursing Homes Registration Bill (England) promoted by the College of Nursing, it may be useful to record experience in Johannesburg in which, with its large boarding-house and flats population, the demand for nursing homes is very considerable. It is, of course, essential that such places be properly constructed, equipped, and administered. The writer is unaware, however, of any English standard of arrangements, though a paper containing certain suggestions and plans for high-class private hospitals and clinics was published in The Lancet[1] in 1922 by Sir Holburt Waring, of St. Bartholomew's Hospital. He stated, as regards London, that "for the most part our so-called private hospitals and nursing homes are merely adapted second-class private dwellings," and concluded with the interesting observation:—

> "It has always seemed strange to me in connexion with English people that they are quite prepared, when they have money and wish to take a holiday, to hire two or three rooms in a hotel of the best kind they can afford. But, if it so happens that they are ill and require serious medical or surgical attention, they are often quite prepared to go into what is little better than a third- or fourth-class lodging-house in a back street where the necessary surgical or medical advice and treatment are carried out."

In 1911 Johannesburg took powers to make by-laws as to municipal licensing, water-supply, sanitary requirements, separate accommodation for staff, and mortuary provision. These by-laws, believed to be the first of their kind, were sanctioned in 1914, and their enforcement quickly secured much-needed betterment. In 1922 the Union Government published regulations under the Public Health Act, 1919, S. 135 (2), dealing especially with Government registration, medical inspection, and the keeping of a detailed register of patients. Thereafter, at the request of the Government, the writer undertook a systematic inspection of nursing homes, some 37 in number, under systematised headings. No responsibility was, however, accepted as to the conduct of these places.

In the course of inquiry as to sanitary conveniences, prompted by disastrous personal experience many years ago at the hands of a certificated nurse, special attention was directed to the cleansing of bed-pans. In only five of the homes was satisfactory slop-sink and sluice provision made. In several cases it was admitted by highly trained English and South African nurses that the bath was used for cleansing and rinsing purposes. This is obviously and specially likely to occur where the water-closet is situated alongside the bath. In other respects the results of inspection were rather surprisingly satisfactory. The replacement of numerous adapted "second-class private dwellings" (usually small bungalows) by buildings of modern design and equipment may in some cases be preferable; but this, like technical equipment, quality of cooking, standard of nursing, attendance, and tariffs, is largely a question of demand, supply, and competition, which can hardly be dealt with by regulation. Nursing homes should certainly be in a state of good structural repair, possess a sufficiency of private open space or garden, be provided with water carriage wherever practicable, and, without any exception, possess adequate and approved slop-sink and sluice provision on each nursing floor. Sufficient and, in the larger homes, separate bathing and sanitary conveniences should be available for patients and staff; in no nursing home should a sanitary convenience be permitted in a bathroom. Licensees should be supplied with, and produce on demand, an authorised schedule of the number of beds permitted in each room, and should not be overburdened with record-keeping, if only to induce them to keep their essential register with reasonable diligence and accuracy. In regard to *standard of nursing*, 51 per cent. of the staff were certificated generally and in midwifery, 15 per cent. in midwifery only, 9 per cent. were probationers, and 23 per cent. were untrained.

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[1] The Lancet, 1922, ii., 697.

As a result of this inspection, the existing 1915 municipal by-laws were revoked to be replaced by the regulations which I here append.

I am, Sir, yours faithfully,
CHARLES PORTER, M.D. Irel., D.P.H. Camb.,
Medical Officer of Health, Johannesburg.
August 1st, 1925.

NEW REGULATIONS.

57. 1. No premises shall be licensed as a private hospital or nursing home if such premises are being used, or are intended to be used, *for any other purpose*; nor

(1) Unless the buildings, including out-offices, (*a*) are in good repair and in a cleanly and wholesome condition; (*b*) possess a sufficient supply of good water, *free from* liability to pollution; (*c*) are, where sewerage is available, connected therewith; (*d*) have within the curtilage such garden area or open space as may in the circumstances be reasonable.

(2) Unless there be provided (*a*) not less than 100 square feet floor space and 1200 cubic feet of free air-space *for all infectious* and serious operation cases, and not less than 75 square feet and 800 cubic feet of free air space for all other cases; (*b*) adequate accommodation *for nursing and* attendants separate from the accommodation for patients; (*c*) water-closets in the proportion of 1 to every 15 beds for patients, or, when sewerage is not available, pail-closets in the proportion of 1 to every 8 such beds; (*d*) where the number of beds for patients exceeds 10, separate closet accommodation for the staff in the same proportion as in par. (*c*) hereof; (*e*) upon *every floor* upon which patients will be accommodated, an approved slop-sink or “sluice” with water-tap, flushing cistern, flushing rim, and hot and cold water laid on, and arrangements *for the satisfactory disposal of sewage* therefrom; (*f*) separate closet accommodation for any native or natives resident or employed on the premises; (*g*) slipper-baths with hot and cold water laid on in the proportion of 1 bath for every 15 beds for patients, and, where the number of such beds exceed 15, separate bath accommodation for the *staff*, no closet or slop-sink or “sluice” to be constructed or permitted to remain in any bathroom; (*h*) a suitable outside room in connexion with such private hospital or nursing home for use as a mortuary chamber.

2. No licensee of a private hospital or nursing home shall fail to display prominently on the door of each room intended for the accommodation of patients the number permissible in such room in terms of Subsection 1 (2) hereof.

58. No licensee of a private hospital or nursing home shall himself or by his servant or agent contravene or fail to comply with or to maintain any of the conditions, provisions, or requirements specified in by-law 57 hereof.

“SMALARINA” IN MALARIA.

To the Editor of THE LANCET.

SIR,—Prof. Cremonese's monograph was not unknown to us, but we must confess to some difficulty in following his pathology and in admitting some of his suppositions. The patients of whom we wrote, when placed on quinine and arsenic treatment, made the *usual* progress—no worse, no better, than the numerous patients suffering from malaria admitted to the Hospital for Tropical Diseases during the past several years. These patients appear to us to afford *adequate* control for the purpose of clinical judgment. “Smalarina” may or may not be of use as an aid to quinine; our few cases were insufficient perhaps wherefrom to judge, but we did not find any beneficial result from its use.

Anyone interested in this subject might refer to “Smalarina Cremonese” published by the Bureau pour l'Encouragement a l'Emploi de la Quinine, Amsterdam.—We are, Sir, yours faithfully,

G. C. LOW.
A. L. GREGG.
Brook-street, Grosvenor-square, W., Sept. 29th, 1925.

PERSISTENT DIARRHŒA IN PHTHISIS.

To the Editor of THE LANCET.

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In the course of inquiry as to sanitary conveniences, prompted by disastrous personal experience many years ago at the hands of a certificated nurse, special attention was directed to the cleansing of bed-pans. In only five of the homes was satisfactory slop-sink and sluice provision made. In several cases it was admitted by highly trained English and South African nurses that the bath was used for cleansing and rinsing purposes. This is obviously and specially likely to occur where the water-closet is situated alongside the bath. In other respects the results of inspection were rather surprisingly satisfactory. The replacement of numerous adapted "second-class private dwellings" (usually small bungalows) by buildings of modern design and equipment may in some cases be preferable; but this, like technical equipment, quality of cooking, standard of nursing, attendance, and tariffs, is largely a question of demand, supply, and competition, which can hardly be dealt with by regulation. Nursing homes should certainly be in a state of good structural repair, possess a sufficiency of private open space or garden, *be provided with water carriage wherever practicable, and*, without any exception, possess adequate and approved slop-sink and sluice provision on each nursing floor. Sufficient and, in the larger homes, separate bathing and sanitary conveniences should be available for patients and staff; in no nursing home should a sanitary convenience be permitted in a bathroom. Licensees should be supplied with, and produce on demand, an authorised schedule of the number of beds permitted in each room, and should not be overburdened with record-keeping, if only to induce them to keep their essential register with reasonable diligence and accuracy. In regard to *standard of nursing*, 51 per cent. of the staff were *certificated* generally and in midwifery, 15 per cent. in midwifery only, 9 per cent. were probationers, and 23 per cent. were untrained.

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(2) Unless there be provided (*a*) not less than 100 *square* feet floor space and 1200 cubic feet of free air-space for all *infectious* and serious operation cases, and not less than 75 square feet and 800 cubic feet of free air space for all other cases; (*b*) adequate accommodation for nursing and *attendants* separate from the accommodation for patients; (*c*) water-closets in the proportion of 1 to every 15 beds for patients, or, when sewerage is not available, pail-closets in the *proportion of 1 to every* 8 such beds; (*d*) where the number of beds for patients exceeds 10, separate closet accommodation for the staff in the same proportion as in par. (*c*) hereof; (*e*) upon every floor upon which patients will be accommodated, an approved slop-sink or "sluice" with water-tap, flushing cistern, flushing *rim, and hot and* cold water laid on, and arrangements for the satisfactory disposal of sewage therefrom; (*f*) separate closet accommodation for any native or natives resident or employed on the *premises*; (*g*) slipper-baths with hot and cold water laid on in the proportion of 1 bath for every 15 beds for patients, and, where the number of such beds exceed 15, separate bath accommodation for the staff, no closet or slop-sink or "sluice" to be constructed or permitted to remain in any bathroom; (*h*) a suitable *outside room* in connexion with such private hospital or nursing home for use as a mortuary chamber.

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58. No licensee of a private hospital or nursing home shall himself or by his servant or agent contravene or fail to comply with or to maintain any of the conditions, provisions, or requirements specified in by-law 57 hereof.

"SMALARINA" IN MALARIA.

To the Editor of THE LANCET.

SIR,—Prof. Cremonese's monograph was not unknown to us, but we must confess to some difficulty in following his pathology and in admitting some of his suppositions. The patients of whom we wrote, when placed on quinine and arsenic treatment, made the *usual* progress—no worse, no better, than the numerous patients suffering from malaria admitted to the Hospital for Tropical Diseases during the past several years. These patients appear to us to afford adequate control for the purpose of clinical judgment. "Smalarina" may or may not be of use as *an aid* to quinine; our few cases were insufficient perhaps wherefrom to judge, but we did not find any beneficial result from its use.

Anyone interested in this subject might refer to "Smalarina Cremonese" published by the Bureau pour l'Encouragement a l'Emploi de la Quinine, *Amsterdam.*—We are, Sir, yours faithfully,

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[1] G. E. Permin: Internat. Beitr. z. Path. u. Ther. d. Ernährungsstör., I., Hft. 2.

This, however, is not the only "shot in our locker." We have been assured by the clerk of H.M. Privy Council that when the College Council's petition and proposed charter arrive before *his* Council, "an opportunity will be afforded to persons interested to bring a counter-petition." My Society will not fail to do so, and we are already taking steps to secure legal aid of the highest class to present ably our just cause and to support strongly a counter-petition on behalf of the 17,000 Members.

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Chandler's Ford, near Southampton, Sept. 26th, 1925.

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SIR,—Will you allow us through the columns of THE LANCET to disclaim all responsibility for paragraphs which have appeared in the public local press concerning us? Not only have such references been unsought by us, but they have caused us great distress, and have in every way been actively opposed by us.—We are, Sir, yours faithfully,

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Leicester, Sept. 28th, 1925. LUCY S. DAVIES.

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NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC.—A post-graduate course will be held at the Hospital, Queen-square, Bloomsbury, W.C., from Oct. 5th to Nov. 27th. The course will consist of the following subjects: (1) Out-patient clinics, Mondays, Tuesdays, Thursdays, and Fridays, 2 P.M.; (2) clinical lectures and demonstrations on the same days at 3.30 P.M.; (3) lectures on the anatomy and physiology of the nervous system (if sufficient applicants), Mondays, 12 noon; (4) lectures on the pathology of the nervous system, Thursdays, 12 noon; (5) clinical demonstrations on *methods* of examination (if sufficient applicants), Tuesdays and Fridays, 10 A.M. A syllabus and further particulars of the course may be obtained from the secretary of the hospital.

ROYAL INSTITUTE OF PUBLIC HEALTH.—A course of lectures on Preventable Diseases will be delivered in the Lecture Hall of the Institute, 37, Russell-square, London, W.C. 1, at 4 P.M., on Wednesdays from Oct. 14th to Dec. 16th. Colonel S. Lyle Cummins, David Davies Professor of Tuberculosis, University College of South Wales and Monmouth, will deliver the first lecture on the Prevention and Arrest of Tuberculosis, on Oct. 14th, with Lieut.-Colonel Cuthbert James, M.P., in the chair. Whilst these lectures are intended primarily for the Fellows and Members of the Institute, all others, men and women, interested in medico-sociological problems are cordially invited to attend. The Harben Lectures will be given by Prof. J. C. G. Ledingham, F.R.S., on Current Problems in Bacteriology and Immunology, and their bearing on Public Health Effort, on Dec. 9th, 10th, and 11th, at 5 P.M. A copy of the syllabus may be obtained from Dr. E. W. Hope or Dr. T. N. Kelynack, hon. secretaries, at the Institute.

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British Science Guild.—The first annual Norman Lockyer Lecture, established by the British Science Guild as a means of periodically directing the attention of the public to the influence of science upon human progress, will be given by Sir Oliver Lodge, F.R.S., on the Link Between Matter and Matter, and the lecture will be held on Monday, Nov. 16th, at 4 P.M., in the Hall of the Goldsmiths' Company (by permission of the Master and Court of Assistants of the Company), Lord Askwith, President of the Guild, in the chair. Tickets of admission may be obtained on application to the Secretary, British Science Guild, 6, John-street, Adelphi, London, W.C. 2.

Medical Defence Union.—The annual general meeting of the Medical Defence Union was held at 40, Bedford-square, London, on Sept. 25th. Mr. Walter G. Spencer, the President, in moving the adoption of the annual report of the Council for the year 1924–25, said that the report was certainly one of the most satisfactory and successful which had ever been issued. The increase of members during the past two or three years was quite unprecedented, and no doubt this was largely due to the fact that the teachers in the medical schools were now making a point of telling the newly-qualified to join one or other of the defence societies. Mr. F. C. Larkin, Mr. D. Drew, and Dr. V. A. Jaynes were unanimously re-elected members of the Council.

National Hospital for the Paralysed and Epileptic.—A post-graduate course will be held at the Hospital, Queen-square, Bloomsbury, W.C., from Oct. 5th to Nov. 27th. The course will consist of the following subjects: (1) Out-patient clinics, Mondays, Tuesdays, Thursdays, and Fridays, 2 P.M.; (2) clinical lectures and demonstrations on the same days at 3.30 P.M.; (3) lectures on the anatomy and physiology of the nervous system (if sufficient applicants), Mondays, 12 noon; (4) lectures on the pathology of the nervous system, Thursdays, 12 noon; (5) clinical demonstrations on methods of examination (if sufficient applicants), Tuesdays and Fridays, 10 A.M. A syllabus and further particulars of the course may be obtained from the secretary of the hospital.

Royal Institute of Public Health.—A course of lectures on Preventable Diseases will be delivered in the Lecture Hall of the Institute, 37, Russell-square, London, W.C. 1, at 4 P.M., on Wednesdays from Oct. 14th to Dec. 16th. Colonel S. Lyle Cummins, David Davies Professor of Tuberculosis, University College of South Wales and Monmouth, will deliver the first lecture on the Prevention and Arrest of Tuberculosis, on Oct. 14th, with Lieut.-Colonel Cuthbert James, M.P., in the chair. Whilst these lectures are intended primarily for the Fellows and Members of the Institute, all others, men and women, interested in medico-sociological problems are cordially invited to attend. The Harben Lectures will be given by Prof. J. C. G. Ledingham, F.R.S., on Current Problems in Bacteriology and Immunology, and their bearing on Public Health Effort, on Dec. 9th, 10th, and 11th, at 5 P.M. A copy of the syllabus may be obtained from Dr. E. W. Hope or Dr. T. N. Kelynack, hon. secretaries, at the Institute.

THE winter session of the James Mackenzie Institute for Clinical Research, St. Andrews, will open on Tuesday, Oct. 6th, at 4 P.M.

THE resignation is reported of Sir Henry Gray from the chief surgeoncy of the Royal Victoria Hospital, Montreal.

Dr. Basil Graves, who has recently been appointed surgeon to the St. Paul's Eye Hospital, Liverpool, has been given leave to enable him to deliver a series of advanced clinical courses on Special Methods and Principles of Technique employed in Microscopy of the Living Eye, at the Bellevue Department of Ophthalmology, New York University.

QUEEN'S UNIVERSITY (BELFAST) CLUB, LONDON.—The annual business meeting and autumn dinner of the club will be held at 7 and 8 P.M., respectively, on Thursday, Oct. 15th, at the Connaught Rooms, Great Queen-street, W.C. 2. Members of the University wishing to join the club should communicate with the Honorary Secretaries at 132, Harley-street, W.

CONFERENCE ON LIBRARIES.—The Conference held by the Association of Special Libraries and Information Bureaux at Oxford was attended by over 200 delegates, representing many countries. It was stated that there are over 25,000 scientific periodicals, and it is obvious that organisation is needed. Miss A. L. Lawrence, of the British Medical Association, discussed the coördination of medical information, and Dr. Kentish Wright, of the Ministry of Health, gave particulars of the intelligence service at the Ministry.

WHITEHAVEN AND WEST CUMBERLAND INFIRMARY. Some three or four years ago Whitehaven Castle, one of the seats of the Earl of Lonsdale, was bought privately and, together with £20,000 to cover the cost of alterations, presented to the governors of the Whitehaven and West Cumberland Infirmary. The alterations are now nearly completed, and the new hospital will shortly be opened by Princess Mary. When Sir John Lowther bought the building in 1675 from Sir George Fletcher it was called Flatt House, but was subsequently re-edified and re-named Whitehaven Castle.

ROYAL VICTORIA HOSPITAL, BELFAST.—It is estimated that the large extensions now in progress, portions of which are already completed and in working order, will cost approximately £125,000. Twenty years ago the expenditure of the hospital, which is the medical school of the University, was £14,000; last year it was £53,000; this year it will be £63,000. The income is now inadequate to the extent of over £10,000, and an offer has been made of a contribution of £1000 conditional upon nine similar contributions. The extensions comprise three additional wards to hold 80 beds, a six-floored nurses' home, which will house the whole of the nursing staff, and two new clinical theatres. An entire floor is being adapted as a dental clinic.

Appointments.

CRAIB, M., M.D., Ch.B., has been appointed Resident Medical Officer for Frere Hospital, East London, South Africa.

GRAVES, B., M.R.C.S., L.R.C.P. Lond., Surgeon to St. Paul's Eye Hospital, Liverpool.

O'CONNOR, BRYAN V., M.R.C.S. Eng., L.R.C.P. Lond., Resident Medical Officer, General Hospital, Jersey.

PLATT, H., M.D., M.S. Lond., F.R.C.S. Eng., Consulting Orthopædic Surgeon to the Devonshire Hospital, Buxton.

TROUP, G., M.D. Aberd., D.P.H., Medical Superintendent, Willesden Municipal Hospital.

Ashton-under-Lyne Board of Guardians: WHITE, L., M.R.C.S., L.R.C.P. Lond., Medical Superintendent, non-resident; RALPHS, F. G., M.B., Ch.B. Manch., Surgeon, non-resident; and EVANS, G. I., Assistant Medical Officer, resident.

Vacancies.

For further information refer to the advertisement columns.

Belgrave Hospital for Children, 1, Clapham-road, S.W.—H.S. and Asst. H.P. Each at rate of £100. Also Asst. S. 50 guineas.

Bermondsey Infirmary, Lower-road, Rotherhithe, S.E.—Jun. Asst. M.O. £400.

Birmingham, City Mental Hospital.—Asst. M.O. £350.

Brighton, Royal Sussex County Hospital.—H.S. £150. Also Surg. Clin. Asst.

Cambridge, Addenbrooke's Hospital.—Cas. O. and Res. Anæsthetist. At rate of £130.

Cardiff Royal Infirmary.—Ophth. H.S. At rate of £50.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Hon. Asst. Out-patient Registrar.

Delhi, India, Lady Hardinge Medical College and Hospital.—Radiologist. Rs.750.

Holland County and Boston Borough Education Committee.—Dent. S. £450.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. At rate of £50.

Hospital of St. John and St. Elizabeth, 40, Grove End-road, N.W.—H.P. and H.S. At rate of £100 and £75 respectively.

Hull City Education Committee.—Asst. Sch. M.O. £600.

Leicester Royal Infirmary.—Second Res. Anæsthetist. At rate of £200.

Lucknow University.—Prof. of Surgery. Rs.1200–50–1400.

Manchester Babies' Hospital, Burnage-lane, Levenshulme.—Two Hon. Phys.

Manchester Royal Infirmary.—Res. M.O. and Asst. M.O. At rate of £200 and £100 respectively.

National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Res. M.O. £200.

Northern Ireland Ministry of Home Affairs.—Med. Inspector. £500.

Paddington Green Children's Hospital, W.—H.P. and H.S. Each at rate of £150.

Portsmouth Royal Hospital.—Cas. O. At rate of £100.

Renfrew County.—Asst. Tub. O. £600.

Royal Chest Hospital, City-road, E.C.—Res. M.O. and H.P. At rate of £150 and £100 respectively. Also Phys. to Out-patients. £50.

Royal Free Hospital, Gray's Inn-road, W.C.—Sen. Res. M.O. £200.

Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Registrar. 100 guineas.

Royal Northern Hospital, Holloway, N.—H.P. and H.S. At rate of £70. Also P.

Seychelles Government.—Asst. M.O. and Res. S. Rs.6500.

Southend-on-Sea County Borough.—Asst. M.O. £600.

Stockport Infirmary.—Sen. H.S. £250.

Winchester, Royal Hampshire County Hospital.—H.P. £150.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments for Certifying Factory Surgeons: Looe (Cornwall), Shrewsbury (Salop). and Wylam-on-Tyne (Northumberland).

Births, Marriages, and Deaths.

BIRTHS.

ANDERSON.—On Sept. 24th, at Albyn-terrace, Aberdeen, the wife of William Anderson, F.R.C.S., of a son.

CROSSMAN.—On Sept. 16th, the wife of Dr. Francis Ward Crossman, Whites Hill, Hambrook, Glos., of a son.

DINGLEY.—On Sept. 25th, the wife of J. R. Dingley, M.B., B.S., Robertsbridge, Sussex, of a daughter.

MOLLAN.—On Sept. 23rd, at Staunton Lodge, Gosport, the wife of Captain F. R. H. Mollan, M.C., R.A.M.C., of a son.

VERCOE.—On Sept. 24th, at Old Court, Ealing, the wife of R. H. Vercoe, D.P.H., M.O.H. Chelmsford, of a son.

MARRIAGES.

MCCREA—WILLOCK.—On Sept. 25th, quietly, at Ottery St. Mary, Devon, Edward D'Arcy McCrea, F.R.C.S.I., M.Ch. Dub., to Edith Florence Willock, F.R.C.S.I., only daughter of Mr. and Mrs. W. A. Willock, Green Bushes, Budleigh Salterton.

MACKINNON—BAGNALL.—On Sept. 24th, at St. Mary's, Hammersmith-road, West Kensington, Archibald Donald Mackinnon, C.M.G., M.D., Kyleakin, Isle of Skye, to Sylvia Joan, widow of Lieut.-Colonel C. E. Bagnall.

DEATHS.

BROWN.—On Sept. 26th, at Preston Park, Brighton, Thomas Lloyd Brown, M.R.C.S., of Stonecroft, Cuckfield.

DAVIES.—On Sept. 23rd, at East Cliff Cottage, Bournemouth, Dr. William Morriston Davies, aged 83.

FOX.—On Sept. 27th, at Bradford-street, Walsall, George Martin Fox, M.D., D.P.H., J.P., in his 61st year.

KIRKNESS.—On Sept. 19th, at The Haven, Pembury, Tunbridge Wells, suddenly, of pneumonia following influenza, William Ronald Kirkness, M.R.C.S., L.R.C.P., eldest son of the late William Kirkness, of Falmouth, and of Mrs. Kirkness, Haslemere, Surrey.

THOMAS.—On Sept. 25th, suddenly, Hugh Mortimer Thomas, M.R.C.S., L.R.C.P. Lond., Tower Hill, Fishguard, aged 52.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE DEATHS OF MERCHANT SEAMEN IN 1923.

BY W. E. HOME, M.D., B.SC., D.P.H., M.R.C.P. EDIN.,
FLEET SURGEON, R.N. (RETIRED).

THE deaths of merchant seamen in 1923 are recorded in the Board of Trade's "Return of the Shipping Casualties to and Deaths on Vessels Registered in the United Kingdom" recently issued. The figures tabulated below may be compared with those previously published[1] for 1921 and 1922, but there is added a line, "equivalent for a single death," which correlates the death-rate per 1000 with the number of persons on which the figures are based, showing by how much any individual death affects the rate per 1000 in any group, such as the Lascars. The total numbers of men serving amongst whom the deaths occurred is once again not given in the report, but has been kindly supplied to me by the Board of Trade. It is only approximate, but no more accurate information is available. The same method of compilation has been used as before and it is probable that the errors are roughly constant from year to year. The death-rate for 167,791 British seamen in 1923 was lower than in 1922, and also lower in each of the three groups—alcohol, diseases, and accidents. This year there were 35 suicides, 32 men were lost through drink, 188 by casualties to their ships, and 363 by disease. There were 50 deaths from pneumonia, 20 from tuberculosis (a decrease of 17), 25 from malaria, and 10 from enteric fever. The 55,035 Lascars form the next largest group in the mercantile marine, and their gross death-rate of 8·01 is higher than in 1922, the main increase being in deaths from disease. There were 17 suicides; none were lost through drink, but 135 in casualties to their ships (73 in the *Okara*). Fifty-six died of pneumonia and 42 of tubercle, to which diseases they are more susceptible as a group. They also suffered more through casualties to ships and accidents on board, particularly from falls down hatchways and "missing at sea," but much less from accidents on shore, in which drink is apt to play a part.

DEATHS IN THE MERCHANT MARINE IN 1923.

—	Numbers of deaths.			Per 1000.				
"First crews," total	British, 167,791.	Foreign, 11,262.	Lascar, 55,035.	British, 1922.	British.	Foreign.	Lascar.	Royal Navy, 1922.
Equivalent of a single death	—	—	—	0·005	0·006	0·089	0·018	0·0103
Cholera	—	—	3	0·015	—	—	0·02	—
Dysentery	10	—	5	0·04	0·06	—	0·09	—
Enteric	19	—	6	0·11	0·11	—	0·09	0·04
Influenza	3	—	—	0·00	0·02	—	—	0·12
Malaria	25	—	12	0·10	0·15	—	0·21	0·02
Plague	—	—	—	0·005	—	—	—	—
Pneumonia	50	3	50	0·25	0·30	0·26	1·00	0·25
Small-pox	4	—	2	0·02	0·02	—	0·01	—
Tuberculosis (all)	29	8	43	0·28	0·17	0·71	0·75	0·37
Venereal diseases	—	—	—	—	—	—	—	0·04
"Other infections"	15	3	8	0·12	0·09	0·26	0·14	0·13
Beri-beri	2	1	9	—	0·01	0·09	0·10	—
Cancer	6	1	2	0·03	0·04	0·09	0·01	0·00
"Other constitutional"	6	—	1	0·01	0·01	—	0·02	—
Diseases of the—								
Nervous system	31	3	10	0·20	0·18	0·26	0·18	0·17
Circulatory	53	6	10	0·34	0·32	0·53	0·34	0·11
Respiratory	16	2	11	0·00	0·09	0·17	0·20	0·13
Digestive	52	6	15	0·23	0·31	0·53	0·27	0·31
Urinary and generative	15	—	4	0·11	0·09	—	0·07	0·07
Other: ill defined and unknown	20	6	20	0·14	0·15	0·53	0·59	0·13
Alcohol	32	3	—	0·22	0·19	0·26	—	0·04
Heat-stroke	8	—	7	0·00	0·05	—	0·12	0·02
Homicide	6	—	6	0·08	0·03	—	0·11	—
Suicide	35	5	17	0·18	0·21	0·44	0·29	0·11
Casualties to ships	188	4	135	1·34	1·12	0·35	2·10	1·32
Accidents on board	130	15	51	0·01	0·81	1·33	0·01	
" on shore	94	5	1	0·00	0·56	0·44	0·02	
Total	860	73	450	6·07	5·13	6·48	8·01	3·44
Alcohol	33	3	—	0·22	0·19	0·26	—	0·01
Diseases	362	30	233	2·21	2·10	3·13	4·11	1·04
Injuries	466	31	217	3·21	2·78	3·74	3·84	1·40

Foreign seamen (11,262), a smaller group, suffer most from accidents on board, tubercle, and circulatory and digestive diseases. In the whole mercantile marine there were no deaths in 1923 from plague, which was rather a triumph; but there was an increase of 7 from beri-beri and 21 from pneumonia. There were 14 fewer from tubercle; cancer deaths were at the same rate in British and Lascar seamen, and there were fewer accidents. It must be remembered, however, that these death-rates are only approximate, and that periods of irregular employment increase accidents, but, owing to the method of preparation of this return, will lower the apparent death-rates. In sailing ships (2456 men) the fatal accident-rate was 14·2, against 2·7 in steam (five times as high), and there were no deaths from either alcohol or disease. In the Royal Navy in 1922 accidents, pneumonia, and tubercle were the chief causes of deaths, and there was less malaria, enteric fever, and circulatory system disease than amongst British merchant seamen. The relative ages in the two groups unfortunately cannot be compared.

In 1924 the Royal Sanitary Institute represented to the Ministry of Health and to the Board of Trade that this classification of diseases was antiquated and should be remodelled, and that the compilation of death statistics and the care of the health of the men of the merchant service should be given in charge to the Ministry of Health, as the Board of Trade was not specially organised for this duty. The Prime Minister stated in March, three months before this return appeared, that the Board of Trade was "in close touch with the Ministry of Health on all matters affecting the health of seamen." Evidence of the effect of this "close touch" is not apparent in this return. The Board of Trade may have been in intimate association with the Ministry's medical advisers, but has presumably been unable to assimilate the wealth of scientific information they have offered. Tuberculosis is still not classified as an infectious disease, and the Board has not yet learned that figures of deaths are of little practical interest unless accompanied by a statement of the numbers of the population amongst whom they occurred. The shortest of conferences with the Ministry should have conveyed this axiom. The report is intended to "furnish an approximate basis for estimating the variations in the extent of the risks from period to period," but how can anybody estimate the variations if he is merely told that in one year there were 910 deaths and 860 in another? It is necessary to know how many British seamen there were in the service in each of these years. The President of the Board of Trade said in March that the Board had under consideration the modifying of the classification of diseases in the statistics it issues of the deaths of seamen, yet it has evidently decided to adhere to that originated by the great William Cullen (Professor of Medicine in Edinburgh from 1755 to 1790), which, since the re-birth of medicine in the "seventies" of last century, has been deserted by all the best authorities and by most Government departments. If this organisation of laymen has the self-confidence to stand, with no medical officer's signature to support it, against all educated medical opinion as regards classification of disease, may it not also have its own private standards in preventive medicine? It is to be hoped that is not why Lascar seamen go on having three times as many deaths from tubercle as have British seamen, who, under the Board of Trade, have 60 per cent. more statutory space in ships. The Board of Trade appears to be recognised by the Prime Minister as in charge of the health of seamen. It does provide for the treatment of their diseases and for drugs to heal them when sick, though it has resigned the treatment of their venereal diseases to the Ministry of Health. But the Board publishes no annual report on the health of the 250,000 merchant seamen in its charge, and can anyone believe that it takes its responsibility seriously? That responsibility should undoubtedly be transferred, as the Royal Sanitary Institute suggested last year, to the Ministry of Health.

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[1] THE LANCET, 1924, ii., 931; 1925, i., 783.

TWO YEARS' WORK IN IRAQ.

REPORT OF INSPECTOR-GENERAL OF HEALTH SERVICES.

THE Inspector-General of Health Services in Iraq has issued from Baghdad his report for 1923 and 1924, in which he claims that in spite of many difficulties satisfactory progress has been made by his department. Schemes for making local authorities responsible for their hospitals and health work have fortunately been abandoned, and the central government pays for the upkeep of the whole service, which ensures that there shall be none of the local weak links whose inefficiency may prove fatal in an epidemic. At the end of 1923 the civil health service maintained 1170 beds; there are now 18 hospitals and 32 dispensaries, and the Royal Hospital at Baghdad, with 250 beds and a large out-patient department, has become a most valuable medical centre with excellent facilities for treatment and teaching. Other hospitals are making progress and the new Maude Memorial Hospital at Basrah, which will have 120 beds, will be the best for its size in the country. The authorities intend gradually to build up a service staffed by Iraqi doctors, but it is extremely difficult to get candidates, and the local doctors do not take kindly to travel amongst the tribes, which is a most valuable part of the work done by British surgeons. Three-quarters of the population of 3,000,000 are tribesmen and the usefulness of specialists at Baghdad depends on the persuasive ability of outlying workers. This nomadic character of the people makes it hard to secure vital statistics, and these can only be given for the great towns. Here the figures for births are unreliable because the people neglect notification on principle, remembering that the Turkish officials used the information they thus obtained for conscription for the army.

Infectious Diseases.

Under Turkish régime epidemics were controlled by the inefficiency of transport. Now the railways which connect Baghdad with Basrah, Shergat (70 miles south of Mosul), and Khanaqin, and the motor routes to Damascus, Beirout, and Teheran enable diseases to spread up and down the country in a day or two. Iraq is full of holy places and the pilgrims are an additional problem, since for political reasons it is not always possible to stop their movements. For example, during an epidemic of cholera at Karbala in 1923 90,000 pilgrims came to the town; but although they could not be stopped nearly all were inoculated. In the 1923 cholera epidemic roughly 300,000 inoculations were done by the Service—vaccine had to be prepared in Baghdad—and their success "affords a very definite proof of their value." This epidemic showed itself first at Abadan in Persia, 30 miles below Basrah, and here there were 961 cases with 911 deaths in about six weeks, out of a population of 9000. Then it spread to Basrah, which has over 50,000 inhabitants; but the preventive measures adopted before the disease had got a grip on the town reduced the number of cases to 905; there were 430 deaths. The most urgent need was to save Baghdad from an epidemic, and by means of traffic control, inoculation, and the establishment of segregation camps this was achieved; in the whole of Iraq there were only 1910 cases with 1100 deaths.

Plague.—There were 787 reported cases of plague in Iraq in 1923 and 523 in 1924. The epidemic in these two years was not exceptional, as the disease appears yearly in Baghdad and Basrah, and sporadically elsewhere. It is impossible to ensure that plague-infected rats will not occasionally gain access to river boats, and the railway presents a further problem which is apparently insoluble. The carriage of grain by rail is essential for the commerce of the country, and whatever precautions may be taken for cleansing railway stock it is obviously impossible to prevent rats gaining access to wagons at some part of the loading or shunting operations or during their passage up or down the line. The country is therefore faced each year with the possibility of local epidemics. The disastrous outbreak in 1918 at Amara, where 500 cases occurred in a population of 12,000, may be taken as an example. The possibility of similar epidemics is greatly increased by the extension of the railway from Baghdad to Kirkuk and its proposed extension to Mosul. The value of plague vaccine as a protective measure and in reducing case-mortality is definitely shown in the report; 300,000 inoculations have been given in Baghdad during the last six years without accidents; although the reaction is severe inoculation is willingly accepted by all classes except the most ignorant, and the M.O.H. of Baghdad has strongly urged that it be made compulsory whenever plague appears in a town. It is doubtful, however, if this could be enforced by the Iraq Government.

During the cold wet winter seasons of 1923 and 1924 there have been small epidemics of pneumonic plague in which the infection occurred from mouth to mouth or by contact with corpses. These outbreaks are especially interesting in view of the opinion, now gaining ground, that pneumonic plague differs from bubonic plague through the action of a symbiotic organism such as the bacillus of pneumonia. The two forms of plague occurred together, and "their origin was undoubtedly from bubonic plague cases in Baghdad, the virulence of which had become modified by some factor connected with the climatic conditions." The mortality of the pneumonic variety was 100 per cent. The bubonic mortality varies; it was 85·7 per cent. in 1921 and 55·1 per cent. in 1923.

Small-pox is endemic amongst the tribes and occasionally becomes epidemic in the towns. Vaccination is compulsory, but although even the wildest tribes recognise its value more than is done in England, the law is hard to enforce owing to the carelessness of the people and inaccurate birth notification. Over 80,000 vaccinations were performed in 1923 and now eight travelling vaccinators have been appointed. *Measles* is always present in some part of the country; in 1924 there were 1347 reported cases and this is considered an epidemic year. There have been only a few cases of *typhus*, and these are attributable to pilgrim traffic from Persia, where the disease is prevalent. *Enteric group diseases* occurring in Iraq are fortunately not usually very severe; 158 cases were reported in 1923 and 134 in 1924. A progressive increase in the number of cases of *tuberculosis* is reported yearly. There were 178 in 1921, 398 in 1922, 593 in 1923, and 810 in 1924. The general opinion is that the increase is only apparent and is due to better notification of cases and to increased confidence in medical institutions, but it is also possible that a proportion of the increase is actual and is due to a lower standard of living now that the population have lost the free flow of money that came to them from the British Government during and after the war, and are resuming their harder but more normal existence. *Anthrax* from time to time occasions epidemics of varying severity amongst sheep and cattle, but is comparatively uncommon amongst the Iraqi who live in close contact with them. Malignant pustule has a stereotyped treatment amongst the tribes. The carbuncle is surrounded by a wall of dough, the centre of which is filled with gunpowder and lighted; the process is repeated until the burning gunpowder produces pain, after which the burned area is left to heal. This treatment is often efficacious, the disease in Iraq being of low virulence.

Schistosomiasis.—Bilharzia is probably the commonest disease in Iraq, and about 90 per cent. of the population of the southern half of the country live in localities where they are exposed to infection. In these areas the incidence is from 20–100 per cent., and in some places to pass blood in the urine is considered normal. Till complications supervene the inhabitants will not submit to treatment, and even then they are indifferent and think the benefits of a long course of antimony injections not worth the trouble. Schemes for eradicating the water-snail which is the intermediate host involve the temporary closing of canals and consequent loss of crops, and it is doubtful if they could be carried through. *Malaria* roughly corresponds in distribution to bilharzia—that is, it favours the marshy and irrigated areas. The health service annually treats some 45,000 persons, but these are only a small fraction of those affected, and the treatment can seldom be more than palliative. Perhaps 20 per cent. of the population of Iraq (600,000 persons) require treatment, and about 20,000 lb. of quinine would be needed annually for merely palliative treatment. This would involve an expenditure of Rs.600,000 per annum, which is at present out of the question; in 1923 and 1924 a total of 6000 lb. distributed was the most that could be paid for. Radical antimalarial measures are expensive, and large drainage operations would deprive many of the population of their means of livelihood (e.g., rice and date cultivation). Further activities against the disease must therefore wait until the Government can afford to distribute more quinine. The report gives an interesting account of an apparent epidemic of malaria in 1924 which was possibly an infectious fever of the nature of influenza which determined or aggravated attacks of malaria. *Leprosy* is widely spread throughout the country, but probably the total number of cases in Iraq is not more than 800. Treated as outcasts amongst the tribes, they drift into the large towns; it is rarely possible to trace any given case to any other. The establishment of a leper colony presents almost insurmountable difficulties—financial, tribal, racial, and religious.

The Work of Health Service Institutions.

Although a holy country to a large section of the Mohammedan world, Iraq does not attract charitable endeavour, in contrast to Palestine, where two-thirds of the lavish medical facilities owe their existence to charity. Practically all the public hospitals and dispensaries have to be maintained by the State. The work is limited by lack of money, but in two years there have been nearly two million out-patient attendances, and in 1924 15,500 cases were treated in hospitals. The care of the aged, infirm, and incurable is impossible. The first-class hospitals at Baghdad, Basrah, and Mosul perform between 2000 and 3000 major operations yearly, but such operations are practically limited to hospitals in charge of British surgeons. Two ophthalmic surgeons are employed—at Basrah and Baghdad—and a great deal of work is being done; but the field is enormous. About 80 per cent. of the population of Baghdad suffers from trachoma, and as a charge of 4 annas a week reduces attendances at clinics by three-quarters, it is again clear that the Government will have to pay if things are to improve. X ray facilities are provided in the three great towns; there is a chemical department at Baghdad, and a very competent pathologist in charge of a laboratory there, who also supervises the antirabic and vaccine lymph institutions. Rabies is widespread in Iraq, and cases of dog, jackal, and wolf bites present themselves in a steady stream. The report gives details of a series of interesting cases showing a considerable measure of success in treatment.

Venereal diseases are extremely common amongst all classes, but the manifestations are milder than in Europeans. Of 280 registered prostitutes examined at Basrah 270 showed infection; brothels are mainly under supervision and preventive measures are encouraged. *Opium-eating* is a well-established practice, especially in the centres of Persian influence, and opium-smoking is common at pilgrimage towns. The tribes use opium chiefly for medicinal purposes, but under Turkish and Persian influence the morphine habit is growing commoner in towns, and cocaine is taking hold of the educated classes.

Medical and Dental Practice.

With two exceptions all the private medical practitioners in the country have settled in the three great towns, where there are far too many of them. A huge influx of doctors comes from Syria, where many poorly qualified men are yearly turned out on a country which has an excess of them already. Turkey is closed to them, so they exploit Iraq. The consequence is that charlatanism and questionable practices are becoming increasingly rife, and that Iraqi doctors find it hard to live. There is as yet no Iraqi medical school. Dressers and hakims are perforce permitted to practise under nominal supervision in some areas, and more or less qualified dentists are allowed to practise with reservations. The country suffers from a lack of trained midwives; but conditions are improving in the towns, and in most of the country districts there are one or two midwives who may be regarded as fairly clean in their methods. Unfortunately, in the East very few respectable women will take up this work, and of the middle-aged women available very few can read or write, and those who cannot are somewhat insusceptible to training.

MEDICAL MISSION CONFERENCE.

THE meeting of the Medical Mission Advisory Board of the Conference of British Missionary Societies at the Bible House, Queen Victoria-street, London, on Sept. 23rd, occupied most of its time in discussing the problems of passing on to the national churches the responsibility and support of mission hospitals, and also the question of the strict adherence to a high standard of nursing, especially in a country like China. Dr. Hugh H. Weir, medical secretary of the S.P.G., who acted as chairman, in initiating the discussion, said that hospitals should not be looked upon merely as humanitarian institutions or even as valuable instruments in bringing forward the Christian gospel, but as instruments for perpetuating the Incarnation. Their tone was therefore the all-important factor, and the primary question to be borne in mind was how far this was being created and how far it would be continued in other hands. Dealing with obstacles to be overcome, Dr. James L. Maxwell, general secretary of the China Medical Missionary Association, said that the financial ones could largely be met by further accommodation for paying patients, but that the question of qualified doctors was more difficult owing to the fact that there were now only seven or eight properly equipped Christian medical schools turning out some 20 men a year to supply the need of China's 300 mission hospitals. Dr. J. H. Cook, medical secretary of the C.M.S., speaking from his experience in Africa, emphasised the need of spiritual, intellectual, and social fitness of the native doctors before institutions could be handed over. The question raised by Mr. W. McAdam Eccles, F.R.C.S., as to how far foreign doctors could continue on the staff after the handing over of a hospital was not answered in the course of the discussion, while the problem which perplexed many, especially some of the women doctors from India, was the advisability of native doctors on the hospital staff also having a private practice. It was felt by many that this was not advisable. Dr. H. T. Chiang, a Chinese guest from Hankow, said that the time was not ripe for handing over hospitals to the Chinese Christian Church. He advocated Anglo-Chinese boards of management to turn the institutions into community hospitals, and the gradual reduction of grants-in-aid to provoke local responsibility. At the afternoon session the actual discussion was almost confined to the standard of nursing in China. Some pleaded that this was too high, too "Americanised," and was a bar to the preparation of sufficient nurses for the urgent needs of the country. It was evident, however, that the majority did not wish to see standards lowered, and as was pointed out, this was the express wish of the Chinese themselves, who formed to-day 75 per cent. of the membership of the Nursing Association of China.

REFUGEES IN MACEDONIA.

THE situation of refugees at Salonika is still serious. It is estimated that in this city alone there are 80,000 refugee widows and children, many thousands of whom are solely dependent on charity. The Government's allowance to them is 1 drachma (about ¾d.) per day, and bread costs 8 drachmas a loaf. In general town-dwellers are worse off than peasants in these unaccustomed conditions; but those refugees who have been sent to outlying parts of Macedonia as agricultural tenants are in serious plight as they received their land too late to sow crops and the Government is not going to distribute grain for food as it did last year. Many crops have also failed through storms. At Salonika refugees are still crowded in mosques, schools, and warehouses. In the barracks a family of six or seven often occupies a floor space of 3 or 4 square yards. Many have been living like this for three years and are still wearing the remains of the clothes in which they arrived. Malaria is not so bad as last year, but in one camp there are 400 cases, and 150 cases of dysentery. The "Save the Children Fund" is the only organisation rationing the people in the Salonika area and is feeding some 9000 people there, but has to turn many away. Its milk stations are greatly appreciated and clothes are badly needed. In order to maintain and increase its services it urgently requires help.

TO CHIROPODISTS AND OTHERS.

THE Society of Chiropodists has reprinted[1] a series of lectures delivered by Mr. Lake, which cover an extensive area, and they should appeal to a wider public than that comprised by the Society. They would form, in fact, an admirable introduction to anyone starting to study medicine, or indeed to anyone interested in the progress of medical science. The development of bacteria, the principles of asepsis, and the causes and processes of disease are dealt with in a masterly manner. The more special articles on the mechanism of the foot and its deformities are of value as an introduction to this branch of orthopædics. But the lectures cover the field from the early history of man to the latest advances of the chemistry of colloids. Indeed, the most interesting lecture is that on the Antiquity of Man, where the author shows a quite exceptional knowledge of his subject. The book is really a volume of occasional essays and we would recommend the pleasure of reading them to many whose interest in chiropody is limited to their personal comfort.

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[1] Lectures to Chiropodists. By Norman C. Lake, M.D., M.S., D.Sc. Lond., F.R.C.S. Eng., Surgeon to Out-patients, Charing Cross Hospital. London: Incorporated Society of Chiropodists. 1925. Pp. 240. 10s.

OBLITERATION OF TATTOO MARKS.

A CORRESPONDENT inquired in a recent issue of THE LANCET as to what method could be used to remove tattoo marks on a girl's legs which were revealed by the fashionable diaphanous stockings. It is said that tattooing disappears before civilisation; but here is an unfortunate case where it has merely become more apparent. To a young woman of the period it would, of course, be supererogatory to point out the possible uses of superimposed pigments: presumably they are for some reason inapplicable or unstable in this particular case. It has been suggested that the obvious solution is to re-tattoo each mark with flesh-coloured pigment, but apart from this unattractive method, there are various other courses for which success is claimed. From Messrs. Thos. Christy and Co., of 4, Old Swan Lane, Upper Thames-street, E.C. 4, an account reaches us of the virtues of a preparation named Extaetol, which is made in Germany. The pigment is brought into contact with the remedy by application after pricking the skin with needles over the marks. The ointment removes part of the corium and the active process takes about six days; the instructions should be carefully considered before ordering. Skillem recommends in the *Philadelphia Medical Journal* (June 18th, 1808) glycerole of papain as the most efficient and least painful agent. It is pricked in over the tattoo marks after desensitisation with ethyl chloride spray. The following has also been suggested, but cannot be guaranteed. Salicylic acid which has been massed with glycerine to the consistence of dough is applied over the marks with a compress and strips of adhesive plaster and is allowed to remain in contact for some time. After the first dressing the epidermis over the marks is removed, and a fresh application of the salicylic paste applied. Usually, the second application removes the marks, but sometimes it is necessary to make a third. The treatment must be applied very cautiously.

APOPLEXY OF THE SOFT PALATE.

As long ago as 1802 Le Jeune, of Boulogne, drew attention to a condition of small hæmatomata of the soft palate which he called "apoplexie de la luette." Bosviel in 1911 recorded a similar case under the title "apoplexy of the tonsillar fold." The swellings are produced by the spontaneous rupture of small vessels and subsequently break through the mucous membrane and cause a hæmoptysis. There is little or no danger involved, but the patient may be gravely alarmed or subjected to considerable discomfort. MM. J. Garel and A. Gignoux, writing in a recent issue of the *Journal de Médecine de Lyon*, regard the condition as not uncommon, although seldom recorded. They have collected 17 cases. It may arise even during sleep, as in a case of Bosviel's, but more usually in the course of a meal, evidently as the result of contraction of the palate. The patient suddenly experiences discomfort in the throat, and if the hæmatoma be a large one the sense of stifling may be agonising and may continue for several hours. It is immediately relieved by opening the tumour with a bistoury or galvano-cautery. More often the hæmatoma is the size of a grape-stone and ruptures by itself in a few minutes, the lacerated mucosa cicatrising in a few days. The authors have not been able to determine the ætiology; trauma undoubtedly plays a part in many instances. A man who was liable to subcutaneous ecchymoses developed a large hæmatoma on the anterior pillar of the fauces while this was being lightly massaged to expel the secretions from his tonsillar crypts. There is thus an analogy with the ecchymoses produced in the vocal cords by a vocal effort. On the other hand, there are cases where no trauma can be traced, and there seems to be a certain individual tendency to the phenomenon. One of the cases, a woman aged 30, had had a palatal hæmatoma every two or three months for 12 years, usually coinciding with the menstrual period. Other cases had experienced it on several occasions. As the false hæmoptysis may continue for several hours much unnecessary alarm may be caused by this trifling accident, and it is well for the practitioner to bear in mind the possibility of its occurrence among his patients.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Oct. 6th.

ORTHOPÆDICS: at 5.30 P.M. (Cases at 5 P.M.)
Presidential Address:
Mr. A. S. Blundell Bankart: The Physiology of Muscular Action.
A discussion will follow.
Cases may be shown, either in connexion with this subject or otherwise.

Thursday, Oct. 8th.

NEUROLOGY: at the Middlesex Hospital, Berners-street, W. 1, at 8.30 P.M.
Presidential Address:
Dr. Campbell Thomson: The Work of Sir Charles Bell in Relation to Modern Neurology.
Drawings and specimens will be exhibited.

Friday, Oct. 9th.

CLINICAL: at 5.30 P.M. (Cases at 5 P.M.)
Cases:
1. Dr. Parsons-Smith: Two Cardiac Cases.
2. Dr. Douglas Firth: Bronchiectasis.
3. Dr. Bernard Myers: (*a*) Transposition of Viscera. (*b*) Morbus Cordis of Unknown Origin.
4. Dr. L. S. T. Burrell: (*a*) Clubbing of Fingers and Toes. (*b*) Abdominal Tumour.

OPHTHALMOLOGY: at 8.30 P.M. (Cases at 8 P.M.)
Discussion:
Penetrating Injuries of the Eye.
Opener:
Mr. Gray Clegg.
Other Speakers: Mr. G. H. Pooley, Mr. Harry Lee, Mr. Goulden.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 5th, to SATURDAY, Oct. 10th.—CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C. Special course in Laryngology, Rhinology, and Otology. Clinical Course and Operative Surgery Course, of which one or both may be taken. Operative Surgery Class daily 9.30 to 11.30. Clinical Course most days, 9–5. In- and Out-patient Operations, Clinics, and Lectures.—LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Endsleigh-gardens, N.W. First two of a series of eight clinical demonstrations, Tuesday and Thursday, at 2, by Dr. G. C. Low and Dr. Manson-Bahr. The subjects considered will be the more important diseases of tropical countries, illustrated, if possible, by cases.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Lecture-demonstration on Treatment by Electro-Therapy on Wednesday, Oct. 7th, at 5.30, by Dr. C. B. Heald.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: OCTOBER-NOVEMBER, 1925.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, Oct. 5th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Paraplegia and its Treatment: Dr. Riddoch.

TUESDAY, Oct. 6th.—2 P.M., Out-patient Clinic: Dr. Walshe. 3.30 P.M., Epilepsy: Dr. Adie.

THURSDAY, Oct. 8th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Progressive Muscular Atrophy: Dr. Martin.

FRIDAY, Oct. 9th.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Pituitary Tumours: Mr. Sargent.

The Fee for the Course, including Pathology lectures, is £5 5*s.* For those who hold Perpetual Tickets the fee is £3 3*s.*

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.

THURSDAY, Oct. 8th.—12 noon, Neuronal Degeneration: Dr. J. G. Greenfield.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

MONDAY, Oct. 5th.—12 noon, (*a*) The Significance and Evolution of the Nervous System. (*b*) Methods of Investigation: Dr. J. L. Birley.

Dr. H. J. Macbride will give a COURSE OF EIGHT CLINICAL DEMONSTRATIONS, CHIEFLY ON METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays, if sufficient entries are received. The fee for this Course will be £2 2*s.*

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 o'clock, or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.

Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.

J. G. GREENFIELD, Dean of Medical School.

UNIVERSITY COLLEGE, London.

WEDNESDAY, Oct. 7th.—5.30 P.M., Prof Fritz Weigert (Leipzig): The Photochemistry of Vision (public lecture in English). 7 P.M., Mr. A. H. Barker: Public Lecture on the Heating Equipment of a Large Hospital.

ST. JOHN'S HOSPITAL, Leicester-square, W.C.

TUESDAY, Oct. 6th.—5 P.M., Dr. S. E. Dore: Physiology of the Skin.

THURSDAY.—5 P.M., Dr. J. M. H. MacLeod: Anatomy of the Skin.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, Oct. 6th.—4.15 P.M., Dr. F. E. Tylecote: Prognosis and Treatment of Bronchitis.

FRIDAY.—4.15 P.M., Dr. E. M. Brockbank: Pre-Existing Disease as a Cause of Disablement in Workers.

An Address
ON
UNUNITED FRACTURES.

Delivered at St. Bartholomew's Hospital, London,

BY ERNEST W. HEY GROVES, M.S. LOND., F.R.C.S. ENG.,
PROFESSOR OF SURGERY, BRISTOL UNIVERSITY.

WHEN I was a student in these revered and ancient walls the subject of fractures received very scant attention in our surgical curriculum. Of course, necessity sometimes compelled the admission of a case of fracture of the leg bones into the wards, and then splints were duly applied and after some weeks the patient was sent out; what became of him we never inquired—he did not interest us. The smartness of a house surgeon was recognised by this among other tests—that he should avoid taking in fracture cases and, having taken them in, should hide the fact and get rid of the offending case as soon as possible. I remember Mr. Lockwood advising us if we ever got a fracture case in private practice to pass it on to our rival across the street, so that it might be his undoing and not ours, but beyond this, I cannot recollect any member of the surgical staff ever taking any notice of a fracture during my dressership. No doubt this is all changed now, and in the full illumination of the X rays the diagnosis and treatment of fractures are taught as embodying the most important principles of the science and art of surgery.

CAUSES OF NON-UNION.

The study of a case of a fracture which has failed to unite is one which may well absorb the interest of the pathologist and the physician as well of the surgeon and the mechanic. Why does repair sometimes fail? What determines the ordered balance between tissue formation and tissue absorption? What is the difference between an osteoblast and an osteoclast? What is the vital relation between the cells and the intercellular material of the skeleton? Such are some of the questions which are suggested and which I find easier to ask than to answer.

Let us consider the last question a little more closely, for it affords a good illustration of the baffling nature of the problem of bone pathology, and it is very intimately connected with explaining the nature and determining the treatment of an ununited fracture. All connective tissue and especially bone and cartilage are distinguished by the large proportion which the intercellular material bears to the cellular element. Is this intercellular material living or dead? A piece of bone is regarded as dead if it contains neither blood-vessels nor cells. But according to this definition all the extra cellular material of the bone is then dead; it is a secretion or excretion of the living cells which can be laid down or taken up according to the necessities of the moment.

The endoskeleton of the vertebrate, like the exoskeleton of the invertebrate, is formed by the living tissues, but is outside them. Any piece of human bone may become temporarily deprived of its blood-supply and its cells all die, and yet in a very short time new blood-vessels and new cells invade the dead bone and the dry bone truly lives once again. On the other hand, a devitalised portion of bone may remain for an indefinite time without blood and without cells, an indolent mass incapable of growth or repair. This, in fact, is the condition of the ends of the bones in many cases of ununited fracture.

The causes of non-union may be grouped as follows:—

Mechanical—
Gap between the bone ends.
Unrestricted mobility.
Interposition of soft parts.
Foreign bodies.

Vascular—
Sepsis, destroying the vital elements.
Sclerosis, the bone canals are closed and the cells imprisoned.
Atrophy, the vital elements disappear and only an earthy shell remains.
Fibrous tissue and cartilage cover over the bone ends and so imprison the vital elements.

Disease—
Infection, pyogenic or specific, tubercle, gumma.
New growth—
Fibrocystic disease, myeloma.
Sarcoma, carcinoma.

Space does not permit of the discussion of each of these causes, and I must be content to emphasise one or two points.

It often happens that several of these causes coöperate. Thus, in the fracture of the neck of the femur, it is difficult to fix the bones, and with the ordinary splinting there occurs mobility, associated with want of apposition and the interposition of part of the capsule of the joint. The proximal fragment has a very poor blood-supply and atrophy quickly takes place. Again in the case of the shaft of the humerus, the difficulty of efficient fixation is the prime cause of the frequent non-union. The bone ends throw out granular tissue or pro-callus, but constant movement prevents this bridging the gap. In the meantime muscle and fascia wrap closely round the bone ends, and each becomes clothed in fibrous tissue or fibro-cartilage. The importance of mobility as a cause of non-union has been obscured by the teaching of those who advocate early movement of a limb as conducing to rapid restoration of function. But there is no real conflict of opinion. Movement of the limb as a whole and of the muscles covering the fracture is good because it promotes vascularity. But movements of the bone ends against one another in the early period after a fracture certainly prevent union.

FIG. 1.

Ununited fracture of humerus, treated by plate, wires, and screws two years previously. (For result of grafting operation, see Figs. 4 and 5.)

One cause of non-union which is not uncommon is the inefficient application of screws and plates or wire in the treatment of a fracture. This, too, has been the subject of much misapprehension. It is commonly said that it is the malign influence of the foreign body which has hindered the vital repair. But this is not the case. Bones tolerate foreign bodies very kindly, provided they are fixed and give fixation. But it is the small plate which soon works loose, or the badly applied wire which works the mischief, causing friction, destruction of granular tissue, and non-union. It is easy to provide abundant proof of this both from experimental and clinical evidence. Fig. 1 is a good illustration of mechanical fixation which provides the maximum of frictional irritation with the minimum of mechanical rigidity. That there was nothing at fault with the bone itself is proved by the kindly way it healed after a bone graft (see Figs. 4 and 5).

VARIETIES OF NON-UNION.

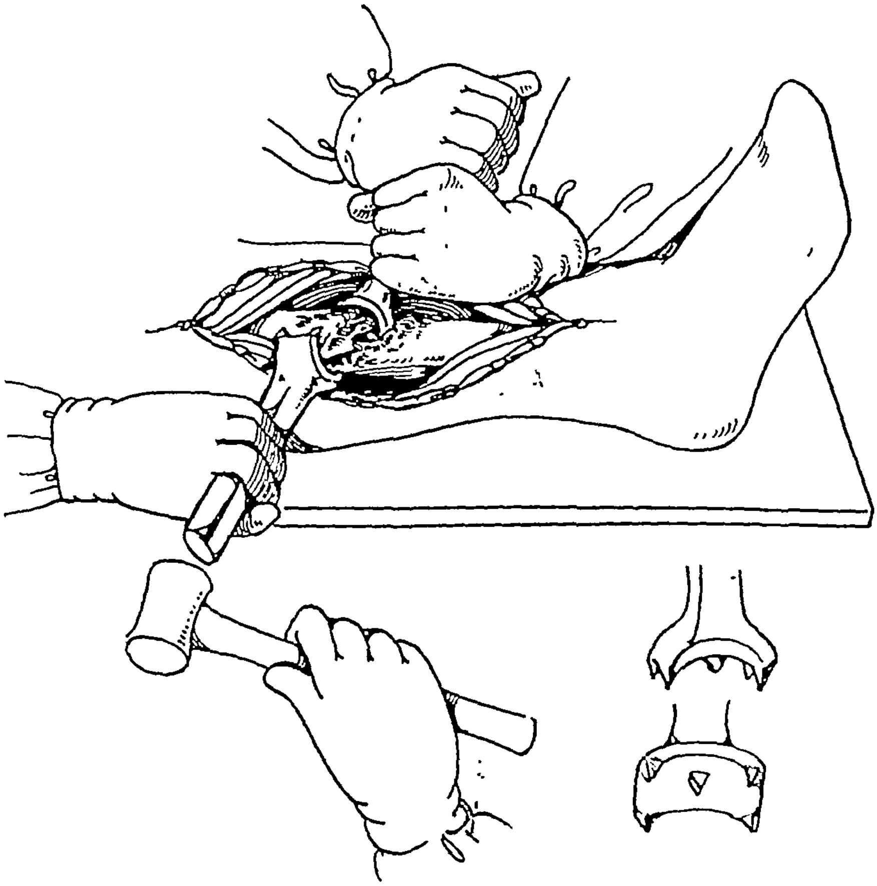
There are at least four different varieties of ununited fractures, and each variety has its own structural peculiarity and requires special treatment. They are:—

(*a*) *Delayed Union*—
Mere cellular inactivity.
No callus and little or no fibrous tissue.

(*b*) *Non-union*—
1. Fibrous union: Fibrous tissue or fibro-cartilage between and connecting the bone ends.
2. Pseudarthrosis: Bone ends eburnated and covered with fibro-cartilage. A joint cavity with capsule and synovial fluid between the ends of the bones.
3. Gap fracture: A piece of bone lost, the bone ends held apart by the companion bone. The bone is usually thin and atrophic.

It is not always possible to distinguish between the first and the second varieties—i.e., between delayed union and fibrous union, but the other two varieties—the false joint, with its flail-like mobility, and the gap fracture—are quite distinct. In merely delayed union the bone's ends are in contact, but callus does not form in such a way as to unite them. Such callus as there is is only the internal callus which seals up each *marrow cavity*. The X *rays show no change in the* bone except for a slight blurring of the distinction between the cortical and medullary layers. It is a state of cellular indolence and inactivity, which can generally be quickened into healthy vital repair by an appropriate stimulus. In fibrous union, on the other hand, the bone ends are thickened, eburnated, and greatly increased in density as seen by the X rays. The bone ends are covered in fibrous tissue or fibro-cartilage, whilst blood-vessels and osteoblasts alike are strangled or imprisoned in hard sclerotic bone.

FIG. 2.



Fractured tibia exposed and treated by subperiosteal comminution; inset shows jaws of instruments used.

In making this distinction, however, it has to be borne in mind that the one condition leads to the other, and it is therefore not always possible to draw a sharp line of demarcation between them. From a practical point of view, delayed union is a condition which can be cured by non-operative or simple comminution methods, whilst true fibrous union will require open exposure with resection of the eburnated bone ends.

NON-OPERATIVE METHODS OF TREATMENT.

In all doubtful cases when not more than six months have elapsed since the fracture, it is worth while to give a good trial for a period of about three months to non-operative methods. Such a case is often presented by a fracture of the lower third of the tibia. Perhaps six months has passed since the accident, the broken bone presents distinct mobility but not much pain, and the X rays show no change in the bone ends except a little rounding off of the sharp contour. It is easy to make a mistake in such a case by treating it as if it were a recent fracture and putting on a plate. It may be true that if the fracture had been plated in the first place union would not have been delayed. But the essential fact of delayed *union—viz., the cellular inactivity of the vital elements* of the bone—now dominates the situation, and mere plating is more likely to make matters worse than better. To apply a plate requires that the bone ends should be partly stripped of their vascular covering and bored with holes, but then the bare area and the fresh holes are covered or plugged with plate and screws, a process which does much to hinder and nothing to promote callus formation.

There are three non-operative methods available and these may be used *singly* or *in combination*. They are: (1) voluntary movements, the fracture being protected with a splint; (2) passive congestion with massage; (3) injection of blood or blood products in and around the fracture.

In the encouragement of active movements the limb must be so protected by a case-splint that absolute rigidity without lateral movement is afforded to the bone, whilst the joints above and below are left free. The contraction of the muscles promotes hyperæmia and also pulls the bones together. In the case of the tibia the patient is made to walk, and this is a most efficient means of forcing the bone ends together and so promoting a frictional stimulus to callus formation. This type of treatment is very practical because it will enable most patients to resume their active work instead of keeping them in prolonged invalidity. The second non-operative method is the "damming and hammering" advocated by Owen Thomas. A piece of rubber tubing is placed round the limb above and below the fracture as tightly as can be borne without altering the arterial pulse and so kept for several hours daily. With this is associated a heavy percussion massage of the limb aimed at promoting tissue stimulation.

The injection of blood or of serum or fibrin has not been used much in this country, and its value is suggested chiefly by experimental evidence. It is really more difficult and nearly as painful as the open exposure of the fracture, and therefore to me it hardly seems worth while. Animal experiments are misleading in this matter. It may be true that blood injection round an injured bone will intensify callus production; but that is when the bone injury is recent and the bone healthy—there are plenty of bone cells and nothing to imprison them. But in an old fracture matters are different. The bone cells are locked up in a hard dense bone, the surface of which is sealed, and blood bathing the outside of such bone has very feeble power to liberate its essential and vital elements.

OPERATIVE TREATMENT.

Whenever union has been delayed for more than 12 months or when there is increasing mobility between the fragments associated with an X ray picture of rounded bone ends separated by a definite gap, then an open operation will be necessary if cure is to be effected. The actual nature of the operation will depend upon various circumstances, and it is a matter for skilled judgment founded upon experience.

The following are the principal considerations which must be taken into account before deciding upon an operation and in choosing the operative method: Age, health, and temperament of the patient; amount of disability, with and without a suitable splint; sepsis; existence of other lesions particularly those of joints, nerves, or blood-vessels; deformity; relation of the bone ends to one another—i.e., contact, overlapping, or gap; conditions of the bone ends, sclerosis, or atrophy.

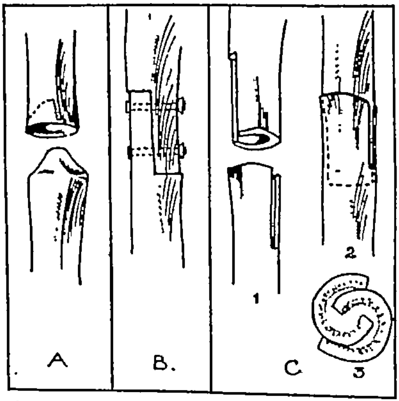
It must be borne in mind that the operation may be one of great difficulty or even danger, and that it makes a great demand upon the patient's vitality and powers of repair. It requires a patient who is keen, healthy, and young, in temperament if not in years. In some cases the amount of disability is very little. For many years Dr. Livingstone continued his active work as an explorer with an ununited fracture of the humerus, and I have known a busy general practitioner continue his work suffering from the same injury. Sepsis, whether actual or remote, is always a serious hindrance to reconstructive operations, although it may not prevent the adoption of the simpler revitalising procedures. The existence of serious complicating lesions of the joints, blood-vessels, or nerves may make it wiser to choose amputation rather than reconstruction, and this applies more particularly to fractures of the tibia.

Deformities should be corrected as far as possible before the fracture is dealt with, so that the freshly united bone is not subjected to any undue strain. The relation of the bone ends to one another should be carefully considered before deciding what type of operation is to be done. It is much better to aim at bringing the bone ends into contact and wide contact with one another, even at the sacrifice of length, rather than to depend upon bridging a defect with a graft. If there is much overlapping of the bone ends it is seldom possible or desirable to restore the bone to full length by traction—it is better to unite them side by side in a step-cut operation. If the bone ends are greatly sclerosed or much atrophied, they will repair slowly, and the mere addition of a graft will not supply the lost elements of vitality. The essential for success is the wide contact of healthy vascular bone surfaces, and if it is necessary to use a graft then this must have wide contact with healthy vascular bone at each end.

STIMULATION OF THE BONE ENDS.

Whatever may have been the first cause of non-union the ultimate conditions which make it permanent are want of contact and failure in vitality of the bone ends. If, then, the bone ends can be brought into wide contact without strain or deformity, it is only necessary to arouse their dormant vitality and union will take place. In the first place, all the dense fibrous tissue between the bones is removed, and raw surfaces of bone secured by scraping and chiselling. But such surfaces are usually indolent, bloodless, and sclerosed. They must be broken up so as to open up fresh blood channels and liberate the bone cells. Multiple drill holes or saw cuts may be made into the bones, or they may be chiselled into fragments. The latter is certainly most effective, because it is more drastic than drilling or sawing and it does not choke the fresh surfaces with the bone dust caused by drill or saw. But it is liable to split fragments clean off the bone, and such fragments will be very inert in the matter of repair. Recently I have adopted a modification of the chiselling method which is a sort of hammer and anvil procedure and aims at *subperiosteal comminution* (Fig. 2). The bone ends are exposed but the thickened periosteum over them is left undisturbed. The fibrous tissue between the bone ends is cut away by chisel and spoon. Then each bone end in turn is taken between the jaws of two spiked steel instruments, which are curved to fit the convexity of the shaft. These are then hammered together, using a heavy hammer, so as to crush the bone and periosteum, but not separating one from the other. Free oozing will, of course, result from this, and the two comminuted bone ends are left in the midst of a hæmatoma over which the soft parts are carefully sewn in several distinct layers without drainage. The limb is put up in a case-splint and active exercise taken as soon as possible.

FIG. 3.



Fitting methods: (A) Double cone. (B) Step-cut. (C) Sectoral interlocking: (1) Ends cut, (2) interlocked, (3) in section.

I would advocate such treatment for those cases in which union is merely delayed without gross change in the bone ends. It is simple and free from any risk except that of failure. If it fails it does not prejudice the success of a grafting operation done later.

SHAPING AND FITTING OPERATIONS.

But in all cases of definite non-union, the bone ends are so unhealthy that they must be not only cut into but cut away so as to secure a wide contact of raw surfaces of fresh bone. And this should be done in such a way as to fit and fix the ends together. Four things are necessary: Fresh bone—i.e., provided with blood-vessels and osteoblasts, wide contact, close apposition, and firm fixation. Whether it is that the osteoblast will not venture out to any distance from its bony origin, or whether an osteoblast ceases to lay down bone when it is at a distance from its parent bone, is not known, but the fact is undoubted that new bone is very rarely formed except in the close neighbourhood of existing bone. Therefore if fresh bones are fitted and fixed firmly together they will unite into one solid bone, whereas if they are in loose apposition they will only become tied together by fibrous union.

FIG. 4.

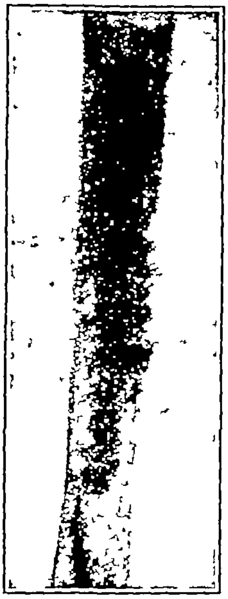


FIG. 5.

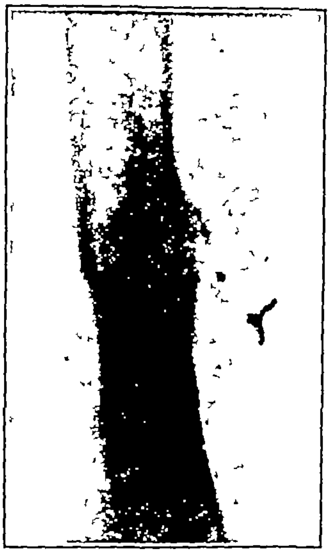


FIG. 4.—Fractured humerus (same case as Fig. 1) treated by autogenous intramedullary graft fixed by "split-and-thrust" method. One month after operation.
FIG. 5.—Same case as Fig. 4. Two years later.

FIG. 6.

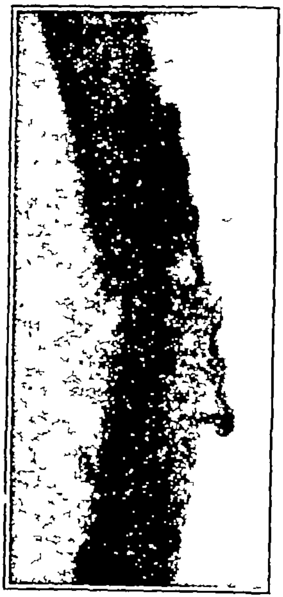


FIG. 8.

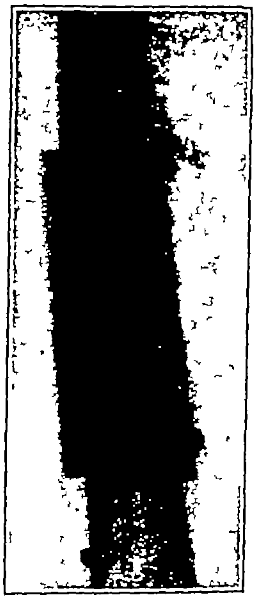
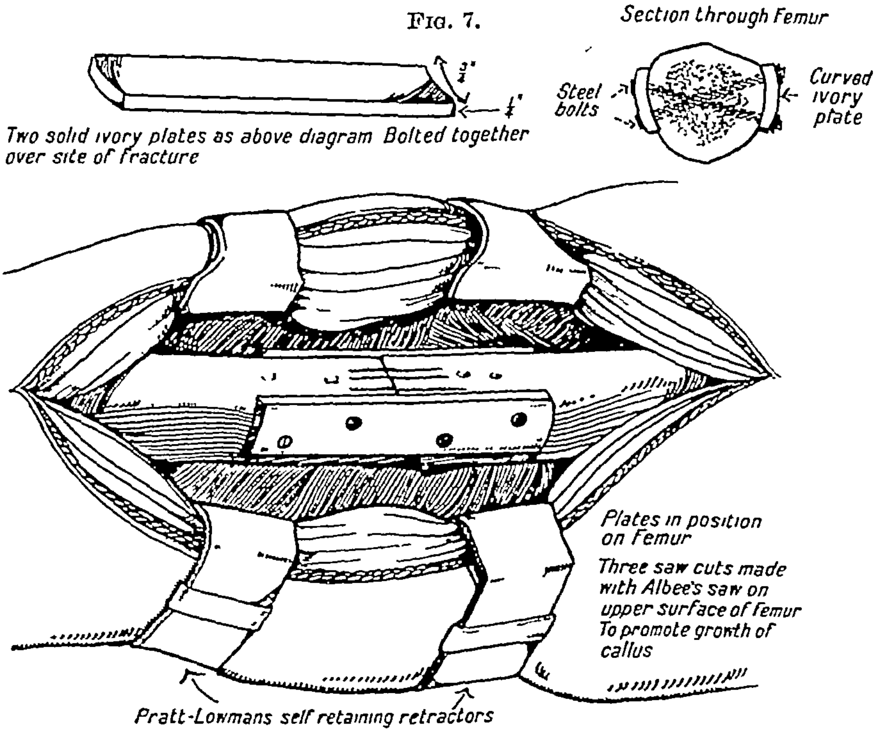


FIG. 6.—Ununited fracture of femur treated 12 months previously by inadequate plating.
FIG. 8.—Same case as Fig. 6. After operation, by a pair of ivory plates, bolted together.

A good illustration may be given from the joinery of a cabinet maker or carpenter. In such work all joining is done by accurate fitting. If glue is used, it is only to fix accurately apposed surfaces and not fill up cracks or deficiencies. No more should be asked of the reparative callus than a carpenter asks of his glue—i.e., to knit together surfaces which truly fit and are firmly fixed.

FIG. 7.


¾"
¼"
Two solid ivory plates as above diagram Bolted together over site of fracture
Section through Femur
Steel bolts
Curved ivory plate
Plates in position on Femur
Three saw cuts made with Albee's saw on upper surface of Femur To promote growth of callus
Pratt-Lowmans self retaining retractors

Same case as Fig. 6. Operation by bolting on pair of ivory plates.

The actual shaping of the bones after sclerotic tissue has been cut away should be adapted to the condition of the bones, the shape of the fracture, and the advisability of shortening the bone. Thus transverse fractures may be shaped as a double cone and fixed by a peg or a plate (Fig. 3, A). Oblique fractures may be step-cut so as to give a wide overlapping and fixed by bolts or bands (Fig. 3, B). Or an atrophic bone may have a piece taken out of its circumference and then be made to interlock with its fellow by engaging one edge of each bone in the marrow cavity of the other, a device which may be described as sectoral interlocking (Fig. 3, C).

It will be noted that all these reconstructive operations involve the shortening of the bone. This is of no great importance in the humerus. In the femur it is better to have a short strong leg than an ununited fracture. It is wise not to attempt full elongation of the thigh bone. It may be given one week's traction by a 25 lb. weight applied by a transfixion pin, and then at the operation the bone should be joined with some overlapping. It is dangerous on account of shock to pull the leg out to its full length, and it is fatal to the fixation if it be put up under strong tension. In the forearm and lower leg the fitting operations usually involve an osteotomy of the companion bone. Having fitted the ends together they certainly should be fixed. Such fixation may be by metal bolts, ivory screws, bands, or wire, or in many cases tendon ligatures, silkworm gut, or stout silk will suffice. If metal fixation can be dispensed with, so much the better, but it is absurd to make the non-use of metal sutures a guiding maxim of bone surgery. Having fixed the fitted bones together by proper sutures the limb is immobilised by an external splint or plaster-of-Paris.

To recapitulate the essential points. Secure fresh bone by cutting away the unhealthy ends; provide wide contact of the fresh bone surfaces by accurate fitting; ensure close contact by proper sutures of which the metal bands and bolts are the most reliable; and get proper prolonged fixation by an external splint which must be worn for three months at least.

BONE-GRAFTING OPERATIONS.

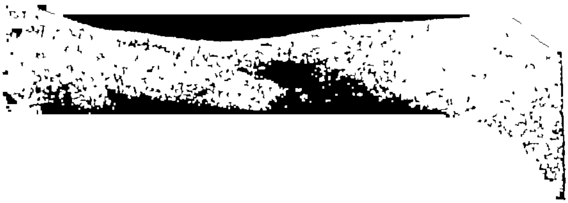
The ideal and obvious method of treating ununited fractures is by putting in a bone graft. But it is well at the outset to realise that this method has very definite limitations, and that the conditions for success are very exact.

A piece of bone cut from the living bone of the patient is endowed with very limited vitality. It has living bone-cells, but for the most part these are locked up in the depth of the dense skeletal tissue. It has blood channels cut off from the active circulation, and it has a strong rigid frame which can be used as an internal splint or strut, whilst this framework is porous and is thus capable of acting as a scaffold work into which new bone tissue may penetrate from neighbouring active bone. It has no power of independent growth, and if it is placed in any living tissue other than the skeleton it rapidly withers away. Its power of producing new bone is very limited, and by many authorities is considered non-existent. When used to repair a defect in a long bone it can act in four ways. First, as an internal fixation splint; second, as a strut by which continuity being restored to a broken bone, the latter is provided with a functional stimulus; third, as a scaffold, in and around which new bone is built up; and fourth, as a source of new bone. The functions of the graft as an agent of fixation and osteo-conduction are clear and obvious, whilst that of osteogenesis is problematical. But a piece of dead bone will carry out the function of fixation and conduction, and it often becomes a question whether it is worth while using living bone just for the sake of its osteogenetic power. If a gap has to be bridged, then living bone must be used for the graft, but if the pieces of the broken bone can be brought into contact and the graft buried in living bone, then dead bone may be used, and should be used, if greater strength is demanded than can be provided by a live graft.

Exactly the same principles apply to the fitting and fixing of a graft as have been laid down for the fitting and fixing of the bone ends of an ununited fracture. That is to say, wide contact with live bone, firm fixation, and efficient immobilisation. And if the graft is used to bridge a gap it must be as stout and as strong as the bone it has to replace.

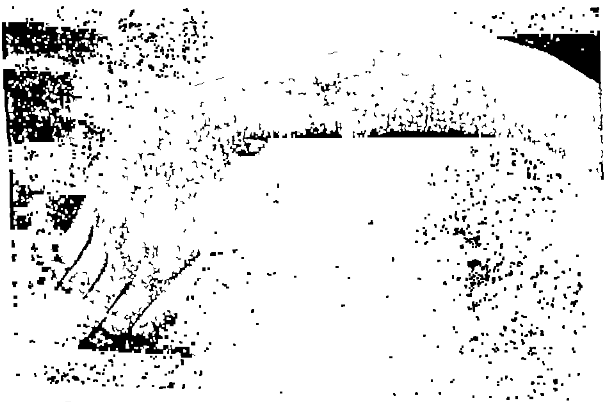
An autogenous graft is usually cut from the inner surface and crest of the tibia, which in an adult is capable of providing a piece of bone 8 in. long, ¾ in. wide, and ¼ in. thick. A motor-driven circular saw

FIG. 10.



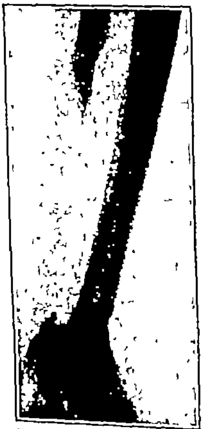
Same case as Fig. 9 after transplanting ulna into radius.

FIG. 9.



Gap fracture of radius resulting from gunshot injury in which bone grafting had twice failed.

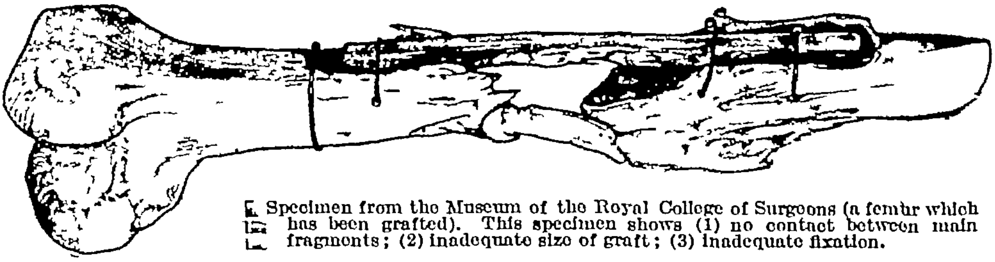
FIG. 11.



Same case as Figs. 9 and 10. X rays three years later. Strong working hand.

cuts the graft quickly, neatly, and with precision, and I have seen no evidence that the use of this instrument produces any interference with the vitality of the graft. It is not essential to take periosteum with the graft, although I think it is an advantage, because the attached membrane will help as a medium of vascular exchange between the graft and the tissues of the bed into which it is laid.

FIG. 12.

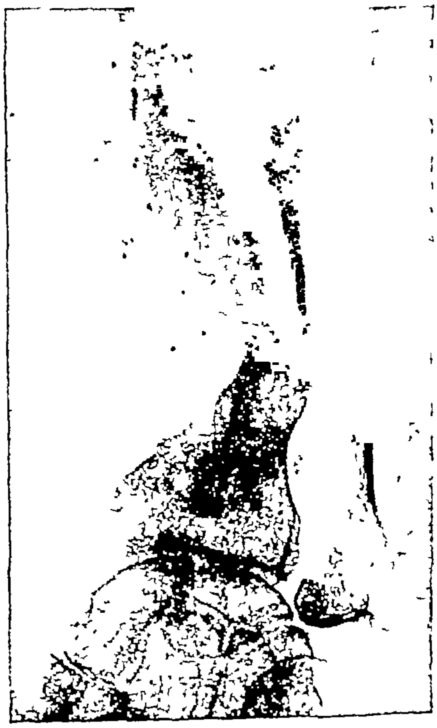


Specimen from the Museum of the Royal College of Surgeons (a femur which has been grafted). This specimen shows (1) no contact between main fragments; (2) inadequate size of graft; (3) inadequate fixation.

The fitting of the graft into the broken bone may be carried out in various ways, driving it into the marrow cavity, embedding it in the surface, or by combining these methods, placing one end in the medullary canal, and fixing the other in a slot cut in the cortex.

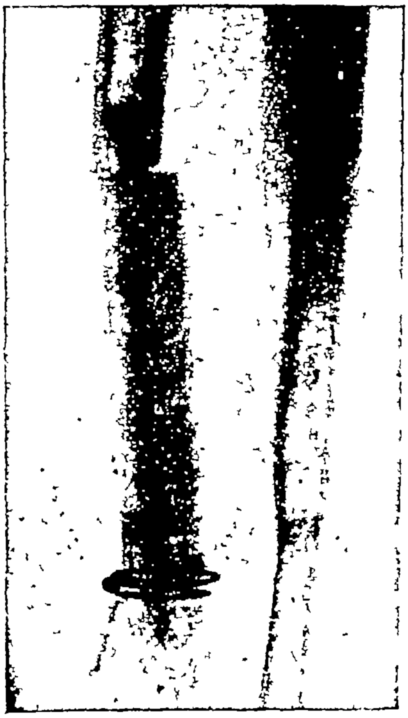
Intramedullary Grafting.—If a bone graft of suitable size and shape be driven into the marrow cavity of a tubular bone it will rapidly become consolidated with the latter. I think this admits of no doubt, and yet intramedullary grafting has fallen into undeserved disrepute because of the technical difficulty of placing the graft tightly in each fragment. This can be accomplished in various ways. The graft can be driven through the end [illegible] one so as to nail one fragment to the other. T[illegible] ble f[illegible] ture near either extremity of t[illegible] or [illegible] the proximal end of the fem[illegible] driven into one fragment, [illegible] is split to receive it and [illegible] or silk [illegible] graft (Figs. 4 and 5 [illegible] is shaped like a cricket bail, one end being driven into one fragment whilst the other is manœuvred into position by angulating the other fragment out of the wound and slowly straightening the bone whilst the graft is engaged in its cavity. Or the graft may be made in two pieces, one is driven into the marrow cavity of each fragment, and the two grafts are then fixed together. Of these various devices the thrust-and-split method is the most satisfactory, because it *gives the greatest contact between the graft and the host bone.*

FIG. 13.



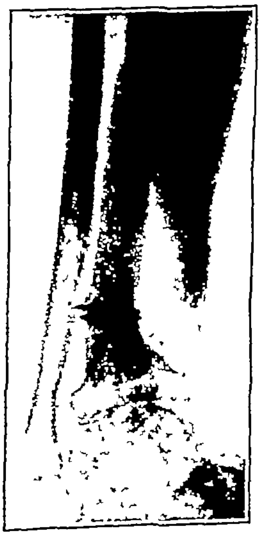
Fractured radius resulting from gunshot injury Shows graft too small, no contact, and no fixation.

FIG. 14.



Same case as Fig. 13 with graft of adequate size and fixation.

FIG. 15.



Same case as Figs. 13 and 14. Two years later.

Cortical Inlay Grafting.—In this method a slot is cut in the surface of both fragments of the fracture, and into this slot is fixed a graft which is made to fit accurately into the slot. The actual fitting is facilitated by using an aluminium plate as a template to measure the size both of the slot and the graft. It necessitates a very free exposure of the broken bone, because at least one-third of its length should be involved in the grafting operation in order to give strength and rigidity. It is particularly suited for the tibia or one of the forearm bones, because it supports one side whilst the other side is held by the companion bone. The graft is fixed in its bed by accurate fitting, by sewing the soft parts over it, or by bone nails or screws.

Use of Beef Bone or Ivory Pegs or Plates.—If the graft has to be buried in living bone then a strong dead graft is often better than a weak living one

Thus, in a fracture of the neck of the femur an ivory or bone peg used as a nail driven in through the great trochanter will give a good result, provided that accurate apposition of the fractured surfaces without interposition of soft parts be secured. In an ununited fracture of the femur, where it is desirable not to shorten the leg by a step-cut operation, it is difficult to get a living bone graft strong enough for the purpose. In this case a pair of ivory plates (Figs. 6, 7, and 8) may be used or else a tibial bone graft may be placed on one side of the fracture and an ivory plate on the other and the two plates then bolted together.

Supplementary Bone-grafting Methods of Doubtful Value.

There are certain methods of bone grafting, founded chiefly on theoretical considerations, which must be considered briefly. These are the use of so-called wafer grafts formed of periosteum with a thin layer of underlying bone, and the employment of bone chips. In my own practice and in experimental work both these methods have invariably led to failure. I would therefore relegate them to a very subsidiary rôle in the treatment of ununited fractures. It is possible, when the fracture has been fixed by one of the above-mentioned methods, that by wrapping a piece of periosteum with adherent chips round the fracture, or by packing in little bits of bone taken from the crest of the ilium the consolidation may be hastened, but I am not clear even on this point. Certainly the process of absorption is much more evident than that of callus formation.

Bone Shortening or Bone Substitution.—It not infrequently happens that more than one operation has failed to cure an ununited fracture. If this is the case with the forearm or the leg, there is another alternative to abandoning the case or submitting it to a case-splint or to amputation. This consists in shortening the companion bone, or substituting one bone for the other. In a gap fracture of the tibia a piece may be taken out of the fibula, sufficient to allow of the tibial fragments being made to impact or overlap. In a gap fracture of the radius, in which grafting has failed, the ulna may be divided and the proximal portion implanted into the distal part of the radius (Figs. 9, 10, 11). This gives a strong, straight arm, curing the radial deviation of the hand, although not permitting movements of pronation or supination.

Causes of Failure.

Apart from certain conditions—e.g., sepsis, active or latent, or the presence of general disease or debility which prevents the success of any surgical procedure—the local cause of failure of operations done for ununited fractures may be grouped together under the following heads: 1. Inadequate contact of bone ends (Fig. 12). This may be due to the sclerosed bone or fibrous tissue not having been cut away or to the raw surfaces not having been fixed together efficiently. 2. Inadequate fixation of the fracture either by reconstructive operation, graft, or splint. 3. Inadequate grafting in respect of the graft being too small, having no contact, or not being fixed to the host bone (Figs. 13, 14, 15). 4. Inadequate splinting of the limb after operation. 5. Excessive tension. If great force is used in reducing an old fracture there is immediate danger of shock, and later, risk almost amounting to certainty, of the mended fracture being pulled apart by the tension to which it is subjected.

The successful treatment of an ununited fracture will often test your skill as a mechanic, your technique as a surgeon, and your patience and optimism as a mender of the maimed; but the results of success are well worth striving for, because they are nothing less than converting a cripple into a whole man, and if in accumulating the experience upon which this lecture is founded I have made many mistakes and encountered many failures, my sincere hope is that you may avoid the mistakes and be rewarded by unvarying success.

An Address
ON
AVENUES IN MEDICINE.

Delivered at the Opening of the Winter Session of the London (Royal Free Hospital) School of Medicine for Women

By Sir CHARLES SHERRINGTON, O.M., G.B.E., M.D. Camb.,
PRESIDENT OF THE ROYAL SOCIETY.

On the opening day of the session, with some here for whom it is the commencing of a profession, our thoughts turn naturally to questions of what that profession has to offer and what it demands. The perspective of the avenue along which the profession of medicine is reached has many interesting points as viewed from either end, though I can deal with but a few among them.

Here in this school I imagine all students enter the profession for no other reason than that medicine earnestly attracts them. That pledge of enthusiasm is a valuable asset for the student herself and for her teachers, as also for the school and for the profession. If we ask what ground there is for that enthusiasm, we may in the first place as practical people take this, that there are in the nature of things not so many callings open to women as to men, and that medicine can and does provide for women to-day a means of earning an independent living. The average annual earning of the medical practitioner in this country to-day is, I believe, put at between £500 and £600 a year. I see little to suppose that that estimate is not applicable to the woman as well as to the man practitioner. It is not, to my mind, a discouraging average in the era before us, which must perforce be one of national economy and fortitude.

It is an average which doubtless regards chiefly the general practitioner. Though general practice is the main path of the profession, there are other far from negligible though relatively exceptional ones. There is consulting work and there is specialist work. Some of those present here to-day brilliantly exemplify the success in these that is attained by women. There are also medical branches of Government service, and I need not name to you women, and from this school, who hold distinguished and responsible positions in those services. Dame Janet Campbell, a senior medical officer of the Ministry of Health, we remember, is a former student of this school. And there are, further, other public services as well, municipal and county posts. Perusal of the list of registered medical women, former students of this school, show how considerable a number of such posts are occupied by them.

But no more than does it satisfy man shall it satisfy woman to live by bread alone. Bread alone will not account for enthusiasm in the choice of medicine as a calling. Medicine has been termed with some justice a poor trade; but at the same time it is known as a noble profession. If we can justify this latter belief it is a truer source for enthusiasm. And it is a claim that can be justified on many grounds.

Medicine a Progressive Science.

One of these grounds, though I do not say the main one, is yet a memorable one, and rises early to my mind. Medicine is not only an honourable art but a progressive science. In this respect it is an exceptional calling; indeed, among callings available for women it stands in this respect almost alone. Like it engineering is at once a science and an art; but engineering is not a profession available for women, Those two professions, medicine and engineering, typify in the work-a-day world and for the thoughtful historian what the modern growth of science is doing in the modern world. It is to underrate their significance in modern life to suppose that these influences are increasingly changing merely the outer features of our surroundings. They are changing and developing the inner features also—the mental outlook and the range of life. And if to engineering science be due those of these changes which most catch the eye, to the advance of medicine are due developments as far-reaching and beneficent, and, to the initiated even more than to the uninitiated, fraught with meaning for human welfare, and are a source for enthusiasm. The swift forward moving of medical science in this present may assuredly stand to the future historian as the outstanding mark of the progress of civilisation in our era. A woman who has yearning to enter to the uttermost into some strong current of the abiding progress of the time we live in, and to feel and understand it, and to play a rôle in it, can rest assured that to enter medicine will give her opportunity for that, and in the fullest and most beneficent of ways.

At risk of repeating before an audience already well aware of them things that are commonplace knowledge even outside the profession, may I instance the speed of medical advance by mentioning a few outstanding points which medicine has attained within less than living memory.

Take the diseases distinguishable as infective. To know them as such is the beginning for the control of them. Tuberculosis and malaria, those two scourges of mankind, have in the last 45 years been opened to such control. A further key to mastery over infectious disease is to get disentangled hold of the particular infective agent. The last 40 years have seen that done for diphtheria, glanders, cholera, tetanus, Mediterranean fever, yellow fever, plague, dysentery, and syphilis. Through the long ages of its previous history medicine had travelled without in one single instance achieving such a step. Hippocrates, father of medicine, had he done so would have been reputed a god; more important, he would have changed the course of human history.

On the heel of such specific discoveries have followed the modern knowledge and employment of immunity, proving, if further proof were needed, the rightness of Jenner's vaccination against small-pox, by elucidating the principle on which it rests. Pasteur began to vaccinate—he called it so, in tribute to Jenner—against bacterial disease by inoculating with the specific bacteria attenuated. What lessening of human and animal suffering date from and because of that step of only 42 years since. In recent eloquent witness stand the statistics of control over typhoid obtained for the armies in France by vaccines introduced by Sir Almroth Wright and extended by Sir William Leishman. Then there is the whole relatively new subject of serology, potent for prevention, for remedy, and for diagnosis. Diphtheria has been largely robbed of its terrors, though Roux and Yersin's work on the diphtheria toxins dates to not 30 years back.

And the progress goes forward, with change, but no sign of halting. Thus, the intriguing bacteriophage, which seems a germicidal subgerm. Again, the new step of knowledge in regard to cancer, stressing the interaction of essential causal factors, and the yet unexhausted power of the microscope for discovery. The invisible viruses are beginning to be made visible.

And, infectious diseases apart, progress of the past five years has turned the position in regard to rickets. The enemy forces have been located. They are recognised as two—deficiency from diet of an elusive substance traceable to the plant world which is based on sunlight, and deficiency of sunlight itself. An era has begun when child-life can be saved from a crippling disability. And in this victorious campaign women have borne a conspicuously important and distinguished share. Then, again, the discovery of insulin came but three years ago, and it is now alleviating cases of suffering the civilised world over. Such instances, taken almost at random, surely justify enthusiasm.

It is difficult for the student or the medical curriculum to find time for all the student has to learn. Introductory science has perforce to be curtailed because it is introductory. Economy of time can be obtained by getting as much as possible of the introductory science done in ordinary school years before coming to the medical school. This is the more advisable because these scientific subjects are to-day essential to general education. We all know the disabilities, conversational and for citizenship, which adhere to otherwise educated people by reason of lack of school instruction in such science as should be part of common knowledge. But wherever and whenever the adjunct sciences are taught with a special view to medicine, it should not be forgotten that for application of them to medicine it is the principles not less than the ad hoc facts which are required. The former rather than the latter enable the student when she or he leaves tutelage to breast not only the scientific applications of that particular date, but to follow for herself professional developments of the future which shall depend on science. That ensures a progressive practitioner instead of maybe a reactionary one. I wish some time could be found in the curriculum for the teaching of the principles of scientific psychology.

And with regard to the sciences dealt with later in the curriculum, they are a part of medicine itself. Differentiated as they are necessarily and dealt with by separate specialist teachers, it is to be remembered that they are from the point of view of medicine essentially one, although separately designated. Therefore, as you study them the more you make them overlap and interlap—histology, anatomy, physiology, biochemistry, bacteriology, pathology—the better will you grasp all and each. Of reasons why that should be so, one is that disease is but disorder of health. Over and over again the normal and the abnormal merge one into the other by degrees practically imperceptible.

THE MEETING OF SCIENCE AND ART.

In medicine, two aspects—namely, those of science and art—meet; at their extremes they are clearly distinct, but their mutual boundary is untraceable. As to what science is and what art is, let me take refuge in saying that all definition is notoriously difficult and that comparisons are odious. Bandaging, I think, I have seen in some hands an art and not a science, and yet in others both an art and a science; and possibly in others a science but without art. Science pursues knowledge for the sake of knowing the how of a result. Perhaps Art uses knowledge for the sake of a result without caring about the how. Science has laws, which, unlike some laws, are unbreakable. Hence Mr. Bateson's wise advice, "Cherish your exceptions." In Nature every seeming exception is but obedience to another law. With Art laws are on another plane—even in the fine arts. The laws of the romantic school of yesterday were not the laws of the classical school of the day before. The laws of the Cubists to-day will not be the laws of the Futurists, perhaps Polygonists, of to-morrow. Hence medicine which has become scientific is more stable than medicine which has not. Fashions of bandaging may change, but the principle of asepsis abides. Science and art dovetail in medicine; that is the real point of importance, not any impossible attempt to distinguish them minutely. Art where skilfully efficient unconsciously adopts measures science would endorse. And it is a mistake to suppose, as seems sometimes done, that the divisions between science and art in medicine correspond with division between the laboratory and the ward. Science can enter into the handling of a case in ward or out-patient room as fully as into laboratory observation or experiment. Last year the Harveian Oration by Sir Archibald Garrod and Sir David Bruce's Presidential Address to the British Association in Toronto pointed out that medicine, while owing much to science, has also given to science immensely. In medicine the clinical and the laboratory studies support and fructify each the other. They flourish together or but little. But the finance of both is difficult, and especially, I think, for the laboratory. Higher education belies the old precept that a venture which deserves success will pay its own way. Higher education never pays its own way. It is said that American colleges spend on each medical student £100 more than the fee receipts. Such a situation endorses and commends the appeal made by this school for a fund to endow some of its laboratory professorships, anatomy, physiology, and pathology. This is a University school, and its laboratories are in that sense University laboratories. Distinguished teachers direct them. Endowment is necessary for such Chairs. The eloquence of the circumstances ensures the success of the appeal; and I hope quickly, for the need is urgent. A fine lead was given last year by devoted friends of the school, including Lord Riddell, who has also so generously helped the hospital itself. And help for the physiological laboratory has come from the Augustus and Alice Waller Memorial Fund, a memorial especially appropriately connected with this school and with research. The laboratories of the school have already won repute as places of research. An element for success in research is the putting the right question to the problem. The astounding research capacity of Pasteur himself lay perhaps as much in asking the right question as in his genius for developing and ripening the latent possibilities of laboratory means. Splendid intention is futile if for the question it puts the time is not yet really ripe. This must be borne in mind in the coöperation for research between laboratory and clinic. Experience shows, I think, that with laboratory and clinic each puts its own question best, knowing its own best means. Both can have a common problem, as in the recent success with rickets, and both can have a common strategy; but the tactics of the two are better independent.

MEN AND WOMEN IN MEDICINE.

Increasingly noticeable in medical research is the tendency towards team-work—a change probably impressed by experience in the late war. In a research team each member takes one part and all parts simultaneously conspire towards a single aim. This plan seems destined to replace advantageously the individual less coördinated effort toward medical discovery in the past. Coöperation is a proper and happy counterpoise to the competition which is perforce so large a rule in life. Team-work accomplished the glorious cathedrals of a former age; in an age of scientific medicine it may rear spiritual edifices no less glorious. I fancy women combine readily for team-work, and are specially fitted to play in it an eminently important rôle, and preferably in coöperation along with men. The very contrasts between man and woman help each to eke out and amplify the powers of the other. Galton arrived at types of family physiognomy by compounding photographs of individual faces. To combine in that way faces of women and men doctors might yield a composite prophetic picture of the ideal physiognomy of the profession. Not that physiognomy consists in features of the face alone. Craniums also can, of course, be long or round. There are, as we all know, modest shoulders and shoulders that are arrogant, elbows egotistical or accommodative. These all both in man and in woman. Woman and man are not wholly unlike. There is something of man in woman, and something of woman in man. The existence of this school and its success show, I think, that woman's due and right place in medicine is won not by her aiming at man's particular qualities, but by her using and training to medical purpose the gifts of her own womanly nature. To me seems regrettable the London County Council's recent regulation that married medical women are ineligible for its medical officerships. I have seen it estimated that about 30 per cent. of medical women marry. That, however, is a lower percentage than is obtainable from the list of former students of this school.

The cause for which this school stands is assured. That women should enter medicine and practise it is but a further and most natural evidence of what we have been talking of—the progress of medicine. But those who go first often have to walk somewhat lonelily, and find their path less free than those who follow. This school does well, therefore, to remember with pious honour those who led the way. Social adaptations come slowly. An elder generation tends to hug old opinions. Truly progressive cannibals eat, it is said, their oldest relations. But I am not sure that that is a complete remedy. Reform is rarely facile. It is not, as Rousseau taught, a simple return to nature. Perhaps, like the ancients, he thought us descended from the gods. But after him came Darwin. It is a long ascent from the grimaces of the ape to the smile of Monna Lisa. But one sex has accomplished it, and it speaks to the comfort of both. A mere man, I have myself had homely reminder of mental kinship to primitive forbears. When my laboratory kept chimpanzees I used to pay a daily visit to them at large in their room. Once after such a visit, when I had just left and locked the door, I turned back again, pondering what the chimpanzees might do when I had left; I stooped and looked through the keyhole. A chimpanzee's eye met mine peering through the keyhole. The same thought had struck us both, both her and me—she, as a lady, had acted first. When the human community about you seems slow in development, recall my case. Surely it is encouraging that despite my mental resemblance to simian stock the convincing logic of your cause stands plain even to me.

THE TRADITIONS OF A MEDICAL SCHOOL.

But to return to this school with its tradition of noteworthy names in the past, and no less noteworthy still with it. One of the things that it has proved is this: that women are well able to fulfil the expanded social duties it trains them for. And the fulfilment of those duties involves more than solely the science and the art of medicine. Every case of sickness is as well as a problem for medical science and art, a fellow creature's suffering. Of all grounds ever taken surely the strangest is that of the man who when refused by a young woman resolved to enter medicine in order to harden his heart. The impression, if it exist, that medical routine tends to blunt feeling is wholly mistaken. Egotism may harden the heart, but knowledge never. Character is what counts. Medicine enhances compassion and instruments it by giving it further resources wherewith to help and comfort a sufferer. As to the danger from the alleged coldness of intellect, as medicine leans more upon science, pure science, it is true, is intellectual, and pure intellect is somewhat like that supreme instrument arisen from it, mathematics, which works best with the abstract—in vacuo, so to say. But at the bedside the "case" is always concrete, and rescues feeling. Moreover, though science may be infallible, not so its votaries, as none know better than they. Science then teaches humility, and humility is close to sympathy, and one essence of successful medicine is sympathy armed with understanding. Sympathy armed with understanding, that surely is a trait that medical women stand for. To those who possess that, what opportunities does not medicine afford of beneficence to the community. To those who by reason of enthusiasm for medicine are entering upon it here, I would affirm that their enthusiasm is well founded. I trust I have not kept you too long in arguing towards so self-evident a conclusion.

An Address

ON

TRADITION IN MEDICINE.

Delivered at the Opening of the Winter Session of the Middlesex Hospital Medical School

BY C. E. LAKIN, M.D., F.R.C.P. LOND., F.R.C.S. ENG.,

PHYSICIAN TO THE MIDDLESEX HOSPITAL.

THERE are three days in a physician's life which may be said to be unique. There is the memorable one upon which he is elected to the staff of his hospital, a day of unalloyed happiness and pleasure; then there is the day of gloom when the time limit sounds his departure from the activities of the hospital; and the third is one like to-day when he gives the introductory address and feels rather like the mariner about to cross the equator for the first time, hardly knowing whether he is quite likely to enjoy all that Father Neptune has in store for him, whether the crowd of onlookers will be sympathetic, and whether his performance may not end in catastrophe. Still it is the tradition of our hospital that this must be faced, and in confronting it one is naturally brought up against the question: What is there in tradition that it should have such a powerful hold upon us?

We are living in an age of rapid transition and of suspended judgments, and those who are familiar with Chekhov's Cherry Orchard, in which is seen depicted the pathetic inability of the older generation to cope with the pressing circumstances of the present, may well ask. But is not tradition crippling us on every side? One must freely admit that there are elements of danger in tradition, but that is not to concede that tradition itself is valueless. Without it chaos replaces order and experience never attains fruition. Each generation must be provided with a starting-point and for this continuity with the past is essential. But tradition itself is not stationary, it is always suffering change. Although at any one moment it may be said to be fixed, at the next it is not quite the same. It is in some degree subject to flux and possibly in increasing degree with the passage of years. It may be observed that the human mind, on the other hand, tends to become less elastic as our years creep on. With few exceptions the older we become the more conservative tends to be our outlook. To such an extent is this true that some see in this very fact the necessity of death in the economy of Nature. Death is Nature's way of evading stagnation.

Now the danger of tradition is found in its power of establishing a prevailing opinion which in itself is antagonistic to further advance. As long as the chief place in medical tradition is assigned to observation, experiment, verification, and induction, this danger is but slight. Medicine has no creed as such to preserve. Its system of knowledge is but the accumulation of facts which have been ascertained by the application of the scientific method to the study of the body in health and disease. By scientific method, if for one moment I may labour the point, we mean observation, experiment, and verification. It has been well said that the mind of Sydenham, interested in a sick child and humanely pre-occupied with its cure, did not, in so far as it functioned scientifically, operate differently from that of Galileo interested in [illegible] movements [illegible] Both alike reflected, rick[illegible] and [illegible]. are r[illegible] elusiv[illegible] ore and the is bas[illegible] in another itself. [illegible] y of life saved t[illegible] there is [illegible] hrined. victorio[illegible]

This is as difficult to describe as is the tradition of a public school or the esprit de corps of a regiment. Like so many of the finer things in life it evades explanation and vanishes into thin air as soon as one tries to take hold of it. It is this elusive atmosphere of which I would attempt to speak to-day to those of you who are about to start your medical studies. To dissect so subtle an influence were almost impious, but if we attempt it hero-worship, historic association, love of beauty, truth and goodness, and the tears and strivings of men will all find a place there.

Who can remain unmoved by the story of William Charles Wells? Wells was a medical man, who like so many others at the beginning of the nineteenth century, had taken to medicine as a means to a livelihood, in order to devote his spare time to the physical sciences. For save in mathematics there were practically no university chairs or emoluments in England open to students of biology, chemistry, or physics. In what follows I borrow freely from the account which Dr. Arnold Chaplin gives of Wells in his FitzPatrick Lectures, delivered before the Royal College of Physicians in 1917–18. Wells began his career in London penniless, and after 16 years of toil was unable to command an income of more than £307 from all sources. Ill-health dogged his steps, and in his forty-third year he was seized with a slight stroke and henceforth it was a grim fight against time to finish the work he had designed. In spite of these disadvantages he laboured on bravely in his humble lodging in Serjeant's Inn, known to few save five close friends, among whom were to be counted Matthew Baillie, David Pitcairn, and David Hume. The name of Wells will be for ever honoured, for he succeeded in investigating and establishing the laws which govern the formation of dew, leaving little to be added by subsequent research. Wells carried out his experiments in the garden of a Mr. James Dunsmore, a merchant friend of his, who lived in Surrey, three miles beyond Blackfriars Bridge. Thither Wells betook himself in the late afternoons, and using pieces of wool of known weight, weighed them again after they had absorbed the dew in various situations and under varying conditions of atmosphere. It is a melancholy picture, this last effort of his, labouring to finish his experiments by night in Dunsmore's garden and trudging home with dropsical legs in the early morning hours to record his results lest death should claim him ere his task was ended. Surely few investigators have battled more bravely with adverse conditions. When his work was accomplished he desired only the modest epitaph, "He tried to extend the bounds of knowledge."

"Man with his burning soul
Has but an hour of breath
To build a ship of truth
In which his soul may sail.
Sail on the sea of death,
For death takes toll
Of beauty, courage, youth,
Of all but truth."

Of such stuff is medical tradition made. Wells's medical investigations were chiefly concerned with dropsy and uræmia and have scarcely received the consideration they deserved. It may be remembered that Charles Darwin, in his historical introduction to the origin of species, gives to Wells the credit of having been the first to enunciate the principle of natural selection in a paper read before the Royal Society in 1812. The names of Thomas Young and William Hyde Woollaston occur to us as other instances of physicists who have practised medicine. Young, who was responsible for the undulatory theory of light, it is interesting to note, lectured in our hospital before the school had been founded by Charles Bell. There is a letter of Bell's which I feel I cannot pass by in silence, giving a picture, as it does of his early days in London:

> "Coming to London with the resolution to fix myself here was certainly a desperate measure, for I had formed no friends, and absolutely did not know a human creature,

When I consider the few introductions I had—to men who could be of no assistance to me—I look back with something like a renewal of the despair I then felt. My first object was to introduce myself to the several schools, with the expectation of being taken as an assistant by one or other of the chief teachers. Cline and Cooper were lecturing in the Borough; Abernethy, with his assistant Macartney, in St. Bartholomew's; Sir William Blizard and Mr. Headington in the London Hospital; and Mr. Wilson in Windmill-street, in the school of the Hunters.

"I could see that a great deal was to be done, but where to find a resting-place? How show my capacity for teaching or illustrating my profession?

"These days of unhappiness and suffering tended greatly to fortify me, so that nothing afterwards could come amiss, nothing but death could bring me to a condition of suffering such as I then endured. There was a little romance with it too. I found myself so cut off from the society I should have wished to cultivate, and which I thought I deserved, and so alone in this world, that I entertained myself with fancies as to what set of people, and what family, and what place, it was likely Providence was to unite me to.

"In short, I believe I was as romantic as any young man could be, although the prevailing cast of my mind was to gain better celebrity and independence by science; and perhaps this was the most extravagant fancy of all.

"I never thoroughly hated London while I could lose myself in it. I had a pleasure in wandering through streets I did not know; but at last it appeared to me to consist of insignificant parts almost infinitely multiplied.

"I was not idle, however, all this time. I had a subject of study always with me. I was preparing my Anatomy of Expression, and made some anatomical studies in the Westminster Hospital.

"I could not help regretting the noble fields that were everywhere around me for exertion in my profession, and which I found closed against me.

"One night I resolved to return to Edinburgh. I went to the opera, to leave the last pleasant impression of London. I could dwell upon my feelings of that night, but few could sympathise with them, and next morning I resolved to remain in London. I took a large ruinous house in Leicester-square, formerly inhabited by Speaker Onslow. When I went with my surveyor to examine it, I was somewhat appalled by his account; he was a great John Bull rough fellow. Leaning out of the window, and observing the walls out of their perpendicular, he said in a coarse familiar manner, 'Sir, you had better have nine bastard children than this house over your head.'

"In taking this step I was conscious I must withdraw myself from such society as I could have loved, and here I gave myself up exclusively to the teaching of anatomy. Such were my miscalculations, that my expectations of a large class were sadly disappointed. It was years before I had 40 pupils to lecture to.

"When I got into this house, the first night I slept in it I had put out the candle and was leaping into bed, when the floor gave way under my foot, and I found I had displaced the board. On examining this in the morning I discovered a tube under the loose board—it was the house where the Invisible Girl exhibited!

"A man brought up as I had been in Scotland has certain notions of respectability, which are very strong and very peculiar. I don't know that at any time I was more depressed than when I found the sort of house I had got possession of, but it was one of those absurd errors into which a stranger in London falls. Before taking it I had been provoked with the opinion of everybody I consulted about my plans, their lowest estimate being that of £10,000 to set me agoing. Even yet I am not rich enough to boast of my poverty."

While medical tradition transcends all geographical boundaries it is in our hospitals and medical schools that she has her special dwelling. A hospital and medical school is something more than a block of buildings where instruction is meted out to students. At Middlesex I have sometimes thought that I have caught sight of the genius loci—the prevailing deity—on the way up to my wards. He is an old man with a white beard and wrinkled face, but in his eyes is the twinkle of perpetual youth. He has usually been standing at the turn of the staircase or on the landings, and as our little procession to the wards approaches I have seen him put his fingers to his lips while all his attention is given to those behind me. It is as if he is picking out his votaries to entice them into his realm, to study with him clinical medicine in the wards of the hospital.

If the blood of the martyrs is the seed of the church, the devotion of the hearts and minds of Middlesex students is the glory of the school. A medical school is not a technical school, and it is because I wish those of you who are joining us for the first time to-day to know something of the spirit of the place that I have been speaking in the way I have to-day. Some of you have come from the older Universities and may, like the scholar gypsy, have walked by Godstow and Bagley Wood, and, unlike him, in high talk have discussed all things in heaven and earth, plumbing the depths of speculation in a world where speculation rightly takes the place of experience. Here, you are suddenly, perhaps too suddenly, brought face to face with reality and your university education continues with a difference. Take note of the motto of your hospital *Miseris succurrere disco*, and in learning to help the wretched you will see that you yourself are undergoing development. Read the legend over the entrance to the post-mortem room, *Hic locus est qua mors gaudet succurrere vitae.* Here is the place where death rejoices to help life and you will come to appreciate the amazing healing power of Nature even to the last. Scorn delights and live laborious days and you will find the world of knowledge has its enchantments. It is not the platform but solitude where true work is done, and I never tire when I feel that we are becoming a little Americanised of thinking how from a small ward of nine beds, with no special facilities, Vesalius taught surgery to Europe. Thank heaven! medical tradition at any rate has nothing to do with propaganda, publicity, and newspapers!

Do not be discouraged by the exactions of the profession you have chosen. The more conscientious may ask: Ought I not to let everything go save my immediate studies, since to me are to be entrusted the lives of my fellows? The question is sufficiently plausible, but the answer is emphatically No. You must first be a man and then a doctor. You must learn to live in the present and to understand the entourage and mental outlook of your patient, and how will you do this if you become simply immersed in study?

Middlesex man as I am, on an occasion like the present, I cannot end without paying homage to those of my friends and yours who so nobly upheld our hospital traditions in the late war. In dying they put on immortality, being silent they yet speak, and have left behind an imperishable memory that needs no memorial:

> "Sons of this place of you let it be said
> That you who live are worthy of the dead,
> These gave their lives that living you may reap
> A nobler harvest ere you fall asleep."

SPA TREATMENT FOR PANEL PATIENTS.—At the autumn meeting of the British Spa Federation held last week at Woodhall Spa the question of spa treatment for insured persons suffering from rheumatic disease was further considered. British spas are, it is stated, unanimous in their desire to see the benefits of mineral water treatment made available for those who have hitherto been unable to afford it, and a special subcommittee consisting of representatives of Bath, Buxton, and Harrogate was appointed to work out practical details satisfactory alike to the insured patients and their doctors, and without interference with the routine and comfort of the ordinary visitors.

LEEDS VOLUNTARY HOSPITALS COMMITTEE.—This newly formed committee has already induced 1085 firms in the business centre of Leeds to join the scheme; a further 3000 have still to be heard from. The promises of subscriptions thus obtained aggregate close upon £7000. A large number of insurance companies and companies owning multiple shops have refused to come in, on the ground that they have so many branches in different towns that to subscribe to the local charities in each would constitute a heavy drain, and that they could not subscribe in one place and not in another. It is, however, felt in Leeds, and probably in other towns, that firms who drive out local shopkeepers who were subscribers to hospitals ought to be prepared to "pay their footing."

An Address

[ABRIDGED]

ON

THE MEDICAL CAREER.*

BY SIR HERBERT F. WATERHOUSE, M.D. EDIN., F.R.C.S. ENG.,
CONSULTING SURGEON TO CHARING CROSS HOSPITAL.

[Sir Herbert Waterhouse began by saying that for over 33 years he was a member of the staff of the hospital and of the medical school. During that time, at various periods, he held every position open to a surgeon and also those of dean and of chairman of the medical school and the hospital, and its branches were amongst the greatest interests in his life. The school was to be warmly congratulated on its present Chairman, Sir George Verity, whose success in freeing the pathological department from debt was already sufficient claim for gratitude. He continued :]

I can honestly congratulate you on your choice of a profession because you have chosen one in which you can help your fellow men and women, can lessen their burden of sorrow and suffering, can earn their esteem and affection, and can assure yourself of a fair competence when the time comes for you to retire from practice. If riches had been your quest you would have gone in for trade, certainly not for medicine. In joining the medical profession you can, at the most, expect moderate financial success, but this is, I am convinced, more safely to be reckoned upon in the profession of medicine than in any other of the great professions. The sick we have with us always and there is ever work for a good doctor. We have nothing comparable to the briefless barrister or to the clergyman, who, though an old man, still remains a curate. But if an adequate reward for your labour may fairly be expected in our profession, your preparation is far longer and far more strenuous and exacting than that for any other profession. You will, for the next five years or more, have to "scorn delights and live laborious days" if you are to attain that standard of knowledge of your professional work that alone can fit you to take charge of the lives of your fellow men and women. In some other professions a fair amount of knowledge may suffice to ensure success ; in ours nothing short of the best is justifiable ; the stakes for which you play are human lives, sacred in the sight of God and man, and this is the day on which to determine that you will do your utmost to fit yourselves for your high calling.

The school you have joined will do its part to help you, and, if you equal the record of the best students of this school in recent years, you will have every reason to congratulate yourselves. Within four years I was fortunate in having as my house surgeons three of the most brilliant young surgeons I have ever known—Messrs. W. S. Fenwick, Norman Lake, and C. J. Marshall—all Charing Cross men. Among the distinctions gained by this brilliant trio were two gold medals at the final M.B., B.S. London examination, one gold medal and one qualified for the gold medal at the M.S. London, one gold medal at the M.D. London, the degree of D.Sc. London, and the Murchison prize in clinical medicine.

I doubt if any medical school in London ever, in so short a period of time, produced three abler men. Mr. Fenwick, to our extreme sorrow, was forced by ill-health (now happily recovered from) to leave us, but Messrs. Lake and Marshall fortunately remain and both are sure to add further to the reputation of the hospital and of the medical school.

It is a pleasing fact that, in the study of medicine, each succeeding year is less of a drudgery and more interesting than the previous year. During your earlier years you will find the study of anatomy wearisome and dissecting somewhat unpleasant. I urge you not to neglect this very foundation of professional knowledge. A good knowledge of anatomy can only be acquired in the dissecting room, and careful dissection alone will teach you how to find your way about the human body. One of my old teachers used to say that surgery is merely " common sense applied to anatomy " and there is more than a germ of truth in this dictum.

With regard to the subject of lectures you will hear it stated, not infrequently, that lectures are useless. I certainly do not hold this view, though I admit that I thought they were over numerous in my student days. The greatest merit of the 9 o'clock lecture is to compel an early start, and I would advise you to keep your reading always a few days ahead of your lectures. If you hear a lecture on a subject which is new to you, you will of necessity fail to assimilate many points. If you have read the subject up a day or two previously you will derive infinitely more benefit from the lecture. It is only when you start your clinical work at the hospital that you will begin to appreciate the real fascination of the study of medicine. Your earlier years of study will have been the somewhat tedious preparation for the foundation of your clinical knowledge and you will now be entering on your real life's work. I would advise you to attend your physician and your surgeon in all his visits to the hospital ; the student who flits from one clinical teacher to another will doubtless learn much of value, but he will not see the same cases treated throughout the whole of their stay in hospital, and will not attain the same personal knowledge of disease and its treatment. If you are constant in attendance upon the teacher of your choice, you will, insensibly, follow him in his mental processes and will find yourself doing almost instinctively what he would do in like circumstances. I can speak from experience. I had the good fortune to be house surgeon to one of the greatest surgeons of all time—the late Sir William Macewen. For six months I studied his great intellect as closely and as devotedly as I was able to do, and, in later years, I have often found myself doing something almost instinctively, and, when I pondered over the question, I found that I was following the example of my great master.

During your final year I would urge you to devote particular attention to the special departments, particularly to those for diseases of the eye and of the throat and ear. These important branches of surgery are usually neglected by students to the detriment of their patients in later years. These remarks apply particularly to diseases of the eye, in some of which a few hours delay in instituting appropriate treatment may result in permanent damage to the sight. It has been said that the fear of examinations is the beginning of wisdom for the medical student. If every surgical examination paper contained a question on diseases of the eye, throat, or ear, these important subjects would soon cease to suffer neglect. As soon as you have qualified and registered, you will do well to join one of the medical defence societies. While you will find the large majority of your patients grateful and appreciative you may come across one who is cantankerous and inclined to litigation, and such persons have no difficulty in finding solicitors to encourage them. They seem to expect that bad fractures into joints should always give perfect results and, if they are disappointed with the issue, they blame, not the injury, but the unfortunate doctor. Such people do not sue their lawyers or stockbrokers when their advice has turned out badly. They seem to specialise in actions alleging negligence against their medical adviser. I have, for some time, been a Vice-President of the Medical Defence Union, and can tell you that 30 members, on an average, seek advice and assistance of the Union at the meetings of its executive, frequently after the receipt of a lawyer's letter alleging negligence. The vast majority of such complaints have no foundation and are disposed of without further trouble. Everyone makes mistakes except the fool and the liar; the former cannot see his mistakes and the latter denies them. In any event it is a great relief to know that you have behind you powerful support and protection, and that you are insured against any possible financial loss in the unlikely event of a verdict being given against you. From close personal knowledge I beg you not to neglect to join immediately one of these protection societies.

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* Delivered to the students of Charing-Cross Hospital at the opening of the Winter Session.

Next, I strongly advise you to try to obtain a resident appointment as house surgeon or house physician (or preferably as both) in your own hospital, or, failing that, in another large institution. It is impossible to over-estimate the value of such a post. Not only will you see a large number of interesting cases, but you will have the advantage of making your diagnosis and of forming your opinion as to how each case should be treated, and then of having your views confirmed or corrected by your senior officer. I have never known anyone consider as wasted the time spent in holding resident hospital appointments, but I have, over and over again, heard men regret that they had failed to take advantage of the opportunity of obtaining such posts. Having, as I hope, spent a profitable year as a hospital resident, I would now urge you to study, for at least one session, abroad. When I was a student, in the late 'eighties, it was a very usual thing for a recently qualified medical man to devote several months to study on the Continent. I had the good fortune to spend a winter session at the University of Göttingen. This time of foreign study widens a man's mental outlook and helps him to get rid of many of the traits of our insularity. I found it most helpful and would earnestly recommend it to your attention. It is, moreover, an enormous advantage to a medical man to have a sound knowledge of French and of German. I have read most French surgical text-books and several in German, and I can testify to the advantage I have derived from them. I would advise you, throughout life, to continue your study of these two languages, so important for scientific medicine.

If you follow out the course I have above indicated you will be well equipped for your life's work.

Some of you will, doubtless, strive to become specialists, but the large majority will be content with the rôle of general practitioner, and the really good general practitioner is the highest development of our profession. It is comparatively easy to know practically all that there is to be known about one branch of medicine. It is far more difficult to know, as some first-rate general practitioners with whom I am acquainted certainly do know, almost as much about every branch.

Among my personal friends two of the ablest are general practitioners in South Hampstead. One is a doctor of literature, of laws, and of philosophy of the University of London, in addition to holding a doctorate in medicine. The other is an M.D. London, F.R.C.S. Eng. On the many occasions I have met my two friends in consultation, I have always felt that they know about as much of surgery as myself and more of every other branch of medicine. I can safely say that I have learned from them far more than they can have learned from me. If these able men are content to remain general practitioners you may well be so.

For what are the requirements that go to make first-rate general practitioners? There are three desiderata: (1) A thorough knowledge of medicine in all its branches; (2) the faculty of inspiring confidence in your patient; and (3) sympathy.

Granted all these three, a successful and beneficent career is a certainty, and lack of any of them will gravely hazard your usefulness. Obviously the most important is the first, but the faculty of inspiring confidence is an essential requirement, and is most helpful to your patients.

How often do we not hear it said: "I have no confidence in Doctor X." Or: "Doctor Y has assured me that I shall pull through all right, so I am quite happy." Poor Doctor X and fortunate Doctor Y. The latter may have less knowledge than the former, but he has his patient's confidence, and that, in many cases, is so often half the battle. We all know men who inspire much confidence and deserve little; men, who, judged professionally, would be weighed in the balance and found wanting—and we know, also, men of brilliant intellect who can make no real headway in practice because they lack this faculty to inspire the confidence in their patients. It is partly a gift, but it is a gift, in a large measure, capable of development. I wish to impress upon you that before you can expect to inspire confidence in others you must have confidence in yourself, and this can only come with knowledge. If you have full confidence in your diagnosis and treatment it will be easier to impart this confidence to your patient. Strive always to gain the confidence of your patient, even from the time you are a dresser or clinical clerk. If you succeed with the charwoman from the slums you will not fail later with the countess in Mayfair. I would venture to urge upon you the importance of learning to express your opinion shortly and to the point. Nothing will help you more to attain this object than joining in the discussion of your medical and debating societies. Here you will learn to say what you have to say clearly and accurately, well knowing that you will not escape criticism from your fellow students should you fail to do so. In this way, as in many others, you will find the best of your fellow students among your best teachers. Remember always never to treat your patients as if they were fools. The vast majority of them are not, and they, during their time of illness, have plenty of leisure to ponder over what their doctor has said to them. The danger of being too chatty is that you may forget what you have said on a previous visit and may say something that may seem to contradict a statement previously made by you. When you are certain you are right say little, when uncertain say less.

Sympathy is the third of the desirable qualities that go to make up my ideal practitioner of medicine. It must, however, be sympathy combined with firmness, and mere sentimentalism is of no use. You should convey to your patients not that your heart bleeds for them, but that you are genuinely interested in themselves and their maladies; that, for the time being, theirs is the most important case you have under treatment; that you mean to devote your best endeavours to its cure and that you bring encouragement and hope of recovery from the illness. But blend your sympathy with firmness and decision, and remember that kindness and tenderness are duties that strength and health owe to frailty and sickness.

I have now come to the end of my advice to the new entrants, who are starting on a journey that is strenuous and exacting. Some, but I hope very few, will fall out by the way, but be certain that patient, intelligent effort will always be successful. The medical profession is one which offers joys that are worth gaining and that no other can afford.

Alexandra Day.—The collections on Alexandra Day (June 10th) produced £45,088, and the expenses to £7635, £5940 of which was the cost of the roses made by cripples. Queen Alexandra has earmarked £10,419 for institutions in which she is especially interested, and £27,555 will be distributed among various hospitals and charities.

The late R. T. Hughes.—Robert Thomas Hughes, M.R.C.S. Eng., L.R.C.P. Lond., formerly in practice in Higher Tranmere, died suddenly on Sept. 28th. He studied at Owens College, Manchester, and at University College, Liverpool, and qualified in 1895. He was medical officer of the Birkenhead Union and one of the best known medical men in the Tranmere district. He was a Lieut.-Colonel in the R.A.M.C. (T.) and saw lengthy service during the war. Dr. Hughes was in his fifty-third year and leaves a widow, four sons, and a daughter.

An Address

[ABRIDGED]

ON

THE MEDICAL CAREER.*

BY SIR HERBERT F. WATERHOUSE, M.D. EDIN., F.R.C.S. ENG.,

CONSULTING SURGEON TO CHARING CROSS HOSPITAL.

[Sir Herbert Waterhouse began by saying that for over 33 years he was a member of the staff of the hospital and of the medical school. During that time, at various periods, he held every position open to a surgeon and also those of dean and of chairman of the medical school and the hospital, and its branches were amongst the greatest interests in his life. The school was to be warmly congratulated on its present Chairman, Sir George Verity, whose success in freeing the pathological department from debt was already sufficient claim for gratitude. He continued:]

I can honestly congratulate you on your choice of a profession because you have chosen one in which you can help your fellow men and women, can lessen their burden of sorrow and suffering, can earn their esteem and affection, and can assure yourself of a fair competence when the time comes for you to retire from practice. If riches had been your quest you would have gone in for trade, certainly not for medicine. In joining the medical profession you can, at the most, expect moderate financial success, but this is, I am convinced, more safely to be reckoned upon in the profession of medicine than in any other of the great professions. The sick we have with us always and there is ever work for a good doctor. We have nothing comparable to the briefless barrister or to the clergyman, who, though an old man, still remains a curate. But if an adequate reward for your labour may fairly be expected in our profession, your preparation is far longer and far more strenuous and exacting than that for any other profession. You will, for the next five years or more, have to "scorn delights and live laborious days" if you are to attain that standard of knowledge of your professional work that alone can fit you to take charge of the lives of your fellow men and women. In some other professions a fair amount of knowledge may suffice to ensure success; in ours nothing short of the best is justifiable; the stakes for which you play are human lives, sacred in the sight of God and man, and this is the day on which to determine that you will do your utmost to fit yourselves for your high calling.

The school you have joined will do its part to help you, and, if you equal the record of the best students of this school in recent years, you will have every reason to congratulate yourselves. Within four years I was fortunate in having as my house surgeons three of the most brilliant young surgeons I have ever known—Messrs. W. S. Fenwick, Norman Lake, and C. J. Marshall—all Charing Cross men. Among the distinctions gained by this brilliant trio were two gold medals at the final M.B., B.S. London examination, one gold medal and one qualified for the gold medal at the M.S. London, one gold medal at the M.D. London, the degree of D.Sc. London, and the Murchison prize in clinical medicine.

I doubt if any medical school in London ever, in so short a period of time, produced three abler men. Mr. Fenwick, to our extreme sorrow, was forced by ill-health (now happily recovered from) to leave us, but Messrs. Lake and Marshall fortunately remain and both are sure to add further to the reputation of the hospital and of the medical school.

It is a pleasing fact that, in the study of medicine, each succeeding year is less of a drudgery and more interesting than the previous year. During your earlier years you will find the study of anatomy wearisome and dissecting somewhat unpleasant. I urge you not to neglect this very foundation of professional knowledge. A good knowledge of anatomy can only be acquired in the dissecting room, and careful dissection alone will teach you how to find your way about the human body. One of my old teachers used to say that surgery is merely "common sense applied to anatomy" and there is more than a germ of truth in this dictum.

With regard to the subject of lectures you will hear it stated, not infrequently, that lectures are useless. I certainly do not hold this view, though I admit that I thought they were over numerous in my student days. The greatest merit of the 9 o'clock lecture is to compel an early start, and I would advise you to keep your reading always a few days ahead of your lectures. If you hear a lecture on a subject which is new to you, you will of necessity fail to assimilate many points. If you have read the subject up a day or two previously you will derive infinitely more benefit from the lecture. It is only when you start your clinical work at the hospital that you will begin to appreciate the real fascination of the study of medicine. Your earlier years of study will have been the somewhat tedious preparation for the foundation of your clinical knowledge and you will now be entering on your real life's work. I would advise you to attend your physician and your surgeon in all his visits to the hospital; the student who flits from one clinical teacher to another will doubtless learn much of value, but he will not see the same cases treated throughout the whole of their stay in hospital, and will not attain the same personal knowledge of disease and its treatment. If you are constant in attendance upon the teacher of your choice, you will, insensibly, follow him in his mental processes and will find yourself doing almost instinctively what he would do in like circumstances. I can speak from experience. I had the good fortune to be house surgeon to one of the greatest surgeons of all time—the late Sir William Macewen. For six months I studied his great intellect as closely and as devotedly as I was able to do, and, in later years, I have often found myself doing something almost instinctively, and, when I pondered over the question, I found that I was following the example of my great master.

During your final year I would urge you to devote particular attention to the special departments, particularly to those for diseases of the eye and of the throat and ear. These important branches of surgery are usually neglected by students to the detriment of their patients in later years. These remarks apply particularly to diseases of the eye, in some of which a few hours delay in instituting appropriate treatment may result in permanent damage to the sight. It has been said that the fear of examinations is the beginning of wisdom for the medical student. If every surgical examination paper contained a question on diseases of the eye, throat, or ear, these important subjects would soon cease to suffer neglect. As soon as you have qualified and registered, you will do well to join one of the medical defence societies. While you will find the large majority of your patients grateful and appreciative you may come across one who is cantankerous and inclined to litigation, and such persons have no difficulty in finding solicitors to encourage them. They seem to expect that bad fractures into joints should always give perfect results and, if they are disappointed with the issue, they blame, not the injury, but the unfortunate doctor. Such people do not sue their lawyers or stockbrokers when their advice has turned out badly. They seem to specialise in actions alleging negligence against their medical adviser. I have, for some time, been a Vice-President of the Medical Defence Union, and can tell you that 30 members, on an average, seek advice and assistance of the Union at the meetings of its executive, frequently after the receipt of a lawyer's letter alleging negligence. The vast majority of such complaints have no foundation and are disposed of without further trouble. Everyone makes mistakes except the fool and the liar; the former cannot see his mistakes and the latter denies them. In any event it is a great relief to know that you have behind you powerful support and protection, and that you are insured against any possible financial loss in the unlikely event of a verdict being given against you. From close personal knowledge I beg you not to neglect to join immediately one of these protection societies.

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* Delivered to the students of Charing Cross Hospital at the opening of the Winter Session.

Next, I strongly advise you to try to obtain a resident appointment as house surgeon or house physician (or preferably as both) in your own hospital, or, failing that, in another large institution. It is impossible to over-estimate the value of such a post. Not only will you see a large number of interesting cases, but you will have the advantage of making your diagnosis and of forming your opinion as to how each case should be treated, and then of having your views confirmed or corrected by your senior officer. I have never known anyone consider as wasted the time spent in holding resident hospital appointments, but I have, over and over again, heard men regret that they had failed to take advantage of the opportunity of obtaining such posts. Having, as I hope, spent a profitable year as a hospital resident, I would now urge you to study, for at least one session, abroad. When I was a student, in the late 'eighties, it was a very usual thing for a recently qualified medical man to devote several months to study on the Continent. I had the good fortune to spend a winter session at the University of Göttingen. This time of foreign study widens a man's mental outlook and helps him to get rid of many of the traits of our insularity. I found it most helpful and would earnestly recommend it to your attention. It is, moreover, an enormous advantage to a medical man to have a sound knowledge of French and of German. I have read most French surgical text-books and several in German, and I can testify to the advantage I have derived from them. I would advise you, throughout life, to continue your study of these two languages, so important for scientific medicine.

If you follow out the course I have above indicated you will be well equipped for your life's work.

Some of you will, doubtless, strive to become specialists, but the large majority will be content with the rôle of general practitioner, and the really good general practitioner is the highest development of our profession. It is comparatively easy to know practically all that there is to be known about one branch of medicine. It is far more difficult to know, as some first-rate general practitioners with whom I am acquainted certainly do know, almost as much about every branch.

Among my personal friends two of the ablest are general practitioners in South Hampstead. One is a doctor of literature, of laws, and of philosophy of the University of London, in addition to holding a doctorate in medicine. The other is an M.D. London, F.R.C.S. Eng. On the many occasions I have met my two friends in consultation, I have always felt that they knew about as much of surgery as myself and more of every other branch of medicine. I can safely say that I have learned from them far more than they can have learned from me. If these able men are content to remain general practitioners you may well be so.

For what are the requirements that go to make first-rate general practitioners? There are three desiderata: (1) A thorough knowledge of medicine in all its branches; (2) the faculty of inspiring confidence in your patient; and (3) sympathy.

Granted all these three, a successful and beneficent career is a certainty, and lack of any of them will gravely hazard your usefulness. Obviously the most important is the first, but the faculty of inspiring confidence is an essential requirement and is most helpful to your patients.

How often do we not hear it said: "I have no confidence in Doctor X." Or: "Doctor Y has assured me that I shall pull through all right, so I am quite happy." Poor Doctor X and fortunate Doctor Y. The latter may have less knowledge than the former, but he has his patient's confidence, and that, in many cases, is so often half the battle. We all know men who inspire much confidence and deserve little; men, who, judged professionally, would be weighed in the balance and found wanting—and we know, also, men of brilliant intellect who can make no real headway in practice because they lack this faculty to inspire the confidence in their patients. It is partly a gift, but it is a gift, in a large measure, capable of development. I wish to impress upon you that before you can expect to inspire confidence in others you must have confidence in yourself, and this can only come with knowledge. If you have full confidence in your diagnosis and treatment it will be easier to impart this confidence to your patient. Strive always to gain the confidence of your patient, even from the time you are a dresser or clinical clerk. If you succeed with the charwoman from the slums you will not fail later with the countess in Mayfair. I would venture to urge upon you the importance of learning to express your opinion shortly and to the point. Nothing will help you more to attain this object than joining in the discussion of your medical and debating societies. Here you will learn to say what you have to say clearly and accurately, well knowing that you will not escape criticism from your fellow students should you fail to do so. In this way, as in many others, you will find the best of your fellow students among your best teachers. Remember always never to treat your patients as if they were fools. The vast majority of them are not, and they, during their time of illness, have plenty of leisure to ponder over what their doctor has said to them. The danger of being too chatty is that you may forget what you have said on a previous visit and may say something that may seem to contradict a statement previously made by you. When you are certain you are right say little, when uncertain say less.

Sympathy is the third of the desirable qualities that go to make up my ideal practitioner of medicine. It must, however, be sympathy combined with firmness, and mere sentimentalism is of no use. You should convey to your patients not that your heart bleeds for them, but that you are genuinely interested in themselves and their maladies; that, for the time being, theirs is the most important case you have under treatment; that you mean to devote your best endeavours to its cure and that you bring encouragement and hope of recovery from the illness. But blend your sympathy with firmness and decision, and remember that kindness and tenderness are duties that strength and health owe to frailty and sickness.

I have now come to the end of my advice to the new entrants, who are starting on a journey that is strenuous and exacting. Some, but I hope very few, will fall out by the way, but be certain that pat intelligent effort will always be successful. medical profession is one which offers joys that worth gaining and that no other can afford.

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STABLE NERVOUS CONTROL IN RELATION TO FLYING EFFICIENCY.*

By MARTIN FLACK, M.B., Ch.B. Oxf.,
GROUP CAPTAIN, ROYAL AIR FORCE MEDICAL SERVICE.

(*From the Medical Research Laboratory, Royal Air Force.*)

A meeting such as this affords opportunity for discussion of the conclusions reached by those who for several years past have been concerned in the study of the human machine in relation to flying. No doubt, considerable difference of opinion may exist as to what are the chief characteristics which make for efficiency as a pilot, and, in consequence, on the best methods to be employed for the selection of personnel for piloting duties. It may be that such difference of opinion, if it exist, is due in part to difference in racial temperament and so forth, therefore it is not suggested that the conclusions formed in respect of the British are necessarily applicable to pilots of other nationalities. Such a conclusion could only be definitely reached if the same characteristics were found in the exceptionally fit and able pilots of all countries. The method of investigation pursued in Great Britain has been to study the characteristics of the most satisfactory pilots selected by the executive, and to contrast the results so obtained with pilots who have not been so successful or who have definitely been unsuccessful.

The main point of this paper will be to emphasise the fact that all-round success in flying is definitely associated with stability of nervous control, particularly of subconscious nervous control, and that in the selection of personnel for flying duties particular attention must be paid to this point.

Under the term "all-round success" we may group: (1) ability to acquire the art of flying; (2) physical and nervous endurance for repeated flights at high altitudes and flights of long duration; (3) flying temperament, which it is not proposed to discuss here.

Visual Efficiency.

In acquiring the art of flying the sense of vision and the power of correct neuro-muscular coördination of the limb muscles are of the greatest importance. In respect of vision the point on which it is desired to lay the greatest emphasis is the fact that binocular or better "bifoveal" vision, the term suggested by Sir Arthur Keith, is of the greatest importance. Such vision cannot be obtained unless there exists good balance of the eye muscles. Although this balance may in a large number of cases be destroyed by occupations which call largely for the use of one eye—e.g., close instrument work—microscope, sextant, slide-rule, &c.—it is even more important to recognise that in certain candidates there exists a lack of eye muscle balance which has no such cause, but is in reality an expression of unstable nervous control of the eye muscles. This instability is of great importance, particularly when associated, as it very frequently is, with other signs of subconscious nervous instability, since the subject is unlikely to fly successfully. He will be prone to erratic landings and is likely to break when exposed to hard work. The above conclusions are based on the excellent work of Wing-Commander Cecil Clements, of the Royal Air Force Medical Service, who, in suitable cases, has been successful in correcting this defect by special ocular muscle exercises, thereby converting erratic landers into successful ones.

Muscle Sense.

As experience in flying grows, the pilot, in addition to employing the sense of vision, relies also for the formation of judgments upon the "feel" of the control column, rudder bar, and seat. These sensations have their origin in impulses from the muscles, joints, and tendons. Not only do such sensations aid the pilot in forming an idea of his position to the *machine* and the nature of the evolution which it is executing, but upon these nervous impulses arising from the muscles, joints, and tendons depends the harmonious and smooth functioning of the muscular groups by means of which the pilot exercises control of his machine. The importance of these proprioceptive stimuli in relation to flying has not altogether been fully appreciated. Next to vision, therefore, these sensations are of the greatest importance to the flier. Such was adduced by the careful questioning of pilots, in respect of the sensations by which they fly, but the work of Garten has demonstrated the fact experimentally. Garten found by the use of a tilting chair that when blindfolded and at rest (in contrast to the rapid movements of an aeroplane), the main source of information as to our position in space was due to deep muscle sensation. All people are not endued with the same sensitivity of perception, but deaf-mutes were equally as expert as normal individuals. When the weight of the body was removed by immersion up to the chin in water, the sensitivity of perception was greatly decreased. Strong cooling of the skin of the heels and soles of the feet, and in one case injection of novocaine, caused no falling off of accuracy of perception of tilt in the tilting chair.

These experiments indicate that the so-called otolithic functions of the semicircular canals exert but little effect in affording information as to our position in space, although it is not denied that their integrity, whatever be their exact function, is of importance for aerial work, probably for the exertion of steady subconscious neuro-muscular control.

Tests for Muscular Coördination.

To judge whether a man has sufficient coördinative skill of the limbs for flying, actual flying is undoubtedly the real test; but this is expensive, involving much waste of instructors' time as well as damage to machines. In this respect, however, a certain amount of guidance can be offered by the medical side, but it must be made clear that the mere testing of psycho-motor responses is not in itself sufficient. Although such tests have value—that is, a steady stable response is good and an erratic unstable response is bad—too much attention cannot be paid to the results, since the manipulative effort—raising or depressing one finger—bears no relationship to the manipulations of flying, and since, also, the coördination of eye, hand and leg, which plays so important a part in the control of the aeroplane, is not adequately tested. In England it has been found necessary to devise an apparatus which records the time taken to perform the actual arm and leg movements made in flying—as, for example, the time taken in response to a visual stimulus to bring, by the appropriate movements of the control stick and rudder, a stationary aeroplane out of what in flight would be a "spin." In this way a test is made of the time of response to both exteroceptive and proprioceptive stimuli, and an estimate formed both of quickness of perception and delicacy of the coördinated movements of flying. The apparatus was evolved by Flight-Lieutenant G. H. Reid, D.F.C., from his original control indicator designed for the purpose of night and fog flying, which is being described elsewhere at this Conference. A report upon the use of this apparatus for testing flying aptitude has already been published in the Proceedings of the Royal Society of Medicine, vol. xvii., No. 12 (Reid and Burton).

The *method of investigation* is as follows:—

The subject is seated in the machine and the mechanism explained to him. A preliminary series of trial [illegible] is given, and, when the idea of the test is grasped, observations are made as follows:—

1. Time taken for successive hand movements from right or left to central position.
2. Time taken for leg movements on the rudder to central position from extreme right or left positions.
3. Time taken for combined movements of hand and feet simultaneously—usually from stick back and full over

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* Being a paper read to the [illegible]national Congress of Aerial Navigation at Brussels on Oct[illegible]

to left side with rudder full over to the right side—a position corresponding to that obtaining in the spiral manœuvre known as a "spin." In this case the time is taken until both controls are exactly centralised.

The effects of distraction may be observed by sounding a Klaxon horn unexpectedly during a series of observations. The effect is noted, not only upon the actual time of that response, which may be increased, but particularly upon the succeeding responses. A marked increase in reaction time persisting over several responses after the noise suggests some instability of nervous control. According to the individual the time taken for the centralisation of the rudder control is from 0·5 to 2 seconds, that of the stick from 1·5 to 5 seconds, due to the greater sensitivity of the setting of the stick control in the apparatus; that of the combined manœuvre (hand and feet) from 2 to 10 seconds.

These observations bring out the following points:—

1. Comparison of the time curves of hand and feet taken separately.
2. The comparison of the curve of simultaneously combined hand and foot movement to those of each taken separately.
3. The actual speed of reactions of each type as shown by the ordinates in the graph.

With this apparatus it has been found that:—

1. The first-class pilot gives a consistent record with an average time about two to three seconds, varying according to the type of machine and number of hours flown.
2. Those found unsuitable for instruction give curves of a multi-peaked nature, showing markedly erratic responses with, generally speaking, a big average time, five to six seconds.
3. The subject suitable for training, although giving a longer average time—four to five seconds—displays consistency of performance, although markedly erratic responses of long average duration probably indicate an inaptitude for the coördinated movements of flying.

It is not suggested that this apparatus shall be used on one occasion only, as, for example, at the entrance medical examination. It should preferably be employed during instruction in flying, when periodic tests will afford indication as to the rate of progress and of likelihood of acquisition of flying skill. It seems probable also that the apparatus may prove of service as a means of training pupils to acquire on the ground those particular coördinations necessary for control of the aeroplane in the air. Possibly also the apparatus may afford indication of the particular type of machine for which a pilot is especially suitable—fastness of time combined with stability indicating, for example, an aptitude for scout machines.

Physical Endurance.

But for flying efficiency it is not enough (as was shown in the war) to be endowed with a mechanical and mental aptitude; it is necessary also to be possessed of physical endurance, particularly when flying at high altitudes. It is not proposed to consider in detail here the effects of high altitude flying, beyond pointing out the fact that in such flying all the devices which conduce to efficient respiration and circulation are brought into play. It is on this account that (in the selection and periodic examination of the pilot) particular emphasis is laid upon the stability of the nervous control of respiration and circulation as well as upon general nervous stability. Generally speaking, an adequate opinion of such stability can be formed by the employment of simple tests, but in cases of doubt special measures can be undertaken, as, for example, observations to test the effect of altitude during rebreathing or during rarefaction chamber experiments. Briefly, the signs of such stability may be synopsised as follows:—

(*a*) Steady regular sitting pulse (60–72) rising in rate on standing up by not more than 24 beats per minute and subsiding in a short time to the normal sitting-rate in the very fit, or from 6–12 per minute, or about that rate, in the averagely fit. After exercise (standing on a chair five times in 15 seconds) the pulse will increase from the steady standing-rate by not more than 24 beats per minute and will return to the normal standing-rate prior to the exercise in under 30 seconds. Conversely, lack of stability of control and efficiency is denoted by (1) quick pulse (irregular or otherwise); (2) undue immediate increase in rate in standing from sitting; (3) markedly increased standing-rate; (4) undue increase after exercise; and (5) delayed rate of return to normal standing-rate.

(*b*) A systolic pressure of about 120 mm. Hg to 130 mm. Hg with a diastolic pressure of about 75 mm. Hg to 80 mm. Hg, the pulse pressure in the fit being about 40 mm. Hg, and in the averagely fit not more than 50 mm. Hg. Conversely, lack of stability of control and efficiency is characterised by: (1) unduly raised systolic pressure (after all efforts to abolish temporary nervousness have failed); (2) diastolic pressure (*a*) about 95 mm. Hg (suggestive of nervous instability or excessive consumption of alcohol), (*b*) below 70 mm. Hg (indicative of possible predisposition to fainting); and (3) pulse pressures of more than 50 mm. Hg associated with the above conditions.

(*c*) Inability to hold the breath after full inspiration and respiration for about 60 seconds. Below 45 seconds is held to indicate an instability of the respiratory centre and lack of respiratory efficiency which may or may not be associated with disease.

(*d*) Inability to maintain a relatively steady pulse-rate while supporting by blowing a column of mercury with the breath held.

The technique of this test is as follows:—

With the nose clipped, the subject is asked to empty the lungs completely, inhale fully, blow the mercury to the height of 40 mm., and maintain it there without breathing as long as possible, the pulse being counted in periods of five seconds during the performance of the test. The average time in a large number of cases is between 50 and 60 seconds. A time less than 40 seconds is very unsatisfactory. In a good subject the pulse-rate may remain practically unaffected or may rise gradually in rate from 72–90, according to the time the breath is held. The pulse may rise almost at once from 72–84 or 96, and be sustained there. A large rise in rate—e.g., from 72–132 or 144—is unsatisfactory, and is held to be indicative of abdominal venous pooling. In cases of marked physical inefficiency a characteristic response is for the pulse to jump up to a very quick rate—e.g., 132–144—during the second or third period of 5 seconds, and then to fall away in rate to normal or even below normal. Such cardio-motor instability is an adverse factor in aerial work, and is an indication for rest. The test to be recorded thus:—

First, the number of seconds during which the mercury column is sustained, then the normal sitting-rate per five seconds taken before beginning the test, and then the number of pulsations in each five-second period, the time taken to blow the mercury to 40 mm. being ignored. The normal sitting-rate should be separated by a stroke from the first figure of the pulse response during the test—e.g., 50 seconds 6/6, 6, 7, 7, 7, 8, 9, 8, 8, 8, 8.

Blood Pressure.

Observations of the blood pressure during the test confirm the fact that this test elucidates also the stability of control of the blood pressures as well as of the pulse-rate. When performed to an average degree of discomfort there is in the fit subject over a period of 50–60 seconds a rise in the arterial pressure of about 30–40 mm. Hg—e.g., 120 mm. Hg–160 mm. Hg. In the less fit the pressures with attendant pulse acceleration rise more quickly and to a greater height—e.g., 130 to 180 mm or 190 mm. Hg—generally speaking, 50–60 mm. in about 45–50 seconds. In the unstable the rise is even more marked, and may be as great as 80–100 mm. Hg in a space of 80 seconds—e.g., 160–240 mm. Hg. It is noteworthy that the greater part of such rises in pressure takes place in the first 15 to 20 seconds. This is interpreted as affording information in respect of abdominal pooling. The abdominal effort necessary to sustain the column of mercury increases the intra-abdominal pressure. In subjects with a tendency to abdominal pooling this pressure drives the blood onwards to the right heart, causing thereby an increase of heart-rate, together with an early marked rise in arterial pressure. In subjects where this pooling is unduly great the systolic pressure becomes so increased that, following the acceleration of the heart due to an increased supply of blood to the right side of the heart, there supervenes reflexly through the action of the vagus a slowing of the heart-rate mainly owing to the stimulation of the depressor nerve endings in the aortic arch.

I think it may be safely stated that physical efficiency for flying duties is associated with stability of the centres controlling the respiration and circulation. A falling away of such stability is one of the earliest—perhaps the earliest—sign of deviation from true physical fitness. It is, therefore, a sign of the greatest possible value. It is found alike in those who are out of condition or stale; frequently also in those suffering from mild infections such as a common cold. It is particularly marked in cases of debility following disease, especially in cases of "nervous exhaustion." In many cases of psycho-neurosis the stability or otherwise of the lower control centres forms a valuable guide as to the form of treatment best employed for the condition. It has been found that in many cases of psycho-neurosis due to flying stress the primary cause of failure has lain with the lower rather than with the higher centres. In such cases timely rest and exercise at an early stage is all that is required to restore full physical efficiency. Early recognition of the condition forms the essence of successful preventive treatment, since at a later stage prolonged psychotherapy may become necessary. The stability of control of the circulation may also be used as a criterion in subjects who are deemed likely (*a*) to suffer from vertigo in the air due to uneven movement in the air, especially in aerial acrobatics; (*b*) to exhibit a tendency to fainting as altitude increases; (*c*) to be unduly anxious when called upon to perform aerial acrobatics.

In this connexion the following test has been devised:—

The subject is seated in the rotating chair and the nature of the test explained to him. It is pointed out that when a machine is spinning it is relatively out of control. To regain control, it is necessary that the human subject be in a condition to perform certain movements—centralise the controls; if, however, the human subject is out of control, then such movements will not be able to be performed accurately and the machine is likely to continue spinning or to come out of its spin and to go into another in the reverse direction. He will therefore now, while sitting as in a machine, with eyes open and head in best possible position—i.e., looking inside the knee further from the direction of spin—be subjected to a relatively fast spin, 10 times in 20 seconds.

The pulse-rate is noted in five-second periods and arterial pressures are now taken. Immediately after the spin these are again observed and the effects noted. More recently, also, the effect upon the ocular muscle balance has been observed.

In a large number of control tests upon good pilots it has been found that rotation has but little effect, the pulse-rate and blood pressures being only transitorily raised. The following afford three examples of many:—

1. Subject, I. H.; aged $24^{11}/_{12}$. Flying: 1200 hours—all types. General physical condition good. Pulse: sitting, 72; standing, 78–72; exercise, 84; return to normal, 15 seconds. 40 mm. Hg test: 78 seconds = 6/6, 6, 6, 6, 6, 6, 7, 6, 6, 6, 6, 6, 6, 6, 6. On rotation chair—before: pulse, 6, 5, 6, 5; pressures: S., 124; D., 82. On rotation chair—after: pulse, 6, 7, 6, 5, 5, 5; pressures: S., 126; D., 84.

2. Subject, H. N. C. R.; aged $24^{9}/_{12}$. Flying: 1500 hours—scouts and day-bombing machines. General physical condition good. Pulse: sitting, 72; standing, 90–84; exercise, 108; return to normal, 15 seconds. 40 mm. Hg test: 65 seconds = 6/7, 8, 8, 7, 8, 8, 7, 7, 7, 7, 7, 7, 7. On rotation chair—before: pulse, 6; pressures: S., 120; D., 82. On rotation chair—after: pulse, 8, 7, 7, 7, 7, 6; pressures: S., 134; D., 80.

3. Subject, C. T. O.; aged $26^{7}/_{12}$. Flying: 1350 hours—all types. General physical condition good. Pulse: sitting, 72; standing, 81–72; exercise, 96; return to normal, 15 seconds. 40 mm. Hg test: 60 seconds = 6/5, 6, 7, 6, 7, 7, 8, 7, 7, 7, 6, 7. On rotation chair—before: pulse, 6; pressures: S., 122; D., 78. On rotation chair—after: pulse, 6, 6, 6, 6, 6, 6; pressures: S., 124; D., 80.

In contrast may be given the following cases:—

Liability to Vertigo.

1. Subject, R. F.; aged 21. Whenever in air (five times) suffered from nausea, retching, giddiness—especially on descending. On rotation chair—before: pulse, 6; pressures: S., 126; D., 88. On rotation chair—after: pulse, 9, 9, 8, 7, 7, 6; pressures: S., 158; D., 102. Nystagmus time normal.

2. Subject, K. E. S.; aged $24^{10}/_{12}$. Official report: On each occasion that I have taken this officer in the air for the purpose of dual instruction, after about 15 minutes he has collapsed through sickness. Examination 20/6/23. On rotation chair—before: pulse, varying 6–8; pressures: S., 128; D., 82. On rotation chair—after: pulse, 11, 12, 11, 12; pressures: S., 172; D., 98; pulse, 11, 12, not back below 10 in one minute; pressures: S., 170; D., 96. (Two separate observations.) Nystagmus time normal. Ocular muscle balance greatly disturbed.

3. Subject, M. G. R., candidate for piloting duties. History: Train sickness till 6 years of age—does not like swings, &c. General examination: pulse 5½; pressures: S., 134; D., 84. On rotation chair—before: pulse 5½; pressures: S., 156; D., 86. On rotation chair—after: pulse, 10, 9, 9, 7, 7, 6; pressures: S., 182; D., 110. Note marked effects of rotation in addition to anticipatory anxiety rise.

Cases Showing Liability to Fainting.

1. Subject, W. S.; aged $24^{6}/_{12}$. Found permanently unfit flying—1918. On rotation chair—before: pulse, 8; pressures: S., 148; D., 96. On rotation chair—after: pulse, 9, 9, 9, 8, 8, 8; pressures: S., 156; D., 78. Note marked fall of diastolic pressure. This case also shows anxiety, Class III., since pressures taken when not on chair were S., 128, D., 78—which shows the definite anticipatory anxiety rise of pressures.

2. Subject, H. G. History, 1918: After flying 36 hours overseas crashed after a flight of two hours at 10,000 feet—flying full speed into the ground. Has no memory of crash—has not flown since. Examination 18/7/23. On rotation chair—before: pulse, 6; pressures: S., 142; D., 78. On rotation chair—after: pulse, 5, 5, 5, 6, 6, 6; pressures: (1) S., 142; D., 58; (2) S., 140; D., 60. (Two observations.) Note marked fall of diastolic pressure.

3. Subject, M. G., ex-naval officer; candidate for aviation. History: Never liked swings—mother highly strung. Ordinary medical examination: pulse, 72; pressures: S., 134; D., 90. On rotation chair—before: pulse, 6; pressures: S., 146; D., 100. On rotation chair—after: pulse, 6/—87 (imperceptible); pressures: S., 168; D., 70; (after some delay). Candidate fainted for 20 seconds, becoming pale; muscles quite limp. After test, acknowledged that once he had to be carried out unconscious from a swinging tub in Copenhagen.

Anxiety Cases.

1. Subject, R. M. J. Has been suffering from indigestion past two to three months—states feels giddy and faint on ground and in air for last month; suffered from shell-shock during war. At ordinary examination: pulse 72 per minute; pressures: S., 118; D., 76. On rotation chair—before: pulse, 72; pressures: S., 146; D., 74. On rotation chair—after: pulse, 7, 6, 6, 6, 6, 6; pressures: S., 140; D., 76. Note anticipatory anxiety rise.

2. Subject, D. V. A. M.; aged 27. Found unfit as pilot—for nervous symptoms, &c., 1918. General medical examination = unsatisfactory nervous stability and control. Pulse: sitting, 96; standing, 120–108; exercise, 132; return to normal, 25 seconds. Pressures: S., 140; D., 86. 40 mm. Hg test: 40 seconds = 8/9, 10, 11, 10, 11, 10, 10, 10. On rotation chair—before: pulse, 10; pressures: S., 154; D., 80. On rotation chair—after: pulse, 11, 12, 11, 11, 11, 10; pressures: S., 162; D., 72. Note anticipatory anxiety rise in rate of pulse with rise of systolic pressure and fall of diastolic pressure—a result further accentuated in this case by rotation.

3. Subject, D. E. W.; aged $30^{7}/_{12}$. Examined for fitness for piloting duties—has felt uneasy while flying as passenger. "Shell-shock" during Great War. General examination unsatisfactory. Pulse: sitting, 72; standing, 108–96; exercise, 114; return to normal, 45 seconds. Pressures: S., 150; D., 102. On rotation chair—before: pulse, 6; pressures: S., 182; D., 110. On rotation chair—after: pulse, 7, 7, 7, 7, 6, 7; pressures: S., 182; D., 110. Note marked anticipatory rise of arterial pressures, unaffected by rotation.

The main results may be summarised as follows:—

(1) In fit pilots, particularly those accomplished in aerial acrobatics, rotation produces but little effect upon the pulse-rate or arterial pressures.

(2) In cases subject to vertigo, nausea, or vomiting, rotation produces a marked rise in pulse-rate and in systolic and diastolic pressures.

(3) In subjects liable to fainting, rotation produces a characteristic fall in the diastolic pressure.

(4) In highly strung subjects, liable to develop an anxiety neurosis, there is a marked anticipatory rise of pulse-rate and systolic blood pressure prior to rotation, which may or may not be further affected by rotation.

(5) In practice it is found that subjects may tend to exhibit a combination of abnormal responses, but the main criterion is the fact that the satisfactory pilot is relatively stable in his responses.

From the above results, therefore, it will be seen that this test appears to afford valuable information in respect of flying efficiency and can be profitably employed when from the history or general medical examination any doubt is entertained in respect of the likelihood of such efficiency. In regard to the effects of rotation upon ocular muscle balance, these will be dealt with at a later date, in conjunction with Wing-Commander Cecil Clements. It can, however, be stated that results thus far indicate that in subjects who are not incommoded by aerial acrobatics the ocular muscle balance is not affected, whereas in subjects who suffer from giddiness and nausea this is markedly affected. During the general medical examination note is also made of any signs of lack of stable nervous control of circulation, respiration or any other system, since it is considered that stable nervous control in respect of all the bodily processes plays a great part in conferring bodily endurance. Thus undue sweating or signs of vaso-motor disturbance—e.g., flushing—are equally as much as tachycardia signs of instability. So also in certain cases is a heightened body temperature—e.g., 99·2°–99·6° F. —the only ascertainable cause for which is apparently suppressed nervous excitement.

In respect of the alimentary system, any history of alimentary disturbance in the absence of disease must lead to careful investigation owing to the frequency of such abnormal conditions being expressions of disorders of the vegetative nervous system.

Psychic Control.

The degree of higher psychic control over the primitive emotional reactions is assessed mainly by the past history of the subject, and by his demeanour and behaviour under examination. A history of undue emotivity as a child, or of any previous nervous illness, shell-shock or breakdown, is regarded as evidence of unstable higher control with a consequent tendency to break down under the strain of flying duties. The presence of stammer, tics, restlessness under examination is considered to be indicative of such a state. Nail-biting is corroborative of the same. In the clinical examination particular attention must be directed to the state of the deep reflexes and presence or absence of tremors. With regard to the knee-jerk, a brisk response alone is not necessarily considered evidence of instability. Where, however, apart from any question of organic nerve lesion, the limb can be thrown into a state of tonicity by rapid repeated stimuli, a functional inefficiency in respect of higher control is indicated. In some cases the response to the tap of the patellar tendon is a general muscular contraction of more or less the whole body, a valuable sign of defect of the highest centre control, but no indication of the condition of the deep reflexes. Such a response is usually associated with a state of anxiety, conscious or subconscious. Tremor of the fingers is evidence of some disordered functional state, and is often an accompaniment of a general state of heightened nervous excitability. Tremors of the eyelids alone are usually indicative rather of a highly strung disposition or of the result of legitimate stress—e.g., overwork or strain of occupation; tremor of the fingers and hand rather of excessive indulgence in alcohol and tobacco.

Tests for the estimation of the power of coördination of opposing groups of muscles are of considerable value in elucidating the state of higher nervous control. In the "self-balancing test" the subject stands with heels and toes touching, the arms being held at the sides. One knee is then flexed to a right angle and the legs held apart slightly. When he has obtained his balance standing on one leg, he closes the eyes and endeavours to maintain the position steadily for 15 seconds. The degree of coördination is assessed by the amount of movement necessary to maintain balance. This test demonstrates the degree of higher control rather than the condition of muscle sense or vestibular stability. Again the subject may be required to raise to shoulder level from a table a board on which stands a small relatively unstable metal rod (of fixed dimensions) and to replace it upon the table without upsetting the rod. The test should be equally well performed with either hand. Besides bringing out any existing tremor, this test demonstrates the state of muscular coördination. Both the above tests are performed with ease in subjects possessing good higher control and a satisfactory performance of the test has been found in efficient pilots. On the other hand, poor performance has been noted in association with states of exhaustion, flying stress, insomnia, and other neuropathic and psychopathic conditions in an early stage of development. In such conditions also will be found an associated lack of nervous control of the respiration and circulation, and, as already pointed out, in many cases it is the failure of such control which predisposes to the breakdown of the higher centres.

In the assessment of efficiency for flying duties, in the case of a candidate, care has to be taken to differentiate as far as possible between states producing temporary lack of nervous stability and control and those in which such lack is of a more permanent nature.

FÆCAL ENTEROLITH OF THE SMALL INTESTINE.

BY R. J. MORRIS, O.B.E., M.D. DURH., M.R.C.P. LOND.

FÆCAL enterolith of the small intestine is rare. It is the rarest cause of intestinal obstruction, only one case occurring in a 13 years' period at the London Hospital. The diagnosis is difficult, the train of symptoms often extending over a long period, so it is worth while to record the following case in the hope that it may help towards an early diagnosis.

Clinical Record.

Mrs. A. B., aged 68 years, came under my care in July, 1922. She complained of painful and frequent micturition, constipation, alternating with diarrhœa, and spasmodic pains in the abdomen which brought about nausea and vomiting. She gave the following history: Dysentery and fever in India prior to 1880, followed by chronic constipation; acute enteritis in 1894; floating kidney was diagnosed in 1896; operation for fixation of kidney in 1906; and operation for gall-stones in 1907. Many gall-stones were removed, complications followed, and a further operation was performed in 1908. She had partial obstruction of the bowels in 1910, relieved by enemata and other treatment.

Examination of the patient in July, 1932, revealed some irregular bulging on left side of the abdomen, some tenderness over the site of her operation scars, no rise of temperature. Urine was normal. After a short course of treatment she left Harrogate and returned to my care on June 22nd, 1923. She stated that she had had many attacks of spasmodic pain in the abdomen, constipation alternating with diarrhœa, and that for the last three weeks the pains had increased in frequency and intensity. She complained of painful and frequent micturition; urine showed a growth of *B. coli* on culture; pulse and temperature were normal. During the following days the spasmodic pains in the abdomen increased in intensity and peristalsis was visible on inspection. On June 28th she vomited several times, on June 29th intestinal obstruction appeared to be complete.

sultation with a surgeon was arranged, when the conclusion arrived at was that the obstruction was due to malignant disease of the intestine, and operation was decided on. At the operation a hard mass was found lying free in the lower portion of the ileum and successfully removed. She made an uninterrupted recovery, and is now in good health and leading an active life.

In the moist state the enterolith was black and polished, due probably to peristaltic action, nodular on the surface, weighed ·33·4 g., 5·5 cm. long, 3·8 cm. in diameter. Section showed no nucleus, texture was spongy, heterogeneous, some parts having a specific gravity greater and some less than 1.

A detailed examination by Prof. H. S. Raper, of the Department of Physiology and Biochemistry, Victoria University, Manchester, is as follows:—

The enterolith.

"The enterolith, when air-dried, was somewhat larger than a walnut and was nodular on the outside. The outer surface was black and shiny. It was much lighter in weight than enteroliths, which are rich in mineral constituents. On section it appeared to be roughly homogeneous in texture, light brown in colour, non-crystalline, and not stratified. It contained 14·0 per cent. of moisture. A portion of the powdered calculus weighing 2 g. was extracted in a Soxhlet apparatus with acetone. The acetone-soluble portion was obtained by distilling off the acetone, and this was extracted several times with light petroleum. The petroleum-soluble substance (fat and cholestorin) was obtained by distilling off the petroleum and weighed 0·146 g.=7·3 per cent. fat and cholesterin. The portion of the acetone extract, insoluble in petroleum, was very small in amount and consisted of a brown gummy substance.

The residual substance of the enterolith after acetone extraction was now extracted continuously with hot alcohol for four hours. The alcohol extract weighed 0·12 g. and consisted of brownish resinous material from which nothing characteristic could be obtained. The main bulk of the enterolith was insoluble in organic solvents. The weight of the residue left after acetone and alcohol extraction weighed 1·47 g. and represented 73·5 per cent. of the original calculus. It gave protein reactions, a very faint starch reaction with iodine, and contained only a very small amount of ash. Under the microscope it resembled vegetable rather than animal material, and contained many dead bacteria. It was partly soluble in hot dilute sodium hydroxide and in cold concentrated sulphuric acid giving a deep-brown solution. Neither solution showed absorption bands when examined spectroscopically, and since only a minute trace of iron was present, the presence of remains of a blood-clot in the enterolith can be excluded.

To estimate the total protein present, total N was determined in a weighed portion of the acetone and alcohol extracted residue by Kjeldahl's method; 5·07 per cent. nitrogen (=31 per cent. protein) was found. From its appearance and properties it seemed likely that the rest of the extracted residue was mainly vegetable material. To test this, a small portion was treated with cold concentrated H_2SO_4 for two hours. The mixture was then diluted to make the acid 2 per cent. in strength and boiled under a reflux for six hours. The solution was filtered, neutralised exactly with baryta, and allowed to stand. The clear layer above the $BaSO_4$ was siphoned off and concentrated to 35 c.cm. under reduced pressure. The concentrated solution reduced Fehling's solution on boiling and gave a distinct orcinol reaction, indicating the presence of pentoses. It may be presumed, therefore, that the enterolith contained a considerable amount of vegetable matter.

As a result of this examination it appears that the enterolith was principally fæcal in nature, and that it did not originate as a gall-stone, a bile-acid concretion, or a blood-clot. The appearance did not suggest that it was an 'oatmeal stone' such as has been described by Hammarsten (quoted by Cammidge)."

The very careful examination sheds no light on the mode of formation of this enterolith.

Examination by X ray was omitted in this case; had a direct radiogram been taken, the enterolith would have been discovered, because examination by X rays of the section left after analysis cast a very definite shadow, almost as dense as that of bone, and would have shown up clearly in any radiogram taken of the pelvis. It would be desirable in all suspected cases to examine the abdomen and pelvis by X rays, but without the opaque meal, which would flow around the concretion and obliterate it on the radiogram.

A classification by Allbutt and Rolleston[2] includes concretions formed from amorphous fæcal matter. This appears to be the composition of this enterolith, the necessary cause of arrest being the dependent position of the lower end of the ileum, the chronic irritation of the intestine, due to enteritis, providing the colloid menstruum in which the formation took place. Tentative diagnoses of enteroliths have frequently been disproved at operation, but the possibility should be borne in mind. A positive diagnosis in this case would have prevented probably years of suffering and invalidism. A radiograph of an enterolith in situ has been described by Dr. J. Anderson, and this is the only instance I can find in the literature on this subject.

Dr. F. Cowan[16] says that rarely preoperative diagnosis is made, and that little attention has been given to the organic substances which enteroliths contain. Dr. Owen T. Williams[15] says concretions found in the intestine are not fully described, and are usually dismissed as "fæcal concretions," "fæcal accumulation," or "enterolith," often not of a simple nature but as manifestations of some abnormal condition of the intestinal secretion.

Dr. Coerr[5] mentions the fact that most of the enteroliths reported have been discovered at operation or post mortem. The rarity of such should be borne in mind and X rays employed; there are no classical signs and symptoms because of the varying size and position in the alimentary canal. Persistent constipation, digestive disturbances, nausea, vomiting, colicky pains, abdominal soreness, and sensitiveness are the usual complaints.

The concretion may act as a ball-valve causing intermittent obstruction, or becoming wedged may cause complete obstruction necessitating operation. Treves states that the most important symptoms indicative of the presence of an enterolith are persistent attacks of incomplete obstruction of the bowel. A new form of enterolith found in the jejunum in a case operated on for intestinal obstruction is described by Prof. Raper.[17] It is notable that two-thirds of the cases of enteroliths are found in the female.

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Harrogate.

HOSPITAL EXTENSION AT STOCKTON-ON-TEES.—At a public meeting on Sept. 29th, in response to an appeal for money for the extension of the local hospital, subscriptions amounting to £11,180 were announced, including £10,000 from Sir John Ropner and £1000 each from Sir Frank Brown, Sir John Harrison, and Mr. T. Mellanby. The extension will cost £43,000, of which £31,000 is in hand, consisting of gifts of £10,000 each, with interest, from the late Sir Robert Ropner, Mr. C. W. Littleby, and Mr. Leonard Ropner. This leaves £12,000 to be raised.

ISCHÆMIA CORDIS INTERMITTENS.

WITH NOTES ON THE EXAMINATION AND PROGNOSIS OF DISEASES OF THE HEART AND VESSELS.

BY DR. L. BISCHOFF,
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> . . . . and "in difference there is life."—
> *The late* SIR T. CLIFFORD ALLBUTT *to the author.*

IN the following paper I propose to isolate and describe a group of anginoid phenomena, which I would designate as *Ischæmia cordis intermittens* and which I have closely studied. It presents the following peculiarities:—

It affects patients of about from 30 to 70 years, mostly males, who often, after more or less brisk walking (generally in the open) or climbing, or, in fact, soon after any sort of exercise, *feel a disagreeable* pain behind the sternum, which passes into a feeling of spasmodic contraction and oppressive sensations of anxiety, culminating in such a feeling of annihilation, that the patients are obliged *to stop*; and if they must perforce move on can only do so under extreme necessity. It may, indeed, lead to complete loss of consciousness. There is no dyspnœa with this affection. A rest *of a few* seconds, or at most of minutes, is sufficient to enable the patient to continue his walk in perfect comfort. Soon, however, after the resumption of exercise the pain returns, and rest becomes once more necessary. The history of all patients, with slight variations, reveals the same, almost stereotyped, phenomena.

I will now proceed to mention a few such cases, describing the first a little more in detail.

CASE 1.—Railway official, aged 56, sent to me for expert opinion. Nothing special in his history. Three years ago, during an easy walk in hilly country, the patient was suddenly obliged to stop because of an unexpected pain in the chest. After about five minutes' rest he was able to go on. From this time until October, 1923, when a similar sternal pain appeared, lasting somewhat longer, there had been no attack. Twelve days after, as the patient left the house for the first time after a transient abdominal affection, after 50 or 60 steps, the pain returned, obliging him to stop. After two or three minutes he could continue, but again only for 50 or 60 steps, and this recurred five or six times until the end of the walk. Since then these attacks have recurred regularly when walking in the open, but recently the distances walked without pain have become longer (100 to 150 metres). On longer walks the attacks, which in the beginning recurred at short intervals, gradually became rarer, and the distances walked, without pain, longer; but the pain itself, when felt, is of the same intensity, always obliging the patient to stop. Shortly after food—viz., midday dinner or any other full meal—the attacks are stronger and more frequent. The same occurs when climbing stairs. Apart from these attacks the patient is well. He is a slender, rather undernourished man. Apex-beat felt in the fifth space in the mammillary line, extending *down* towards the median line and well visible in the epigastrium. This beat is slowly heaving. The heart borders are slightly dilated, both right and left. In the region of the manubrium sterni there is an unusual dullness towards the left. The heart sounds, which are clear and *regular*, are most easily audible in the epigastrium; they are heard with difficulty at the bases of the heart. Blood pressure 180–190 max. (variable). Hæmoglobin 70 per cent. Stained blood film shows nothing of note. Traces of albumin in the urine. A screen examination showed a *dilatation* of the aorta, pulsating synchronously with the systole. In the first oblique diameter there was no filling of the posterior mediastinum; dilatation of the right auricle; slightly dilated left ventricle, which is strongly rounded. In view of the *dilatation* of the aorta a Wassermann test was made but gave a negative result.[1]

After four months the condition of the patient was objectively and subjectively identical. After several genuflexions the pulse was accelerated to 110 per minute; infrequent *suppression* (arrhythmia) of a few pulse-waves. Blood pressure: systolic 175, diastolic 110. No pains. Observed in the open (public park), at rest, pulse 61–70 per minute, regular, equable; blood pressure[2] (conf. *Korotkoff*) 170–100; radialis the same on both sides. After about 100 paces the patient said he felt the pain behind the sternum, radiating to the arms. Continuing the walk he asked to stop after ten paces. Facial expression somewhat anxious. No dyspnœa; no apocamnosis. Pulse 120 to 124, of alternating form, large and small beats of the oscillometer at (Korotkoff) 190–150; strongly alternating murmur pulse and tone pulse with equal pressure of the cuff. Cessation of the pulse (8–10). After one minute's rest improvement of subjective condition. *After two minutes* the patient continued his walk without difficulty. Pulse 70, regular, equable; blood pressure 170 (175) –100.

CASE 2.—Physician, aged 62. Non-smoker, moderate *consumer of alcoholics*, good eater, no syphilitic history. Came on account of the above described complaints which had first appeared three years ago. The attacks came on in the open, and chiefly in cold weather. When walking is not at once stopped the pain *extends to the left side* of the chest, to the left and then to the right arm, and the feeling of oppression on the chest increases and vertigo appears.

State of nutrition good, hypertrophy of the heart, slight dilatation on the left, a ringing second *sound of the aorta*; no murmurs. Pulse regular, well, and equally perceptible on both sides (70 per minute). Blood pressure 250–110 (Pachon); no albumin in urine (repeated examinations); no glucose, no pathological sediment. During an experimental attack the pulse was regular, 100 per minute (same right and left). Blood pressure 260–200. Heart sounds dicrotic.

CASE 3.—Painter, sent for report, aged 57, complains of spasmodic painful sensation under the lower sternum and in *the* epigastric region, which occurs after walking in the open air and obliges him to stop. No dyspnœa. The sensation is accompanied by a peculiar feeling of tiredness in the arms. A spasmodic pain appears also during efforts of *defæcation. The symptoms* date from two and a half to three years back.

Patient is of plethoric complexion, high diaphragm, emphysematic thorax; apex of heart in the mammillary line. Auscultation difficult (owing *to thickness* of panniculus adiposus and extension of lungs): m.l. (median left), 12·5–13; m.r. (median right), 4·5 (orthodiagraphy). Oblique position of heart. Pulse regular, 80–90; blood pressure 190–100 (Pachon). After exercise the minimum rises *disproportionately* (140). Albumin in the urine; low specific gravity (1001). Hæmoglobin 78 per cent., red corpuscles 4,200,000. Stained blood film nothing of note. Wassermann test negative. The dorsalis pedis and tibialis postica examined *on the screen show* nothing abnormal. The condition of blood makes chronic lead poisoning improbable.[3]

CASE 4.—Female, aged 51, syphilis acquired 20 years ago in South America. For a year past, on walking quickly, she feels *compression and* pain in the chest. If she does not stop giddiness supervenes. One day, to avoid being run over by an automobile, the patient had to move on when giddiness had already begun; she fainted and fell, narrowly escaping the car. She was taken home by *others*. No consumer of either tobacco or alcoholics.

First sound both at base and apex, resonant, with a high timbre as of church bells; second aortic sound slightly accentuated. Percussion showed no displacement *of borders*. The near X ray *image* in the second oblique diameter (position 45) shows a sharply defined bulging and strong pulsation against the aorta "window." Slightly turning the patient to and fro facilitates topography. Pulse 84; blood pressure 150–100. Wassermann negative. No albumin in urine; no glucose. Patient feels oppressed after a short walk in the open air and shows a slowly progressing bradycardia (with regular pulse), and soon giddiness ensues. The walk is not continued.

CASE 5.—Civil engineer, aged 53. Family history: The father died of apoplexy. The patient is a strong smoker, partakes of alcoholics in moderation, denies syphilis. On walking in the open he complains of the above-mentioned *distress*. When walking is continued he loses consciousness and falls. Clonic convulsions of the limbs with foam at the mouth were observed by casual witnesses; pulse fluttering. After about one hour the pulse is still very rapid. There was no alteration of the heart, either by percussion, auscultation, or orthodiagram. Pulse 74 per minute. In the morning with empty stomach, blood pressure 120 max.; in the afternoon 160 max., 90 min. Wassermann negative. No albumin in urine, no glucose, no *urobilinogen*, nothing in sediment. Reflexes slightly increased.

CASE 6.—Business man, aged 28, smoker, no syphilis. A month ago, during betrothal, the patient, after walking in the open air, gets the typical pains; this until the breaking *off of* the engagement, three days ago. Nothing particular about the heart. Blood pressures 170–95, pulse 80. An experimental walk in the open air has no results. No attack to be provoked even by running.

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[1] From the report to the chief physician of the Swiss railways, Nov. 27th, 1923.

[2] Brace, manometer, and sphygmometric oscillometer were left in during the whole observation.

[3] From the report to Dr. P. in B.

Case 7.—I regret being able to report on this case only from memory, as I examined it only as a visitor during consulting hours at the university clinic while I was assistant of Prof. Michaud. The patient was a Russian, aged about 30, rather thin. He smoked much and denied syphilis. Nothing wrong with the heart detected by percussion, auscultation, or fluoroscopy. Pulse normal (?). I witnessed an attack, for after walking about 50 metres rather briskly we were obliged to stop suddenly as the patient felt a strong pain in the manubrium sterni. He became very pale. No dyspnœa. The pulse in the radial was very perceptible. After a stoppage of a few minutes the pallor soon disappeared and the patient could provoke further fits by repeated exertion. The attacks, however, did not occur every day. The patient left for Russia before a more thorough examination could be made.

The intermittent attack after relatively hard exercise, especially in the open air, is common to all these cases. In none of them did the attack occur during rest (in bed), as may happen in true angina pectoris. Dyspnœa was never observed. In the first cases, with general or more local alteration of the vessels, I suppose there is a coronary affection in which the heart is unable to meet greater exertions, and insufficient adaptability (dilatability) of the altered vessels during exercise.

Case 2 might be included in the Bittorf's type of dyspragia cordis, dependent on the advanced age of the patients, with arterio-sclerosis of the coronaries. In Case 4 the patient shows a typical luetic affection of the aorta ascendens. In Cases 5 to 7 the cause of the attacks is probably to be found in an angiospastic neurosis (vasomotor) and an increased vasomotor irritability in the coronary vessels after exercise, something like the benign form of intermittent lameness of the lower extremities through nervous and angiopathic diathesis (Tobias), or through angiospastic diathesis (van Ordt). Perhaps with many patients there is a congenital narrowness of the vessels which Mendel especially emphasises in cases of intermittent claudication. Probably also nicotine comes in here as an exogenous factor, as it often does in intermittent claudication (Erb). I should include in this complex of symptoms some cases published by Mendel[4] of intermittent lameness of the aorta and its branches. In Case 4 the attack would be caused by poor supply of heart muscle through insufficient flow of blood in the coronary arteries (ischæmia) owing to progressively retarded sequence of heart-beats.

We know that epileptic fits (such as in Case 5) occur also in heart-block instead of (or after) the usual fainting fit. The observed tachycardia (Case 5) excludes connexion between these fits and the Stokes-Adams complex. Though observations similar to the above are rightly named "lameness" of the heart, angina pectoris and these special forms are not usually distinguished, so that angina pectoris becomes synonymous with intermittent "lameness" of the heart. Potain already called true angina pectoris intermittent lameness of the heart. Fits of insufficiency accompanied by dyspnœa do not, of course, belong to this present argument, though naturally in case of ischæmia cordis intermittens, with organically altered vessels, the neighbouring aorta ascendens may also be affected (insufficiency and stenosis of the aorta). In the same way other defects of the heart (such as mitral stenosis, &c.) may accompany it (see *Gallaverdin*).

We thus have to distinguish between angina pectoris vera and this form of disease. Most fits of angina pectoris occur at night or during rest; the above-described features during exercise. Angina pectoris vera has a much more unfavourable prognosis. By taking care of one's self (rest) the fits of ischæmia cordis intermittens do not occur at all—i.e., they do not come when we do not want them to. Angina pectoris vera comes when it will, and may kill in that case. In our cases, as in the usual angina, further prognosis will depend on the ætiology of the ischæmia—i.e., when there are alterations of the vessels, on the extent of such alterations, on the state of the aorta, of the heart muscle and on its reserve power. One can easily see that when there is rigidity and slow response of the vessels, and the heart muscle is then suddenly overtaxed to the point of failure, the prognosis will be a more serious one. A heart with good reserve power will resist better and longer than one without this advantage (lues).[5]

Combinations of angina pectoris with ischæmia cordis intermittens naturally occur, but still only a sharp distinction between limited complexus of symptoms can give us a clear insight into the different forms of disease; hence greater assurance regarding pathogenesis and special prognosis and therapy. The chief requirement is—besides the history which shows the way, and after a thorough clinical examination—to examine the patient during a fit in the open air, that is to walk and climb with him, always closely observing him.

I have named this complex of symptoms *ischæmia cordis intermittens*, as its origin is connected with an insufficient supply of blood to the heart muscle, whether this be due to a pure spasm, insufficient lability of the sclerotic vessels, or other factors, intermittently after exercises like an intermittent lameness of the lower limbs. The qualification, angiosclerotica, angioneurotica might still more define this affection. The statistics, of course, differ according to selection of material in relation to other diseases (intellectual and bodily workers). We know, for instance, that angina pectoris is more frequent among professional men (doctors, lawyers, clergymen, politicians, financiers) than among labourers and peasants, and hence its relative rarity in the hospitals. The fact is also to be noted that while "organic affections" of the heart predominate greatly as causes of death in the black race (¼ to 2 times according to Registration Area U.S., 1914–17) angina pectoris does so (2 to 1) in the white race.

Examination and Prognosis of Diseases of the Heart and Vessels.

It is very advisable to carry out *auscultation* in a cabinet which shuts out exterior sounds. I much doubt whether it will be possible to register successfully the timbre by instruments. For this the human ear remains the best receiver. The rubber tubes of the stethoscope lower the character of the sounds perceived in proportion to their flexibility and their length; short tubes are, therefore, advisable. It had seemed to me in several cases that the species of the tonality, the timbre (not the intensity) before and after exercise, might inform us as to the efficiency of the heart and vessels, but I can give no definite results. I have never heard a double first sound (during quiet breathing in the entire phase) in cases of ischæmia cordis intermittens, while it has been repeatedly observed in angina pectoris (Huchard), either as "angina de décubitus, produite par le collapsus du ventricule gauche," as Vaquez calls it, or otherwise. I cannot in practice follow the division of Leclerq in classifying angina as A, B, C = cardio-sclereux, aortique, atherome cardio-aortique.

Though the assertion of Mackenzie that *respiratory arrhythmia* can indicate a sound heart cannot be sustained, still it can be accepted as a sign of good compensation. And I would add that the stronger the arrhythmia the better the prognosis (with the same patient). The following example may serve as illustration:—

Mrs. M. C. L., affection of the myocardium with angina pectoris vera, breathing arrhythmia was always present during the compensation of the heart. A few days before the fit the pulse was perfectly rhythmical and strong. During the fit there was tachycardia, but in convalescence the breathing arrhythmia was promptly re-established. Here the arrhythmia was a favourable indication, regular rhythm a bad one. (For causes see Brown-Séquard, Einbrodt, Burdon Sanderson, Hering, Fredericq, Spalitta.)

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[4] Zentralblatt f. d. ges. Neurologie u. Psychiatrie, xxvii, Nos. 2–3.

[5] In a list of 40 cases of angina pectoris, mostly Parisians, by Martinet, one half had proved luetic affection, which made the prognosis much worse.

In general, and in accordance with what I have set forth, we must suppose that when the heart responds less vigorously to the provocations which vary with the work performed (i.e., if the totality of blood thrown into the system of arteries per minute is invariable), its value as a pump is very probably impaired!

Blood pressure has been measured by the oscillatory method with Pachon's instrument. Though I prefer to use a double cuff (like Gallavardin) for measuring maxima, Pachon's simple cuff was found quite sufficient when measuring blood pressure in the open during trials. Already—as assistant—I had noticed that the blood pressures in the early mornings, with an empty stomach, were often considerably lower than when measured during the day. We know at present that a pressure that varies during the day is more favourable prognostically than a permanently even one, and I would say this is so even when the single peaks of the varying pressure curve reach much higher figures than the moderately high but flatter waves of the other. Only by comparison of pressures of different times of the day can we distinguish between the permanent and the diurnal temporary high pressures. Strictly speaking, the pressure should therefore be measured several times a day, but as this is often unadvisable, either because of an unfavourable psychic impression on the patient or for other reasons, I find two determinations sufficient, that of the early morning as the lower pressure closely approximating the pressure during sleep, and the second determination some time during the late afternoon. It is to be regretted that the observation of pressures during sleep is difficult to obtain. In the purely spastic forms of ischæmia cordis intermittens blood pressure was "variable." The patients with organic alterations showed a lowering of the systolic and at the same time a rise of the diastolic pressure, which, with a strong convergence of the two pressure-curves, gives a bad prognosis.

Radiologically (besides general fluoroscopy) I generally make use of *orthodiagraphy* and mark the pulsations and the excursions of contours. Teleradiograms were of secondary consideration. Special attention was given, firstly, to the aorta, and then to the configuration and range of contractions of the heart under different conditions; of the aorta more especially to the aorta ascendens. As to the aorta, I think that in general much unnecessary importance is given to the so-called "deepened shadow" in cases of sclerosis of aorta ascendens. Apart from the hardness of the tube, the distance of the screen, the stop, &c., which are all technical factors, the personal disposition of the observer at the time plays an important part in the judgment.

Generally, m.r. and m.l.=A.T. of the aorta were measured and its length in comparison to m.r. and m.l. of the heart, for the longer the transversal dimensions of the heart the larger may be those of the aorta without indicating a pathological state of the aorta (always considering the height of the diaphragm and the shape of the thorax, &c.). Hence, absolute single figures (dimensions of the aorta only) may be valueless.

By turning the patient slowly while standing around his vertical axis, one obtains views of the other (chiefly I. and II. oblique) diameters. This slow turning I often find of much assistance in identifying parts of the image. I only have been able to observe one patient fluoroscopically during a fit of ischæmia cordis intermittens. Such observation is rather difficult in itself. Orthodiagrams, in this case of i.c.i., before and during the fit, showed no alteration worth mentioning (f.i. dilatation), but undoubtedly the apparent pulsations and the well visible range of contractions were small. The supposition of a so-called "cramp of the heart"—i.e., of a tonic-spasmodic state of contraction—is completely excluded here. Valsalva's experiment (strong effort of expiration with closed glottis) showed scarcely any (unfavourable) change. Zehl's experiment (expiratory flattenings) did not plainly show any flattening. It is to be regretted that those two experiments are still but rarely made. Indeed, orthodiagraphy as a control is seldom made. While making orthodiagrams I have frequently endeavoured to draw the usual ventricle diastole, and vessel systole orthodiagram (during quiet breathing—as should be made in usual orthodiagraphy), the contours both of the ventricle systole and the aorta diastole. I tried to utilise the observations of varying amplitudes for *determining the functions of the heart vessels*—viz., orthodiagrams taken before and after exercise with indication of the corresponding systole-diastole amplitude. I was very pleased to see that Dietlen supports me in general on this test as a means of forming an opinion on the function of the heart. "By these means one will at least be able to decide in each case if a change in the volume of the heart-beats has occurred."

A complete cinematographic view would, of course, give a still better insight into this matter, but so far this has not successfully been done. Groedel's method, which consists in a combination of a series of radiograms with the corresponding electrocardiograms, might, perhaps, prove useful. But a continuous "film" would give us a far more objective and comprehensible view, with all details and hence with many differentiations (according to each single case). A slowed-down reproduction, such as commonly done in picture theatres for showing gymnastics, diving, &c., would permit an even closer study of details.

The strength and quality of the pulsations at the beginning of lues at the aorta as shown on such a film and compared with the latter observation, would reveal the cicatrisation, if any, which may have been produced by specific treatment (in the form of a reduced pulsation?).

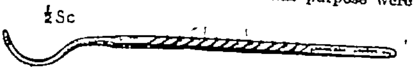
I believe I am the first who has clinically examined in the open air cases of ischæmia cordis intermittens during purposely provoked fits,[*] and I trust I have indicated several new methods and directions for work to be followed in the diagnosis of heart affections, and especially also in their prognosis, which may prove of interest.

The late Sir T. Clifford Allbutt very kindly assisted in translating the technical words into English (1028/24).

New Inventions.

A CONVENIENT DISSECTOR.

IN the operation of transfusion of blood it is desirable that the veins, whether of donor or recipient, should be handled as delicately as possible, and finding that most of the instruments for this purpose were unduly heavy, I have had constructed a combined dissector and aneurysm needle (see figure.). The instrument is made of rustless steel, and is very light. The aneurysm needle is flattened and takes up very little room in the wound. The shaft is serrated and is flattened at its end to an edge which is almost sharp. It is conveniently employed in conjunction with a pair of cilia forceps with very light springs, the points of which are toothed. Both instruments are also useful for fine dissections on experimental animals.



Messrs. Down Bros., Ltd., are the manufacturers.

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[*] Schweiz. medizin. Wochenschrift., vol. liii.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

This Section held its first meeting of the session on Oct. 1st, Mr. T. G. Stevens, the President, occupying the chair.

Per-uterine Insufflation of Fallopian Tubes for Sterility.

Dr. I. C. Rubin (New York) read a paper, enriched by numerous epidiascopic illustrations, entitled Diagnostic Value and Therapeutic Application of Per-uterine Insufflation of the Fallopian Tubes in Cases of Sterility. He said the method was devised to determine the patency of the Fallopian tubes, and that before its introduction it was necessary to do exploratory laparotomy in the kind of cases under review. In 1914 he commenced his attempts with collargol, but the results he did not regard as favourable, as patients complained of distension and epigastric distress, and when standing up there was pain in the shoulders and diaphragmatic region. Carbon dioxide was substituted for oxygen, as the former was more rapidly absorbed from the peritoneal cavity. With regard to spasm of the tubes, he soon realised that there were cases in which the first test by insufflation seemed to indicate that the tubes were non-patent, but on a second or a third trial gas was forced through the tubes into the peritoneal cavity, and a fourth repetition showed that the gas could be forced through at a relatively low pressure. In the early cases he was content with ascertaining whether, in a given woman, the Fallopian tubes were open, but it was now possible to ascertain by the method whether one or both tubes were open, and it was not necessary to inject opaque solutions. In cases of normal patency the pressure rose to 40, 60, 80 mm. of mercury, then dropped, then fluctuated for a time, and the patient did not complain of pain. If the pressure rose to 140 or 160 mm. and then dropped, it showed there was a distinct stenosis or obstruction which was remediable.

Contra-indications and Dangers.—The presence of purulent discharges from the cervix, vagina, and urethra constituted a contra-indication to insufflation, as did also the presence of tumour masses in the pelvis, and particularly if tense. Even if there were only tenderness in the pelvis on bi-manual examination, without a palpable tumour, he would not adopt the insufflation method. Those who prescribed the method originally and those who had followed the procedure carefully did not have any trouble from it at all. The cases of trouble were those in which the practitioner attempted it without having fully studied it, and had applied it at an unfavourable part of the menstrual cycle. It should never be practised during the menstrual flow, nor on women who suffered from serious cardio-renal disease. If cases were properly selected, danger from embolism could be practically discounted. The injection should be carried out slowly and carefully. He had not had any peritoneal reaction in 1000 cases. The safest time to insufflate he had found to be four or five days after the cessation of the last regular period. The worst time for it was just prior to a period falling due. A month should elapse before repetition.

Results.—Dr. Rubin said that since he adopted the method he had been seeing among his patients an increasing number of pregnancies. He had studied the effect on the menstrual period and noted that in quite a number there had followed a relief of dysmenorrhœa. In 1000 consecutive cases in his practice there had been 10 per cent. of pregnancies, and these were not ascertained from inquiry instituted, but were voluntarily reported by the women themselves. As a result of a questionnaire sent out there were reported 52 pregnancies out of 763 patients who were treated by the method for sterility. Most of the cases were of women who had been married four or more years, and when 10, 15, or more years of childless married life had been experienced, and then coitus following the insufflation resulted in pregnancy, he thought the claim of cause and effect was a just one.

In describing the mechanism of the procedure, by the aid of slides, Dr. Rubin pointed out the importance of the tube reaching well up beyond the internal os. In some cases a mucus plug, not visible at the external os, as it occupied the deeper portion of the cervical canal, was seen to be expelled after insufflation and when the cannula had been withdrawn. Such removal must, he contended, be a factor in some of the successful cases; and the same applied to the straightening out of tortuous tubes. He believed that in some patients the insufflation had a psychic effect on the patient, curing a spasm which had sufficed to close the uterine ostium.

Discussion.

In the brief discussion, Dr. S. Forsdike said he had been using the bulb method for 15 months, and thought the critics of that method had exaggerated the danger of escape of air. His use of the bulb method followed on some researches he conducted on cats with lipiodol, careful examination of the tubes of these cats showing that the use of the method on the human being was fully justified.

Mr. A. W. Bourne, having used the method, said it would be a great advantage if X rays could be dispensed with as a means of ascertaining whether the gas had passed through the tubes, reliance being placed on hearing with the stethoscope applied to the hypogastrium the noise of the passage of the gas. He questioned whether the rubber acorn on the cannula sufficed, in the case of ulcerated and otherwise irregular cervical surfaces, to prevent leakage.

Dr. T. Watts Eden referred to two cases in which he tried the method. In one the patient had had one or two miscarriages and had a retroverted uterus which, he thought, was adherent. She was anxious to have a child, and he thought it would be a good chance to use the method, having the patient under anæsthesia in case an operation was required. There was a rapid rise to 300 mm., which was sustained, and no gas went through. He found the uterus was retroverted and lightly adherent to the pouch of Douglas. There were no tubal adhesions, and he could pass a probe up to the uterus on either side. The second patient had never been pregnant, but wished for a baby. Her uterus was large and hard, but movable, and there was no evidence of pelvic inflammation. According to the instrument there was a block in both tubes, but he found that she only had a small interstitial fibroid in the fundus of the uterus, both tubes being healthy.

Mr. Victor Bonney said his view was that if a woman wanted seriously to have a child the aim should be to remove any structural defect which could be found, and that was one reason why he had not done tubal inflation except under an anæsthetic. If he found a tube was blocked, his practice was to open the abdomen at once. Sterility was commonly associated with retroflexion, and in many cases there was a blockage of the tubes. In some cases V-shaped kinks were found, and these could not in some cases be straightened out as a fine band united the two limbs of the V, and this had first to be divided.

Exhibition of Specimens: Endometrioma.

Mr. Beckwith Whitehouse (Birmingham) showed an endometrioma which had invaded the bladder of a single girl, aged 22, who had never menstruated. He said there was an element of doubt as to the ætiology of this class of tumour—i.e., as to whether endometriomata were due to regression of the menstrual discharge in the Fallopian tube, or whether they were grafts of endometrium upon the organ or peritoneum upon which they rested. This girl complained of intense pain in the pelvic region, particularly on the right side, at regular four-weekly periods, so severe as to compel a temporary cessation of work. She had never experienced menstruation in the ordinary sense. Examination showed she was virgo intacta, that the uterus was irregular in shape, and the appendix somewhat matted. At operation the uterine appendages were found to be surrounded by adhesions; the tumour was on the anterior wall of the uterus. On opening the tumour there was an escape of the typical tarry material seen in a blood-cyst of the ovary. He therefore opened the bladder, took away a portion of vesical mucous membrane, sutured the bladder, and performed total hysterectomy. The specimen showed a cystic lined cavity, containing this tarry material. The patient made a normal recovery and she was now well and free from pain.

Mr. Whitehouse also showed an intra-ligamentary endometrioma from a married woman aged 33. The patient had been married five years, and in the year previous to attending hospital had had three abortions. At the second abortion she had a retained polypus, and was curetted by the exhibitor, who thought he detected an intra-ligamentary fibroid on the right side. After the third abortion the patient consented to the removal of this fibroid. He found a tumour between the layers of the right broad ligament, and carried out subtotal hysterectomy. On opening the tumour after removal tarry material, as in the last case, exuded. He did not favour the view that these tumours were implantations of endometrium.

Malignant Endometrioma with Lung Metastases.

Dr. A. P. Thomson and Dr. F. W. M. Lamb showed a specimen of this description. The former said he was unable to trace a record of anything similar before. He saw the patient, a school teacher aged 27, in 1923, whose menstruation was normal and remained so until the end of her life. In 1923 she started a course of physical training to fit her for a post as games mistress, and after a particular swing race she became very blue and breathless. She returned home under the impression that her heart had been strained. She did her work with increasing difficulty, and in March, 1924, she was sent to Dr. Thomson. She said she had progressively lost weight, the total loss to date being 9 lb.; she also had great lassitude and became short of breath on exertion. There was but slight impairment of the percussion note over the right clavicle, and he heard some fine crepitant râles. There seemed a possibility that she had tuberculosis, and X rays showed a shadowing over the right upper lobe. He therefore sent the patient to Switzerland. When walking there with a medical friend the latter noticed that the patient's face appeared almost black against the snow. She was sent home, and Dr. Morley Fletcher, who saw her, found she had polycythæmia, the blood showing over 9 million reds. Following on repeated distress, Dr. Thomson saw her again in November last, and then the outstanding feature was an intense purplish-black cyanosis. While seated quietly in front of the fire the appearance of the face became almost normal, but the hands were very blue. In the chest there were now only a few fine crepitant râles at the apex of the left lower lobe. She then appeared to have gone to another physician, who told her to take more exercise, and, as a result of attempting to fulfil this instruction, she almost died in the street. A colleague was called and found her sitting in a chair much distressed, and there were crepitations over both lungs. A fortnight later she was seen by Dr. Stanley Barnes, and was still very cyanosed. Shortly afterwards she rallied and entered the hospital under Dr. Barnes. The red cells had then mounted to 12 million, and shortly after the number soared to 13¼ million. The dullness on the left side was found afterwards to be due to a left pleural effusion, the fluid being chylous. She continued more or less in this state for six weeks, much oxygen being used to combat the cyanosis, and the red cell count dropped to 6¼ million. But she had ascites due to the chylous fluid, and died soon after this started. No satisfactory cause for the illness was ever found. Post mortem a chylous effusion was found on the left side with complete collapse of the left lung. The heart and great vessels were normal. The right lung showed a curious emphysema, and in the abdomen, along the course of the aorta, there were enlarged glands. Apparently the chylous effusion in the abdomen and thorax resulted from direct pressure on the thoracic duct.

Dr. Lamb demonstrated the section of the growth in the recto-genital space, showing that it contained aberrant muscular tissue. No connexion could be found between the tumour and the other part of the pelvic organs. He preferred, for this tumour, the term adenomyoma, as its essential constituent was muscle. The lungs did not show a nodular metastasis, but were very friable, and looked like soft red rubber. A professor in Birmingham suggested that there might be some obstruction to aeration of the blood which did *not*, however, *obstruct* the vessels, and that seemed to be the case.

Reviews and Notices of Books.

The Normal Mind.

An Introduction to Mental Hygiene and the Hygiene of School Instruction. By William H. Burnham, Ph.D., Professor of Pedagogy and School Hygiene in Clark University; Member of the Joint Committee on Health Problems of the National Education Association and the American Medical Association. London and New York: D. Appleton and Co. Pp. 702. 16s.

Writers on the subject of mental hygiene and societies directed towards its promotion have been prone in the past to devote most of their attention to the subnormal and the abnormal. In this book, which is designed as an attempt to apply scientific knowledge towards the guidance of the development of mind, and particularly the mind of the school child, Dr. Burnham deliberately concentrates upon the normal, and only incidentally for purposes of illustration deals with departures from the normal, whether failures in development or temperamental inequalities of development. He starts with the fundamental proposition that the essential characteristic of the normal mind is integration of the personality, which implies adjustment to the environment. On the intellectual side of the mind he finds this integration expressing itself in the capacity for concentrated attention, the habit of orderly association; and on the temperamental side in the control of disordered instincts, the solving of mental conflicts, and the removal of harmful repressions. The means by which to attain integration is that of coördinated activity, physical and mental, in the doing of significant tasks. He promulgates three essential conditions of integration and therefore of mental health—the task, which may be anything from the immediate goal of the moment to the more remote ideals of life; the plan, which makes the work purposive; and freedom. These points are discussed with a wealth of detail. He devotes considerable space to the discussion of conditioned reflexes, not merely, however, from a theoretical point of view, but keeping always in view their practical significance in the formation of associations and habits.

Dr. Burnham lays much stress upon the necessity of discovering the superior mentalities and the special directions in which they are superior in order to constitute an ideal social group in which these superior abilities can be integrated for a common purpose. The chief application of intelligence tests in the broadest sense will, he considers, lie in the discovery of the superior individual and his superior talent. Two specially valuable chapters are that on the acquirement in school of right mental attitudes, suitable interests, and proper habits of study and thought, and that on suggestion. Freud's contributions to psychology are sanely applied, and placed in proper perspective. The book, while designed for educationists, is of value to anyone who desires to learn to think clearly and avoid the cultivation of bad mental habits. The medical man who is necessarily nowadays a psychologist will find it eminently practical. To the school doctor it should be of special interest. If the book has a fault, it is in a tendency to prolixity.

A Clinical Handbook of Mental Diseases.

For the use of Students and Medical Practitioners in India. By W. S. Jagoe Shaw, M.D. Belf., M.B., Ch.B., B.A.O., R.U.I., Lieut.-Colonel I.M.S., Superintendent, Central Hospital for Mental Diseases, Yeravda, Poona. Calcutta: Butterworth and Co. (India), Ltd. 1925. Pp. 202+29. Rs.3.

This interesting and instructive little book is eminently suitable for its purpose. Directed to the assistance of the student and practitioner in India, who no doubt must often be called upon to face the practical problems involved in the treatment of mental disorder, it provides in a comprehensive and compact form just the information he requires to enable him to envisage his difficulties and to see roughly on what lines he may solve them. Naturally, the subject is treated somewhat superficially and contentious matters are avoided, but the author has introduced all that is of practical importance and the book is in every way quite up to date. The appendices which deal with the practical methods of securing the proper accommodation for the treatment in India of both Europeans and Indians, civil and military, and of arranging for the transfer from India to England, are very important. It is in such matters that the patient is most liable to suffer from the lack of experience of the practitioner. The low price of the book should make it accessible to all who may be brought into contact with the mental patient.

Local Anæsthesia.

Die Örtliche Betäubung. Seventh edition. By Prof. Dr. Heinrich Braun. Leipzig: Johann Ambrosius Barth. 1925. Pp. 511. M.22.50.

The Technique of Local Anæsthesia. Third edition. By Arthur E. Hertzler, A.M., M.D. London: Henry Kimpton. 1925. Pp. 272. 25*s.*

The increasing interest which is taken in local anæsthesia is reflected in the two volumes before us. Both are new and enlarged editions of well-established works and they include many pages devoted to methods not even mentioned in former editions. Prof. Braun deals with the subject with the thoroughness familiar to students of his earlier editions and characteristic of the German mind. Commencing with the great aphorism of Hippocrates "Divinum est opus sedare dolorem" he traces the history of local anæsthesia from the earliest times down to the present day. From the use of compression by Patroklus at the siege of Troy he tells the story of the use of cold by Larréy in the Russian campaigns down to the superb injection methods of modern anæsthesia. It is strange that cocaine, discovered by Pizarro in 1572, should only in 1884 have been used by Kollers for the anæsthesia of the eye. In spite of its dangers cocaine remains pre-eminent as the most powerful anæsthetic we know, but Prof. Braun gives an exhaustive account of the many substitutes which chemical research has placed in our hands, and of which novocaine, until quite recently, has been the most successful.

The surgical methods of anæsthesia are described by Prof. Braun with great elaboration and with a completeness of technical detail which will appeal to all who practise their use. The instruments required are exactly described and beautifully illustrated, and on every page will be found hints invaluable to the practical surgeon. The application of local anæsthesia to the various regions of the body are fully described and superbly illustrated, and include a full discussion of such up-to-date methods as sacral and splanchnic anæsthesia. The volume is replete with original ideas, and the method of anæsthetising the palm from the back of the hand is a surgical manœuvre so neat as to repay the cost of the book. From the illustrations a surgeon, even without a knowledge of German, may learn a vast amount about technique. The book concludes with a list of 2000 references, obviously selected with great care. To the student of German psychology two small points will be of interest. From the text no fewer than 4000 foreign words have been expurgated and the title of the book has been changed from "Lokal-Anästhesie."

Dr. Hertzler's volume makes no pretension to encyclopædic compass, but succeeds in giving a sufficiently full account of the methods of the art. The book is well printed and illustrated, and those who wish for practical information without great elaboration will find it ample for their purpose. There can be no question that local anæsthesia has a great future before it, and surgeons will be grateful to the authors of these two volumes for their assistance in one of the most beautiful of the surgical arts.

Anatomy.

Buchanan's Manual of Anatomy, including Embryology. Fifth edition. Edited by E. Barclay-Smith, M.D., King's College, London; J. E. Frazer, F.R.C.S., St. Mary's Hospital; F. G. Parsons, F.R.C.S., St. Thomas's Hospital; and W. Wright, F.R.C.S., London Hospital. London: Baillière, Tindall and Cox. 1925. With 810 illustrations, mostly original and in colours. Pp. 1702. 35*s.*

The last edition of this popular manual, which appeared six years ago, was produced under the editorship of a committee of anatomists in London, but as it was largely in the nature of a reprint their efforts were subject to considerable restrictions. In the present instance they have had a freer hand, and have revised and in some cases extensively rewritten the text, while adhering in the main to the general arrangement. This is particularly noticeable in the sections dealing with the limbs. Many new and good illustrations have been added. As hitherto, the book deals with anatomy from the regional standpoint, and for this reason is eminently suitable for general reading. The old terminology is adhered to. An excellent index facilitates use as a book of reference.

As regards embryology, the work includes what is practically a new manual on the subject. There is a chapter on general embryology at the beginning of the book, and the more detailed development of the various organs is described under the several headings. The descriptions are sufficiently long to fulfil their purpose and sufficiently short to invite reading, and we feel sure that the student will welcome this section, requiring as he does authoritative, concise, and up-to-date information on this, to him, nebulous branch of anatomy. The practical guide to dissection omitted from the present volume is to be published independently.

We can confidently recommend the new "Buchanan."

Case-taking.

Notes on Medical Case-taking and the Examination of Patients. By G. S. Haynes, M.D., M.R.C.P., Assistant Physician, Addenbrooke's Hospital. Cambridge: W. Heffer and Sons, Ltd. 1925. Pp. 57. 3*s.*

This is a handbook for the use of students in their examination of clinical cases, of a size easily carried in the pocket, interleaved with blank pages for notes. The main systems are set out in reasonable detail, without cumbersome minutiæ, the circulatory system having more space devoted to it than the alimentary, respiratory, and nervous. Curiously enough, the hæmopoietic system has been omitted altogether, while under the nervous system there is no mention of the examination of the pupils. The author has noted the significance of important signs in order to make the manual more lucid to the student. A typical case record is included.

Handbooks of this type are of assistance to the student in forming habits of systematic observation of cases, and this is a good example of the type.

Practical Ophthalmology.

Causeries d'Ophtalmologie Pratique. By Dr. A. Cantonnet, Ophthalmologist to the Paris Hospitals. Paris: A. Maloine et Fils. Pp. 325. Fr.16.

This little book, a welcome variety from more formal text-books, contains much useful information, and is sufficiently stamped with the individuality of the author to make it interesting to the advanced student. It is before all things practical, and begins characteristically with a description of how best to examine the eyes of a photophobic child. It is by no means limited to the elements of the subject, however, and we very soon come to a section on examination with the red-free light and another on testing the sight of the aviator. Details of refraction and operative treatment are not dealt with, but the chapters on symptoms and diagnosis contain matter of interest to every surgeon. It is pointed out, for example, that in recent cases of syphilis with headache there may be hypertension of the cerebro-spinal fluid from subacute or chronic serous meningitis, and this may be the cause of choked disc. Another possible cause not generally recognised is traumatism of the skull. In any case of choked disc temporary obscuration of vision should be regarded as a danger-signal calling for serious consideration of an operation for decompression. In some cases of ophthalmia neonatorum no gonococci can be discovered, and it is probable that these cases are caused not by microbes at all but by non-microbic structures which have been found in the conjunctival epithelium of the infant, as well as in the *vagina* of the *mother* and the urethra of the father. One cause of those cases of muscular paralysis often ascribed to cold is arterio-sclerosis.

These are samples of the subjects of these lectures, and although the opinions of the author are not invariably orthodox, they are always worthy of consideration. The author has an original mind. In connexion with binocular vision he invented the well-known experiment of the "hole in the hand." In this book there are diagrams which we do not remember to have seen elsewhere, showing the different effects of salt solutions of different concentrations on the cornea. Even in such a subject as the non-operative treatment of glaucoma, a method of administering pilocarpine drops is described which seems well worthy of trial

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Experiments in Genetics.

By C. C. Hurst. Cambridge University Press. 1925. With 175 figures. Pp. 578. 50s.

This handsome quarto contains the record of 30 years of active work in breeding animals and plants. It consists of reprints of 38 papers and addresses. The first, published in 1897, deals with the curious generic hybrids which can be made in orchids; the last (1925) is an analysis of the chromosome constitution of the species of Rosa throughout the northern hemisphere which ends with a promise of a great deal more on the same subject. The wide field which Dr. Hurst has covered at Burbage in Leicestershire includes also the coat colour of rabbits, fowls and their fecundity, horse-breeding, snapdragons, human eye colour, and other subsidiary subjects of genetical inquiry. The whole forms a record of which anyone might be proud, and it covers a moving period in the history of inheritance, because the early observations were made in pre-mendelian days and the latest in the light of the most modern cytological refinements. It constitutes in this way a sort of running commentary on the progress of the science of genetics, and it is for the most part easily intelligible to those who are not very familiar with the advanced nomenclature of mendelism. We could have wished for one improvement—that the author had made rather more ample commentary on his earlier results in the light of what has transpired since. His notes are few and brief.

Treatment.

A Text-book of Practical Therapeutics. Nineteenth edition. By Hobart Amory Hare, M.D., Professor of Therapeutics, Materia Medica, and Diagnosis in the Jefferson Medical College of Philadelphia. London: Henry Kimpton. 1925. Pp. 1061. 30s.

A new edition of this book follows quickly on the last; a successful book in medicine and its branches has to come out often, for medicine is changing rapidly. The use of insulin, the internal application of iodine in exophthalmic goitre, the development of the Schick test, variation in drugs used in syphilis, all mark steps of advance. As in previous editions this book, which is really an index of treatment, consists of four parts, all alphabetically arranged—namely, general considerations, drugs, remedial measures other than drugs, diseases. Information may thus be reached from different sides either under the disease or under the remedy; cross references and indexes are full and good, so that everything is easily found. The reader will like the book better the more closely he studies it; it is full of information and eminently readable.

Ghosh's Treatise on Materia Medica and Therapeutics. Tenth edition. By Birendra Nath Ghosh, Examiner in Pharmacology, University of Calcutta. Calcutta: Hilton and Co. 1925. Pp. 718. 10*s.* 0*d.*

This edition of Rakhaldas Ghosh's book has been undertaken by B. N. Ghosh alone, as Major-General B. H. Deare has retired. It has now passed through five hands in its ten editions. The present edition does not differ much from the ninth in general form, but several drugs on which recent work has been done have been written up afresh. Some of these, as antimony in leishmaniasis and carbon tetrachloride, are of especial interest to the Indian student. The book is a good, if somewhat heavy, summary of pharmacology and therapeutics culled from the best sources. The editor acknowledges that he has availed himself of the work of Cushny, Clark, Dixon, and Sollmann, than whom there are no better exponents of pharmacology.

Text-book of Meat Hygiene.

By Richard Edelmann, Ph.D., Professor at the Royal Veterinary High School, Dresden. Fifth revised edition by John R. Mohler, A.M., V.M.D., Chief, United States Bureau of Animal Industry; and Adolph Eichhorn, D.V.S., Director, Veterinary Department, Lederle Antitoxin Laboratories. With 161 illustrations and 5 coloured plates. London: J. and A. Churchill. 1925. Pp. 478. 25s.

This text-book has now passed through five editions and would seem, therefore, to be established as a standard work upon the subject. The book may be considered from two points of view—i.e., as a source of scientific information upon animal diseases, and as a practical guide to meat inspection. Its chief value lies in the information given on the anatomy and physiology of the normal animal and on the most important diseases which may affect animals used for human food. There is a detailed account of the distribution of the lymph glands in animals, the peculiarities of meat from different animals is discussed, and the various bacterial diseases and animal parasites are described in detail. The bacteriological examination of meat as a help to diagnosis is too briefly touched upon to give substantial help. The account of putrefactive change on its bacteriological and chemical side is inadequate, and Eber's ammonia test for putrefaction is still described and illustrated, although it is generally recognised as useless, whilst more modern tests are not even mentioned. Chapter XI., which deals with meat poisonings, is the kind of article which was written on the subject a dozen or a score of years ago. It ignores most of the modern work on the subject, and no one reading it would obtain an accurate account of our present knowledge of meat and food poisoning. It is true ptomaines are not brought forward in this connexion, but decomposition changes and poisoning from *B. coli*, proteus species, &c., are mentioned as important causes of meat poisoning. The section on botulism still gives sausages as the most important causes, while all the recent American work on this bacillus and its relationship to canned foods and to animal diseases is ignored. The account of van Ermengem is accepted as the latest and final information upon the subject.

From the administrative point of view the book is of little service to English meat inspectors. Chapter IV. gives an extended account of the regulations governing the meat inspection of the United States Department of Agriculture which is of interest but is not applicable to English conditions. The judgment sections all deal with American practice. The chapter on abattoirs deals solely with Continental and American conditions and is not of much help as regards the slaughter-houses which prevail in this country. A handbook which at the same time provides a scientific and up-to-date account of the physiological appearances and pathological conditions which occur in animals used for food, which is a reliable guide to their detection and also gives simple accurate information as to the judgment which should be exercised in their condemnation or passing for human food is much needed. While Dr. Edelmann's book contains a vast amount of valuable information it cannot be advocated as a satisfactory practical text-book for the meat inspector in this country.

CONSTITUTIONAL DISPOSITION.

Die Konstitutionelle Disposition zu Innere Krankheiten. Third edition. By Dr. JULIUS BAUER. Berlin: Julius Springer. Pp. 794. $9.60.

A BOOK of 800 large octavo pages, published in so unfavourable a year as 1917, which has reached a third edition, must obviously be meeting a demand, and undoubtedly such a work as this of Dr. Julius Bauer needed to be written. Of recent years the attention of medical workers has been mainly directed to the agents which, entering the body from without, give rise to disease, and to the mechanisms by which the tissues protect themselves with greater or less success; whereas the inherent qualities of his tissues, which render an individual more or less liable than his fellows to this or that malady, have received much less attention. Diathesis which figured so largely in the medicine of our grandfathers is a word seldom heard nowadays, and we are in danger of forgetting that not all of pathology can be studied in the laboratory.

It is time that we should turn our thoughts back again to the study of constitutional tendencies and of the outward signs by which, in some instances, special liabilities may be recognised. Such a study needs to be based upon the knowledge now available of heredity, idiosyncrasy, protein, sensitivity, balance of hormones, and individual and specific chemical peculiarities. It has been the self-imposed task, and certainly no light one, of Dr. Bauer to bring together such information upon these subjects as bears upon disposition to diseases of various kinds. Whilst he admits the truth, at the time when it was pronounced, of the dictum of Germain Say, "La disposition est un mot pour masquer notre ignorance," he holds that the time has come when it is possible to define the share of constitutional tendencies in the pathogenesis of individual maladies.

The amount of information collected between the covers of this book is immense, and he who seeks to obtain knowledge of any special deviation from the standard of which we speak as the "normal" will seldom be disappointed, whether such deviation be one often met with or one which is extremely rare. The earlier chapters, which occupy rather more than 100 pages, treat of the subject of constitutional predisposition in its general aspects. The views of various writers, and the nomenclatures which they adopt, are described and discussed. Signs of degeneracy, structural and functional abnormalities, and such anomalies as persistent infantilism and premature senility, are considered. In a full and interesting chapter the liability of some individuals to, or natural immunity from, particular infective diseases receive due attention. The later chapters deal with the several systems and organs in turn; with the anomalies met with of their form and position, individual variations of their functional capacities, and the bearing of all these factors upon the liability of the patient to be attacked by various maladies, and of particular organs to bear the brunt of the attack.

Obviously the whole subject is very complex, and there is little in common between such factors as shape of thorax and lungs as a predisposing cause of pulmonary tuberculosis and a sensitivity to certain proteins which predisposes to asthma. Thus, under the heading "kidney," to take a single example, we find sections which treat of malpositions and malformations of those organs, of obstruction of urine due to structural anomalies, and of congenital cystic kidney. Amongst functional anomalies are included the so-called renal glycosuria and the several varieties of functional albuminuria. Special liabilities, usually hereditary, to nephritis and granular kidney also receive consideration, as also do ischuria and polyuria, the tendency to form calculi, and liability to urinary disorders of nervous origin. Clearly when treating a theme so vast individual items must often receive but brief consideration; for the benefit of those who desire to look further into particular items an ample bibliography is provided, which covers no less than 140 pages; and there is an adequate index.

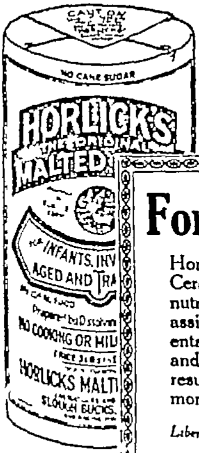
INCOMPATIBILITIES IN PRESCRIPTIONS

Fifth edition. By EDSELL A. RUDDIMAN, Ph.M., M.D. London: Chapman and Hall, Ltd.; New York: John Wiley and Sons. 1925. Pp. 330. 12*s.* 6*d.*

THE first hundred pages of this book present the common incompatibilities in concise form, the substances treated being arranged in the alphabetical order of their Latin names. This section should be of real value to the busy prescriber. The next section (of about 50 pages) is intended more for the student of pharmacy; it contains a list of 480 prescriptions as an exercise, so that he may study them and find out for himself where the fault is to be found in each one, and the best means of avoiding it. Then follows another long section containing clear and detailed criticism of these prescriptions by means of which the student may check such conclusions as he may have been able to draw. The last section contains a useful table showing the effect of rubbing together equal weights of two solids, and a series of tables showing the solubilities of all the commoner drugs in water, alcohol, ether, chloroform, and glycerine, together with a column showing the solubility of some of the drugs in miscellaneous solvents. A serious blemish in this table of solubilities is the absence of any explicit statement as to the meaning of the figures, the reader being left to deduce the fact that they refer to parts of solvent to one part of dissolved substance. No temperature is indicated; presumably that vague idea, "room temperature," is implied.

The book concludes with two good indexes: one of incompatibilities, the other of prescriptions. It is well printed, and should be a useful desk companion to prescribers and students in this country. It could, we think, be improved by the inclusion of a short introductory section dealing with the general principles of incompatibility.

MR. Henry Kimpton is the English publisher of C. E. Turner's "Personal and Community Health," reviewed on p. 702 of our last issue. The price is 12*s.* 6*d.*



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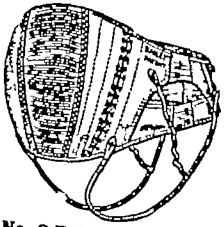

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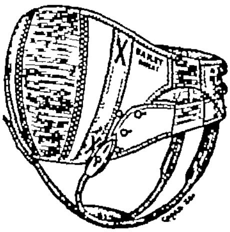

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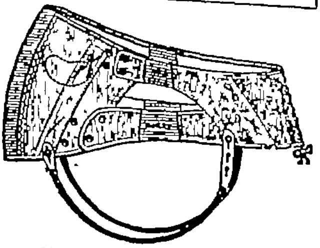

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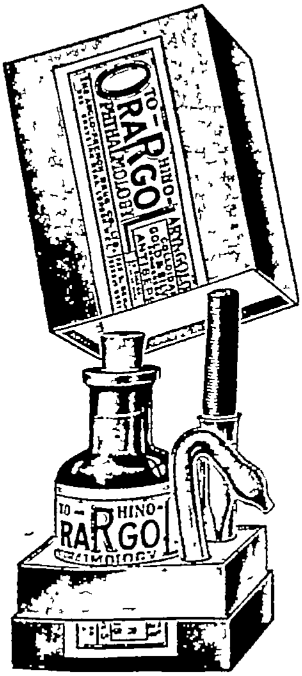

THE LANCET.

LONDON: SATURDAY, OCTOBER 10, 1925.

POST-GRADUATE EDUCATION.

IN a foreword to the first number of the *Post-Graduate Medical Journal* Sir WILLIAM HALE-WHITE compares the newly qualified doctor to a mariner setting out on a voyage over changing seas. For a time he is well served by the charts which his teachers have given him, but as he finds that the best of charts provided by others cannot meet the developments or emergencies with which he is confronted, he begins, consciously or unconsciously, to make charts for himself. And as the years pass he finds that he requires help in dealing with the new currents; truer soundings have made old observations obsolete, while fresh waters are opened which were uncharted in his pupillage. To provide opportunities for such revision is to raise the standard of medical work, and to meet this need alone justifies the establishment of post-graduate education in this country. The great mass of medical practice must be carried on by individuals largely upon their own responsibility, and it is a function very appropriately performed by the great London hospitals when they offer to their qualified men fresh inspiration in aims, methods, and ideals.

That such an offer evokes an enthusiastic response is shown by the success of the course of lectures given during last week-end at St. Mary's Hospital; an account of the proceedings will be found in another column, and similar developments in this direction at other centres are inevitable. The constituency to be assisted is ready to the hand, and on one side the material from which to draw the necessary teaching is present in superabundance. But while—if the simile is not being too much laboured—the general mariners may be expected to increase in number, and while the object-lessons are aggregated in miserable wealth in the metropolis, we are apt to forget that the pilots are in a most difficult position. Just as to get an accurate knowledge of special seas, and to train for an extra-master's certificate is not easy, except as the result of long preparation, so special teaching in medicine is not a fortuitous accomplishment. Further, many who possess the necessary qualities and gifts may not be available for their distribution; and the arrangements for the work are in London ill-organised because of the vast size of the metropolis, and, at bottom, because of the absence of a great clinical centre. The sound work of the Fellowship of Medicine can be estimated now that that body is issuing regularly a journal, which will be published monthly under the editorship of Dr. ADOLPHE ABRAHAMS. For many years the Fellowship has done its best to remedy the defaults in London for post-graduate education, and has placed at the disposal of graduates a fine assortment of sound teaching, for English teachers are as good and as enthusiastic, given the appropriate milieu, as any European professors. But our great hospitals have a routine for the training of their undergraduate students which assorts ill with post-graduate lecturing and demonstration, and all the experience of those who have thought long and worked hard at the subject points to the institution of a great clinical centre. Meantime the Fellowship of Medicine will continue its useful ministrations. As we are reminded in its new organ, the Minister of Health has appointed a committee, with this reference: To draw up a practicable scheme of post-graduate medical education centred in London. The Committee is strongly constituted and has the situation left by the Athlone Committee in May, 1921, to deal with. The Athlone Committee recommended that a school attached to a hospital centrally situated in London should be devoted solely to post-graduate medical education, a school of the University of London being suggested. A meeting was summoned early in this year by the Fellowship of Medicine, at which free expression of opinion on the existing arrangements for post-graduate teaching was invited, when representatives of the Military and Naval Services expressed satisfaction with the arrangements made for their medical officers; but the conditions in the Services are special, and too much stress must not be laid upon success along this line, gratifying though it is.

A second foreword to the *Post-Graduate Medical Journal* is supplied by Sir BERKELEY MOYNIHAN, who deplores the readiness with which the practitioner—only too naturally—is content to practise on the medicine learned in student days, not realising the joy of dwelling in a land of advancing frontiers. He urges the necessity for practitioners, despite the over busy day to which he pays tribute, to find short periods for reading, as well as leisure to attend meetings of a medical society and the instructions of a post-graduate class, adding with regard to the last the wise comment that discussion and controversy are of the very spirit of scholarship and that comradeship with those who labour transforms competitors into colleagues. The great thing on which all are agreed, then, is that there should be opportunities for practitioners to keep abreast of recent knowledge by contact with those who have the ability and the willingness to teach. And in order to meet this great need of "keeping in touch" the inevitable conclusion is reached that in London, and, indeed, in other large cities, there should be a medical school for post-graduate workers. As far as London is concerned, the cost of providing such a centre, with lecture halls, laboratories, and perhaps a hostel where post-graduates could lodge, has caused the scheme perpetually to be set aside, but it is becoming more and more obvious that only by the foundation of a real post-graduate institute can London take up its right place as the centre of medical teaching not only for the metropolis but for the Empire, attracting also the keenest minds among foreigners. The ideal should be ever present.

THE SOCIAL HYGIENE CONGRESS.

SOON after the outbreak of war in 1914 the Eugenics Education Society addressed a request to the Royal Medical Colleges to support a movement for national education on the subject of venereal diseases. The time was opportune; the Royal Commission on Venereal Disease had just brought in a report making clear for the first time the great prevalence of venereal disease and the inadequacy of the provision for its treatment, especially in London. The segregation in camps of large numbers of sexually active men made immediate action desirable, and a National Council was formed, which held its inaugural meeting on Nov. 11th, 1914, when the aims and objects, as set out, may be summed up as follows:—

To provide public information and medical education, to organise early treatment, and to promote legislative reforms. A strong executive committee was constituted with Dr. Douglas White and Mrs. Gotto as honorary secretaries.

Eleven momentous years have elapsed since this beginning was made, and this week we report the second Imperial Social Hygiene Congress which is the culmination of the work of the National Council. It is difficult for those without long memories to picture the change of fact and heart which have occurred during those 11 years. It was not an impossible thing at that time for a medical student in his clinical years not to know the meaning of venereal disease. The Secretary of State for the Colonies reminded the Congress that in 1911 he found it all but impossible to get a single Member of Parliament to say a word on the subject of venereal disease, and the conspiracy of silence continued almost unbroken until the National Council began its work. Facilities for treatment would be idle unless the public knew what venereal disease is and where these facilities were to be obtained, but enlightenment has been so complete that during the year 1924 over 1,500,000 attendances were made at treatment centres in England and 81,806 attendances in Wales. During little more than a decade the treatment of venereal disease, previously limited to a tiny group of "lock" hospitals and the casual care of general out-patient clinics, was replaced by expert treatment under conditions of entire confidence and secrecy at 184 centres in England and 10 centres in Wales. At several centres in London continuous out-patient venereal clinics are held daily, and a similar centre for women only was recently opened at the Royal Free Hospital; auxiliary clinics for the treatment of mothers and infants are under consideration at the present time in Wales. The effect of all this on the incidence of disease is now beginning to make itself felt, for comparing 1924 with 1920 the number of new cases of syphilis has fallen by nearly 50 per cent., and new cases of gonorrhœa by 23 per cent. Legislative action in this country has not taken any stringent forms. The Venereal Diseases Act, passed in 1917, was little in advance of the public opinion of the day or of the habits of the people, and the only subsequent legislative Act in this country has been the useful little measure providing gratuitous treatment for the mariner at various ports of call. During this time, however, some of the self-governing Dominions have passed legislation making notification a statutory duty on the medical practitioner and even enjoining patients themselves to report within a specified time in face of severe penalty. These measures, as Mr. C. M. Kohan pointed out at the Congress, have, as yet, proved little more than pious aspirations. Queensland, the pioneer of compulsory measures, continues satisfied with their administrative aspect, while regretting the unwillingness of its medical men to fall in completely with the obligation laid upon them. In this country we have remained content with the secrecy of the clinics, hoping thereby to secure the efficient treatment of many who otherwise would be unwilling to attend. Unfortunately, in the last recorded year 40 per cent. of the total cases ceased to attend before treatment was complete, although many of them are believed to have been rendered non-infective before ceasing their attendance. More successful following-up measures have been instituted in certain places, especially Edinburgh.

While all this registers tremendous progress, on which it is well to insist afresh, the situation with regard to the volume of venereal disease is one which must continue to command the attention of the British Social Hygiene Council for many years ahead. Present incidence of congenital syphilis is described by Colonel L. W. Harrison as a reproach, when the disease is a horror which can be completely prevented. The returns for 1924 showed 2532 cases of venereal disease in England under the age of 7 years, 1826 of these being congenital syphilis, the balance largely being those who acquired venereal disease apart from sexual misconduct. In the Navy, for the latest year in which complete figures are yet available, there were, for every 1000 men 113 entries for venereal disease during that year, and the average daily number of sick men was 892. In spite of a recent decline the rate of venereal disease in the Army in 1922 was still 25·9 per 1000, and Major E. C. Lambkin felt it incumbent upon him to assure the Congress that the Army did not condone or encourage sexual irregularity. As a matter of fact 20 per cent. of soldiers became infected while absent on leave; and special difficulties are contended with abroad, particularly in Turkey and on the Rhine—for in Cologne alone there are reputed to be 6000 prostitutes. Similarly, the risk of China and Cape Town to the sailor is very imminent. These figures are sufficiently alarming and indicate that the problems, especially abroad, are not by any means within sight of solution. Ignorance, indifference, and fatalism in the colonies take the place of the despairing public outlook and the deliberate concealment which constitute the chief difficulties at home. Mr. Amery indicated the existence of a Committee of Civil Research, corresponding on the civil side to the Committee of Imperial Defence, which was concerned for the security of national life. The Congress provided opportunity for exchange of information in regard to venereal disease over a very wide area, which may well be considered by this Committee. In Fiji, Dr. P. T. Harper expects syphilis to appear amongst the Fijians in proportion as the ritual inoculation with yaws declines. In Nyasaland, where the problem seems to be primarily political, Dr. G. M. Sanderson aims at training up a native medical profession to spread enlightenment in the villages. In Palestine Dr. J. W. Harkness regards the mild endemic syphilis of the rural population as the result of social rather than sexual intercourse. Amongst such people education must be by word of mouth and is a slow and laborious process; pictorial illustration is hard to devise; to the unimaginative native an enlarged culex on the screen may be indistinguishable from a camel. In India, where Sir Leonard Rogers regards early marriage as a safeguard, and where the Central Provinces are still relatively free from disease, Major-General A. Hooton can see little prospect of progress until more efficient instruction is offered at the medical colleges and schools. A moving picture was drawn by Dr. Kathleen Vaughan of venereal disease in Kashmir, where there is no teaching of any kind on the subject for boys and girls except that given in the few mission schools. The British Social Hygiene Council has in prospect a campaign of social service which will embrace the education in hygienic living, a serious attempt to prevent disease by improving environment, and a review of all aspects of the problem in the Empire.

THE MEDICAL ASPECT OF INDUSTRY.

In his presidential address to the Brighton and Sussex Medico-Chirurgical Society on Oct. 1st Mr. H. J. Walker dealt with the work of the factory surgeon as an important branch of preventive medicine, and one likely to receive attention in the present Parliament. After reviewing industrial conditions in the early nineteenth century and the revolution already brought about by factory legislation, he commented on the fact that even in the present year 37 cases of lead poisoning and six of anthrax were reported to the Home Office, in addition to seven other cases of lead poisoning amongst house painters and plumbers, and he went on to remark on the possibility of eliminating altogether industrial injury from such things as lead, mercury, arsenic, phosphorus, or anthrax. Turning to the larger aspect of industrial problems, Mr. Walker quoted with approval the statement that industrial medicine, if properly applied, might effect a saving of many millions a year in sickness benefit. At present it is only in a few dangerous trades that medical inspection is compulsory. Little objection, he thought, would be taken by the workman to medical examination, provided he thoroughly understood it was for his own benefit. Men continued to work, when unfit to do so, day after day for fear of losing their employment, and there was no doubt that they lost more than they gained in the long run. "Some time back," said Mr. Walker, "I was called to see a man who was found dead in a railway carriage. He was employed in the building line and had been seen running to catch his early morning train. On post-mortem I found a large calculus in one of the valves of his heart. I was informed by his wife that the man had not consulted a doctor for many years and had never complained of any trouble. In another case a man knocked his shin whilst at his work and sought no medical advice until he was *incapacitated* from work, when on examination the leg was found to be acutely septic. Osteitis of the tibia had developed, necessitating an operation with a prolonged stay in hospital, and a final appeal to the law courts for compensation." He often saw cases of dermatitis and eczematous ulceration of hands and forearms caused by irritation from flour, sugar, mercury, fur preparations or various solutions used in factories. When these cases came for disablement certificates, in order to obtain compensation, the disease in most cases was far advanced, the man having continued his employment until the irritation and annoyance had become almost *unendurable*. The Factory Bill now before Parliament suggests that young persons up to the age of 18 should be medically examined before starting work. After that age they are supposed to be capable of looking after themselves. Of this, Mr. Walker is very doubtful. "Under the present economical system," he said, "the exigencies of work prevent proper attention being given to health. I would suggest that in all factories and workshops young persons, up to the age of 18, should be examined every six months, a health register being kept with full particulars of the work. If not suitable, and the employer and the employee wish to continue with the same work, the latter should be examined again in six months. If the work is then found to be deleterious to the employee's health, the medical attendant should have power to suspend him from that work. All employees should be compelled to seek medical advice for all injuries and diseases of more than a week's duration, and should not be allowed to return to work without a medical certificate of fitness. Examinations should be compulsory every six months in trades which have a tendency to undermine the employee's health." Mr. Walker admits that there must be individual hardships, but contends that the gain to the community at large would far exceed any hardship to the individual. The expense incurred would be compensated for by filling factories and workshops with healthy and willing workers. More unrest, Mr. Walker thinks, is caused in the industrial world by poor health and uncongenial surroundings than from low wages and all other reasons combined.

BRITISH DENTAL HOSPITAL.—The annual general meeting will be held at the rooms of the British Dental Association, 23, Russell-square, London, W.C., on Thursday, Oct. 15th, at 8 P.M., when Dr. James Wheatley, county medical officer of health and school medical officer, Salop, will give an address on Dental Propaganda. Sir Harry Baldwin, the President, will preside.

Annotations.

"Ne quid nimis."

THE CARE OF THE PRIMIGRAVIDA.

A CORRESPONDENT has suggested that it should be made obligatory for every woman in her first labour to be attended by a registered medical practitioner. The question is important and difficult to answer off-hand. Undoubtedly, at the present time certified midwives conduct a large proportion of first labours without medical assistance, for the most part with complete success. Our correspondent maintains, however, that the first labour is liable to certain complications, which require the wider knowledge and greater skill of the qualified practitioner to recognise and deal with them in time to prevent undesirable results. The practice of the metropolitan hospitals indicates to a certain extent the attitude of the best obstetrical authorities. If they do not recognise any necessity for distinguishing between the primipara and the multipara, it is probable that the present safeguards that surround the practice of midwifery are adequate. The district maternity work of a London hospital is conducted by medical students, from whom different hospitals demand a different standard of qualification. We have inquired of several London hospitals what these standards are. One demands an attendance at five cases before the student conducts an outside confinement; one, under a new regulation, exacts a month's experience; while all others which have a lying-in ward demand a certain amount of inside training. In all except one hospital a qualified obstetrician accompanies the student on his first one or two district cases. A medical student who has completed his clerkship and dressership should have a wider outlook than the midwife, but his brief experience of the labour ward will not make him her equal in her own specialty of obstetrics. If, therefore, the student is considered sufficiently qualified after this training to attend all classes of confinements, it would appear that a midwife who has taken her C.M.B. diploma can quite well be trusted with first labours under the existing legal safeguards. It is interesting to note that none of the hospitals who have favoured us with their opinions make any distinction in practice between primiparæ and others. Nearly all these hospitals, however, attach great importance to the work of the antenatal clinics that they maintain. All women who desire to be attended from the hospital for their confinement are seen at the antenatal clinic early in their pregnancy for a thorough examination, and are examined again towards the end of their time, so that any abnormality that might interfere with labour can be properly treated and its evil results anticipated. Unfortunately, however, only a very small number, comparatively, of expectant mothers in the country come under antenatal examination, and the distinction between primiparæ and others, which London hospitals disregard, may have to be considered among women who undergo their confinements in their own homes. But antenatal work at welfare clinics is slowly but surely making itself felt. A report,[1] which has just reached us, is based on replies received from 500 out of the 641 antenatal centres so far established. These indicate that vigorous work is being carried on in the great majority of areas covered. In 61 per cent. of the centres the medical officer in charge of the clinic has the status or the experience of an obstetric specialist, while most of the remaining 30 per cent. are, or have been, in general practice with large numbers of midwifery cases. An interesting point raised was as to the practice at the various centres with regard to vaginal examination. In only 18 per cent. of clinics was this examination made as a routine procedure, 60 per cent. making it only where considered advisable. This group may increase as experience in antenatal work grows. In the light of available evidence we hardly think that alteration in the existing law would be justified.

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[1] Report into the Work of Existing Antenatal Centres, being an Inquiry based upon a Questionnaire sent out by the Association of Infant Welfare and Maternity Centres (117, Piccadilly, London, W. 1s.).

SOME LITERARY DEATH-BEDS.

STRESS of life counts high in the literary world to-day. Nevertheless litterateurs of the nineteenth century died, as a rule, at an earlier age than they do now, and they seem to have died of curious ailments. This is apparent from the perusal of Mr. Stewart Ellis's "Mainly Victorian," a collection of essays and biographical notices recently published. The author deals with 30 or more distinguished authors and others connected with English literature whose busy, but often not exceptional, lives ended prematurely during the nineteenth century. Charles Lamb, with some of whose hitherto unpublished letters the volume opens, died, if not at too early an age, then at least out of due season. At the age of 60 he stumbled and slightly injured his face. This brought on erysipelas, which proved fatal. Latterly he had been a hard drinker, but his life had been one of steady indoor work with no particular excitement or excess. Ann Radcliffe, a popular writer of terrifying stories, died at the age of 59, the cause of death not being stated, though her state at the last was one of extreme weakness, and her last words were the comfortable phrase, "There is some substance in that," in allusion to some nourishment administered to her at midnight. Richard Harris Barham, a convivial Church dignitary, author of the famous "Ingoldsby Legends," died prematurely. In 1844 a severe chill brought on violent inflammation of the throat, from which he continually rallied only to become weaker. He was moved restlessly from place to place in search of health, and his old bizarre humour flashed forth for the last time with the remark, as he was carried into his London house, "that he was indeed at Amen Corner." Mr. Ellis then describes the death-bed scene, "when a man of but 56 years of age, and with his brilliant mental powers at their zenith, calmly faced with the bravest fortitude the most appalling experience of humanity." Sorrow at the loss of children and friends may have contributed to early collapse in the sensitive merry writer, but that is not enough to account for a typical nineteenth century death, at once premature and caused by seemingly remediable conditions. Captain Marryat died of cerebral hæmorrhage at the age of 56 in 1847. He also was carried about from place to place in search of a better climate, as though that would assist him. At the last he was kept alive on lemonade, dying in stupor. He had been an intrepid and hard-working naval commander, one who consistently burnt the candle at both ends. He wrote against time, and neglected an old tendency to rupture of blood-vessels. His feverish literary career gives the lie to the assumed placidity and uneventfulness of the 'forties and 'fifties. Thackeray died at the age of 52, after foreseeing his end for a long time. Surtees, the creator of "Jorrocks," died of angina pectoris at the age of 61. He had apparently had no warning of this. Whyte Melville was killed in the hunting field at the age of 57, and he does not therefore come within our purview, but Frank Smedley, author of "Frank Fairleigh" and other stirring romances, was a typical invalid author, who made up to himself for his limitations in the matter of health by the vividness of the adventures he described. In this he resembled R. L. Stevenson, the consumptive creator of "Treasure Island." Smedley was laid up from early youth by an affection of a paralytic nature, which gradually deprived him of the use of his legs and brought on what was then diagnosed as "irritation of the brain." He wrote against his doctor's orders, overworked, and died at the age of 45, passing at the last through a series of epileptic fits. G. P. R. James died a complete wreck, mental and physical, at the age of 59. At the same age died Sheridan Le Fanu. The death of Charles Dickens was self-induced, for he insisted on giving his recitations long after he had been warned against every kind of activity. His medical attendant and friend, Carr Beard, could only sit by and report on the degrees of excitement reached by the ultra-dramatic reciter.

TREATMENT OF INTERSTITIAL KERATITIS.

UP till now there are few ophthalmologists who have displayed any enthusiasm for the treatment of *interstial keratitis by salvarsan or its allied compounds.* According to most of the prevailing authorities, anti-syphilitic treatment has very little effect. "Unfortunately," says Fuchs, "we must say that in many cases, parenchymatous keratitis, even under the most careful treatment, runs a course that is not essentially different from what would have been the case without any treatment at all." Foster Moore records his conviction that neither mercury nor any of the salvarsan compounds will prevent the onset of interstitial keratitis or the other eye symptoms of congenital syphilis; it is hardly to be expected, then, he says, that they will bring about a cure when the disease is established.[1] On the other hand, de Schweinitz believes that treatment by the salvarsan compounds is most valuable. "Although it does not materially hasten the absorption of the corneal deposits it definitely shortens the duration of the disease."[2] This more hopeful opinion has recently received support from Mr. R. Lindsay Rea, who claims that the end-results of cases treated with injections of novarsenobillon are very decidedly better than if not so treated.[3]

A systematic investigation of the question has been undertaken by Dr. Maud Carvill and Dr. George S. Derby at the Massachusetts Eye and Ear Infirmary.[4] Previous to 1910 the general treatment of interstitial keratitis was carried out at this institution in a more or less desultory fashion. Since 1910 anti-syphilitic treatment has been systematically carried out for all these patients—viz., numerous injections of arsphenamin or allied preparations, mercurials by injection, inunction, and by the mouth, in addition to iodides when indicated. For purposes of comparison 100 of the "untreated" cases were collected and 100 of the "treated" cases and the results tabulated. In the case of the former group the average period that had elapsed since the cessation of acute symptoms was nine and three-quarter years. In the case of the latter, two and three-quarter years. Except for the shorter period of observation of these "treated" cases the comparison seems a fair one. The result is decidedly in favour of treatment. At the most recent examination vision of 20/30 or better was found in 58 per cent. of the treated cases, and in only 28 per cent. of the untreated. In the treated cases only 15 out of 178 eyes had a vision of less than 20/100. One eye had only perception of light. In the untreated, 45 eyes out of 179 had a vision of less than 20/100. Five eyes had light perception only, and in five vision was nil. In spite of the possible fallacy involved in the different period of observation in the two groups these figures cannot be ignored. Another comparison of the number of cases in which recurrences occurred is even more striking, as in this the difference in period of observation was eliminated. In the untreated cases during the first three years recurrences took place in 24 eyes (13 per cent.), as compared with 3·6 per cent. among the treated cases. In the light of these recent observations on both sides of the Atlantic it seems desirable that ophthalmic surgeons should turn their attention to this subject which is of considerable importance. The incidence of the disease is about 0·5 per cent. of the total number of patients at most ophthalmic hospitals, and children blind from it are by no means unknown in the blind schools.

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[1] Medical Ophthalmology, p. 193.

[2] Diseases of the Eye, tenth ed., p. 303.

[3] THE LANCET, August 22nd, 1925.

[4] Boston Medical and Surgical Journal, August 27th, 1925.

APT PATIENTS.

Our Vienna correspondent informs us of an interesting experiment that has been carried out at Prof. Pirquet's Children's Clinic in that city. When insulin was discovered some three years ago Prof. Pirquet began the treatment of 30 diabetic children by this means, the cost of which was met by grants from the union of the Vienna "sick clubs" (*Krankenkassen*). Insulin at that time was very expensive, and, in addition to the actual cost of the drug, the unfortunate sufferers appeared doomed to pay medical fees throughout their lives for the minor operation of having the medicament injected subcutaneously. Prof. Pirquet, therefore, attempted the daring innovation of teaching these children to inject themselves. A regular course of instruction was instituted, and the children were taught the principles of sterilisation, how to handle a syringe, how to make an injection, and further, they learned the dietetic values of the various foods suitable for their condition. The older children were taught how to cook their own food. Later on the course was extended to include the relations of diabetic children, and full instruction was given on all points relating to the treatment of the disease, including urine tests. The experiment proved successful, and in a short time it was possible to allow all the children to return to their homes, with the exception of a few serious cases. The children are examined medically every few weeks for control of weight and urine, otherwise they are free from the shadow of hospitalisation. A similar experiment is now being made with cases of myxœdema. This experiment, apart from the happy results it has achieved in individual cases, is of importance in showing how the hospital can be used as a teaching centre for patients as well as students.

THE ERECT POSTURE AND ITS DRAWBACKS.

When by standing upright on our feet we gained our predominance over animals which crouch or crawl, we brought on ourselves by way of payment a host of troubles of which we seem to have reached only the beginning. Dr. René Lambolez, in a recent article in a French medical journal,[1] has described some of them, and as a mathematician has gone very deeply into the dynamics of the erect position, far more deeply than most readers will follow. In addition to those handicaps of abdominal and circulatory trouble that are familiar results of bipedal progress, he deals with curvature of the spine and malformation of the hips, discussing especially scoliosis. Monod wrote in a thesis in 1900 that "it is not the exigencies of study that make a scoliotic, but the fact that [the child] attends school during the years when he is exceptionally liable to scoliosis," and Dr. Lambolez points out that if there is a tendency to deformity in a child, prolonged and constantly repeated harmful attitudes will produce it. The especial importance of the vertical position is in those scolioses that result from asymmetry of the fifth lumbar vertebra, or the so-called "static" forms that are due to an inequality in the length of the legs, malformed hip, or a unilateral flat-foot. The term covers, of course, a vast number of malformations due to different causes, and their treatment can be neither exclusively medical nor exclusively orthopædic. True scoliosis of bony origin benefits immensely in its early stages from rest in a recumbent position; later on the deviation from the vertical may have to be compensated by appliances. Pott's disease, before deformity appears and while it is still in the stage of functional impotence, is also best treated by complete rest and relieving the vertebræ from the strain of the upright position. Dr. Lambolez quotes Prof. Calot as authority for his statement that minor malformations of the hip-joint are at the bottom of half the ailments wrongly diagnosed as coxalgia, three-quarters of those diagnosed as tuberculosis of the neck, and nine-tenths of those that pass as localised rheumatism or dry arthritis, and he also maintains that all the coxa plana cases observed by Waldenstrom and all the "osteochondritis" of Perthes can be traced to slight defects in the hip-joint alone. Another unfamiliar suggestion in his article is the treatment of obesity by continuous lying down. The recumbent position facilitates the action of the heart and helps urination, so that the watery accumulations, which, as much as fat, cause this condition, are gradually eliminated from the body. Dr. Lambolez's article will stimulate many who do not agree with him.

MEDICAL STUDY IN SWITZERLAND.

Switzerland affords opportunities for postgraduate study which are perhaps not as well known as they might be. There are seven Cantonal or State universities, five of which have a Faculty of Medicine and grant the M.D. degree, the language of instruction being French at Lausanne and Geneva, and German at Bâle, Bern, and Zürich. Bern and Lausanne, in particular, welcome British students, and their regulations are accommodative. The University of Bern has some 65 professors in the Faculty of Medicine, including dentistry, and the number of regular students is about 1000, with 300 *auditeurs*; the University of Lausanne has some 85 professors in the Faculty of Medicine, and about 800 students and 200 *auditeurs*. The choice is governed chiefly by considerations of language and climate. Bern has many attractions as an international centre and its hospital buildings are pleasantly grouped in a sort of garden suburb. Lausanne is situated high up overlooking the Lake of Geneva. The Cantonal Hospital is divided into two main sections, the general hospital (medical and surgical) situated in the Avenue du Bugion containing some 500 beds, and the new maternity and children's blocks, built in 1916, across the road, containing an additional 200 beds each, the whole in design, construction, and equipment being probably unsurpassed elsewhere.

British practitioners are received upon the same footing as the Swiss holding the Swiss Federal Diploma, and can obtain the M.D. degree on complying with the following regulations:—

(I. (*a*)) Matriculation in the University and registration as a student, on production of a matriculation certificate of any British University, or of any preliminary examination recognised by the G.M.C. for the purposes of registering as a medical student; (*b*) Production of the certificate of the degree or diploma qualifying for practice in the U.K. and the certificate of registration as a medical practitioner in the U.K. (II.) Undergoing with success a colloquium—i.e., a viva-voce examination—in any three of the subjects of the final medical examination, at the choice of the candidate—e.g., medicine, surgery, diseases of children, or midwifery. (III.) The presentation of a thesis for the doctorate, which has been prepared and completed in the clinic under the direction of one of the professors of the Faculty of Medicine, in any subject in the medical curriculum.

Most of the professors speak English fluently, and the choice of the subject for the thesis may be made by the candidate and approved by the professor, or may be made by the professor himself. The standard, though high, is within the reach of steady work during the required semester of residence (October–March). After the thesis has been accepted by the Faculty of Medicine, its printing is authorised by the Dean, and 200 copies have to be handed in. The fees are roughly as follows On matriculation, Fr.20; on inscription for the colloquium, usually half-way through the semester, Fr.50; on presentation of thesis, Fr.200; diploma and graduation, Fr.25; courses, lectures, library, and laboratory fees, about Fr.80; printing of thesis, about £7 to £12. It is possible to live comfortably for £10 per month. The calendar and regulations can be obtained from the secretary of the university, and application for admission should be made to the Dean of the Faculty of Medicine, and to the professor in the subject in which the candidate wishes to do his thesis. The Student's Guide is issued in October and April (Guide de l'Etudiant), and may be obtained for 50 cents from F. Haeshel-Dufey, 3 Rue Centrale, Lausanne, or from the Office Central Universitaire, Bern.

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[1] Considérations sur la Station Verticale et ses Conséquences. By Dr. René Lambolez, Faculté de Médecine of Nancy. La Vie Médicale, August 28th, 1925.

The Academic Diploma of M.D., which has so far been considered, does not confer the right to practise in Switzerland, which requires the possession of the State or Federal Diploma. Examinations for this diploma are conducted by a board of examiners drawn from all the universities. The Swiss students, after matriculating in one of the universities, pursue a five years' course of study, and take the first, second, and final examinations of the Federal Diploma. When this has been obtained they become *médecins fédérals*, and are entitled to practise in Switzerland. A year or two later they proceed to the M.D. degree of their Alma Mater, the Federal Diploma thus corresponding to our M.B. degree. It is not made easy for foreigners to acquire the right to practise in Switzerland, in view of the large number of Swiss qualified medical men and women and the comparative cheapness of higher education in Switzerland. It is obligatory to matriculate and to pass all the qualifying examinations, and even when this is done the diploma is not assured. Every canton, however, has the right to license practice within its own borders.

THE MENTAL PATIENT'S CHANCE OF RECOVERY.

There is no doubt that the average practitioner, and still more the layman, holds the gloomiest views on the chances of a patient with mental disease. The last thing the relatives will do for such a patient is to put him under proper treatment, and the general practitioner, when called in, will often give him up at a glance as incurable. The attitude seems to be that mental patients simply go from bad to worse, and even if they appear to be cured they always break down again afterwards, so that the psychiatrist hardly ever sees a mental case until it has reached an advanced stage.

The way out of this undesirable situation is for the psychiatrist to persuade the practitioner and public by unimpeachable argument, first, that a mental patient has as good a chance of recovering as a medical or surgical one, and secondly, that like the latter, his chance will be considerably improved if he is treated in good time. It is therefore encouraging to read in the *Journal of the American Medical Association* a lecture by Dr. Earl D. Bond, of the Pennsylvania Hospital, in which he analyses 1054 consecutive admissions, including all the graver forms of mental disease, whose history has been followed for at least five years starting from the date of admission. Thirty were lost, and the percentages of the remaining 1024 are as follows: Recovered and stayed well, 26·7; improved, 14·5; died, 32·3; unimproved, 25·5. He remarks that some of the recovered patients attained a higher level of health than they had been able to reach before their illness, and quotes some very striking individual cases who recovered completely from persecutory delusions, hallucinations, paranoia, and melancholia. No patient is counted as recovered who has relapsed at any time since discharge, and the "improved" are generally hard workers who, although they suffer from occasional relapses, are able to earn their living. The deaths are heavy, as is natural over such a long period in a group that includes many elderly people. Influenza in 1918 accounted for several, and many other causes of death were not related to the psychoses in any way. All the patients with senile and arteriosclerotic psychoses, however, died during the observation period. The failures are dementia præcox cases and manic-depressive psychotics with prolonged or frequent attacks.

On the physical and surgical side of medicine there are plenty of statistics about particular diseases, but hardly any of consecutive patients irrespective of what they suffer from. In Dr. Bond's opinion the surgeon or physician would be satisfied with a full return to function in 25 per cent. of his consecutive cases, judged from five to ten years after the beginning of treatment. Whether this is a good estimate or not, Dr. Bond's own results give him the right to challenge the general practitioner to revise his prognosis of the average mental disorder. More statistics of this kind are wanted, and other psychiatrists might well follow Dr. Bond's example. Incidentally, he made out a very good case for holding up the diagnosis of dementia præcox until a long time of observation has elapsed. This disease is incurable, but its symptoms are frequently counterfeited by other and curable diseases, and many cases prematurely diagnosed as dementia præcox have recovered. Their chances are naturally much better if judgment is reserved, and the psychiatrist should wait a very long time before he decides to abandon them as hopeless.

STICKING-PLASTER DERMATITIS.

In the course of a year the medical profession uses many miles of sticking-plaster on patients of all ages and conditions. It is therefore disconcerting to read an article by Dr. H. W. Siemens in the Munich Medical Weekly of August 7th, in which he states that 1 per cent. of persons have an idiosyncrasy that makes the homely sticking-plaster an enemy. Rashes, blisters, eczemas appear from its use that may last a month and give severe trouble. The offending substance is "dammar" resin, that comes from the sap of one of the evergreens and is the favourite mucilage of plaster manufacturers. The irritation is not an acid one, for the resin acids have been proved harmless when tried by themselves. Dr. Siemens found three cases of individual susceptibility in the Munich University Skin and General Clinic, and tested them with dammar resin, dammar-oleic acids, pine resin, colophonium, and a brand of plaster called Helfoplast that contains no resin. The dammar, introduced into the upper arm by scarification, produced an erythema after 24 hours that was still more marked after 48. He tested his first two subjects again after three and a half and four months; the first showed less tendency to react and the second much more. The third case was the most interesting, a college student, male, 24 years old. A strip of plaster over a cut on the left forearm had brought out a severe bullous dermatitis, and tests with various resins and their derivatives, repeated after three weeks, showed a slight reaction to dammar resin and plaster and none to other substances. On the third day of the later test two large strips of plaster were applied to the right upper and fore-arm. They gave a positive reaction at the place of application after two days, and an outbreak of papulous eczema round the original wound and the sites of the earlier test. After 12 days the erythematous patches round the plaster were not very severe, but the reaction on the earlier sites was intensely irritable. The nodules were thickly and widely scattered and had been decapitated by scratching, healing with a serous scab. The reaction on the site of the old tests was less than that on the original wound. Dr. Siemens finds that this idiosyncrasy is not related to eczema liability, nor especially found in eczematous subjects. It would be interesting to know if any parallel results are forthcoming in this country. The subject should certainly be investigated further, since if the 1 per cent. incidence that Bloch demonstrated is uniform, many cases must occur that are not traced to their real cause. Dr. Siemens is still doubtful about the exact nature of this idiosyncrasy, and the fluctuations which he demonstrated in his first and second cases warn us against accepting it immediately as constitutional. The experiments remind us that skin disease as a whole is an obscure subject.

HEALTH OF THE U.S.A. IN 1925.

IN spite of distressingly hot weather in June the health record of the United States has been good so far this year. According to a preliminary report by Surgeon-General Cumming, of the U.S. Public Health Service, most of the commoner communicable diseases have been less destructive to life and health than usual. The death-rate for June was considerably higher than the average for that month owing, in Dr. Cumming's opinion, to the heat waves which then prevailed over a large part of the United States. During July and August the States which report regularly to the U.S. Public Health Service have recorded approximately 6100 cases of diphtheria. Last year for the corresponding period these same States reported nearly 8100 cases, this year's figures showing a decrease for the period of 20 per cent. In the same period measles has indicated a decrease of 27 per cent., while scarlet fever has decreased 14 per cent. On the other hand, there has been a definite increase in poliomyelitis. During the spring and summer months the prevalence of this disease usually increases, but this year 32 States reported 1463 cases of poliomyelitis for eight summer weeks, as against 635 for the corresponding period last year. This increase was particularly noticeable in California, Minnesota, Missouri, New Jersey, North Dakota, South Carolina, and Wisconsin. Typhoid, too, has increased. Decreasing for many years, the general death-rate per 100,000 population in the registration area fell from 35·9 in 1900 to 6·8 in 1923. Since July, however, 33 States have reported 7173 cases, which may be compared with 5013 cases last year, an increase of 43 per cent. Some of this increase may, of course, be due to more accurate and complete reporting of cases. The ports of Oakland and San Pedro, Cal., and New Orleans, La., have been declared free from plague, and outgoing quarantine measures have been discontinued. The Mexican authorities, upon information tendered by the U.S. Public Health Service, have agreed to the discontinuance of the disinfection of mails from Los Angeles, and also to the suspension of the fumigation of freight trains from that city, except in cases in which the Public Health Service deem this measure necessary. Because of the absence of yellow fever from Mexican, Central and South American ports, and the very low incidence of this disease, even in countries in which it is present, there has been no close quarantine this year on account of yellow fever, which means, of course, that there has been no detention of passengers. Dr. Cumming expresses the hope that the authorities of those countries in which yellow fever infection still persists will continue the work of mosquito extermination until quarantine measures will no longer be needed.

SIR Frederick Mott will deliver the Harveian Oration before the Royal College of Physicians of London, Pall Mall East, on Monday, Oct. 19th, at 4 P.M.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—During October, November, and December a series of lectures on Tuberculosis will be delivered in the Lecture Room of the Medical Society of London, 11, Chandos-street, at 5 30 P.M. The opening lecture will be given by Dr. L. S. Burrell on "Tuberculosis from the Physician's Viewpoint." All members of the medical profession will be welcome. A two weeks' combined course in Diseases of Children will be given from Oct. 12th, in which the Paddington Green Children's Hospital, Victoria Hospital, and the Children's Clinic will participate. There will be morning and afternoon sessions. At St. Peter's Hospital a four weeks' course in Urology will be held from Oct. 19th to Nov. 14th. From Oct. 26th to Nov. 20th the St. John's Hospital will hold a special course in Dermatology comprising pathology, clinical instruction, and lectures. There will be a two weeks' intensive course in Medicine, Surgery, and the Special Departments at the Royal Northern Hospital from Oct. 26th to Nov. 7th. Application for copies of the syllabuses, as also the Fellowship general programme, should be made to the Secretary at 1, Wimpole-street, London, W. 1.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CLXII.—TREATMENT OF POST-OPERATIVE PULMONARY COMPLICATIONS.

WHEN abnormal physical signs are detected in the lungs soon after an operation it is usually taken for granted that a post-operative complication has occurred, and usually the anæsthetic is blamed for the so-called "pneumonia" or "broncho-pneumonia." But a careful examination of the lungs in a large proportion of acute abdominal cases will reveal definite abnormal physical signs before operation. Unless these are detected, it is difficult to appreciate the significance of any pulmonary change that may be found after operation, especially as very similar signs may result from a purely post-operative condition. Briefly, these signs (which are nearly always confined to the right lung) are increase of size in the right half of the chest, raising of the liver dullness in the nipple line to the fifth rib or fourth space, impairment of percussion note, and diminution of breath-sounds (which are never definitely bronchial) over the base of the right lung, especially at a point 1½ in. below and to the left of the angle of the scapula; the apex beat is in the normal situation. By means of X ray screening the right half of the diaphragm is seen to be raised and its range of movement limited, though what movement there is appears to be an active one. These signs are always present and occur at a very early stage when there is inflammation of the peritoneum in the upper abdomen, but with diminishing frequency as the inflammation is situated further from the diaphragm. They are constantly present in retro-cæcal appendicitis and when suppurative peritonitis is spreading up from the pelvis, and occur in cholecystitis and perinephritis; but they are absent in pyelitis, cholelithiasis unaccompanied by cholecystitis, all forms of colic, tuberculous peritonitis, salpingitis, unless there is a spreading peritonitis, in appendicitis confined to the pelvis, and in pneumonia or diaphragmatic pleurisy. The measurement of the chest is conveniently taken with a saddle-tape measure placed just below the nipples in males and below the breasts in females. The difference is often as much as 1½ in., but an increase of only ½ in. may be regarded as pathological. Obvious fallacies are spinal curvature or old lung disease.

The explanation of these signs is not difficult; just as impaired movement of the anterior abdominal wall is an early sign of peritonitis, so is impaired action of the diaphragm. The latter is not inactive, but its excursion is *limited*, and what movement remains is apparently able to aerate the lung sufficiently to prevent any great degree of collapse. The liver rises in consequence of the partial collapse of the lung, and by its shape causes an enlargement of the right side of the chest. The treatment is, of course, mainly surgical, but after operation the patient should be encouraged to breathe deeply, and not allowed to remain too long in one position, as there is danger of hypostatic congestion. For the same reason he should be placed in Fowler's position, to avoid as far as possible the pressure of the liver against the diaphragm. Expectorants also help to avoid congestion of the lung base.

POST-OPERATIVE MASSIVE LOBAR COLLAPSE.

There are two forms of this condition: (*a*) collapse with contraction, and (*b*) collapse with enlargement of the corresponding side of the chest wall.

(*a*) *Collapse with Contraction.*—The first symptom is usually sudden pain low down in one side of the chest (usually the right); the temperature rises (102° or 103° F.); respiration quickens and there is some distress which may be acute; after a few hours expectoration of white viscid sputum begins. The physical signs are impaired movement of the affected side of the chest and upper quadrant of the abdominal wall, impaired percussion note, at first diminution or absence of breath-sounds over the lower lobe of the lung, and later well-marked tubular breathing; displacement of the heart towards the affected side, diminution in girth of this side of the chest, inactivity of the diaphragm and upward displacement of the liver, if the collapse is on the right side, or heart, if on the left. The liver dullness may begin as high as the fourth rib, and this upward displacement is a most valuable sign, easy to demonstrate, and constantly present. On screening I have always found the cupola of the diaphragm raised on the side of the collapse and the movement either absent or much restrained, so that the excursion is small and jerky, suggesting tonic contraction.

Differentiation from Pneumonia.

Massive collapse is easily distinguished from post-operative pneumonia by the displacement of the heart and liver, the decrease in size of the affected half of the chest, the viscid white sputum which is never blood-stained or rusty, and the termination which may be as sudden as the crisis of lobar pneumonia, but followed by a much more rapid return of the normal signs of a healthy lung. There is no flush and the skin is usually moist, and has not the hot, dry feeling so often present in pneumonia. The change usually occurs on the third day after the onset of the collapse; the temperature drops to normal or thereabouts, the pain disappears, and the only remaining symptom is the coughing up of the characteristic sputum for another few days. At the same time the diaphragm begins to move in normal fashion.

In certain cases the change is dramatic in its suddenness, which suggests a mechanical cause rather than a pathological change in the lung tissue. The apparent tonic contraction of the diaphragm and the sudden onset closely resemble an attack of asthma, in which condition we also find a rigid (though not raised) diaphragm, which immediately begins to move on cessation of the attack. The similarity has led me to try drugs used to alleviate asthma, and I have found injections of 5 minims of a 1 : 1000 solution of adrenalin the most useful remedy, not only for the treatment of massive collapse, but when given as a prophylactic it seems to lessen the chances of this complication ensuing. It is better to give 5 minims repeatedly than to give larger doses at longer intervals. A second dose may be usefully given in half an hour's time. As a prophylactic 5 minims may be given every six hours for the first 48 hours after operation. Other drugs which are helpful are injections of ½ c.cm. of pituitary extract, or ⅓ gr. of emetine hydrochloride. In addition, small doses of potassium iodide and ammonium carbonate with a few minims of ipecacuanha wine made into a mixture with camphor water, help to liquefy the viscid sputum and so assist its expectoration. Many patients have benefited from the application of a mustard leaf to the side of the neck, which was done with the idea of providing counter-irritation to the phrenic nerve, and with a similar object I have found it of some use to pass a descending constant current down the side of the neck. This form of massive collapse is an alarming complication, but unless pneumonia supervenes (and this happens but rarely) is never by itself fatal.

(*b*) *Collapse with Enlargement of the Chest Wall.*—In massive collapse with enlargement of the affected side there are several points of difference. The onset is painless and gradual; dyspnœa is not marked; the heart and liver are displaced in a similar way, and though the heart is never drawn over so far, the upward displacement of the liver is extreme. When screened the diaphragm can be seen considerably raised, moving very slightly and apparently passively on the affected side, as if paralysed and relaxed. The breath-sounds are feeble, the percussion note is considerably impaired, and bronchial breathing is never as marked or extensive as in the cases associated with contraction of the chest. This is a much more serious complication than that already described and indicates a spread of infection up to the diaphragm and consequent risk of general peritonitis or subphrenic abscess. Treatment is mainly surgical, as there is need of free drainage. Drugs are of little use and adrenalin has no effect. Some cases recover with merely expectant treatment, for the peritoneum can deal successfully with infective organisms in very great measure.

The treatment of any condition involves consideration of the cause. It has been shown that the position and action of the diaphragm are modified in both kinds of post-operative collapse and in the cases which show pre-operative pulmonary signs. The diaphragm is just as much a part of the muscular wall of the abdominal cavity as the rectus abdominis and oblique muscles, and is affected by inflammation beneath it just as are the muscles overlying an inflamed appendix.

That infection greatly modifies diaphragmatic action is clear from a study of 39 cases in which one or other form of collapse of the lung followed operation. (1) Many needed subsequent drainage after the wound had been sewn up, or the wound was found to be suppurating when the stitches were taken out. (2) The more distant the focus of infection, the less likely was the diaphragm to be involved, and inflammation confined to the pelvis never affected it. (3) Subphrenic abscess invariably paralysed the diaphragm. Subsidiary causes of collapse are very large incisions, especially if they extend into the hypochondrium, and rough handling of the sides of the wound at the operation, so injuring the muscles and causing an alteration in the tone of the opposing muscle—i.e., the diaphragm.

A slight stimulation of a muscle causes it to contract, but a severe one removes the power of contraction, which accounts for the two forms of collapse. When the chest is contracted, the infection or stimulus appears to be slight; manifest suppuration seldom ensues and drug treatment is of great use. Where the side of the chest is enlarged, drugs are of little avail and subsequent drainage of the wound, or possibly of a subphrenic abscess, is usually necessary.

Subphrenic abscess is a further complication which may be mentioned. Measurement almost invariably shows the affected side of the chest to be larger than the other, and if the heart has been originally drawn over and the signs of collapse of the lung persist or increase, any movement of the apex beat towards or beyond its original situation indicates the presence of a subphrenic abscess or an abscess in the upper part of the liver. The treatment, of course, is purely surgical. The outstanding feature of post-operative massive collapse is its relation to interference with the peritoneum. The length of operation and the kind of anæsthetic employed appear to have no effect of this sort.

Pneumonia and Bronchitis.

Lobar pneumonia following operation is uncommon, and its treatment in no way differs from that of the ordinary attack. I should like to urge the value of intravenous injection of strophanthin, gr. 1/100, in cases of failing heart with low blood pressure, always remembering that any severe grade of cyanosis must be relieved by preliminary venesection.

Bronchitis, which may progress to bronchopneumonia, is best relieved by injections of atropine, gr. 1/100, or tincture of belladonna in moderate doses, if the sputum is fluid and excessive; if it is scanty and viscid, antimony wine in 20 minim doses with 15 minims of tincture of stramonium is often very useful. A little bronchitis may be unavoidable after long administration of ether, and possibly contributes to any collapse that may be present, but it never seems to be the sole cause.

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Special Articles.

THE CENTENARY OF THE DISCOVERY OF BRIGHT'S DISEASE.

BY SIR WILLIAM HALE-WHITE, K.B.E., M.D. LOND.,
CONSULTING PHYSICIAN TO GUY'S HOSPITAL.

ON Oct. 12th, 1825, there was admitted into Guy's Hospital, under the care of Dr. Bright, one John King, an intemperate sailor, suffering from general œdema, scanty urine, and pain in the loins. He had hæmaturia but this passed away, and the urine, when clear, coagulated if heated; the pulse was hard. The sectio cadaveris revealed acute pericarditis, œdema of the lungs, pleural effusion, a large heart, and ascites. In Bright's own words:—

> "The kidneys were completely granulated throughout; externally the surface rough and uneven; internally all traces of natural organisation nearly gone, except in the tubal parts. . . . This is a well-marked example of a granulated condition of the kidneys connected with the secretion of a coagulable urine."

He inclines to the opinion that the "disease of the kidney was the first established." He considers that neither the disease of the lungs, pleura, nor heart was the primary condition, nor was there any disease of the liver to explain the ascites. He points out that pain in the loins is a symptom of renal disease, and that

> "the tendency to inflammatory affection in this man was a striking feature in his case and appears to me connected immediately with the condition of the kidneys."

THE LANCET of Dec. 25th, 1858, writing of Bright's death, said:—

> "The sudden and unexpected demise of Dr. Bright has created a deep impression of grief and regret such as only a sense of irretrievable loss could occasion. In him all felt that the medical profession of England had lost one of the most original, observant, and philosophic minds. A man of peculiar independence of thought, of high morale, and untiring energy, he contributed more, perhaps, than any other to form the medical opinion of his day . . . By the singular devotion to pathological investigation which characterised his career, he was at once enabled to accomplish investigations which have immortalised his name."

It is fitting, therefore, that the centenary of the commencement of the investigations on the disease, bearing the name of one better known throughout the civilised world than any British physician since Harvey, should be signalised by some account of Richard Bright and his work.

Biographical Account.

He, the third son of Richard Bright the elder, of Ham Green, Somerset, was born at Bristol on Sept. 28th, 1789. In 1808 he began to study medicine at Edinburgh; in 1810 he accompanied Sir George Mackenzie to Iceland, and he wrote the botanical and zoological parts of Mackenzie's "Travels in Iceland" and drew some of the illustrations. On his return he entered at Guy's Hospital, and, in 1811, read a paper before the Geological Society. In September, 1812, he graduated M.D. at Edinburgh with a thesis on erysipelas, about which he had previously read a paper at the Medico-Chirurgical Society. He spent two terms at Peterhouse, Cambridge, returned to medicine in London, and in 1814 went on a tour through Holland, Belgium, Berlin, Vienna, Austria, and Hungary. He observed and studied everything he came across, medical or otherwise, and in 1818 published "Travels from Vienna through Lower Hungary, with some Remarks on the State of Vienna during the Congress in the Year 1814." The book, a well-printed quarto of over 700 pages, exemplifies Bright's wonderful power of observation and description, his wide reading, his accuracy, as shown by the tables, maps, and appendices, and his artistic ability, for it is illustrated by beautiful engravings from sketches by himself. In 1818 he again travelled in Germany, Italy, and France for nearly a year. In 1821 he became assistant physician to Guy's Hospital, in 1822 a Fellow of the Royal Society, in 1824 full physician to Guy's, and in 1832, although only a licentiate, he was with applause elected a Fellow of the Royal College of Physicians of London. He died on Dec. 16th, 1858; few of the millions that pass along Piccadilly know that there is a tablet to his memory in St. James's Church. He was a man of several interests, physician, pathologist, traveller, geologist, artist, writer, linguist, and an indefatigable worker, for many years spending six hours daily at the hospital. He was beloved by the students and his colleagues, who were invariably willing to aid him in his researches; he was always most careful to acknowledge help given, was ungrudging in his admiration of the work of others, and intensely proud of Guy's Hospital and its museum. But all this does not make a man extraordinary; but Bright was. It is impossible to place geniuses in order, but he would certainly be among the first five or six in our profession. To him was given marvellous power of observation, and his genius took him further even than brilliant seeing of facts, for he could correlate his observations and draw deductions from them.

Richd Bright

(From Guy's Hospital Reports, January, 1921.)

Discovery of Bright's Disease.

Bright's most remarkable publication was his renowned book "Reports of Medical Cases selected with a view of Illustrating the Symptoms and Cure of Diseases by a reference to Morbid Anatomy."[1] It is in two large volumes containing 65 beautifully coloured plates. The first appeared in 1827, the second in 1830. It shows his facility of insight, for it is entirely composed of original observations made at Guy's Hospital during the short six years he had been on the staff. In the preface he says:—

> "It is my wish in thus recording a number of cases, to render the labours of a large hospital more permanently useful, by bringing together such facts as seem to throw light upon each other. . . . To connect accurate and faithful observation after death with symptoms displayed during life, must be in some degree to forward the objects of our noble art. . . . The work will not be thoroughly completed, until every disease which influences the natural structure, or originates in its derangements, has been connected with the corresponding organic lesion."

The most celebrated part of this book is the first 120 pages of Vol. I. This section is entitled "Cases Illustrative of some of the Appearances Observable on the Examination of Diseases Terminating in Dropsical Effusion." Bright reminds us that a common cause of dropsy is venous obstruction, but adds that too little attention has been paid to the kidneys. Often albuminuria, which he detected by heating the urine in a spoon over a candle, is present as well as dropsy. Then the kidneys will be found diseased. He says:—

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[1] This is now a rare book. An abstract of it and of Bright's other writings was published in Guy's Hospital Reports, vol. lxxi., January and April, 1921.

> "I shall now detail a few cases . . . in which I had the opportunity of connecting the fact of the coagulation of the urine with the disorganised state of the kidneys."

Then follow the clinical notes of 23 cases to illustrate this point. Considerably more than half were fatal, a full account of the post-mortem examination is given, together with a series of coloured plates to show the diseased state of the kidneys. I have already mentioned the first, that of John King. Bright's next allusion to renal disease was in his second Goulstonian Lecture delivered in 1833. He then had

> "had great assistance from the intelligent and zealous coöperation of three of my young friends and pupils, Mr. Barlow, Mr. Tweedie, and Mr. Rees."

They examined the urine of 296 patients. Bright alludes to the enlargement of the heart, the serous effusions, the headache, the coma, and the cerebral hæmorrhage found in association with disease of the kidneys and reaches this conclusion:—

> "My conviction is complete as to the existence of some decided connexion between the three facts—anasarca, coagulable urine, and diseased function going on to diseased structure of the kidney."

His final and most extensive communication on the subject of nephritis appeared in *Guy's Hospital Reports* for 1836. It consists of two papers occupying 65 pages; the first is entitled "Cases and Observations Illustrative of Renal Disease accompanied with the Secretion of Albuminous Urine," the second, "Tabular View of the Morbid Appearances occurring in One Hundred Cases in Connexion with Albuminous Urine."

He gives the history of a sufferer from the form of renal disease under consideration thus: the patient may in the past have had scarlatina; early symptoms are polyuria, hæmaturia, and œdema of the face or ankles; if, at this stage, the urine is tested, albuminuria is found. Next he notes that the pulse is full and hard, the skin is pale and dry, the patient complains of headache, pain across the loins, vomiting, and disturbance of sleep owing to frequent micturition. A sense of lassitude, of weariness, and of depression steals over the bodily and mental frame. The blood is found to contain urea. The disease progresses, the œdema may increase, the lungs become œdematous, the headaches are more frequent, the stomach is deranged, the vision indistinct, and blindness may supervene. Finally, the patient dies from asphyxia due to œdema of the lungs, or of the glottis, or in coma or convulsions, or from acute pericarditis or peritonitis. Bright is not hopeful of treatment unless the case is seen in its early stages, but he advises diaphoretics, as antimonial powders, compound ipecacuanha powder, ammonium acetate, and warmth such as a hot bath; bleeding is of little use, cupping the nape of the neck will relieve the headache, leeches to the loins will assuage the pain there; acupuncture will diminish œdema, but we must be careful not to set up inflammation; the only diuretic that may be used is digitalis; elaterium is a suitable purge; milk is one of the best aliments; every precaution must be taken to avoid chill, flannel should be worn, and a warm climate is desirable. I have given a mere abstract of what he wrote, but even that is enough to show that Bright's description is a masterly exposition of the symptoms and treatment of what was then a new disease. The post-mortem appearances of the kidneys are carefully described; it is noted that acute pleurisy, pericarditis, and peritonitis may be found, or the pleural, pericardial, and peritoneal cavities may contain serous fluid; the heart may be hypertrophied, but otherwise healthy; œdema and bronchitis of the lungs are common; sometimes the intestines have been irritated; occasionally they are ulcerated and cerebral hæmorrhage is observed in some instances. Bright, with the inspiration of genius, arrives at the conclusion that the primary cause for all these symptoms and post-mortem appearances is disease of the kidneys.

Assuredly this is one of the most astonishing series of papers in medical literature. A disease, which presents symptoms of derangement of almost every organ in the body, is unerringly ascribed to the kidney. We are shown how to diagnose it. The description of its causes, its symptoms, its treatment, and its post-mortem appearances is so complete and accurate that after nearly a century no error has been detected and, if we except a few facts that have been gleaned by instruments Bright did not possess, nothing of importance has been added.

His enthusiasm for the study of renal diseases continued. With the hearty coöperation of his colleagues, two wards were, from May to October, 1842, set apart for renal cases only, which were all under his care. A small laboratory "was fitted up and decorated entirely to our purpose." This, Bright says, is—

> "the first experiment which, as far as I know, has yet been made in this country to turn the ample resources of a hospital to the investigation of a particular disease by bringing patients labouring under it into one ward properly arranged for observation."

The results of this experiment were published, by Barlow and Rees, in *Guy's Hospital Reports* for 1843, and they confirmed the previous investigations.

Other Medical Observations.

Bright's work on renal disease has attracted so much attention that too little has been paid to his other observations, many of which were original. His power of seeing was extraordinary; little escaped him, he never saw what was not there, not a single one of his observations has been shown to be incorrect; his accuracy and truthfulness are wonderful; no preconceived idea ever tints his descriptions; his industry was unflagging; he willingly goes into the country for the sake of a post-mortem examination. He could write well, it is a pleasure to read him; any disease he describes stands out with all its features clear, and the account he gives is true to-day.

The second volume of his "Reports of Medical Cases," with its 724 pages and 40 artistically coloured plates, is concerned with the nervous system. Bright dislikes the use of the word functional, for it is used to cloak ignorance and it retards investigation. He describes the meningitis due to disease of the ear and nose, and records that the tuberculous variety may be excited by a blow; he tells of patients, with tumours of the brain, who had spasmodic extension of the limbs and in whom the spinal cord was "remarkably firm throughout, almost like cartilage"; this, he thinks, was probably the cause of the spasticity, and to him, therefore, belongs the discovery of the morbid anatomy of secondary degeneration of the cord and spastic paraplegia. More than 40 examples of cerebral hæmorrhage are recorded, both clinically and autopsically, and their relation to renal disease is emphasised. In the section on epilepsy, epileptic mania and somnambulism are depicted; Bright was insistent that certain epileptic seizures, or, as we should now call them, attacks of Jacksonian epilepsy, are due to organic disease damaging the surface of the brain; and further, that in these and in other cases of nervous disease, study of the symptoms will enable us to foretell the position of the causative lesion. In illustration of this he tells us that he saw a man suffering from fits on the right side; because of this he was of opinion that there was disease on the surface of the left brain, which proved to be correct. Aphasia is singularly well described. He was, indeed, the pioneer in the doctrine of cerebral localisation.

He did much to make known the association between chorea and rheumatic fever. Probably he was the first to tell us that a mitral murmur and also pericarditis may accompany chorea.

Bright published a series of papers in *Guy's Hospital Reports* on Abdominal Tumours and these were reprinted as a separate book; 117 cases are reported and form classical clinical lectures. How much of the matter in them is original we cannot say, for we do not know the exact state of knowledge at the time; but with regard to 15 cases of abdominal hydatid disease we have the testimony of Barlow that—

> "It is but due to the memory of Bright to state . . . that the description of acephalocyst hydatids is altogether original, and certainly an anticipation of similar observations which have since been published in Germany."

In his paper on "Cases and Observations connected with Diseases of the Pancreas and Duodenum," Bright was the first to describe—and he did it admirably—the stools which we now know to be characteristic of disease of the pancreas, and he stated that they indicated disease of that organ. He was aware that glycosuria might occur with pancreatic disease. Another paper, "Observations on Jaundice," contains an account of jaundice and its causes. We are told how, in alcoholic cirrhosis, the liver first enlarges and then contracts, and we have the first description of acute yellow atrophy of the liver, for although Bright did not name the disorder, he accurately described its clinical symptoms and post-mortem appearances. A paper on Chronic Peritonitis contains what is probably the earliest description of chronic proliferative peritonitis; the thickened membrane, the bands, the shortened mesentery are all here.

To Bright must be given the credit of being the first to depict Addison's disease. He did not connect the disease of the adrenals with the symptoms, but he gives a life-like account of them and records that the suprarenals were greatly enlarged from a deposit of scrofulous matter. The specimen is still in the museum at Guy's Hospital.

In London, in 1839, was published Vol. I. of "Elements of the Practice of Medicine," by Richard Bright, M.D., and Thomas Addison, M.D. The second volume never appeared, and the first is a rarity; therefore, it is not generally known that it contains the earliest accurate account of the causes, symptoms, course, and *post-mortem* appearances of appendicitis. It is too long to quote, but everyone interested should read it; Kelly does not exaggerate when in mentioning it he says, "descriptions so clear and well presented that they could not be surpassed to-day."

Conclusion.

In this outline of Richard Bright and his work I have been compelled, for want of space, to omit much; for example, his description of phthisis, his giving of oxygen for respiratory distress, his account of a case of heart-block, and what is probably the first delineation of the broncho-pneumonia and pulmonary collapse seen in whooping-cough; but I trust I have shown that this article, written to commemorate a centenary, is justified.

A CARDIFF CONVALESCENT HOME.—Cardiff Royal Infirmary has long been in need of a convalescent home, and the lack has now been supplied by Sir William Edgar Nicholls, who has presented the infirmary with a country house known as Ty To Maen at St. Mellons, near the city, with 25 acres. The house, which is in beautiful country overlooking the Bristol Channel, will provide between 60 and 65 beds.

WELSH MENTAL DEFICIENTS.—A conference of representatives of the six counties of North Wales has recommended the preparation of a joint scheme for a new home for mental deficients. The North Wales Mental Hospital at Denbigh, which is supported by the counties of Denbigh, Flint, Carnarvon, Anglesey, and Merioneth, has long been overcrowded. Its nominal capacity is 1000 patients, but it sometimes contains 1200.

AN INSANITARY IRISH HOSPITAL.—Donegal County Council is borrowing £7000 for urgent work at the Donegal County Hospital, Lifford. It was stated at the meeting of the council that "there was danger of an attack of enteric fever in the place if some remedy were not forthcoming," and that "anyone going near the place could not help observing that there was something wrong owing to the pungent smell."

PUBLIC HEALTH ADMINISTRATION.

ADMINISTRATIVE MACHINERY IN EUROPEAN COUNTRIES.*

(*Continued from p. 719.*)

VI. HUNGARY.

HUNGARY has been reduced to an area of 30,000 square miles containing a population of about eight millions (200 persons per square mile). Various forms of government have been tried since the war; at present the country is ruled by a single chamber National Assembly based on universal suffrage and acting under a Governor who has royal rights but no legislative veto. For administrative purposes Hungary is divided into counties and each of these is in charge of a Prefect (Föispán), who is directly responsible to the Government. Each county elects a Municipal Committee, whose General Assembly may have several hundred members. The central authority of the Prefect dovetails into the autonomy of this county parliament, and there is between them an important Administrative Committee, mainly composed of high officials, under the presidency of the Prefect. The representative of the county as an autonomous unit is the Vice-Prefect (Alispán). Towns with a population of more than 50,000 (urban municipalities) correspond to counties and in these the burgomaster is the Alispán. Each county has from three to six districts, the ultimate unit being the commune, which has its own Mayor with Administrative and Representative Councils like those of the county in miniature. Small communes are sometimes grouped into cantons, and towns of over 7000 rank as districts politically.

Health Administration.

The foundation of the present system was laid in 1876 by a sanitary law designed to detect and punish nuisances; but the Ministry of Health and Social Welfare was only established in 1918. The Minister has very wide powers, and is assisted by under secretaries who deal with public health and social welfare respectively and superintend the 14 departments. Each of these is in charge of a Ministerial Councillor and they cover all the branches of health and welfare, including, for example, sanitary administration, social diseases, hygiene, health insurance, and communicable diseases. To advise the Ministry upon all special questions there is a non-executive National Public Health Council representing every branch of medicine, and there is also a Board of Forensic Medicine which assists the Ministry of Justice and advises on disciplinary or disputed points within the medical profession.

Counties (urban or rural municipalities).—The Municipal Committee (General Assembly) is responsible for organising small communes into sanitary cantons, draining marshes, the issue of emergency health regulations, and the revaccination of adults in epidemics. It also examines the credentials of practitioners and midwives, ensures that every commune has a midwife and regulates her fees, and authorises private practice by communal medical officers or makes allowances to them if their income is inadequate. Appeals against the Assembly's decisions are addressed to the Ministry. Under the law the principal lay authorities must be guided as a general rule by expert opinion. The Prefect therefore appoints, subject to the approval of the Ministry, a Chief Municipal Medical Officer in each county, and this officer and his medical subordinates form the nucleus of a Municipal Health Committee which advises and makes suggestions. The Chief Medical Officer is a member of the Prefect's Administrative Committee and acts as expert rapporteur to this and to the General Assembly. Apart from giving advice he supervises the whole health personnel and medical institutions of his county, conducts sanitary inspections, licenses doctors and midwives, undertakes investigations in police cases, and publishes statistical data. He is subject to the Prefect but in direct contact with the Ministry, to which he reports quarterly. He must visit every village at least once a year and he takes action in epidemics. Administrative power, however, rests with the Alispán (Vice-Prefect or burgomaster) on whom the actual responsibility lies for the enforcement of health regulations. It is his duty to see that dwellings are not overcrowded, that conditions in medical institutions are satisfactory, that epidemics are being met, and that sanitary inspection is made properly.

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* Based on a Series of Reports on National Health Organisation to the Health Section of the League of Nations. Obtainable in Great Britain from Constable and Co.

Note.—Budapest has modified health organisation.

Districts.—The lay Chief District Officer is responsible, like the Alispán, for all public health matters —e.g., the enforcement of sanitary regulations including those applying to food, the care of the indigent sick and of babies, and the ordering of autopsies. The District Medical Officer, appointed for life by the Prefect, reports on any neglect of regulations, inspects buildings, schools, medical establishments, examines food, supervises the treatment of the indigent sick and the certification of death, and conducts medico-legal autopsies. He reports quarterly to the Alispán. (In cities ranking as counties the District Medical Officer is appointed by the General Assembly, which also delegates many of his duties to other officers.)

Communes.—Health administration is the same in communes, cantons, and in towns politically ranking as districts. The chief official is the Mayor, who heads the Communal (Administrative) Council and presides over the Representative (Advisory) Council. He is responsible for drinking-water, cemeteries, inspection of food, and the care of the disabled and children. The commune pays half the expenses incurred in preventing or treating infectious disease, including hospitals, the rest being defrayed by the State. The Mayor must consult the Communal (or Town) Medical Officer, who is assisted by a Health Committee consisting of doctors, veterinary surgeons, pharmacists, ministers, &c. This Committee advises on the appointment of medical officers, hospital surgeons and midwives, and on all health matters, and can appeal to the District Medical Officer. Every commune or canton of over 5000 inhabitants has one or more medical officer. He is allowed to practise privately and advises all the authorities. He treats the indigent without fee, attends maternity cases, vaccinates, certifies deaths, supervises midwives, performs autopsies, and reports to the District Medical Officer.

Hospitals, Training and Registration.

State hospitals are under direct supervision by the Ministry. The doctors are appointed by competitive examination and the senior officers rank as civil servants. Public hospitals must conform to regulations and they are subject to the Municipal Administrative or Communal Committees. The staff is appointed, after examinations, by the Prefect in counties and by the Vice-Prefect in communes. There are also hospitals ranking as Public Utility Establishments, which are semi-private institutions recognised and subsidised by the Ministry in return for an obligation to receive certain kinds of patient. Finally, there are the private hospitals, and these are under municipal supervision.

Insurance.—All workers earning less than a fixed sum who are subject to the Industrial Law are compelled to insure themselves against sickness and accident. There is also a scheme covering civil servants. Strict laws govern *medical practice*; there is a six months' course in public health but no public health school in Hungary; health officers are generally required to have passed an examination and to have had two years of hospital experience. A diploma has also been required of *midwives* since 1921, and a ten months' course is needed before this can be taken.

Statistics are based on the reports of the officers mentioned. Registered medical practitioners, persons trained for the purpose, or failing them, the communal authorities, are entitled to certify death. Burial must take place within 60 hours, and autopsies may be conducted whenever desirable in the public interest.

VII. THE KINGDOM OF THE SERBS, CROATS, AND SLOVENES.

Jugo-Slavia was formed in 1918 from Serbia, Montenegro, and the old Austrian provinces of Croatia, Slavonia, Voyvodina, Bosnia-Herzogovina, Dalmatia, and Slovenia. The area is 87,000 square miles and there are over 12 million inhabitants (137 persons per square mile).

Health Organisation.

The Ministry of Health is the central health authority, but has much in common with the Ministry for Social Affairs, which deals with housing, with the protection of children and the infirm, and with social and workers' insurance. The Health Ministry, which has the advisory assistance of a Permanent Epidemics Commission and a Supreme Health Board, is divided into departments dealing with Administration, Health, and the Public Health Services. The Institute for Social Medicine at Belgrade is a technical branch of the Ministry which is collecting information on national and foreign health standards and methods, and is engaged in propaganda and the preparation of schemes and reforms.

The Health Department.—Until 1923 this was independent of the general administration. There were ten sanitary inspectors and there were regional medical officers in charge of each province, district, and county, who had full authority and could inflict fines for infringement of sanitary regulations. Their powers have been curtailed, and they are now responsible to the administrative (political) authorities of their regions, though they retain the right of appeal to the Health Minister.

The Health Services are autonomous technical organisations, which deal with epidemics, malaria, venereal diseases, &c. Their work is regulated by the Ministry through the new Sanitary Institute at Belgrade, which will contain central laboratories with facilities for bacteriology, training of medical officers, and research. The Institute will control the otherwise independent activities of the large provincial institutes for the study of special diseases and the whole body of local epidemiological institutes and stations. Many bacteriological stations have been established, either permanently or in the field, and these are self-contained sanitary units with a bacteriologist, nurses, and disinfecting apparatus. There are also some motor laboratories and two ambulance trains. The service at present has 150 medical officers of its own and is limited to those who have been specially trained abroad. The number is to be increased, and during epidemics other doctors are temporarily coöpted.

Training, Propaganda, and Statistics.

The kingdom has three schools of medicine. After five years' training students are attached for a year either to a hospital or to a health institution, and in this way specialism in hygiene begins at once. The course for nurses lasts two and a half years, and they, too, are attached to one or other kind of institution. *Propaganda* is regarded by the authorities as one of the most essential parts of the health organisation, and is carried on by books, pamphlets, lectures, plays, and the cinema. The Ministry of Health subsidises a paper advocating temperance and publishes an official journal. The method of collection of *statistical information* is as yet incoördinate and faulty. The duty devolves on the Ministry for Social Affairs, but centralisation is incomplete and no reports have been published for ten years. The data are mainly furnished by the priests—Orthodox, Catholic, or Moslem—who are supposed to fill in statistical forms for all births, marriages, and deaths. Helpful instructions are issued for the use of persons who have to state the cause of death in the absence of a doctor. Still-born children are those who "have not breathed and who died before birth." Registrable information is forwarded monthly to Belgrade by the priests or the District Health Officers.

VIII. CZECHO-SLOVAKIA.

Czecho-Slovakia is a democratic Republic under an elected president, and is made up of territory from the old kingdoms of Bohemia and Hungary and from a part of Prussian Silesia. It covers 54,000 square miles, and has a population of 13,000,000 (244 persons per square mile). Under the Empire the Austrian provinces of Bohemia, Moravia, and Silesia had a measure of autonomy whilst Slovakia and Ruthenia were appanages of the Hungarian crown. The Czecho-Slovakian Government is trying to establish a uniform administration, under which the country is divided into counties (Zupàs), with an average population of 600,000, and these are subdivided into districts of 60,000. County and District Commissioners represent the Government in their areas, and there are county councils and district committees which carry on administration under their care. For financial reasons, however, this system is as yet only in force in Slovakia. Ruthenia remains a semi-independent territory governed by a local Diet, and the other provinces retain much of their previous administrative machinery, which combined with difficulty and friction the authorities of the provincial Diet and the Imperial Government.

Health Organisation.

The Ministry of Public Health and Physical Training was established in 1918, and has legal, administrative, financial, and recording divisions. The sections devoted to public health are in charge of heads of sections, or lower officials called Ministerial Councillors, and are subdivided into departments. There is an under secretary who represents the Minister, and a Central Committee which organises the work of the whole under the Minister's presidency. A State Institute of Hygiene is to be formed from the existing institutes of hygiene, serology, pharmacy, bacteriology, chemistry, and hydrology, and a large grant by the Rockefeller Foundation makes it possible to combine the practical laboratory services with hospital work and the training of medical officers of health and sanitary personnel. The Ministry of Social Welfare deals with child welfare, sickness insurance, the care of disabled soldiers, housing, and industrial inspection. It acts through committees established throughout the country according to provinces and nationality. The National Council of Social Hygiene is intended to centralise voluntary health and social work, and is a federation of benevolent organisations which includes those interested in tuberculosis, venereal disease, and maternity and infant welfare. The most powerful voluntary organisation in Czecho-Slovakia is the Red Cross, which organises campaigns against epidemics, establishes hospitals and dispensaries, and arranges courses for public health and social workers.

Local Administration.—The reorganisation of the country into counties will eventually produce in the health services a continuous chain leading from the Rural Medical Officer to the Minister of Health. But the change is far from complete and the remains of the old systems still exist with modifications. Under the Empire there were two distinct organisations, and dual control was evident in its results. First of all, there was the Imperial Service, which was represented in the province by a Provincial Health Commissioner and in the district (60,000 persons) by a District Health Officer. This administration was supposed to supervise health institutions and pharmacies, control the spread of infectious disease, arrange for vaccination, order post-mortem examinations when necessary, and perform other like functions. So much for that; but the Provincial Diet or parliament—an historical relic and a concession to nationalism—also had its health organisation. Chiefly this was concerned with the upkeep of hospitals, but it also superintended the local medical officers. The country was (and is) divided into small areas in charge of Rural Medical Officers, and towns of more than 6000 had one or more Urban Medical Officers. These officials were paid by the communes, on which fell the duty of applying health regulations, collecting particulars of cripples and the disabled, treating the indigent sick, keeping up cemeteries, and supervising infectious diseases. Their officers were also frequently required by the Imperial Service to furnish reports and make post-mortems; but they were quite independent of the State officials, who were far better paid and trained. Both were permitted to practise privately; but the local officers were often practically dependent on what they could earn in this way; which circumstances, and the fact that the district officers were looked on as representing the Imperial Government, led to disharmony and a total lack of coöperation. At present there are in Czecho-Slovakian service 331 medical officers in what was formerly the Imperial Service and about 2000 in rural and urban employment. The new constitution will combine all these in one State Service, but financially this is at present impossible on a permanent basis. To make the local officers subject to the district officers was imperative, and this has been done by enrolling all the local officers as State servants on a temporary contract with increased salary.

Hospitals and Training.

Public hospitals are maintained by the State, province, county, district, or town. Slovakia was the only province in which there were any State hospitals before the Republic was formed. Nationalisation of all hospitals has been abandoned on grounds of expense. There are two beds for every 1000 inhabitants; but unfortunately the distribution is most uneven, and in some districts more are urgently needed. Most of the so-called infirmaries are really poor-houses without medical amenities. Besides the true public hospitals there are institutions receiving that status in return for certain obligations, and there are, of course, private hospitals. In Czecho-Slovakia there are 1506 beds for pre-tuberculous children, 3204 for curable tuberculosis, and 428 for incurable tuberculosis, and in Bohemia alone there are 7108 beds for the insane (more than 1 per 1000 inhabitants). Health centres have been set up in the larger towns for the treatment of social diseases; disinfection stations exist on the frontiers, and there is an observation station in Bohemia to which people suspected of infectious disease are sent. Regular school doctors were appointed in Prague as early as 1904, and there are now 14. Their presence in other towns depends on local initiative; their salaries are paid by the provinces or districts except in the few State schools; in these they are paid by the Ministry of Health, which is the authority in school health matters.

Medical students are required to study for five and a half years, and State medical officers have been obliged to pass an examination before appointment. Two years' preliminary practice was required, and a preliminary university course of three months was usual; but now a regular course on public health at the State Institute of Hygiene is being instituted, and local medical officers also will have to pass the examination. There are schools of nursing, but to possess the diploma is very rare, and general hospital nursing is unsatisfactory. District nursing is almost unknown, and there is no school of public health nursing. Midwives must obtain a diploma before practising. The course lasts six months, and probably 95 per cent. of all births in Czecho-Slovakia are attended by midwives, though there are too few in the country districts. Their general education is very weak. There are very few trained disinfectors, and their duties are usually undertaken by night watchmen or policemen; but a school has been started in Prague, and short courses are occasionally given as demand arises.

POST-GRADUATE LECTURES AT ST. MARY'S HOSPITAL.

THE course of post-graduate lectures given over last week-end at St. Mary's Hospital was as successful as those held during the past two years, and had a very cordial reception. Eleven lectures were delivered between 11 A.M. on Saturday and 5 P.M. on Monday; they were freely open to all practitioners, and the fact that over 100 attended part or all of the course should encourage its organisers and provoke imitation of their work.

Mr. C. W. G. Bryan gave the first lecture on the management of

Common Forms of Urinary Obstruction.

Congenital narrowing of the urethral meatus is, he considers, a frequent cause of bouts of obstruction in boys and of continued intractable gleet in men, yet it is often overlooked. In retention due to stricture in adults, any given case may later need anterior urethrotomy, and disturbance by bougies must be minimal. If decongestive measures fail a 2 per cent. novocaine solution should be injected, and a No. 5 French gum elastic bougie passed. If this succeeds the stricture is dilated by four sizes; if it fails, a filiform catheter is inserted and left for 24 hours. A silver bougie is never desirable, and if the stricture is impassable the bladder should be aspirated with the smallest possible trocar, and, if need be, aspirated again after 24 hours. Persistence of retention after this indicates anterior urethrotomy; and infection, of course, forbids aspiration from the first. Strictures must be gradually stretched but never ruptured. Dilatation should not be done more than once or twice a week; an increase of two to three sizes at a session is enough; there should never be bleeding, and it is wrong to go on till there is pain or difficulty. After describing a method of permanent watertight drainage of the bladder by a special catheter inserted through a cannula, Mr. Bryan ended with a plea for cystoscopy and patience in treating ureteric calculi.

The Differential Diagnosis of Gall-stones.

Mr. S. Maynard Smith said that gall-stones must be treated before those complications arise which make them easy to diagnose. After dealing with the main complications he fully described the clinical features of the disease near its onset, emphasising the vague dyspeptic symptoms lacking periodicity and punctuality; the sensations of nausea, giddiness, and chill often noticed; the relation of discomfort to fatty foods, and the absence of relief by alkalies. Visceroptosis is more confusing than ulcers. In gall-stones there may be short acute exacerbations, unrelated to food, when the vague epigastric discomfort turns to right hypochondriac pain with transient subcostal tenderness; lying down brings no relief; a day of standing brings no exacerbation; and bile may be found in the urine. Chronic appendicitis gives tenderness over McBurney's point, not to be confused with diffuse tenderness over the lower rectus muscle due to a distended cæcum. In conclusion, Mr. Maynard Smith discussed, with illustrations, the value of X rays, and mentioned the detection of bilirubin in the blood, the examination of bile withdrawn through a duodenal tube, the estimation of blood cholesterol, and the intravenous injection of calcium tetrabromphenolphthalein to display the gall-bladder with X rays.

Speaking on

Hæmorrhagic Ovarian Cysts,

a common cause of pelvic pain, Mr. T. G. Stevens said that these have been variously called hæmorrhagic corpus luteum cysts, tarry or chocolate cysts, and apoplectic ovary. They are usually found in sterile women of 25–40, and give rise to severe increasing dysmenorrhœa—otherwise rare after the age of 40—coming on several days before the flow and lasting for two days; rectal pressure and pain due to adhesions; dyspareunia, and, in half the cases, menorrhagia. Swellings of moderate size on either side of a partly fixed uterus to which they are somewhat attached, in conjunction with these symptoms and in the absence of any history of pelvic peritonitis, are probably hæmorrhagic cysts. Inflammatory tubal swellings never have the same insidious onset. The condition has often been wrongly diagnosed and disregarded, but it is very serious; the patients become chronic invalids and suffer much; the only satisfactory cure is operative, and both ovaries generally need removal. Until recently the pathology has been obscure. In every cyst wall, said Mr. Stevens, a small area of endometrial tissue is found, and the cyst is formed by the menstruation of this tissue, the pressure of blood producing the severe pain. He discussed the possible sources of this "endometrioma," and its relation to adenomyomata and endometriomata found in other positions. He is satisfied that it comes from endometrial tissue carried up through the Fallopian tubes at menstruation and implanted in the ovary, as is proved, he considers, by ovarian sections which have been prepared.

Dr. C. M. Wilson followed with a lecture on

The Patient's Point of View in Treatment.

He began with a plea that where there is a doubt the patient's opinion should have the benefit of it rather than the doctor's prejudice. In uncertain duodenal ulcer medical treatment should be tried. So-called functional disease probably rests on an organic basis, and it is useless to tell a chronic nervous dyspeptic that he is a bundle of nerves; he must have careful examinations and explanations. Exophthalmic goitre is a common disease badly mishandled. Every case is a potential case of heart failure, and must be moved at once into better conditions. Surgical treatment has a mortality of 5–10 per cent., and X rays must always be given a trial first; to operate when the basal metabolic rate is rising is disastrous, and the time must be carefully chosen. Diabetes in a child demands elaborate institutional treatment; in a young adult it demands at least three weeks' careful training and investigation in hospital; in the middle-aged it usually needs a modified diet, and, if this is neglected, a warning about eye troubles; in the aged only complications have to be treated. Briefly, insulin is only indicated in children, in coma, in gangrene, and sometimes when the diet fails. With heart disease in pregnancy labour is usually successful, but serious degeneration follows.

On Sunday morning Mr. Zachary Cope spoke on

Minor Surgery in General Practice.

After referring to the dangers of chloroform and cocaine he dealt briefly with the treatment of various common conditions. No operation should be regarded as unimportant; care is always needed. Breast tumours are outside the province of minor surgery altogether; they must always be treated as malignant till proved benign, and nothing less than the whole section of breast containing them can safely be removed for fear of diffusing cancer cells. In abscesses, contrary to belief, redness and fluctuation are by no means always present. Ischio-rectal abscesses must be diagnosed early to avoid fistulæ; peri-anal pain demands rectal examination; the removal of a circular piece of skin at the centre of the usual cruciform incision gives good drainage. As a guide to infections of the hand Kanavel's book is invaluable. Needles should be localised if possible by seeking for them under X rays with a hypodermic needle containing novocaine. Brilliant green (a 5 per cent. aqueous solution) is useful in erysipelas, and acriflavine is a good general antiseptic. Mr. Cope ended his lecture with ten minor surgical commandments, which prohibit the use of cocaine for small tumours under the skin, of chloroform after adrenalin, and of strapping applied to infants' skin. They prescribe microscopy for all small tumours, radiography for all sprains, and Hilton's method for opening all deed abscesses.

Prof. B. J. Collingwood opened a lecture on

Some Applications of Physiology in Practice

by remarking that it is untrue to say that laboratory work is divorced from clinical work; they are not yet even engaged. His address dealt with the reaction of the blood, and he gave a lucid explanation of the terminology used. The general metabolism makes for acidity, but a constant reaction is vital to the body and is maintained by the alkaline reserve; when this is reduced the body normally excretes acid ions by the lungs. The CO_2 in alveolar air is an index of the acid content of the blood and can be easily and quickly determined. Much diminution of alveolar CO_2 below the normal 5 per cent. therefore means that the alkaline reserve is reduced, since the acid content of the blood varies as the alkaline reserve in order to keep the reaction constant, and it is thus easy to discover and measure acidosis or alkalosis. The second way of getting rid of acid is by the kidney. The urine is a caricature of the blood—it exaggerates any fault—and a slight rise in hydrogen-ion concentration in the blood produces an acid urine. A third defence against acidosis is the combination of acid radicles with ammonia by which, if necessary, ammonium salts are excreted instead of urea.

On Monday morning Mr. Warren Low read a paper on

Malignant Disease of the Colon.

Clinically, he said, it may simulate a dozen diseases. As a rule it is of low malignancy, but there are striking exceptions, and it often occurs earlier in life than other forms. After describing the annular and cauliflower types of growth and showing specimens, Mr. Warren Low discussed ulceration in the distended bowel above the lesion and the types of obstruction which developed. The onset of constipation in a patient over 40 always demands examination; cæcal cancer often produces colicky pain after meals; in obstruction there is often visible peristalsis and a local or general distension. In growths on the left side constipation is seldom absent; on the right side diarrhœa is common, and ten days' intractable diarrhœa in an adult should stimulate investigation; neurasthenic dyspepsia or ulcerative colitis are commonly diagnosed mistakenly. A rectal examination is essential; X rays are rather disappointing at present; the diagnosis from diverticulitis may be impossible, and laparotomy should be done oftener. The vaunted value of blind cæcostomy is illusory in practice, and it is to be reserved for desperate cases and those in which the diagnosis is certain.

Overlooked Causes of Fever in Children.

Prof. Langmead said that in protracted fever, where the child is obviously very ill, one must think of pneumonia, generalised tuberculosis, *B. coli* infection, malignant endocarditis, and typhoid. Too much is laid at the door of worms and dentition, but they are also possible causes. The only absolute sign of generalised tuberculosis is a choroidal tubercle. *B. coli* infection is too often overlooked, as for some reason babies' urine is not examined; offensive urine and rigors may give a clue, and the condition may be a cystitis, pyelitis, or even a fatal pyelonephritis. Though cases of congenital heart occasionally have bouts of fever, they frequently end with malignant endocarditis. Where unexplained fever is the outstanding feature of a case, constipation or mild colitis due to diet—perhaps excess of bananas—is often responsible. Bilious attacks without vomiting, which otherwise resemble bouts of cyclical vomiting, are not uncommon, and food idiopathy is an occasional cause of fever. No throat should ever be forgotten, and otitis media is sometimes exceedingly insidious. Obscure fever also occurs in dental caries, chronic appendicitis, cryptic glandular tuberculosis, and in nervous children whose mental or physical equilibrium has been disturbed. In stomatitis the buccal temperature is sometimes raised spuriously above that of the rectum. Speaking on

Clinical Types in Gynæcology,

Mr. Aleck Bourne said that sterility is often due to fine adhesions or membranes closing the ostia of the Fallopian tubes. In women complaining of sterility who show no constitutional or pelvic abnormality he recommends dilatation of the tubes by gas, to find out whether the ostia are patent. The apparatus is simple. Under an anæsthetic the cervix is slightly dilated and gas is passed into the uterus; a constant low pressure and bubbling sounds on auscultation show that the gas is entering the peritoneal cavity. This procedure is inapplicable if there is sepsis or tubal inflammation and in the week preceding menstruation when congestion occludes the ostia; but apart from constitutional disease it is otherwise safe and rational, and American statistics suggest that it is therapeutic as well as diagnostic. In healthy sterile women with closed ostia a plastic operation is worth trying. Describing the symptoms which may coexist with retroverted uterus, Mr. Bourne said that, practically speaking, its correction is only needed in the type of woman with dyspareunia, a tender "fixed" uterus, and prolapsed ovaries, in marked prolapse, and in some cases of sterility and repeated abortions. He ended by mentioning the value of X rays applied to the thyroid in "functional menorrhagia," and the possibilities of intra-uterine radium in this condition.

On Monday afternoon Sir William Willcox lectured on

Chronic Toxæmia,

its recognition and treatment. He regards latent infection as the most important known ætiological factor in disease. The relation of toxæmia to diabetes, exophthalmic goitre, appendicitis, gastric ulcer, arthritis, and many other conditions is generally recognised. Its symptoms include wasting, debility, neurasthenia, and a muddy complexion; the last is very suggestive. The irregular pyrexia may suggest typhoid, and amongst many results of toxæmia are thrombosis, hæmorrhages, myocarditis, and endocarditis. The gradual rise of blood pressure throughout life is probably a result of toxæmia which might be avoided, and it has been suggested that 75 per cent. of mental disease is toxæmic in origin. Teeth, tonsils, antra, bowel, and urogenital system—all require investigation in doubtful cases. In intestinal infection there is often an atonic colon, a palpable cæcum, and indicanuria. Colon lavage may yield good material for examination, and is a simple effective form of treatment which any intelligent nurse can carry out. Vaccines should only be given after removing the focus, if that is possible, and need caution in diseases like gout in which resistance to bacteria is poor. Vaccine dosage, indeed, is generally too large.

Cancer of the Breast.

Mr. Duncan Fitzwilliams said that it may be many years before Barnard's findings can be accepted as proved. To establish that cancer is bacterial would not necessarily give us a cure, and the only certainty about the disease is that it is non-infective. Breast tumours in women over 35 are malignant in 80 per cent. of cases. The remaining 20 per cent. are made up by abscess, which is usually puerperal and therefore rare at this age; adenoma, which commonly occurs in younger women; lipoma, syphilis, tuberculosis, and duct papilloma. This last often gives a blood-stained discharge and it is impossible to say in any given case whether it is malignant or not. The hope of cure in breast carcinoma depends on really early diagnosis. To wait for pain, involvement of the skin, nipple retraction, or axillary swellings is futile. If a woman complains of uneasiness in the breast and anything abnormal can be felt, there is only one proper course—microscopy. There is no other way of diagnosis at the time when the patient will have a 60–80 per cent. chance of cure.

A demonstration followed this lecture and ended the post-graduate course.

IMPERIAL SOCIAL HYGIENE CONGRESS,

WEMBLEY, OCT. 5TH–7TH.

UNDER the auspices of the British Social Hygiene Council a very largely attended Imperial Social Hygiene Congress took place in Conference Hall No. 3 at the British Empire Exhibition at Wembley on Oct. 5th, 6th, and 7th. The chair was occupied by Sir Auckland Geddes, the President of the Council, who extended a cordial welcome to the various delegates, many of them hailing from distant Colonies and Dependencies.

Opening by the Secretary for the Colonies.

Mr. L. S. Amery, M.P., Secretary of State for the Colonies, formally opened the proceedings in a speech in which he reviewed the general question of venereal diseases in various parts of the Empire. He said that those who embarked upon this work could well be satisfied by the obvious signs of the increasing interest and recognition of the importance of the subject from the public health standpoint which had been manifested both by the general population and in official quarters. In Africa, especially, the wrestling with the problem had got to be carried through by the people themselves, and it must be remembered that the African native was not, either in physique or intelligence, capable of coping with the great task which was to be attacked there, hence the great requirement was the enhanced development of the people, especially on the physical side. The foundation of African disease was not one which was inherent in climate so much as inherent in man; it was due to neglect and was therefore eradicable. The increasing importance of the part which medicine had to play in the administration of the tropics was patent to all at headquarters who could take a general view; and what applied to Africa was also applicable, in smaller measure, to other parts of the Empire. The Colonial Office was now giving greater attention to the suggestions of the Advisory Council, and had increased the grant to the body responsible for this Congress. Under the auspices of Mr. Baldwin and Lord Balfour the British Government had created a new policy in the form of the Committee of Civil Research, which would do for the scientific aspect of our national life what the Committee of Imperial Defence did 20 years ago for the external security of our national life. He emphasised the fact that the administration of the Empire as a whole must be based upon a sound health policy. The particular diseases with which the present Congress was concerned were among the most serious and yet most hopeful to which any body of workers or reformers could devote themselves; the wastage and destruction of human life for which they were answerable was being more and more realised, and with the march of scientific research in regard to them they could be eradicated given a sufficiently strong public opinion and a determination to combat them. The chief barriers in the past had been ignorance, indifference, and fatalism, creating a very hopeless public outlook. Concealment, deliberate or semi-conscious, on the part of the public on this matter had not only affected legislative attempts to deal with it, but had even influenced the amount of study which had been devoted to it by the medical profession. Very great progress in the matter had recently been made, however, and that largely in consequence of treating the disease frankly as a disease, without permitting any other considerations, such as any stigma, to enter. He expressed his high appreciation of the work being done by the Council throughout the Empire, remarking that one of the great problems of to-day was to build up and to eliminate waste, and there was no form of waste more disastrous than that due to preventable disease.

Mr. Mifzud (Prime Minister of Malta) told the Congress that he attributed great importance to the work being done for the Empire by the Council and by the holding of congresses of the kind, as well as the Imperial efforts to stamp out all diseases in the territories of the Crown, instancing especially Mediterranean fever and venereal diseases.

Mr. James McNeill (High Commissioner for the Irish Free State) followed and expressed similar sentiments.

Dr. J. Alexander Mitchell (South Africa) spoke of the instruction and inspiration which the work done in this country had afforded to South Africa, where, however, racial differences and peculiarities rendered its application difficult. It was a pity that Governments had not recognised earlier that this campaign was not only a good one, but that it paid.

Dr. D. Colquhoun spoke of the drastic law which the New Zealand Government had placed on the Statute Book relating to the compulsory notification of venereal diseases, and the infliction of penalties in the case of those who, being infected, refused to persevere with the necessary treatment.

Sir Leonard Rogers referred specially to the case of India, and said that the greatest feature of the body responsible for the Congress was that it was one of the first bodies to break the "conspiracy of silence" which had so long attached to the subject. In the large cities of India, and especially in the ports, prostitution was appallingly prevalent, but there was the great off-setting advantage that the great mass of the population was rural, and in those areas early marriages were the rule, and these constituted a safeguard. But when the rural folk visited the towns they often went back infected. The spread of knowledge among the rural as well as the town populations would constitute the great means of checking the spread of venereal diseases.

Naval and Military Aspects.

Surgeon-Commander T. B. Shaw read a paper on the venereal disease problem as it affects the Navy, in which he bore testimony to the valuable work done by the Council at the various ports visited by the Navy. He said that the greater the incidence of venereal disease on shore, the larger would be the number of cases on board ship. The loss to the Service caused by venereal diseases was very heavy; in 1921 the case-ratio of these diseases per 1000 men was 113 in the year, and the total days lost to the Service by men being on the venereal sick-list was 325,557, the daily average of men sick from these conditions being 892. In the years preceding the Great War there had been a steady decline in the incidence, but since 1915 these diseases had shown a steady increase, associated, no doubt, with a general increase in promiscuous sexual intercourse following a general laxity in sexual relationship. He was convinced that as this promiscuity would continue to be practised by some people in spite of all efforts to the contrary, the only hope of eventual extermination of these diseases lay in the wider application of means of disinfection of the parts immediately after connexion. His experience in the Service had convinced him that when prophylactic measures were properly used there was little or no risk of contracting the disease. Dr. Shaw proceeded to give his views on particular measures applicable to various conditions in the Service, such as restriction of leave and placing certain districts in foreign ports "out of bounds." He had an unflattering word to say about China and the city of Cape Town, the latter chiefly on account of the great prevalence of these diseases among the coloured population.

Major E. C. Lambkin (representing the War Office) read a paper on venereal diseases in the Army, in which he said that in the great advances made in connexion with the subject the social influences, especially temperance, played a great part. During the last 20 years, excluding the war period, the incidence of these diseases in the Army at home showed a steady decline. In 1904 these admissions were at the rate of 55·8 per 1000, and in 1922 25·0 per 1000.

The admissions in garrisons abroad had always been high, partly owing to lack of provision for regular exercise, partly to laxity of treatment in small scattered units. In the area of occupation on the Rhine and in Turkey the problem was one of real difficulty; in Cologne alone it was computed that there were 6000 prostitutes. The Aldershot Command continued to show the lowest incidence figures, and here the conditions were good, and the organisation of amusements and recreations rendered it less necessary for the soldier to spend his leisure outside. Twenty per cent. of the cases became infected while absent on leave, and many were found to have contracted their disease from amateurs, not from prostitutes. He emphatically declared, contrary to the view held by some, that the Army did not condone or encourage sexual irregularities, but did its best to make the conditions for the soldier as alert and invigorating as possible. There should be some organised attempt at prevention by medical means, such as the packet in use in the Navy. He knew of one command in which a practically clean bill of sexual health was due to the enthusiasm and friendly attitude towards the men of one orderly, who secured attention to immediate measures as soon as risk of infection had been encountered. In Army life concealment of these diseases was of rare occurrence; the trouble was to persuade the men of the need of taking due precautions.

In the ensuing discussion Sir Leonard Rogers expressed surprise that as immediate disinfection was of so much value when properly carried out, the figures for the Navy were not better than they had been shown to be. Colonel L. W. Harrison said his view was that in recent years the proportion of relapses to fresh infections had considerably diminished, due to the more efficient treatment now prevailing. Dr. T. G. Stokes asked whether measures had been adopted to prevent the spread of these diseases to the civilian population by discharged soldiers. Mr. E. B. Turner said his experience was that 48 per cent. of sufferers had attempted the prophylactic treatment, and it had failed. Success or failure in this matter depended largely, he thought, on the personality of the man in charge.

Dr. Shaw replied that if all the men could be got to use suitable prophylaxis immediately after connexion, venereal diseases would soon be exterminated. During six months 1400 preventive outfits were issued, and only one man using such got syphilis, and he delayed its use an hour. Work was now being done on a mercuric iodide soap.

Major Lambkin, in his replies, said there was, in the Army, no compulsion about the use of preventive measures. No man was discharged from the Army until he was deemed to be free from infection, and a man still having the disease when he left the Army was notified to attend the nearest venereal diseases clinic. Patients with gonorrhœa were subjected to every known test before discharge, and relapses were now far fewer than formerly. The moral teaching of the men was left largely to the chaplains.

The Administrative Position Within the Empire.

A paper on this aspect of the subject was read by Mr. C. M. Kohan, who presented a succinct epitome of enactments and regulations bearing on the subject in the various parts of the Empire, remarking that India appeared to be practically untouched by ad hoc legislation dealing with venereal diseases. The most drastic laws seemed to obtain in Queensland, but expert witnesses stated before a Royal Commission in Australia that notification by medical practitioners of cases of these diseases under their treatment was not being efficiently observed. That Commission also received much evidence as to considerable infection by female amateurs.

Dr. J. H. Mitchell (S. Africa) paid a warm tribute to Mr. Kohan for his laborious research.

Methods of Health Propaganda in the Far East.

Sir Claude Hill, K.C.S.I. (Director-General, League of Red Cross Societies), read a paper on this subject. He said that methods of sanitation could only become effective with the informed coöperation of the people themselves. In the League secretariat, therefore, all possible information had been collected as to the chief causes of the suffering and disability of the people. He set out in detail the methods of propaganda employed, and exhibited specimens of posters and other means of pictorial instruction. The organisation he represented had been able to arrange for the delivery of 30,000 popular lectures on the subject. Also a health exhibition was organised at Bangkok in 1922, and 50 per cent. of the population went to it.

Sir Harry Waters paid a tribute to the work being done by the Red Cross League, and especially that accomplished by Dr. Peters. Mrs. Billinghurst said that an attempt was made in Shanghai to start a V.D. clinic for women, but opposition to the proposal by the nursing sisters, who belonged to a Roman Catholic order, stultified this.

The Diseases in Relation to Race and Climate.

Dr. H. M. Hanschell read a communication on the relation of these diseases to race and climate, based largely on his experience as pathologist at the V.D. clinic at the Seamen's Hospital, Royal Albert Docks. He considered that reported differences in the several venereal diseases in different racial groups were founded mainly on locally conditional circumstances affecting the investigation of these diseases.

Dr. P. T. Harper spoke of the mildness of these diseases in Fiji, where the people were practically vegetarians and consumed very little alcohol. The bulky vegetable diet caused frequent evacuations, and intestinal toxæmia was thus rendered less liable to occur. He thought active immunity against syphilis was caused by their having been inoculated when quite young with yaws.

Lieut.-Colonel W. R. Dawson pointed out that cases of syphilis which were supposed to have been cured by injection of malaria still had active treponema pallidum in their system.

On Tuesday morning the meeting was presided over by Viscount Willingdon.

Syphilis and Cardiac Disease in India.

Sir Leonard Rogers read a paper in which he made a comparison of the incidence of syphilis and cardiac diseases in India with that in this country. Rheumatic endocarditis, in 1000 post mortems in London, gave a mortality of 3·7 per cent., whereas in Calcutta there were no deaths from this cause. Aneurysm gave 8·2 per cent. for London, 1·60 per cent. for Calcutta. Ulcerative endocarditis was also definitely more frequent in London than in India. Practically all the heart disease in India was due to syphilis.

The Chairman expressed his great appreciation of the work which had been done by the I.M.S., especially in such a country as India, where there was a great suspicion and distrust of anything new. Recently it had been decided, with the full concurrence of the Governments of Bombay, Madras, and Bengal, as well as that of Burma, to send out a small expert commission to give what expert help it could in assisting to stamp out venereal diseases, which, especially in the centres of industry and the ports of the country, were on the increase.

The position of the campaign in various parts of the Dependency was then dealt with in papers by Colonel R. M. Carter (Bombay) in relation to Bombay; Major W. L. Harnett, who dealt with Calcutta, Lieut.-Colonel T. G. Stokes, reviewing the Central Provinces; and Lieut.-Colonel W. H. Forster in relation to the Punjab. Colonel Carter thought more good would be done by controlling and seeking to improve brothels than by drastic suppression of them. All the papers showed sincere and careful work. There was a short general discussion.

Congenital Syphilis in India.

Dr. Kathleen Vaughan (Kashmir) spoke of her experiences during the three years she was in charge of the Jubilee Zenana Hospital at Srinagar. There was, she said, a regular trade in women with the Punjab, and when these women were no longer fit for their trade they returned to their native land, and no doubt swelled the ranks of the diseased there. The Indian woman was a passive agent in her own degradation, a very important fact to remember. Some of the women who had led such a life practised midwifery in their declining years. The speaker said that the Kashmiri Hindus were gradually disappearing, and four chief reasons for this were venereal disease, tuberculosis, osteomalacia (among the women), and the practice of infanticide by throwing unwanted children into the rivers. She had found the whole place to be overrun with disease. Children of 10 and 11 years of age were sent to their husbands' houses, and often were killed as a result. Many girls before reaching puberty had been infected by their husbands with gonorrhœa, and gonorrhœal ophthalmia was all too common. Dr. Vaughan said the first step should be the investigation of the conditions here described, then the distribution of suitable literature, then the provision of free treatment, and control of the depressing traffic in women which was going on.

The final paper of this morning's session was by Mr. H. W. Bryant, the general secretary of the Bombay Y.M.C.A., who said that some of the largest problems which workers in his agency had to contend with were housing and poverty, early marriages and infantile mortality, and prostitution. These he dealt with in detail.

(To be continued.)

IMPERIAL SOCIAL HYGIENE CONGRESS: THE DINNER.

The Congress dinner was held at the Princes Restaurant, Piccadilly, on Monday evening, Oct. 5th, when Sir Auckland Geddes, chairman of the Council, occupied the chair. After the loyal toasts, the toast of "The Empire" was proposed by Mr. L. S. Amery, Secretary of State for the Colonies, who spoke of the work of his predecessors, Mr. Joseph Chamberlain and Lord Milner, in building up a health tradition in the Colonies. The outlook as regards venereal disease was both serious and hopeful, for he realised how much could be done by a few people who really cared. Viscount Willingdon, who responded, acknowledged the part played by the British Social Hygiene Council in raising up a healthy virile people to carry on the work of the Empire. Sir Auckland Geddes proposed "The Congress," whose great object it was to keep steadily before responsible officials and the public the instructed point of view. Sir Alfred Mond, in responding, remarked on one very important item of progress—namely, that the fresh air of discussion had been let in on the subject of venereal disease. In this country syphilis had been reduced by one-half in the last four years, and he saw no reason why it should not be stamped out. Sir William Schooling proposed "The Delegates and Guests," to which, in the absence owing to illness of Dame Rachel Crowdy, response was made by Sir Claude Hill, who spoke of the increasing influence of British thought throughout the world and of the unique position of women in British social work, and by Mr. Junkin, of the Sun Life Insurance Office of Canada, who made the gratifying announcement that his company proposed to make a donation to the funds of the Council from their large unallotted surplus. Prof. Winifred Cullis neatly proposed thanks to Sir Auckland Geddes for presiding.

NEW MATERNITY HOME FOR CHESTER.—The new Chester Maternity Hospital, situated in White Friars, was opened on Sept. 30th by the Marchioness of Cambridge. The expenditure on the building and equipment amounted to £7000, and the hospital is opened free of debt.

Public Health Services.

SCHOOL MEDICAL SERVICE.

THE following figures are given in the reports for 1924:—

Name of district.	No. on roll.	Av. elem. school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.*
West Ham ..	—†	—†	16,833	17,087	21·5
Llanelly	—†	—†	1,375	1,974	15·40
Nuneaton ..	7,789	—†	1,658	7,005	11·5
Soke of Peterborough C.C.	—†	1,425	500	505	—†
Rutland C.C. ..	—†	2,627	773	787	—†
Swindon B.....	8,868	7,701	2,491	5,168	33·3
Northampton B.	—†	—†	3,165	8,825	16·4
Dover	—†	5,461	1,888	1,725	13·2
Leicestershire C.C.	35,890	—†	10,255	7,600	11·9

* Excluding dental defects and uncleanliness.
C.C. = County council. B. = Borough. † = Not given.

West Ham.—Dr. F. Garland Collins's report is a straightforward account of the various phases of school-work well carried out, but there is no mention of any linking-up of the maternity and child welfare scheme with the school activities. The large number of special examinations is a token of the good work done. These children are recommended by teachers, parents, attendance officers, and nurses for examination; representing as they do the ailing section of the school population, they are deserving of special attention. Blind, deaf, physically and mentally defective children are all cared for, either in the borough itself or by arrangement with neighbouring authorities. Open-air classes are held in many schools and two new open-air schools are now in operation. Though only the 6, 7, and 8 year-old children are examined by the dentists, the quality of the work is high, as 83 per cent. of those found to require treatment get it.

Llanelly.—Many interesting tables are given in Dr. L. W. Pole's report which show at a glance the percentage of the various defects. The figures given for enlarged cervical glands (25·2 per cent.) is high, but no doubt includes all the cases of palpable glands. The vexed question of "What is anæmia?" is raised by the large percentage (32 per cent.) of routine children marked as anæmic. In these times it is encouraging to see that 79·8 per cent. of the children examined were found to be vaccinated. A dental surgeon has been recently appointed, and in order to overtake the long arrears has instructed the school nurses in examination for dental caries, and he proposes that they should carry out the inspections while he devotes his time to treatment. This is no doubt expedient as a temporary arrangement.

Nuneaton.—The varying standards adopted by examining medical officers is clearly shown when we see that less than 0·2 per cent. of Nuneaton children who were examined suffer from anæmia, against 32 per cent. in Llanelly, while 1·5 per cent. of the Nuneaton children have enlarged cervical glands, compared with 25·2 per cent. in Llanelly. Dr. K. E. Tapper remarks on the progress made in the school medical service since he took over the work, but points the road for the future advancement by, among other things, extending open-air facilities and opening special classes for abnormal children. He concludes with justice that the cumulative benefits of the early treatment of all ailing children cannot be measured in £ s. d.

Soke of Peterborough C.C. and Rutland C.C.—The school medical officer for Soke and Rutland, Dr. Christopher Rolleston, reports that, though correction of visual defects is popular, in only 21 cases out of 111 have parents in Soke sanctioned the proposed operations for enlarged tonsils and adenoids. He discusses the causes and effects of this condition, and finds that 58 per cent. of children in whom it is present show some retardation in their studies. Facilities for treatment and the coöperation of parents are both much better in Rutland than in Soke. Dr. Rolleston has investigated the physical condition and environment of all the backward children in his areas, and in about 50 per cent. of cases could find no causal factor.

Swindon.—Dr. Dunstan Brewer finds that primary cases of ringworm are often traceable to infection from cattle. He thinks that there is no justification for separating severe myopia from slight myopia and considering them as different entities. In addition to myopia, dental caries, enlargement and disordered action of the thyroid, and spinal curvature are important factors in secondary schools. Dental caries is neglected more often in secondary than elementary *schools; apart* from this, hyperthyroidism is the most prominent condition in Swindon secondary schools. Interesting comments are made on "overstrain."

Northampton.—The offices of medical officer of health and school medical officer have been combined so as to increase coöperation between the services. Dr. J. Doig McCrindle introduces the report of the assistant school medical officer, Dr. J. H. Mason. The pressure of work has made special inquiries impossible. The number of children unvaccinated is deplored. Investigation of 203 children who have left mental defective schools reveals that of those alive 40 per cent. are at work, 44 per cent. in institutions, and the remainder unemployed.

Dover.—Dr. A. B. McMaster reports that the facilities for visual correction are increasingly used. Investigation has been *made* of the relation of visual defects to improper illumination in schools. An account is given of lessons in mothercraft by school nurses who are also health visitors, and the scheme is to be commended. The lack of special schools is regrettable, though an open-air school is promised.

Leicestershire.—Dr. T. Robinson reports no provision of open-air schools or classes for blind, deaf, or physically or mentally defective children, and no definite orthopædic scheme is yet in operation. The number of crippled children (157) and of mentally defective (26) is incredibly small out of a school population of 35,800. Dr. J. B. Dalton states that in a small-pox outbreak at Melton Mowbray the schools were kept open and the children could thus be effectively supervised and absentees noted. Dr. S. E. Murray has investigated a series of 77 cases of heart disease and studied their ætiology.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 26th, 1925.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 27; scarlet fever, 1901; diphtheria, 929; enteric fever, 76; pneumonia, 761; puerperal fever, 32; cerebro-spinal fever, 6; acute poliomyelitis, 16; acute polio-encephalitis, 1; encephalitis lethargica, 48; dysentery, 3; ophthalmia neonatorum, 103. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 3 deaths from enteric fever, 14 from measles, 3 from scarlet fever, 32 from whooping-cough, 41 from influenza, and 21 from diphtheria. There were 173 deaths of children under 2 years from diarrhœa and enteritis, as compared with 220, 219, 230, and 218 in the preceding weeks. In London itself the deaths from diarrhœa and enteritis in children under 2 years numbered 46, as compared with 55, 43, 38, and 40 in the preceding weeks; there were 8 deaths from diphtheria, 1 from whooping-cough, and 5 from influenza.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

G. W. Gardo to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

C. F. McLean to be temp. Lt.

MILITIA.

Capt. S. W. Hoyland to be Maj.

TERRITORIAL ARMY.

Lt.-Col. C. H. S. Redmond to be Bt. Col.
Capt. H. F. W. Adams, late R.A.M.C., to be Capt.
Capt. R. C. Aitchison (Res. of Off.) to be Maj. (prov.)
General Hospitals: Lt.-Col. A. H. Gosse to be Bt. Col.

ROYAL AIR FORCE.

Air Vice-Marshal D. Munro, C.B., C.I.E., Director of Medical Services, R.A.F., has been appointed an Honorary Surgeon to the King.

Group Capt. H. V. Wells, C.B.E., has been appointed an Honorary Physician to the King.

Flight Lt. J. C. Osburne is granted a permanent commission in the rank stated.

A. F. Cook is granted a short service commission as a Flying Officer for three years on the active list.

DEATHS IN THE SERVICES.

Major-General Sir Hayward Reader Whitehead, K.C.B., died at Lyndhurst on Sept. 28th, aged 70. A student at Charing Cross Hospital, he qualified with the M.R.C.S. in 1877, and afterwards held appointments both at the institution where he received his medical education and at the Royal Westminster Ophthalmic Hospital. In 1880 he took the F.R.C.S. Eng., and in the same year the L.R.C.P. Edin. Two years later he was awarded the Montefiore Gold Medal at the Army Medical School, Netley, and became a surgeon in the Army Medical Department, reaching the rank of surgeon-major in 1891. He saw service in the *Tirah Expedition* of 1897–8, and was present at the action at Dargai, the capture of Sampagha and Arhanga passes. He was also with the expedition against the Chamkanni Khel Afridis, and took part in the march through the Bazar Valley (*mentioned* in dispatches and promoted lieutenant-colonel). From 1891 to 1896 he was assistant professor of military surgery at Netley. In 1905 he was promoted colonel and appointed administrative medical officer in India. In 1908 he served with the Mohmand Expedition as principal medical officer (again mentioned in dispatches), and in the following year he was promoted surgeon-general and appointed Deputy Director of Medical Services, Southern Command. He was transferred to the Eastern Command in 1912. In the second year of the late war he was sent to Malta as Director of Medical Services, and was afterwards appointed to the British Salonika Force. Created C.B. in 1900, he was promoted to K.C.B. in 1917. He also held French, Serbian, and Greek decorations, and was a Knight of Grace of St. John of Jerusalem. He married, in 1893, Evelyn Wynne, daughter of Colonel Cayley, C.M.G., I.M.S.

SIR HAYWARD WHITEHEAD.

THE MOTOR SHOW AT OLYMPIA.

OCT. 9TH TO 17TH.

(BY OUR MOTORING CORRESPONDENT.)

THE CHOICE OF A CAR.

DURING the last six years British cars, especially the small and medium ones, have been developed to an amazing pitch of excellence. They are all in their particular ways first class, and prices appear to have come to rock-bottom and will probably start to rise before the next show. The trouble is to choose. The press particularly interested in motor vehicles issue many bulky show numbers with very complete and accurate buyers' guides; the *Autocar* has excelled itself in particular. Presuming that the medical man will want a small or middle sized car, preferably covered and absolutely trustworthy; that he will, perhaps, in the course of his duties overwork it and not attend to it overmuch, and that he will seriously consider the price of the car, these notes will direct him to a few of the many cars that satisfy these conditions. Every single car is superlatively good, and the modern engine develops about twice as much power for its size as the pre-war one. If he wants four-wheel brakes he can generally have them for another £20 or so if they are not fitted as standard; most cars have low-pressure tyres, and all are fully equipped with excellent starting and lighting sets. Once the medical man buys a car, he may be fairly certain that he need buy nothing and do nothing for six months at least, except pour in fluids and occasionally pump in grease, through special nipples with a special gun. The old days of buying indispensable accessories as extras, and then of anxious watching and expensive repairing, are over. Here, then, are a very few possible choices, in ascending order of price.

There are many excellent foreign cars on view as well as our own British makes, but fine as they are, there is none that cannot be matched in our own country.

A Selection of Cars.

Trojan, 10 h.p. Stand 182. Four-seater, £125 with solid tyres and £130 with pneumatic. Wonderful springs and exceptionally simple controls. Very economical running. The saloon cost £158 with pneumatics, but the open model is perfectly waterproof. No electric starter, but has a mechanical device worked from the seat.

Austin, 7 h.p. Stand 211. The smallest British car. Two roomy seats and a capacious boot with an extremely powerful little engine. £149.

Jowett, 7 h.p. Stand 98. Another very powerful miniature, tested fully in the West Riding. The open two-seater is £150, and there is a very good saloon at £200, a new and surprisingly roomy design.

Morris-Cowley, 11·9 h.p. Stand 184. Very sweet to drive, and the starter is exceptionally silent. All Morrisses now have all-weather equipment, shock absorbers, and balloon tyres. Open two-seater £162 10*s*., and £7 10*s*. extra for four-wheel brakes. Coupé £195, saloon £235, both including four-wheel brakes. The Oxford, which is 13·9 h.p. and very luxurious, costs £240 as an open two-seater, £285 as a coupé, and £350 as a saloon, all with four-wheel brakes.

Rover, 9 h.p. Stand 107. Two-seaters £185 and £212 10*s*.; saloon £285, including four-wheel brakes. The "super" two-seater costs £220 with four brakes.

Cluley, 10 h.p. Stand 83. Two-seater £225. The all-weather 14 h.p., a recent model, costs £395, and the saloon £475.

Clyno, 11 h.p. Stand 99. This firm makes one of the best motor-cycles in the country, and their cars are equally good. Two-seater £162 10*s*., front brakes £7 10*s*. extra. Saloon, with four-wheel brakes, £265. 13 h.p. two-seater £245, coupé £285, with four-wheel brakes.

Standard, 11 h.p. Stand 106. Exceptionally roomy cars. Coupé £225. 14 h.p., one of the best English two-litre cars. Coupé £365, saloon £150. There are several other kinds of bodies. There is to be a new 12 h.p. chassis at the show, of which no details have been published.

Humber, 9 h.p. Stand 213. Touring £260. 12 h.p. coupé and saloon £555; 15 h.p. saloon £800, a splendid car.

Singer, 10 h.p. Stand 181. Two-seater £225, saloon £280, exceptional value. 14 h.p. saloon, £375.

Hillman, 14 h.p. Touring £295, Saloon £345.

Talbot, 8 h.p. Stand 147. Coupé £325. A very fast and sweet-running engine, quite exceptional for its size. 10 h.p. two-seater £350, coupé £415; 12 h.p. six-cylinder, wide two-seater, £750.

F.I.A.T. Stand 185. This company has sent a fine batch from their vast factory in Turin, and the little 10 h.p. model which has been so popular in the last two years is better than ever. The coupé costs £365, with four-wheel brakes extra.

Austin, 12 h.p. Stand 211. A beautiful little medium-powered car, four speeds and four-wheel brakes. Coach £395; 20 h.p. saloon £650. This is an excellent car of the larger variety at a very low price.

De Dion Bouton. Stand 215. This famous car, which was good even in 1896, worthily represents France. The 10 h.p. coupé costs £395, and the 12 h.p. coupé £610. This make is as fine as anything in the show.

Star, 12 h.p. Stand 136. Touring £365 and £395; saloon £445; 14 h.p. coupé £525; 20 h.p. coupé £700. This firm has made cars from the earliest days, and has six different chassis at this show to choose from, with a large variety of bodies.

Armstrong-Siddeley, 14 h.p. Stand 108. Coupé £425. These are very beautiful cars, by far the cheapest of the real luxury class. The 18 h.p. six-cylinder is one of the most attractive medium-powered cars in the world. The two-seater costs £450 and the coupé £550

Crossley, 14 h.p. Stand 139. All the Crossleys fit four-wheel brakes. The coupé is an ideal doctor's car and costs £540.

Vauxhall, 14 h.p. Stand 135. One of the fastest and best of the two-litre class. There are four-wheel brakes and four speeds on this year's models. Touring £550 and saloon £650 and £750.

Willys-Knight. Stand 150. The Willys six-cylinder and the *Overland* 13·9 h.p. are two fine American-designed machines, the first of which costs £695 and the second £340, both saloon bodies; they are manufactured in this country.

Sunbeam, 14 h.p. Stand 110. The Sunbeam is one of the very best British cars; it is designed by Louis Coatelen, and has a wonderful performance. The coupé is £750 and the two-seater £625, with a saloon at £795.

A Few Hints to Novices.

Other models besides those mentioned also have four-wheel brakes and four speeds, but both features are almost universal in the more expensive cars. For the benefit of readers new to motoring a few hints may not be out of place. Low-pressure tyres, now almost universal, increase the smoothness of the running very considerably, and four-wheel brakes add enormously to safety, especially on hills, but they must be kept in proper adjustment. Whether one dislikes gear-changing or not, four speeds are generally more comfortable than three, and certainly save petrol. The most important point to the medical man who drives his own car, next to docility and sweetness of handling, is protection; this can be judged to a certain extent at sight, but ease of driving needs a road-test. Most coupés keep the wet out, but in some it is difficult to see and signal, and the buyer should sit in the car at the Olympia show and satisfy himself that he can see enough. He should choose a body of grey or brown, which does not show the dirt easily, and should satisfy himself that the controls are well within reach, especially the hand-brake; inaccessibility is the worst feature of many cars and completely spoils a few excellent ones. He will find a dashboard light useful in open cars; closed ones usually have an inside lamp. A "strangler," for cutting off the air when starting, is useful on cold nights, but not many British cars have them. And, lastly, when he takes his trial run, let him choose a wet day if possible. Many coupés and saloons that look beautifully snug at Olympia become a perfect shower-bath in wet weather through faulty joints in the windscreen and faulty fitting in the windows.

Correspondence.

"Audi alteram partem."

EXPERIMENTAL EPIDEMIOLOGY.

To the Editor of THE LANCET.

SIR,—In your leading article under the above heading in THE LANCET of Oct. 3rd there is one point on which I should wish to offer a comment, and an explanation. When I first had the good fortune to engage the interest of Dr. Greenwood in these experiments, some five years ago, it soon became evident that the satisfactory progress of the investigation demanded close coöperation, not only in interpreting the results, but in planning the experiments. Since that time those experiments which were likely to yield data requiring statistical analysis have been devised by Dr. Greenwood and myself, after consideration of the results already obtained, and of the experimental or statistical difficulties likely to be encountered; and the experimental method has, from time to time, been modified as new problems or unforeseen difficulties have presented themselves.

Dr. Greenwood's part of the investigation has, therefore, not consisted merely in applying statistical methods of analysis to results which I have independently obtained; but throughout this part of the work the investigation has been a joint one in the full sense of the word, and the statistical side has been carefully considered in devising the experiments as well as in interpreting the results. It is our firm conviction that full and equal coöperation of this kind is essential if progress is to be made in the investigation of an intrinsically difficult problem.

I am, *Sir, yours faithfully*,

W. W. C. TOPLEY.

Public Health Laboratory, Manchester, Oct. 2nd, 1925.

TECHNICAL INSTRUCTION IN OPERATIVE SURGERY.

To the Editor of THE LANCET.

SIR,—From what I constantly see I am forced to conclude that in the plethora of subjects which students have nowadays to tackle surgical handicraft is apt to be forgotten, and that operative training is distinctly inferior to that of midwifery in which a number of personal attendances *must* accompany the application for admission to the final examination. I should like to know what percentage of the candidates for the higher surgical diplomas know how to mop a wound—that is, will apply the sponge with a steady vertical dab instead of a fierce wipe which sweeps away ligatures and causes small unclamped vessels to bleed.

I beg to invite the attention of clinical operators also to avoid teaching their pupils to retain their hands in full pronation when assisting at operation. There is not anything which tempts me more to open my mouth than when the assistant is retracting the edges of wound or applying a ligature to have the whole field obfuscated with his pronated fists, with the result that he barely sees what he is doing and I cannot see anything. It seems *somewhat* of a farce to set papers for examination containing questions—for example, the dissection and difficulties attending exposure of the pituitary gland, carotid body, or semilunar ganglion—to candidates who do not know how to hold a knife or handle a needle, and if entrusted with the application of a ligature to a pedicle, even money, will make such a violent tug on the second knot as to smash up the whole procedure.

I am quite aware that this burlesque is not, in the majority of instances, due to any personal fault of the unfortunate youth camouflaged with a licence to practise surgery, but to the miserable dog-in-the-manger stunt which gives nothing, and in wanton stupidity, admits of a yearly turn-out of men as qualified surgeons who are absolutely incapable for want of personal technical instruction to perform any operation on any living thing.

I wonder what kind of door or window an embryo carpenter would turn out if he had not served his time, with tools in fist, under the direction of his boss.

I am, Sir, yours faithfully,

Buenos Aires, Sept. 9th, 1925. JOHN O'CONOR.

⁎⁎⁎ Sir John O'Conor adds in a postscript that his letter was not inspired by anything which Mr. Bernard Shaw has written — or may write. Coming nearer home it cannot have been inspired either by the annotation on "The Surgeon as a Technician" in our issue of Sept. 26th (p. 657) to which it is so highly apposite.—ED. L.

PERSISTENT DIARRHŒA IN PHTHISIS.

To the Editor of THE LANCET.

SIR,—I have found two drugs not mentioned by Dr. de Carle Woodcock useful in the treatment of this very distressing complication. For some time now I have used intramuscular injections (or intravenous, in much weaker dilutions) of calcium chloride in doses of ½–1 gr. at intervals of two or three days. It has certainly some beneficial effect, especially if given in conjunction with large doses of bismuth by the mouth, say 1–2 dr. thrice daily. The action of calcium chloride is very slow, and injections should be continued for two or three weeks before definite results are expected. Persistent diarrhœa in tuberculosis is not always due to specific infection of the bowels; and when there is clinical evidence of fermentative changes in the large gut, dimol in doses of 1 gr. thrice daily is also a very *useful* adjunct to dietetics and other methods of treatment. This treatment is more effective if a preliminary period of semi-starvation has been prescribed and the tract prepared with a dose of calomel.

Dr. Woodcock raises an interesting point which will have to be settled soon unless pneumothorax therapy is to suffer a set-back. I refer to the connexion between artificial pneumothorax and a supervening diarrhœa. It appears to me that pneumothorax has a tendency to cause (sooner or later) the appearance of another active focus somewhere else in the body, and this tendency is more marked if comparatively high pressures have been used in producing collapse. The intestinal tract, or some other organ, may be the seat of one or two *small* and comparatively quiescent foci, and by collapsing the lung too effectively or too quickly the patient's system gets an overdose of autotuberculin, resulting in reactivation of these indolent foci.

This is, in my opinion, a real danger in pneumothorax treatment. One is apt to overlook the fact that pulmonary tuberculosis is one manifestation (of many) of a general disease.

I am, Sir, yours faithfully,

FELIX SAVY.

Grampian Sanatorium, Kingussie, Sept. 20th, 1925.

ALTRUISM AND THE "COMMON COLD."

To the Editor of THE LANCET.

SIR,—Your correspondent, Dr. J. A. Drake, writes of the thoughtless distribution of the "cold" from person to person. The late Sir William Robertson Nicoll is said to have maintained that "colds, neuralgia, and most other ills arise from the great modern curse of fresh air." The sound of such a voice crying in the wilderness must find an involuntary echo in many conservative hearts beating beneath heavy overcoats to-day; for the curse of fresh air is upon us, and the curse has come to stay. It is true, of course, that although there are few who dare to protest there are many who only accept the inevitable with reservations. Mr. Stephen Leacock, for instance, whilst strongly supporting the use of fresh air, says that after the house has been filled with it the windows and doors should be carefully closed so as not to let any of it escape; properly enclosed it will last for years. In this view he follows Bacon, who remarked in his "History of Life and Death" that: "It is to be observed that air accustomed to the body doth less prey on it, than new air, and often changed." But the fashion of the day is to favour fresh air in and out of season and in every place except the secret places of the home.

It is supposed by many that this retrogressive movement back to Nature will eliminate half the minor diseases of the cities, and in particular it is claimed that the common cold is doomed as soon as it is threatened with an open window. If it were to receive, they say, another name more in keeping with its ætiology, such as a "warm" or a "stuffy," it would never have an opportunity to attack anyone again. But here they do not convince the majority of reasonable people, who think that an open window threatens the patient more than his disease, and who know perfectly well that whether you call it common-or-garden or common-or-drawing-room, there is no doubt of the trouble being a cold.

It is, of course, an ingenious idea that the sensation of chill invariably associated with the onset is due to the first working of the disease in the system; and such no doubt is the explanation of the general experience which gave the name to the complaint. But it is too much to say that cold is not and cannot be an ætiological factor. There are certain people who react astonishingly rapidly to the chilling of their feet, by the immediate development of profuse rhinorrhœa. This may be a purely nervous disorder, but the fact remains that it is only necessary for them to remove their shoes and walk about on a cold floor for a few minutes in order to work the oracle, and if medical opinion cannot accept any mysterious connexion between the nose and the feet, apart from their common faculty of running, it must at least consider whether local improperly compensated chill does not play some part in stirring up nasal infection. Such a defence is the last ditch of the diehard; but even a proof of the connexion between cold and colds cannot save him from those who prefer to put the hardness into living.

It was long ago observed that whereas the English muffled themselves to the eyes when out of doors and permitted a freezing blast throughout their houses, the French, whilst keeping very warm indoors, took the air outside their houses in the scantiest garb. Each of these habits is as reasonable as it appears foolish. When man originally adopted clothing it was intended to permit his exposure to colder climates, and so far it was successful; but since then it has been used to dull the activities of the skin and the race has simply been geared up to warmer surroundings. Any system which encourages the exposure of healthy persons to extremes of temperature, and relegates clothing and housing to their proper place as mere supplements, is increasing the human efficiency. Especially it reduces susceptibility to chill, and the use of cold baths and the habit of wearing as few clothes as possible in all weathers is most likely to produce a healthy skin which will laugh at exposure to draughts. Such a régime is applicable only to those who react properly to it, and for those who suffer from constitutional disease, or for the aged, a protected life is obviously desirable. "And therefore," said Bacon, "poor people who live always within the smell of the same chimney and change not their seats are commonly longest lived, notwithstanding to other operations, especially for them whose spirits are not altogether dull, we judge change of air to be very profitable." Another class for whom the panacea of exposure proves ineffective in preventing colds is that enormous body of persons with nasal abnormalities. How many medical men hide a deflected septum beneath a smiling face? Reflection on such organic aspects of the common cold leads to consideration of infection. The only change in nomenclature which would at present find favour with the man in the street would be a change from active to passive mood. He considers himself caught, rather than catching. Agreeing with the ancient saying that chronic diseases are brought upon a man by himself but acute diseases are an act of God, he shifts the responsibility for his illness from himself on to the micrococci. And, however much the cultivation of general resistance to cold may be in fashion, it remains true that massive infection or foreign infection will lay low the Arctic explorer or the returning holiday-maker whose resistance may be supposed good. How then can the average man, relying pathetically on a cold bath and an evening stroll without an overcoat, hope to prevail against sudden proximity with a virulent strain of organisms recently developed in another suburb? It seems that everyone likes to get the greatest possible pleasure from misfortune. Seized by a cold some people concentrate on the physical compensations of bed, hot whisky, and sympathy; but others prefer moral satisfaction and carry on bravely with conscious pride. This is more subtle, but far more scandalous, for only too often the path of glory leads but to the grave—and the unfortunate thing is that it is usually someone else's grave. If everyday life must throughout the winter be cursed with such members of society let them at least be segregated. Let them travel only in railway carriages intended for the purpose and clearly labelled "colds," and there let them close the windows and there let them create an emulsion of pride and micrococci to their heart's content.

I am, Sir, yours faithfully,

Oct. 1st, 1925. F.R.C.S.

A SURGICAL COINCIDENCE.

To the Editor of THE LANCET.

SIR,—The occurrence of the same surgical emergency twice in a patient must be very rare. A. M. Z., an Egyptian labourer, aged 40, was brought to me in January, 1923, suffering from acute intestinal obstruction. On examination I remarked a sausage-shaped swelling plainly visible under the abdominal wall. I operated under stovaine anæsthesia and reduced a volvulus of the sigmoid flexure, the patient making an uneventful recovery in 12 days. In August, 1925, a man suffering from abdominal pain came to me, and I was at once struck by something vaguely familiar about the look of his abdomen. It was the same sausage-shaped swelling in my same friend of two and a half years before. I operated under stovaine again, and this time I put some "reefs" into his sigmoid mesentery, so I hope his accident will not occur again. He made another uneventful recovery and left hospital in 13 days.

I am, Sir, yours faithfully,
H. E. S. STIVEN,
P.M.O., Egyptian Government Hospital,
Sept. 10th, 1925. Port Said.

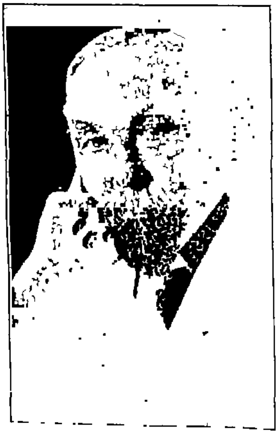
VACCINATION AND COMPULSION IN IRELAND.—Our Dublin correspondent writes: "The vaccination laws in Ireland are compulsory, and no loophole is provided for the conscientious objector. As a result vaccination is, on the whole, fairly thorough, and there has been no outbreak of small-pox in the country for a great many years. During the disturbed period four or five years ago vaccination, however, fell into partial neglect, and when the present Department of Local Government and Public Health came into power there was much leeway to be made up. In most areas this has been done without trouble or opposition, but in the south-east corner of the country, County Wexford, and neighbouring areas, there has for long been a fairly strong antivaccinationist movement, and opposition in that district has been general. The Department of Local Government has done its best to persuade the county health board of Wexford to enforce the law in regard to vaccination, but has failed, and recently the board was informed that steps would be taken by mandamus unless the law was obeyed. The board was still recalcitrant, and it is expected that the department will apply for a mandamus as soon as the courts sit."

Obituary.

JAMES NIVEN, M.A., LL.D. Aberd., M.A., M.B. Camb.

By the death, on Sept. 30th, of Dr. J. Niven, late medical officer of health for Manchester, the medical profession is deprived of a member of outstanding character and ability.

James Niven was born in 1851, and after graduating in Arts at Aberdeen he went to Cambridge, where he had a distinguished career as a mathematician. He was eighth wrangler in 1874 and was afterwards elected to a Fellowship at Queen's College; but although his original intention was to study engineering, he went on from Cambridge to St. Thomas's Hospital, and after taking his M.B. in 1880 held an appointment under the Metropolitan Asylums Board. He then went to Manchester and practised privately for four years in a southern suburb. In 1886 he was appointed medical officer of health for Oldham, and in 1891 the sphere of his influence was again widened when he succeeded Dr. John Tatham in the Manchester office. In the 28 years that followed he proved himself one of the greatest of medical officers of health, and one of the most useful public servants that Manchester has ever had. Apart from routine work he carried through many important reforms. In conjunction with the late Prof. S. Delépine he was able to bring about immense improvement in the city's milk-supply; considerable progress was made against tuberculosis, and great strides were made by Manchester in sanitation. It was largely due to his efforts that the death-rate fell from 24·26 per 1000 in the year before his appointment to 13·82 in 1921. His great achievements were made possible by his intense zeal, his patience and perseverance in attention to detail, and his courage in maintaining his opinions when he was satisfied that they rested on a basis of ascertained fact. There were others equally, or even more, successful in the everyday work of administration, but there was none who explored or proved so thoroughly the foundations of public health, or who pointed out so surely or so wisely the lines along which sanitary reform must proceed. No department of health practice escaped his scrutiny, and each in turn was made the subject of careful study; on each he left the impress of his critical and constructive wisdom. He was essentially a realist; he never lost sight of the economic aspect of health work, nor forgot that the chief end and justification of expenditure is the production of healthier, happier, more efficient citizens. Dr. Niven will be remembered for his insistence upon housing reform, for his revision of existing methods of dealing with infectious disease and the machinery of disinfection, and for his valuable interest in tuberculosis. He was the first to advocate notification, and based his useful reports on a voluntary notification scheme.



Dr. James Niven.

[Photograph by Lafayette.

A record of his work, entitled "Observations on the History of Public Health Effort in Manchester," was published in 1923. His other contributions to medical literature were numerous, and his advice was rightly in request at the Ministry of Health, and by his colleagues in the health service. In giving evidence he was always terse and convincing. He was president of the Epidemiological Section of the Royal Society of Medicine, examiner in sanitary science at Cambridge, and lecturer in public health at Manchester University. For his services to preventive medicine he was given medals by the Royal Institute of Public Health and other bodies, and on his retirement from active work at Manchester in 1922, when he passed the age limit, he was publicly thanked by the city.

A former assistant writes: "As a man Niven was possessed of a singularly noble and winning character. One recalls especially his courage and independence, his tireless industry, his unselfishness, his intolerance of sham, and his love of children. Generous in his estimate of the work of others, he was a tireless critic of his own shortcomings. He had a great capacity for inspiring affection and devotion in his staff, and to those of us who were privileged to be so numbered there remains the enduring memory of a kind friend and 'true and very gentle knight.'"

Dr. Niven's somewhat shy and reticent manner hid a personal character that was generous and kindly. His life was one of continuous and unsparing effort in the public cause. Himself a remarkable man, he was a member of a remarkable family. His three brothers were also wranglers at Cambridge; the eldest was Sir William Niven, who was Director of Studies at Greenwich Naval College; and another was Charles Niven, first wrangler in 1867, who became professor of natural philosophy at Aberdeen. Dr. Niven's wife died 12 years ago, and he leaves three daughters.

ALAN REEVE MANBY, M.D. Durh., F.R.C.S. Eng.,

PHYSICIAN EXTRAORDINARY TO THE KING AND QUEEN ALEXANDRA.

Alan Reeve Manby was born in 1848, the son of Dr. Frederic Manby who practised at East Rudham, in Norfolk, and to whose practice he succeeded. He was educated at Epsom College and at Guy's Hospital, where he filled, among other posts after qualification, that of obstetric resident. Almost immediately he joined his father in a practice which had been carried on previously by his grandfather, and from the first he showed the qualities which made him a success in general practice. In 1885 he was appointed surgeon apothecary to the household at Sandringham, where the Prince of Wales, afterwards Edward VII., was often in residence, leading the life of a county gentleman. On the accession of Edward VII. Manby was appointed physician extraordinary, a position which he afterwards held in respect of the present King and of Queen Alexandra. In 1901 he went in attendance on the Prince and Princess of Wales, the present King and Queen, during their Colonial tour, when he received the M.V.O. Two years later he was knighted, and in 1918 promoted K.C.V.O. He was also a Knight Commander of the Order of Dannebrog of Denmark. His intimate relations with the Court were never allowed to interfere either with his practice or with his interest in professional and local affairs. He had a considerable obstetric practice and was at different times chairman of the Norfolk and Norwich Medico-Chirurgical Society, and president of the East Anglian branch of the B.M.A. He was the author of short but practical clinical contributions to The Lancet and other medical journals, and devised some improvements in several surgical instruments.

He married in 1870 Charlotte, daughter of the late Edmund Farrer, of Petygards, Swaffham, by whom he had one son, Mr. Percy Manby, the Judicial Commissioner of the Malay States, and one daughter, the wife of Dr. F. J. Willans, who succeeded his father-in-law as surgeon apothecary to Queen Alexandra and the household at Sandringham.

EDMUND LANGLEY HUNT, C.M.G., L.R.C.P.I.

Dr. Langley Hunt, whose death took place in London on Sept. 30th, was superintending medical officer of Jamaica and was home on leave when he was taken ill. Born in 1868, the second son of the late E. Langley Hunt, of Co. Limerick, he qualified at the Irish Royal Colleges in 1894 and became a civil surgeon with the South African Field Force (1899–1902), part of his service being on the personal staff of the Commander-in-Chief. He was twice mentioned in despatches (two medals, six clasps) and was awarded the C.M.G. in 1902. Later he was employed in the Anglo-German Boundary Commission to Lake Chad, when he received the thanks of the German Government and the Royal Order of the Crown of Prussia (third class). He was appointed to the West African Medical Staff in February, 1905, and did notable work at the time of the outbreak of plague at Accra in 1908. In 1912 he was transferred to Ceylon as inspecting medical officer, becoming principal officer two years later. He was transferred on promotion to Jamaica as superintending medical officer in 1919. Dr. Hunt leaves a widow and three sons.

WILLIAM MORRISTON DAVIES, M.D. EDIN.

WE regret to note the death on Sept. 23rd, after a short illness at Bournemouth, of Dr. William Morriston Davies at the age of 83 years. Dr. Davies was a native of Glamorganshire and spoke Welsh only until he was 16 years old. He graduated at Edinburgh in 1873 and started practice the following year in Huntingdon with Dr. Michael Foster, father of the famous physiologist of the same name. After six years he moved to London, where he practised at 55, Gordon-square, amidst an ever-increasing circle of patients and friends, until his retirement in his sixty-ninth year to the Manor House, Stoke Poges. To his professional duties and to his private life Dr. Davies brought an earnestness and an intuition which gained him the affection of his patients and the esteem of the physicians and surgeons he called to his aid. In his private life he was an enthusiastic collector of old furniture, silver, and mezzotints, and devoted all the time he could spare to travel and sightseeing, in the course of which he acquired an intimate knowledge of the architectural beauties in the cities of England and Europe. A member of the Alpine Club, he was a keen climber, his wife accompanying him in most of his ascents. Dr. Davies was the possessor of an acute power of observation and an ability to retain a clear and correct memory of all that he saw and read. He was a lover of the beautiful both in art and nature, and with his strong personality acquired a host of friends whom he never failed to instil with a similar enthusiasm.

WILLIAM RONALD KIRKNESS, M.R.C.S. ENG.

Dr. W. R. Kirkness, who died on Sept. 19th at Pembury, Tunbridge Wells, at the age of 50, was a son of the late Captain W. Kirkness, of Falmouth. Born at Wimbledon in 1875, educated at Rossall and King's College School, and then deciding to follow the profession of his grandfathers, Dr. Kirkness, of Truro, and Dr. Soltau, of Plymouth, he entered King's College Hospital and became qualified M.R.C.S., L.R.C.P. in 1904. After holding appointments at Wolverhampton, Westminster, West Herts, Children's Hospital at Hackney, and Mount Vernon Hospital for Consumption, he took up general practice at Portsmouth where, in addition to his own work, he acted during the war as civil medical officer with 13th Battalion R.F.A., and R.A.O.C., R.A.S.C., and R.E. When the war ended his health began to deteriorate, so, greatly to the regret of his colleagues and patients at Portsmouth, Dr. Kirkness disposed of his practice and took a smaller one at Pembury, Tunbridge Wells, where he held the appointments of medical superintendent of Tonbridge Union Infirmary and Hospital, medical officer to the Capel Isolation Hospital, and district medical officer of the Tonbridge Union. During the six years he was at Pembury he gained the confidence of a large clientèle and was always willing to assist his fellow practitioners. A chill caught during the course of his duties brought on an attack of pleurisy and double pneumonia which proved fatal despite every attention. His death has cast a gloom over a district where he was universally liked.

Dr. Kirkness leaves a widow, a son, and a daughter, the former a student at Epsom College.

Medical News.

HOSPITAL DINNERS.—A large gathering of old students of *St. Bartholomew's Hospital* sat down in the Great Hall of the hospital on the evening of Oct. 1st, Mr. John Adams, F.R.C.S., occupying the chair. In proposing the health of the Hospital and of the Medical College, the Chairman contrasted the present body of 700 students, 80 per cent. of them University men, with the 223 students in attendance when he entered the hospital in 1868. Bart.'s men had, he said, won during the past year the gold medals at the M.D., M.S., and M.B., B.S. examinations of London University. Sir William Lawrence responded for the hospital in the regretted absence of Lord Stanmore through illness. Plans for new hospital buildings had, he said, at last been drawn up, to be submitted to the Governors next month. There would be 740 beds on the present site, with an additional paying-block of 80 to 100 beds. The Great Hall was to remain as it now was. Mr. W. McAdam Eccles, in replying for the College, spoke of the four medical professorships of London University within the school and of his wish to see all these chairs adequately endowed, and anatomy housed as well as physiology, physics, and pharmacology at present were. During the last summer they had been through another very successful post-graduate course for old hospital men. Sir Anthony Bowlby, who received an ovation, proposed the Health of the Guests, amongst whom were Sir John Bland-Sutton, Sir Archibald Garrod, Surgeon Vice-Admiral J. Chambers, Lieut.-General Sir William Leishman, and Air Commodore D. Munro. Sir John Bland-Sutton responded. The Chairman's Health was proposed by Dr. W. Langdon-Brown and warmly honoured. After dinner there was the usual adjournment for conversation to the School Library.

Charing Cross Hospital held its annual dinner on Oct. 5th in the Adelaide Gallery at Gatti's Restaurant. Dr. W. J. Fenton, the dean, took the chair. The loyal toast was described on the list as "Our Most Illustrious Doctor, His Majesty the King," and there were no other toasts and no speeches whatever, in spite of a vociferous demand that Sir Herbert Waterhouse should play the raconteur. After dinner Mr. John Goss, with the Cathedral Quartette, sang some really delightful songs and chanties. For the arrangement of some of them, including the favourite war song "And if I die, don't bury me at all," the pianist (Mr. Hubert Foss) was responsible, and several had been arranged or composed by Mr. S. Taylor Harris, a student at the hospital. His very spirited ditty about a pirate sprang into immediate local popularity which should become widespread.

The annual dinner of past and present students of *St. George's Hospital* was held on Oct. 1st at the Hyde Park Hotel, Mr. F. Ashton Warner, F.R.C.S., in the chair, when 100 alumni of the hospital attended, nearly a record gathering. Diners were grouped at small tables and speeches were cut down to a minimum. After the loyal toast, Mr. W. C. Bridgeman, First Lord of the Admiralty, proposed the Hospital and Medical School. He contrasted the difficulties of the medical profession with those of politicians, inferring that, if anything, the doctor had rather the better of it. Some of the general practitioners present appeared to be not quite sure that this was really the case. Dr. James Torrens, Dean of the Medical School, in responding to the toast spoke hopefully of the future of the School, and announced that the entry this year was the highest since 1899. Sir Humphry Rolleston and Sir George Turner were toasted by the company and briefly responded. The success of the evening was largely due to the work of the secretaries, Mr. G. A. Ewart, Dr. Bellingham-Smith and Dr. Gilbert Orme.

The annual dinner of the old students of the *London Hospital* was held on Oct. 1st at the Trocadero Restaurant. The chair was taken by Sir Hugh Rigby, senior surgeon to the hospital, and nearly 200 old students were present. The Chairman congratulated the hospital on its great and increasing prosperity. The school, he said, showed no signs of birth control, and though labour might sometimes be difficult her sons were more numerous than ever, and as devoted as ever to the mother who gave them birth. Financially, thanks to the wizard hand of Lord Knutsford, the hospital had never been more prosperous, and the appreciation which laymen felt for its work was well illustrated by the generous gifts of £10,000 each from Lord Bearsted and Mr. Harron for a clinical theatre and a pathological laboratory respectively, as well as by the latest gift of £50,000 from an anonymous donor for research. With the development of the medical unit, of the system of annex hospitals, and of changes in the organisation of the receiving room and the out-patient department, many old traditions were passing away, but he hoped that nothing would ever be done to disturb the responsibility with which the residents were entrusted, to which we so largely owed the splendid type of practitioner whom everyone associated with the hall-mark of the London Hospital. Team-work was the great demand of the present day, but nowhere could be found a more united or a more devoted team than the past and present students of the hospital which he and his audience were proud to own as their mother.

The annual dinner of *St. Mary's Hospital Medical School* was held on Oct. 5th in the Connaught Rooms, Mr. Leslie Paton in the chair. A large gathering of St. Mary's men and women and their guests was present. In proposing the toast of the school, the chairman said that a teaching hospital filled three important functions: first, the healing of patients; second, research; and third, the teaching of students. It was the third function that was the most vital; no research work was so good as that which was constantly clarified by teaching it to others, and clinical work by being constantly and critically watched by students was benefited greatly. Mr. Paton then paid a feeling tribute to the late Sir Anderson Critchett. Mr. A. R. Prideaux, chairman of the Hospital Board, spoke in reply of the hospital's finances. The past year showed a deficit of £3000, but the prospects for the coming year were more encouraging. A gift of £2000 had recently been received for the purchase of radium, and a further £2000 had been given anonymously. The National Sporting Club had contributed over £6000 annually as the proceeds of boxing tournaments. Dr. C. M. Wilson, Dean of the School, who also replied, explained how the expenditure of the school had increased out of all proportion to the pre-war income from students' fees. The prestige of the school to-day was higher than it had ever been, and he had a very sensitive barometer for estimating that prestige. On the athletic side also the school record was a brilliant one. The health of the chairman was proposed in a humorous speech by Dr. R. H. Miller, and Mr. Paton replied.

The annual dinner of the past and present students of the *Middlesex Hospital* was held at the New Criterion Restaurant at 7.30 P.M. on Oct. 1st. The chair was occupied by Sir Arnold Lawson, ophthalmic surgeon to the hospital. There was a large gathering of the past and present students and their friends, numbering in all about 250. Among the guests were the Hon. Sir Arthur Lawley, Prof. E. A. Gardner, and the Mayor of Marylebone. After the usual loyal toasts, the Chairman proposed prosperity to the Middlesex Hospital and its medical school. He referred to the arrangements being made to carry on the work of the hospital during the rebuilding, to the efforts in train to raise the necessary funds, and to the satisfactory response so far obtained, thanks to the help afforded by the various agencies concerned, including the press, the various committees, the students, and the nurses. He announced that the efforts of the past students and present together so far had realised £4000. Mr. Reginald Beddington replied on behalf of the board. He alluded to the arrangements made to supply accommodation for patients during the rebuilding and stated that they would not involve the loss of a single bed. Mr. Eric Pearce Gould, the Dean, replied for the school. He paid a generous tribute to the work of his predecessor, Mr. A. E. Webb-Johnson. He referred with great satisfaction to the developments in the school during the past year, notably to the appointment of Prof. E. C. Dodds to the University chair of biochemistry, and to the generous gift of a large sum for the study of laryngology and otology from Mr. T. Ferens. Dr. T. L. Hardy, of Birmingham, replied on behalf of the past students, and referred with pride to the reputation of his old school. Mr. E. W. Riches, the Broderip Scholar, made a witty and amusing speech in replying for the present students. The toast of the Guests was proposed by Mr. Sampson Handley, and responded to by Sir Arthur Lawley and Prof. Gardner. The toast of the Chairman was proposed by Dr. R. A. Young. Sir Arnold Lawson replied, expressing his gratification at the large attendance.

The annual dinner of past and present students of the *Westminster Hospital* was held on Oct. 1st in Oddenino's Restaurant, Regent-street. Dr. H. B. Brackenbury was in the chair. The toast of Westminster Hospital students, past and present, was given by the Chairman, who said that he thought of all those who were there that evening as present students; past students could only refer to those who had passed away. A student of Westminster Hospital remained a student throughout his life, still learning from the work which went on there. He had, he said, in special memory many who had now passed away after doing excellent work, and also the actual students of to-day who were faced with new and difficult problems. The toast was responded to by Dr. Charles Roper on behalf of the old students, and Mr. R. G. Hodges made a happy and skilful speech for the younger generation. Mr. E. Rock Carling proposed the toast of the Chairman. For the remainder of the evening the ratio of songs to speeches was judiciously balanced, and the function was a very enjoyable one.

Chelsea Clinical Society.—The annual dinner of this society will be held at the Café Royal, Regent-street, on Tuesday, Oct. 20th, at 7 for 7.30 P.M. Dr. P. Seymour Price, president, will be in the chair.

University College Hospital Dinner.—The annual dinner of past and present students of University College Hospital will be held at the Hotel Cecil, Strand, on Friday, Oct. 16th, at 7.30 P.M., with Dr. Herbert Spencer in the chair.

Prince of Wales's General Hospital: Reunion Association.—The annual dinner usually held during "motor week" will this year take place early in November. Members will be notified in due course of the actual date and place.

Harveian Society of London.—A clinical meeting of the Society will be held at the Hospital for Epilepsy and Nerve Diseases, Maida Vale, on Thursday, Oct. 15th, at 4.30 P.M.

Society of Superintendents of Tuberculosis Institutions.—A meeting of the Society will be held at 122, Harley-street, on Monday, Oct. 19th, at 3 P.M. Papers will be read by Dr. J. W. Linnell on Some Reflections on the Diagnosis and Treatment of Tuberculosis, and by Dr. F. R. Walters on Needs and Indications in Pulmonary Tuberculosis.

People's League of Health.—The first of the Sims Woodhead series of constructive educational health lectures under the auspices of the League will be delivered to-day (Friday) by Prof. Pembrey on Elementary Anatomy and Physiology in the Fyvie Hall, Regent-street Polytechnic, Regent-street, W., at 6 P.M.

Medical Defence Union.—At a meeting of the Council of the Medical Defence Union, Ltd., held on Oct. 1st, Sir Herbert Waterhouse, consulting surgeon to Charing Cross Hospital, was appointed president of the Union for the ensuing year, in room of Mr. W. G. Spencer, retired.

Royal Society of Arts.—On Monday, Nov. 9th, a conference will be held at the house of the society, John-street, Adelphi, W.C., on How the Midwife can Help in the Reduction of Maternal and Infantile Mortality. The chair will be taken by Sir Francis Champneys, Bt. The speakers will include Dr. John S. Fairbairn, Miss E. M. Doubleday, Lieut.-Colonel Fremantle, and Sir John Robertson.

Medical Society of London.—The programme for the first half of the session 1925–26 opens with the annual general meeting at the House of the Society, 11, Chandos-street, W., on Monday, Oct. 12th, at 8 P.M. At 8.30 P.M. Sir Holburt J. Waring will deliver his presidential address on Osteopathy, Chiropractic, and Medicine. The following meetings will also be held on Mondays, at 8.30 P.M.: Oct. 26th, clinical evening, exhibition of cases and skiagrams; Nov. 9th, discussion on Obscure Pyrexia in Childhood, to be introduced by Dr. Robert Hutchison; Nov. 23rd, clinical evening; Dec. 14th, discussion on the Treatment of Genito-Urinary Tuberculosis, to be introduced by Mr. Cyril A. R. Nitch.—The Lettsomian Lectures on the Principles of Treatment in Relation to Diseases of the Nervous System will be delivered on Monday, Feb. 15th, Wednesday, Feb. 24th, and Monday, March 15th, 1926, by Dr. E. Farquhar Buzzard.—The annual oration will be delivered in May, 1926, by Sir Berkeley Moynihan.—The Lloyd Roberts Lecture on Man's Structural Defects will be given on Monday, Nov. 16th, at 5.30 P.M., at the Royal Society of Medicine by Sir Arthur Keith.

Dr. Addison has been adopted as prospective Labour candidate for the Swindon Parliamentary Division.

THE annual service of the Guild of St. Luke, Evangelist and Physician, will be held on St. Luke's Day, Oct. 18th, at 6.30 P.M., at Westminster Abbey.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—The first meeting of the seventieth session will be held to-day (Friday) in the Board Room of the Miller General Hospital, Greenwich, S.E., at 8.45 P.M., when the officers and council for the ensuing year will be elected. Dr. H. S. Knight, the President, will occupy the chair. Clinical cases will be shown by several members.

UNIVERSITY OF BRISTOL.—In a special Final Examination for the degrees of M.B., Ch.B. (Part II.), held recently, the following candidates were successful in public health only (completing examination): Charles T. Hyatt and Hubert J. Satchwell.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the monthly meeting of the Faculty, held on Oct. 5th, George Lynn Pillans, M.C., L.R.C.P., L.R.C.S. Edin., L.R.F.P.S. Glasg., was admitted, after examination, as a Fellow of Faculty.

MANCHESTER BABIES' HOSPITAL.—The new buildings will be opened by the Earl of Derby on Monday, Oct. 10th, at 3 P.M.

THE LATE DR. WILLIAM SANG.—Dr. Sang, who died recently at his residence in Dundee, at the age of 80 years, was a native of that city. He retired from practice only three years ago owing to ill-health. He graduated at Edinburgh University in medicine and surgery in 1871, proceeding to the M.D. degree in 1884. He had contributed several papers on medical subjects to medical journals, among them being one, in 1891, on a case of accidental poisoning by Epsom salts.

ROYAL INSTITUTE OF PUBLIC HEALTH.—A course of lectures on Preventable Diseases will be delivered in the Lecture Hall of the Institute, 37, Russell-square, London, W.C. 1, on Wednesdays, Oct. 14th to Dec. 16th, at 4 P.M. The first lecture will be delivered (on Oct. 14th) by Colonel S. Lyle Cummins on the Prevention and Arrest of Tuberculosis. Lieut.-Colonel Cuthbert James will be in the chair. These lectures, whilst intended primarily for the Fellows and members of the Institute, all others, men and women interested in medico-sociological problems, are cordially invited to attend. The Harben lectures will be given by Prof. J. C. G. Ledingham on Current Problems in Bacteriology and Immunology, and their bearing on Public Health Effort, on Dec. 9th, 10th, and 11th, at 5 P.M. Copies of the syllabus may be obtained from Dr. E. W. Hope and Dr. T. N. Kelynack, hon. secretaries, at the Institute.

SURGICAL INSTRUMENT MANUFACTURERS' ASSOCIATION, INC.—The annual dinner of this Association, which is affiliated to the National Union of Manufacturers, was held on Friday, Oct. 2nd, at the Holborn Restaurant, Kingsway, Mr. Ernest W. Mayer being in the chair. The toast of the Association was proposed by Mr. H. E. Curtis, who gave a short résumé of its history. The Association, he said, was a war-time product, due to the thought of Mr. Edwin Arnold, who, in 1917, brought, by its foundation, the members of the surgical instrument trade together. The first President was Mr. Down under whose able guidance the Association had flourished exceedingly. Mr. Godfrey Cheesman, general secretary of the National Union of Manufacturers and former secretary of the Association, in response to the toast, said that it should be incumbent on public spending bodies to buy British goods, and gave some instances where certain communities had transgressed in this respect. He referred to the spirit of amity and coöperation that existed in the Association, and salted his remarks with several amusing anecdotes. Colonel A. Young, C.B.E., proposed the Guests in a humorous speech, and Sir W. Arbuthnot Lane, in reply, paid a tribute to the superiority of British surgical instruments. "Surgeons don't realise," he said, "how much they owe to the surgical instrument makers." "The Chairman" was proposed by Mr. W. T. R. Beckett, and Mr. Mayer replied. During the evening a pleasant programme of music and song was dispensed by Miss Ethel Kemish, Miss Blanche Gaston Murray, Mr. George Webber, and Mr. Hector Gordon.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, Oct. 12th.

WAR: at 5 P.M.
Presidential Address:
Lt.-Gen. Sir William Leishman (Director-General, A.M.S.): Research in the Medical Services.

Tuesday, Oct. 13th.

THERAPEUTICS AND PHARMACOLOGY: at 5 P.M.
Discussion on
Some Difficulties in the Use of Insulin, to be opened by Dr. George Graham (President).
The following have also promised to contribute:
Prof. H. MacLean, Dr. R. D. Lawrence, Dr. E. P. Poulton, Dr. G. A. Harrison.

Thursday, Oct. 15th.

DERMATOLOGY: at 5 P.M. (Cases at 4 P.M.)
Cases:
Dr. J. H. Sequeira: (1) A Private Case for Diagnosis. (2) Kaposi's Multiple Pigment Sarcoma.
Dr. A. C. Roxburgh: Lupus Erythematosus.
Other cases will be shown.

Friday, Oct. 16th.

ELECTRO-THERAPEUTICS: at 8.30 P.M.
Presidential Address:
Dr. Alastair MacGregor: Then and Now.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Oct. 12th.—8 P.M., Annual General Meeting. 8.30 P.M., Ordinary Meeting. The President's address on Osteopathy, Chiropractic, and Medicine, by Sir Holburt J. Waring, to be followed by a discussion.

BIOCHEMICAL SOCIETY (Biochemical Department, Cambridge).

SATURDAY, Oct. 10th.—3 P.M., Dorothy Needham and J. Needham: The Micro-Injection of pH and rH Indicators. G. S. Lund and C. G. L. Wolf: The Fermentable Sugar in Blood. F. G. Hopkins: An Oxidation of Proteins promoted by Glutathione. Mrs. H. J. Coombs and Marjory Stephenson: The Gravimetric Estimation of Bacterial Growth. L. J. Harris: Extension of the Principles of Acidimetry. Application to Certain Biochemical Problems: (*a*) Analysis of Amino-acid Mixtures; (*b*) Volumetric Estimation of Casein and other Proteins; (*c*) The Rationale and Prediction of Protein Behaviour; (*d*) Polypeptides; (*e*) Insulin. H. F. Holden: The Estimation of Glucose. C. S. Hicks: The Effect of a Tryptophane-Free Diet on the Thyroid Gland of the Rat, with Studies in Heat Production. C. S. Hicks: The Ultra-Violet Absorption Spectrum of Acetyl-Thyroxin. C. S. Hicks and M. L. Mitchell: A Preliminary Report of the Study of Induced Polyuria in Rats. H. W. Dudley and W. V. Thorpe: A Synthesis of N-methylputrescine and of Putrescine. J. B. S. Haldane: The Effect of Diuresis on Purin Metabolism. H. J. Channon and J. C. Drummond: Feeding Experiments with Spinacene.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

THURSDAY, Oct. 15th.—8.15 P.M., Opening Meeting of Session. Dr. Andrew Balfour, C.B., C.M.G., President: Inaugural Address on Some of Our Pioneers, illustrated by lantern slides. The meeting will be preceded at 7.45 P.M. by an exhibition of some interesting works on tropical medicine and hygiene dating from the middle of the eighteenth century onwards.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

THE FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 12th, to SATURDAY, Oct. 17th.—COMBINED CHILDREN'S COURSE, Paddington Green, Victoria Hospitals, and Children's Clinic. Morning and afternoon sessions.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road. Special course in Laryngology, Rhinology, and Otology. Clinical course and Operative Surgery course, of which one or both may be taken.—LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Endsleigh-gardens. Tuesday and Thursday, clinical demonstration by Dr. G. C. Low and Dr. P. Manson-Bahr at 2 P.M. The subjects considered will be the more important diseases of tropical countries, illustrated by cases in hospital.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: October-November, 1925.

Clinical Lectures and Demonstrations.

Monday, Oct. 12th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Paraplegia and its Treatment: Dr. Riddoch.

Tuesday, Oct. 13th.—2 P.M., Out-patient Clinic: Dr. Walshe. 3.30 P.M., Epilepsy: Dr. Adie.

Thursday, Oct. 15th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Syringomyelia: Dr. Martin.

Friday, Oct. 16th.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Acoustic Nerve Tumours: Mr. Sargent.

The fee for the Course, including Pathology lectures, is £5 5s. For those who hold Perpetual Tickets the fee is £3 3s.

Course of Lectures and Demonstrations on the Pathology of the Nervous System.

Thursday, Oct. 15th.—12 noon, Neuroglial Reaction: Dr. J. G. Greenfield.

Course of Lectures and Demonstrations on the Anatomy and Physiology of the Nervous System.

Monday, Oct. 12th.—12 noon, (a) The Peripheral Nervous System, (b) Spinal Cord: Dr. J. L. Birley.

Dr. H. J. Macbride will give a Course of Eight Clinical Demonstrations, chiefly on Methods of Examination of the Nervous System, in the Wards at 10 A.M. on Tuesdays and Fridays, if sufficient entries are received. The fee for this Course will be £2 2s. (commencing Tuesday, Oct. 20th).

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 o'clock, or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.

Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.

J. G. Greenfield, Dean of Medical School.

UNIVERSITY COLLEGE, London.

Monday, Oct. 12th.—5 P.M., Mr. R. J. Lythgoe: The Physiology of Hearing and Vision (first of a course of eight public lectures).

Wednesday.—5 P.M., Second lecture.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

Tuesday, Oct. 13th.—5 P.M., Dr. A. C. Roxburgh: Eruptions due to Physical Causes.

Thursday.—5 P.M., Dr. R. F. Fagan: Pathological Demonstration.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

Wednesday, Oct. 14th.—4 P.M., Colonel S. Lyle Cummins: The Prevention and Arrest of Tuberculosis.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Thursday, Oct. 15th.—3 P.M., Mr. Norman Fleming: Demonstration of Fundus Cases. 4.30 P.M., Mr. Aubrey Goodwin: Lecture, Treatment of Vaginal Discharges.

Daily.—In-patient and Out-patient Clinics in General and Special Departments, Operations, &c.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

Thursday, Oct. 15th.—4 P.M., Mr. Fairbank: Spinal Caries.

ANCOATS HOSPITAL POST-GRADUATE LECTURES.

Thursday, Oct. 15th.—4.15 P.M., Mr. E. E. Hughes: The Significance of Urinary Symptoms.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE LECTURES.

Tuesday, Oct. 13th.—4.15 P.M., Mr. D. L. Sewell: Chronic Empyema of the Maxillary Antrum.

Friday.—4.15 P.M., Dr. A. McDougall: A Point of Moment in the Treatment of Epilepsy.

Appointments.

Duncan, A. G. B., M.D. Aberd., D.P.H., has been appointed Medical Officer of Health, Kidsgrove Urban District.

Elliott, G. M., M.B., Ch.B. Edin., Medical Officer of Health for the County of Selkirk and the burghs of Galashiels and School Medical Officer.

White, A. H., M.B., B.S. Durh., F.R.C.S. Eng. & Edin., Hon. Assistant Surgeon to the Royal Victoria Infirmary, Newcastle-upon-Tyne.

Wilson, F. A., M.D. Edin., Junior Assistant Medical Officer, Cheshire County Mental Hospital.

National Hospital for Diseases of the Heart: Trotter, W., M.D., M.S. Lond., F.R.C.S. Eng., Consulting Surgeon; Cleminson, F. J., M.Ch. Camb., F.R.C.S. Eng., Consulting Surgeon for Diseases of the Ear, Nose, and Throat.

Vacancies.

For further information refer to the advertisement columns.

Barry Urban District Council.—H.S. at rate of £200.

Birmingham, City Mental Hospital.—Asst. M.O. £350.

Cambridge, Addenbrooke's Hospital.—Cas. O. and Res. Anæsthetist. At rate of £130.

Cambridgeshire Tuberculosis Colony, Papworth.—H.P. At rate of £100.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Hon. Asst. Out-patient Registrar.

Colwyn Bay and Colwyn Urban District Council.—M.O.H., &c. £800.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—H.P. At rate of £125.

Farringdon General Dispensary, Holborn-circus, E.C.—Surg. for Throat, Nose, and Ear Dept.

Greenwich, Dreadnought Hospital.—S. in charge of Out-patients.

Guy's Hospital, S.E.—Salomons Infant Welfare Centre. M.O. 1½ guineas per session.

Holland County and Boston Borough Education Committee.—Dent. S. £150.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. At rate of £50.

Hospital of St. John and St. Elizabeth, 40, Grove End-road, N.W.—H.P. and H.S. At rate of £100 and £75 respectively.

Hull City Education Committee.—Asst. Sch. M.O. £600.

Ipswich Mental Hospital.—Asst. M.O. £300.

Liverpool, Brownlow Hill Infirmary.—M.O. £500. Also Asst. M.O. £200.

London Hospital, E.—First Asst. and Registrar. At rate of £200.

Manchester Royal Infirmary.—H.S. At rate of £50.

Metropolitan Hospital, Kingsland road, E.—Sen. and Jun. H.P. Sen. and Jun. H.S. Also Two Cas. O.'s. Each at rate of £100.

Middlesex County Council Committee for the Care of the Mentally Defective.—Asst. M.O. £600.

Miller General Hospital for South-East London, Greenwich-road, S.E.—Pathologist, £500, Asst. in Out-patient Dept. £150, and H.S. £125.

National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Res. M.O. £200.

Newark Hospital and Dispensary.—Res. H.S.

Plymouth County Borough.—Asst. M.O.H. £750.

Plymouth, Didworthy Sanatorium, South Brent.—Res. M.O. £600.

Queen's Hospital for Children, Hackney road, Bethnal Green, E.—Asst. S.

Royal Chest Hospital, City-road, E.C.—Phys. to Out-patients. £50.

Royal Northern Hospital, Holloway, N.—P.

St. Bartholomew's Hospital.—Asst. Ophth. S.

Seychelles Government.—Asst. M.O. and Res. S. Rs.6500.

Southend-on-Sea County Borough.—Asst. M.O. £600.

Wolverhampton and Staffordshire Hospital.—H.S. At rate of £150.

The Chief Inspector of Factories, Home Office, London, S.W., announces vacant appointments for Certifying Factory Surgeons at Yeovil (Somerset) and Whitchurch (Salop).

The Home Secretary gives notice that, in consequence of the resignation of Dr. E. le C. Lancaster, one of the Medical Referees under the Workmen's Compensation Act, 1906, for the District of the Neath and Port Talbot County Court (Circuit No. 31), the appointment held by him is vacant. Applications for the post should be addressed to the Private Secretary, Home Office, and should reach him not later than Oct. 28th.

Births, Marriages, and Deaths.

BIRTHS.

Bolton.—On Sept. 30th, at Bedford Lodge, Boldre-grove, the wife of Dr. A. O. Bolton, of Leighton Buzzard, of a son.

Graham.—On Sept. 20th, at Trimulgherry, India, to Major and Mrs. W. T. Graham, R.A.M.C.—a son.

Oram.—On Oct. 4th, at Lee-terrace, Blackheath, the wife of E. R. B. Oram, F.R.C.S., of a son.

Ormerod.—On Oct. 1st, 1925, to Mary (née Burton), the wife of Frank Cunliffe Ormerod, of 13, Welbeck-street, W. 1, and 30, Queensborough-terrace, W. 2.—a son.

MARRIAGES.

Colville—Ball.—On Sept. 30th, at Havant, Hants, Oliver Colville, M.D., of Bedlington, Northumberland, and Bath, to Kathleen, only daughter of Mr. and Mrs. Ernest Ball, of St. Margaret's, Drayton, Cosham, Hants.

Cuthbert—Taylor.—On Oct. 5th, at All Saints', Shooters' Hill, Captain Edmund Sheppard Cuthbert, R.A.M.C., to Annie Rose, elder daughter of Captain R. C. Taylor, R.H.A., (retd.), and Mrs. Taylor, of Plumstead.

Foote—Adair.—On Sept. 25th, at Holy Trinity Church, Sloane-street, S.W., Robert Rowden Foote, M.R.C.S., L.R.C.P. Lond., to Maureen, only daughter of Mr. and Mrs. G. E. R. Adair, Wellesley House, Lower Sloane-street.

Hammond-Williams—Barton.—On Oct. 3rd, at the Parish Church of St. Mary, Acton, Douglas Shepherd Hammond-Williams, L.D.S. R.C.S. Eng., to Violet Nellie, youngest daughter of Mr. and Mrs. Edward A. Barton, of The Cottage, Woodhurst-road, Acton, and Laleham-on-Thames.

Hilton—Hill.—On Sept. 16th, Reginald Hilton, M.B., B.Ch., M.R.C.P., to Gwenda Hill, M.B., B.S.

Hudson—Allard.—On Oct. 2nd, at All Saints' Church, Whitstable, Frank Hudson, F.R.C.S., to Christabel, eldest daughter of C. B. Allard, Tankerton, Kent, grand-daughter of the late W. Allard, F.R.C.S., Tewkesbury.

Mines—Gordon.—On Sept. 28th, at Sidbury Parish Church, Albert Gordon Austin Mines, R.A.M.C., to Marion Alice Gordon, youngest daughter of the late Alexander Hamilton Miller Haven Gordon, of Delamont, Killyleigh, Co. Down, Ireland, and Mrs. Gordon, of Ladymead, Sidford, Devon.

Prowse—Crellin.—On Sept. 29th, at St. Mary's, Leigh Woods, David Crawford Prowse, M.B., M.R.C.S., to Dorothy Emily Crellin, M.B., M.R.C.S., younger daughter of the late John C. Crellin and Mrs. Crellin, of West Mall, Clifton (late of Hoylake, Cheshire).

Rogers—Glasbrook.—On Oct. 2nd, at All Souls', Langham-place, London, Herbert Rogers, M.B., Ch.B., to Margaret Iris, eldest daughter of Mr. and Mrs. David N. Glasbrook, of Bryn-y-Mor, Swansea.

DEATHS.

Hunt.—On Sept. 30th in London, Edmund Langley Hunt, C.M.G., L.R.C.S. & P.I., Superintending Medical Officer Jamaica. Funeral took place at Golders Green Crematorium on Oct. 3rd.

Manby.—On Sept. 29th, at East Rudham, Norfolk, Sir Alan Reeve Manby, K.C.V.O., F.R.C.S., M.D., aged 77.

Stares.—On Sept. 28th, at The Limes, Swanley, Kent, Charles Lindsay Baker Stares, J.P., M.R.C.S. Eng., L.R.C.P. Lond.

Vernon.—On Feb. 12th, 1925, suddenly, at Montego Bay, Jamaica, Alexander Apfell Vernon, M.D. New York, M.R.C.S. Eng., L.R.C.P. Lond., aged 60 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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THE LONDON MEDICAL EXHIBITION: A REPETITION IN LIVERPOOL.

Both in scope and variety the London Medical Exhibition which was opened at the Central Hall, Westminster, on Oct. 5th and which closes to-day (Friday, Oct. 9th), is perhaps the most important of the many that have been organised since 1905. The attendance has been large; it has included appreciative visitors from London, the home counties, and the Midlands, and a fair number of medical men from overseas at present visiting this country. The success of these exhibitions is shown by the demand for a similar display more conveniently situated for medical men in the North of England, and to meet this demand a medical exhibition, similar to the London one, will be opened at the Philharmonic Hall, Liverpool, on Tuesday, Nov. 24th, for four days, closing on Nov. 27th. The London office of this new enterprise is the British and Colonial Druggist, Ltd., 194–200, Bishopsgate, E.C. At the London exhibition practically every branch of medical treatment receives recognition in some form, and both drugs and surgical instruments in their latest adaptation to progressive medicine and surgery find a place. Particularly noticeable is the large number of iodine and liquid paraffin preparations; the popularity of electro-therapeutic treatment is indicated by a variety of apparatus, and in this category may be included light treatment by means of quartz and other lamps. Another prominent feature of the exhibition is the obvious effort of the manufacturers of drugs to present them in a form pleasing to the eye as well as to the taste. The organisers are certainly to be congratulated upon the success of the exhibition no less than upon the production of the "London Medical Brochure," which is given away to visitors. This is a list of special medicines with their composition, therapeutic uses, and the name of the maker or supplier, and forms a ready guide for medical men who wish to try some of the newer remedies for particular diseases. A detailed account of the exhibition will appear in our columns next week.

INTERNATIONAL HEALTH ORGANISATIONS.

The prevention of disease as an international problem is now accepted as a commonplace, but international health organisations are of comparatively recent growth, and even the word international, now so familiar, only dates from 1780 when it was coined by Jeremy Bentham. International organisations trace their origin in the first place probably to trade, soon followed by intellectual and artistic exchange between nations, and they were also undoubtedly influenced by widespread religious interests as seen in the early Church Councils and in the Crusades. The earliest international congresses were of a scientific nature, the first of these being held in Germany in 1823, and it was not until 1861 that an association between nations for a common end took shape in the International Geodesic Association, which had as its object the accurate measurement of the earth. In 1851 the first international sanitary conference was held in Paris and prepared a draft convention which was never ratified, but from that time forwards the gradual development of the international aspect of public health took place until at the present day there are three important organisations concerned with this—the Office International d'Hygiène Publique, the Pan-American Sanitary Bureau of the American Republics, and the Health Organisation of the League of Nations, including both the Health Committee and certain divisions of the International Labour Office. A recent issue of Public Health Reports[1] from Washington contains an historical review of these organisations and traces their evolution up to their present-day established position.

After the First International Sanitary Conference of 1851, succeeding conferences were held in a spasmodic fashion until, in 1903, the Italian Government proposed a conference in Paris for the purpose of collecting into one agreement the existing conventions, and it was at this meeting that the Office International d'Hygiène Publique was created. An agreement between the powers was drawn up and signed at Rome in 1907, providing for the establishment of headquarters, funds, and staff, for the issuing of a monthly bulletin, and for a permanent committee which should meet once a year. The permanent committee met first in April, 1909, and but for the years of the war has continued to hold regular sessions each year. It has carried out important work; for example, with regard to plague, tuberculosis, Malta fever, water-supplies, and the standardisation of serums and other biological products, while the monthly bulletin, published without interruption since January, 1909, contains valuable epidemiological reports and tables, abstracts of articles on subjects pertaining to public health, and bibliographies on similar subjects.

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[1] Washington, Public Health Reports, xl., No. 34, August 21st, 1925.

By the Covenant of the League of Nations the authority was given for an international health organisation under the direction of the League. The Office International d'Hygiène Publique found itself unable to participate in the activities of the League owing to certain important provisions in its organic by-laws, but to avoid the difficulties of a dual organisation an arrangement was made in 1923 whereby the International Office retains its regulations, powers, and its seat in Paris, and acts as the Consultative Council to the Health Organisation of the League, which consists in addition of a permanent health committee and a health section of the secretariat with its headquarters at Geneva. The League by means of this organisation has carried out a great amount of work, including, for example, the fighting of the typhus fever epidemic in Poland and Russia, an epidemic commission in Greece, and other preventive work in the Near East, while the standardisation of biological products and the interchange of public health officials by providing courses of "travel studies" are other important developments. The health section of the Secretariat of the League, under the direction of Dr. Ludwik Rajchman, is the executive organ of the Health Committee, and besides the work described above is responsible for issuing valuable epidemiological reports. The International Labour Office, an autonomous organisation within the League of Nations, has a division of industrial hygiene which has collected and published much information in regard to this subject, and has set up certain advisory committees, one of which on anthrax has made valuable contributions to the problem of combating this disease. Mention may here be made of the League of Red Cross Societies, an association of National Red Cross Societies founded in 1919, and now comprising 51 members, which maintains a permanent secretariat in Paris and does valuable work in close coöperation with the official international organisations by distributing propaganda on health matters throughout the world as well as carrying out courses in London for nurses from many different countries. It possesses a very fine collection of pamphlets, posters, booklets, and films on health matters, and forms an important link between the official bodies and the public.

The Pan-American Sanitary Bureau is the outgrowth of a series of international conferences of North and South American States which date back over a hundred years, and largely with a view to combating the ravages of such diseases as cholera and yellow fever at the sea ports the United States summoned an international conference to meet at Washington in 1881. This was followed in 1889 by a conference of American States at which every American Republic was represented, and where, among other questions, the subject of ship sanitation and quarantine was discussed. At the second conference of the American States in 1901–02 the International Sanitary Bureau of the American Republics was created, its name being changed in 1923 to the Pan-American Sanitary Bureau. Since its foundation this bureau, which is a permanent executive board with its headquarters at Washington, has been responsible for collecting and distributing information on public health matters, for giving expert assistance in the fighting of outbreaks of epidemic disorders, and generally carrying out the resolutions of the seven international conferences of the American States which it has organised since 1902.

COLONIAL HEALTH REPORTS.

Ashanti.

In his report for 1923–24 Mr. John Maxwell, C.M.G., the Chief Commissioner, states that there were four deaths and five cases of invaliding of Europeans during the year under review, two of the deaths and two of the cases of invaliding being due to blackwater fever. The admissions to the European Hospital numbered 118, as compared with 101 during the previous year and 172 for 1921. The admissions to the Native Hospital numbered 1072, whilst 15,501 out-patients were treated during the year. These cases were of the usual kind, venereal disease, yaws, pulmonary affections, ulcer, and malaria being the most common. There was no epidemic throughout the year, and the health of the inhabitants was generally good. The sanitation of the towns (except Kumasi) and villages was satisfactory. With the opening up of the country by motor roads new villages adjacent to the roads have been built and the old villages distant from the roads have been deserted. This forward movement is particularly noticeable in the western province and is an extremely satisfactory condition of affairs. It indicates greater trust by the Ashanti in the protection of life and property which the administration affords, and also indicates that the Ashanti is fully alive to the greater possibilities of disposing of his products to travellers and others. These new villages, with the help of the political and sanitary officers, are all carefully laid out with fine broad streets, open spaces, and sanitary utilities. Kumasi, Obuasi, Bekwai, Juaso, Kintampo, and Sunyani are the principal towns, and the sanitation of these towns is under European and African officers. The population at the census of 1921 was 406,193, that of Kumasi, the chief town, at the end of the year being approximately 27,000. The town limits are a radius of one and a half miles from the fort and there are buildings scattered all over this area. The usual preventive measures were taken against insect-borne disease, including malaria, yellow fever, filariasis, infectious and epidemic diseases. There was, unfortunately, no improvement in the quality of the Kumasi water-supply, which is badly polluted by the presence of *B. coli*. There were no cases of cerebro-spinal meningitis, cholera, enteric fever, small-pox, or plague. The rainfall recorded at Kumasi during the year was 59·210 inches. Investigations have been made at Chebbi, near Nsuta, as to its suitability for a site for a sanatorium for the Gold Coast in accordance with the Secretary of State's suggestion. The situation is ideal and water-supply appears to be good and plentiful. It is 1200 feet above sea-level and is within two hours by motor from Kumasi, the road being good, except for the last three miles.

Grenada.

Mr. Herbert Ferguson, Colonial Secretary, in his annual report, states that the death-rate for 1923 (16·6 per 1000) is the lowest recorded in the annals of the colony. The number of deaths from dysentery decreased from 83 to 33, and from diarrhœa and enteritis from 320 to 283. Deaths from malaria were also fewer, being 74, as compared with 83 in the previous year. The population at the last census was 66,302. The Registrar-General points out "that the low death-rate coincided with a year of deficient rainfall, the latter having been 55·72 inches at Richmond Hill in St. George's, as compared with the average of 74·38 inches for the past 30 years. An examination of death-rate in relation to volume of rainfall over the past 20 years does not reveal any striking relativity between the two. As a rule a low rate of rainfall is supposed to accompany a decrease in the death-rate, but this is not invariably the case. A prolonged dry season followed by a short spell of heavy rains often leads to an outbreak of dysentery, diarrhœa, and enteritis, and thus, while the annual rainfall may be low, a corresponding reduction in the death-rate does not always follow. Last year there was no distinct spell of dry season, nor of heavy rainfall at any time, the latter being well distributed over each month. It is this equable distribution of rainfall throughout the year that has contributed to the low mortality."

Grenada, situated in the extreme south of the Caribbean Sea, is the nearest British island to the mainland of South America, with the exception of Trinidad and Tobago. The island is about 21 miles in length and about 12 miles in its greatest breadth. Its area is about 120 square miles, but including Carriacou, an island in the north, the area of the colony is 133 square miles. Grenada is mountainous and well watered by streams. St. George's Harbour, land-locked and deep-watered, is one of the most beautiful in the West Indies. There are two small lakes formed in extinct craters, one called the Grand Etang, being situated near the centre of the island 1740 feet above sea-level, while the other, Lake Antoine, is near the sea on the eastern coast. A sanatorium is established near the former. The climate can be classed as excellent, especially from December to May, when it is delightful. The range of temperature is small and tends to make the climate equable and healthy. The thermometer seldom reaches 90° F. in the shade or drops below 70°.

St. Helena.

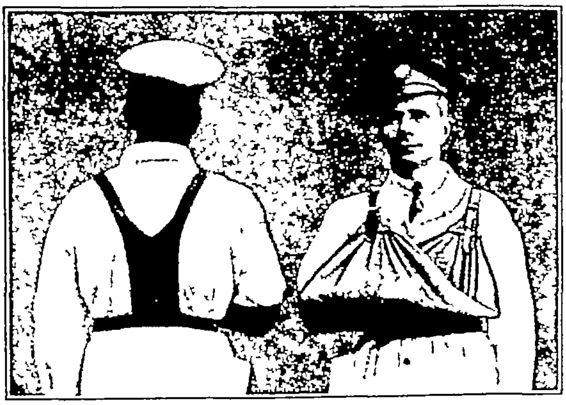
In his annual report on the affairs of this colony the Governor mentions that the civil population on Dec. 31st, 1924, was estimated at 3703, an increase of 43 over that of the previous year. The death-rate was 10·23 per 1000, compared with 7·66 in 1923. The number of births was 106 (not including four stillborn), as against 114 (and two stillborn) in the preceding year. The infant mortality was large, 11 out of the 38 deaths being under the age of 1 year. No specific reason can be assigned for this, the deaths being all from what might be termed natural causes in very young children. A mild epidemic of influenza was prevalent in the months of February and March, but there was no appreciable rise in the death-rate on that account. On the whole, the general health of the colony during the year was good; 169 persons were admitted to the hospital, being eight less than in the previous year. There were three deaths. The average number of indoor patients was ten. The mean temperature was 60·3° F., as compared with 62·0° in 1923. The total rainfall recorded at Hutts Gate for the year was 33·100 inches as against 45·740 in 1923.

THE NEWSVENDORS' BENEVOLENT AND PROVIDENT INSTITUTION.

THE annual dinner will be held at the Hotel Cecil, London, on Nov. 3rd, and Mr. Frederick Lawson, writing from the office of the *Daily Telegraph*, points out that the newsvendor works early and late that the public may be provided with their newspapers, while it is the purpose of the institution to provide on their behalf for pensions in old age or incapacity, or grants and other assistance to members, their widows, and orphans who may be in temporary difficulties. "Many newsvendors," he writes, "have only too little opportunity for providing for illness or old age, and the institution gives to those members of the public to whom the newsvendors render a daily service an opportunity to give their thanks in return." The funds of the Newsvendors' Institution, which was established in 1839, are carefully administered. There are at present 68 pensioners, whose welfare is constantly borne in mind. Sick parents are sent to convalescent homes, orphan children are cared for in selected institutions, and financial help is given in cases of need. Mr. Lawson is chairman for the year, and will be glad of offers from ladies and gentlemen willing to assist as stewards.

THE "EUPHOROS" SELF-ADJUSTING ARM-SLING.

IN appearance this sling is similar to the common form of support constructed from a folded handkerchief, but instead of being suspended from the back of the neck, the "Euphoros" is kept in position by straps passing over the shoulders and attached to a waistband, as is clearly shown in the accompanying illustrations, and the patient is thus relieved of any sense of carrying weight. One of the illustrations also shows that the back piece is curved so as to avoid the shoulder-blades, and this part of the sling, together with the belt, may be worn either under or over the coat. The sling is attached by buckles to the bands passing over the shoulders, thus making adjustment quite easy to the wearer; and a gusset at the elbow obviates the necessity for safety-pins and gives greater freedom to the arm. The "Euphoros," adaptable to the right or left arm, is made of a strong, light and durable black material, and is extremely comfortable to wear. Its merits certainly commend it, and it might well find a place in the emergency cupboard of every household. Messrs. Squire and Son, Ltd., 413, Oxford-street, London, are the agents for its sale.



The "Euphoros."

A FAMOUS SANITARY COMPANY.

THIS bright little book[1] tells how the City of London Sanitary Company was formed in 1908, of its regular service thereafter in autumn manœuvres, and of its personnel when the war broke out. On August 4th, 1914, there were two officers and 59 N.C.O.'s and men, and the numbers steadily grew to 80 officers and 1500 men overseas. Only men with sanitary knowledge or good education were taken, many of them obtained by advertisement in sanitary journals; there were sanitary inspectors, surveyors, builders' foremen, linguists, graduates in science, and others. Headquarters were at Chelsea, and scientific institutions in the neighbourhood freely helped. The men were taught about bacteriology, the causes of disease, the disposal of night soil, disinfection, the care of water and meat, and when trained they were fit to be N.C.O.'s. They were also taught to cook. In one [illegible] they had good fortune, for their Q.M.S. was a professional caterer, and fed them well for a shilling a day, so that the mess fund, started by a gratuity of £50, got them equipment for instruction and recreation, a company magazine, rail tickets to go out of London for route marches, and ultimately, when the company was broken up, £500 to endow a memorial bed at the Westminster Hospital. After November, 1914, every British division had a sanitary section with it. The first duties overseas were supervision of the units, themselves responsible for the sanitation of their areas, but needing advice. The duty of the sections was to point out deficiencies, their privilege to help in putting them right, and tact generally got this done smoothly. Water analysis and chlorination, disinfection, baths and washhouses were special activities of the sections, nuisances and flies their great preoccupations. In 1917 men of no education were drafted into the company, but many of them proved to be useless or worse. There is a story of an infantry private who drank unapproved water, having first made German prisoners drink it, "and ye see they're all right." The book should be read by officers of sanitary companies and by all who expect to join them on mobilisation.

SUGAR AND ATHLETICS: A SHAKSPEARIAN ALLUSION.

To the Editor of THE LANCET.

SIR,—The Harvard Marathonians, in your leading article of Sept. 19th, found that eating candies was very reviving when exhaustion began to appear. They might have remembered Prince Hal's remark to Falstaff (*King Henry IV.*, Part I., Act iii., Scene 3): "If there were anything in thy pocket but tavern-reckonings, memorandums of bawdy-houses, and one poor penny-worth of sugar-candy *to make thee long-winded.*"—I am, Sir, yours faithfully,

M.A., B.Sc. St. And.

NURSERY PSYCHOLOGY.

THE National League for Health, Maternity and Child Welfare (117, Piccadilly) has issued a pamphlet entitled, "Every-day Psychology in the Nursery," being a selection from courses of lectures recently delivered by physicians and others under the auspices of the National Society of Day Nurseries. The six lectures reprinted in this book deal with various psychological subjects, including the use and abuse of suggestion with children, sex education, the part played by diet in the psychology of the child, and the children's evening hour. Each of these essays is good and practical, and should prove stimulating to all engaged in the training and care of children.

A NATIONAL INDICTMENT.[1]

"THE future is for the nations who are chaste." This saying of Tom Mann's is the concluding sentence in the book before us, an authorised translation of Mr. Paul Bureau's "Indiscipline des Moeurs," and it adequately sums up the author's beliefs. In an essentially scientific manner Mr. Bureau analyses the first of the three causes of what he terms the "great sickness" of France—namely, sexual licence, the others being alcoholic intemperance and lack of an efficient central governing and representative authority. He deals with much of the disagreeable side of life as it exists in that country, and it is particularly the attitude of the average man to sexual matters that he first attacks. For example, the attitude of what we should term a decent class family to the "amorous amusements of the young man" is that his enjoyment is innocent and free from moral blame "so long as the four accidents which may follow imprudent conduct are avoided: venereal disease, prosecution in the high court, an action for damages before civil courts on the charge of seduction or paternity." With the conduct of married people Mr. Bureau is no less severe in his condemnation, and although surprisingly influenced by much of the teaching of Malthus he is nevertheless wholeheartedly out against "neo-Malthusianism." The book, which Dr. Mary Scharlieb in an introduction describes as "at once terrible and fascinating," should certainly be studied by those interested in social and economic problems. The author's patriotism and his enthusiasm are unquestionable, and he tells his country frankly that if she "does not reform her habits not only will her glorious victory bring her no benefit, but, on the contrary, the war will have accelerated yet more swiftly the hour of her fall and will bring her nearer the hour of her final ruin." Hard words, but those who know France at all intimately realise that such words contain more than much truth, and the author's masterly analysis of the problem of sexual morality is not without interest to this country as well. We live in a glass house, as readers of the police news and the records of *causes célèbres* show.

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[1] [illegible] tory of the First London (City of London) Sanitary [illegible] M.C. (T.) Edited by G. W. Foster, The Laurels, [illegible] e sca[illegible] oln. With ten illustrations. Pp. 114. 2s. 6d.

[1] Towards Moral Bankruptcy. By Paul Bureau. With an Introduction by Mary Scharlieb, C.B.E., M.D., M.S. Lond. London: Constable and Company. 1925. Pp. 546. 16s.

Introductory Address

ON

RESEARCH IN THE MEDICAL SERVICES.

Delivered to the War Section of the Royal Society of Medicine on Oct. 12th, 1925,

BY LIEUT.-GENERAL SIR WILLIAM B. LEISHMAN,
K.C.B., K.C.M.G., F.R.C.P., F.R.S.,
DIRECTOR-GENERAL, A.M.S.; PRESIDENT OF THE SECTION.

AT the outset it is my purpose, if I can, to remove from your minds the impression that research is of necessity an esoteric matter, confined to mysterious laboratories, and that it can be carried out only by professors and specialists who have given years of work to their subject, who are a "*peculiar folk*," and talk in a tongue "not understanded of the people." It is true that much experimental inquiry demands expert knowledge, special equipment, and comes within the opportunity of comparatively few of us, but I prefer to give to the word research a much wider significance and to take it to cover any means by which we, of set purpose and on a deliberate plan, strive to add to the existing knowledge of the cause, the prevention, and the treatment of disease. I have on more than one occasion spoken on this subject and have urged in connexion with it a far closer collaboration for this purpose between clinician and specialist than exists at present.

THE PRESENT POSITION.

Let us examine in some detail our position as medical officers of the fighting services *vis-à-vis* this question of research. It is not my intention to dwell on the admirable research work which is in continual progress in our respective colleges and laboratories, nor to point out the moral of the incalculable benefits which the Services have enjoyed as a result of much of that work. This would leave no time to deal with anything else, and I prefer to speak of the present, and still more of the future, rather than of the past.

I am bound to admit that the present moment does not appear to be an ideal one for suggesting that, with our diminished personnels, over-worked officers should voluntarily add to their heavy work; but, after all, we are only passing through a period of depression, and such periods, familiar enough to those of us with long service, pass and have usually been followed by conditions better than those that preceded the negative phase.

Be that as it may, I know I am not exceptional in holding as a firm belief that there is a profound difference between work which, however conscientious and good, is more or less of a routine, and that which is varied and which brings with it continual new interests. Anything in the nature of research, understood in the broad sense I mentioned just now, belongs definitely to the latter category, and has the further great attraction that it brings us into that closer intellectual sympathy with our colleagues which is one of the results of the pursuit of a common purpose.

Advantages of the Services.

Let us now look for a moment at the very exceptional facilities and opportunities which we of the Services possess; they are indubitable and, I believe, far greater than those enjoyed by the great majority of our confrères in civil life. First, and most important, our material. Whether sailors, soldiers, or airmen, those of whom we have the honour to be in medical charge become, if we wish, our friends and comrades throughout their service; where they go we go, and their health and physical well being is not only our charge but is to us an open book throughout their service, wherein we may read, and perhaps even write, as we will. From their examination as recruits till they leave the colours their physical standards and their medical history are recorded and they are under our daily supervision. What would not our civil brethren often give for such an intimate knowledge of the past history of a patient! There is nothing like it, except perhaps in some schools and institutions and in relation to some of the notifiable diseases such as tuberculosis. The fact that the men, like ourselves, are subject to discipline brings in another element of great value, inasmuch as it renders possible such things as systematic or periodical examinations and the employment of uniform standards of procedure, which are, as a rule, totally impracticable elsewhere.

As to the opportunities for medical research in connexion with this exceptional material, there is no need for me to remind my brother officers of both the abundance and the variety of the morbid conditions which come under our observation in officers and men and among their wives and families. This is less appreciated, unfortunately, by many outside the Services where there are still many misconceptions as to both the volume and the nature of our work, and it is not rare for us to read, or to hear, that our opportunities are meagre, that we see but the commoner ailments to which healthy young manhood is liable, and that the bulk of our experience is in the treatment of minor complaints and venereal diseases. This was not true even when I joined the Army in 1887, and nowadays, in that Service, the volume and importance of the medical and surgical work compares favourably with that of all but the largest of the metropolitan or provincial hospitals. The change of policy which has resulted in the concentration of the troops in a smaller number of large stations has been followed naturally by a similar concentration of the medical organisation—greatly to the benefit of the Army, the taxpayer, and ourselves. I am, naturally, not so intimate with the situation in the Navy, the Air Force, and the Indian Medical Service; but I have good reason to know that they are in most matters as favourably situated as ourselves, while the records of past meetings of this Section bear abundant evidence to the good use they make of their opportunities.

Medical and surgical material, then, is abundant and varied, both at home and abroad, and we are most favourably placed to observe our cases from start to finish and, if we wish, to follow them up afterwards.

The Value of Organisation.

Turning to another side, we can readily make use of our respective organisations for the employment of the technical aids to diagnosis and treatment with which medical science has been so greatly enriched in the last 30 years; and one acknowledges gratefully that we are able to maintain our equipment for theatre and laboratory in a condition well abreast of all modern requirements. Whatever tests may be considered as helpful to diagnosis or as accessory to treatment are readily available and, if the specialist and his tools cannot be brought to the patient, the patient, if necessary, is transferred to the hospital where he will find the pathologist, the radiologist, or other expert whose skill is needed. Further, should we feel that our own resources in skill or experience are insufficient in a difficult case we are indeed fortunate at home in being able to call upon one of our distinguished consultants, whose ready and valuable help it is impossible to acknowledge adequately. We are thus able, in all but the most isolated stations at home or abroad, to investigate fully all our cases, to observe their progress accurately, and to make permanent records in relation to any facts of importance. These are great assets for any medical man, and, if we do not benefit by them to the full, the fault is our own.

Such, then, being the present position as regards material and facilities in the Army Medical Service, and also, I am confident, in the sister Services, let us turn to the use which we are making, or may make, of them to further medical science by observation and research.

The Outlook for the Future.

As to the past, each Service has a record of research of which it has every reason to be proud, and even our youngest sister has lost no time in making her permanent marks on medical progress. As I have said, I do not intend to enumerate even the more important and outstanding of these researches, but will only point out that, for the most part, they were the work of men who had had the advantage of special training in some line and who enjoyed special facilities, either in the way of exceptional access to fruitful material or in the use of well-equipped laboratories. At the same time, this was far from being the case in all instances, especially in the past when specialism and laboratories were rare, and many most valuable contributions to knowledge were made by men who had to rely solely on themselves and had to create and utilise their own opportunities.

What would not many of our forbears have given to profit by the benefits which we have inherited? Apart from the volume of new knowledge which lies to our hand, we all enjoy the further inestimable privilege of going through an admirable post-graduate course, just at the moment in our professional life when we can benefit by it best; that is, when we are old enough to have acquired a wide experience of men and of other lands and are still young enough to retain energy and ambition. Whether or no our professional predilections are sufficiently defined to lead us to seek for further special instruction in a particular branch, we are all of us, at the least, given the chance of bringing ourselves well up to date in our rapidly moving profession.

The Opportunities.

The point which I now wish to make is this. In my view, everyone who has reached this stage in his Service career is well equipped to make valuable original observations on many lines of professional work, either alone or with the readily available help of his specialist comrades. Not that I would for a moment suggest that such work need be deferred till then, but one recalls how, in one's earlier years, one feared to slip up by publishing observations or views which, through our inexperience, might either prove not to be novel or to have been inadequately controlled and documented.

Apart from the desirability of attempting such research work for its own sake and for the general advancement of our profession, there is, I imagine, little need for me to emphasise its value to the individual. Not only would it make his professional life infinitely more interesting, but there is always the chance that a particular investigation might end in bringing to light something of great importance, one result of which would be, if justice is done, as it usually is in the end, that the investigator's name would become associated with the observation and he would find he had taken a definite step forward out of the class of "also ran." I would, however, warn anyone who, on the strength of this advice, felt inclined to try his wings in this direction that two qualities are essential to any chance of success—absolute honesty and infinite patience. One needs really something of the qualifications of the fly-fisher, for whom there is such hope in every cast that it will carry him happily through a blank day, leaving him with cheerful anticipations of the morrow.

One other word of counsel. Much careful and good observational work fails to obtain full acceptance and credit for lack of record of some observations or tests which a critic might consider essential to the acceptance of the conclusions. In such cases collaboration with a specialist colleague is most desirable, and is most valuable to each.

Individual Research : Planning the Work.

Let us now consider for a few moments what kind of inquiries might be set about and in what manner the material which lies to our hand might be utilised. You will, perhaps, forgive me the presumption of attempting to advise beginners in this matter on the slender ground of having been, in my past life, a specialist in one branch. Putting myself, as far as I can, in the position of a young officer who has not as yet attempted anything of this kind, I should begin by asking myself "In what line of professional work am I most interested and would most wish to become expert?" The answer, I am sure, would be clear and prompt. I should then sit down to think over the many branches of that subject, finally selecting one or two of them for a closer scrutiny. I should lay special stress on the cases which, in my own experience, had puzzled me and in which, for example, I had felt unsatisfied as to the current explanations of their ætiology or in which the treatment in common use had proved, in my hands, unsatisfactory. It would not be long, I fancy, before a certain number of such instances occurred to one. Of these I should select one or two and proceed to soak myself in the recent literature of the subject, incidentally subscribing to some of the technical journals dealing with it. One would soon realise that many others had encountered the same difficulties and would find oneself stimulated by their new points of view and their own conclusions. By degrees you would, I am sure, find yourself becoming more and more critical of these conclusions, so often expressed with dogmatic confidence, and you would begin to ask yourself "Why does this fail to convince me?" or "How am I to reconcile this result with what has been recorded by X, Y, or Z?" Next in order comes the stage at which one begins to think "Would it not be possible to settle the point if I were to do—what?" If one accepts the mental challenge *that* is the starting-point of a specific piece of investigation, and one must then begin to plan the campaign. Assuring oneself, in the first place, that sufficient material is already available, or can be made available by a little private organisation, you ask "How can I make and record these observations in such a way that a clear-cut answer may be obtained to the questions I have asked myself?" In this it must be kept clearly in mind that you have to convince not yourself only but others who, when they come to read your work, will be quick to notice the absence of certain relevant details or the inadequacy of your "controls." It is impossible to take too much trouble over this planning of the inquiry, for, if every fallacy is not thought of beforehand, and guarded against as far as possible, one may waste much effort and have to start afresh.

Unexpected difficulties, failures, interruptions, are the daily bread of the inquirer, but, if met with cheerful philosophy, and still more if one is wise enough to have prepared more than one string for one's experimental bow, one may confidently anticipate reaching a result worth communicating to a society or journal and will have achieved an altogether new outlook on professional work and acquired that admirable thing a new interest in life.

The Fallow Fields.

Each man has different tastes and different aptitudes, but, in the extremely varied work which falls to us in the Medical Services it would indeed be strange if one could not find, within working distance, *both* the subject and the material for commencing such an inquiry as I have outlined. The tropical diseases are bristling with unsolved problems of ætiology, of treatment, and of prevention, and our opportunities in this line when on foreign service are unbounded. The Navy and the Air Force have, I take it, no lack of unsolved problems special to themselves, while in the Army there are a host of morbid conditions, some of them of first-grade military importance, in which our special facilities should give us a better chance of adding fresh knowledge or of clearing up difficulties than falls to the lot of most of our brethren. Again, to the considerable number of us to whom preventive medicine makes a stronger appeal than clinical work, the difficulty will be to choose one out of the hosts of problems which are presented to us by the rapid development of this subject.

COLLECTIVE RESEARCH.

So far I have been speaking of the individual inquirer who wishes to choose and follow up for himself a particular subject. Let me now say a word or two on collective research, a method of inquiry which so far has not been very widely used in the Services. By this is meant that a selected problem is investigated by a number of workers in different places who follow an agreed plan and conform to certain rigid standards as to the material and the methods to be employed. I have always thought that there were great possibilities in connexion with this method and that the conditions which should make for success were exceptionally favourable in the Medical Services. In the case of the Army our research organisation is readily adaptable to such a method, and a certain number of such investigations have been commenced since the Directorates of Pathology and Hygiene were created. As no doubt you are aware, in each of these subjects our Director has the advantage of a technical Advisory Board to which highly qualified civilian experts have been nominated. At their meetings subjects possibly suitable for such research are examined and, if one is chosen, the details of the inquiry, the methods to be employed, the mode of recording, collecting, and analysing the results, &c., are fully discussed and decided upon. The detailed plan is then communicated to the specialists in suitable commands, who get down to work on a common plan and using a common technique. I may enumerate a few of the pathological subjects so chosen, merely by way of illustration. (1) Influenza: the incidence of Pfeiffer's bacillus in the sick and in contacts, in the presence and in the absence of epidemics. The use of vaccines. (2) Latent sepsis: the value of vaccines prior to operation. (3) Catarrh: inquiry into bacteriology and prophylactic use of vaccines. (4) Typing of strains of diphtheria, cholera, and dysentery bacilli encountered in different countries. (5) The Schick reaction. (6) Parallel testing of the Sigma and Wassermann reactions. (7) Sand-fly fever.

These and other subjects have been explored in this collective way with, in some instances, substantial and encouraging results. I need hardly add, especially in the present difficult times, that we cannot command success; a particular epidemic may dwindle and disappear, or the other material may not be forthcoming in sufficient quantity. More frequently, however, it is one of those inevitable but irritating "exigencies of the Service" which has called a premature halt to a promising line of inquiry. I trust, however, that such efforts may not be abandoned since these collective inquiries are of value not only because they multiply results and tend to accelerate progress, but because the work and results of one observer form a useful check on those of another. Again, the mere fact that workers at a distance from one another are engaged on the same problem, and confronting the same difficulties, stimulates inter-communication and tends to break down that feeling of isolation which may sometimes become so irksome when one is working alone.

Its Value to Civil Medicine.

Before leaving this subject I would add that the method is capable of being of service to our civil brethren. There are many inquiries of medical, physiological, or sanitary importance which, because we are very busy people and because the problems are not perhaps of very direct military importance, we have not undertaken in the Services. At the same time, thanks to the favourable conditions of which I spoke at the beginning of my address, the Army, Navy, or Air Forces offer a field for their investigation under almost ideal conditions of observation and control. We have received, and continue to receive, so much ungrudging help and advice from our civil colleagues that we should, indeed, be ungrateful if we did not in return do everything that we could to assist them, whenever this is within our power. I am glad to know that something has already been done for them in this way, and I hope that we may be able to do more.

As regards research and observation of the more strictly clinical character I may add that, in the case of the Army, we have now the great advantage of the advice and controlling direction of our own consulting surgeon and consulting physician, and I am confident that their assistance and counsel would, if required, always be most readily available.

To conclude, I have been urging upon you that we should endeavour to secure a larger output of medical research from the Services, and have suggested that this is well within the power of many who have not so far embarked on it. I have done so for the following reasons: First, because it is our bounden duty to leave nothing undone which we can do to maintain or improve the health of the fighting forces, and to anticipate and prevent medical catastrophes in the future, not only by utilising new knowledge, but by adding to it. Second, because I know nothing better calculated to maintain a man's professional interests as well as to keep him out of the groove which may become so dangerously deep as our Service advances. Finally, it is only by contributing our full share to medical progress that we can hope to maintain the high prestige gained for our respective Services by those who have gone before us.

THE TOXIC EFFECTS OF LEAD ADMINISTERED INTRAVENOUSLY.*

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No one hitherto has had an opportunity of observing the toxic effects in the human subject of measured quantities of lead administered intravenously at known intervals. The accuracy of the observations about to be recounted makes them of some importance in any consideration of lead poisoning.

The injections, the effects of which we have been able to observe, have been given in the course of the treatment of malignant neoplasia, to which reference has already been made on previous occasions,[1] [2] and to which we shall again refer in the next and last paper of this series. In that paper, too, the more detailed procedures in connexion with the administration of lead will be recorded. Here it will be sufficient to give a general outline of the method. Some 200 patients in all have received injections.

METHOD OF PROCEDURE.

The actual form in which the lead has been administered has varied considerably from time to time, but the last 58 cases have been treated almost entirely by intravenous injections of metallic lead in colloidal form. In the early cases lead acetate, lead iodide in a partly colloidal state, and compounds of lead with thyroiodin and with hæmoglobin were used. Before treatment was commenced the blood of every case was carefully examined, and, as far as possible, full red and white cell and differential cell counts were made, and the blood-urea and sometimes blood-sugar were estimated. The urine was also exhaustively analysed, and in cases about which there was any doubt as to renal efficiency a urea-concentration test was performed. The hepatic efficiency was also examined, especially in cases in which there was involvement of the liver or jaundice due to extrinsic causes.

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* This investigation was undertaken on behalf of the Liverpool Cancer Research Committee.

[1] Bell, W. Blair: THE LANCET, 1923, ii., 1005.

[2] Ibid., 1924, i., 267.

During treatment all these methods of investigation were carried out whenever possible at intervals, either after each dose or after every few doses; especially was the blood examined for stippled red blood corpuscles, and the urine for albumin.

SYSTEMS AND ORGANS INVOLVED IN THE TOXIC EFFECTS OF LEAD.

The toxic effects of lead were noted on the following systems and organs: (1) the blood and blood-forming organs; (2) the alimentary system; (3) the nervous system, including the retina; (4) the kidneys; (5) the liver.

FACTORS CONCERNED IN THE PRODUCTION OF TOXIC EFFECTS.

Susceptibility of the Individual.—In general, it has been found that there is a great difference in individual tolerance to lead. Some patients showed signs of poisoning after quite small amounts had been administered, whilst others showed no untoward symptoms, although relatively large quantities had been given.

Body-weight.—It has appeared that the quantity necessary to produce toxic symptoms has varied with the body-weight of the patient; for example, a patient weighing 14 st. can usually tolerate more lead than a patient whose body-weight amounts to 7 or 8 st.

Age of the Patient.—It has also been held that there is an age factor in regard to the rapidity and intensity of the toxic effects of lead. We have found that relatively larger amounts could be given to patients between 55 and 65 years of age. It was formerly thought that young people tolerated lead better than older persons, but we have observed that a slightly higher average dose was necessary to produce toxic symptoms in patients between the ages mentioned than in younger patients.

Sex of the Patient.—It appears that the male is more tolerant than the female to the toxic effects of lead, as the following figures tend to demonstrate:—

Maximum and Minimum Amount of Pb required to Produce Toxic Symptoms: Average for all Ages.

Maximum.		Minimum.	
Males.	Females.	Males.	Females.
0·34 g.	0·29 g.	0·1 g.	0·04 g.

It must, however, be remembered that the average weight of men is greater than that of women.

Size of Malignant Growth.—It has, too, constantly been observed that there is a definite relation between the sizes of the growth to be treated and the amount of the lead which can be tolerated. A patient with a large sarcoma in the abdomen, for instance, would show no signs of lead poisoning until very considerable quantities had been given; whereas a patient with a small carcinoma of the œsophagus might show symptoms of poisoning when a relatively small amount had been administered. This relation between the size of the tumour and the amount of lead which is tolerated is impossible to demonstrate in figures, but it is a clinical fact which we have repeatedly observed. The importance of this will be discussed in another paper.

From what has been said in the preceding paragraphs it will be noticed that there are many factors concerned in the facility or difficulty with which lead poisoning may be produced in patients under treatment, and the various factors may interact so as to produce a complex arrangement that is impossible to estimate in any statistical manner, and it is this that makes treatment of malignant disease with lead extraordinarily difficult.

In our experience repeated small doses over a long period of time produce a dangerous cumulative effect. On the other hand, a few large doses administered at long intervals, considerably exceeding in total quantity of lead the amount given in small repeated doses, may, after the initial symptoms, leave no bad effect whatsoever.

EXCRETION OF LEAD.

As is well known, lead is but slowly excreted from the body. Our own observations indicate that malignant growths have the power of attracting lead, as a result of which we have found that the metal may become locked up in the tumour to an extent that is infinitely greater than occurs in the normal tissues of the body. We have also made observations on the relative excretory processes of the kidney and bowel. The urine and fæces were collected from two cases to which heavy initial doses of lead, amounting to 0·15 g. lead, had been administered in a single dose. In these cases it was found that the amount of lead excreted by the kidney was very large, and that only a small proportion appeared in the fæces.

TOXIC EFFECTS OF LEAD ON THE BLOOD AND BLOOD-FORMING ORGANS.

Red Cells.—The effects of lead on the red cells may be grouped as follows: (*a*) punctate basophilia; (*b*) polychromasia; (*c*) abnormal forms; (*d*) anisocytosis and poikilocytosis; and (*e*) anæmia.

Punctate Basophilia.—This is one of the earliest signs of lead poisoning. Some writers have stated that this phenomenon occurs in normal blood; we are, however, convinced that this is not so; it has only been found in a single case in our large series of blood examinations before lead has been administered. Undoubtedly, of course, it occurs in other pathological states, especially severe anæmias.

The appearance of the granules in the red cells, which give rise to the name "punctate basophilia," when seen in a blood film stained by Leishman's method, varies. In a well-marked example they are seen as bright blue stipples, numbering from 10 to 20 or even more, inside the red cells. The size of the blue stipple varies greatly; in some cases they are large, when the condition is known as "coarse basophilia"; in these instances the blue bodies are frequently arranged round the periphery of the cell. In other cases they resemble very fine dots scattered uniformly throughout the cell. In those cases in which there is polychromasia it is possible that the appearance is due to the granules having become broken up and diffused throughout the cell.

The actual number of stippled cells found in any film of blood is also subject to great variety. In a severe case of lead poisoning it is possible often to find an average of two stippled cells in each field under the 2 mm. objective; this, however, is rare. More commonly one stippled cell is found in every five or six fields. When the patient shows no other evidence of lead poisoning, it may be possible only to find one or two stippled cells after a prolonged search. The time of appearance of the stippled cells in the blood, after the intravenous administration of lead, depends on two factors: (*a*) the amount of lead given, and (*b*) the susceptibility of the patient from the many points of view already discussed. The smallest total amount of lead which produced the stipples in our cases amounted to only 0·02 g. The earliest time at which stipples have been observed was three hours after a single injection amounting to 0·1 g. of lead. Generally, great variations have occurred both in the time of appearance of the stipples, and in the amount of lead necessary to produce them. No doubt susceptibility is a factor of importance in this matter.

The exact significance of stippling has never been determined with absolute precision. By some it is considered to be a degenerative process, by others regenerative. Recent observers incline to the belief that the phenomenon is due to degeneration in the red cells owing to the fact that in the bone-marrow stippled cells are not found, and also because the phenomenon is associated with other pathological processes than lead poisoning. Moreover, it appears probable that the basophile stipples are of cytoplasmic origin, and are not, in fact, fragments of the nucleus of a normoblast. Indeed, we have frequently observed normoblasts containing a perfectly normal nucleus, in which coarse basophile stipples have been scattered in the cytoplasm around the periphery.

Polychromasia.—This is a very common phenomenon. It consists of a diffuse grey-blue coloration of the red cells stained by Leishman's method. Reference has been made to the suggestion that this is due to diffusion throughout the cell of the basophile stippling. It is possible, also, that it may be connected with changes in the constitution of the hæmoglobin in the red cells in the circumstances under consideration. We have observed this phenomenon frequently during the recovery of the patient from the effects of lead.

Abnormal Forms.—The presence of nucleated red corpuscles is not very uncommon. When present they are invariably associated with considerable anæmia and stippling of the red cells. Sometimes, as already mentioned, the nucleated red cells themselves contain stipples. From this it is obvious that degenerative processes associated with the formation of stipples, whatever they may be, can occur at a very early stage in the life of the red cell.

Anisocytosis and Poikilocytosis.—These phenomena have only been seen in association with more or less profound anæmia.

TABLE I.—*Summary of Patients Showing Changes in Red Blood Cells after the Administration of Pb.*

No. of patients (117 cases): Males (M.), 31; females (F.), 86.
No. of patients showing—

1. Stippling of the red corpuscles (76 cases) ..	M.	24
	F.	52
2. Stippling of the red corpuscles + N.R.C. (24 cases)	M.	6
	F.	18
3. Polychromasia (14 cases)	M.	2
	F.	12
4. Stippling, nucleated reds, poikilocytosis (1 case)	F.	1
6. Stippling, nucleated reds, polychromasia (2 cases)	F.	2

Average amount of lead producing—	Stipples	0·14 g.
	Polychromasia ..	0·157 g.
	Nucleated reds ..	0·138 g.
Average time for production of—	Stipples	12 days.
	Polychromasia ..	13·4 days.

and in six of the most recent cases where nucleated red corpuscles appeared they were observed on the fifth day.

Anæmia.—Anæmia associated with chronic lead poisoning has long been observed, and, indeed, is a peculiar feature in the appearance of workpeople engaged in the lead trades. An eminent Recorder in the North Staffordshire area informed us that time and time again he was able to see in witnesses in his court evidence of the pallor produced by the absorption of lead. We have observed that although a considerable degree of anæmia, as shown by the hæmoglobin-content may be present, it is not invariable to find this associated with a decrease in the red cell count. We have, however, been able to observe all degrees of the condition, from the very mildest to that resembling the severest form of aplastic pernicious anæmia. Reductions of 750,000 red blood corpuscles after the administration intravenously of 0·2 g. of colloidal lead have been noted; but blood cell counts as low as 3,400,000, and in one case even 1,400,000 have been seen.

As already indicated, far more striking than the diminution in the number of red blood corpuscles may be the reduction in the hæmoglobin-content. Table II., which consists of a few cases selected at random, will serve to illustrate these points.

It will be seen from Table II. that lead causes a relatively greater diminution in the hæmoglobin-content of the blood than in the number of red cells, although this is not invariable.

It follows that with such marked blood destruction all the symptoms of serious anæmia may be present—pallor of the skin and mucous membranes, headache, lassitude, and muscular weakness. In several of our patients a blood transfusion has been deemed necessary before treatment could be continued. In one case, however, in spite of repeated transfusions, very little benefit was obtained; the lead seemed to have destroyed the blood-forming power of the bone-marrow.

TABLE II.—*Relation Between the Hb. Content and the R.b.c. and the Amount of Pb Administered.*

Case No.	Hb. percentage before treatment. (R.b.c. in millions.)	No. of inject.	Mass of Pb.	Hb. percentage after treatment. (R.b.c. in millions.)
			(g.)	
44	73 %; r.b.c., 3,900.	5	0·18	50 %; r.b.c., 3,660.
34	95 %; r.b.c., 6,600.	11	0·48	65 %; r.b.c., 3,950.
46	88 %; r.b.c., 4,800.	5	0·35	82 %; r.b.c., 4,025. 17 days later Hb. 70 %; r.b.c. 4,050.
48	90 %; r.b.c., 4,725.	4	0·24	82 %; r.b.c., 3,950.
32	90 %; r.b.c., 5,900.	11	0·53	62 %; r.b.c., 3,050. 1 more inject., 10 c.cm. B.
			0·55	42 %; r.b.c., 2,800. 1 more inject., 15 c.cm. B.
			0·58	30 %; r.b.c., 2,340.
47	83 %; r.b.c., 5,125.	13	0·43 0·05 } 0·48	65 %; r.b.c., 4,950.
23	96 %; r.b.c., 7,100.	37	0·83	60 %; r.b.c., 4,400.
180	84 %; r.b.c., 4,750.	2	0·2	59 %; r.b.c., 4,000.
185	88 %; r.b.c., 5,160.	3	0·3	75 %; r.b.c., 3,850.

The rate of recovery from lead anæmia is, of course, a most interesting matter. In those cases, such as the one just described, who had submitted to frequently repeated small doses, recovery from the anæmia is rather a lengthy process. On the other hand, when patients have received several massive doses their recovery seems almost instantaneous.

The appearance of patients who have recovered from malignant disease under treatment, and are seen some months or years later, is that of the most vigorous health, without any abnormality of the blood cells. This point was emphasised by Dr. Adami recently at a review of our cases.

Another phenomenon to be observed with considerable frequency in blood films is the curious distribution of the pigment in the red cells. They assume the appearance of a lifebuoy with the red pigment around the periphery and an apparently clear zone in the centre; this, of course, is a common phenomenon in anæmia, but as we have observed it so repeatedly we think it well to call attention to it.

BONE-MARROW.

We have examined the bone-marrow from animals which have died in the laboratory from lead poisoning. In no case have we seen stippled cells in this tissue; indeed, like other observers, we are at a loss to say in what important particular this organ is affected. A lengthy investigation into the normal structure of this complex tissue has not enabled us to discover any important difference in the bone-marrow of healthy and lead-poisoned animals. That it is involved is undoubted, as the stage of inertia is reached in certain cases, to one of which we have referred, when the marrow seems to have given up the effort of throwing off normoblasts into the blood-stream.

CHANGES IN THE WHITE CELLS.

These may be grouped as follows: (*a*) leucocytosis, (*b*) relative lymphocytosis, (*c*) slight eosinophilia, (*d*) increase in other granular and streaky forms, and (*e*) leucopenia.

Leucocytosis.—Leucocytosis has, of course, been observed in association with malignant processes. Whether this is due to malignant growth is doubtful; it seems likely that it may be the result of the infection that so often supervenes owing to autolytic processes in malignant neoplasms. Bearing this fact in mind, we have endeavoured carefully to observe whether the administration of lead alters the white cell count. When moderate-sized doses of lead have been given there has not been any very great increase in the number of white cells, 14,000 to 15,000 being the maximum number counted. In one instance, however, in which the patient received 0·2 g. lead in a single dose, leucocytosis was pronounced, the leucocyte count rising to 58,000 within 48 hours of the injection. It would appear that the earlier the counts are made after an injection, the greater likelihood there is of finding some degree of leucocytosis, for the number of white cells appears rapidly to diminish until the normal level is reached. (Table III.)

TABLE III.—*Showing Leucocytosis after Administration of Pb.*

Normal w.c. count: 6500.

Case.	No. of injects.	Mass of Pb.	Leucocyte count.	Time after commencing treatment.
		g.		
178	4	0·425	9,200	—
79	10	0·3	9,500	3 months.
174	1	0·2	52,500	2nd day.
91	4	0·16	14,500	—
105	20	0·57	12,000	—
138	2	0·019	15,000	—
140	3	0·0275	15,000	In 9 days.
	11	0·1825	42,000	—
149	6	0·086	12,000	1 month.
53	22	1·3	10,000	—
23	14	0·39	.11,250	4 months.
168	4	0·11	15,000	—
23	3	0·025	13,750	6th day.
45	2	0·06	13,700	3rd day.

Relative Lymphocytosis.—Many observers have described relative lymphocytosis in association with lead poisoning. This, however, is by no means common, and very rarely does the percentage of lymphocytes exceed that of leucocytes. The counts in Table IV. are illustrative of a certain degree of lymphocytosis.

TABLE IV.

No. of w.b.c.	Poly-morph. (%).	Lymph. (%).	Large mono-nuclear cells (%).	Eosino-phile (%).	Mast. (%).
3,900	46'0	48·0	1·5	4·5	—
13,750	51·3	31·6	10·6	6·0	0·6
3,500	52·5	27·0	20·5	6·0	—

These, however, are somewhat unusual, and, taking an average of a large number of cases of differential counts, the percentage figures work out as follows: polymorphs, 63·6; lymphocytes, 20·7; large mononuclear cells, 7·4; eosinophiles, 3·7; mast cells, 1·5; and transitionals, 2·6.

It will be seen in lead poisoning that although a relative lymphocytosis may occur, yet it is not constant, and with almost all cases the relative numbers of leucocytes and lymphocytes are approximately normal. The slight increase in the eosinophile cells appears to be fairly common. In some instances this was very marked, and very many beautiful specimens were seen with large pink granules. On one occasion they equalled 8·3 per cent. of all the leucocytes present, and as high a ratio as 6 per cent. has been observed on several occasions. Yet, as is seen from the preceding table, taken on the general average of a large number of differential counts, the eosinophile cells represent only 3·7 per cent. of the total number of leucocytes—a slight but definite increase above the normal.

Increase in other Granular and Streaky Forms.—A number of curiously-streaked forms of white cells may be found. Many of the cells already described in the table were as large as polymorphs, and show a streaky cytoplasm. In size and shape they resemble the large hyaline cells. Occasionally there are found cells which closely resemble the ordinary polymorph, except that the granules, instead of staining pink with eosin, taken on a purple tinge.

Leucopenia.—Leucopenia is rarely seen. There seems a tendency rather that, if there be a change, it is towards leucocytosis. The particulars given in Table V. illustrate the possibility of this condition.

TABLE V.—*Showing Leucopenia.*

Case No.	W.c. count before treatment.	No. of injects.	Mass of Pb.	Leuco-penia.	Time.
			g.		
1	6,200	4	0·16	3,900	22 days.
14	8,120	24	0·2	6,250	7 months.
34	9,375	27	1·056	4,217	15 ,,
				5,000	17 ,,
150	10,625	16	0·674	3,500	11 ,,
		17	0·774	6,200	12 ,,

It will, however, be seen from the tables given that there is nothing specific or definite in regard to the change seen in the white cells as there is in the red cells.

THE ALIMENTARY SYSTEM.

The signs and symptoms discussed under this heading are the following: (1) Blue line on the gum edges; (2) nausea and vomiting; (3) intestinal colic; and (4) constipation and diarrhœa.

Blue Line on the Gum Edges.—In our experience this has been an uncommon occurrence; it has only been definitely observed in three cases. The explanation of the infrequency with which this phenomenon—so often considered a classical sign of lead poisoning—is observed is probably due to the method of administration. The blue line is, of course, due to the conversion of lead into lead-sulphide by the H_2S generated by decaying vegetable matter in the mouth. In these circumstances it is easily understood that if lead gained entrance to the system through the mouth, en route either to the lungs or the intestinal canal, the blue line on the gums would readily be produced; and these methods of admission are probably the common ones in industrial lead poisoning. In the three cases in which we have seen the blue line, lead had been administered over a relatively long period. When given in massive doses, as now, it is unlikely that it will be seen. It has always been stated that the blue line is persistent over a long period of time, but in our cases it disappeared in two or three weeks. This further illustrates the difference in the manner of production when the lead is administered intravenously from that of the more superficial staining observable in industrial lead poisoning.

Nausea and Vomiting.—It occasionally happens that a patient complains of intense nausea a few hours after the first or second injection of colloidal lead. It is difficult to believe that in these circumstances the symptom is due to lead alone; it is probable that the foreign proteins in the colloidal solution are responsible for the effect produced. The true nausea and vomiting due to lead generally occur later, after the administration of the metal; the nausea and vomiting may then be very bad, and may last for several days. Moreover, it is more persistent in some of the cases in which it has not been observed after the earlier doses; this indicates that the accumulation in the system of a certain amount of lead may be necessary in some patients before these symptoms are produced. Since we have given massive doses the cumulative effect has been well demonstrated. Before June, 1924, the solution used never contained more than 0·1 g. per cent. of lead; after that date we commenced to use a very strong solution containing 0·5 per cent. of lead. The average mass of lead required to produce vomiting with the weaker solution was 0·37 g., whereas with the stronger solution 0·22 g. was sufficient. This is in keeping with the production of other toxic symptoms; with the heavier doses they appear earlier, but, fortunately, disappear sooner; with the smaller doses we were inclined to continue blindly until very serious symptoms supervened—symptoms which could not well be relieved with any degree of certainty.

Lead sickness is a very distressing condition both for the patient and the doctor. As a rule, the patient can take no food whatsoever, and some of our patients have lived on water (if they did not reject that) and saline with glucose per rectum for several days. It is important, too, to bear in mind the fact that the patient may have gone home for some days before the vomiting occurs. In one case no symptoms supervened until three weeks after an injection, and the patient became seriously ill, and remained so for ten days. In such circumstances, of course, acidosis supervenes. We have known of no cases in which the patient has not eventually recovered, and, indeed, a few weeks later expressed themselves as feeling better than before. The susceptibility of the patient, to which we have already referred, plays a large part in the onset and severity of these symptoms.

Intestinal Colic.—Until the administration of the heavy doses of colloidal lead, we had never seen a case of lead colic. During the last year, however, it has been noted in a large proportion of all the cases treated; very often it is an accompaniment of the attacks of nausea and vomiting, which we have just discussed, and it usually comes on at the same time. The pains may be extremely severe and last several days; eventually, within a short time, they entirely disappear. It is extremely difficult to relieve the pain in severe attacks of intestinal colic; indeed, morphia and atropin are the only drugs we have found of service.

Constipation and Diarrhœa.—We have seen very few cases of constipation that could definitely be attributed to the effects of lead. So many patients are constipated in ordinary circumstances and rarely complain that the injections have made them more so. It is important, however, that patients under treatment should be closely questioned, and saline aperients should be given if constipation is present. We have not been able to connect this disorder with intestinal colic, just mentioned. Diarrhœa we have not seen, except in one or two cases after a very massive dose of lead, and then it appeared to be due to an anaphylactic shock produced by the proteins present in the solution rather than to the lead itself.

NERVOUS SYSTEM, INCLUDING THE RETINA.

The nervous phenomena produced by lead poisoning may be divided into two groups: (1) psychopathies, and (2) neuropathies.

In the early stages of our work we had three cases in which the patient became mentally deranged, no doubt due to what has been called lead cephalopathy—that is, to changes produced by lead in the brain.

In only one case were the symptoms serious. The patient was a male with an extensive carcinoma of the œsophagus; he became unmanageable, and apparently had delusions that he was being starved.

In another case, a man with extensive carcinoma of the floor of mouth, the patient became strange in his manner and taciturn; there was no violent outbreak, and the patient was sent home in a slightly improved condition so far as his mentality was concerned.

In the third, the patient, when at home in an interval between the administration of injections, committed suicide, but it was hardly fair to attribute this to the administration of lead, for he was a young man who was naturally in a state of considerable mental agitation, because he knew that he had cancer of the bladder.

With regard to neuropathies, such as wrist-drop, we have seen none, and this has been a source of considerable surprise, for we know that involvement of certain peripheral nerves has been regarded as almost inevitable in lead poisoning.

The Retina.

Four patients have complained of eye symptoms. In two instances they suffered from temporary loss of vision, the condition lasting only a few hours, complete recovery supervening.

In the other two cases, however, there was considerable œdema of the retina, and in one there was optic atrophy, the patient becoming almost completely blind. It was important to note that the œdema of the retina in each case was associated with generalised œdema of the body and a considerable degree of albuminuria. It is probable that the lesions in the kidney were responsible for the retinal changes.

These symptoms only occurred in the earliest stages of our work, but we feel that they should be emphasised as a serious warning of the dangers associated with this treatment.

THE KIDNEY.

Sometimes the earliest and often the most obvious toxic action of lead is on the kidney. The extent and duration of the damage seem to depend both on the amount of the dose given at one particular time and also on the total quantity of lead administered, even when given in small doses.

TABLE VI.

Case No.	Condition.	Date.	Quantity of Pb to date.	Blood urea.
			g.	mg. %.
185	Retroperitoneal sarcoma.	14/4/25	Nil.	12
		20/5/25	0·3	29
		30/5/25	0·4	32
		20/8/25	0·55	31
186	Carc. of tarsus and tibia.	16/4/25	Nil.	24
		24/6/25	0·5	31
157	Sarcoma of parotid.	20/5/25	0·6	28
160	Carc. mammæ et peritonei.	7/5/25	0·774	32
191	Carc. mammæ.	4/8/25	0·275	20
169	″	8/5/25	0·407	26
179	Carc. mammæ et maxillæ.	9/1/25	Nil.	19
		16/1/25	0·05	17
177	Carc. of pancreas.	10/11/24	Nil.	29
		1/7/25	0·8	34
180	Carc. mammæ.	20/5/25	Nil	27
		26/6/25	0·2	31
178	Ovarian sarcoma.	15/12/24	Nil.	21
		26/1/25	0·225	20
		1/5/25	0·525	13
		6/5/25	0·525	14
		5/6/25	0·625	35
20c.	Renal sarcoma.	6/8/24	0·03	31
		10/9/24	0·2	40
		18/9/24	0·24	45
		28/9/24	0·20	50
		7/10/24	0·28	48
21c.	Carc. mammæ.	12/9/24	0·05	38
		17/10/24	0·145	31
22c.	Carc. œsophagei.	16/9/24	Nil	10
		20/1/25	0·37	27
23c.	Carc. recti.	22/8/24	Nil.	43
		10/9/24	0·08	38
		22/9/24	0·155	35
		30/9/24	0·195	40
24c.	Carc. ventriculi.	17/10/24	Nil.	22
		14/11/24	0·11	25
25c.	Epithelioma of jaw.	10/9/24	0·05	35
		28/9/24	0·15	45
		6/10/24	0·20	42
26c.	Carc. œsophagei.	21/1/25	Nil	19
		27/2/25	0·18	23
27c.	Sarcoma of femur.	17/12/24	Nil.	23
		19/12/24	0·2 (massive 18/12/24)	44
		23/12/24		167
		31/12/24		55
28c.	Epithelioma of face.	14/12/24	Nil.	42
		19/12/24	0·2 (massive)	55
174	Carc. post cricoid.	11/1/25	0·20	31
		4/11/24	Nil.	22*
		6/11/24	0·2 (massive)	60*

* Non-protein nitrogen.

We have attempted to study the effect of lead therapy on renal function from five main points of view: (1) clinical manifestations; (2) changes in the blood-urea; (3) changes in the urea-concentrating power of the kidney; (4) changes in the urine; and (5) pathological changes in the kidney.

Clinical Manifestations.—Usually, after small doses of lead, clinical manifestations are not apparent. Occasionally, however, diminution in the secretion of urine and œdema may occur together with changes in the urine. The appearance of symptoms, or of other evidence of renal impairment, has invariably led to the cessation of treatment, at any rate for the time being, with the result that further signs of renal failure have not occurred. Pre-existing renal disease has been regarded either as a contra-indication to treatment or as an indication for small dosage, according to the severity of the disease. Massive doses, however, have led to the appearance of other symptoms which appear to be due to renal damage. These are pain in the back, hæmaturia, drowsiness, headache, and vomiting. Headache and vomiting, however, may occur without other evidence of renal failure.

Changes in the Blood-urea.—Routine estimations have been made of the urea content and in a few cases of the non-protein nitrogen of the blood. The results obtained seem to indicate that small doses of lead are without effect on the value of the blood-urea. Massive doses of lead almost invariably cause a rise in blood-urea, often a marked rise. There is, however, always a subsequent tendency to fall after a few days. With the rise in blood-urea there is a simultaneous fall in the excretion of total urea. (Table VI.)

Changes in the Urea-concentrating Power of the Kidney.—The urea-concentration test becomes inapplicable of necessity in cases in which there is marked suppression of urine. It is, therefore, of very little value in determining the degree of renal impairment following a massive dose. It was used, however, in one such case after the immediate effects of the lead had passed away. No change in the concentrating power occurred at this period. In respect of smaller doses of lead there were also no definite changes. (Table VII.)

TABLE VII.

Case No.	Condition.	Date.	Quantity of Pb to date.	Urea conc. test.		
			g.		c.cm.	%
25c.	Epithelioma of jaw.	11/9/24	0·05	(1)	28	2·9
				(2)	66	3·4
				(3)	48	4·0
		17/9/24	0·10	(1)	72	2·4
				(2)	168	1·8
				(3)	168	2·2
		23/9/24	0·13	(1)	112	1·9
				(2)	96	2·2
				(3)	96	2·2
20c.	Carcinoma œsophagei.	25/8/24	0·05	(1)	84	2·3
				(2)	112	2·5
				(3)	84	2·4
		4/9/24	0·09	(1)	114	2·1
				(2)	96	2·7
				(3)	84	3·0
23c.	Carcinoma of rectum.	10/9/24	0·08	(1)	168	2·2
				(2)	56	2·3
				(3)	140	2·5
		21/9/24	0·155	(1)	98	2·4
				(2)	120	2·2
				(3)	100	2·2
20c.	Renal sarcoma.	7/8/24	0·03	(1)	300	0·8
				(2)	140	2·2
				(3)	110	2·8
		10/9/24	0·20	(1)	356	1·5
				(2)	168	2·2
				(3)	140	2·3
		22/9/24	0·26	(1)	208	2·1
				(2)	130	2·4
				(3)	130	2·6
28c.*	Epithelioma of face.	13/11/24	Nil.	(1)	224	1·9
				(2)	112	2·2
				(3)	112	2·6
		24/11/24	0·2 (massive 17/11/24)	(1)	112	3·2
				(2)	84	3·4
				(3)	84	4·0

* See Figs. 1, 2, 3.

Changes in the Urine.—Diminution in secretion often precedes the appearance of albumin in the urine following lead therapy, and is a valuable indication of early renal damage. It occurs occasionally during the administration of small doses and almost invariably after massive doses.

The quantity of lead administered in several small doses at intervals necessary to produce albuminuria varied from 0·06 g. to 0·83 g. Massive doses (0·1 g.) invariably produce it at once. The albuminuria usually disappears if no further injections are given. This condition has occurred in 43 (23 per cent.) of the cases treated. The total amount of lead necessary to produce it was less than 0·1 g. in six cases, between 0·1 g. and 0·2 g. in 23 cases, between 0·2 g. and 0·3 g. in 6 cases, and over 0·3 g. in 6 cases.

Casts appeared in all cases treated by massive doses but eventually disappeared in most. On one occasion granular and hyaline casts did not appear until 17 days after the injection of 0·15 g., to disappear again subsequently. It was unusual to find them after smaller doses.

The quantity of chlorides in the urine is unaltered, as a rule, after small doses of lead, but these salts may be completely absent for a time after large doses.

Pathological Changes in the Kidney.—The kidneys of two cases which had received massive doses of lead showed little macroscopic changes at autopsy, apart from congestion. Microscopically, very definite changes were found affecting mainly the secreting tubules.

CASE 28c (Epithelioma of face).—P.M.:—Kidneys: Acute congestion. Considerable amount of advanced cloudy swelling, three-quarters of the epithelium being affected in the tubules. A few isolated areas of chronic interstitial nephritis. No definite endarteritis. (Total amount of lead = 0·35 g., including a massive dose, 0·1 g.).

CASE 29c (see Fig. 4) (Sarcoma of femur).—P.M.:—Kidneys: Moderate amount of cloudy swelling and considerable dilatation of secreting tubules producing an appearance similar to that met with in subacute diffuse nephritis. No casts or other evidence of acute nephritis. Arteries apparently normal. (Total amount of lead = 0·34 g., including a massive dose, 0·1 g.)

The kidneys of three dogs with spontaneous malignant tumours that had received varying doses of lead were also investigated.

Dog, "Major"; mongrel. Kidneys: Cloudy swelling of the secreting tubules. No arterial changes. (Total amount of lead = 0·0612 g.)

Dog, collie (male). Kidneys: Acute congestion and tubular necrosis. (Total amount of lead = 0·2 g.)

Dog, "Pat"; Irish terrier (male). Kidneys: Tubular necrosis. Acute congestion. Thrombi in the glomeruli. (Total amount of lead = 0·0942 g.)

It is interesting to compare these findings with the appearances seen in a case of industrial lead poisoning. Tubular necrosis was found together with evidence of long-standing chronic interstitial nephritis without much glomerular change. There was a definite deposit of pigment.

THE LIVER.

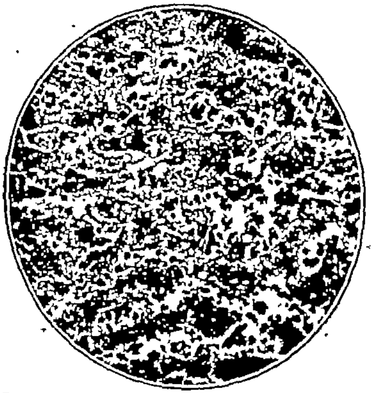
It is possible that some of the symptoms following the intravenous injection of lead—viz., headache, rigors, nausea, and vomiting—are due to impairment of hepatic function. In all cases of general poisoning the liver is the first line of defence, and it absorbs much of the toxic agent from the blood-stream. This has been shown to be the case after the administration of the arsenobenzol derivatives.

The effect of lead on the liver has been studied from two main points of view: (1) The effect on the bile-producing function; and (2) the pathological changes produced in the liver.

Effect on the Bile-producing Function.—All degrees of jaundice have been encountered varying from a slight icteric tinge of the sclerotics after the smaller doses to a deep tint of the skin with a large amount of bile in the urine, which is often seen after massive doses. It is probable that the lesser degrees of jaundice are purely hæmolytic in origin. This is supported by the fact that in these cases, while no bile is to be found in the urine, there is often excess of urobilin, and the Van den Bergh reaction of the blood serum is indirectly positive only.

An explanation of these phenomena would seem to lie in the fact that lead influences the bile-producing mechanism just like phosphorus, arseniuretted hydrogen, and toluylene diamine, partly through blood destruction and partly through its direct effect on the bile-secreting cells of the liver. In the slight cases the bile-secreting cells are probably unaffected, and the jaundice is due to the excessive production of bile-pigments from the products of hæmolysis by the Kupffer cells. These pigments are produced in too large a quantity to be taken up entirely and secreted by the liver cells, with the result that a quantity continues to circulate in the blood, and slight jaundice follows—a similar state to that which occurs in pernicious anæmia and acholuric jaundice.

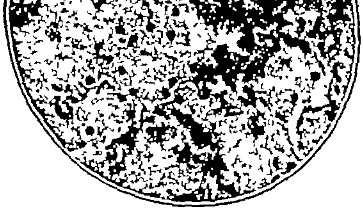
FIG. 1.



CASE 28C.—Section of liver showing congestion, slight fatty infiltration, hæmosiderin. × 300.

In other cases, especially when massive doses have been administered, it appears that, in addition to damage and disordered function of the polygonal cells, there is also obstruction in the smaller bile-ducts due to cholangitis. The jaundice is deep; bile appears in the urine, and an immediate direct Van der Bergh reaction is the rule.

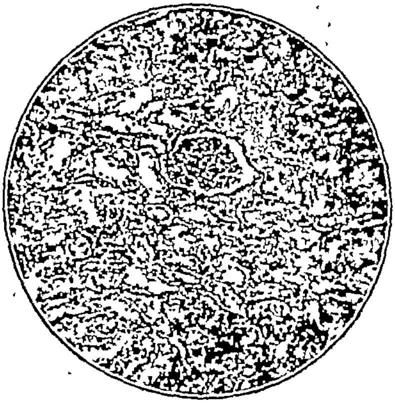
FIG. 3.



The same as Fig. 2. × 300.

Pathological Changes Produced in the Liver.—The pathological changes produced by lead were studied in the material obtained at autopsies on two human subjects and two dogs. The outstanding changes appeared to be: *fatty infiltration, congestion, and the deposit of hæmosiderin.*

FIG. 2.



CASE 28C.—Section of kidney showing advanced cloudy swelling of tubules. × 75.

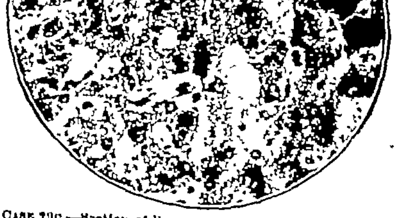
CASE 28C (Epithelioma of face).—Liver: Congestion and small deposit of hæmosiderin. (Total lead = 0·35 g.)

CASE 29C (Sarcoma of femur).—Liver: Fatty infiltration. Deposit of hæmosiderin in the liver cells and Kupffer cells. (Total lead = 0·31 g.)

Dog: "Major." Liver: Fatty infiltration. (Total lead = 0·0012 g.)

Dog, collie. Liver: Marked congestion. Fatty infiltration. (Total lead = 0·2 g.)

FIG. 4.



CASE 29C.—Section of liver showing hæmosiderin. × 300.

Similar changes were found in a case of industrial lead poisoning, where the main features were: fatty infiltration and the deposit of pigment.

It is only right to point out that with increased experience we now find it possible to avoid all the more serious toxic effects of the administration of lead, although it is only to be expected that those of a less serious nature, such as nausea and colic, will occasionally be seen. The foregoing account of the poisonous effects of lead may, indeed, be taken as demonstrating the difficulties through which we have had to fight our way to reach comparative safety. This we believe we have accomplished. At the same time it must be emphasised that only long experience, careful judgment, and complete biochemical investigations have enabled us to secure our patients from harm. Such immunity as we have established in this respect can only be attained by those using this form of treatment if they obtain first-hand knowledge of the method and carefully follow the suggestions made in our next communication on the treatment of patients.

GENERAL SUMMARY AND CONCLUSIONS.

Blood Changes.

1. Lead causes changes in the red cells. There is punctate basophilia, which may appear within a few hours of initial dose. Anæmia and its accompaniments, polychromasia, anisocytosis, and poikilocytosis occur later. This anæmia may be only temporary, or, if bone-marrow be involved, may persist.

2. Leucocytosis has frequently been observed, especially when the blood has been examined shortly after an intravenous administration of lead. Leucopenia occurs occasionally. Neither of these phenomena appears to be constant.

3. A slight relative lymphocytosis may occur, but this is not generally marked.

4. There is a definite increase in the number of granular forms of leucocytes.

5. Anæmia is a consequence of the long-continued administration of lead, and it is accompanied by the usual symptoms of that condition—namely, headache, lassitude, and palpitation. In women there may be amenorrhœa. This last-named is not constant, and depends on many circumstances.

Alimentary System.

1. Blue line at the gum edge is rarely seen when lead is administered intravenously.

2. Nausea and vomiting appear to be dependent on the amount of lead administered, but occur after a smaller total quantity when given in massive doses, rather than after the long-continued administration of small doses.

3. Intestinal colic occurs with considerable frequency after the administration of massive doses; it is not seen after the long-continued administration of a smaller quantity of lead.

4. Constipation and diarrhœa have not been observed as definite phenomena supervening under the treatment adopted.

Nervous System, including the Retina.

1. Psychopathies may occur after the intravenous administration of lead; they are, however, rare.

2. Neuropathies do not occur when lead is administered in the manner mentioned.

3. The retina may be affected; in these circumstances it is probable that it is a concomitant of renal involvement.

The Kidney.

1. The toxic effect of lead on the kidney as the result of intravenous therapy is sufficiently frequent and of such magnitude as to require the greatest caution in the administration of this drug, especially in large doses.

2. The functional impairment caused by many small doses is smaller in degree but more permanent than that caused by occasional large doses.

3. The earliest indications of renal failure appear to be: (*a*) Diminution in the quantity of urine secreted; (*b*) the presence of albuminuria; and (*c*) the presence of œdema.

4. A rise in blood-urea does not occur, as a rule, until the damage is sufficiently great to be detected clinically. Changes sufficiently great to be of value have not been observed in the urea-concentrating power of the kidney.

5. As in nephropathies due to other causes, it is difficult to correlate functional impairment with pathological change. A case which showed advanced cloudy swelling in three-quarters of the tubules has good renal efficiency as determined by the usual tests.

The Liver.

Pathological changes are not so marked in the liver as in the kidney, and the main impairment of function seems to be connected with the bile-producing mechanism.

General.

The administration of lead is a form of treatment that should never be attempted by those who have not complete laboratory facilities at their disposal, and who have not studied for some time the actual treatment of patients.

We wish to acknowledge with gratitude the large amount of work done by Mr. H. F. Woolfenden and Mr. Patterson in our earlier investigations of the effects of lead.

GASTRO-JEJUNAL ULCER.*

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ALTHOUGH gastro-enterostomy has been performed for the treatment of gastric ulcers for nearly 45 years, there is still some doubt as to its value. This doubt is largely due to the fear of the later onset of gastro-jejunal ulcer. Some surgeons are advocating the use of more severe operations to prevent what they regard as a common complication; others believe that the frequency of these marginal ulcers has been much exaggerated and their danger will be outweighed by the increased risk of the larger operation. The time is therefore opportune for a careful review of the known facts which are based upon the large number of figures now available.

Frequency of Gastro-jejunal Ulcer.

The real frequency of the condition must be accurately determined, for it is possible that it is believed to be common owing to the fact that only the failures present themselves for further observation and treatment, while the successes are overlooked. Such an investigation is not, however, without difficulty, for there is no question but that the incidence is increased by want of technical skill in performing the operation. To-day operations of this magnitude are being widely performed by those who have only had a small amount of experience in war surgery, and who, when confronted with an upper abdominal lesion, perform a gastro-enterostomy incorrectly, or, what is of greater importance, perform it when it is not indicated. A high percentage of bad results under such conditions is to be expected, and unfortunately they discredit the operation even when it is correctly performed. On the other hand, unless all the cases are seen in an adequate follow-up department, many examples of this complication may be overlooked and the incidence placed too low. In Paterson's[12] original paper stress was laid upon the difficulty of obtaining true figures, but he found three cases in 348 patients, that is, a little under 1 per cent. Judd[8] reported 54 in 8324 gastro-enterostomies, that is, 1·04 per cent. Lewisohn,[9] on the other hand, has reported an astonishing series of 68 cases, 23 of which developed gastro-jejunal ulcers, a percentage of 34. Generally, however, there is a remarkable unanimity among surgeons of wide experience in placing the frequency between 1 and 2 per cent. My own experience is as follows:—

There have come under my care 20 cases of gastro-jejunal ulcer, 11 of them being cases upon whom I had personally operated. It is almost certain that these 11 are the total number, for all cases have been carefully watched in a most satisfactory follow-up department, and I do not think that any with this complication have escaped observation. These 11 occurred in a total of 783 gastric and duodenal ulcers which had been subjected to operation, giving a percentage of 1·4 (Table I.). Of these cases, however, a gastro-enterostomy was alone performed in 631 cases, so that the danger of this ulcer formation after simple gastro-enterostomy may from this group be estimated at 1·7 per cent. My figures, however, show that the lesion is only common after duodenal and pyloric ulcers; in fact, of the 11 cases only one occurred after a lesser curve ulcer. If, therefore, we consider the pyloric and duodenal ulcers alone, that is the group that is most favourably placed for the onset of this complication, we find there are ten anastomotic ulcers in 417 cases, a percentage of 2·4, which may be regarded as the highest incidence. It must, however, be remembered that for so crippling and dangerous a disease as an ulcer at or about the pylorus a gastro-enterostomy gives us, as I have elsewhere shown,[17] 90 per cent. of complete cures, results which are incomparably better than after any form of medical treatment. The operation must not, therefore, be condemned because so small a percentage is left with this dangerous complication, and before substituting for it any other form of operative procedure, we must be confident that this procedure does prevent the incidence of this disease, and has not a higher mortality than that of simple gastro-enterostomy, which is well under 1 per cent.

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* A paper read before the American Inter-State Congress in London.

TABLE I.—*Frequency of Gastro-jejunal Ulcer.*

—	Total.	Gastro-jejunal ulcers.	Percentage.
All ulcers	783	11	1·4
Gastro-enterostomy alone	631	11	1·7
Pyloric and duodenal alone	417	10	2·4

Ætiology and Pathology in Relation to Prevention.

There are, however, certain points in the ætiology and pathology of this condition which will indicate how its onset can be prevented. As a general rule the jejunum is remarkably free from ulceration, and is generally only affected after an artificial anastomosis has been made between it and the stomach. Von Roozer[14] in reporting three cases first suggested the possibility of primary ulceration in this position, and Richardson, in reporting two of his own cases, was able to collect ten others from the literature. I[17] have reported another similar case occurring in a woman. After gastro-enterostomy the ulceration always occurs in proximity to the junction, and although gastro-jejunal and jejunal ulcers have been described, I have never yet seen a true example of the latter. In every case which I have had the opportunity of observing there has been evidence that the ulcer has started directly at the junction, for even when the ulcer was relatively remote there was a scar extending to the anastomotic line.

The ulcers are nearly always found after an operation for a pyloric or duodenal ulcer. This relationship has been constantly found by all observers, and it will be noted in my own series of 20 that there was only one unusual case in which the ulcer followed a lesion of the lesser curve. It is also almost wholly limited to males, possibly because they are so much more liable to ulcers at the pylorus and in the first part of the duodenum. In my own series of 417 pyloric and duodenal ulcers, 344 occurred in males, and of the 20 gastro-jejunal ulcers only one was a female (Table II.), and in her case there were exceptional conditions. It is said never to follow an operation for carcinoma of the stomach, although I know of one such in the literature which was reported by Lennander.

TABLE II.—*Distribution of Gastro-jejunal Ulcers.*

Ulcers.	Total.	Males.	Females.	Gastro-jejunal ulcers.
Lesser curve ..	360	228	138	1
Duodenal and pyloric	417	344	73	19
Gastro-jejunal ..	20	19	1	—

The ulcers, as seen shortly after the gastro-enterostomy, may be acute, shallow and irregular in outline, and usually involve one-third or so of the circumference of the new opening. The floor may be covered with sloughing material, and may be the site of a considerable amount of hæmorrhage. If seen later they have all the characters of a chronic peptic ulcer and deeply penetrate the walls at the junction. If they become adherent to the colon the penetration may give rise to a gastro-jejunal colic fistula; if non-adherent, perforation leads to a diffuse peritonitis. A few may penetrate anteriorly, and becoming adherent to the abdominal wall lead to a local abscess. It has been thought that the ulceration owes its inception to the trauma of clamps applied to the jejunum during the operation. This is, however, improbable, since the ulcer nearly always commences, not in the jejunum, but at the line of suture, and the complication seems to be as common whether the anastomosis be performed with or without the use of clamps. The experiments of Gronnerund[3] showed that in dogs the use of clamps made no difference to the incidence of gastro-jejunal ulceration.

Occasionally acute ulceration at the junction is found when the patient has suffered from some acute infective condition immediately following the operation, and hence it is probable that such an infection may be a predisposing factor. It cannot, however, be the only one, nor indeed the most important one, for in many cases the patient has made an uninterrupted recovery from the gastro-enterostomy.

Technical Errors in the Primary Operation.

Technical errors in the performance of the primary operation are unquestionably an important factor; the ulcers, for instance, are found much more commonly after the use of Murphy's button, as is, indeed, to be expected, for this device has to separate by a process of sloughing at the edges of the anastomosis which is likely to progress to chronic ulceration. In the same way the use of silk sutures appears to be a definite factor, for a large number of such ulcers have been reported where a portion of silk was found hanging from the base of the ulcer. In my own 20 cases a portion of such suture was found in nine, so that at one time I was strongly of the opinion that this was the factor of importance. The persistence of the ulcers after the sole use of catgut sutures shows that this is not the only cause. Catgut should alone be used, as it will reduce the incidence of this complication, but it will not entirely abolish it. Another step in the technique around which much discussion has arisen is that of occlusion of the pylorus. Martin[10] points out that the pancreatic secretion is normally activated by the passage of acid through the pylorus. The contact of this acid with the duodenal mucosa produces secretin which is carried by the blood-stream to the pancreas where it stimulates the secretion of the pancreatic juice. Galpern[1] has laid stress upon the importance of this in surgery, and quotes an experiment of Popielski in support of it; a dog's stomach was divided into pyloric and cardiac halves; the introduction of acid into the cardiac end produced no flow of pancreatic secretion, but when inserted into the pyloric end the secretion was profuse. He believes that this experiment is reproduced when the pylorus is occluded. Holzweissig[6] quotes a case supporting this view. The bile and pancreatic ducts were occluded by gall-stones and caused the death of the patient. At post mortem acute ulcers were present in the first 10 cm. of the jejunum, and he believes that this was due to the fact that the acid was not neutralised in the pancreatic secretion. It is interesting to note in this respect that in my one case of gastro-jejunal ulcer occurring in a woman there was also chronic pancreatitis with obstructive jaundice, and it is possible that the absence of a pancreatic secretion was a contributory factor. Von Haberer[5] believes that occlusion of the pylorus has a very definite bearing, for he states that in his series there were 275 cases of simple gastro-enterostomy with three cases of jejunal ulcer, and 71 cases of pyloric occlusion with 12 jejunal ulcers. These views are in entire opposition to the findings of Paterson,[12] who has shown that after gastro-enterostomy there is a diminution in the total chlorides as well as in the free HCl, a change which he regards as being due to the fact that the hormone regulating the formation of HCl is formed in the pyloric portion and is not utilised if the food does not enter this portion of the stomach. Whether a permanent and complete occlusion of the pylorus has any effect on increasing the incidence of this lesion I have no evidence in my own experience to show, but my figures make it quite definite that embedding a duodenal ulcer with silk, which gives rise to a temporary occlusion, has no such effect, for not only have I not had a larger incidence of this complication, but I also carry out a similar temporary occlusion after excision of all ulcers of the lesser curve, and a gastro-jejunal ulcer here is of extreme rarity. That gross errors of technique will increase the incidence of this condition is therefore certain, but that alterations in the minor details have any bearing is improbable, for the majority of surgeons have an incidence of 2 per cent., and it is unlikely that they would all commit errors with the same frequency.

Gastro-jejunal Ulcers and the Prior Operation.

The important question, however, is whether these ulcers can occur after operations other than gastro-enterostomy. The two alternative steps which have been most frequently advocated are gastro-duodenostomy and partial gastrectomy.

Naturally enough no true gastro-jejunal ulcer can occur after a gastro-jejunostomy, but any recurrence of the ulceration at or about the site of the enlarged pyloric opening would be of a similar nature, and would have to be considered in weighing the merits of one operation against the other. Such recurrences are indeed not uncommon, and Turner[15] in his analysis of 48 cases of pyloroplasty found in four cases a recurrence with inflammatory masses near the pylorus, giving a recurrence rate of over 8 per cent., which is considerably greater than the incidence of gastro-jejunal ulcer.

It is generally tacitly assumed that a partial gastrectomy will not be followed by any gastro-jejunal ulcer, and it is on these grounds that this more extensive operation has of late been so frequently advocated as a routine line of treatment for pyloric and duodenal ulcers, and this in spite of the fact that even in the hands of skilled surgeons this operation may be, as Pannett,[11] who advocates its use, points out, a very prolonged and tedious measure which is associated with many difficulties. It is certainly the experience of the majority of surgeons that such ulceration is much less common after partial gastrectomy than after a simple gastro-enterostomy, and Sherren,[14] in 1924, states that up to that period he had never had a marginal ulcer after partial gastrectomy, and the argument has even been put forward that such ulceration is almost impossible because removal of the pyloric antrum abolishes the mechanism of the secretion of acid in the fundus glands. There have occurred in my practice two cases following partial gastrectomy by other surgeons, and others have been reported by Beer[1] and H. Haberer.[4] Von Haberer[5] has even abandoned the Billroth II. and Polya operations and returned to the Billroth I. method, as gastro-jejunal ulceration was in his experience so common after the former operations. Wright,[18] after reporting two cases of a similar nature, gives what is probably the correct explanation of the popularly accepted belief that these ulcers are rare after this operation. He states that up to the present time partial gastrectomy has usually been performed for carcinoma of the stomach, and it is only of recent years that it has been carried out for peptic ulceration, and that marginal ulceration has begun to follow its use. There is thus no doubt that this serious complication is not entirely eliminated by the substitution of the more dangerous operation of partial gastrectomy. Dr. Mayo has pointed out that the removal of so large a portion of the stomach for a small ulcer, perhaps of less than 1 cm. in diameter, in order to lessen the frequency of this rare complication, is too extensive and too dangerous a procedure. This has always been my own view, and I have been very loth to remove perhaps three-quarters of the healthy stomach for a small innocent ulcer. It is true that surgeons of wide experience are agreed that the end-results of a partial gastrectomy are extremely satisfactory, and in the 188 cases in which I have performed this operation for large ulcers and carcinoma I have never met with any severe disability. Nevertheless, Hurst[7] has laid special stress upon the late complications following gastrectomy, and has even claimed that later in life it may be followed by pernicious anæmia. He states that he knows of five such cases where this complication resulted. These claims cannot yet be considered as proved, but they strengthen the belief that so large a removal of a healthy viscus will be found in the future not to be entirely free from danger. Too much stress must not be placed upon the published statistics, for these are generally the results of surgeons of wide experience, and it is highly improbable that surgeons less skilled in abdominal surgery will be able to obtain a mortality even as low as 10 per cent., a mortality which is greater than the combined mortality of gastro-enterostomy and the incidence of gastro-jejunal ulcer after such an operation. To my mind, therefore, there can be no justification for the general substitution of partial gastrectomy for gastro-enterostomy in the treatment of pyloric and duodenal ulcers. I believe that an entirely exaggerated view has been taken of the importance and incidence of marginal ulceration after gastro-enterostomy. This complication is a very serious danger, but it only occurs in a small percentage of cases, and its incidence will not be entirely prevented by the use of an operation which carries a much higher mortality.

Acid of the Gastric Juice in Relation to Ulceration.

It is now clearly recognised that there is a close relationship between the amount of acid in the gastric juice and the incidence of gastric and duodenal ulceration. The work of many investigators, and especially that of Hurst,[7] has established the fact that with pyloric and duodenal ulcers the acidity is high, and it is after operation for these lesions that gastro-jejunal ulceration most commonly occurs. With lesser curve ulcers the acidity is lower and marginal ulceration is rare. With carcinoma, free acid is usually absent, and marginal ulceration is practically unknown. The test meals of my own cases make these facts clear. With carcinoma of the stomach there was nearly always a complete absence of free acid, and with the lesser curve ulcers it was lower than with the pyloric and duodenal ulcers (Table III.). Of the 20 cases of gastro-jejunal ulcer I was able to obtain records of the test meals previous to the first operation in my own 11 cases and in two others. In these 13, who were all males, the acidity was much above the average (Table IV.). As this series was small Mr. Cairns investigated a complete series from the London Hospital comprising 50 cases. Excluding my own cases as above, and those in which the primary operation was performed elsewhere, there were left 10 cases, the average acidity of which is shown in Table V., the figures of which are nearly identical with my own.

In the one case of lesser curve ulcer in which a marginal ulcer followed operation, the test meal showed before the primary operation free HCl 0·23, total acidity 80, and before the marginal ulcer 0·10, 40-

It seemed possible that a variation in the acidity between the different sexes might also account for the tendency of this complication to occur almost entirely in males. I therefore investigated the figures of my series, and it is clear from an inspection of Table VI. that both with the lesser curve and the pyloric and duodenal ulcers the average acidity was considerably higher in the males than in the females.

TABLE III.—*Acidity with Different Types of Ulcer.*

Ulcers.	Cases examined.	Average total acid.	Average free HCl.
Lesser curve ..	192	58	0·118
Duodenal and pyloric	257	62·5	0·160

TABLE IV.—*Acidity with Gastro-Jejunal Ulcer.*

Gastro-jejunal ..	13	71	0·19

TABLE V.—*Acidity with Gastro-Jejunal Ulcers (Mr. Cairns).*

Gastro-jejunal ..	19 all males.	63	0·18

TABLE VI.—*Acidity in the Two Sexes.*

Lesser curve—			
Males	135	61	0·123
Females	57	61	0·108
Pyloric and duodenal—			
Males	212	63·5	0·105
Females	44	61·6	0·136

TABLE VII.—*Changes in Acidity after Gastro-Enterostomy.*

—	Total.	Acid increased.	No change.	Acid lowered 60 % or more.	Free acid abolished.
Gastric ..	42	1	3	9	29
Duodenal	113	2	7	53	51

TABLE VIII.—*Acidity after P.G.E. with Gastro-Jejunal Ulcers.*

Ulcers.	Cases.	Average total acid.	Average free HCl.
Gastro-jejunal ..	13	44	0·12

TABLE IX.—*Changes in Acidity in Gastro-Jejunal Ulcers.*

Ulcers.	Total.	Acid increased.	No change.	Acid lowered 60 % or more.	Free acid abolished.
Gastro-jejunal	13	3	2	5	3

Up to a short while ago it was usually accepted that the effect of gastro-enterostomy for a pyloric or duodenal ulcer was in the greater number of cases to enormously decrease or entirely abolish the amount of free acid which occurred in the test meal. More recent observations have tended to throw doubt on these conclusions. Therefore Mr. Cairns collected and examined for me a considerable series of more recent cases at the London Hospital, where observations on the acidity had been carried out both before and after gastro-enterostomy. The cases occurring in the years 1921–24 were taken and included 51 lesser curve ulcers and 115 pyloric and duodenal ulcers. Of these, nine of the lesser curve and two of the pyloric ulcers had no free acid previous to the operation and are therefore excluded. The changes occurring in the remainder are seen (Table VII.). It will be noticed that whereas in nearly three-quarters of the gastric ulcers the free acid is abolished after operation, this change occurs in rather less than half of the duodenal ulcers. It is very probable that this difference is due to the tendency to place the stoma nearer the pylorus with the pyloric and duodenal ulcers than with those on the lesser curve, and thus to bring about a less efficient neutralisation. In my group of 13 gastro-jejunal ulcers in which test meals had been taken before and after the gastro-enterostomy, the effects were even less marked. The average acidity as contrasted with Table IV. had fallen (Table VIII.), but the numbers to be benefited were below the average (Table IX.). It is possible that the failure of the acid to fall in these gastro-jejunal ulcer cases may be due to an anatomical variation, the acid-producing cells in a certain number of duodenal ulcer cases (about 2 per cent.) being more widely distributed over the gastric surface, and thus being less affected by the gastro-enterostomy, but whatever may be the cause there is no doubt that the ulceration is dependent upon the higher acidity which occurs in the pyloric and duodenal ulcers in males, and which tends to persist after gastro-enterostomy for the latter group of ulcers.

Course of Events after Prior Operation.

It is usually accepted that the majority of cases of gastro-jejunal ulcer do not seek treatment until a considerable period has elapsed after the gastro-enterostomy, and in the ordinary course of events it will generally be found that a patient returns to hospital or to his surgeon complaining of disability some three or four years after the operation. In many published cases, indeed, the interval has been much longer than this, and has extended to 10 or 15 years, so that this free interval is often quoted as being characteristic of the disease. One thing has, however, very clearly emerged from my periodical examination of these cases in a follow-up department, and that is that they never make the same complete and absolute recovery after the gastro-enterostomy which is so characteristic of the greater majority of duodenal and pyloric ulcers. They will often state that they are very much better and have been enormously improved, but if they are cross-examined it will be found that they are unable to take full diet, or that they have a little feeling of discomfort coming on late after food which necessitates their taking a dose of bismuth and alkali through a prolonged period after the operation. It will be noted, too, that although these symptoms are so slight there is a certain periodicity about them. They may continue for a month or two after the operation and then be considerably relieved for several weeks, only to return again. This change is very distinct from the usual patient who states that he is perfectly well, is able to eat anything, and has never been so well in his life. As they are watched from month to month it will be noticed that they develop a more definite periodicity, their symptoms become more marked, and especially does the pain become more severe. By keeping a careful record in this way it will often be noticed that when their symptoms have been established they will state that they have been quite well after the operation for a prolonged period, having in the meantime entirely forgotten the minor symptoms. By such a method of careful following it is possible to get evidence of these ulcers in their earlier stage, and I think it is the use of such a department which explains the fact that I have never yet seen a perforation of one of these ulcers either into the general peritoneal cavity or into the colon; complications, which from the published statistics, appear to be relatively common. When the disease is well established the severe symptoms show a periodicity which is nearly as characteristic as that of a duodenal ulcer. They appear in attacks which will last from three to four weeks, and may then be followed by several months of complete relief. If the base of the ulcer becomes adherent to the surrounding tissues, most frequently the transverse colon and the mesocolon, the symptoms will tend to become much more constant. The pain shows characters which in the greater part are similar to those of a duodenal ulcer; that is to say, it comes on late after the ingestion of food, will often wake the patient at night, and nearly always is relieved for the time being by taking more food. It differs, however, in one respect: it radiates more widely, and especially does it pass down to the left iliac fossa. It is often described as agonising and severe, and at first when the ulcer is non-adherent is relieved by alkalies. Later, if the transverse colon is involved, practically no relief is gained by this means. It is interesting to note that in the majority the attacks of severe pain are associated with vomiting, an indication that the stomach is involved as well as the jejunum. Generally a considerable amount of relief is given by the vomiting, which nearly always contains a large amount of bile. As a rule, hæmorrhage is not a marked feature, but there are cases where it is predominant, and I have two cases in my series in which the presence of repeated hæmorrhages, which had reduced the patient to a considerable degree of anæmia, were the only evidence that ulceration existed. In such cases the ulceration is usually much more superficial, and the absence of pain is accounted for by the fact that the deeper tissues are not involved. Generally the test meal shows the presence of a considerable amount of free acid, the reduction by the gastro-enterostomy having been very incomplete. In three of my cases, however, there was a complete absence of free HCl. The X ray evidence is usually of great value. In the long-standing cases direct evidence will be obtained, for the outline of a penetrating ulcer may be easily visible, or after the meal has passed from the stomach a meniscus may be left in the region of the stoma. In the earlier and more shallow ulcers the evidence will not be so definite and may chiefly consist of hyperperistalsis and irregular contractions of the stomach and duodenum. Direct evidence of some alteration in the outline of the stoma was obtained in 12 of my cases.

Treatment after Ulceration has Occurred.

If once ulceration has occurred, and there are definite symptoms or a positive X ray examination, operative interference is the only treatment that is likely to be of any value, but in the earlier stages, when there are simply ill-defined symptoms, a course of medical treatment may possibly prevent the progress of the ulcer, and it is in order to obtain the cases in this stage that a series of follow-up investigations is of extreme value. As regards the preventive treatment of the first operation it has been pointed out already that one of the factors of importance is the abolition of all mechanical devices to perform the anastomosis and the use of catgut sutures throughout. In addition, extreme care must be taken to bring about absolute apposition of the mucous coat, for if a gap be left the deeper layer of sutures will be exposed, and although of catgut they may persist for a long time and act as foreign bodies. For this reason I have abandoned the excision of the strip of mucous membrane surrounding the opening, although this method gives a much neater union. Another factor which I think will be of value, and which I am now adopting, is to place the anastomotic opening rather higher up on the greater curve, that is, about 3 in. from the pylorus. There was a tendency among all surgeons in the past to make the opening as near to the pylorus as possible, but it has been clearly shown that in ulcers of the lesser curve, where the opening has been placed high up, the results have been satisfactory, and as a general rule the higher the opening is placed the more complete is the neutralisation of acid. I was formerly of the opinion that, in the treatment of the established condition, excision of the ulcer and resuturing with catgut alone would often give rise to a cure; further experience has, however, shown that this method is unsatisfactory. Where it was adopted I have had four cases of recurrence, and I believe that the only treatment which is likely to be of any avail is to perform a partial gastrectomy which is sufficiently extensive to considerably reduce the acid. This may be one of the most difficult operations in modern surgery, especially if the primary operation has actually been of the no-loop variety. If the opening is placed 1–2 in. distal to the flexure the operation is comparatively easy, and it is now, therefore, my custom in all cases of pyloric and duodenal ulcers in which the acid in the test meal is abnormally high not to perform an absolute no-loop gastro-enterostomy, but to place the opening about 2 in. from the flexure. I have never found any evil consequences follow this step, and I believe that we have been obsessed with the idea of the value of no-loop anastomosis owing to the evil effects which unquestionably follow the use of very long loops. The division of the stomach should be made well proximal to the anastomosis, and if sufficient of the stomach is taken away it is almost certain that the acid will be reduced; that is to say, the method which one would advocate is to perform a simple gastro-enterostomy with the opening rather higher than usual and rather further from the flexure as the routine treatment for pyloric and duodenal ulcers, and to reserve the more extensive and dangerous operation of partial gastrectomy for the small number of cases that develop gastro-jejunal ulceration. Although the partial gastrectomy for these ulcerative cases is undoubtedly a severe operation, most of the patients stand it remarkably well. In my own series of cases it has been performed 13 times, and 11 cases have made a complete recovery, and after the partial gastrectomy have remained entirely free from symptoms. The question will naturally arise, if partial gastrectomy is unsatisfactory as a primary method of treatment, why should it be selected as the method of choice after the ulcer is definitely established? The answer to this is that the liability for secondary ulceration will probably depend upon the amount of stomach which is removed, so that if a partial gastrectomy is performed at the primary operation it will have to be extensive, and will carry a high mortality, and so big and extensive an operation should be reserved for the small number of cases that have definitely developed this complication.

Conclusions.

(1) Gastro-jejunal ulcer is a relatively rare complication of gastric and duodenal ulcer occurring in a little over 2 per cent. (2) Its frequency does not warrant the introduction of extensive operations for the treatment of the primary condition. (3) It is almost entirely limited to pyloric and duodenal ulcers. (4) It occurs almost wholly in the male sex, and is found in those cases in which the gastric acidity is high. (5) As a general rule it is found when the acidity after the primary gastro-enterostomy persists, this being possibly due to an anatomical variation in the distribution of the oxyntic cells in the stomach. (6) The symptoms of this complication, although slight at first, nearly always commence immediately after the primary operation. (7) The frequency of the condition will probably be diminished by performing the anastomosis rather higher up than usual. (8) The treatment of the established condition should be by partial gastrectomy, which will be aided by placing the stoma rather more remote from the flexure than is usual at the first operation.

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THE VALUE OF SOFT-RAY TECHNIQUE IN PULMONARY RADIOGRAPHY.

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THIS article is an attempt on the part of the writers to explain the value of the soft-ray technique of radiography,[1] especially as a diagnostic aid in dealing with early tuberculous lesions of the lungs. A radiograph of a lung affected with tuberculosis may be made to show a very different picture, according to the quality of the rays employed. The hard ray will penetrate an early focus of tubercle and give an appearance similar to that of normal tissue. Old fibrotic foci, however, are opaque to the more penetrating, and in fact, to all rays. The hard-ray radiograph is liable to show the older and healed lesions only, the more recent and much more important earlier foci being generally missed. In order to obtain really satisfactory results in pulmonary radiography, soft-ray technique must be employed.

Comparison of Techniques.

The appearance of a normal healthy chest in an adult taken by hard-ray technique varies enormously from the same subject taken by soft rays. Using the hard ray, the fine mottling of the connective and interstitial tissue of the lung is not shown, and the harder the ray the less this is discernible. All that is seen in the negative is a more or less uniform darkness over the whole of both lungs, with the ribs showing very plainly, even the bony markings being visible; the vertebral column, too, is often plainly distinguished through the heart shadow. The roots of the lungs appear as lighter shadows on each side, but their finer parts are not seen, nor are the delicate radiations which extend downwards, upwards, and outwards from them. This appearance, of course, varies with the hardness of the ray employed, the harder the ray the more easily does it penetrate the interstitial tissue of the lungs.

The appearance of the same chest taken by the soft-ray technique is very different. Scattered through the lungs on both sides there is seen a fine mottled and striated appearance, which is the pulmonary connective and interstitial tissue, the roots are much better defined, and their radiations plainly seen. The ribs appear as more or less indefinite shadows, and the fine bony markings on them are not evident. The details of the vertebral column are not seen, as the soft ray does not penetrate the heart and pericardium.

Comparing these two radiographs, the uninitiated would perhaps say that the one taken with the hard ray was the better picture of the two, and the one taken by the soft ray might perhaps be diagnosed as tuberculosis affecting the roots of the lungs, the mottling being also thought to be pathological in appearance. These characteristics are even more distinct in children; and in children of, say, about 8 to 10 years old the diagnosis of hilum tubercle has no doubt often been made from the appearance of a soft-ray radiograph of a normal chest of a child. It is a very important thing, when giving an opinion of a chest radiograph, to be able to distinguish what is normal from what is beginning to depart from the normal, which can only be done by an extensive experience of the soft-ray technique.

We might here mention that, in our opinion, it is extremely important that the radiologist should mark on the radiograph the conditions under which it was taken—i.e., penetration of tube, milliamperage, focal distance, exposure, &c. To resume, by using the hard-ray technique an excellent picture of the bones of the chest is obtained, but the finer details of the lung tissue missed.

In THE LANCET of March 17th, 1923, the present writers, in a paper entitled X Ray Examination of the Chest, discussed the value of X rays in the detection of pulmonary tuberculosis, and stated that, in their experience, they had come across several cases where physical signs were absent on clinical examination, but which showed, on X ray examination, signs of tubercle such as enlarged glands, and masses of infiltration round the hila, lesions which could not be made out with any degree of certainty by clinical means. They are now prepared to go even further than this, and to state that a recent pulmonary lesion in an early case, or a new focus in an old case, may be detected by the soft-ray technique, before definite physical signs have made their appearance. The old hard-ray method was of no use whatever as a diagnostic aid in early pulmonary tubercle; it showed up the old fibrosing lesions perfectly well, but penetrated and completely missed the early infiltrations, which latter are revealed by means of the soft-ray technique, as fluffy, indefinite, cotton-wool-like shadows. It was because of the general use of the hard rays in former years that X ray examination, *as an aid to* diagnosis in tubercle of the lungs, fell into disrepute. It is still, we believe, very commonly stated that tuberculosis of the lungs which cannot be discovered by careful clinical methods will not be discovered by X ray examination, either fluoroscopic or radiographic. This, we beg to submit, is certainly not always the case, and in every suspected case of pulmonary tuberculosis, whether it is an early new case or a suspected reinfection in an old case, competent X ray examination should be performed as a matter of routine, using the soft rays, the technique of which is given below.

Correct Technique of Chest Radiography.

Before discussing the correct technique of chest radiography, we might mention that, in our opinion, the following accessories are necessary to the radiologist: 1. Kilovoltmeter. This instrument saves the time and trouble of taking readings by equivalent spark gap, penetrometer, &c. 2. A reliable milliampermeter. 3. An automatic time switch.

Technique.—The following standardised technique has been adopted by the writers: Kodak duplitised films between two intensifying screens; distance between anticathode and film, 1 metre; secondary voltage, 45 kilovolts; milliamperage, 40; exposure, ¼ to 1 second, according to the thickness of the subject, the double focus Coolidge tube being employed.

Standardisation of Technique.—In chest radiography it is important that the technique be standardised, as when a case comes for re-examination it is useless to compare the two radiographs, if the first one has been taken under one set of conditions, and the second one under another. In this respect the Coolidge tube and high-tension transformer are

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[1] By soft rays we mean a secondary voltage of 45 kilovolts—an equivalent spark gap of about 4 inches—4 benoist. By hard rays a secondary voltage of 60 to 70 kilovolts—an equivalent spark gap of about 6 inches—6 to 7 benoist.

(*Continued from opposite page.*)

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invaluable, as the current passing through the tube and the penetrating power of the rays are independent of each other. If the auto-transformer rheostat is adjusted to give a certain secondary voltage, the penetration of the tube remains constant no matter whether 4 or 40 milliamperes are passing through the tube. An X ray journal should always be kept, and in it noted the conditions under which the radiograph is taken, so that if a patient comes for re-examination, the conditions under which the first radiograph was made can be duplicated. For example, patient A. B. was radiographed six months previously, and is referred by his specialist for re-examination, reference is made to the X ray journal, and it is noted that the previous entry reads: "Focal distance, 1 metre; penetration, 45 kilovolts; milliamperes, 40; exposures, 0·75 second"; Procedure: The auto-transformer rheostat is advanced until the kilovoltmeter shows a secondary voltage of 45 kilovolts; the rheostat controlling the heating current of the Coolidge tube adjusted until the milliampermeter shows that the tube is drawing 40 milliamperes, and the automatic time switch set for 0·75 second. The exposure is then made. In this way the radiologist is absolutely certain of having duplicated the technique of the previous radiograph. Development of the film must also be standardised, the usual method being to develop the film for five minutes at a temperature of 65° F.

A NOTE ON

CHRONIC ENDOCERVICITIS:

THE END-RESULTS OF OPERATION.

BY JOHN WILLIAM BURNS, M.D. DUB., F.R.C.S. EDIN.,

HON. SURGEON, LIVERPOOL SAMARITAN HOSPITAL FOR WOMEN; HON. ASSISTANT SURGEON, LIVERPOOL MATERNITY HOSPITAL.

IN 1922 I read an article[1] on chronic endocervicitis and its treatment before the North of England Obstetrical and Gynæcological Society, in which I stated my belief that the best way of dealing satisfactorily with cases of chronic endocervicitis, especially those associated with erosion, was to remove the eroded area along with the lower half or two-thirds of the cervical canal—i.e., the infected portion.

One of the main criticisms aimed at the particular type of operation which I had adopted was that it would probably have a very serious effect upon subsequent conception, pregnancy, and labour.

Technique of Operation.

Before dealing with the end-results I would like to refer to the operative procedure adopted in these cases. It is that devised by Sturmdorff, of New York, and described by Matthews.[2] The eroded area of the cervix is encircled by an incision which penetrates the vaginal covering of the cervix only. The area within the incision is seized with vulsella and pulled strongly downwards. The incision is deepened in an oblique manner with a knife or sharp-pointed scissors, so as to reach the cervical canal in the region of the junction of the upper and middle thirds. By this means a cone of tissue is removed which contains the eroded area of the cervix and the infected cervical lining. Four sutures are inserted—one anterior, one posterior, and one on either side. A vaginal pack of gauze soaked in acriflavine (1:1000) left in for 24 hours is all the dressing required.

There are several little points in the technique attention to which renders the operation very easy. The cone of tissue should not be completely separated until the lateral sutures have been inserted. As soon as the cervical canal has been exposed it should be seized with strong forceps and pulled down in order to render easy the passage of the anterior and posterior sutures. If this is not done there is a danger of wounding the bladder in front and of opening the recto-vaginal space behind. The sutures should not be tied until all four have been inserted. The needles which I find easiest to use are small fully curved bayonet-pointed, and must be fairly strong. As a rule I do not dilate the cervix or curette the uterus.

Advantages.

These are: (1) It can be modified to meet any type of cervical laceration. (2) The whole of the infected portion of the cervix is removed and as a result healing takes place rapidly and by primary union. There is, therefore, a minimum amount of scar tissue formed. (3) There is no post-operative bleeding, as the four sutures used efficiently control the four segments of the cervix. (4) The leucorrhœa, which for the most part comes from the infected portion of the cervix, is quickly reduced, and the vaginal exudation is allowed to resume its normal acid protective quality. (5) A potentially malignant area of the cervix is removed.

Results, Immediate State.

The immediate results of this operative treatment of chronic endocervicitis are excellent. The vaginal discharge and backache disappear, and also the other discomforts arising from a profuse leucorrhœa. The patient's general health rapidly improves, probably because with the removal of the infected area she is no longer absorbing toxins. Out of 92 cases operated upon in 1922 and 1923, and investigated and followed up until a recent date, only three returned to hospital complaining that they were not cured. Of these two turned out to be cases of gonorrhœal infection, while the third was a woman who, in spite of advice, would persist in frequent douching. In view of the belief that malignant disease develops in a cervix which is chronically inflamed, it is interesting to note that out of over 200 cases examined microscopically I have not found a single case of early carcinoma or epithelioma.

The effect of this operative treatment upon subsequent conception, pregnancy, and labour is shown by the following analysis of the cases operated upon during 1922 and 1923:—

Total number of cases operated upon		120
Failed to report	28	
Cases in which supravaginal hysterectomy had been performed	3	
Cases at or beyond the menopause.	5	
Unmarried	3	
Sterile..	10	
Cases of salpingo-oophoritis	6	
	55	
Total cases in which pregnancy might be expected to occur		65

Of these 65 cases 14 became pregnant within a period varying from two months to two years following the operation, that is, 21·5 per cent. This would appear all the more satisfactory when the fact is taken into consideration that the average age of these patients at the time of operation was 35 years. Of the 14 patients who became pregnant, one became pregnant twice within two years of the operation and 13 once, thus producing 15 pregnancies—

Total pregnancies		15
Cases which went to full term	10	
Cases terminating in miscarriage	3	
Cases not yet delivered	2	

All those cases which went to full term passed through perfectly normal labours. Of these ten cases two were primiparæ, one of which miscarried over the first pregnancy, conceived again within six months, and this time the pregnancy went to full term and terminated in normal labour. While the number of cases terminating in normal labour is somewhat small to base definite conclusions upon, yet I think these results show that this particular tracheloplastic operation has very little effect upon conception, pregnancy, or labour. The fact that eight of these cases had periods of sterility varying from two to eight years preceding the operation is suggestive that the infective condition of the cervix inhibits conception.

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[1] THE LANCET, 1922, ii., 796.

[2] Journal of Surgery, Gynecology, and Obstetrics, March, 1921.

Conclusions.

(1) The operative treatment of chronic endocervicitis brings about a rapid and permanent cure.

(2) As the chronically inflamed portion of the cervix is removed by this method what may be a potentially malignant area is destroyed.

(3) By rapidly decreasing the cervical discharge, which is always excessive in these cases, the vaginal exudation is allowed to resume its normal acid protective quality. This is most important from a bacteriological point of view.

(4) The operative treatment described has little or no effect on conception, pregnancy, or labour.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

THE inaugural meeting of the session was held on Oct. 12th, when the new President, Sir HOLBURT J. WARING, delivered an address on

OSTEOPATHY, CHIROPRACTIC AND OTHER CULTS, AND MEDICINE.

The PRESIDENT said he had received many inquiries from medical friends as to what was the exact nature of osteopathy and chiropractic, what were the advantages to be derived from its employment, and what disadvantages and dangers were to be feared. Briefly, the so-called principles on which these cults were founded were as follows.

Osteopathy.

This was stated to be a system of treating disease without drugs, and was based on the belief or assumption that all disease was caused by some part of the human organism being out of proper adjustment or alignment, as in the case of a misplaced bone, cartilage, or ligament; or, in the case of adhesions or contractions of muscle resulting in unnatural pressure on or obstruction to a nerve or a blood- or lymph-vessel. Investigation had shown him, however, that the different practitioners of osteopathy had varying ideas as to what was comprised in the term and what were the limitations of treatment. A later definition seemed to include the use of the term "inhibition," or the relief of pain or spasm of muscles by the application of steady pressure. This cult was founded in 1873 by Dr. Andrew T. Still, in the State of Missouri. He declared that all disease was due to or dependent upon a disturbance of the nerves or blood-vessels in the different parts of the body, especially in relation to the nerves coming out from the spinal column; that disease was also due to impairments of circulation preventing vital materials reaching different parts and organs. Osteopathy was therefore regarded as a therapeutic measure for the treatment of all disease, and apparently it was a mechanical measure, consisting of making alterations in position and relations by digital pressure or manual manipulations of the supposed diseased parts. The abnormalities of the spinal column which these practitioners considered caused disease were termed "osteopathic lesions," and often they were said to be characterised by localised areas of tenderness and muscular spasm. The means of treatment adopted by the osteopath was manipulation to correct the so-called deformity or osteopathic lesion, to bring into proper apposition displaced bony surfaces, to relax muscular spasms, and to eradicate tender points.

Chiropractic.

This, said the President, had been defined as the philosophical science and art of things natural, and a system of adjusting the subluxated vertebræ of the spinal column by hand for the restoration of health. The cult was originated by a layman, D. D. Palmer, and he founded a school, bearing his name, at Davenport, Iowa, in 1805. His theory was that disease was the result of pressure upon nerves as they emerged from the spinal column, this pressure being assumed to be caused by the vertebræ being in an abnormal position. Palmer said diagnosis was not necessary for the treatment of disease; all that was needed was to relieve pressure on nerve roots. Diseases of eye and ear were treated by both osteopaths and chiropractitioners in a similar manner, even though the nerves supplying them did not come off from the spinal cord.

The President said that a number of other cults had sprung from these two, but he only mentioned one of them, naprapathy. The practitioner of naprapathy stated that the basal centres of life were all located in the medulla oblongata or basal portion of the brain, and the nearest portion of the surface of the body to the medulla was the nape of the neck, and therefore to this region the various manipulations were applied. No medicines were prescribed, and surgical instruments were declared to be unnecessary; only thumb-pressure and free rubbing with the heel or the fist. Thus all the cults mentioned based their ideas and practice on a primary dogma which was untrue. Following upon the setting up of these cults, a number of irregular medical schools had sprung up in the States, self-styled colleges. They were mostly proprietary, and run with the object of making private gain rather than supplying well-qualified practitioners of the healing art. Apparently the only essential elementary education insisted on at most of these schools was ability to read and write; laboratory instruction, in the modern acceptation of the term, did not seem to exist, and no hospital clinical facilities were available. At one of them an elementary graduate was given the degree "L. W.," and a further qualification was awarded the style "T. N.," which investigation showed to signify respectively, "Live wire" and "Top notch"! At one of the largest of these schools anatomy was taught by a lecturer who appeared never to have gone through a course of dissection of the human body, and she had no recognised diploma or degree. Here also one of the most prominent courses was one on "salesmanship." In this course, personality, personal magnetism and psychology, various forms of advertising, selling the patient and selling the services of the practitioner, were given. They taught that there was no necessity to carry out isolation for infectious disease, and declared that osteopathy was something which could not be learned from books; only by personal instruction given by a qualified osteopath. Most of the students in these schools seemed to have been drawn from among people of the poorer class who had received but little education.

The treatment by osteopaths and chiropractitioners seemed to be very similar, consisting mainly of applying the osteopathic thrust or thump. In some cases immediately after applying this thump the operator made a clicking noise with his tongue, announcing to the patient at the same time that the displacement had been reduced, but he was enjoined to take a course of the treatment to become quite well.

Dangers of these Methods.

The President said patients suffering from severe affections were liable to be seriously damaged by having these methods practised on them. In one case of appendicular abscess the forcible treatment was applied, the abscess ruptured, and the patient died. There were many cases in which these manipulations had caused acute dissemination of carcinomata and sarcomata, and he had also seen many cases of tuberculous disease of joints in which serious damage had been caused by forcible manipulation and movement. In the United States epidemics of infectious disease have been due to lack of isolation and the practitioners of these cults carrying the infection broadcast. It could be stated that these manipulations, in some diseases and abnormal conditions, did no harm, but in the *majority* of diseased and abnormal conditions considerable harm might be done, and in some cases the sequel was an irreparable injury. Some of the cures reported had probably been due to suggestion, others to the direct results of manipulations and the breaking down or separation of adhesions between muscles and nerves and the adjacent tissues. Patients were usually very averse to having anything rough or forcible done to them, and often, even in the presence of adhesions, the medical practitioner pandered to this and failed to carry out the obvious measures. The patient went to an osteopath, who had no such scruples, and his prestige was enhanced accordingly. Dr. F. Albee stated that he had never discovered, in all his experience, any foundation for the chiropractic theory, and, in his opinion, it was a menace to the public at large.

The Position of Osteopaths and Chiropractitioners in this Country.

In conclusion, the President pointed out that unless they possessed a medical qualification these people could only carry on their practices here as unqualified practitioners, and they were liable to prosecution for malpraxis. They were now seeking registration and recognition by Act of Parliament, desiring to be known as drugless healers, with limitations as regards practice. The speaker's own view was that our medical practice laws ought to be amended so as to place all practitioners of the healing art on the same educational level, because of the danger of the general public being deceived by a plausible theory and the making of unfounded claims; especially was this true in the case of sufferers who had grown desperate. A number of the graduates of the schools of these cults in the States had come to this country and set up practice, seeking to extend it by blatant advertisement. He thought the State should take a strong stand in protecting the health and preserving the life of the community.

Cordial thanks were tendered to the President for his address, on the proposition of Mr. V. WARREN LOW, seconded by Sir STCLAIR THOMSON.

Discussion.

Dr. DES VŒUX thought quacks would continue to exist as long as the medical profession were unable to cure all ailments, and it could not be denied that on occasion a quack had "wiped the eye" of a general practitioner. He did not think it would be wise for the profession to try to discourage quackery, especially as he did not think quacks did the regular profession any harm.

Dr. EUSTACE CALLENDER said he had seen many sad results of people going to quacks, even among people highly placed in society. He had seen three children, one after another, allowed to die of tuberculous meningitis without any steps being taken to protect them from the disease; they were only "treated" by a Christian Scientist. Such occurrences he regarded as wicked.

Mr. J. E .H. ROBERTS referred to a case of incomplete paraplegia in a man who was shot in the war. He recovered from that. Five years later he got work as a dustman, and after a short time of lifting weights of rubbish on to the dust-cart he began to get pain in his lumbar region, and this got worse. X rays showed a bony displacement, a subluxation of the second lumbar vertebra, but the bullet was harmlessly reposing in the muscle. He, the speaker, met a man who was an osteopath, a "D.O." of some place in America, and who was also a Licentiate of the Royal College of Physicians here in London, and asked him, as he said he cured subluxations of the spine, whether he could reduce it, showing him the radiograph. The answer was: "But that is a real subluxation; I should not advise you to touch that"; a decision Mr. Roberts had already arrived at. It well illustrated a mental attitude.

Mr. V. WARREN LOW did not agree with Dr. Des Vœux's eulogy of quacks, but he thought with that speaker that the medical profession should leave them alone. And he agreed that some Department of State should undertake the education of the public as to the general structure and functions of the body, so that imposition by specious claims would be rendered more difficult.

Dr. E. G. GRAHAM LITTLE, M.P., said the question of the recognition of osteopaths in this country would probably come before the House of Commons quite soon, in response to a meeting which was held in Parliament six months ago, and convened by an influential body of members who favoured osteopathy. That meeting was addressed by a qualified medical man who had forsaken the ordinary practice of medicine and had taken up osteopathic methods. The meeting was attended by all the medical members of the House at the present time, and several of them tried to obtain a hearing. After the hour's conversation by the medical man referred to, other speakers were allowed three or four minutes, and were then told that the company present did not desire any further information from the medical point of view. The resolution, submitted by the promoters, was carried. The Ministry of Health seemed to be most sympathetic to this movement, therefore the opposition must, he thought, come more from the general body of the medical profession, and some notice ought to be taken of the fact that the speaker for the meeting was himself a duly qualified medical man. The opposition should not be an official one organised by any great body, but among the profession itself.

The PRESIDENT, in a brief reply, said he thought it was the duty of every Government to protect its citizens from fraud. To recognise and allow to register practitioners of these cults in this country would mean the incursion into the ranks of healing of men with very little general education and training.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

A MEETING of this Section took place on Oct. 9th when Sir ARNOLD LAWSON, the President of the Section, occupied the chair.

Penetrating Injuries of the Eye.

Mr. J. GRAY CLEGG (Manchester) initiated a discussion on this subject, his attempt being not to range over the different varieties of perforating injuries and their treatment, but to deal with some practical and interesting points. During his 25 years at the Manchester Royal Eye Hospital nearly 213,000 cases of accident had been treated, and 1448 of those had been in-patients under his care. There were among them 859 cases of penetration or rupture of the globe. The fullest possible history of cases of penetrating wounds should be obtained, and it must be determined whether complete penetration has taken place, and whether the mechanical agent has been withdrawn or still remains in the eye. When examination by ordinary methods failed, perforation could often be proved by means of the slit-lamp.

First as to the *cornea*. If the wound in it was small and aseptic, he said, no active surgical treatment was required. If the iris was prolapsed or caught in the deeper part of the wound, a foreign body was not likely to be still retained. *If there was no such* prolapse there was a greater probability that the foreign substance was still in the eyeball. For prolapsed iris the operator could do either (1) reposition through the wound (often unsuccessful); (2) reposition by making a small corneal incision with a keratome at a point 180° from the wound, and passing in an iris repositor or blunt hook, and separating the iris from the cornea by traction; or (3) excision of the prolapsed portion, which is the usual method he had followed. If the decision reached was to excise the prolapse, he advocated, in suitable cases, the use of small, fine-ribbed capsule forceps, especially when the iris had become friable owing to inflammatory changes a few days after the accident. When the corneal wound was large and tended to gape he favoured suturing the cornea, using Webster Fox's slit-ring forceps. Horse-hair or the finest silk-worm gut were the suture materials he recommended. In some cases it was an advantage to raise the conjunctiva at the corneal limbus, undermine it for some distance, and so suture it that the wound was well covered. For ragged and irregular wounds a conjunctival covering was desirable, and for this he suggested the Nuel suture. He discussed the disadvantages of suturing the conjunctiva over the wound. When there has been a delay of several days before the ophthalmic surgeon is consulted Mr. Clegg said that immediate operation was sometimes needed, but each case must be decided on its merits. Where iris was prolapsed or adherent to the corneal scar, and in two or three weeks the eye was quiet, in most cases operative interference should be undertaken to relieve dragging. This could be done by one of three methods: (*a*) An iridectomy at a position diametrically opposite the site of the wound; (*b*) an iridectomy at either side of the anterior synechia; (*c*) complete severance of the attached portion from the rest of the iris, with or without partial iridectomy.

Mr. Clegg next discussed the question how far it was safe to leave a traumatically produced anterior synechia in a quiet eye months after an accident. Mere perforations or clean cuts were left to recover as best they could. Wounds of the lens, associated with penetration of the globe, always complicated matters if there was anything more than a fine tear in the capsule not large enough to allow aqueous to invade the substance. With regard to the question as to whether it was advisable to remove lens substance when there was a recent wound of the cornea, he thought extraction (when there was a hard nucleus), or expression through the original wound, or lavage, or suction of the soft cortex should be done when there was extensive rupture of the capsule, as the presence of lens substance in the anterior chamber increased the possibility of sepsis, diminished the osmosis at the filtration angle, and might even lead to endophthalmitis phakoanaphylactica. But when the corneal wound was not large and the lens substance not greatly swollen, the removal of the lens could be left to absorption in a young subject, or to a later extraction in a person over 30 years of age. If vitreous protruded into the anterior chamber little could be actively done except when it prolapsed through the corneal wound. The prolapse should be snipped off and the eye protected against infection.

When the wound was at the corneo-scleral junction or in the sclera the case was more serious, but there was no longer fear of the "danger zone." If ciliary body or choroid were prolapsed it could only be excised. Even large clean wounds of the sclera might heal well and a useful eye be retained. Covering with conjunctiva was desirable in all cases, and the edges of the sclera could be brought into contact by Nuel's suture; it was rarely necessary to pass the suture material through the whole thickness of the scleral tissues. One late effect of even the cleanest wounds of the sclera might be detachment of the retina, and the question was, Could anything be done to prevent this? If wounds of the sclera were of some days' or even weeks' standing, questions arose other than those connected with the wound itself. In all extensive perforating wounds of the globe it was necessary to consider whether recovery was possible with the retention of a globe which would have useful sight and would yet not be a threat to the fellow eye. It was, he thought, rarely wise to condemn an eye to evisceration or excision as soon as it was seen to have suffered. At least a week should be allowed to pass before condemnation was pronounced, and there was practically no fear of sympathetic trouble during that short time. He asked the opinions of members as to whether any good resulted if an exciting eye was removed when sympathetic disease had already started in the other eye.

With regard to foreign bodies penetrating and remaining on the globe, these were divisible into magnetic and non-magnetic, and both could be classified into radio-opaque and radio-transparent. The first named could be accurately localised by the methods of Mackenzie Davidson or Sweet. Sometimes the foreign body could be seen on focal illumination by the ophthalmoscope, or it was evident on trans-illumination. If a non-magnetic substance, such as glass, was causing no obvious irritation it could sometimes be safely left. Chemically irritating substances, such as copper, eventually led to loss of the globe, hence every possible effort at removal of such materials must be made. Magnetic substances were best removed by the magnet, for siderosis and opacity of lens might otherwise ensue. If the iron or steel fragment were in the anterior chamber, or even in the iris tissue or in a wounded lens, it could usually be extracted through the original wound, though sometimes this wound had to be enlarged. If the fragment was embedded in the iris tissue it was, he considered, good surgery to make the incision over its position and cut off the damaged iris with the imprisoned chipping.

Dealing with other aspects of the subject Mr. Clegg said that excision of a suppurating lacrymal sac was important.

Mr. G. H. POOLEY (Sheffield) said that as a result of many years of experience and consideration he had arrived at the conclusion that the ophthalmic surgeon was justified in applying conservative modern measures to the eye when that organ had received a penetrating wound, and that this policy should replace the more anxious one which in the past had led to many eyes having been excised within a few days of the accident happening to them. Even mild sepsis of the eye could be successfully dealt with, and a blind quiet eye was a better possession than an artificial eye. He divided penetrating wounds of cornea or sclera or both as follows: (1) Without prolapse of iris or other tissue and without the retention of a foreign body or injury to the lens. (2) With prolapse of iris or other tissue but without retention of a foreign body or a lens injury. (3) With or without prolapse of iris or other tissue or injury to the lens, but with the retention of a foreign body within the eye. (4) The last named and injury to the lens in addition. These he discussed in some detail, making the following points. A straight clean cut of less than 4 mm. in length seldom gaped much, whether it was in cornea or sclera. A wound longer than this should be closed; if in the sclera by the finest 30-day catgut, the sutures picking up the *outer* layers of the sclera about 1 to 2 mm. from the wound on each side, and so tied as to invaginate the cut edges of the sclera and hold them fairly tightly in apposition. To the conjunctiva should be applied buried catgut sutures. He used a slightly curved needle about 10 mm. long. A gaping corneal wound could be kept in place by indirect suture. In the cases in which a part of the iris was prolapsed, the portion should be picked up, gently pulled a little further out of the wound, and cut off. Prolapsed portions of ciliary body, choroid or retina, and beads of vitreous should be cut away. Foreign bodies should be removed by the nearest and easiest route. Even if such foreign bodies should be septic, they could be retained for a long time without causing trouble, though they should be removed as soon as their exact site had been determined. He had successfully removed glass and steel fragments from eyes in which they had been reposing for years. Dealing with injuries to the lens, Mr. Pooley advocated well washing the eye out and removing as much of the injured lens as possible, to prevent it from swelling and adhering to the wound afterwards. His rule was to try to save every eye, however badly damaged, deferring his decision as to enucleation until about the third week. If vision was never likely in an eye, and it was the seat of keratitis punctata, he removed it. The question of sympathetic ophthalmia Mr. Pooley discussed in some detail, remarking that no eye should be taken out within the first fortnight; he also entered into a description of the technique of scleral suture.

Mr. CHARLES GOULDEN spoke of the treatment of certain difficult cases of prolapse of iris, and of non-magnetic foreign bodies present in the anterior chamber. The method was to make a small incision opposite the perforating injury, 3 mm. in width, so as to admit a repositor. Then the prolapsed iris was dealt with. If any portion of iris remained entangled in the wound, the repositor could be passed through the eye so as to disengage it. With regard to the treatment of large perforating wounds, especially those which perforated the sclera, he thought, contrary to Mr. Pooley's view, that it was unnecessary and dangerous to insert scleral sutures, because of the likelihood of loss of vitreous. When a serious injury was followed by a gaping wound, a good plan was to make an incision round the conjunctiva, then draw the conjunctiva over the wound, and so close it. He discussed the technique of removing magnetic foreign bodies by means of the electro-magnet.

Mr. M. H. WHITING pointed out the advantages of the Haab magnet over the Mellinger for the extraction of magnetic substances from the eye. The horse-collar of the latter instrument, its smaller power compared with that of the Haab, as well as the difficulty of preventing it touching the eye when being used, were among the factors mentioned.

Mr. ELMORE BREWERTON said his practice when he encountered prolapse of iris was to make an incision less than 90° from the wound before dealing with the prolapsed iris.

Mr. T. HARRISON BUTLER said he had been using the Mellinger magnet for 15 years and had not seen the disadvantages from it which Mr. Whiting mentioned. With regard to sympathetic ophthalmitis, he considered that by removing the exciting eye in the early days many eyes would be saved. But it was necessary to keep careful watch with the slit-lamp. If the latter showed commencing danger he at once instituted the treatment as for actual ophthalmia. This had resulted in the saving of several eyes.

The PRESIDENT said that while it was true that an eye could safely be retained a fortnight or so without risk of sympathetic ophthalmia, he recently had a case in which that complication ensued ten days after an apparently trivial injury, accompanied by keratitis punctata, so that the eye had to be excised.

Mr. CLEGG and Mr. POOLEY replied.

Clinical Cases.

Mr. J. D. M. CARDELL showed and carefully described a case of Kruckenberg's spindles in a single woman aged 30. By means of the slit-lamp Miss Ida Mann found that the pigment was in the posterior layers of the cornea; it seemed to consist of a multitude of closely-set brown rings. Thomson and Ballantyne regarded the condition as congenital.

Mr. POOLEY showed two cases of punctured wound of the cornea, in association with his remarks in the discussion of that subject.

Reviews and Notices of Books.

HANDBOOK OF DISEASES OF THE THROAT, NOSE, AND EAR.

Edited by A. DENKER (Halle) and O. KAHLER (Freiburg). Vol. I., Diseases of the Air-passages and Mouth: Anatomy, Development, Physiology, Methods of Examination. Berlin: Julius Springer; Munich: J. F. Bergmann. 1925. Pp. 1068. M.84.

THIS volume is the first of a great work which, when complete, is to consist of nine volumes. Of these the first five will deal with the upper air-passages, the next three with the ear, and the last with the thyroid and thymus glands and external structures of the neck. No fewer than 120 authors are concerned in this work, of whom 21 contribute to the present volume. This, consisting as it does largely of the spade-work preliminary to the actual description of diseases and their treatment, is perhaps less intrinsically interesting to the practising laryngologist, but it presents an extremely thorough foundation for what is to follow. Even the comparative anatomy of the nares, fauces, and larynx, as well as their embryology, is described and illustrated, that of the nares being particularly good. In the section on physiology the physical characteristics of odorous substances, and the conditions which influence their absorption, are well explained by Prof. Zwaardemaker, of Utrecht, who, indeed, covers the whole subject of olfaction, of which he has made a special study. Similarly, Prof. Skramlik, of Freiburg, deals at length with the sense of taste. The chapters on methods of examination are likewise full of detail, but here a certain narrowness of outlook becomes apparent. Under anterior rhinoscopy only one speculum, Hartmann's, is advised and illustrated: of bronchoscopic methods, distal illumination is dismissed in five lines as unsatisfactory, and Chevalier Jackson is not mentioned. except in the list of references at the end of the chapter. Indeed, the workers of other countries receive throughout scant recognition. The book is provided with a good index, a detailed table of contents, and a long list of references at the end of each chapter. There are 709 illustrations, all good, and some of them, notably the photomicrographs, are beautiful examples of colour printing. As a work of reference this volume will be of great value to specialists.

THE MIND IN HEALTH AND DISEASE.

An Introduction to the Mind in Health and Disease. For Students and General Practitioners interested in Mental Work. By T. WADDELOW SMITH, F.R.C.S., Deputy Medical Superintendent of the City Mental Hospital, Nottingham. London: Baillière, Tindall and Cox. 1925. Pp. 235. 10*s*. 6*d*.

IN setting out to write an introduction of this kind Dr. Waddelow Smith has undertaken a difficult task. Such a book must of necessity be elementary, but even so, the author surely underrates the equipment of his readers, who are presumed to be medical men and students, in a passage such as the following, from the anatomical description of the central nervous system:—

> "The membranes . . . are continued all over the cerebral hemispheres and have between them and the nerve cells of the hemispheres a layer of cerebro-spinal fluid, so we find the little nerve cells, all over the surface of the brain and also at its base and in its substance, are bathed by this nourishing fluid by means of the layer just described and the ventricles."

In the section dealing with mental disorders the author has a considerable experience of mental work behind him, and there are many practical hints which should be valuable to the beginner. But here the purely Freudian definition and interpretation of the morbid phenomena is to be deplored. It is hardly a generally accepted view, for example, that the anxiety neurosis is "characterised by the failure of the individual properly to adjust his or her somatic and psychic sexuality." In an introduction to what will be of practical utility it is very important that the reader should be guided aright, and we do not feel that this book can be wholly recommended as a help in difficulties.

Old and New Viewpoints in Psychology. By KNIGHT DUNLAP, Professor of Experimental Psychology in the Johns Hopkins University. London: Henry Kimpton. 1925. Pp. 166. 10*s*. 6*d*.

THERE is a growing number of practitioners and laymen to whom psychology is an extremely interesting side-line. It may require a great deal of patience, as well as previous knowledge, to read appreciatively an exhaustive text-book, and many readers are content to derive their knowledge from small synopses of more or less doubtful authority. Prof. Knight Dunlap's book is a very good example of this "popular" class of work on psychology, while it carries exceptional weight, for the author is well *known as a conscientious teacher.* The five articles were originally delivered as lectures; those on mental measurements and present-day schools of psychology are dull, but give an impartial survey of recent progress in both these subjects. The psychology of the comic is a good piece of constructive reasoning on a subject of universal appeal, and the article on spiritualism is less speculative and carries a sober warning with it. The last, on the reading of character from external signs, is frankly negative. On the whole, the book shows the defects of any random collection of articles or lectures. It lacks vitality and coherence, besides which the writer is too dogmatic for such a controversial subject.

THE EMOTIONS.

Experimental Investigations into the Emotional Life of the Child Compared with that of the Adult. By HELGA ENG, Oslo. Translated by GEORGE H. MORRISON, M.B. Edin. London: Humphrey Milford, Oxford University Press. 1925. Pp. 243. 21*s.*

A LARGE amount of work has already been done in measuring the physical concomitants of emotion, and in the book before us Miss Eng sets out to answer the question whether psychical experiences of a definite character are accompanied by definite changes in the volume-pulse curve and in the respiratory curve, and, secondly, whether such changes in children might indicate a feature peculiar to the child's emotional life. Using the kymograph, the pneumograph, and the plethysmograph, the author finds that the emotions dealt with in the experiments can be arranged in three pairs, each pair showing opposite expression changes on the recording instruments; attention and activity, displeasure and pleasure, depression and excitement are thus opposed, the first mentioned in each pair being marked by a fall in the volume curve, decrease in pulse height, retarded pulse, and retarded respiration, whilst the second shows opposite changes. In experiments on the effect of stimuli no difference was found between children and adults, but a phenomenon, which at first sight might be expected to vitiate the experiments, proved to be of interest. The spontaneous emotional state of the subject, as revealed by introspection, often found expression in the curves, and it is here that age differences became manifest, for spontaneous emotions were, in the case of children, mostly related to sensory impressions, whilst in adults they were more often connected with events of greater personal psychical content; moreover, in these spontaneous emotions, pleasure is more notable in the child and displeasure in the adult. The author concludes with an expression of the opinion that the physiological processes concerned are "definitely dependent on the psychical processes, and not the other way round." About half the book is taken up by tabular records of experiments, and nine plates are devoted to reproductions of actual tracings. To describe laboratory investigations of physiological reactions as an investigation of the emotional life of the child may disappoint those readers who regard that emotional life as made up largely of personal problems and the inter-play of instinctive tendencies. But to say so is in no way to belittle the value of this record of conscientious work. The translator has done his part well, and the book will interest all who are concerned with youthful behaviour.

PHYSICAL SIGNS.

Perkussion und Auskultation. By Dr. HERMANN VIERORDT, Professor of Medicine at the University of Tübingen. Berlin and Vienna: Urban and Schwarzenberg. Pp. 95. M.2.

THE author of this little book has succeeded in condensing his information so well that practically all the student may require to know about percussion and auscultation (as far as they can be acquired from a book) is to be found in these 95 pages. Other parts of the body besides the chest are dealt with as far as their examination by percussion and auscultation is concerned, and the reader is taught how to distinguish between ascites and an ovarian cyst, and how to percuss such organs as the kidneys when they are displaced from their normal site. A book like this is useful to the busy practitioner who, without it, is apt to fall into slipshod ways and to simplify his technique to the vanishing-point. Under such circumstances a small book, which will slip into an overcoat pocket, may jog its wearer's memory, reminding him of those diagnostic methods from the practice of which, owing to pressure of time and want of contact with his fellow practitioners, he has lapsed.

TUBERCULOSIS.

Diagnostik und Therapie der Knochen- und Gelenktuberkulose. Second edition. By Dr. EUGEN KISCH. Leipzig: F. C. W. Vogel. 1925. With 6 tables and 307 illustrations and charts. Pp. 296. M.20; bound, M.23.

THIS profusely illustrated work comes from the Hohenlychen Institute for Surgical Tuberculosis, attached to the University Surgical Hospital of Berlin under the direction of Prof. A. Bier. Hohenlychen may be said to be to Germany what Alton is to England; and, like its English counterpart, Hohenlychen is a standing demonstration of the fact that heliotherapy is not a monopoly of the Alpine and sub-Alpine levels. It is an institution where a great variety of therapeutic measures serve the patients' needs. Hohenlychen makes considerable use of treatment by passive congestion, and those who have abandoned this form of treatment in surgical tuberculosis may wonder if the success of hyperæmia at Hohenlychen may not be due to the many other remedies provided there. The guiding principles of Hohenlychen are that surgical tuberculosis is a disease for conservative treatment, that success can be achieved at any altitude, and that only in exceptional cases should the surgeon resort to the knife. The book is divided into two parts, general and special. The former deals with the physiology of pigmentation, the experimental foundation of the combined treatment with sunlight and hyperæmia, the actions of various forms of artificial light, and the technique of their administration. Information is given as to the action of iodine taken by the mouth in association with passive hyperæmia, and as to the improvement to be effected in the general condition of debilitated patients by the intravenous injection of the blood of mammals other than man. In the special part, an account is given of the disease as it affects each structure, and a whole chapter is devoted to a study of the re-absorption of tuberculous sequestra. The book is a valuable summary of modern German teaching.

Contributions to the Study of Tuberculosis by the Research Department, National Jewish Hospital for Consumptives. Denver, Colorado. 1924.

THIS large volume, which is the fifth of the series, is a collection of the papers published by authors associated with the Research Department of the National Jewish Hospital for Consumptives. The earlier papers deal with the problems of tuberculosis in a more or less general manner. Several papers on research follow, and the last seven contributions are clinical. Most of the papers published in this volume have already appeared in some American or English journal, but the volume will serve the useful purpose of showing the patrons of the hospital the very considerable output of the Research Department.

Recovery Record for Use in Tuberculosis. Second edition. By GERALD B. WEBB, M.D., and CHARLES T. RYDER, M.D. New York: Paul B. Hoeber, Inc. 1925. Pp. 70. $2.

THE first half of this book contains hints on how to recover from tuberculosis, and the second half contains charts on which the patient is invited to record his temperature, pulse, weight, general notes, and questions for his physician. On each page, above and below the chart, there is a proverb intended to give the reader a hint as to how to think and live. Both the advice given in the first half of this book and the proverbs quoted in the second half show that the authors attach more importance to rest than to any other factor in recovery from tuberculosis. To the advocates of exercise as a method for treating tuberculosis is addressed the following quotation from Trudeau: "I know I have hurt nobody by rest, but I am quite sure I often have by allowing them to exercise." Solly is quoted as having said: "The wise have four times as good a chance to recover as the foolish." This is surely an over-estimate of the fool's chance.

Tuberculosis: Its Prevention and Treatment. By J. LAIRD, L.R.C.S. & P.I. Second edition. Bristol: John Wright and Sons, Ltd. 1925. Pp. 130. 5*s.* 6*d.*

THE chief feature of this little book is its advocacy of calcium in the prevention and cure of tuberculosis. Calcium, it would seem, is the key to the problem, not only of tuberculosis, but also of such diseases as cancer. In the first instance its influence is beneficial, in the second it is detrimental, for "cancer is chiefly a disease of advanced life, when the salts of calcium are in excess in the system, and may act as the predisposing cause of the disease." Medical readers may doubt whether the solution to complex problems can be so simple as the author thinks.

VETERINARY DIAGNOSIS AND TREATMENT.

By G. E. JORGENSON, A.B., M.D., N.D.V., former State Veterinarian of Iowa; Consulting Pathologist and Associate Editor, *North American Veterinarian.* London and New York: D. Appleton and Co. 1925. Pp. 441. 12*s.* 6*d.*

THE author is evidently well informed and always gives a reason for the conclusions he forms and the treatment he adopts. This somewhat uncommon practice should appeal to readers who wish to be rational. He gives 132 case reports of wide range; his treatments seem to have brought about a high proportion of recoveries. Case 8 (fibrinous pneumonia in a horse) and Case 10 (pneumonia in a cow) seem to have been treated, contrary to orthodox practice, by purgatives. However useful in bronchitis they should be given cautiously in serious pneumonia. It is somewhat surprising to learn that the author has never heard of epilepsy in swine; convulsions, falling, and foaming at the mouth are common, and although they may not be signs of true epilepsy they are certainly epileptical. We do not agree that the diagnosis of cæcal impaction is easy, and the action of drugs is modified by the fact that the cæcum is a cul-de-sac undisturbed by the flow in the main tube. Impaction of the colon often follows impaction of the cæcum. It is impossible to commend the autopsy of the cow with anthrax (p. 282 et seq.), for which the two cases that developed later may well have been responsible.

There is much sound reasoning in this book, and it is well produced. We prefer the author's description of its objects to the publisher's statement that it is "a standard practical guide for all farmers." Farmers would remain uninterested in the sino-auricular node of Keith and Flack, polynuclear neutrophiles, and basophiles.

JOURNALS.

QUARTERLY JOURNAL OF EXPERIMENTAL PHYSIOLOGY. Vol. XV., No. 2.—Corpus Luteum Extracts and Ovulation in the Rabbit, by Walter P. Kennedy. It is now a generally accepted theory that at least one of the functions of the corpus luteum is the prevention of ovulation so as to maintain the rhythm of the œstrous cycle and to avoid superfœtation in pregnancy. There is a considerable amount of clinical evidence that extracts of corpus luteum exert a specific action on the functional activity of the ovary. Extracts were made from a powdered desiccated product and shaken up with the required amount of saline, or fresh extracts were made from corpora lutea dissected out from fresh cow ovaries. The injections were given in the marginal vein of the ear or in one of its larger branches. The general picture of the histological findings was one of degeneration and inhibition of the cyclical changes. The general results are that a substance or substances can be extracted in the cold from the corpus luteum of the cow in the fresh or desiccated state, which inhibits ovulation in the rabbit if injected intravenously in sufficient dosage.—The Significance of the Elastic Tissue in the Human Fœtus, by Evelyn E. Hewer. The wide distribution and early appearance of tissue with a great affinity for elastin stains indicates that this type of tissue plays an important part in the functional development of many organs; its appearance is in certain cases correlated with the time at which functioning of the organ begins.—The Action of Pituitary Extract on Urinary Secretion, by Nicholas S. Craig. Ox pituitary (posterior lobe) was used. The author found that in anæsthetised animals, intravenous administration of the extract produced a definite diuresis. Continuous intravenous administration of pituitary extract in 0·9 per cent. saline solution produces the same result. In unanæsthetised dogs pituitary extract administered subcutaneously controls the diuresis which normally would result from the administration of water or normal saline by the mouth. If concentrated saline solution is used diuresis results. The author also deals with the action of pituitary on the absorption of fluid from the alimentary canal and on the blood composition. There are further studies on the pituitary by Launcelot T. Hogben on the "Avine Depressor Response," who finds that the substance present in pituitary extracts causing a powerful depressor response in the bird is a specific property of the fresh gland substance; it does not belong to the category of capillary poisons common to extracts of many tissues, and has no connexion with the histamine-like substance responsible for the secondary fall in carnivora, and seems pre-eminently associated with the pars nervosa; it is present in the pituitary of fishes, amphibia, reptiles, birds, and mammals. Another paper by the same author and Gavin R. De Beer deals with Localisation and Phyletic Distribution of Active Materials in the Pituitary.—The Reactions of the Pupil in the Chloralosed Animal, by R. J. S. M'Dowall. The author observed that if an animal such as a cat be anæsthetised with chloralose the pupil remains of normal size, but is extremely sensitive and rapid in its reactions. The reactions of the pupil give not only an indication of the state of the autonomic nervous system of the animal, but they may be utilised as an index of sensation, not only from areas supplied by the spinal nerves, but also from those supplied by the autonomic nervous system, and as a means of tracing out the paths of afferent impulses in the sympathetic nervous system.—R. J. S. M'Dowall and B. L. Worsnop describe new methods of demonstrating changes in the tone of the arterioles.—W. G. Millar records observations on the hæmatocrite method of measuring the volume of erythrocytes, showing that the speed of centrifuging has an important bearing on the accuracy of measuring the volume of erythrocytes by the hæmatocrite.—A. D. Macdonald, in describing the action of pituitary extracts on intestinal muscle, throws doubt on the commonly held view that the pituitary gland contains a general stimulant of plain muscle-fibres.

SOMERSET'S MENTAL DEFECTIVES.—Sandhill Park, Bishop's Lydeard, formerly the seat of Sir W. P. Lethbridge, was last week opened as a home for the mental defectives of the county of Somerset. The house, built in 1720 by Sir Thomas Lethbridge, and about 150 acres were bought for £16,000, and the building has been adapted by Sir George Oatley, the architect of the new extensions of Bristol University. There is at present accommodation for 110 patients, but the estate is ultimately to be developed into a farm colony for the feeble-minded.

IMPERIAL SOCIAL HYGIENE CONGRESS,

WEMBLEY, OCT. 5TH–7TH.

(Concluded from p. 771)

ON the afternoon of Tuesday, Oct. 6th, the conference discussed

Social Hygiene in Relation to the Mercantile Marine.

In the absence of Sir George Buchanan, Dr. F. J. Coutts, of the Ministry of Health, introduced a paper prepared by them, in which they mentioned the difficulties met with in trying to treat seamen who moved from place to place. The problem was especially important in view of the part played by certain seaport towns in spreading venereal diseases. International agreement was clearly desirable, but there had been many obstacles, including the system by which in some countries seamen or shipowners were expected to bear the cost of treatment; the difficulty of making a man's case papers intelligible to the medical staff at foreign ports; and the practical difficulty of how to express the results of Wassermann tests. The inquiry into this last had led to the recent researches at Copenhagen into the comparative value of different blood tests for syphilis. The agreement on the international treatment of venereal disease had been signed by Argentina, Belgium, Cuba, Denmark, Finland, France, Great Britain, Greece, Italy, Monaco, New Zealand, Peru, Roumania, and Sweden. The United States was not prepared to adhere to the agreement, but in practice it was hoped that satisfactory arrangements would be made. It was greatly to the credit of the British Social Hygiene Council that the agreement was a practical instrument rather than a mere sign of theoretical unity of purpose. Medical facilities were to be provided free for seamen in the chief ports of the contracting parties; specialist officers were to be available in the clinics, and a card which could be universally understood was to be used. Experience had shown the scheme to be useful and exemplary arrangements had been made at Liverpool. Seamen going abroad were to be furnished with a list of treatment centres elsewhere.

A paper was read for Mr. M. R. K. Burge describing the work of the Joint Maritime Commission set up by the International Labour Office in coöperating with other national and international bodies in the campaign against venereal disease among seamen. Although pleased with the steps taken by Governments to provide treatment, the Commission hoped that such activities would not obscure the necessity for preventive measures. A report on prophylaxis was, he said, being got ready by the International Labour Office.

Welfare Work for Merchant Seamen.

Fleet-Surgeon W. E. Home said in his paper that the valuable services of seamen to the community entitled them to more care. Their occupation, which early removed them from home and its training, was quite exceptional amongst trades, and so were their risks and discomforts. The last official statistics, dealing with the years 1900–02, showed that seamen had nearly twice as many deaths per 1000 as "all occupied males" in England and Wales, and four times as many deaths from accidents. The accident death-rate was double that of coal-miners. Most workmen lived in communities with other people, their health being watched by sanitary authorities; but the merchant seamen had no one specially to look after them and report on their conditions. The United States saw that its men were vaccinated, inoculated against typhoid, or given quinine; but in spite of heavy mortality nothing of the kind was done in England. Accidents and their prevention seemed unconsidered. The problem of venereal disease amongst seamen was the result of a vicious circle. The want of home influence led to drink and mischief; they led to infection, and infection might prevent the man ever having a home of his own. In 1924 the Seamen's Hospital at Liverpool had handled 438 new cases, of which 160 were syphilitic. After referring with admiration to the work of the late Miss Agnes Weston, he said that everything preventing aimless idleness—gymnasiums, entertainments, concerts—must be encouraged, and the Social Hygiene Council was arranging for sports grounds near harbours.

[An analysis by Fleet-Surgeon W. E. Home of the causes of death amongst merchant seamen appeared in THE LANCET of Oct. 3rd 1925.]

Arrangements in the Empire.

Dr. C. L. Park's paper gave an account of arrangements in Australia by which every seaman reported as infected was taken in charge by the quarantine authorities during the whole time his ship stayed in Australian waters. Hospital beds and specialist treatment were provided for him, and on his removal to another port the treatment was continued there. The Australian laws ensured that infected seamen were kept under observation until their disease had ceased to be infective; but the facilities did nothing towards preventing fresh infection being incurred by the healthy, though recreation was available in certain ports.

Major H. B. Jeffs contributed the information that Canada imposed a fine of $200 for any emigrant brought to a Canadian port of entry suffering from a venereal disease, any such emigrant being deported at the steamship company's expense. Persons rejected for venereal disease might not apply again for entry. He described the free clinics for seamen at Canadian ports, stating that there were 56 free venereal clinics in operation in the Dominion, besides other institutions; about 330,000 treatments were given in a year. Prisoners entering reformatories and gaols were subjected to a Wassermann test and treated if necessary.

Sir Claude Hill assured the Congress that the Red Cross would give all possible help in propaganda. Dame R. Crowdy thought that the Congress had concentrated too much on the technical side of prevention and not enough on the moral factors.

White Slave Traffic.

Mr. S. Cohen read a paper on the suppression of the white slave traffic. He said that it had gradually been reduced to very small proportions because the steamship companies refused to carry the women and the Home Office refused to let them land in England. He hoped that tolerated houses would be put down everywhere; if this were done there would then be no traffic. It was a great advance that Hungary and France had refused to allow any foreign women into their tolerated houses, and perhaps the other Latin countries would follow this lead.

Mrs. Neville Rolfe appealed to Mr. Bascom Johnson (Director of Special Inquiries for the League of Nations) to say whether venereal disease had any special relation to licensed houses. Mr. Johnson replied that they prevailed in the same areas, but investigation of relationship was still incomplete. Prostitutes were in the habit of following the American fleet to Panama for its winter manœuvres; if there were no brothels in which they could find lodging they would not go.

Dr. David Lees complained that a British seaman kept in hospital at a place like Port Said would lose his ship and his pay; and as there was no British Consul there he would be worse off than a foreign sailor in a British port. There should be Government subsidy to set up sailors' homes in every port. The State, through the local authorities, should provide 75 per cent. of funds. He mentioned that Edinburgh was to be invited to build such a home.

Surgeon-Commander T. B. Shaw attributed most venereal disease to drink, and Mr. E. B. Turner, in supporting the plea for sailors' homes, recalled old London conditions.

After the meeting a film dealing with venereal disease was exhibited.

Treatment of Venereal Disease in England.

At the morning session on Wednesday, Oct. 7th, Sir Kingsley Wood, Parliamentary Secretary to the Ministry of Health, who presided in the absence of Mr. Neville Chamberlain, said that the Government had not been ungenerous in meeting 75 per cent. of cost involved in treating venereal diseases. There were to-day 193 treatment centres in England and Wales, and there were 14 hospitals approved for the accommodation of women and girls and seven special institutions for infected pregnant women. There was much evidence of the increasing willingness of people to come forward for diagnosis. Since the inception of the present scheme in 1917 more than 600,000 persons had attended the treatment centres, of whom about 120,000 were found to be suffering from venereal disease. Since 1920 there had been a steady decline in the total numbers of new cases of infection dealt with at the centres. In 1924 there were only 22,010 new cases of syphilis as compared with 42,805 in 1920, and 31,272 cases of gonorrhœa, compared with 40,280 in 1920. The number of attendances at the clinics during 1924, however, reached a total of about 1,650,000, the highest on record, which meant that the average number of attendances per case had increased and that the importance of persevering in treatment was increasingly recognised. The percentage of cases which ceased attendance at the clinics before their course of treatment was complete had fallen from 47 in 1921 to 39 in 1924. There seemed to have been a definite diminution in syphilis and gonorrhœa during the past five years. The expenditure of local authorities on schemes for diagnosis and treatment had fallen from £450,000 in 1921–22 to £388,000 in 1923–24, and a further drop was expected this year. The saving was due to improved arrangements at the centres and more economical working. Turning to the subject of notification, Sir Kingsley Wood said that so far as experience had been obtained it had not shown that its advantages would outweigh its disadvantages. One city, Bradford, had an Act which required the notification of certain classes of cases, but did not empower the local authority to take any action on receipt of the information. In Canada and Australia legislation was in force setting up conditional notification. In wishing the conference Godspeed he said that one of the tragedies of the present situation in this country was that in 1924 over 5000 persons under 17 years of age had to be dealt with for the first time.

Colonel L. W. Harrison, of the Ministry of Health, said that the report of the Royal Commission in 1916 had stated that the number of syphilitics could not be less than 10 per cent. of the population in the large cities, and his own investigations had led him to suppose that the incidence of gonococcal infection was about three times that of syphilitic. It was estimated that the annual number of venereal disease infections before 1916 was not less than 200,000, but since then there had been provision of efficient treatment and of education. He believed that a very high proportion of cases of syphilis reported themselves, but not so high a proportion of cases of gonorrhœa. In England, as in all other countries where there were good facilities for treatment available, there appeared to be a very remarkable reduction in the incidence of syphilis; but he did not think that any very great reduction in gonorrhœa could yet be expected. The treatment was harder, and to stop the infectivity of the patient was harder; the fight against this disease would be long and difficult. The cost of the present schemes of treatment was about 2½*d*. per head of the population per annum, and a minimal estimate of the ultimate saving showed how economical this was for the nation. A manufacturing concern in Virginia had installed a free venereal clinic for its employees at a cost of $6000 for the first year and had later reported that labour efficiency had increased by one-third, which gave a return of $40,000 yearly for the investment. After pointing out the advantages of clinics being open all day, especially for women with gonorrhœa, who are preferably treated daily by a nurse, Colonel Harrison referred to the necessity of preventing ophthalmia neonatorum and congenital syphilis by taking forethought. He wished to awaken all branches of the medical profession to the fact that congenital syphilis was a horror, and its incidence a reproach. The instruction of medical students gave far too little knowledge of early venereal disease. The curriculum need not be further loaded. Was it not better to spend a few hours learning to treat syphilis in its first stages than to devote many to the pathology, signs, symptoms, and prognosis of the horrible consequences of early neglect?

Progress in the Dominions.

The position throughout the Dominions was then reviewed. Dr. C. L. Park (Australia) pointed out that venereal disease was now being looked upon as a general public health problem. Dr. B. Colquhoun drew attention to the fact that not the least of the evils of the war had been the loosening of social behaviour, and that such institutions as Boy Scouts, Girl Guides, and the Junior Red Cross, and open-air schools for young children, would give a much better chance to the coming generation.

Dr. J. A. Mitchell, Secretary for Public Health for South Africa, said that there was an extraordinary tendency to exaggerate the prevalence of disease amongst natives. In South Africa not more than 2 per cent. of all races had venereal disease, and since inter-tribal wars had been stopped and famines were prevented or checked, the real racial danger was the destruction not of the natives, but of the white population, which might be elbowed out, swamped, or absorbed. In a paper laid before the conference by Lieut.-Colonel Pargett Adams, the incidence and manifestations of venereal disease amongst natives were described. Syphilis was a far less formidable complaint in South African Abantu races than in white or partly coloured people.

In a paper by Dr. Gordon Bates (Canada) it was insisted that the Venereal Disease Acts were of real value from the point of view of the protection of the family. Canada was going forward on the lines of a broad social programme. Mr. John Huxham (Queensland) advocated the interchange of medical certificates between persons wishing to contract marriage. Dr. Draper Bishop (Guernsey) said that as a result of legislation social abuses had been enormously reduced. Dr. David Lees criticised Sir Kingsley Wood as regards economy. If it had been possible to save money let them use the money saved for the attack on gonorrhœa. As regards the problem of large or small centres, he protested against the tendency to establish ad hoc clinics instead of clinics inside the hospitals. A point that was essential was to get a keen medical staff, but it was questionable how long this would be possible under the present rates of payment; he could not advise able young men to go into the work of venereal disease under present rates of pay, and suggested that the Ministry of Health should make part-time appointments, so that the general public, which was not getting as good treatment as hospital patients, could benefit from their experience. Dr. J. H. Sequeira said that the London Hospital had no difficulty in getting expectant mothers into the clinics, because there was no attempt to label the departments as ad hoc departments. Mr. H. Wansey Bayly claimed that self-disinfection, which was in practice in Portsmouth, had resulted in bringing the Portsmouth figures for disinfection considerably below those of Birmingham, a decrease having been seen in Portsmouth, whereas there had been an increase in Birmingham.

Colonies, Protectorates, and Mandated Territories.

The problem of venereal disease in these countries was discussed at the final session of the Congress on Wednesday, Oct. 7th. Papers were submitted by delegates from Barbados, Nigeria, Ceylon, Fiji, Nyasaland, and Palestine.

Dr. A. M. De Silva said that in Ceylon the Government and the public are vigorously attempting to deal with the prevention and cure of venereal disease and that the number of sufferers shows signs of decreasing. In Colombo all houses of ill-fame have been closed; the police strictly enforce regulations against public solicitation; free treatment clinics are available at all the large hospitals, and specially trained doctors travel from village to village. There is no difficulty in getting the people to come for treatment.

Dr. P. T. Harper said that hitherto the inhabitants of Fiji have been immune to syphilis owing to the magical rite of inoculation with yaws practised on children after the eruption of their first teeth. A small percentage of Fijians grow up without having contracted yaws, and the proportion is increasing owing to the influence of the Government and missions. A number of them is also being cured of yaws, and it may be confidently expected that in future syphilis will appear amongst the Fijians and spread, as gonorrhœa is now slowly spreading amongst them. The abolition of indentured labour has lessened venereal disease amongst the Indians. Free treatment is provided at numerous Government institutions for all Fijians, Indians, and necessitous persons, and there are arrangements for treating all infected seamen arriving at the islands.

Nyasaland, Palestine, and Jamaica.

Dr. Meredith Sanderson, describing the conditions in Nyasaland, said that leprosy, plague, trypanosomiasis, bilharziasis, ankylostomiasis, and venereal disease are all endemic. The last can only be dealt with as part of an organised effort to improve the public health as a whole. The problem is political rather than medical; the Pax Britannica is apt to result in boredom, and the adage about Satan and idle hands is very true in Central Africa. Tribes which were moral under tribal rule have become less moral; the marriage tie has been weakened and prostitution is on the increase. Dr. Sanderson considers that tribal discipline may be improved; that the marriage tie should be regularised by civil process; that village schools should give instruction in hygiene; and that a native medical service should gradually be built up

Dr. J. W. P. Harkness said that syphilis amongst the rural population in Palestine is mild in type and is spread by social rather than sexual intercourse; but its effect on birth-rate and child life is as serious as in Europe. The people are not sexually promiscuous and they marry early; but domestic hygiene is bad. The health department is capable of treating about 2000 patients a year, and instruction in hygiene is given to teachers in Government schools. Education is a very laborious process, and suitable pictorial representations of disease are extremely hard to devise. In 1924 the Supreme Moslem Council consulted the health department as to the practicability of a religious edict forbidding the marriage of Moslems who do not submit medical certificates of freedom from venereal disease, and there is a possibility of this being tried in one district. Gonorrhœa is not unduly prevalent in Palestine, though there are epidemics of gonorrhœal ophthalmia. The administration has never countenanced the system of registration and compulsory examination of prostitutes, and the number of brothels in Jerusalem and at the ports is less than in 1918. Syphilis and gonorrhœa are notifiable but not by any means always notified. The general situation is promising.

The Bishop of Jamaica said that the population of Jamaica was about 0 millions, of whom some 15,000 were Europeans. The percentage of persons suffering from venereal disease has been estimated at its lowest as 40 and at its highest as 80. Until recent years the Government paid very little attention to the problem. In the past six years a committee, of which the Bishop is chairman, has been at work, and it has made representations to the Government, broadcast literature, and instituted courses of lectures. All this has made a considerable stir amongst the people. The Bishop said that adequate sums of money are required to deal with the situation effectively. If there is to be success in the great campaign throughout the Empire it must be by legislators, medical men, and ministers of religion working together.

Mrs. C. Neville Rolfe (secretary-general to the Congress) said that the outstanding need is for assistance to the medical services in the Colonies.

In winding up the conference Colonel Harrison pointed out that expenditure on venereal disease is a paying proposition.

WORKSHOPS FOR THE TUBERCULOUS.

HEALTH WEEK CONFERENCE.

A CONFERENCE in connexion with Health Week was held at Holborn Town Hall on Oct. 7th with the object of making known and popularising workshops for tuberculous patients in the borough. In opening the proceedings the Mayor (Councillor H. W. Coleman) said that Holborn was able to demonstrate the possibility of such workshops by the success of the Spero factory in Hatton Garden.

Dr. C. H. Walmisley, chairman of the Public Health Committee of the London County Council, described the difficulties which faced the local authority which tackled the tuberculosis problem. It was very important that notification should be received early. Sanatorium treatment was often difficult because the financial position of the patient made him anxious, and his benefit under the National Health Insurance was for a limited time. At the sanatoria the patient must attain to six or eight hours' work a day; to do only four or six hours was unsatisfactory because he might then go home and try to do eight, which would lead to relapse. This was where the system of workshops came in. The tuberculous patient who did only six hours' work a day was either paid for half a day's work, in which case his family could not live, or else he was paid for a full day's work, when the goods he produced could not be sold at an economic price. He suggested that surplus funds under the National Insurance Act should be devoted to subsidising workshops. One of the worst possible ways of treating tuberculosis was to take a man away from a sanatorium and let him sink in his way of life. Even able-bodied men had great difficulty in finding work to-day. A workshop, he said, was quite different from a colony, where a family was taken from its surroundings and put down in a new environment. The workshop allowed the man to live at home and go to work under conditions suitable to his disease.

Funds and Subsidies.

Dr. Otto May, of the Prudential Assurance Company, said that early deaths from tuberculosis accounted for a heavy item in claims against insurance funds, and that the company were interested in any way of preventing them. The suggestion that they should bear the whole cost of subsidising workshops had the merit of simplicity, but although they might be induced to help in suitable schemes they had, in fact, very little surplus money. The approved societies, however, had large surplus funds under the Insurance Act, and there was no reason why they should not allocate some of them to the provision of tuberculosis workshops.

Dr. Haden Guest, speaking as a Member of Parliament rather than a doctor, said that he believed that the remedy of the great social problems did not lie with medical science but in an alteration of social conditions. We were preserving in our cities—in London—manufactories of tuberculosis. Prevention was not a question of serums but of hygienic surroundings. The real difficulty in getting early notification was that the workman did not want to go on the sick list and lose his wages. It could never be obtained until there was some means provided of supporting such a man, and this was one of the key-ways of dealing with the situation. At present many cases escaped notification altogether. He would like to see workshops provided in the early stages, so that the men could get better before they got bad, and he agreed that workshops were useful for men who were recovering. Subsidy for this work would be an altogether useful and commendable expenditure which would really bring in dividends. He thought that trade unions might be asked to coöperate as health propagandists, and that they could do useful work. He had himself been a member of the L.C.C. Public Health Committee, and considered that although it was doing valuable work it should do three times as much. The present tuberculosis figures ought to be halved before there was any cause for satisfaction.

Dr. Harry Campbell said that many patients who had active tuberculosis were capable of light work. In workshops they would have medical care, congenial work, and new interests, and could be taught to avoid infecting others.

The Hatton Garden Workshop.

Dr. N. D. Bardswell said that the Spero leather factory was the first work centre of its kind to be established in London, and, so far as he knew, the first in the country. It had been opened in 1922 by the Central Fund for the Industrial Welfare of Tuberculous Persons, and the employment scheme consisted of three units—namely, the central office and showrooms at Denison House, Vauxhall Bridge-road; the specially arranged hygienic factory at Cross-street, Hatton Garden; and the training centre at King George V. Sanatorium, Godalming, whence employees for the factory were recruited. Dr. Bardswell described the conditions at Hatton Garden. The factory makes high-class fancy leather goods, such as purses, bags, and wallets, and sells them in the open market. The full complement of the factory is 23 men. At present there are 22 employees, of whom 11 are ex-Service men; five are married. The minimum rate of wages to trained men is 8½*d.* per hour, or 30*s.* a week, which is the same rate as prevails in the Lord Roberts' workshops. On increased efficiency the rate is raised, and the wages of the trained men at present vary from 44*s.* to 30*s.* 3*d.* The men prefer payment per hour to piecework. Working hours are from 8 A.M. to 5.30 P.M., with one hour's interval for dinner and ten minutes for lunch; on Saturdays the factory closes at mid-day. Two weeks' holiday on full pay is allowed during the year. The workshop and business generally are managed by a committee of five members, one of whom is an employee of the factory nominated by his fellows, and a highly skilled leather worker is responsible for the routine work in the factory. The medical supervision of the employees is exercised by their usual medical attendants, in association with the tuberculosis officers of the various boroughs, whilst their social welfare and that of their dependants is looked after by a small informal committee. Owing to the relatively low wages that can be earned, financial difficulties continually call for attention. On the social side of its work, the Central Fund have found invaluable helpers in the British Red Cross, the Charity Organisation Society, the various borough care committees, and other social service organisations.

Results of the Experiment.

After three years' experience, continued Dr. Bardswell, the following conclusions had been reached. (1) The organisation of employment for tuberculous persons is a practical proposition; but the training of tuberculous persons for a skilled trade is not generally possible. Were the Central Fund to begin over again, they would not choose a skilled trade, such as leather work, but rather some trade demanding the minimum of training in which the output of workers could be assisted by the use of simple machinery. This lesson of the Fund's experience could not be too strongly emphasised. (2) Medically speaking, tuberculous persons working in a city factory under conditions such as can be seen in Hatton Garden do very well. The workers, all definite cases of pulmonary tuberculosis, and many of them serious cases, had maintained their health or improved, and as a means of after-care the success of the factory was fully proved. (3) On the important question of cost it was less easy to be dogmatic. The business was young, though growing, and had a long way to go before it could be considered established. To start a new business at a time of general commercial depression was very difficult; markets were shy and competition relentless. Added to this there was the handicap of employees whose output was lower and slower than that of their competitors. Before anything else, a factory for tuberculous persons needed a certain and constant sale for its products, and this should be the first consideration of the promoters of any scheme of employment. The rent of the premises at Hatton Garden was £150 a year; gas, heating, and cleaning cost £90. The cost of altering and equipping the factory had been £400, and the salary of the workshop manager was £350 per annum. Broadly speaking, the income from sales of goods at present covered the whole amount paid in wages to the employees and the cost of raw materials used in the factory. All other expenses, such as rent, taxes, insurance, wage of manager, office expenses, and assistance to the employees, had to be met from other sources, and these amounted to more than £1000 per annum. As everyone knew, a factory for the partially disabled must be subsidised; but it was surely a wise expenditure which maintained in health and work those who otherwise would be sick and without the means of work.

Agreement and Criticism.

Dr. G. Quin Lennane, medical officer of health for Battersea, welcomed the Holborn work as a pioneering experiment. Dr. H. de C. Woodcock said that the fact that this scheme had proved practically an economic success under present difficult conditions seemed an argument for making workshops for the tuberculous a national question.

Mr. F. Berliner (Finsbury) said that many skilled men were out of work, and in his opinion, by the subsidy of workshops, the wrong men were being put to the work. Those who could not compete commercially in one sphere should have the opportunity to work in another, and the influx of healthy men to the towns should be met by letting the tuberculous, for instance, go out into the country. There were 21 million acres available for afforestation, and there was light work, such as the care of nurseries and putting up netting and fences, which he thought suitable for the tuberculous. At Hatton Garden it had been found that the only way to carry on was to observe ordinary business hours, and even then the lack of speed of the workers was a serious handicap.

Councillor the Rev. H. Ross said that the mental and moral welfare of the men was important, and that they did not want to move from their homes and surroundings. He agreed that as many as possible should go on the land, but more workshops were needed.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION. The Association has arranged a course of instruction from November till May on similar lines to those of former years: (1) A series of demonstrations will be held each Wednesday afternoon commencing Nov. 4th. The programme includes medicine, surgery, obstetrics, and a number of special subjects. (2) Special courses in ophthalmology have been arranged by the staff of the Glasgow Eye Infirmary. Instruction in other special subjects will be arranged by other hospitals to meet the expressed desire of graduates. (3) A number of clinical assistantships are available in the wards or out-patient departments of various hospitals for periods of three months' tenure. The syllabus may be obtained from the Secretary of the Association, Dr. James Carslaw, 6, Woodside-crescent, Glasgow, C.3.

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THE LANCET.

LONDON: SATURDAY, OCTOBER 17, 1925.

PHYSIOLOGY AND ORTHOPÆDICS.

THIS is the season for introductory and presidential addresses, and there is some risk that in the flood of October oratory the paper read by Mr. BLUNDELL BANKART before the Orthopædic Section of the Royal Society of Medicine on Oct. 6th may attract less notice than is demanded by its merits and the importance of its subject. Every surgeon ought to be familiar with the latest established facts concerning the physiology of muscular action, and in no specialty is such knowledge required more urgently than in that of orthopædic surgery. As Mr. BANKART very truly pointed out, "its ultimate aim is the restoration of function, so that those who profess to deal with disorders of bodily function must have some knowledge of the normal functions of the body." Advances in pure science are apt to remain unapplied in practice for a long time, and especially is this true of the science of physiology, which advances not often by leaps and bounds, but for the most part by many small creeping movements. It is very well then that there should be vigilant observers who bring the latest discoveries of the laboratory to the notice of the clinician. Even if, as in the case of recent experiments into the sympathetic innervation of voluntary muscles, improvement in practice does not necessarily follow, yet the discussions which arise around it ventilate the subject and tend to maintain and improve the liaison between the experimenter and the practitioner. It is some years since Prof. SHERRINGTON published an account of his work on the postural activity of muscle, and showed that although there is only one kind of striated muscle cell, there are two kinds of muscular action, one of which brings about movement, while the other resists or prevents it. This fact is of interest to all clinicians, but it is of special importance to orthopædic surgeons, not only in the treatment of spastic palsy, but in the treatment of errors of posture, which they may hope to correct not by the education of muscles, for they are the mere slaves of nerve-fibres and incapable of learning or being taught, but by educating the nervous mechanism. Whether the faulty posture affect a segment of a limb or the whole trunk and lower limbs, if it is due, as is so often the case, to a lack of tonic muscular action, its correction can only be hoped for as the result of improving the efficiency of the neuro-muscular mechanism which produces postural tone. It therefore follows that resistance exercises should be preferred, which call for the tonic contractions which resist movement and are more likely to produce good results than free voluntary movements.

Probably one reason why the drill sergeant has been so much more successful than the civilian physiotherapist in producing changes of trunk posture, is that he relies more on making the recruit resist tendencies to sag and slouch than on active movements which are supposed, probably erroneously, to improve posture. But as postural tone is concerned in the regulation of all voluntary muscular movements, the performance of these latter must have some, if only a small, effect on the development of the former. All who are concerned with physiology—among whom at least all orthopædic surgeons should be included—were interested in the posthumous publication[1] of two lectures by that brilliant Australian physiologist Dr. J. I. HUNTER on the Sympathetic Innervation of Striated Muscle, in which he claimed to have shown as the result of experiment that the postural tone of SHERRINGTON was really composed of two kinds of action which he called plastic tone and contractile tone respectively, and further, that every striated muscle consisted of two kinds of fibres, of which one was innervated by sympathetic nerve-fibres and the other by the ordinary medullated nerves of the cerebrospinal system. Dr. N. D. ROYLE went further and applied[2] the lessons learned from HUNTER's experiments to the surgical treatment of spastic paralysis by sympathetic ramisection. This was less than a year ago when the new discovery was hailed with enthusiasm as a great advance in our knowledge of neuro-muscular physiology, and the operation based upon it was credited with great results. Unfortunately, Dr. HUNTER was cut off in his youth and before he had an opportunity of profiting by the criticisms to which his new observations and theories were speedily subjected. Had he lived he would doubtless have profited by them and have been the author of discoveries which would have stood the test of time and conduced to his lasting fame. There used to be a cynical saying to the effect that the average life of a new physiological fact was three years. To judge from the review of the whole subject by F. M. R. WALSHE, which appeared in the September number of *Medical Science*, the life of HUNTER's new facts is to be measured in months not in years. Dr. WALSHE concludes by saying that the analysis of postural tone into two separate components has proved to be artificial, that, in short, postural tone cannot be so split up and that sympathetic motor innervation of striated muscle has not yet been satisfactorily established. As regards the operation of sympathetic ramisection its results have been most disappointing, even in the two cases chosen by ROYLE out of 25, and operated upon by him in Boston.

To these experiences of the results of sympathetic ramisection which are referred to by Dr. WALSHE there may be added those of Mr. BANKART, who stated that he had performed this operation for spastic palsy ten times without any beneficial result. As he is known as a most skilful operator and as one who has paid special attention to the operative treatment of Little's disease, it is not likely that much more will be heard of this method of treatment. Mr. BANKART also referred to the interesting but rather baffling question of muscular atrophy after injuries to bones and joints, which is especially noticeable in the quadriceps after fractures of the patella or of the lower end of the femur, and pointed out that it was the postural tone of the muscle that was most conspicuously lacking, and that while the power of voluntary contraction could be increased by active movement, massage and electric methods, we could only hope to improve the postural tone by proceedings which tend to stretch the muscle; in other words, by resistance exercises. Flexor muscles are not postural, and therefore those who hope that the transplanted hamstrings will be capable of controlling the knee-joint are doomed to disappointment, for the chief function of the quadriceps is not to extend the knee but to prevent it from bending, in which function the postural tone is alone concerned. Several other questions concerned with muscular activity which interest the orthopædic surgeon were lightly touched upon in this address, such as "What is cramp?" and the relations between intestinal stasis due to faulty posture, and arthritis. Mr. Bankart claimed, and we think made good his claim, that of all branches of surgery orthopædic surgery is the most advanced, for it has recognised, as all surgeons should, the importance of reckoning with the progress of physiological knowledge and applying its lessons on treatment. The physiology of muscular movement is but one instance of the fundamental relationship between physiology and orthopædic surgery.

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[1] Brit. Med. Jour., 1925, i., 197, 251.

[2] Brain, 1924, xlvii., 275.

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ANOMALOUS APPETITES.

Perverted appetites are well known if they are not very common. People and animals eat earth, hair, dung, cinders, curious pickles, and all sorts of things because they want to, and indeed in some cases because they feel they must. Normal appetite is a pretty good indication of normal need as we are now coming to learn, and it will be of much interest to discover the rationale of some of the fantastic cravings which are known. The last number of *Physiological Reviews* (1925, v., 336) contains a good account by Dr. H. H. Green of one case of which the explanation is apparently ascertained. Osteophagia in cattle in South Africa was mentioned by the traveller Le Vaillant as far back as 1785. He noticed that the cattle eagerly searched for the bones left by his dogs and chewed them with relish, and he attributed the habit to the poorness of the grass on which the animals had been fed.

In recent times the habit has been so widely spread that in its milder phases it has come to be looked upon as almost natural. The least degree of craving is shown by a taste for sweet bleached bones alone; greater degrees by a readiness to gnaw at bones in increasing stages of foulness and putrefaction until the stage is reached at which the animal will devour any miscellaneous rubbish that it can get at. With this dirty food it is liable to pick up a toxigenic anaerobic bacillus (*Parabotulinus bovis*) which gives rise to the serious and fatal poisoning known as lamsiekte, and it is mainly the losses due to this which have concentrated attention on the osteophagia which always precedes it and which by itself causes noticeable deterioration of growth, milk-yield, and general condition. Theiler and his co-workers have shown fairly conclusively that osteophagia is caused by a deficiency of phosphorus in the diet. The administration of any phosphorus compound which can be utilised by the animals will cure it within a few weeks —bran, bone-meal, calcium phosphate, sodium phosphate, and phosphoric acid are all effective. It does not, of course, follow, because ague can be cured by bark, that malaria is caused by the absence of quinine, but in the present instance the indication from therapeutics is corroborated by many details of the relation of osteophagia to locality and season. Oxen, too, require the smallest ration of bone-meal to keep the craving under, growing stock perhaps twice as much, and milking cows still more. It seems, then, that osteophagia is a highly intelligent response to phosphorus deficiency, though the animals have not quite enough chemical knowledge to jump at precipitated calcium phosphate towards which cravers show no inclination. The craving in its more exaggerated form will also lead cattle to eat any odd rubbish whether it is rich in phosphorus or not, and in so doing they will often get killed by botulism: *quem vult deus perdere prius dementat.*

These curious facts suggest reflection on two lines. In the first place, as to how far similar "perversions" of appetite may have similar explanations. Are hair-eating and feather-eating expressions of a need for something in keratin, possibly the cystine? N. Zuntz found that he could increase the wool of sheep by feeding them with partially hydrolysed keratin, and one of his colleagues who took the preparation had to shave twice a day instead of once. Is coprophagia an attempt to get something which has been made by bacterial action in the bowel?—it has often been noticed in rats fed on vitamin-deficient diets. In the second place, as to how far it is phosphorus that is effective in restricting the quantity of live matter on the world. It is not an abundant element and most of what is in sight is in plants and animals; in the sea, at any rate, there is only just enough to go round—in other words, it becomes a limiting factor. Some wheat lands in America are useless without the addition of phosphate, and as Dr. Green points out it seems likely that the "cripples" of stock in New Zealand, Australia, and Texas is also aphosphorosis. Man, at any rate, has found it worth while—and not a little profitable—to go far afield to fetch phosphorus. The deposits in Christmas Island are commemorated in the Irvine Chair of Bacteriology in the University of Edinburgh.

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THE VOLUNTARY HOSPITALS OF GREAT BRITAIN.

There are in Great Britain 911 voluntary hospitals, with 58,551 available beds, and of these 793 hospitals with 45,091 beds lie outside the metropolitan area, and are the subject of a report[1] to the Joint Red Cross by Dr. F. N. K. Menzies, which is issued this week. There has never been any year, writes Dr. Menzies, in which all the voluntary hospitals paid their way, but, taking the extra-London hospitals as a group, there was a balance to the good for the year 1924 of £453,000 in England and Wales and £690,000 in Scotland, while 61 per cent. of all the hospitals did, in fact, show a surplus of ordinary income over ordinary expenditure. Nor has this favourable balance-sheet been obtained at the cost of diminished activity, for there has been a steady increase in the number both of in-patients and out-patients treated, the total number of new in-patients during the year reaching the figure of 614,069, and that of new out-patients the enormous total of 2,496,485. In their report to the Minister of Health last year the Voluntary Hospitals Commission put the total additional beds required for England and Wales at 10,000, making at a bare cost of £400 per bed a minimum capital expenditure of £4,000,000. Dr. Menzies regards these two figures as an underestimate of actual requirements and sets himself to answer the question: Can the voluntary hospitals themselves within the next five years provide and maintain without State aid the additional 10,000 beds said to be required? He finds that during the last four years an addition of 4681 beds has actually been made to the voluntary hospitals of England and Wales alone, or an average increase of over 1100 beds per annum, so that the need would be supplied if only the hospitals found themselves able to double the normal rate of increase of their bed accommodation during the next five years. Obviously, as Sir Arthur Stanley points out in his foreword, there are great inequalities in the need, and such a newly populated district as Becontree, where hospital beds cannot be obtained by extension of an already existing institution—for there is nothing to extend—must receive financial help from the State. It will be remembered that the Hospitals Commission definitely asked for a capital grant of £2,000,000 for building purposes, but Dr. Menzies carefully considers the alternative ways in which the necessary funds might be made forthcoming. Closer coöperation between hospitals, so desirable in theory, has proved unattainable in practice, and founders on one of our invincible national traits. Exemption from local rate charges, also unlikely of attainment, can hardly be cogently urged when hospitals, like other ratepayers, benefit so greatly from certain municipal services. On the other hand, exemption from legacy duty would benefit the hospitals to the extent of £150,000 per annum, and make such a difference in the hospital budget that no further suggestion of "going on" the rates or the Exchequer, as Sir Arthur Stanley puts it, would need to be entertained. Dr. Menzies, however, believes himself that the Treasury, given the choice, would prefer a lump sum contribution to such a permanent loss of revenue. The final alternative suggested in the report, which does not exclude any other method of improving finance, would be the establishment of a Central Fund on somewhat similar lines to those of King Edward's Fund for London. The proposal, rejected at Sheffield two years ago, has yet much to commend it, although it may be years before such a fund could grow to any considerable dimensions, and time is of the essence of the problem. In one way or another the need for additional hospital accommodation, which in certain areas is very acute, must be met, and careful study of Dr. Menzies's report will be of material help to those who are concerned to raise the money. The report this year also contains a series of valuable essays on various aspects of hospital administration, one of which we print on another page. In this essay Mr. N. Bishop Harman sets out the claim for the general hospital as the ideal unit of organisation. There is, he argues, no justification for separate hospitals for disease of the nose, throat, skin, heart, rectum, urinary organs, for cancer cases, or for radiological treatment. Special hospitals run the risk of one-sided growth through loss of contact with general medicine and surgery or from failure to know what other branches of medicine are doing. The issue is one which needs to be clearly thought out in contemplating the addition of hospital beds in the near future.

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[1] Voluntary Hospitals in Great Britain, excluding London. Sixth Annual Report, for the Year 1924. By F. N. K. Menzies, M.D., F.R.C.P.E., D.P.H., Director of Hospital Services, Joint Council of the Order of St. John and the British Red Cross Society. With a Foreword by the Hon. Sir Arthur Stanley, Chairman of the Joint Council. 19, Berkeley-st., London. 1*s.* 6*d.*

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CHIROPRACTIC.

The first essential in the practice of medicine is the honest attempt to make an accurate diagnosis. Licensing bodies throughout the world prescribe a prolonged course of study, after a stiff entrance examination, with a view to producing a certain standard of diagnostic ability amongst those who are to have the care of the sick. In his presidential address last Monday to the Medical Society of London (summarised on page 807), Sir Holburt Waring ruthlessly laid bare the exiguous curriculum of many of the osteopathic and chiropractic schools in America. It would appear that many of these schools make no condition of entrance save the ability to read and write; they prescribe a mere 18 months of study prior to granting a doctorate of osteopathy or of chiropractic. The type of manipulator thus produced preaches the utterly unscientific doctrine of displacement of vertebræ with direct pressure on nerves and vessels as a result. There is a more enlightened school which describes the osteopathic lesion as an *immobilisation* of the joint outside its position of normal movement, and which attributes the resulting ills to irritation of the sympathetic. The growth of these two schools, whilst undeniable, need give rise to no serious anxiety unless there is failure on the part of the medical curriculum itself to recognise the value of manipulation in the treatment of pain, local or referred. We know of only one general hospital at which a class of students is taught the technique of joint manipulation, and attendance at this class is not compulsory. In cases in which manipulation offers a chance of relief this can now be obtained only at the hands of a small group of qualified practitioners, and relief, therefore, tends to be sought in unqualified channels.

Annotations.

"Ne quid nimis."

RESEARCH IN THE MEDICAL SERVICES.

Our issue this week opens with an address, entitled as above, and delivered before the appropriate Section of the Royal Society of Medicine by Sir William Leishman on Monday last. The Director-General, A.M.S., points with confidence to the opportunities enjoyed by the officers in his and in the sister Services, for contributing to the medical wisdom of the world both by coöperation and by individual labour. His words in the latter respect, with regard to the planning of work, are wholly admirable; especially does he inculcate that self-criticism which will go far to prevent premature enunciation of theories, a proceeding which is unfortunately followed by personal disappointment or resentment for the would-be discoverer, while it is woefully embarrassing for all workers along the same lines. Sir William Leishman's counsel is designed to create a fine individual worker who shall contribute to collective research. Alterations in the conditions of service in the R.A.M.C., which took effect under Sir John Goodwin some five or six years ago, with the active coöperation of Sir William Horrocks and the present Director-General, have made it possible for sound scientific workers to attain to positions in the Service of proper trust and emolument, so that the great scope for original labour in tropical and preventive medicine offered by the sphere of duty can be properly taken advantage of. The reform is bearing fruit now, while the urge of scientific enterprise has manifested itself also in the Navy and the Air Force. In all the Services there must arise difficulties due to isolation, to change of station, and to the daily pressure of routine, but in all of them there is a spirit abroad surmounting the obstacles, and that it is the spirit rather than the provision of material appurtenances which counts is sufficiently shown by past records. The zoological-pathological work of Manson and Ross was accomplished largely while carrying on their arduous duties, and with a similar disability Sir Leonard Rogers found time to reverse the figures of cholera mortality. Sir David Bruce, with many patients but no laboratory save what he could construct for himself, found the germ of Malta fever and initiated a campaign which added a battalion to the effective strength of the Army; after which he, with the devoted assistance of his wife, went on to discover the relations of the tsetse-fly to sleeping sickness. Sir William Leishman himself, while engaged in the duties of his office, discovered the cause of kala-azar, and Sir Percy Bassett-Smith, as a naval officer, showed the Navy how to escape the menace of scurvy. Last week we published a paper read to the International Congress of Aerial Navigation at Brussels by Group Captain Martin Flack, in which the relation of stable nervous control to flying efficiency was fully discussed, and the elaborate work there indicated, which has to be undertaken for the assessment of a candidate for flying duties, demonstrates the high range of scientific accomplishment to which officers in the Air Force Medical Service must to-day attain if they are to discharge their duties. Medicine may look confidently to the Services for competent and zealous recruits to medical research.

THE TEACHING OF HEALTH.

The Royal Sanitary Institute was recently responsible for a National Health Week, when nearly 400 cities and towns of the United Kingdom joined in the campaign for rousing a sense of personal responsibility for health. Such a health week has usually as one of its attractions popular lectures on health matters, and there seems to be an increasing demand for public health propaganda by the spoken word. In view of this it seems important that the principles underlying the health talk should be fully understood, for there is a certain amount of danger attached to faulty method. It is interesting to note that education in general relies largely on the spoken word, and that despite the high level attained by modern advertising business still has to depend to a large extent upon the glib salesman, while health propaganda is still mostly a matter of poster, pamphlet, or picture, to the neglect of the most valuable medium afforded by speech. The National Tuberculosis Association of America has realised some of the difficulties attendant on the use of the spoken word, and in a recent little book [1] Dr. Iago Galdston has analysed these difficulties and set down certain rules for the guidance of the health teacher. The speaker in the first place should be carefully chosen and diligently trained, and it must be borne in mind that one who can effectively lecture to a group of city merchants may fail lamentably before a class of school-children. The choice of vocabulary must be strictly made with the elimination of all technical words, and a pleasantly carrying voice is as important as a forceful personality. The subject matter of health talks presents more difficulties than are at first apparent; the available information must be abstracted, defined, and arranged in such a manner that it can be adapted to the age, social, or sex group for which it is intended. It is to be remembered that in these days of the universal newspaper most audiences will have a smattering of recent information on health matters. A lecturer on cancer, for example, will be expected to give an account in simple language of any recent discoveries in this field and he will lose some of the effect of his appeal if this be omitted. Health teaching is not the same as health preaching, and the untrained lay speaker who recites a set of rules will, in general, prove ineffective, for members of the average audience demand to be told the reasons why they should change their ways and do this and avoid that. The audience to which a health talk is being given must always be carefully considered, and the set lecture delivered alike to factory-hands, school-teachers, and working-class mothers is likely to be of less value than if it were skilfully adapted to suit the situation. The set lecture written out in full is also to be condemned; with the main points before him the successful lecturer will develop his theme according to immediate circumstances. The long talk and the series of talks will differ considerably from the short talk, and here again skilful adaptation will be necessary for success. The question of the adjuncts of a lecture have also to be considered; in general the distribution of pamphlets should take place after the health talk, and other illustrative material such as charts, slides, and films must be chosen to harmonise with the subject, both in substance and in treatment. When slides are used the lecturer should be careful to speak *with* the pictures rather than *about* them, for this avoids the obvious handicap of a rapidly shifting attention on the part of the audience. When films are used brief introductory remarks and then the picture, followed by some 10 or 15 minutes' talk emphasising certain points, will be found the best plan. Object talks, including blackboard drawings, have certain uses, but here, even more than elsewhere, the lecturer will need special training. Dr. Galdston's little book includes an account of how a broadcasted health talk should be arranged. The necessity of a striking introduction is obvious, and a talk in clear-cut, short, simple sentences will enable anyone tuning in during the middle of the talk to understand what it is about. Broadcasting opens up a new avenue for the effective promotion of public health, but certain points in the technique require close attention. Some of the suggestions made here may seem trite and unnecessary, but with the new powers under the Public Health Act enabling local authorities to spend money on health propaganda there is some danger that the teaching of health may be looked upon as a simple off-duty occupation for junior officials in the health departments. The effective use of the spoken word in health propaganda has undoubted value, but care must be taken to master some of the esssential details of what is certainly a highly specialised art.

PERSPECTIVE IN X RAY INTERPRETATION.

Dr. William Cotton has endeavoured to apply the laws of perspective to the art of radiography, and he gave a demonstration on the subject at the recent International Congress of Radiology, the substance of which he has now reprinted. By these laws we are enabled to represent accurately on a plane the appearance of triply extended objects as seen from a point known as the centre of vision. The author considers that in radiography the focal spot of the X ray tube is the centre of vision, and in order to obtain a correct interpretation of a radiogram the observer must stand in the same position relative to the film as the focal spot when the exposure was made. If this position is adopted, then by the same laws of perspective the view of a subject seen on the fluorescent screen is a false or reverse one. This picture, however, is the only one possible in existing radiographic methods. In view of the valuable information which the fluorescent screen reveals, it would appear desirable to adopt methods for examining radiographs which give the same picture of a subject as seen on a screen. By the same picture is meant that the parts of the radiogram appear in the same positions relative to the observer as they would appear on a fluorescent screen. An attempt to obtain this view is complicated by the extensive use of both positive and negative radiograms, but the difficulty is removed by marking the side of the film placed next the subject during exposure. When the film is viewed through this side a negative picture is seen if the above convention is adopted. The positive, corresponding to the fluorescent view, is the mirror image of the former and is obtained by viewing the film through the unmarked side.

Owing to the local nature of many radiograms, the observer has not the advantage as in photography of knowing when the image is erect, and it is usual to make some mark on the film, the position of which relative to the subject is known. In the picture seen on a fluorescent screen those parts of the subject nearer the observer are more sharply defined than those more remote, and in this respect the screen picture corresponds to the photograph. On the other hand, the parts of the subject further from the screen are magnified, whereas in the photograph more remote parts appear diminished in size. This distortion observed on the screen and radiogram is obviously due to the use of a cone of illumination, part of which is transmitted through the subject to the film and is independent of the position of the observer. For this reason, therefore, it is not to be expected that a radiogram will furnish directly accurate data concerning the relative dimensions of the different parts it portrays. However, by placing the affected part as near as possible to the fluorescent screen a truer idea of its dimensions may be obtained. To ascertain the position of a foreign body, two radiograms are taken by the usual stereoscopic method. Following the above convention the picture obtained when the X ray tube is moved to the right may be termed the right-eye picture and that for the corresponding shift to the left, the left-eye picture. Correct relief can only be obtained from a stereoscopic pair when the right-eye views the right-eye radiogram and the left eye views simultaneously the left-eye picture. The methods by which the two pictures are superposed may be divided into two classes. In the first, of which Brewster's lenticular stereoscope is an example, each eye views its appropriate picture or its enlarged image. In the second, right and left eyes view mirrored images, which correspond respectively to right and left-eye pictures. The Wheatstone stereoscope is of this type and it is clear that to obtain correct relief, from the point of view of the fluorescent screen, the right-eye view must be placed on the observer's right hand and the left-eye view on his left. Both views must be so placed that the sides of the films, which were originally in contact with the subject, face the observer.

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[1] Health Speaker's Handbook. New York: National Tuberculosis Association, 370, Seventh-avenue. 1925.

The application of the principles of perspective to radiography, as suggested by Dr. Cotton, is useful in that it stresses the importance of adopting systematically the same position relative to all radiograms. It is in his choice of a position corresponding to the focal spot that we differ from Dr. Cotton. This position leads to a picture which is the reverse of that seen on the fluorescent screen, and thereby introduces a complication which is avoided in the method of examination outlined above.

THE RELIEF OF LEEDS UNIVERSITY.

THOUGH certain authorities have doubted whether stone walls a prison make, and all have agreed that they do not make a university, it cannot be denied that stone walls are an important predisposing cause of both types of institution. Scattered wooden buildings make a poor prison and are inappropriate to a seat of learning. The rapid growth of Leeds University has made it necessary to carry on much of its work in temporary structures and transformed dwelling-houses; but in the course of time such conditions have become increasingly irksome, and the University is rightly pleading for relief. Present conditions are hardly tolerable, and expansion is impossible until new and larger buildings can be put up. The occasion of the appeal is timely; the coming of age of the University coincides with the jubilee of the Yorkshire College of Science, which was one of the three bodies whence it sprang. Of the many factors which brought this College into being the most important were the increasing public appreciation of the value of education, and especially of scientific and technical education, and the growth of the mechanics' institutes. The motives of the promoters were utilitarian; they wanted to increase industrial prosperity, but even at the inauguration there were those who took a wider view. On this occasion Dr. Lyon Playfair said:

> "The object of technical education, even in a technical school, is not to teach men how to use spinning jennies or steam hammers, but it is to give a cultured intelligence which may be applied to work in life, whatever that may be. . . The ultimate effect of this may be that you may evolve a wider and more comprehensive college for higher education."

It is said that when the College opened its doors in 1874 only one student, a coal miner, appeared on the first day, and that two more days elapsed before he was joined by a second; but the three original professors were Sir Arthur Rücker, Sir Edward Thorpe, and Prof. Alexander Green (all of whom became Fellows of the Royal Society), and the wisdom of choosing such men soon bore fruit in the success of their undertaking. It was not long before they came to the conclusion that their efforts could not attain a maximum of usefulness until the curriculum was expanded to include literary study, and in 1878 this change was made and the words "of Science" were deleted from the name of the Yorkshire College. About this time the Leeds School of Medicine, which had been in existence for nearly 50 years and had achieved something of a reputation, began to wish for university status, and it joined forces with the Yorkshire College in 1884 in the hope that the joint college would be admitted to the Victoria University. In 1887 the hope was realised, and Yorkshire College joined Owens College and University College, Liverpool, in a federation. In 1903 this federation was dissolved, and in 1904 a Royal Charter made Leeds a University. It is hardly necessary to describe the fortune of the venture. The academic staff has grown to include 208 persons; there are some 1700 men and women students, 320 of whom live in University hostels; and there are 42 departments of study grouped in the four Faculties of Arts, Science, Technology, and Medicine. Such an institution as this can do invaluable work for its county and its country, and yet, unlike other universities, it has hardly received the financial support which its services deserve; and although ends just meet on the present revenue of £173,000 per annum (33.4 per cent. of which is from Government grants and 17.2 per cent. from local education authorities), a special effort is needed if the University is to be freed from its present cramping and expensive circumstances. In our correspondence columns we publish an appeal for the medical school, a school which is associated with the names of men, living and dead, who have been leaders of our science. It will be regrettable if appeals do not meet with a worthy response.

I-EM-HETEP.

THE medallion which we reproduce was presented on Oct. 8th to the Reading Pathological Society by Sir Stewart Abram, an ex-president of the Society, to be the President's jewel or badge, and is of interest since, instead of the somewhat hackneyed figure of the Greek god Æsculapius, it represents the Egyptian Deity of Medicine, I-em-hetep or Imhotep, whose name signifies "he who cometh in peace." This famous Egyptian lived about 2000 B.C., and was a learned and many-sided man. He was Prime Minister to a Pharaoh of the Third Dynasty named Zoser. Further, he was a distinguished architect, and built the earliest pyramid known to history, the Step Pyramid of Sakkarah. Above all, however, he was noted as a physician, and he so impressed his fellow-countrymen with his skill in the healing art that he was eventually acknowledged throughout Egypt as the Deity of Medicine. In his honour temples were erected in various parts of the country, and to them flocked patients from far and wide. Many miraculous cures are reputed to have taken place at his shrines.

The jewel presented by Sir Stewart Abram consists of a pendant in hand-chiselled gold and enamel, designed and made by Mr. Omar Ramsden, of London. The oval plaque of enamel shows the image of the god, which is based on an exquisite early bronze statuette in the Wellcome Historical Medical Museum. The god is shown in profile, seated on a golden "throne of knowledge," while his feet rest upon a footstool representing the solid earth, which is surrounded by a green band symbolising the cultivated strip of land watered by the Nile. The latter is in heraldic blue and white, flowing by in full tide, whilst the background shows the blue sky of the East. The delicately wrought frame is surmounted by a double-headed and winged serpent from which is suspended the Egyptian "ankh," the symbol of life. The border is made up of lotus buds springing from a lower space inscribed with the name "I-Em-Hetep." At the back is engraved the following sentence: "George Stewart Abram commanded me to be wrought for the Reading Pathological Society, in October of the year of our Lord MCMXXV." At the Congress of the History of Medicine, held at Geneva in July last, a paper on I-em-hetep, the Egyptian Deity of Medicine, was contributed by Dr. J. B. Hurry, of

Reading. To the Reading Pathological Society will fall the honour of having been the first in this country to recognise the claims of I-em-hetep to be regarded as the Deity of Medicine. "I-em-hetep is," to quote the late Sir William Osler, "the first figure of a physician to stand out clearly from the mists of antiquity."

ALCOHOLISM AS AN INTERNATIONAL PROBLEM.

International movements are always suspect; it is often suggested that they are a kind of sport which enables reformers to visit foreign countries and hold enjoyable meetings. That the internationalism of the campaign against alcoholism is of real significance was the thesis of a lecture by Dr. R. Hercod, of Lausanne, before the Society for the Study of Inebriety on Oct. 13th. Certain countries, he said, have newly taken up vine growing; others have reduced their consumption by legislation or propaganda; economic depression has reduced markets; and the result of these things is a crisis in the wine-producing countries which has forced the growers to seek new custom. A French Minister for Agriculture encouraged the people to drink more wine on the grounds that this "temperance beverage" was really the best weapon in a serious fight against alcoholism (although an average annual wine consumption of 30 gallons per head suggests that the French population was already doing its duty); but however much sympathy may be felt with such enthusiasm, it is less easy to condone the methods adopted by France and Spain in forcing the importation of their produce on foreign countries. Iceland has been obliged to except Spanish wines from her prohibition laws because Spain could starve Iceland by refusing to admit her exports of fish, and Norway has suffered in much the same way at the hands of France. German breweries have considerable stakes abroad, and they and their methods are implanted in the Far East; and Scotch whisky is not without its influence on distant peoples. According to Dr. Hercod, Africa is suffering from a veritable scourge of alcoholism, which is the outcome of Western civilisation and which is inadequately controlled by the Convention of Saint-Germain-en-Laye. In partly Moslem countries the influence of religion is being overcome, and everywhere the lands which are producing more alcohol than they can consume are pressing their produce on others, in ways both legitimate and illegitimate. The support of the press has greatly helped the international campaign against prohibitive legislation, which has therefore been as successful as might be expected; but it is not merely in reaction against the activities of the liquor traffic, Dr. Hercod considers, that the cause of temperance will be helped by international coöperation. More information is needed on the experiments, both individual and social, of other countries, and the United States has lost a great opportunity by failing to organise a systematic and continuous investigation of the facts of prohibition. A strong educative campaign must be based on truth, and as yet there are gaps in scientific knowledge which should be filled. There are, for instance, discrepancies between the results of Dr. H. M. Vernon and Prof. E. M. Widmark, to name two workers only, and such discrepancies should be cleared up. Though it may be possible, even now, to come to an international agreement on the manufacture and distribution of alcohol on a smaller scale, it will be impossible to contemplate its total suppression so long as the population in general is unwilling to admit such a measure. Study of the propaganda methods of other countries, and especially their work in schools, is most valuable, and the International Bureau Against Alcoholism, of which Dr. Hercod is director, will do much to help. All who are imbued with the scientific spirit will approve the dissemination of the truth, about alcohol or anything else, but it is evident from the increasing stress laid by temperance workers on the social side of their work that scientific facts do not always impress the public. Alcohol has not been damned by being called a narcotic—for a narcotic is just what most people most enjoy. It has been truly remarked that "Mankind has never needed a stimulant, but rather something to take the edge off things."

CRITERIA OF PATHOGENICITY.

The time-honoured criteria for the identification of a microbe as pathogenic are those familiarly known as Koch's postulates. The difficulty in applying these criteria lies in the fact that the majority of pathogenic organisms do not produce in experimental animals a disease exactly identical with that which they produce in man. This holds not only for organisms whose rôle in human disease is still open to doubt, such as Pfeiffer's bacillus, but also with the most firmly established species, whose pathogenicity has been proved both purposively and accidentally upon the human subject, such, for example, as the typhoid and cholera organisms. Consequently, in attempting to prove the relationship of a given organism to a supposed disease the experimental demonstration often breaks down over this point, and this is the crux of the difficulty which lies in the way of proving or disproving the truth of claims which are constantly put forward. In a recent paper[1] Dr. W. M. Crofton suggests that two criteria may be safely substituted for the third of Koch's postulates. The first is that if a vaccine from a given organism will reduce the morbidity and mortality of a certain disease, then the organism composing the vaccine is the one which causes the disease, and, in evidence thereof, he cites the case of typhoid vaccine and the incidence of typhoid fever. This contention may be admitted in the absence of direct evidence to the contrary, but it must be remembered that not only are all the factors in play in such a case extremely hard to control, but that non-specific effects in immunity reactions are not uncommon, and in clinical medicine other parallels may be found to the case of small-pox and vaccinia. Dr. Crofton's second contention is even less tenable. He asserts that if in a given disease a vaccine or bacterial preparation produces a reaction—e.g., the tuberculin reaction—which is not obtained with the normal individual, and its injection is followed by amelioration or cure of the disease, then such a vaccine is composed of the causal organisms. He instances his own results with influenza vaccine in encephalitis lethargica, and those of Dr. H. W. Crowe, who claims to have cured cases of rheumatoid arthritis by a *Staphylococcus albus* vaccine prepared from organisms recovered from the urine. Both of these instances are unconvincing, since the association of influenza and encephalitis is very generally agreed to be a negative one, and, further, the present treatment of rheumatoid arthritis by bacterial vaccines, for which considerable success is claimed, is avowedly non-specific, such organisms as *B. typhosus* being frequently used. Whether or no they embody final truth, Koch's postulates cannot be set aside without substituting a habit of extreme and rigid self-criticism in bacteriological research.

HOME SERVICE AMBULANCES.

A legacy of the war was the inception of the ambulance facilities we now enjoy in this country. Before 1914 in only a few of even the great cities had the municipal authorities established a motor ambulance service. The County of London was still content with the service of hand-propelled wheeled litters established by the police, and it was not until 1915 that the motor ambulance service was inaugurated to deal with accidents. During the war, as everyone knows, splendid work in the provision and maintenance of ambulance service was done through the coöperation of the Order of St. John of Jerusalem in England and the British Red Cross Society, and happily after the signing of the armistice these two organisations decided that the need for their united efforts in the care of the sick had not come to an end. One of the first steps they undertook was the organisation of a national ambulance service for England, Ireland, and Wales. It was to the needs of the rural areas especially that attention was devoted, as in London and the great towns official boards had already begun to provide for the transport of the sick. The Home Service Ambulance Committee, formed under the Joint Council of the two Societies, began, therefore, to set up ambulance stations in various parts of the country, and to-day these number 341, with 34 affiliated stations, making a total of 375. The total number of cases carried since the establishment of the service up to the end of June, 1925, was 312,501. The Committee has just issued a new edition[1] of the register of these ambulance stations, grouped in counties, and to medical men in all counties there has been sent a list showing the stations in their county. Further, all the road scouts of the Royal Automobile Club and the Automobile Association carry a list of stations within their patrol. Wherever possible ambulances are placed in charge of those who by training have acquired dexterity in the handling of the sick and injured, nor is the handling of the vehicle itself of minor importance, for unskilful driving may gravely prejudice the patient's chances of recovery. The Order of St. John and the British Red Cross Society have a great body of trained members who voluntarily and gladly give their services. Maintenance costs are met in different ways according to local circumstances. In the majority of cases a charge is made for the use of the ambulance, calculated to cover the actual running expenses, with a margin sufficient to allow for remissions in necessitous cases. By such efficient ambulance service the sick can obtain a standard of treatment which might be impossible in or in the neighbourhood of their own homes, and in addition the safe transport of convalescing patients from large hospitals to smaller or at all events less expensive institutions can do much to relieve the pressure on the nerve centres of our hospital system.

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[1] Journal of State Medicine, vol. xxxiii., No. 10.

PARATYPHOID TRACED TO ICE-CREAM.

IN his report for the month of August Dr. G. P. Kinloch describes an outbreak of paratyphoid fever. Investigation revealed the fact that 21 Aberdeen cases were associated with the outbreak, and, further, that two girls from Glasgow, who had been on holiday in Aberdeen from July 17th to the 30th, had sickened of paratyphoid fever in Glasgow on August 2nd and 5th, respectively. Previous to 1924 paratyphoid fever had been absent from Aberdeen for four years, but cases were notified during the present year on May 7th, June 20th, July 10th, and August 6th and 9th. These cases, as far as could be determined, were separate and distinct from the 28 cases of the outbreak. In endeavouring to trace the source of infection, the milk-supply could be excluded, as the 20 families concerned were supplied by 18 dairies. After full inquiry it was ascertained that the one common article of food consumed was ice-cream, obtained from a particular shop on July 20th. As the patients sickened on or about August 4th, the incubation period of the disease could be put at about 15 days. In the shop in question about six gallons of milk are daily converted to ice-cream, the milk being brought to the boil, cornflour, &c., added, and then the mixture again brought to the boil, and when cold introduced into the refrigerator. The time which elapsed between the infection of the ice-cream and the outbreak made it impossible to find out exactly how the ice-cream had been handled and disposed of on the day in question. Full bacteriological investigation of the workers in the shop was carried out. Both the shopkeeper and her mother had suffered from typhoid fever a long time ago, and their blood agglutinated to *Bacillus typhosus*, but not to *Bacillus paratyphosus*. The shopkeeper's son had agglutinins both to *Bacillus typhosus* and to *Bacillus paratyphosus*, but he had been inoculated against both varieties in the army in 1917. Samples of blood from the three employees contained no agglutinins, and the specimens of fæces and urine from all six persons engaged in the shop were negative. There was no evidence that the milk from which the ice-cream was made was infected. It was obtained from one of the largest milk retailers in the city. It is estimated that 800 customers might be supplied daily with ice-cream from this shop, but so far as is known only 28 cases of infection occurred. There were no deaths, but some attacks were severe. In view of the fact that during July there was an outbreak of food-poisoning in Aberdeen, affecting some 500 persons, traced to a bacillus of the Gaertner group, Dr. Kinloch proposes to publish a more detailed report of both outbreaks later.

THE PANEL CONFERENCE AND THE OPHTHALMIC SPECIALIST.

THE Annual Conference of Representatives of Local Medical and Panel Committees will meet in the Great Hall of the British Medical Association next Thursday, when there is a very full agenda paper. The most important, although not the most controversial, matter which will come before this Conference is the new arrangement made in regard to ophthalmic benefit for insured persons. As the culmination of a long series of negotiations between representatives of British ophthalmologists, the Ministry of Health, and the Association, there has now been drawn up a list of 000 practitioners throughout the country who are regarded as ophthalmic specialists and who are willing to treat insured persons at a uniform fee of a guinea to cover each complete case of refraction. These practitioners have obtained access to the list by virtue of holding certain ophthalmic appointments, of having made a special study of ophthalmology, or of being recognised by fellow practitioners as having special proficiency and experience. Their fees will be paid out of the surplus sums available for additional benefit revealed at the second Approved Society valuation. Most of the smaller societies eligible to join the scheme have come in, bringing with them a million and a half insured persons. The larger societies, although not hostile to the scheme, are ineligible to join until next year. The actual procedure is that any panel practitioner, finding the condition of a patient such as to require ophthalmic treatment, shall at his patient's request furnish him with a recommendation in writing that such treatment shall be obtained. The insured person then procures from his society the necessary authority to visit one of the ophthalmic surgeons on the approved list. The scheme represents not only the death-knell of an attempt on the part of lay bodies to institute a kind of optical benefit outside the medical benefit provisions of the Insurance Act, but is the first embodiment of a specialist service within the Insurance Acts. No doubt other specialist services will follow in due course now that official recognition has been given to the doctrine that insured persons are entitled to treatment by fully qualified persons.

THE SANATORIUM AND AFTER.

THE after-treatment of ex-sanatorium patients is one of the most urgent and elusive problems which medical and social science has to face. A scheme to provide industrial employment in hygienic workshops, started in London two years ago, has given results sufficiently encouraging to merit attention from all who are dealing with tuberculosis care and after-care. A public meeting held last week in Holborn Town Hall in support of the more general provision of such workshops is reported fully on another page. From the strictly medical standpoint it is admitted that the combination of sanatorium, settlement, training centre, and workshop offers the ideal conditions for after-care, but such settlements can only deal with a fraction of the tuberculous population. While any workshop scheme has its inherent difficulties, the success of the London experiment known as Spero Leather Workers has surprised those who have watched it most closely. The improved health and happiness of the workers, consequent on their feeling of rehabilitation in industry and of their ability to maintain themselves, and perhaps a family, has exceeded expectation. During the 30 months since the workshop was started, absences on account of health have not exceeded 4 or 5 per cent. of the total time, although all the workers are ex-sanatorium patients; and this absence is covered by a scheme of sickness benefit. It is rather on the economic side that the difficulties lie. The tuberculous worker obviously cannot earn a living wage during his period of training or for some time after, and the distribution of manufactured goods on a small scale presents difficulty. It would be fatal to the success of any scheme to allow the standard of living of the workers to become inadequate, and steps have to be taken to supplement their income where necessary. At present the Central Fund for the Industrial Welfare of Tuberculous Persons is undertaking this responsibility. The outstanding need appears to be for schemes of employment providing work which does not require a prolonged period of training, such as repetition in workshops fitted with the necessary machinery or other work of unskilled or slightly skilled order. We hope that the publicity given to Spero Leather Workers will result in experimental schemes being started on other lines. Unfortunately the municipal workshop idea worked out by the late Dr. F. Stanley Tinker (The Lancet, Feb. 21st, 1920) never came to fruition. It remains true, as he then said, that the value of the labour of tuberculous subjects has not yet been worked out. If properly managed it should, he thought, cover the cost of wages and even in time produce a small profit. This has been the case in the London experiment.

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[1] Home Service Ambulances: Ambulance Stations and Officers in Charge. Obtainable from the Offices of the Joint Council, 19, Berkeley-street, London, W.1.

IMMUNISATION AGAINST SCARLET FEVER.

In a communication recently made to the Minnesota State Medical Association Dr. W. Colby,[1] of the Miller Hospital Clinic, St. Paul, reported that he had carried out active immunisation with detoxicated toxin of 132 children, aged from 2 to 14 years, and 16 nurses, who all presented positive Dick reactions. Sodium ricinoleate was used as the detoxicating agent, which, as Dr. W. P. Larson, of Minneapolis, has shown, possesses the power of neutralising bacterial toxins without altering their immunising properties, as he proved by successfully immunising animals against diphtheria and tetanus by this agent. The technique of the procedure consisted in the addition of an equal volume of a 2 per cent. solution of sodium ricinoleate to the toxin, when the final dilution equalled 4000 skin-test doses per c.cm. Thus prepared the toxin was allowed to stand at least four hours before injection. One injection only was given, the dosage ranging from 500 to 4000 skin-test doses. No general reactions occurred, and there were only negligible local reactions, consisting in erythema and slight induration, which disappeared within 36 hours. Immunity was established in direct ratio to the amount of toxin given. In order to increase immunity still further the dosage was safely increased to 6000–8000 skin-test doses. For children under 10 years of age observations showed that 4000 skin-test doses were sufficient. In older children and adults a higher dosage was required, as was shown by the low percentage of immunity (37·5) in the case of nurses in whom only 2000 skin-test doses were used. In the subsequent discussion, Dr. Larson remarked that sodium ricinoleate was nothing more or less than a highly purified castor-oil soap. The advantages of neutralising the toxin with this substance instead of with antitoxin, as in the ordinary toxin-antitoxin mixture, was that antitoxin tended to sensitise the child to horse serum. Since it was possible to neutralise the toxin effectively with castor-oil soap and possibly to effect immunisation with one dose, the main objection to active immunisation against diphtheria and scarlet fever would be removed.

DIFFICULTIES AND DANGERS OF INSULIN.

The unique value of insulin in the treatment of diabetes is known to every newspaper reader in the world, but its drawbacks are not fully recognised even by those who have to use it. Many first-class research workers have, however, been energetically testing it under all conditions since it was first given to the world by Dr. F. G. Banting, and the mass of their results has laid bare most of its dangers and made known the most efficient precautions against them. Those who attended the meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine that was held on Tuesday last had the privilege of hearing the latest results of some of the most eminent workers in this branch of therapeutics from the workers themselves. Dr. George Graham, who chose the subject for his Presidential Address, is well known as the author of many works on diabetes and allied conditions, and has a specialised experience of the disease that extends over many years.

Dr. Graham stated first of all that insulin, which is undoubtedly a very important discovery, does not cure diabetes, but so effectively counteracts as to enable the patient to take his normal place in social life. Very few who are treated with it remain invalids, and still fewer die entirely unaffected. He analysed 85 cases that had come under his own experience during the last two years at St. Bartholomew's Hospital, and showed that the 17 deaths were mostly in-patients who had never had insulin before they entered hospital, and in whom the diabetes had caused organic lesions that overcame the natural resistance even when the disease was counteracted. The large majority of patients treated with insulin were able to leave hospital after a few months and continue the treatment themselves. The difficulty here is to keep the blood-sugar normal after discharge. The normal in most people is below 0·1, but it is difficult to get it as low as this without causing discomfort from an overdose of the drug, while a high sugar content lowers the natural resistance to it. Hence, it was necessary by diet to reduce the sugar as much as possible without insulin. He exhibited several interesting charts and made some remarks on taking blood samples and on the regulation of treatment by post, a very interesting side-issue; he also gave an illuminating series of examples of the method of securing a good insulin "balance." Hypoglycæmia sometimes results if the dose is too high, but it is rarely very dangerous and the symptoms decline when sugar is administered. Curiously enough, the insulin requirement is often decreased after an attack. Another difficulty is that an intercurrent infectious complaint will send up the blood-sugar; if it is severe there is a danger of giving too much insulin. By taking urine samples every three hours and regulating the extra doses accordingly it is possible to keep step with the increased sugar content. Very large doses are often given with safety when the blood-sugar rises from this cause, sometimes up to 200 units. The danger comes when the patient begins to recover, and sugar should be kept ready against symptoms of hypoglycæmia.

Dr. R. D. Lawrence followed the President with some very interesting comments on the effect of exercise in lowering the sugar content. He quoted the case of a gardener who, on increasing his work at the beginning of summer and also taking up cricket, suffered from mild hypoglycæmia; 4 units decrease in the morning dose, which had been 10, restored this balance. When he resumed a more sedentary life his blood-sugar again rose. He is now learning to keep his balance according to his work output. Sunday tennis produced the same effect in another patient.

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[1] Minnesota Medicine, September, 1925.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CLXIII.

TREATMENT OF HYDROCELE, HÆMATOCELE, VARICOCELE, AND SPERMATOCELE.

CONSIDERATION of the treatment of these four conditions involves a brief discussion of their ætiology and differential diagnosis. It is clear that where the scrotal abnormality occurs as the result of the presence of some other focus of disease in the body, it is this primary lesion which calls urgently for treatment. Again, should erroneous diagnosis of these conditions be made, treatment directed to their cure is more likely to result in harm than benefit to the patient.

I. *Hydrocele.*

This is the only one of these four conditions not essentially male, as it is occasionally met with in the labium majus, especially in little girls, as *Hydrocele of the Canal of Nuck*, when its treatment is that of excision of the sac through an inguinal incision.

Various types of hydrocele are met with in the male.

Diffuse Hydrocele of the Cord is a rare multilocular cystic condition of the whole scrotal extent of the spermatic cord, often extending up through the inguinal canal into the abdomen; and the treatment consists in dissecting the mass away from the cord, by no means an easy task.

Hydrocele of an Unobliterated Processus Vaginalis (congenital hydrocele) is a condition met with in young children and usually only diagnosed when there is some coexistent inflammatory condition of the peritoneal cavity, such as tuberculous peritonitis, which causes fluid to be exuded and gravitate into the vaginal sac. Congenital hernia is usually also present unless the opening in the neck of the sac is too small to allow of the passage of bowel or omentum, but is a fruitful source of misdiagnosis, the best point in differentiating the two conditions being the slowness with which the hydrocele fills and empties and the absence of resonance in the fluid swelling. In a young child both will be translucent. Treatment consists in excision of the sac through an inguinal incision as for hernia; should tuberculous peritonitis coexist operation should be put off till this has been cured, as not only is there grave danger of a tuberculous sinus following operation, but a spontaneous cure may result.

Encysted Hydrocele of the Cord presents as an ovoid swelling in or just below the inguinal canal; if in the canal it may be mistaken for a bubonocele but has no expansile impulse on coughing, and can often be drawn down out of the canal by gentle firm tension on the testicle and cord, when the upper limit of the mass can be defined. Rarely chronic suppuration in the course of the cord, following gonorrhœa or tubercle, may cause a similar pyriform cystic tumour. Treatment consists in cutting down on the swelling through an inguinal incision and dissecting it off the cord, a difficult task since the membrane is thin and friable.

Hydrocele of the Tunica Vaginalis (hydrocele) may result from effusion into the tunica vaginalis secondary to some disease of the testis, or obstruction to its venous return, or may be the result of primary irritation of the lining membrane of the sac. It can be diagnosed by its translucency and tapering upper end.

Secondary Hydrocele may result from (1) acute or chronic inflammation of the testes or epididymis, as in gonorrhœa, tuberculosis, or syphilis; or (2) follow on a testicular tumour. In the acute cases there is pain, and examination of the testes and adnexa after "tapping" the hydrocele reveals that they are enlarged. The condition may also be present, as a bilateral affection, in cases of ascites due to advanced cardiac and renal disease, carcinoma of peritoneum, retroperitoneal tumours, and chylous ascites (when the hydrocele fluid is also milky), due to lymphatic obstruction in filarial elephantiasis and blockage of the thoracic duct. In all these cases treatment must aim at the eradication or alleviation of the primary disease, no local treatment other than tapping being indicated.

Primary or Idiopathic Hydrocele can only be safely diagnosed when the foregoing conditions, and the possibility of a hydrocele in the fundus of a hernial sac, or even an irreducible hernia, have been eliminated. Treatment of the condition is operative and should, except in very old or debilitated patients, aim at effecting a radical cure by removal of the secreting membrane, though tapping may often be necessary as a diagnostic step. The patient should be seated or, better, lying on a bed or couch for this operation.

Tapping.—The position of the testes having been ascertained (usually by touch and the patient's sensation, though transillumination may afford valuable indication of its position), the pyriform scrotal swelling is grasped in the palm of the hand, and the penis being held away by the thumb the skin is made to stretch tensely over the mass. The scrotum is now painted with 2 per cent. iodine in spirit, and an area on the front free from veins being selected, a sterile trocar and cannula are plunged sharply in, the trocar withdrawn, and the fluid allowed to escape through the cannula, the hand being used to press out the fluid toward the cannula. The trocar needs plunging sharply through the tense skin and tunica, both of which it can be felt to pierce, and then a sense of loss of resistance is encountered as it enters the fluid. The common source of inability to obtain fluid is that owing to the skin not being held tense and insufficient force used the trocar slips along the outer surface of the tense tunica between it and the skin, but occasionally it is plunged into the testes, as evidenced by the patient experiencing sickening pain, when it should be immediately withdrawn and reinserted smartly elsewhere.

When no more fluid escapes, the cannula is withdrawn and the opening sealed with gauze and collodion. Some surgeons prior to withdrawal insert a few minims of irritable fluid such as pigmentum iodi, or strong carbolic, which is massaged around, with the object of destroying the endothelial lining and so effecting a radical cure, but this proceeding causes some pain and the results are not on the whole satisfactory, as loculation very often occurs.

Radical Cure.—A short incision is made upwards and outwards from the pubic spine; the scrotal root is to be avoided, as not only is the skin difficult to approximate accurately, with consequent delay in healing, but fouling of the wound, with consequent sepsis, is very liable to occur during the use of the bedpan and urine bottle. The sac of the hydrocele having been exposed in the depth of the incision it is pressed well up into the wound from below and held there while it is incised alongside the cord. A fairly free incision should be made and the stream of fluid directed into a bowl, pressure being meanwhile maintained on the scrotum to empty the sac. The wound is mopped out, and the edges of the sac grasped in forceps, and the whole tunica and testis pulled up through the wound and separated gently from the surrounding cellular tissue, in which all bleeding points must be secured if hæmatoma of the scrotum is to be avoided. This is a serious complication in that it is very liable to infection, with resultant sloughing of the testes; unless, therefore, absolute hæmostasis is assured it is well to drain the scrotum for 24 hours through the lower end of the incision by means of a corrugated rubber drain. Two methods are in vogue for the treatment of the tunica vaginalis, which is now freely exposed, lying on gauze outside the wound :—

1. The simpler method recommended by Winkelbaum can be practised only on thin-walled hydroceles, and consists in everting the testis through the hole in the tunica vaginalis, which is thus turned inside out and secured in this position by a few stitches passing behind the cord and epididymis. The whole rather bulky mass is returned into the scrotum and the wound closed, the object being to secure adhesions between the endothelial lining and scrotal cellular tissue, and so ensure granulation and destruction of the former. The disadvantage of this method is that sometimes the endothelium grows over the cellular tissue and a pseudo tunica is formed, becomes filled with fluid, and recurrence results; this is the more likely to occur if a small hæmatoma has been present. The percentage of recurrences recorded is, however, small, varying from 1 per cent. to 15 per cent.

2. The surer method consists in clipping away the whole of the parietal portion of the tunica vaginalis, an easy operation, but one accompanied by severe bleeding from the numerous vessels in the tunica. It is advisable to under-run the entire cut margin by a continuous glovers' stitch of catgut to prevent scrotal hæmatoma. The testis is then returned to the scrotum and the wound closed, with drainage for 24 hours if hæmostasis is incomplete.

The wound should be dressed with gauze, retained in position by a suspensory bandage, which acts also as a scrotal support. The patient may get up in four or five days, but should wear a suspensory bandage for two or three weeks.

II. *Hæmatocele.*

The cause of a hæmatocele is nearly always a sharp blow or injury, but may occur as a complication of a malignant tumour of the testis, or in blood diseases such as hæmophilia, scurvy, or severe anæmia. Since in this case local treatment would be disastrous, a blood count should be done if there is any doubt. The tumour presents as a pyriform swelling in the scrotum, which may show subcutaneous bruising, and it can be diagnosed from a hydrocele by the fact that it is not translucent, and from a hernia by having no expansile impulse; moreover, its upper limit is defined.

Treatment in a recent case consists in supporting the scrotum in a tight suspender, or by strapping, and resting the patient in bed in an endeavour to limit the bleeding. Tapping should, if possible, be avoided for at least 48 hours, as it tends to cause recrudescence of the bleeding; but it should be practised as a routine after that time has elapsed. After the blood has been withdrawn the affected side of the scrotum should be strapped with zinc oxide adhesive plaster for four or five days, being previously shaved in an adult.

In older cases where clotting has already occurred and thickening of the tunica resulted, the only satisfactory treatment is operation by the inguinal route as for radical cure of hydrocele, and excision of the parietal tunica vaginalis. In very old-standing cases, where extreme thickening and fibrosis of the tunica and scrotal tissues exist, this operation may not be practicable; in such a case orchidectomy may be undertaken since the testis is usually atrophied and disorganised. The wound should be drained for 24 hours, whichever course is adopted, since oozing from the scrotal cellular tissue is almost impossible to control. Such old-standing cases are not infrequently diagnosed as neoplasms of testis, and it is practically impossible to be certain that a testicular tumour does not coexist with the hæmatocele; for this reason orchidectomy should be carried out as the operation of choice.

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(*To be continued.*)

Special Articles.

VACCINIA AND VARIOLA.

DR. MERVYN GORDON'S STUDIES OF THE VIRUSES.

DURING recent years the Medical Research Council has given every encouragement to research work on filterable viruses and the diseases for which they are responsible. In the National Institute for Medical Research at Hampstead and at certain suitable centres elsewhere a general programme of investigation is being carried out. The work undertaken by Dr. Mervyn Gordon at St. Bartholomew's Hospital has now been published as M.R.C. Special Report No. 98.[1] Dr. Gordon chose vaccinia for special study because this virus lends itself readily to experimental work, and in the research now published he has certainly clarified and advanced our knowledge of these viruses and introduced methods which may be serviceable in the study of less known or unknown viruses.

The report is divided into three sections, the first of which occupies about a quarter of the book and gives an account of some previous studies of the virus of vaccinia and outlines the scope of Dr. Gordon's own researches. The middle half is devoted to a description of the author's studies of the virus of vaccinia and the last quarter reports some very interesting experiments with the virus of variola. Appended to the report are five instructive photographs, three of which illustrate the generalised eruption in alastrim and varicella, a coloured picture represents the type of lesions obtained in the experimental work on the shaved skin of the rabbit, and a fifth photographs the agglutination of vaccinia virus.

1. *Introduction.*

For most readers the second and third sections of the report will possess chief interest. We shall not therefore attempt to epitomise the already condensed review of previous studies reported in the introduction, but merely call attention to some of the problems connected with the virus of vaccinia on which this scholarly review throws further light. The filterability of vaccinia virus has been a much debated question, but it is clear that the difficulty experienced by many investigators in getting the virus to pass through a Berkefeld filter is not due to the large size of the organism so much as to its adsorption by the material of which the filter is composed. There is no doubt that the rabbit is susceptible to vaccinia and that immunity may be established by about the sixth day after subcutaneous, subdural, intracerebral, or intravenous inoculation of the virus. Serological methods of study have established the fact that in the course of development of immunity three specific antibodies make their appearance in the blood—namely, a virulicidal or antivirulent substance that possesses the capacity of inactivating vaccinia virus in vitro, a precipitating or agglutinating antibody that causes flocculation of the virus, and a complement-fixing antibody. The precise nature of the antibody which has received the cumbersome and somewhat vague name of "virulicidal" is far from clear at the present time; a curious attribute is revealed by the observation that the virulicidal power of a serum decays faster than the immunity. The precipitating antibody also needs more accurate definition, and the use of the term precipitin would appear to be premature until it has been shown that the substances in the filtrate upon which the reactions depend are really in solution. The complement-fixing antibodies are of constant appearance in response to infection either by vaccinia or variola virus, and the complement-fixing antibody excited by one of these viruses reacts also with the other; but beyond that the reaction is specific. A point of special interest in connexion with passive immunity is the natural transmission of what appears to be a passive immunity from a mother immune to vaccinia to her fœtus. In a case recorded by Béclère, a child proved immune to vaccinia although twice inoculated cutaneously with active vaccinia virus within a month of birth. The blood of the mother and also that obtained from the umbilical cord both contained the virulicidal substance, although the former was the stronger in this antibody. This transmitted immunity is, of course, transient. Dr. Gordon also refers to the successful treatment of patients suffering from variola with the serum of small-pox convalescents, the blood being collected between the twenty-fifth and fortieth day, when the virulicidal power of the serum is at its maximum.

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[1] Studies of the Viruses of Vaccinia and Variola. By M. H. Gordon, C.M.G., C.B.E., D.M., F.R.S. H.M. Stationery Office. 3s. 6d.

The *later* sections of the report contain important observations on the relations between the viruses of vaccinia and variola, and in reviewing previous inquiries into this question the author remarks that experimental work on serological lines has hitherto been weak on the quantitative side, a defect which, it will be *seen, has to some* extent been removed by the more accurate technique which Dr. Gordon has introduced. In his work the skin of the rabbit was used as a "*reagent*" *for detecting* the presence of vaccinia virus and the test was made quantitative by submitting material to a known degree of dilution before inoculation. He used also the rabbit's skin as a culture medium for providing supplies of this virus by the simple expedient of killing the rabbit and harvesting its lesions at the height of their development. For further details of his technique the original report should be consulted, wherein all experiments are described with exactitude. We pass now to the second section which deals with studies of the virus of vaccinia.

2. *Studies of the Virus of Vaccinia.*

One of the first investigations undertaken was a study of the relative potency of various specimens of calf lymph in use in this country for purposes of vaccination, and after each had been submitted to decimal dilution the degree of their individual capacity to produce vaccinia on the rabbit's skin was determined. We notice from the published protocol that very significant variation existed amongst these lymphs, the most potent being active at a dilution of 1 in 100,000, whereas the weakest only at 1 in 10. This experiment alone points to the urgent need of some compulsory standardisation of vaccine lymphs supplied to vaccinators. As regards their reciprocal immunising action all these individual strains of virus appeared to be identical. Disinfection experiments showed that vaccinia virus is more susceptible to the action of acid than of alkali and that the virus withstands ether comparatively well. But the outstanding feature of the disinfection experiments was the very high value that potassium permanganate appears to possess for destroying in vitro the virus of vaccinia. Experiments on the effect of heat on vaccinia virus showed that an exposure for 30 minutes to 55° C. reduced the active virus by over 99 per cent., but did not destroy it completely. A number of experiments were undertaken to determine the extent to which active immunity to vaccinia can be produced in the rabbit by prophylactic use of this virus after attenuation or destruction by various measures. These proved that a substantial degree of immunity can be produced by vaccinia virus after being heated for 30 minutes at 55° C. provided that the condition of the virus as regards potency was good in the first place and that the dose reached a certain critical or effective strength. This immunity appears four days after subcutaneous injection and thereafter rises rapidly. By the hundredth day a decrease had occurred but a certain degree of immunity could still be detected. Several experiments were designed to study the specific antibodies to vaccinia, and Dr. Gordon has formed the opinion that vaccinia virus excites the production of specific antibodies in the blood of the rabbit after the fashion of ordinary pathogenic bacteria. The complement-fixing antibodies and agglutinins appear to be equally specific for the viruses of vaccinia or variola. Some observations furnished evidence of the presence of lysin in anti-vaccinia serums, but no systematic attempt was made to define the part played by this antibody in immunity to vaccinia. The question as to whether the serum of rabbits immunised against vaccinia is capable of protecting others from this disease was investigated by means of some carefully planned experiments which showed that anti-vaccinia serum which possesses definitely protective properties against the virus of vaccinia may be prepared in the rabbit. One c.cm. of this serum protected against 100 minimal vaccinial doses of virus. Having by means of the cutaneous test of virulence established a sufficiently accurate method of determining the abundance of vaccinia virus in a given suspension, Dr. Gordon proceeded to study the effect on this virus of gravity, centrifugation, and passage through a Berkefeld filter. These experiments definitely proved the virus of vaccinia to be particulate. When a suspension of the virus was allowed to stand 3–10 days in a long narrow tube the top layer was found to be less active than the bottom. The centrifuge reduced the virulence more in two hours than gravity did in three days, but in both these tests the complement-fixation test, being less delicate than the virulence test, failed to detect any difference between the surface and deeper layers. The Berkefeld filter removed the virus so thoroughly from a suspension that all of the three indices of its presence—namely, virulence, complement fixation, and agglutination—although strongly positive before filtration, were thereby rendered negative.

Some particularly interesting experiments are reported by Dr. Gordon on the permeability of various surfaces of the rabbit to the virus of vaccinia. These can be best described in a quotation from the report (p. 87):—

> Employing as chief criterion the production of immunity, evidence has been found that in the absence of mechanical injury and under approximately natural conditions the virus of vaccinia is capable of penetrating the system of the rabbit through the external auditory canal, the ocular conjunctiva, and the nasal mucosa; the last being the most permeable of these three surfaces, since a dose of virus so small as that contained by 0·01 mg. of calf lymph can successfully penetrate by that channel and produce immunity.
>
> When a dose of vaccinia virus of this magnitude, or above, gains access to the nasal mucosa of the rabbit, the animal after an incubation period of 6–8 days develops a condition of acute nasal catarrh accompanied by a mucopurulent discharge which in early stages contains the virus of vaccinia in abundance, and may also contain catarrh bacteria such as *pneumococci*. This acute stage does not last as a rule for more than a day or two. The catarrh may spread to the conjunctiva. The animal is not seriously ill, and the condition closely resembles that of acute nasal catarrh in the human subject.
>
> Immunity can be produced in the rabbit by the nasal route with vaccinia virus that has been attenuated by exposure to 55° C. *for* 30 minutes, provided that the dose is of the size found necessary in previous tests of this matter, employing the subcutaneous route. There is reason to believe that similar success may be *obtained* by the oral route if a large enough dose of the heated virus is given.
>
> When scarification is employed, the skin is more susceptible to the virus of vaccinia than is the nasal mucosa without trauma.

3. *Studies of the Virus of Variola.*

During the period that the investigation of the virus of vaccinia that have been described in preceding sections were in progress the occurrence of several outbreaks of small-pox in this country afforded an opportunity of testing examples of variola virus in a similar way to vaccinia. Dr. J. C. G. Ledingham has recently reviewed in these columns the experimental evidence in favour of the unity of the alastrim and variola virus (The Lancet, 1925, i., 199). With his views Dr. Gordon appears to be in substantial agreement, and we pass therefore to record briefly the experiments recorded in the M.R.C.

report which bear on this important question. Dr. Gordon found that samples of variola virus obtained from cases of the mild and severe types of small-pox respectively had no effect on the rabbit, though they both affected the monkey when inoculated cutaneously. Vaccinia appeared to protect the monkey against either of these strains of variola virus better than the strains of variola protected that animal against vaccinia. It is particularly interesting to notice that specimens of variola virus from five outbreaks, including three of the mild and two of the severe type of small-pox, were all found to react positively with antivaccinia serum in the complement-fixation and agglutination tests. Dr. Gordon observes (p. 135)—

> As these laboratory reactions appear to be specific for the viruses of vaccinia and variola, there is good reason to believe that they are capable of affording valuable assistance in the practical diagnosis of small-pox, especially in doubtful cases where such help is most needed.

Thus no difference could be detected between the virus of the mild or alastrim type of small-pox and of the more severe type of this disease, except in regard to virulence for the monkey. The argument would have been even more conclusive had it been possible to employ cross tests of the capacity of virus from alastrim to protect a monkey against virus from severe cases of small-pox and vice versa. Nor has an antivariola serum yet been prepared by which the relation of various strains of variola virus to each other and to vaccinia respectively can be determined.

Before concluding our brief summary of this notable contribution to the literature of virus infections, which the laboratory worker will find stocked with valuable experimental detail, we wish to draw attention to three pages of the report which the general reader will find particularly interesting. In the section on the relationship between the viruses of alastrim, variola, and vaccinia (pp. 105–107) Dr. Gordon explains by the aid of a diagram his view that the vaccinia virus consists of equal parts of vaccinia and variola elements, and adds some striking quotations from the writings of Jenner and his biographer, which prove that Jenner himself had distinguished the two different manifestations of small-pox and yet realised their essential unity.

We propose to comment on certain other points raised by Dr. Gordon's work, particularly on the permeability of the nasal mucous membrane of the rabbit to vaccinia virus and the catarrh provoked.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.[*]

(Continued from p. 723.)

Society of Apothecaries of London.

(App. LXXXVI. and Q. 21218–21236.)

EVIDENCE was given jointly on behalf of the Society of Apothecaries of London and of the Association of Certificated Dispensers by Dr. A. D. Brenchley and Dr. R. B. C. Wall, by Mr. Graham Bott and Mr. A. Wager.

By Section XVII. of the Apothecaries Act, 1815, it is not lawful for any person (except as in the Section mentioned) to act as an assistant—i.e., a dispenser—to an apothecary—i.e., a Licentiate of the Society—in compounding or dispensing medicine without obtaining the certificate of the Court of Examiners established by the Act. Dispensers who are holders of the certificate have been largely engaged by medical men or public institutions, and it was submitted that the nine months' training required by the Society's syllabus and the examination which candidates for the dispensers' certificate have to pass fully guarantee their fitness to dispense medicines.

The witnesses contended that the position of these dispensers had been prejudicially affected under the National Health Insurance Acts, and urged that holders of the certificate who had three years' practical experience should be recognised under those Acts for all purposes of dispensing supply of medicines. Although such a claim to recognition was adversely reported on by a Departmental Committee in 1913, the witnesses pointed out that the period of training had been raised from six to nine months, and further, that they proposed three years' practical experience in dispensing as a qualification. No claim was made that these dispensers should be allowed to keep chemists' shops.

East of Scotland Dentists' Panel.

(App. LXXVII. and Q. 19900–20114.)

This evidence, which was given by Mr. A. E. Miller and Mr. W. Arbuckle, followed in all essential respects that given by the dental surgeons in England. The recommendations put forward included one as to the necessity for a wide extension of dental treatment, and for its establishment as a permanent benefit, and the need for a separate administration in Scotland. Statements were made as to the dangers of dental disease, the insufficiency of the present "additional benefits," and the advantages of the panel system over a system of clinics.

The witnesses were asked how long it would take before the suggested saving in the cost of medical benefit brought about by a national scheme of dentistry would be reflected in the acceptance by the doctors of a lower capitation fee. The answer was that they were not interested in the question. On the question of a check against over-attendance, the witnesses did not think that the dentists were prepared to accept a scaling down of their bills.

> Suppose in respect of a simple filling, which is 5s., at the end of the year, there was not enough money to pay all your bills, and instead of getting 5s. you only got a dividend of 4s., what then?—I did not think this was to be a sort of gamble.

Evidence of the Association of Poor-law Unions.

(App. XC. and Q. 21632–21725.)

It was submitted by Mr. R. A. Leach on behalf of the Association: That boards of guardians should be treated equally with other local authorities in respect of grants made from the National Exchequer for health work; that other local authorities should not only be under no disability from entering into agreement with boards of guardians for the performance of any health work which the boards are doing for non-insured classes, but that encouragement should be given in every way to such agreements being entered into; that in the case of an insured person who has no dependants entering the Poor-law institution for medical treatment the guardians be legally empowered to enforce payment to them by the Approved Society of any benefit payable in respect of the insured person during the period of his or her stay in the institution.

It was contended that the Poor-law medical service, both domiciliary and institutional, was excellent. As regards salaried officers remaining with the guardians, it was explained that while the younger men might hold short-time engagements in the same way as house surgeons in a general hospital, the principal medical officers tended to remain in the permanent service of the guardians. While the National Insurance Scheme had effected a lightening of domiciliary medical relief under the Poor-law, there had been a considerable increase on the institutional side.

As to possible changes in local health services:—

> Your contention is that if medical treatment was put under some new local health service, it would not alter the fact that it was Poor-law treatment under another name. That is your point of view, is it not?—That is so, and I think myself it would be a great pity that the functions as regards the destitute poor should be entrusted to any authority which has duties other than dealing with public assistance.

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[*] References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1369.

Association of Parish Councils of Scotland.

(App. LXXX. and Q. 20535–20636.)

Mr. M. A. Reynard, clerk to the Glasgow Parish Council, gave evidence to the effect that under the National Health Insurance Acts, as at present constituted, it is provided that no portion of the benefits payable under the Insurance Acts are to be allocated to boards of guardians or parish councils, where the insured person has been treated in a hospital belonging to such parish council. It was felt that not only is there an injustice in thus debarring parish councils from receiving payment from these persons for the treatment afforded, but also that, in many cases, the money is not put to a proper use.

The witness said that there was greater readiness nowadays on the part of the doctor and patient to accept Poor-law institutional relief, and yet that with 2250 cases of insured persons who were treated in hospitals by the Glasgow Parish Council last year, only £112 was voluntarily surrendered by the insured persons for treatment, as against an estimated expenditure of £12,000.

It was especially urged that where an insured person died in hospital and had no dependants any accrued sickness benefit should be paid over to the public authority. It was suggested to the witness that the Poor-law authorities had an already existing obligation to persons who were destitute, and that if insurance benefit were paid to an institution the effect would be that contributions by the State and by the employer would be used for the relief of rates.

As to the misuse of the funds by the patient, the witness cited a recent case of a patient who had just gone out of hospital and was squandering his sickness benefit money.

> He was entitled to his National Insurance money from December of last year up to date, and he frankly admitted to me that he had borrowed £3 on the strength of the £20 he was going to get, and he got drunk on it, and he came in demanding a certificate to go to his society and uplift the £20. I said to him, "What are you going to do?" He said, "It will keep me fine for a month anyway, and I will be back on you then."—And that is not an isolated case?—No, there are hundreds more of them. It is because of that that I am asking you to devise some method whereby we will get rid of that terrible waste of public money.

Evidence of Mr. W. J. Braithwaite.

(App. XCI. and Q. 21720–21827.)

Mr. Braithwaite, who was at one time secretary to the Joint Committee of National Health Insurance, confined his evidence to a recommendation that the system of payment per case instead of the capitation system—at any rate, for industrial areas—wanted more consideration by doctors and others than appeared to have been given to it.

The case system, he said, which involves the payment for each case treated, removed the suspicion that a doctor might not be glad to see an insured person, made it possible to introduce specialised services into the insurance system, gave the doctors at least the same interest in the quick recovery of their patients as did the capitation system, and resulted generally in a close approximation to the conditions of private practice.

Mr. Braithwaite said that the difficulty about chronic cases could be obviated by defining the period of an illness which would constitute a "case." Speaking from his recollections of the working of this system in Germany in 1910, the witness said that machinery would, of course, be necessary to guard against the possibility of "cases" being unduly multiplied.

It was suggested in the course of examination that if there was any tendency to multiply cases the psychological advantages of the system might be severely discounted by the friction and suspicion which might be engendered by the machinery of a check. The witness appeared to think that any attempt on the part of one doctor in a district to increase "cases," with the result that the remuneration of the other doctors was cut down, might fairly be left to the doctors themselves to provide adequate safeguards, as with the Manchester attendance system at present.

THE LONDON MEDICAL EXHIBITION.

THE Medical Exhibition, which has just been held at the Central Hall, Westminster, proved, as we indicated last week, a decided success both from the point of view of the number of medical visitors and the scope of the exhibits; and the fact that a similar exhibition will be opened in the Philharmonic Hall, Liverpool, on Nov. 24th next for four days shows how much these exhibitions are appreciated. Among the reasons for this are the opportunity which is thus given to the medical man for making himself familiar with the more recent technique while affording him a means of selecting particular drugs and appliances which he may find useful in his daily practice.

While it is impossible to make any exact classification of the exhibits owing to their wide scope and the overlapping among the exhibitors of medical and surgical exhibits, we make the following broad divisions: Drugs and Foods, including Milk and its Preparations; Instruments and Appliances; Spas and Waters; and Medical Publishers.

DRUGS AND FOODS.

ALLEN AND HANBURYS, LTD. (37, Lombard-street, London, E.C., Vere-street and Wigmore-street, W.), in addition to their standard dietetic and pharmaceutical preparations, drew particular attention to Iodolysin, a soluble compound of thiosinamin containing 47 per cent. of iodine, which in many hands has proved so useful in rheumatism and allied conditions, and to sodium tetrabromphenolphthalein, for the X ray diagnosis of diseases of the gall-bladder.[1] Other notable exhibits of this firm were "Osmo" Kaolin for intestinal infections, the Lister Institute products—sera, vaccines, &c.—and Antivirus for use as a specific immuniser and bactericide in the treatment of local infections.—The exhibit of BURROUGHS WELLCOME AND Co. (Snow Hill Buildings, E.C.) provided a striking example of progress in scientific pharmacy. Amongst the more recent additions was "Hypoloid" Bismuth Metal, which places the potent spirillicidal properties of bismuth in isotonic glucose solution at the disposal of the physician; and "Kharsulphan," for subcutaneous or intramuscular injection, which provides a further simplification of arsenobenzol therapy; and "Iodicin," a product containing a high percentage of iodine in organic combination, in a pleasant, palatable chocolate base, is a very suitable means of administering iodine to children. Intensive iodine treatment is also facilitated by tabloid "Iodicin" capsules, each of which secures the administration of one grain of iodine in organic combination. "Ethidol," which contains 20 per cent. of iodine, is an allied product for use by injection into tuberculous abscess cavities, or for innunction in neuritis, rheumatoid arthritis, and sciatica. Vaccines, sera, tuberculins, and diagnostic products, prepared at the Wellcome Physiological Research Laboratories, were also displayed.—BOOTS PURE DRUG COMPANY, LTD. (Nottingham), had an exceedingly fine display of synthetic and medicinal chemicals, solution tablets specially made to facilitate the rapid solution of drugs, demulcent and medicated pastilles, and dressings and surgical sundries. Among antivenereal preparations were Stabilarsan, Bismostab, Thiostab, and Acriflavine, while insulin and pituitary extracts were prominently displayed.—THE ANGLO-FRENCH DRUG CO., LTD. (238A, Gray's Inn-road, W.C.), showed a wide selection of pharmaceutical preparations, those receiving particular attention being Adrepatine, a pluriglandular compound for the treatment of hæmorrhoids; Creosal Syrup, combining guaiacol, phosphoric acid, and calcium, for the relief of cough; Digibaine, an association of digitalin and strophanthin; Iodaseptine, an intravenous bactericide; and Omrgol, a suspension of colloid silver and gold. Labat syringes and needles were also shown.—BURGOYNE, BURBIDGES AND CO., LTD. (East Ham, E.), displayed Cooper's Colloids in comprehensive range, including argentum, arsenium, ironmalt, hydrargyrum, manganese, iodum, and sulphur, the latter being for bath medication and for internal administration.—BENGUE AND CO. (52, Charlotte-street, W.), in addition to their well-known Ethyl Chloride, showed various pharmaceutical preparations, including Eupargo for chronic constipation and hæmorrhoidal conditions; Muthanol, radio-active bismuth hydroxide suspended in olive oil, for use as a non-toxic spirillicide; and Forxol, a preparation of nucleogenic vitamins, for neurasthenia and diseases of nervous origin.

OXO, LTD. (Thames House, Queen-street Place, E.C.). In addition to the well-known products of this firm, Oxo, Oxo cubes, Hospital Oxo, beef essence, and Lemco, much interest was shown in their various "Oxoid" gland extracts, tablets, and fluid. Among them Pitoxylin, which is a new "Oxoid" endocrine preparation specially suitable for obstetrical, surgical, and general use, and consists of a sterile solution of the purified oxytocic and pressor substances from the posterior lobe of the pituitary gland. It is protein-free, and the undesirable ingredients have been eliminated so that the risk of inducing anaphylactic troubles when using the preparation is entirely avoided. Each batch manufactured is adjusted to a definite standard of activity. —G. W. Carnrick Co. (London agents: Brooks and Warburton, 40, Lexington-street, W.). Single gland and pluriglandular substances of many kinds were shown at this stand, where a 253-page book, "Organotherapy in General Practice," was at the disposal of medical men. Among the preparations to which attention was particularly drawn were Hormotone and Trypsogen.—Virol, Ltd. (Hanger-lane, Ealing, W.), in addition to Virol and Virolax, demonstrated the nutritive properties of Virol and Milk for nervous and mental fatigue after fevers and in convalescence generally, a golden-coloured powder which requires only the addition of hot water, and has been found of great use by nursing mothers.—Bovril, Ltd. (148–166, Old-street, E.C.), exhibited Bovril and Invalid Bovril, and Bovril and milk; and Vitmar, Ltd. (Callard's Vitamin Foods) (Standen-road, Southfields, S.W.), showed several forms of their food products.—Chas. Zimmermann and Co., Ltd. (9 and 10, St. Mary-at-Hill, E.C.), drew attention to Asthmolysin, a suprarenal-pituitary compound for relief in asthma, especially if due to hormone deficiency; Idozan, a therapeutic agent used in anæmia; and Posterisan, in the form of ointment and suppositories, a new vaccine therapy for local application in the treatment of hæmorrhoids and allied conditions.—The chief features of the exhibit by Oppenheimer Son and Co., Ltd. (179, Queen Victoria-street, E.C.), were Roboleine, now well known as a reconstructive food containing animal fats, maltose, diastase, and natural nitrogenous and phosphoric compounds with the three vitamins; Colloidal and organotherapeutic preparations, and the admirably adapted method of administering these last two by "Oscols" and Palatinoids. Particular attention was called by this firm to their automatic oxygen generator which is portable and safe and renders oxygen instantly available for medical use.—Parke, Davis and Co. (50, Beak-street, Regent-street, W.) had quite an interesting and attractive display of pharmaceutical preparations, among them being Dibromin, a practically non-toxic germicide used in dilute solution as a wet dressing, douche, or gargle; Metagen, a concentrated vegetable extract containing water-soluble and fat-soluble vitamins; and Metagen and cod-liver oil emulsion; Olgar, containing liquid paraffin of high viscosity with agar; and Neo-Protosil, a readily soluble colloidal silver iodide compound. This firm also showed vaccines prepared under the direction of Sir Almroth Wright at St. Mary's Hospital.—Lionel Cooper (14, Henrietta-street, Covent Garden, W.C.) had an interesting exhibit, and particularly noticeable among the many medical preparations was Milesia, a tablet containing 3 gr. of magnesium hydrate, Presoiod, an iodine solution, and Sil-Al, a physiologically pure silicate of aluminium.—C. H. Hewlett and Son, Ltd. (35–42, Charlotte-street, and 83–85, Curtain-road, E.C.), exhibited a selection of their antiseptic cream, medicated skin lotions, formalin mouth wash (Gargar); Hæmorrhaline, an improved ointment for hæmorrhoids; and Hormonigen, a combination of pluriglandular extracts; as well as surgical instruments, dressings, and sprays.—Howards and Sons, Ltd. (Ilford, E.), who supplies ether for anæsthetic purposes to many well-known hospitals, made a prominent feature of their Hydrogen Peroxide and of their Agotan brand of Phenylcinchoninic Acid as a remedy for rheumatism, gout, rheumatoid arthritis, brachial neuritis, neuralgia, sciatica, and gouty skin diseases.—Menley and James, Ltd. (64, Hatton Garden, E.C.), showed Iodex, a therapeutically active iodine in an emollient base, which does not stain or irritate the skin and is quickly absorbed.—W. Martindale (10, New Cavendish-street, W.), who displayed a large assortment of drugs and medical preparations, put up in attractive forms, drew attention to their absorbent moss surgical dressing; Aspriodine, a new compound of aspirin and iodine, as the name implies; and Phenoltetrabromphthalein, Tetraiodophthalein, and Tetrachlorphthalein for gall-bladder visualisation and liver function tests. This is referred to in the "Extra Pharmacopœia" of Martindale and Westcott, Vol. II., 1925.—H. R. Napp, Ltd. (3 and 4, Clement's Inn, W.C.), attracted much attention by their demonstration of rats showing the growth of carcinoma produced by the injection of tumour pulp and by the display of wax models showing the treatment of tuberculosis and allied mixed infections by cutaneous inoculation. Among the preparations shown were Ponndorf, for cutaneous inoculation in tuberculosis; Xifal Milk, a combination of sterilised milk; a vaccine for injection in epilepsy, myocarditis, and infantile paralysis; and Hypertherman, an injection for the protein body therapy of obesity. Vaccines and sera were shown in variety.—Hoffmann-La Roche Chemical Works, Ltd. (7 and 8, Idol-lane, E.C.) Allonal, which was prominently displayed at this stand, was reported upon in The Lancet as recently as Oct. 3rd, p. 700, as well as chocolate Iodostarin for the prophylaxis and treatment of simple goitre. Sedobrol Sedative Bouillon was also shown. This consists of sodium bromide incorporated in a mass of vegetable extractives put up in tablets. It is prepared by dissolving one or two tablets in a cup of boiling water. It is non-poisonous and non-narcotic.—May and Baker, Ltd. (Battersea, S.W.), showed a very fine range of drugs and chemicals, especial prominence being given to anti-venereal remedies, including Novarsenobillon, which has been approved by the Ministry of Health for use under the Venereal Diseases Regulations. This remedy has also been used in yaws, malaria, and rat-bite fever. Ametox, a purified and sterilised sodium thiosulphate for use as an antidote to metallic intoxication, especially in arsenical dermatitis and bismuth and mercury stomatitis, was shown among other drugs, as well as Mestarine, the sodium salt of theobromine N-acetic acid, which is a new addition to diuretic medication possessing stability and ready solubility.—Schering, Ltd. (3, Lloyd's-avenue, E.C.), prominently displayed samples of the medicinal products from their laboratories; Atophan, phenylchinolin carboxylic acid, for all diseases associated with uric acid diathesis; Atophanyl, a solution of sodium salts of atophan and acid acetyl sal. with 0·16 per cent. of novocaine, for injection in the treatment of laryngeal catarrh and other affections; and Maturin (the original product phloridzin), a preparation which produces artificial glycosuria in early pregnancy for the diagnosis of which it is employed.—W. Dederich, Ltd. (Stanley House, Dean Stanley-street, Westminster, S.W.), drew attention to Ichthyol, a sulphonated schist oil preparation containing a high percentage of sulphidic sulphurs. Other preparations shown by this firm were Ichthargan and Ichthoform, the former containing 30 per cent. of silver, the latter being an ichthyol-formaldehyde preparation. Mergal, a mercurial compound for the treatment of syphilis by oral medication, also received prominence.

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[1] THE LANCET, July 11th, 1925, p. 68.

Angier Chemical Company, Ltd. (86, Clerkenwell-road, E.C.), displayed Angier Emulsion (petroleum and hypophosphites), each fluid ounce of which contains 33⅓ per cent. of purified petroleum, 9 gr. of combined hypophosphites of lime and soda, with chemically pure glycerine.—Crookes Laboratories (22, Chenies-street, W.C.), devoted entirely to the manufacture of colloids, showed a wide range of these products, and with regard to Collosol Ichthyol claim with pride that it is a natural ichthyol of entirely British origin.—Anglo-American Oil Co., Ltd. (Albert-street, Camden Town, N.W.), exhibited their well-known Nujol and Mistol, and in addition, other preparations of liquid paraffin, including Semprolia, a petroleum jelly in both yellow and white colour, which can be conveniently used as an ointment base, and Semprolax, a palatable preparation containing 80 per cent. of liquid paraffin.—Dimol Laboratories, Ltd. (40, Ludgate-hill, E.C.), showed their product Dimol, a benzene derivative, dimethylomethoxyphenol in combination with the tri- and tetramethylopheno, is a bactericide which is claimed to be 35 times more efficient than pure phenol; it is not absorbed and is voided with the fæces. Indicated in putrefactive and other bacterial invasions of the intestinal tract, it is put up in the form of pulverettes, syrup, pastilles, lavage powder, ointment, snuff, and as a dentifrice.—Deshell Laboratories, Ltd. (Premier House, 150, Southampton-row, W.C.), exhibited Petrolagar, an emulsion of liquid paraffin and agar-agar, which is supplied (plain, alkaline, phenolphthalein, and unsweetened). It contains 65 per cent. of pure mineral oil of high viscosity and 10 per cent. of agar-agar.—British Alkaloids Co. (104, Winchester House) displayed antiseptics and germicides.

A large number of illustrated pamphlets showing the many uses of Antiphlogistine in medical and surgical practice and in dentistry were displayed by the Denver Chemical Manufacturing Co. (London, E.), and their product, the well-known antiseptic poultice which is indicated in inflammatory and congestive conditions, received much attention.—Genatosan, Ltd. (Loughborough, Leicestershire), in addition to Sanatogen, Genasprin, and Formamint, exhibited a new detoxicated vaccine prepared from *B. pneumosintes* for the treatment and prophylaxis of influenza.—Kolynos (Incorporated) (Chenies-street Laboratories, W.C.) showed their well-known non-gritty dental cream, which does not stain the teeth and is very refreshing and pleasant to use as well as being a reliable antiseptic, and the Pepsodent Co. (42, Southwark Bridge-road, S.E.) their equally well-known acid dentifrice, which stimulates the salivary glands and gives a brilliant polish to the teeth. It contains no injurious ingredients.—Jeyes' Sanitary Compounds Co., Ltd. (64, Cannon-street, E.C.), had a display of Cyllin in its many adaptations as a bactericide, whose slight toxicity makes it suitable for employment as an internal or external antiseptic. For medical and surgical uses the preparation has a Rideal-Walker co-efficient for *B. typhosus*, 24 to 26.—Newton Chambers and Co., Ltd. (331, Gray's Inn-road, W.C.), exhibited the Izal disinfectant specialties: Thermogene Co., Ltd. (Haywards Heath, Sussex, and Victoria Embankment, E.C.), showed their curative wadding, Thermogene, which stimulates the circulation in affected parts and relieves congestion and inflammation: J. C. Eno, Ltd. (Pomeroy-street, S.E., and Victoria Embankment, E.C.), drew attention to their effervescent saline laxative, Eno's Fruit Salt; and Keen Robinson and Co., Ltd. (incorporated with J. and J. Colman) (London and Norwich), showed various preparations of barley and mustard.—The City Soap Works (Wapping, E.) exhibited Gibbs's various soaps, shaving creams, and dental cream; the Pinoleum Co., Inc. (Distributing agents, Brooks and Warburton, 40/42, Lexington-street, W.), demonstrated the use of Renoleum, an anodyne, antiseptic, and emollient preparation for medication of the mucous membrane of the throat and nose; Pastilles, Ltd. (124, High-street, Shoreditch), had a display of Lakerol Bronchial Pastilles; and Irving's Yeast-Vite Laboratories (Cecil House, Holborn Viaduct, E.C.) showed yeast tablets.

Jaeger Co., Ltd. (95, Milton-street, E.C.), displayed their well-known wool underwear. Endocrines, Ltd. (distributors for the Harrower Laboratory, 72, Wigmore-street, W.), exhibited pluriglandular preparations under the name of Polycrines. There were over 80 combinations of ductless glands in tablet form ("sanitablet"), every dose being enclosed in an airtight damp-proof envelope. Among new preparations are Sol. Placento-Luteum Co., for use in the vomiting of pregnancy, while attention was also particularly called to Adreno-Spermin Co. for neurasthenia; Pan Secretin Co., for diabetes; Thyro-Ovarian Co., for dysmenorrhœa; and Gonad Co. for rejuvenation. Many of the preparations are put up in ampoules for hypodermic injection. This firm presented free to medical men a 300-page book, "A Manual of Pluriglandular Therapy."—Organotherapeutical products were also shown in large variety by the British Organotherapy Co., Ltd. (22, Golden-square, Regent-street, W.). Among others noted were the Lymphoid Compound and Lymph Serum, pluriglandular preparations which have been used in nervous disorders resulting from the war and otherwise and in securing the rejuvenation of elderly people; extracts of the brain and spinal cord; Corpus Luteum Extract; Eukinase, prescribed in the treatment of intestinal indigestion and chronic constipation; Gastric Mucosa Extract, for gastric dyspepsia; *Hepatic* Extract, for liver torpor; and Lymphatic Gland Extract, for the treatment of adenoids without operation. The preparation Hæmatothyroidine was also shown. This is employed in the treatment of exophthalmic goitre, as well as Saccharomycin, an isothermal, isotonic, and living yeast specially prepared for medical use.—Armour and Co., Ltd. (Queen's House, Kingsway, W.C.). At this stall a large selection of Endocrines were shown in the form of desiccated powder, tablets, capsules, liquors, and hypodermic solutions. Digestive ferments of all kinds are manufactured in the Armour Laboratories in Chicago, as well as surgical catgut and such specialties as glycerine and extract of red bone-marrow.

The Garden City Pure Food Co., Ltd. (95, Westminster Bridge-road, S.E.). The Soya Double Cream, Soy-Yeast, Soya Biscuits, and Soya Flour exhibited by this firm are primarily intended for diabetics, and there is an entire absence of starch or sugar in their composition. The Double Cream and Soy-Yeast are in powder form and are easily converted into food drinks. By a special process the unpalatable flavour of Soya preparations has been greatly modified and the products should make a useful addition to diabetic diet.—Mead's Infant Diet Materials (Distributors, Brooks and Warburton, 40/42 Lexington-street, W.). The Dextri Maltose and other infant diet materials prepared by this firm are intended to be prescribed by a medical man, consequently no directions are printed on the containers. The foods include Mead's Casec, used in the preparation of protein milk for the treatment of fermentative diarrhœa; Mead's Powdered Protein Milk with lactic acid; Mead's Certified Cod-liver Oil; and a reconstructed milk powder, Re-co-lac, a breast-milk substitute.—Savory and Moore, Ltd. (143, New Bond-street, W.), prominently displayed their well-known food, which can be prepared to approximately resemble *mothers'* milk in composition, together with their peptonised milk preparations.—Therapeutic Foods Co. (Energen Works, Bridge-road, Willesden, N.W.) prominently exhibited their starch-reduced foods standardised for use in dietetic treatments with constant proportions of carbohydrate and protein. These consisted of bread, biscuits, and flours, as well as cocoa essence.—Prideaux's Pure Casein and Life Food Co., Ltd. (Southwark-street, S.E., and Motcombe, Dorsetshire), exhibited dried full cream milk prepared entirely from new milk under hygienic conditions.—Cow and Gate Milk Food (Cow and Gate House, Guildford, Surrey). The product of this firm is manufactured by the West Surrey Central Dairy Co., and is also made in Dorset and Somerset from the milk of prize herds. The process of *manufacture eliminates all contamination*, and it is claimed for the food that it produces in infants results identical with those of healthy breast milk.—Glaxo Dried Milk Products (56, Osnaburgh-street, N.W.) showed their various forms of dried milk, Glaxo Malted Food, Glax-Ovo, and their Diabetic Milk Food. Prescription (Humanised) Glaxo was also made a prominent feature of the exhibit; and Ostelin, a high concentration of the antirachitic unsaponifiable fraction of cod-liver oil, called forth many inquiries. The Maltine Manufacturing Company's products have now been taken over by this firm.—Hooker's Malted Milk (Thew Hooker and Gilby, Ltd., Buckingham). This well-known preparation, which is completely soluble in either hot or cold water, is quickly prepared, and is of use both in sickness and health.—Horlick's Malted Milk Co. (Slough, Bucks). This is also a well-known preparation which had a prominent display.—Trufood, Ltd., Creameries (Wrenbury, Cheshire; offices, Lever House, Blackfriars, E.C.), showed their Humanised Trufood, which closely approximates to breast milk; Trufood Full Cream for use from 9 months onwards, for nursing mothers and for invalids; and Secway, a pure, sweet whey powder which can be used as the basis of feeding in gastric disorders, even in the case of young infants.—S. Guiterman and Co., Ltd. (35/36, Aldermanbury, E.C.), exhibited Cereal Meal, a food whose object is to produce normal daily intestinal evacuation; Brusson Jeune and Co. (311, Gray's Inn-road, W.C.) Gluten breads and foods for *diabetes, obesity, gout*, indigestion, rheumatism, and invalid dietaries; A. C. Fincken and Co. (107, Great Portland-street, W.) H-O Quick Cooking Oats; and Sister Laura's Infant and Invalid Food Co., Ltd. (Springfield Works, Bishopbriggs, Glasgow), a food for infants and invalids.—Cadbury Bros., Ltd. (Bournville, Birmingham), supplied to visitors cups of their delicious beverage and a book of useful recipes for making chocolate cakes and sweets.

(*To be concluded.*)

BUCHAREST.

(From our own Correspondent.)

Reform of the Workmen's Compensation Act in Roumania.

The Minister of Public Welfare has delegated Dr. George Cimponariu, the director of the central "sick club," to find out how unification of the sick club system may be accomplished, as the States recently incorporated into Roumania—namely, Transilvania, Bessarabia, and Bukovina—have each a *different* system, though in Bessarabia the treatment of workmen, both from a social and from a medical point of view, is very primitive. The most perfect system is the Transilvanian (formerly instituted by Hungary), and on it the new scheme will be *modelled*. Dr. Cimponariu says that the most important task of the sick club will be not only to give temporary help to the patients, but also to exercise medical control over all industrial undertakings and factories, and thereby combat the industrial diseases. The protection of workmen against tuberculosis will also claim attention. Mothers will be granted a considerably greater support than prescribed by the law. Under the new scheme a working mother will be granted a holiday at the time of her confinements, commencing four to six weeks previous to the event and continuing for eight weeks thereafter. Infants will be under medical supervision up to a certain age. In the larger factories day homes will be established where working mothers can feed their babies. It is unfortunate that no satisfactory method has as yet been suggested for protection against venereal diseases, which claim victims among the working class. According to recent statistics, every workman loses, on an average, 26 working days in a year on account of venereal diseases. The Central Workmen's Insurance Offices have also planned the erection of sanatoriums, although the present low rate of exchange prevents building. For this reason contracts were made with various private sanatoriums for a certain number of beds.

The Teaching of Roentgenology.

The study of roentgenology has for some time been compulsory in every university in Roumania, although students were not obliged to pass an examination in it. Recently, however, examinations in that subject, both theoretical and practical, have been made obligatory. If a student fails he has to continue the subject for two seasons. Coincidently with this ruling, all university clinics have been furnished with X ray apparatus of the transformer type, both for diagnostic and therapeutic purposes, and also the application of "deep therapy."

Medical Certificates for Marriage.

After the introduction of many medico-social institutions, as, for example, the nationalisation of the medical treatment of workmen, the establishment of free venereal and tuberculosis clinics in every large town, the granting of State support to the victims of industrial accidents in cases where the employers have gone bankrupt, the Government sent out to various countries a commission to study the different methods of controlling the health of couples intending to marry. The commission recommends the method practised in certain of the States of North America. It proposes to forbid all matrimonial offices to wed couples unless they produce a medical certificate (from any physician they may choose), the certificate to be signed by a sanitary officer, who has the right to examine the parties if any doubt arises as to the validity of the certificate. The discussion of this question in the daily papers is prompting intelligent fathers to demand, before consenting to the marriage of their daughters, that the suitor produce medical evidence as to his general health and freedom from venereal disease.

The Price of Alcohol Raised.

The pharmaceutical papers of Roumania are lamenting the new regulations regarding the alcohol monopoly, which extend the general tax on alcohol to alcohol used medicinally, which has hitherto been exempt. The manufacturers of perfumes and cosmetics succeeded in getting the tax reduced for their use, in order to protect this industry, which lately, owing to the intensive culture of roses and the manufacturing of rose-oil, has grown by leaps and bounds. Pharmacists are allowed to use a cheaper alcohol for tinctures and fluid extracts, but only if the process of preparation is done under the supervision of an official. The regulations provide for new officials for this purpose, and a medical paper, the *Viata Medicala*, remarks that the number of pharmacists will dwindle as the result of this measure, and consequently the manufacture of tinctures, and so forth, will fall into the hands of the manufacturing chemists, as was the case in Germany, whence this new regulation was copied.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Medical Men in the Senate of the Irish Free State.

THE final results of the election of 19 members of the Senate were announced last week. Two medical men are among the successful candidates. One of these, Mr. H. S. Barniville, was a previous member of the Senate, having been nominated one of the original Senate by President Cosgrave in 1922. He is one of the surgeons to the Mater Misericordiæ Hospital, Dublin. The other medical man who has been elected is Sir Edward Coey Bigger, formerly medical member of the Local Government Board for Ireland and chairman of the Irish Public Health Council. Sir Edward Bigger has always been an ardent influence in matters of health. He was one of the members of the Vice-Regal Committee on the Poorlaws which reported nearly 20 years ago, and in 1919 he was chosen as chairman of the Irish Public Health Council, which subsequently sent in a report recommending many drastic changes.

Royal Academy of Medicine in Ireland.

The annual elections at the Royal Academy of Medicine took place last week. Sir James Craig remains in office as President, and Dr. T. P. C. Kirkpatrick as general secretary and treasurer. The following, with representatives of the sections, constitute the General Council: Dr. A. F. Dixon, Sir J. W. Moore, Dr. T. G. Moorhead, Dr. G. E. Nesbitt, Dr, R. J. Rowlette, and Sir W. I. de C. Wheeler. The following Presidents of Sections have been elected: Medicine, Prof. F. C. Purser; Surgery, Mr. R. C. B. Maunsell, President R.C.S.I.; Obstetrics, Dr. D. G. Madill; Pathology, Prof. J. W. Bigger; Anatomy and Physiology, Dr. C. M. West; State Medicine, Prof. V. M. Synge.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt.-Comdrs to be Surg. Comdrs.: G. S. Harvey, W. H. Murray, and G. H. Hayes.

ROYAL NAVAL VOLUNTEER RESERVE.

A. J. Gilbertson, late Surg. Lt.-Comdr., re-entered as Surg. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS.

Maj. T. W. Stallybrass retires on ret. pay.

Capt. F. K. Tomlinson retires, receiving a gratuity.

Capt. N. Cantlie is restd. to the estabt.

REGULAR ARMY RESERVE OF OFFICERS.

Col. R. J. Blackham, late R.A.M.C., having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

ROYAL AIR FORCE.

The undermentioned Flying Officers are promoted to the rank of Flight Lt.: T. V. O'Brien and F. W. G. Smith.

INDIAN MEDICAL SERVICE.

The King has approved the promotion of the following officers: Majs. H. W. Pierpoint, W. D. H. Stevenson, H. P. Cook, P. S. Mills, W. J. Fraser, C. A. Godson, R. H. Lee, F. P. Warwick, W. A. Mearns, and R. G. G. Croly to be Lt.-Cols.

Capts. G. H. Mahony, G. Covell, W. R. Stewart (Bt. Maj.), Venkatasubba Mahadevan, and A. C. L. O'S. Bilderbeck to be Majs.

Capt. H. J. Rice is confirmed in his rank.

Capt. Vasantrao Dinanath Madgaokar relinquishes his temporary commission.

In the Legislative Assembly at Simla on Sept. 2nd, in spite of Government opposition, a resolution was carried that all further recruitment to the Indian Medical Service shall henceforth be only by an open competitive examination held simultaneously in England and India from the year 1926.

Captain E. R. Daboo officiates as Civil Surgeon, Sadiya, Assam. The Executive Council of Lucknow University has elected Major H. Stott to represent the University on the Medical Council of the United Provinces of Agra and Oudh. Major T. T. H. Robinson, D.S.O., has been appointed Civil Medical Officer, Ranikhet, vice Lieut.-Colonel W. C. Croly, D.S.O. On return from leave, Dr. W. G. Wince and Dr. C. H. Mason have been re-posted as Civil Surgeons at Wardha. Captain P. Verdon has been appointed District Medical Officer at Guntur. Major B. Gale has been posted to Amballa. Dr. Kali Charan Dube has been appointed Medical Officer of Health at Meerut, vice Dr. Nand Lal Varma, who reverts to the Provincial Medical Service. Colonel H. O. R. Browne Mason officiates as D.D.M.S. Western Command, vice Major-General S. F. St. D. Green, who has proceeded on leave.

THE MOTOR SHOW AT OLYMPIA.

Oct. 9th–17th.

(By our Motoring Correspondent.)

The nineteenth annual International Motor Car Exhibition, held by the Society of Motor Manufacturers and Traders, which closes to-day (Saturday) has fulfilled the expectations of everyone. The motor show has now been for a long time a national institution, and thousands, not only of the trade nor even of motor-car owners, but also of the vast car-less public, look forward to it eagerly, for all the cars they have recognised and coveted stand here in the glory of their show finish, open to be inspected and admired, opened and shut, sat in, and in imagination driven at great speed along straight black roads. Many makers have their engines sliced open, so that we can see for the first time exactly how sleeve valves or overhead camshafts work, and such anticipated wonders as the new six-cylinder Bentley, the "New Phantom" Rolls with six brakes, and the 25–70 sleeve-valve Vauxhall are at last realised.

A Retrospect.

The habitual visitor to Olympia always *feels*, the moment he enters the building, that he has come home. Except that it is half as large again, there is no apparent difference between the show to-day and the show of 1912. A few new names appear on the great white panels over the stands and the lights may be brighter and more numerous. The noise of the horns in the gallery is gone for ever. But the stands and the cars on them are neither larger nor more splendid than they were then, and unless one looks very closely neither machinery nor bodywork seems to have altered in anything but small detail. Actually, however, the change is vital. The doctor who wanted in 1912 to spend £200 on a car was tied down to about half a dozen makes, nearly all heavy and underpowered. There were no electric starters and electric lights, and none of those side-screens and screw-down hoods that make any open car waterproof in three minutes to-day. Most of the accessories were extras, and the tool outfit supplied with the car was heartbreaking. Next year came a rush of 10 h.p. two-seaters that, led by the far-sighted experiment of the Morris-Cowley, grew into eleven-nines after the gap made by the war, and then a year or two later into thirteens and fourteens, while a fresh crop of sevens, eights, and nines with incredibly powerful engines sprang up in their place.

There is no comparison at all between the Talbot or Gwynne 8, or the Austin or Jowett 7 of to-day and the A.C. and Singer 10 or the Morris-Oxford 9 of 1914, and the reason is the immense increase in knowledge that the war gave to the designer of all kinds of internal combustion engines, and in particular those of aeroplanes. A glance through a buyers' guide will show that power is now quoted in two figures—e.g., 8–16, 15–60, 20–60—the first being the taxable power and the second the horse-power the engine actually gives at its best speed. It is not an exaggeration to say that, size for size, engines are three times as powerful as they were before the war, and a glance at the Austin 7 or the Aston-Martin 11 shows that this improvement is not confined to engines with overhead valves, though more and more makers are fitting them.

1925.

The power-price of most cars is now back again approximately to what it was in 1914 and is not likely to go any lower, but it now includes a perfect lighting and starting set, an "all-weather" equipment that closes the car in almost as completely as a permanent top, a whole shop-full of accessories like mirrors, dashboard-lights, screen-wipers, luggage grids, clocks, air-stranglers, and safety-locks, and very often front-wheel brakes as well. The competition of the cheap American cars has provided the chief impulse to this development, but our manufacturers have responded to it in a way that does the country great credit. The Standard Motor Co. gave us the all-weather screening and Morris Motors took the lead in supplying the cheap car with all the accessories of the expensive one, especially one that is worth more than all the others put together, the system of greasing the whole chassis with one gun that fits on to special nipples.

Four-wheel brakes were fitted on the Argyll and the Isotta-Fraschini nearly 20 years ago, but only became popular about the beginning of last year—chiefly because of the way in which they contributed to the success of the Peugeots in the Grand Prix the year before. There is now hardly a car on which they cannot be fitted if required, and many have them as standard. They are excellent if they are properly adjusted, but apt to be highly dangerous if they are not. The front wheels must brake together, and most people prefer them to come on later than the back.

Returning to cars in general, however, we see that the 11·9 h.p. of 1½ litres, so general three years ago, is losing its hold on popular favour. There are now a great many twelves, such as the Morris-Oxford, Hampton and Bayliss Thomas, and fourteens and fifteens like the new Triumph, the Lagonda, and the Hillman, that are the descendants of former eleven-nines. The new 2½-litre car is very nearly the old family 15·9 that was so popular once, and it is most pleasant to see this convenient size reappearing. Five people could always be sure of finding in it ample room for their feet and a certain amount of luggage as well.

Two Examples of Modern Practice.

A very good example is the

Beardmore 16–40 h.p. These manufacturers are well known for their excellent aircraft engines and their taxis, and the new 16–40 will not fail to increase their reputation. They make a saloon for £550 in which there is that rarest of things, a really comfortable driving seat with all the controls in reach on the right-hand side. The pedals are adjustable and a wheel-base of 10 ft. 6 in. gives ample leg room. All these cars have front wheel brakes and stand close comparison with the £1000 class in every way. There is no better value to be found in the whole show.

The *Triumph* 15–50 h.p. is a similar model, but a little smaller. Triumphs were the engineers who rescued the British motor-bicycle from extinction in the first decade of the century; a year or two ago they produced one of the finest small cars in the country, and have now passed on to a 2-litre chassis. It would be very hard to beat the open five-seater at £395 or the four-door saloon at £405 or £400, but it is a pity they only fit three gears. The front wheel brakes are hydraulic, and every conceivable gadget is fitted, including a very good tool kit.

Tool Kits.

The result of a careful inspection of tool kits at the show was reassuring. Even the very cheap cars now carry a modest but perfectly adequate set, and the makers of the more expensive ones take care that their jacks and pumps shall be up to the standard of their cars, which they did not always do a few years back. Even so, there are very few who include a box of the spare nuts and small parts, the absence of which will sometimes keep a car in dock for a week. It was surprising, too, in how few cars a six-foot person could stretch his legs and at the same time reach gear- and brake-levers without leaning forward. Hand-brake levers are much longer and better placed than they were; the ones on the Lancia, Darracq, and Talbot pull upwards from the floor and give a tremendous leverage, but most of those on the right-hand side are far too near the coachwork. The A.C. has an excellent one, and nearly all the American cars are very good. One Italian car has a spade handle, and it is a pity more makers do not copy this, as it gives

grip, particularly to the left hand. On

though, makers of small cars are inclin

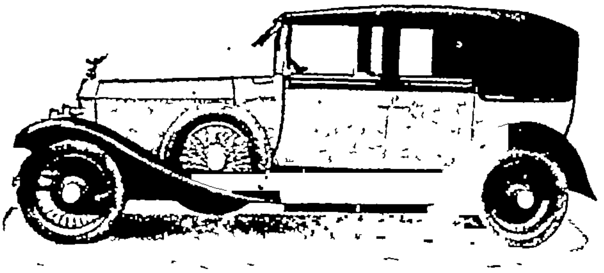
extra four inches which make all the difference, especially the Morris, where the hand-brake is the one blot on an otherwise beautiful control system.

Coachwork.

Body-work as a special industry remains at the same level of perfection.

Barker's Cabriolet de Ville has a folding roof that will cover all the seats or the back only as required, and will fold up completely in fine weather. As its protection when fully closed equals that of a saloon, it combines the advantages of all types of bodies. A splendid specimen of their work is on the large Rolls-Royce (Fig. 1) in blue and black, with upholstery in plain light cloth and a folding arm-rest.

Fig. 1.



Rolls Royce. Body by Barker.

Mann, Egerton and Co., Ltd., showed a 14–40 Vauxhall saloon and a 25–85 Daimler with their own four-door saloon body painted powder blue. An interesting exhibit was a 30 h.p. Minerva, enclosed drive limousine, the body staged in an unfinished state, from which could be judged the excellence of the coachwork before it was painted.

Offord and Sons, Ltd., exhibited among other cars a 14 h.p. Crossley saloon landaulette.

Windovers, Ltd., had fitted another of the Rolls exhibit, a 20 h.p. with a six-seater Brougham Limousine (Fig. 2) in black—a most handsome town car.

Belgravia Coachworks had a very attractive 3/4 Landaulette on a 14 h.p. Bean chassis and a saloon Limousine with six seats on a 17·9 h.p. Renault.

Coachbuilders are tending to make more use of the new scratchproof cellulose compositions and safety glass. Most of the bigger saloons have four doors, and windows are almost invariably raised and lowered by cranks or other mechanical devices. V-fronts are holding their own, and larger windows are fitted at the backs of closed cars, a most necessary modification, as anyone will know who has ever tried to reverse a large covered car into a narrow garage.

The Large Cars.

Undoubtedly the chief joy of Olympia for the ordinary person is to examine closely, and perhaps to sit in, the huge expensive cars that he covets on the road but never hopes (and if he is wise never really desires) to possess. *Rolls-Royce* had their "New Phantom" with the improved engine and the six brakes system, *Daimlers* had their 35/120 sleeve valve, but the most interesting of all was the new *Bentley*.

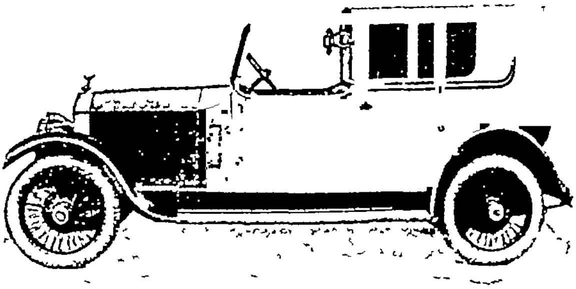
Bentleys are the only manufacturers that have ever stepped straight into the first rank with a new car, and since 1922 their name has become as familiar as that of Rolls-Royce. The car was the famous 3-litre 17·9 h.p. with 16 overhead valves, which would do 75 miles per hour with a saloon body and was incomparably finer than anything of its size in existence. They have now surpassed themselves with a new six-cylinder machine (Fig. 3) of 6½ litres, with 24 overhead valves, taxed as 38 h.p., but developing well over 100, which, if it maintains the standard of the earlier model, will be unique, as the life of the small Bentley is almost endless, and it is designed to need no attention. The most interesting feature of the big one is the camshaft drive, which consists not of gear wheels, but of two triple crankshafts connected by three pairs of stout tubes, which work in a large conical tunnel behind the engine. To counteract expansion was the chief problem, and it was solved by fitting spring bearings to the connecting rods at each end. The engine is mounted in front on a fabric pad and behind on two blocks of rubber, which insulate it from the frame; a new clutch design is fitted and the steering gear is redesigned to allow for the extra resistance of low-pressure tyres. It is a marvellous car.

Another of the most attractive large cars is the eight-cylinder Packard from America, a straight eight with the generator, starter, and carburetter all standing out from the clean run of the cylinder casting and extremely accessible. The engine, which is very long, is in the neighbourhood of 40 h.p. by our rating. Flint, Chandler, and Kissell are other large cars that represent the best of the American market.

Cars for the General Practitioner.

Now that makers are going in so much more for closed bodies, and that all cars are so reliable and easy to look after, the medical visitor will find that 85 per cent. of the cars shown would suit him perfectly. Even if he can only afford a maximum of £200 he can choose between a good dozen examples, such as Morris-Cowley, Jowett, Baby Austin, Briton, Citroën, Clyno, Peugeot, Chevrolet, and Trojan, and if he has £500 he can take his pick of half the show.

Fig. 2.

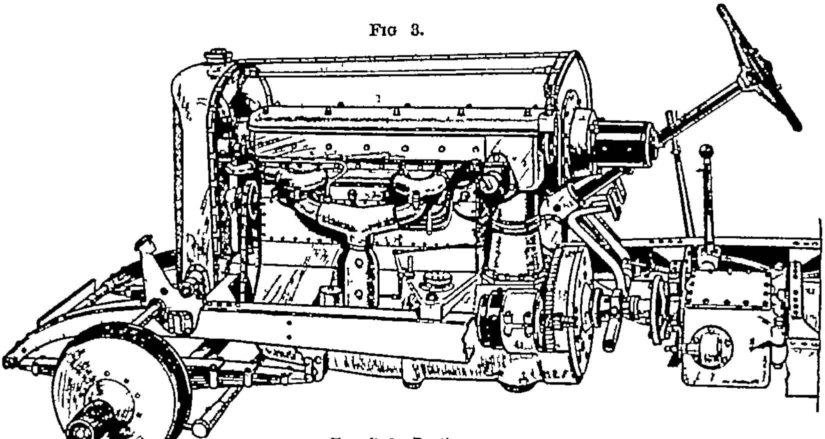


Six-seater Brougham Limousine by Windovers, Ltd.

Of orthodox two-seaters and saloons there is no end, and quite a number of makers still include the coupé in their standard range, but this wide two-seated body with its high bulwarks and solid folding top and carriage-windows, so suitable for the doctor who drives on winter nights, is showing signs of diminishing popularity. It is probably being ousted by the small saloon. There is one beautiful two-seater of a rather "sporting" type, however, with a semi-coupé top, that would be just the thing for a practitioner who wanted a car rather faster than usual but still suitable for everyday (and every night) practice. This is the *B.S.A.* 16 h.p. six-cylinder sports two-seater (Fig. 4). The body is cream-white, with red wings and mouldings, and the hood folds down and clamps to the raked wind-screen. There is ample room under the "quarter-deck" for spares and luggage and one passenger in the dickey. The engine is the 16 h.p. sleeve-valve Knight-Daimler, which is practically inaudible and extremely powerful. The car should do 65 miles per hour easily. Other bodies on this chassis are the open five-seater at £550 and two saloons at £550 and £600. It is really a cheaper Daimler, and so is extremely good.

Another of these small six-cylinder cars is the *A.C.* 16/40 h.p. This car is unique in that it has a 2-litre engine in a chassis only 2 cwt. heavier than their 4 cyl. 12 h.p., and so is exceptionally lively. One model that looked pre-eminently suited for a doctor is called the "Aceca" (Fig. 5) and costs £500. A disadvantage of the ordinary coupé is that it is very hard to see out of, and the Aceca body with the hood down is just like an ordinary very comfortable two-seater. The wind-screen is raked, however, with two triangular side-pieces, and the driver can pull the hood over and lock it to the top of the screen with the car on the move. When the windows in the doors are pulled up the protection is that of a coupé. This ingenious body is also fitted to the four-cylinder chassis at £495 There is a great variety of bodies to choose from between the cheapest A.C. at £300 and the racing four-seater at £800

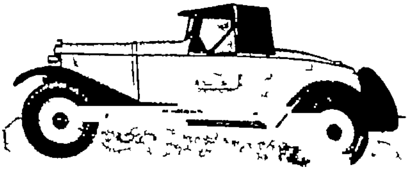
FIG 3.



Six-cylinder Bentley engine

The *Lancia* ' Lambda " is the only foreign car for which there is no British equivalent. It is daringly unorthodox, being built very low down on a pressed steel frame with body and chassis in one piece, like a destroyer The naval reminiscence is helped by the casing of the driving-shaft that runs the whole length of the seating space, and in fact by all the low straight lines of the car, the lift of the scuttle, and her great liveliness. There are several improvements since last year There are now four speeds, and the wheelbase has been lengthened on one chassis from 10 ft. 2 in. to 11 ft. 2½ in. The low seats are amazingly comfortable and the controls are exactly right. The makers claim 70 miles per hour for it. The shorter saloon costs £725 and the longer, with two extra folding seats, £800 Both saloons have a top which will come off and leave the car open for the summer There are double Hartford shock absorbers on the back springs, in front are the Lancia vertical springs that contain their own dampers. The car is exceptionally light on fuel and tyres.

FIG 4.



16 h p. B S.A. Sports two-seater

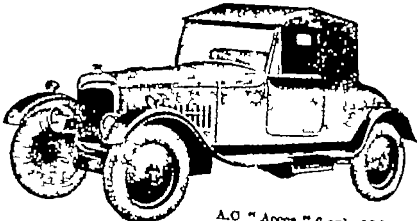
In the less ambitious class there are so many possibles that we are reduced to an invidious choice. One or two stand out slightly from the rest, and among them is the *Hampton* 12 h p coupé at £330, four-wheel brakes £345 It has a wide double dickey, a single-handed hood, and patent window lifts; the driving position and hand brake lever are really comfortable Screw-down bonnet clips of the kind that the Citroëns introduced into the country are a sign of the careful designer, and the dashboard has the now almost universal "cubby-hole" which was first started by the Standard makers.

A Scotch car that has fully proved its worth is the *Galloway* 12 The firm is a daughter of Arrol-Johnstone's, and fully sustains the parent's reputation. The engine has overhead valves of a new design that makes it exceptionally silent, and unlike most overhead valve engines it does not become noisy with use, which can be said of very few others. Four speeds are fitted, with right-hand change, and the speed and brake levers are well apart. Four-wheel brakes are £10 extra; the two-seater is £205 and the saloon £300

The *Windsor* 10–15 coupé, by James Bartle and Co, Ltd, at £405, is another first-class car for the doctor It has ample locker and luggage accommodation, a leather hood, and four-wheel brakes.

The *Essex* coach at £295 is remarkable value.

FIG 5



A.C "Acca," 6 cyl. 16 h.p.

Wolseley Motors, Ltd., have confined themselves this year to three models, an 11/22, a 16/35, and a 24/55 The small car is even better than the famous 10, but we miss the 14, which covered itself with glory in Major Forbes Leith's drive to India The 11/22 two-seater costs £235, with four-wheel brakes extra.

Low-priced Cars.

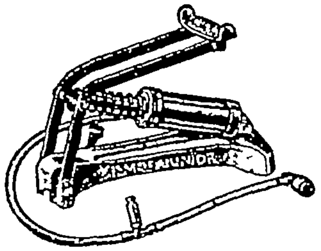
For the many who want a reliable car to get about in at the lowest possible price, Olympia caters better this year than it ever has before.

The Leyland *Trojan* 10 h.p. is very well known now, with its clean simple lines and its solid tyres and chain drive. The springing is literally better than that of any other car on the road, and the two-stroke engine very economical. The ordinary model at £125 represents the cheapest motoring there is, but the firm also sell a coupé with a detachable top, fitted with pneumatic tyres, at £158, that the country practitioner would find an ideal means of transport. There are no sliding gears, which will appeal to the beginner.

The *Peugeot* 7·12 is a remarkable little French car with a great name. The two-seater costs £150 and the smart weatherproof cabriolet £185. The makers have been daring enough to revert to the straight-through gear-change, which many drivers prefer to the gate. The car can be thoroughly recommended.

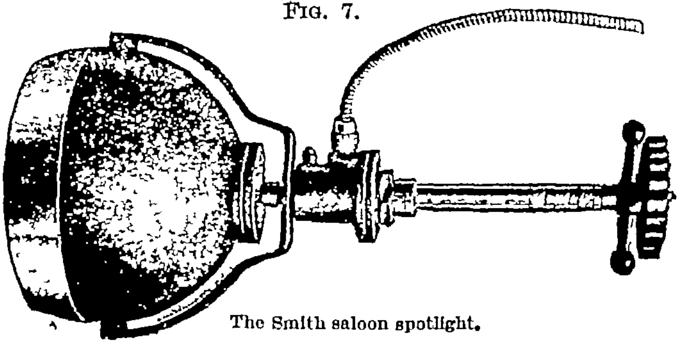
The *Morris-Cowley* 11·9 at £162 10s. has Gabriel shock-dampers, spring gaiters, a grease-gun system, electric lighting and starting, a dashboard light, and a radiator thermometer, and for £180 front-wheel brakes. It is unquestionably the best-equipped car of its price on the road, and is certainly one of the sweetest to drive. Its only disadvantages are that its brakes are nearly always noisy and the hand-brake lever is too short. The Morris-Oxfords are rather larger, and are very fine cars indeed; they cost from £90 to £130 more.

FIG. 6.



The Kismet patent foot pump.

FIG. 7.



The Smith saloon spotlight.

ACCESSORIES.

A tour of the galleries this year, though very instructive, showed hardly anything new, but that is largely because everything that a motor-owner could conceivably require, and plenty that he could not, is already obtainable. The owner-driver is not as a rule very interested in paint, preferring to leave such a difficult subject to the coachbuilder, but *Robbialac* is always a standby to him, as it requires very little knowledge to apply and dries quickly and well. It is a most useful enamel for covering up odd scratches and dents in mudguards. The *Carmaloid* firm exhibited their now well-known celluloid enamel, which is being increasingly used by the makers of bodies. It is non-inflammable when dry and very elastic and tough; its polish improves with wear. It has also the great advantage of drying in a single hour at 70° F.

Tyres, Jacks, Pumps, Shock-absorbers.

The "balloon" tyre increases in popularity, which is not surprising, for it enormously adds to the comfort of any car, besides improving its appearance. Most tyre makers now market a full range of low-pressure and medium-pressure tyres, especially *Dunlop* and *Michelin*, whose products are better and more widely used than ever. The owner of a car with these tyres, however, must be very careful indeed to keep his pressure up to the figure recommended by the maker, since if they are under-inflated they are liable to roll off the rims when taking a bend at speed, which may cause a very serious accident. He can completely insure himself against mishaps of this kind for 6s. 10d., and a little care, by purchasing the Schrader gauge. It is a small nickel tube about the size of the little finger, which with its adaptor will fit any valve. When it is pressed against the opening a black graduated plunger shoots out from which the pressure is read. To possess it is to save ten times its cost every year at least.

The buyer of a car with low-pressure tyres should make sure that his jack will lift the car the extra two inches or so when the tyre is flat. If it will not he should throw it away and buy the *Dunlop* "Double-Lift" jack, which besides being extremely well made is only 6 in. high when closed. The central pillar consists of a threaded bar within a tube threaded inside and out, which gives a quicker lift than the simple type. The gearing is completely enclosed and the top swivels; the base is broad enough to stand firmly on any surface.

It will save the doctor a great deal of valuable time to make sure he has a good pump. Most men hate the strenuous work of inflating tyres with the ordinary push-and-pull type, and there are several extremely good foot-operated pumps in the show. The two best, which are of similar design, are made one by Dunlops and the other by William Turner and Bro., Ltd., of Sheffield. The latter is called the *Kismet-Duplex* (Fig. 6), and costs 58s. 6d. in its box. There is a smaller model at 40s. A high-pressure cylinder works inside a low-pressure one; air is passing into the tyre all the time, and the work, besides being easy, is cut extremely short, since the pressure is increased about 1¼ lb. by each stroke. The valve connexion is of a "universal" push-on type (which, by the way, should be on all pumps. Many designs are marketed by different firms, and cost 2s. or 3s.).

Shock Absorbers.

The great elasticity of balloon tyres causes an uncomfortable bounce unless the recoil of the spring is damped by some form of shock absorber. There are many good makes, but of these the most generally used are the *Gabriel Snubber* representing the counter-spring principle, and the *Hartford* representing the friction principle. The Gabriel, shown by *Brown Bros.*, consists of a coiled spring in a box on the frame, attached to the axle by a strip of stout webbing. It is extremely efficient, and is fitted to all Morris and Buick cars.

The Hartford, of *T. B. Andre and Co., Ltd.*, London, is so widely known that it hardly needs description. It is shaped like the hind leg of a grasshopper; one arm is bolted to the frame and the other to the axle. Double models are made for racing cars, of which hardly one exists without them. The damping effect is finely adjustable. This fitting makes all the difference to the comfort of a touring car, and adds at least 20 miles per hour to the maximum speed of a racer. For smaller cars it costs between 12 and 15 guineas to fit.

In these days of spare wheels and cord tyres a driver does not often need to mend a tube on the road, but it may easily happen to a country practitioner that he has left a wheel at a garage to be mended and then punctures or bursts one of the others. The only alternative to abandoning the car is to carry a box of *Patchquicks*, which are stout patches that are applied with a special solution called "Fix," like patches on a bicycle tyre. The presence on the car of a box of these patches may save the loss of a half-day's work or more. Always carry valve spares on the car.

Tyre Insurance.

The Lancashire and General Assurance Co., Ltd., 8, Bucklersbury, London, E.C., have a scheme of tyre insurance that will be welcome to many motorists. They insure against bursts at a rate of 6*d.* per £ value. Coupons are sent on application. The scheme applies only to British-made tyres, which must not have run more than a week.

The *Parson's Non-Skid Co.*, in addition to their unique chains which are the only counter to thick mud or snow, showed a neat "Twinbar" bumper at £3 5*s*, for front or back.

The Industrial Rubber Products make neat india-rubber grips for the steering-wheel at 6*s*. 6*d*., and *Mosley* a pneumatic driving-cushion, the "Float-on-Air," in all sizes, from 47*s*. 6*d*.

Lights.

C. A. V., *Lucas*, *Rotax*, and all the well-known makers were well represented.

The *Marrulo Accessories Co.* showed a very useful dimmer switch called the "Courtesy," which has the following advantages. It is indestructible and will not burn out, can be used on any system, will give any degree of dimming or switch off entirely, and can be fitted in any position on the car. It costs 15*s*. 6*d*., and is most convenient on a spoke of the steering-wheel.

S. Smith and Sons, of Great Portland-street, showed among their great range of accessories two very useful lighting devices. The *Saloon Spotlight* (Fig. 7) fits through the wind-screen pillar and is directed without lowering the window by turning a milled knob that projects inside the car and revolves a small friction disc one side of which makes contact with the body of the lamp.

The *Smith Safety Signal Mirror* has a transparent two-ended arrow in the glass. By moving a switch on the dashboard either end will glow red, according to the direction in which the driver intends to turn. Pressure on the foot-brake signals "stop" or "slow" by lighting both heads of the arrow.

Horns.

Alfred Graham and Co., who have fitted our warships for years with loud-speaking telephones, have marketed a new electric horn called the "Sparton S O.S." The note, although not offensive, is high-pitched and arresting, and extremely loud—the kind of horn that wants a dimming-switch for town.

Klaxon, Ltd, in addition to their large and well-known range of alarm devices, sell a model with two notes, for use either in town or country.

A fitting that should be on every steering-wheel is the *Eural* horn ring. It happens continually that a driver wishes to sound the horn, steer, and pull his brake on at the same time, and no simple switch will allow him to do all three. The Eural ring is attached to the spokes of the wheel, and pressure on any part of it sounds the horn; there is no position of the steering hand that puts it out of reach. It is made in five different diameters, and costs from 21s to 35*s*.

Petrol and Oil.

All the leading makers occupied stands gaily decorated with illuminated petrol-supply pumps and coloured cans, and exhibited samples of their fuel and lubricants. There is hardly any bad petrol to be had, but car-owners should be careful to buy only oil with a thoroughly reputable name, such as Castrol (Wakefield's), Shell, Price's, &c. The British Petroleum Co. are the only purely British suppliers of motor fuel. They are the selling end of the Anglo-Persian Oil Company, which has vast wells in Persia and Iraq.

Ignition.

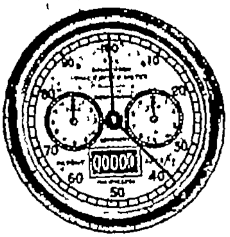
Lodge have a very complete range of plugs, and Smith and Son handle the well-known *K.L.G.*, which was designed originally by the famous racing driver, Kenelm Lee Guinness, and has proved its worth in many races. Both makes are thoroughly reliable.

Simms Motor Units showed several magnetos in action, particularly a slow-speed model which gives an especially hot spark for starting.

Speedometers.

Now that every car is sold with a speed indicator thrown in, owners are probably less interested than they were in descriptions of individual types. There is one so outstandingly good, however, that it would be worth anybody's while to demand it and pay the difference. It is the new Bonniksen Time-Speedmeter (Fig. 8), at £8, from Rotherhams', of Coventry. The Bonniksen speedometer has been known for many years, of course, but the new model is considerably improved. In addition to the two "walking hands," one of which the speed to be indicated, is always steady at there are two small dials, one identical with a a clock face and the other like it, but divided into 10 "hours" instead of 12. The first tells the time of actual running and is set by the watch at starting, the second the distance covered in miles. The driver can therefore calculate his exact average speed and know how long he lost in stops. To the careful business-like driver it will appeal irresistibly.

FIG. 8.



Bonniksen time and speed meter.

Miscellaneous.

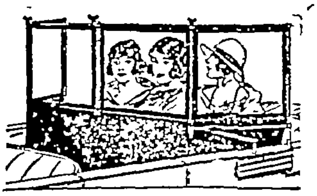
Ferodo, Ltd., are well known for their clutch and brake linings, and the driver who is determined to make his car as comfortable as he can will be interested in the application of their fabric to the leaves of springs. Besides prolonging the life of the springs it damps out the rebound without spoiling the resiliency. It is known as "Ferodo Spring Interleaving."

Among the various devices for preventing thieves from driving a car off are the *Connaught* petrol tap, which can only be turned on by a special key (*Jenks*, 54, Ebury-street, S.W.), and an ingenious electrical lock called the *Owl*, by *E. T. Riches and Co., Ltd.*, 10, Store-street, W.C. It replaces the ignition switch, and is a small round dial, fitted with a revolving ring on which is an inside pointer. The dial itself is marked like the face of a clock, and the mechanism is set at a particular "starting-time" known only to the driver. The engine can only be started if the pointer indicates this time, and any illicit attempt turns on the electric horn. The makers are so confident of its infallibility that they include a free insurance of £25 against theft, and suggest that its mere presence would deter the would-be thief. The American device of a large scarlet wedge, to lock on to the tyre, seems not to have penetrated Olympia yet.

The *Boyce* radiator thermometer, among other reliable makes, is indispensable to a sympathetic driver. In winter engines are driven too cold as often as too hot, and in conjunction with a radiator-jacket by any good accessory maker this fitting will enable him to maintain the best running temperature. It is also extremely ornamental, as a glance at any Morris-Cowley or Buick will show. The temperature of the water is shown by the height of a red column in a circular glass dial with a nickel frame, like a watch. Similar in appearance is the "Telegauge" petrol indicator, by Picard's, which is designed for tanks filled from the scuttle, and shows the contents in gallons.

The "Easting" rear wind-screen (Fig. 9) maintains its popularity. These cleverly designed screens make all the difference to the comfort of passengers in the back of a touring car, and many makers fit them as standard. The type illustrated is a four-panel screen with four-point suspension. The panels are of highly polished transparent celluloid on tubular steel frames covered with leatherette, and beneath them are large waterproof aprons that completely protect the passengers. The two centre panels hinge back as doors on the outside ones, and the screen can be locked rigid in any desired position. It completely fulfils the cardinal requirements of protection, convenience of entrance and exit, and clearness of vision.

FIG. 9.



The Easting rear wind-screen.

The thought suggested most forcibly by this year's Olympia is that the vast car-less public is going to be substantially reduced between now and next midsummer. What the roads will be like does not bear thinking, but it is much more important that a few more thousand Englishmen will have their lives enriched by the adventure of owning and learning to manage a car of their own, and will enter into the possession of our English roads and the country they open up, than which there are few more valuable possessions.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 3RD, 1925.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 28; scarlet fever, 2217; diphtheria, 1002; enteric fever, 61; pneumonia, 738; puerperal fever, 59; cerebro-spinal fever, 4; acute poliomyelitis, 15; acute polio-encephalitis, 1; encephalitis lethargica, 43; dysentery, 9; ophthalmia neonatorum, 101. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 4 deaths from enteric fever, 23 from measles, 12 from scarlet fever, 28 from whooping-cough, 51 from influenza, and 23 from diphtheria. There were 126 deaths of children under 2 years from diarrhœa and enteritis, as compared with 173, 220, 219, and 230 in the preceding weeks. In London itself the deaths from diarrhœa and enteritis in children under 2 years numbered 34, as compared with 46, 55, 43, and 38 in the preceding weeks; there were 7 deaths from diphtheria, 3 from whooping-cough, and 0 from influenza.

MEDICAL GOLFING SOCIETY.—The annual autumn meeting of this society was held on Oct. 10th and 11th at Deal by permission of the Royal Cinque Ports Club. The course was in excellent condition. The results of the competitions were: Singles *v.* Bogey: L. W. Bathurst, 3 up; 2nd prize, W. H. Lamplough, after a tie with L. Barrington-Ward. Foursomes *v.* Bogey: G. Norman and H. Wolseley-Lewis, 2 down. Canny Ryall Challenge Cup: H. Apperly after a tie with A. H. Vassie at 75; 2nd prize, Mather Thomson, 76; 3rd prize, N. Fleming and H. Gardiner-Hill, 77.

MEDICAL SICKNESS, ANNUITY AND LIFE ASSURANCE SOCIETY, LIMITED.—The annual meeting of this society was held at the offices of the Company, 300, High Holborn, London, W.C., on Oct. 12th. The Chairman, Dr. F. J. Allan, in his annual address, congratulated the members on the satisfactory report on the work of the society during the past year. He called attention to the fact that, though there was a steady increase in the business, the ratio of expenses had fallen by nearly 2 per cent. as compared with the previous year. Dr. Allan gave a brief history of the society since its foundation in 1883, and in referring to the various policies issued, said that the society was converted into a limited company on a mutual basis in 1920, as hitherto it had suffered from the restriction under the Friendly Societies Act, which limited the amount for life insurance to £300. Since the alteration over £500,000 of new business had been transacted in that branch. Dr. F. C. Martley and Sir William Willcox were re-elected to the board of directors, and Messrs. Harber, Sturges, and Fraser were re-elected auditors.

Correspondence.

"Audi alteram partem."

THE UNIVERSITY OF LEEDS: THE MEDICAL FACULTY.

To the Editor of THE LANCET.

SIR,—The old Leeds Medical School is approaching its century of existence in which a steady progress of development has been marked from time to time by substantial additions to its accommodation. Since 1893, the date of completion of the present buildings, there have been no structural alterations commensurate with the progress of physiology and pathology, the closer coöperation of laboratory and clinical departments, and the increase of the general and special hospitals and the public health organisations, which all add to the obligations and opportunities of service of the Medical School.

The support given by the medical profession to the school in times past was both generous and important. The example of former days is our justification, at this critical time of need for expansion, for making a special appeal on behalf of the school.

The University is fully aware of the value of the Leeds Medical School, and desires very earnestly to promote the usefulness of this faculty with no less care and energy than it devotes to the development of the faculties of arts, science, and technology. For this reason the urgent needs of the Faculty of Medicine have been acknowledged by the University; and in making its general appeal to Yorkshire it feels that the greatest assistance may be derived from the spirit of the profession which by its own endeavours raised a medical school from casual meetings in the back room of the old dispensary to a position of respect and eminence in the medical world.

At the present time there is neither accommodation nor equipment to permit the University to set men on to meet the demands for investigation and service required by the community. Even the present staff, honorary and otherwise, are prevented from giving their energies and enthusiasm to current problems by this lack of facilities. It is earnestly hoped that the members of the profession will give all the assistance in their power towards the object of the University which is to make its medical departments capable of acting as a fruitful and useful centre of research and information and equal to their obligations to our large industrial population.

We are, Sir, yours faithfully,

DEVONSHIRE,
Chancellor.

J. KAY JAMIESON,
Dean of the *Faculty of Medicine.*

The University, Leeds,
October, 1925.

OCCUPATIONAL THERAPY.

To the Editor of THE LANCET.

SIR,—A movement is now actively on foot for the promotion and coördination of all forms of curative handwork in this country. In July last Mr. Thomas Kidner, President of the American Therapy Association, was entertained at the Lyceum Club by men and women in the medical and educational world, when he gave an account of the growth and results of the work of that Association during the six years of its existence. The hope was expressed that an association on somewhat similar lines might be started in this country. Mr. Kidner's report was followed by comments from Sir Robert Jones, Dr. E. Mapother, Dr. Porter Phillips, and Dr. Crichton Miller, which made it clear that while much was being done in this country for tuberculous cases, the psychical side of the work was as yet sadly undeveloped, owing rather to lack of funds and trained workers than to any failure to realise the value of handwork as a means of cure.

As a direct outcome of this meeting, representatives of interested bodies met at 122, Harley-street, London, in September, when Dr. Jane Walker explained the object of the meeting as an effort to ascertain the possibility of forming an association to stimulate and advance the work in this country, by promoting coöperation in already existing work, gathering suggestions and ideas from all sources and disseminating them for the common good, and by aiding in the training and supply of suitable workers. It should be borne in mind, said Dr. Walker, that occupational therapy was of three kinds: *Diversional* therapy, when the patient was not fit for more than simple games or amusements to divert the mind. Or, if further on the road to recovery, the *occupational* type of work could consist in making useful and artistic things, not only for the purpose of occupying the mind, but for the restoration of impaired or weakened function. Thirdly, and this would refer primarily to non-mental cases, the work could be *vocational*, in the attempt to place the patient in a better position to earn his living when restored to health. From the ensuing discussion it became clear that the position in regard to mental patients was held to be quite different from that of the tuberculous. In regard to orthopædic work, Mr. R. C. Elmslie regarded it as impossible to separate the occupational from the vocational. Dr. J. E. Chapman emphasised the distinction between the two. Lieut.-Colonel J. R. Lord's experience of mental cases showed the work had to be undertaken from an entirely curative and non-vocational point of view. Others who contributed to the discussion were Dr. N. D. Bardswell, Mrs. Kimmins (Heritage Craft Schools), Miss L. Nevile (Essex County Association), Miss Evelyn Fox (Central Association for Mental Welfare), and, on the subject of the training of workers, Mrs. Francis Lewis and Miss Munckton.

Three points emerged from this discussion: (1) No doubt exists as to the value, and, indeed, necessity, of handwork as a means of physical and mental cure in cases where recovery is slow and tedious. (2) Both in practice and result, occupational therapy differs widely in the two forms of illness, mental and physical. (3) The need for trained workers is urgent.

Finally, it was proposed by Dr. W. A. Brend (Ministry of Pensions) and carried unanimously that an association be formed, and a provisional committee to consider finance and organisation was appointed as follows: Dr. Jane Walker, Dr. Brend, Mr. William Wilson, D.Sc. (Inspector of Workshops, Ministry of Pensions), Mrs. Townsend (Cripples' Care Committee), Miss Nevile, Miss Fox, with Miss M. Gribble as acting secretary.

As one of the chief aims of this newly-formed Association will be to promote coöperation in existing work and to further new enterprise, it will be of the greatest assistance to the executive committee if heads of institutions or other interested workers would offer suggestions as to the way in which such an association would serve them best in their particular branch of work, and would furnish further details as to what they have been able to accomplish already.

I am, Sir, yours faithfully,

M. GRIBBLE,
Secretary, "Occupational Therapy,"
122, Harley-street, W. 1.

Oct. 7th, 1925.

WHAT CONSTITUTES A CURE IN PSYCHOTHERAPY?

To the Editor of THE LANCET.

SIR,—I read with interest the annotation on this subject in your issue of Oct. 3rd. Personal and subjective factors are of more account in the psychoneuroses and in functional disorders generally than in any other department of medicine. Classification, diagnosis, treatment, and standard of cure are therefore inevitably less cut-and-dried, and statistics are apt to be varied and unreliable. We remove a tumour, and set it up in a bottle of spirit for all the world to see; we remove an obsessive fear which its owner has hidden from all the world but ourselves—and where can we preserve it as evidence? The faulty adaptation to life which is the essence of a psychoneurotic state may be wholly internal, hence the unsupported statement of such a patient as to his illness, improvement, or cure, while not the final word on the matter must be given much more weight than in the case of a sufferer from gross organic disease. A cure can only consist in the patient being enabled to reach a stable adjustment to life, and can only be proved by the harmony and efficiency of his reactions to it and by his freedom from his former mental or physical symptoms.

It must also be remembered that certain persons, capable of leading highly useful and successful lives, suffer from what we can at present only call a constitutional nervous instability, which, from the practical point of view, is in many cases incapable of being influenced by psychotherapy or any other treatment. But just as we may "cure" a case of bronchitis without altering an underlying emphysema, or may, for an indefinite period, relieve dyspnœa and palpitation without affecting a damaged cardiac valve, so we may—and should—do much by psychotherapy to relieve neurotic symptoms even in cases where we may be unable to touch the basic causal factors. In other words, the existence of "chronics" is just as inevitable in psychological work as in ordinary medicine, their frequency no greater, their "cure" just as impossible, and their need for help just as urgent.

It is thus pertinent to ask, What constitutes a *failure* in psychotherapy, for it is certain that much scepticism and distrust are due to the fact that psychotherapy is asked for, and too often attempted, in cases where a total or partial "failure" is a foregone conclusion owing to the nature of the case or its attendant circumstances.

I have not happened to notice any published statistics of individual psychotherapeutic work, so, for what they are worth, I have investigated my own records. I am not in a position to say whether my results are good, bad, or merely absurd. I have taken 100 consecutive cases which have been referred to me for psychotherapeutic treatment, or at least for an opinion as to its advisability, omitting only those which are still under treatment, and a few obviously unsuitable cases, usually of manifest insanity, which have been brought to me without, or against, the advice of their physician. They cover a wide field, from enuresis and simple insomnia to complicated obsessional and anxiety states. I try to believe that I adapt my methods to individual cases. Some have worked out on typical Freudian lines, with others a more constructive kind of mental analysis has proved useful, some have been treated by explanation and discussion, one or two by hypnotic suggestion, due regard being had to the presence in any case of toxic or endocrine factors.

Of the 100 cases under review 10 were more or less promptly declined as unsuitable, without any attempt to institute treatment. The majority were cases of early melancholia or dementia præcox, three showed the mental sequelæ of lethargic encephalitis, two suffered from organic nervous disease. In this branch of medicine, above all others, rapid diagnosis is dangerous and often impossible, and in nine cases I began treatment in a more or less tentative way, but after a period varying from one to six weeks I decided, usually in spite of the patient's wish, to give it up, as it had become apparent that such treatment as I could give would do no real good. Some of these proved to be definitely psychotic, in some of them physical treatment appeared to be the first requirement, in others difficulties connected with their employment, or their domestic relationships were insuperable. It should be said that some at least of these 25 rejected cases could probably have been dealt with successfully in a suitable institution or nursing home had circumstances permitted. I have not included in this series some which I myself sent to such places.

Eight patients whom I would have continued to treat stopped attending, either owing to family opposition or because the demands which treatment made upon their time, pride, courage, honesty, or purse were more than they were prepared to face.

· Of the remaining 67 cases treated to a conclusion, I classify 22 as "cured." By that I mean that all symptoms have disappeared, the patients are efficient and happy in their ordinary activities, and, if life treats them with reasonable kindness, I see no grounds for anticipating any relapse.

Twenty I describe as "much improved." (Ten of these state that they are perfectly well, but while encouraging them in that belief, I am not yet myself sufficiently confident as to their stability to include them in the "cured" class.) They have lost most, if not all, of their symptoms, and are getting on with their daily work very comfortably, able to deal fairly adequately with any difficulties which arise.

Seventeen are "improved." They are relieved of their more urgent symptoms, and are carrying on, though not without some difficulty at times. Psychological readjustment is apt to be a slowly progressive matter, and some of them will, I expect achieve it more fully by degrees. Others will probably require further assistance sooner or later.

The remaining eight are complete failures. That is to say, they are cases which, in my opinion, psychotherapy ought to have been able to help more or less, but which have shown no improvement. Apart from lack of skill, on my part, the chief reasons for failure appear to be unusual depth and complexity in the psychological maladjustment, and the presence of persistently unfavourable external circumstances.

The obvious criticism of these figures from the statistical point of view is that each case is classified in an arbitrary manner, and largely on subjective grounds, by the unconfirmed testimony of two biased parties, the patient and myself. I grant this unfortunate and unavoidable fact at once, but until the emotional vagaries of the hysteric and the compulsions of the obsessionist can be made as definite and objective as microscopic specimens and death certificates, I do not see how statisticians can ever be given the precise and clean-cut figures and percentages regarding the results of psychotherapeutic work which they quite rightly demand in other departments.

I am, Sir, yours faithfully,

Glasgow, Oct. 12th, 1925. D. YELLOWLEES.

LUMINAL OR BORAX IN EPILEPSY.

To the Editor of THE LANCET.

SIR,—Those who deal with a large number of cases of epilepsy of all the described types, from minor epilepsy and pyknolepsy to affect epilepsy, know that it is not uncommon in adults to find remission from attacks for a few months with almost any of the advised remedies. My chief objections to luminal are: 1. It easily tends to become toxic, of which the symptoms are drowsiness, vertigo, disturbances of coördination and speech, rashes and œdema, and, occasionally, restlessness and excitability. 2. While in most cases which have never previously been given it, attacks are lessened and sometimes cease for a few months, in the vast majority of these cases it rapidly loses its effect and after a few months becomes ineffective.

In my own experience, sodium biborate (borax) is the most valuable therapeutic agent we have for epilepsy if it is properly applied. Since 1920 I have been using it as a routine treatment in every variety of epilepsy, in nearly 100 cases, and even where it does not absolutely cure it greatly reduces the number of attacks. The great objection is that children do not as a rule respond so well as adults. Its whole value lies in the method in which it is given. I start the patient (if an adult) on sodium biborate, gr. 10, thrice daily, with 10 or 15 gr. of sodium bromide. Sometimes I add 2 or 3 minims of liquor arsenicalis, but I am doubtful of the necessity of arsenic. The main combination is bromide and biborate. If the patient does well on this, I leave it. If the fits do not cease in a fortnight (the standard I adopt during treatment is total cessation of fits, not mere diminution in number, except in pyknolepsy), I first of all increase the sodium biborate to 15 gr. thrice daily. If the fits do not cease totally in another fortnight with this I next increase the bromide to 15 gr.—i.e., 15 gr. each of sodium biborate and sodium bromide. I leave it at that for a month or six weeks, and if there are still fits I [illegible]em 15 minims of belladonna once daily, either morning or evening, depending on whether the fits are diurnal or nocturnal, in addition to the 15 gr. each of bromide and biborate three times a day.

This combination almost invariably, in my experience, achieves a cessation of fits in adults. Once I get to the optimum drug combination I leave the patient on that for about two months if belladonna has been used, then I diminish the belladonna first, so that after a further month the patient is not taking belladonna. The biborate and bromide I leave undisturbed for at least a year, then if there are still no fits I gradually diminish the bromide, taking some months till the bromide has disappeared altogether. The patient then remains on what is his optimum dose of biborate (10 or 15 gr.), and is kept for another year, even without fits, on sodium biborate and water.

The following cases shown at a recent clinical lecture will serve as illustration.

MRS. A. B., aged 45. I first saw her on Nov. 10th, 1921. She had had her first fit three years before that and had been under continuous medical treatment. Her fits were now getting more frequent and when first seen she was getting two to three every week. She had no aura. She had incontinence of urine sometimes, bit her tongue, injured herself sometimes, and was always mentally confused afterwards. She was put on sodium biborate gr. 10, ammonium bromide gr. 15, liquor arsenici hydrochlorici minims 3. In the course of the first 12 months under treatment she had only three slight attacks, and her last fit (a mild one) was on Dec. 8th, 1922. The bromide was finally taken out of her mixture on March 1st, 1923, when she was put on a mixture of sodium biborate, gr. 10 and water, three times a day. This was continued till April, 1924, when all medicine was stopped. Since then she has had an attack of pleurisy and one of influenza, but she has had no more fits.

MISS C. D., aged 27, "dull mentally" since birth, and can neither read nor write. She had fits of major epilepsy for several years before coming under my care in January, 1922. They were increasing and she was then having sometimes three in a week. She was put on 10 gr. each of sodium biborate and ammonium bromide thrice daily. Her last attack of major epilepsy was in April, 1922, but she has had what her mother calls "spasms," probably myoclonus epilepsy. She had one of these "spasms" on an average of one every two months, but has not had even a "spasm" since September, 1924. She is still on 10 gr. each of bromide and biborate.

MR. E. F., aged 26. He has had fits since the age of 11. He has no aura; incontinence of urine sometimes; bites his tongue, injures himself, and is "stupid" for about ten minutes afterwards. His fits averaged one a month, and he had been under treatment at various hospitals for many years. His last fit was on April 7th, 1924. He came under my notice on April 16th, 1924, and I put him on sodium biborate gr. 10, sodium bromide gr. 15, thrice daily. He has not had a fit since he has been under treatment. He is now on 10 gr. of biborate and 5 gr. of bromide. In another month he will be on biborate alone. His general health has improved and he feels well. His heart exhibits premature contractions at irregular intervals, 1 in 4 or 5, to 1 in about 50 beats, but he has no dyspnœa or palpitation.

On the whole I find that patients bear sodium biborate well, and I have yet to find one suffering to any extent from indigestion due to it. The only toxic effect I have noted is that the heart frequently exhibits premature contractions, which can be ignored, as the patients do not suffer either from dyspnœa or palpitation.

I am, Sir, yours faithfully,

PHILIP FIGDOR, M.B.,
Assistant Physician, London Temperance
Hospital, &c.

Oct. 7th, 1925.

LUMINAL IN EPILEPSY.

To the Editor of THE LANCET.

SIR,—I have before me the case-records of 89 epileptics treated during the last two and a half years at the Birmingham and Midland Hospital for Nervous Diseases. Careful records of progress and treatment are kept in all cases of epilepsy at this hospital, so that the case-sheets constitute a valuable guide to the merits of different forms of treatment. Of the 89 cases, 40 per cent. attended at fortnightly intervals for over 12 months, another 45 per cent. for over six months, and the rest for short periods only.

From a study of these cases four facts seem to emerge: (1) That luminal is more effective than bromide in controlling the seizures in idiopathic epilepsy; (2) that the effect of luminal is considerably enhanced by the addition of a small dose of bromide; (3) that the mentality of the patient improves under luminal, as compared with bromide; and (4) that although the period of improvement under luminal is longer than under bromide, tolerance seems eventually to be established and fits recur.

As to dosage, I do not believe that more than 3 gr. of luminal daily should be given in epilepsy. In only five cases of this series was this dose exceeded, 1½ gr. having been given three times a day, and in every case signs of intoxication appeared—that is, thick speech, ataxia, hilarity, and a subjective sensation of "silly-headedness." In no case were skin rashes noted. I do not believe that luminal can ever replace bromide entirely, but I think its great utility is to enable us to so reduce the dose of bromide that the characteristic bromide depression does not occur. Also, since it is given in tabloid form it is so much more convenient to take. I have omitted special features, such as family history, the presence of disease in other systems, reflex sources of irritation, and, what is still more important, the time which has elapsed between the onset of fits and the institution of treatment, but all these have been taken into account in deciding the merit of luminal as compared with bromide.

Dr. O. G. Misquith quotes two cases from his practice in which luminal completely checked the fits and restored the patients to a "normal existence." I, too, have had such cases, in which it appeared to act like magic, cases in which bromides had seemed actually to aggravate the trouble. I remember one such case in a tram conductor, who had lost his employment on account of fits, and who, when he consulted me, was having 5 to 10 seizures a week. Luminal in his case completely checked the fits, and for months he would bounce into my consulting-room at the hospital, and literally sing his praises from a newfound vitality and joy in life. Alas, this lasted exactly 12 months, and then the fits began to recur, and try as I might by readjustment of dosage, I could not again control him with luminal. I could quote many similar cases.

Cases in which fits begin between the ages of 14 and 20 seem by our statistics to be the easiest to control, and I am a firm believer in bringing all recent cases of epilepsy under a preliminary in-patient observation and treatment before beginning outpatient attendance. Some remarkable facts in this connexion are brought to light by a study of this series of cases.

I am, Sir, yours faithfully,
A. WILLIAMS-WALKER, M.D., M.R.C.P.,
Physician to Out-patients, Birmingham and Midland Hospital for Nervous Diseases (associated with Queen's Hospital, Birmingham).
Oct. 10th, 1925

STICKING-PLASTER DERMATITIS.

To the Editor of THE LANCET.

SIR,—The annotation on this subject in your issue of Oct. 10th is important. It is to be hoped that Dr. H. W. Siemens has isolated the injurious ingredient. If it can be omitted from the plaster he will have conferred a great boon on countless patients. Recently I was conducting a number of experiments on the skin of my arms and of some colleagues; the ordinary brown hospital plaster was used to retain the applications in position. Invariably, a day or two later, the parts touched by the plaster broke out in discrete follicular pustules. These confused and vitiated any conclusions one might draw from the effects of the materials we were testing. The use of plaster necessarily had to be discontinued.[1] There did not appear to be any sensitising effect from the plaster. All the experimenters seemed equally liable. The eruptions were strictly localised, and the strength and severity of the inflammation produced apparently varied with the length of application.

I am, Sir, yours faithfully,
Wigan, Oct. 12th, 1925. R. PROSSER WHITE.

Obituary.

ARTHUR GORDON JENNER, M.R.C.S. ENG., D.P.H. LIVERP.

Dr. A. G. Jenner, medical officer of health for the Borough of Stockport, who died on Oct. 5th at the age of 40, studied medicine at the University of Liverpool, qualifying in 1907, and in 1911 he obtained the Liverpool Diploma of Public Health. He held successively the posts of house surgeon and senior house physician at the Royal Southern Hospital, Liverpool, and was then appointed resident medical officer at the West Derby Union Infirmary, Liverpool. For two years he was resident medical officer at the Liverpool Corporation Park Hill Fever Hospital, and in 1912 was appointed assistant medical officer of Burton-on-Trent. Just before the outbreak of the war he went to Stockport as tuberculosis officer, and was appointed deputy medical officer in the early part of 1915. For two years he had charge of the public health in Stockport, and in 1917 joined the Army, where, until 1919, he served with the rank of captain on the administrative staff of the Salonika Army in charge of the 98th and 131st Sanitary Sections. On his return to Stockport he was reappointed deputy M.O.H. in October, 1920. He succeeded the late Dr. H. E. Corbin as medical officer of health for Stockport in 1922. Dr. Jenner was a member of the Board of Directors of the Stockport County Football Club, and was himself an enthusiastic footballer, having been a Rugby player. He was a most efficient and painstaking medical officer, and he was particularly interested in child welfare. A man of pleasing and attractive personality, his early death is deeply regretted by the whole community of Stockport. He leaves a widow and two children.

PERCY ROBERT COOPER, M.D., B.Sc. (HONS.) LOND., F.R.C.S. ENG.

Dr. P. R. Cooper, honorary consulting surgeon to the Altrincham General Hospital, died on Oct. 10th as the result of septic poisoning contracted in the course of his professional duties. He received his medical training at the University of Manchester and at St. Bartholomew's Hospital, London, graduating M.B., Ch.B. Vict. in 1893 and obtaining the M.R.C.S. Eng. and L.R.C.P. Lond. in the same year. In 1890 he gained the B.Sc. of London University with honours, and in 1895 he became a Fellow of the Royal College of Surgeons of England. The following year he obtained the M.B. Lond. with first-class honours, and in 1901 became M.D. Lond. With a strong leaning towards natural history, he was for a time assistant demonstrator in zoology and pathology at Owens College, Manchester, and after some experience as a house surgeon in the Manchester Royal Infirmary he took up practice in Altrincham, where in due course he became one of the best-known and busiest practitioners in North Cheshire. Two years ago he was appointed honorary surgeon to the Altrincham General Hospital. Dr. Cooper was an enthusiastic member of the medical and pathological societies of Manchester, and at one time acted as President of the Manchester Clinical Society. He was a great reader of medical books and occasionally contributed a well-considered note on some clinical problem to a medical journal. The joint library of the Manchester Medical Society and the University Medical School owed much to his interest and coöperation. Altogether he will be much missed.

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[1] Brit. Jour. Dermatology and Syph., April, 1925, p. 163.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At examinations held recently the following candidates were successful:—

DIPLOMA IN PUBLIC HEALTH.

Old Regulations: John R. Hayman; James A. G. Keddie; William B. Stott, Christ's. *New Regulations:* Andrew N. Fergus; Mary K. Henegan; Reginald A. Mansell, Emm.; Charles F. Pedley, Jesus; Charles J. Stocker, Trin. (distinguished in Part I.); Francis C. Tibbs; and Man K. Yue, Christ's (distinguished in Part II.).

DIPLOMA IN HYGIENE.

Abdel R. Hassan and Labib Shehata.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—The third award of the Streatfeild Research Scholarship has been made by the executive committee of the College to Mr. Norman Leslie Capener, F.R.C.S. This scholarship was founded in 1916 through the generosity of Mrs. Eliza Streatfeild, who gave the sum of £10,000 to the Royal College of Physicians and the Royal College of Surgeons, the income thereof to be expended upon the promotion of research in medicine and surgery. The subject of Mr. Capener's research will be the Comparative Anatomy and Function of the Prostate Gland. The research will be carried out at St. Bartholomew's Hospital and the Zoological Society.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a meeting of the Council on Oct. 8th, Sir John Bland-Sutton, President, in the chair, the annual report of the Council to be submitted to the Fellows and Members at the annual meeting on Thursday, Nov. 19th, was submitted, approved, and adopted.—The President reported that a Sir Gilbert Blane Medal had been awarded to the following medical officer of the Royal Navy: Surg. Lieut.-Commdr. Lionel Frederick Strugnell, promotion examination, 1925.—The President also reported that the Bradshaw Lecture on Gastro-jejunostomy would be delivered by Mr. James Sherren on Wednesday, Nov. 11th, at 5 P.M.; and that the Thomas Vicary lecture on the Mediæval Conception of the Anatomy and Physiology of the Central Nervous System would be delivered by Prof. William Wright on Wednesday, Nov. 18th, at 5 P.M., at the College.—Diplomas of Member were conferred upon the following candidates who have complied with the by-laws of the College:—

K. Bandaly, Cairo and Univ. Coll.; Leighton M. Clark, King's Coll. Hosp.; Andrew N. Coomaraswamy, Madras and London Hosp.; Gerald N. Golden, London Hosp.; Tom A. Griffiths, Cardiff and Liverpool University; Allan B. Hewlett, King's Coll. Hosp.; Thomas Kemp Homer, Birmingham University; and Elizabeth M. Weideman, St. Mary's Hosp.

VICTORIA UNIVERSITY OF MANCHESTER.—At the examination for the Diploma in Public Health, held recently, the following candidates were successful:—

Part II—R. B. Boston, P. D. Connolly, E. R. Gilmore, and A. C. Newman.
Part I.—Georgie I. Brodie and Margaret Sproul.

THE Council of the British Empire Cancer Campaign has approved a grant of £1000 a year for six years to Dr. Thomas Lumsden, at the Lister Institute of Preventive Medicine, to enable him to continue the experimental work on cancer antisera reported in THE LANCET of Feb. 21st and Sept. 12th, 1925. Further grants have also been made to Dr. J. C. Mottram, Dr. Louis Cassidy, and Prof. R. T. Leiper.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A lecture on the Diagnosis of Pulmonary Tuberculosis will be delivered by Dr. Marcus Paterson in the Lecture Hall of the Medical Society of London, 11, Chandos-street, on Monday, Oct. 19th, at 5.30 P.M., and all members of the medical profession will be welcome. Several special courses have been arranged for the month of November. The Chelsea Hospital will hold a three weeks' course from Nov. 2nd, consisting of demonstrations, operations, and lectures by members of the staff. Throughout the month the London Lock Hospital has arranged a comprehensive course in venereal diseases. The Royal Waterloo Hospital will give a course in Medicine, Surgery, and Gynæcology from Nov. 23rd to Dec. 12th, embracing the study of diseases of children and women from all aspects. From Nov. 3rd to 28th Dr. Porter Phillips and Dr. Thomas Beaton will give twice weekly lecture-demonstrations on Psychological Medicine. An evening course for general practitioners has been arranged at the London Temperance Hospital from Nov. 1st to 13th. There will be a course in Diseases of the Chest, Heart, and Lungs at the Victoria Park Hospital from Nov. 9th to 21st. Application for copies of each of the syllabus and for the general programme should be made to the Secretary, at 1, Wimpole-street, London, W. 1.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.—A meeting of this association will be held at 11, Chandos-street, Cavendish-square, W., on Friday, Nov. 6th, at 4.45 P.M., when Dr. A. I. Simey will read a paper on the Prophylaxis of Common Colds.

A CONFERENCE on Social Insurance in its national and international aspects is to be held under the auspices of the League of Nations Union from Nov. 23rd–26th at the London School of Economics. Sessions of the Conference will deal with the following aspects of the problem: The Government pensions scheme; the unification of social insurance; health insurance; workmen's compensation and accident prevention; unemployment insurance; family insurance; and the international aspects of social insurance. Full particulars of the Conference may be obtained from the Secretary, League of Nations Union, 15, Grosvenor-crescent, S.W. 1.

CLERICAL, MEDICAL, AND GENERAL LIFE ASSURANCE SOCIETY.—The report presented at the 101st annual general meeting of the Clerical, Medical, and General Life Assurance Society, held at 15, St. James's-square, London, on Oct. 9th, showed that during the year 1880 new assurances were made for a total sum of £1,616,869, while re-assurances were effected to the extent of £227,500, making the net new life business £1,389,369, as compared with £1,324,601 in the previous year. The total premium income was £672,832, or an increase of £62,840. The claims by death amounted to £352,610, an increase of £3873 over the previous year, which is accounted for by the expansion of the business of the Society. The expenses of management, after allowing for the cost of annuity business, represented £14 7*s.* 5*d.* per cent. of the premium income. As a result of the year's transactions the Life Assurance Fund increased from £7,901,035 to £8,404,681. This growth of £503,646 exceeds that of any previous year.

DENTAL BOARD OF THE UNITED KINGDOM.—A course of four lectures (illustrated by lantern slides) on General Anæsthesia will be delivered during the forthcoming winter season. The series will consist of the following: (1) Respiration in Anæsthesia, and (2) the Absorption and Elimination of Volatile Substances in the Lungs, by Prof. Yandell Henderson, Yale University; (3) the Circulatory Changes in Anæsthesia, and the Use of Oxygen, by Dr. Leonard Hill; (4) the Metabolic Changes in Chloroform Poisoning, by Prof. Noel Paton. The lectures will be given in:—London: In the Robert Barnes Hall, the Royal Society of Medicine, 1, Wimpole-street, W., at 8.30 P.M., on Oct. 22nd, 23rd, and 30th, and Jan. 11th. Manchester: In the Medical School, the University Buildings, Oxford-road, at 5.30 P.M. on Oct. 26th and 27th, Nov. 3rd, and Jan. 13th. Edinburgh: In the Surgery Theatre, the University, at 5 P.M., on Oct. 29th and 30th, Nov. 5th, and Jan. 15th. The course is intended primarily for dentists and medical practitioners. Dental students are invited to attend. Tickets of admission are not required.

LIVERPOOL MEDICAL INSTITUTION.—On Thursday, Oct. 8th, the members of this society met to offer their congratulations to no fewer than three of their number on the completion of 50 years' membership. These were Dr. A. Craigmile, of Wallasey; Dr. A. C. E. Harris, of Birkenhead; and Mr. F. T. Paul. Allusion was made to the large part played by Dr. Craigmile in the foundation of the Victoria Central Hospital, Wallasey, and to the leading position taken now for many years by Dr. Harris in the profession in Birkenhead. Mr. Rushton Parker and Mr. T. H. Bickerton recalled their experiences of Mr. Paul's earlier days, when he went to Liverpool as resident medical officer and superintendent at the Royal Infirmary, duties now carried out by 11 different individuals. The surgeons of the city had combined to have a number of Paul's "Selected Papers" published as a tribute of their respect and admiration for the man and his work, and at the close of the meeting a formal presentation of this was made.

NEW STOKE-ON-TRENT POOR-LAW HOSPITAL.—The Stoke-on-Trent guardians have approved in principle a scheme for the erection of a new Poor-law hospital which, it is stated, will cost £500,000. The scheme provides for the erection of a hospital at Stoke with 400 beds, capable of expansion to 800, together with all the other adjuncts of a great modern hospital. The decision was arrived at after a favourable report by Dr. F. W. Ellis, chief medical officer of the Birmingham Union, based upon an inspection of the existing institutions at Tunstall and Stoke. Dr. Ellis strongly recommended the centralisation of hospital services for Poor-law purposes by transferring the patients to the Stoke institution and the building of the new hospital there. He suggested that the new hospital should be utilised for the treatment of acute cases, and that the two existing ones should be retained for chronic sick and infirm cases.

THE Wellcome Historical Medical Museum, 54A, Wigmore-street, W., will be closed for cleaning and structural alterations from Oct. 19th until Nov. 30th.

TUBERCULOSIS SOCIETY.—A meeting of this society will be held to-day (Friday) at 8 P.M., at 1, Upper Montague-street, Russell-square, London, W.C., when Dr. F. G. Chandler will read a paper on Pulmonary Tuberculosis in Children.

DEVON AND EXETER MEDICO-CHIRURGICAL SOCIETY. The first meeting of the session will be held on Friday, Oct. 23rd, at the Royal Devon and Exeter Hospital, Exeter, the President, Mr. J. M. Ackland, in the chair. An address will be given by Sir StClair Thomson on the Surgical Anatomy of the Nose and Accessory Sinuses.

THE death has occurred at Hampstead on Oct. 10th of Dr. C. F. Sonntag, Prosector to the Zoological Society and demonstrator in anatomy at University College. Dr. Sonntag was at one time medical officer to the Great Portland-street Red Cross Clinic for Disabled Officers, and recently published a standard work on the Morphology and Evolution of the Apes and Man.

UNIVERSITY OF EDINBURGH: CAMERON PRIZE LECTURES.—Prof. Harvey Cushing, who was awarded the Cameron Prize of 1924, will deliver three lectures in the Anatomy Class-room, University New Buildings, on the undermentioned dates at 4 P.M.:—Monday, Oct. 19th: The Circulation of the Cerebro-spinal Fluid; chairman, Sir E. Sharpey Schafer. Tuesday, Oct. 20th: The Pituitary Gland; chairman, Sir J. Alfred Ewing. Thursday, Oct. 22nd: Brain Tumours; chairman, Sir Harold J. Stiles. Students and graduates in medicine are invited to attend.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL.—Following the opening lecture of the winter session by Dr. William Hill on Oct. 6th, the annual dinner of the medical staff was held at the Trocadero Restaurant the next evening, Mr. Harold Kisch in the chair. A total of 63 were present, and amongst the guests were: The lecturer, Dr. W. Hill; the President of the Royal Society of Medicine, Sir StClair Thomson; the President of the Fellowship of Medicine, Sir William Arbuthnot Lane; Sir Thomas Horder; the President of the Laryngological Section, Royal Society of Medicine, Dr. W. H. Kelson; the Honorary Secretary of the Fellowship of Medicine, Mr. Herbert Paterson; Mr. Herbert Tilley; Mr. G. J. Badgerow; Mr. T. B. Layton; Dr. Watson-Williams; Dr. J. H. Chaldecott; and the Chairman of the Committee of Management of the Hospital, Mr. Carmichael Thomas, with his colleagues, Mr. Mackillop Brown and Mr. Glenton Lewis.

LIVERPOOL: VISIT OF THE MINISTER OF HEALTH.—During a two days' visit to this city Mr. Neville Chamberlain busied himself chiefly with the inspection of the new housing and re-housing problems of Liverpool. The site for the proposed ten-story tenement was visited, and at the dinner in the town hall on Oct. 8th he expressed himself as profoundly impressed with the boldness and courage with which the subject had been faced, and more particularly for the imagination shown in planning communications between the newer areas and the centre of the town. He also advanced the consideration as to whether the time had not come when great communities should consider a change of ownership of slum property, substituting for a landlord, unwilling or unable to fulfil his responsibility, one which has ample resources and a sense of public duty. On the second day Mr. Chamberlain visited the various institutions under the guardians and also the municipal hospital at Fazakerley for infectious diseases, including phthisis and surgical tuberculosis. At the latter institution he spoke of his sympathy with the campaign for a plentiful, clean, tubercle-free milk-supply, and also promised to see that, so far as the financial condition of the country would allow, a due proportion of the Government's resources was secured for the extension of the campaign against tuberculosis, above all for the treatment of the disease in childhood.

Hospitals Contributory Scheme.—At a recent meeting of the Liverpool Hospital Staffs' Association the opportunity was taken of drafting certain resolutions bearing upon the proposed Lord Mayor's contributory scheme for the support of the voluntary hospitals, which is modelled largely upon the Sheffield "penny-in-the-pound" idea. The following points were emphasised: (1) That there should be no differentiation in treatment between contributors and non-contributors; (2) that it should be recognised that contributors should attend the hospitals only with the knowledge of their private medical attendant, except in cases of urgency; (3) that in any contract entered into by hospital authorities for the provision of medical services provision should be made for the payment of a certain proportion into a medical staff fund. It was noteworthy that these points, after full discussion, were agreed to unanimously by the meeting, at which all the hospitals were fully represented.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Oct. 20th.

GENERAL MEETING OF FELLOWS: at 5.30 P.M.
Ballot for election to the Fellowship.

PATHOLOGY: at 8.30 P.M.
Papers:
W. Cramer: Systemic Factors in Carcinogenesis.
C. C. Okell and H. J. Parish: Virulence Testing of the Diphtheria Bacillus.

Wednesday, Oct. 21st.

HISTORY OF MEDICINE: at 5 P.M.
Paper:
Dr. J. D. Rolleston (President): Voltaire and Medicine. Part I.

SURGERY: at 8.30 P.M.
Presidential Address:
Sir Lenthal Cheatle: The Present State of the Teaching and Practice of Surgery.

Friday, Oct. 23rd.

STUDY OF DISEASE IN CHILDREN: at 5 P.M. (Cases at 4.30 P.M.)
Cases:
Dr. C. Worster-Drought: Case of Hirschsprung's Disease with Double Optic Atrophy.
Dr. C. Worster-Drought (shown by Dr. E. W. Fulton): Case of Incoördination, for Diagnosis.
Mr. W. E. Tanner: Congenital Malformation of Tongue and Pharynx.
Dr. D. Paterson: Old Case of Cœliac Disease.
Dr. N. Hobhouse: Lesion of Mid-Brain and Pons.

EPIDEMIOLOGY AND STATE MEDICINE: at 8 P.M.
Paper:
Dr. T. Stacey Wilson: On the Management of Scarlatinal Epidemics in Boarding Schools (illustrated by photographs of Desquamation, Scarlatinal and otherwise).

LONDON DERMATOLOGICAL SOCIETY, 49, Leicester-square, W.C.
WEDNESDAY, Oct. 21st.—4.30 P.M. (at St. John's Hospital, Leicester-square), Pathological Specimens and Clinical Cases. 5 P.M., Dr. Knowsley Sibley: Treatment of Diseases of the Skin by Ultra-violet Rays.
The Monthly Dinner will be held at the Cavour Restaurant, Leicester-square, at 6.30 P.M. Price 7s. 6d. per head.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

THE FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Oct. 19th, to SATURDAY, Oct. 24th.—Fellowship of Medicine Lecture, Medical Society, 11, Chandos-street, Mon., 5.30, Dr. Marcus Paterson: The Diagnosis of Pulmonary Tuberculosis.—COMBINED CHILDREN'S COURSE, Paddington Green Children's Hospital, Victoria Hospital, and Children's Clinic. Morning and afternoon sessions.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road. Special Course in Laryngology, Rhinology, and Otology. Clinical course and Operative Surgery course, of which one or both may be taken (second week).—LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Endsleigh-gardens. Tuesday and Thursday, Clinical demonstration by Dr. G. C. Low and Dr. Manson-Bahr at 2.—ST. PETER'S HOSPITAL, Henrietta-street. Special course in Urology. Clinical work every afternoon and lecture.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
THURSDAY, Oct. 22nd.—3 P.M., Demonstration: The X Ray Examination of Pulmonary Tuberculosis. 4.30 P.M., Lecture: The Treatment of Pulmonary Tuberculosis with Special Reference to Artificial Pneumothorax.
Daily: In-patient and Out-patient Clinics in General and Special Departments, Operations, &c.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Oct. 22nd.—4 P.M., Dr. Frew: Acidosis.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.
TUESDAY, Oct. 20th.—5 P.M., Dr. H. W. Barber: Bacteriology and Mycology.
THURSDAY.—5 P.M., Dr. J. M. H. MacLeod: Morphology and Histopathology of Elementary Lesions.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Oct. 20th.—4.15 P.M., Dr. C. H. Melland: Some Tropical Diseases.
FRIDAY.—4.15 P.M., Prof. W. L. Bragg: X Rays.

ANCOATS HOSPITAL POST-GRADUATE LECTURES.
THURSDAY, Oct. 22nd.—4.15 P.M., Mr. E. E. Hughes: The Significance of Urinary Symptoms.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: OCTOBER-NOVEMBER, 1925.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, Oct. 19th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., An Introduction to the Study of Aphasia: Dr. Kinnier Wilson.

TUESDAY, Oct. 20th.—2 P.M., Out-patient Clinic: Dr. Walshe. 3.30 P.M., Compression Paraplegia from a Surgical Standpoint: Mr. Armour.

THURSDAY, Oct. 22nd.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Ocular Palsies: Dr. Gordon Holmes.

FRIDAY, Oct. 23rd.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Demonstration of Swedish Remedial Exercises (in Exercise Room): Mr. Elmquist.

The fee for the Course, including Pathology Lectures, is £5 5s. For those who hold Perpetual Tickets the fee is £3 3s.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.

THURSDAY, Oct. 22nd.—12 noon, Ischæmia: Dr. J. G. Greenfield.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

MONDAY, Oct. 19th.—12 noon, The Spinal Cord (continued): Dr. J. L. Birley.

Dr. H. J. MacBride will give a COURSE of EIGHT CLINICAL DEMONSTRATIONS, chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays, if sufficient entries are received. The fee for this Course will be £2 2s. (commencing Tuesday, Oct. 20th).

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.

Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.

J. G. GREENFIELD, Dean of Medical School.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Oct. 21st.—4 P.M., Dr. M. B. Ray: The Prevention and Arrest of Rheumatic Disease.

PEOPLE'S LEAGUE OF HEALTH, Fyvie Hall, Regent-street Polytechnic.

FRIDAY, Oct. 23rd.—6 P.M., Mr. E. B. Turner: Recreation and Physical Exercise.

Appointments.

GLENNIE, J. A. R., M.B., C.M. Aberd., has been appointed one of the Medical Referees under the Workmen's Compensation Act for the Districts of the Camelford, Holsworthy, and Launceston County Courts.

MACADAM, W., M.D. Glasg., M.R.C.P. Lond., Honorary Assistant Physician to the Leeds General Infirmary.

OLDHAM, J. B., M.B., Ch.B. Liverp., F.R.C.S. Eng., Honorary Assistant Surgeon to the David Lewis Northern Hospital, Liverpool.

TOOGOOD, F. S., M.D. Lond., one of the Medical Referees under the Workmen's Compensation Act for the Districts of the Bodmin and Liskeard County Courts.

St. Mary's Hospitals, Manchester: BRENTNALL, C. P., M.B., Ch.B. Liverp., Honorary Assistant Surgeon; POPE, S., M.B., Ch.B. Manch., and CROWTHER, J. A., M.B., Ch.B. Manch., House Surgeons at the Whitworth-street West Hospital; ADAM, R. S., M.B., Ch.B. Manch., House Surgeon at the High-street Hospital; CRAIG, JENNIE D., M.B., Ch.B., Assistant Medical Officer, Out-patient Department; KNIGHT, BARBARA M., M.B., Ch.B., Clinical Assistant.

Certifying Surgeons under the Factory and Workshop Acts: HOEY, J. T. S., M.B., B.Ch. Oxf. (Petersfield); GRAHAM, J. (East Grinstead); MORRIS-JONES, J. H., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg. (Colwyn Bay); and WEBB, H., L.R.C.P. Lond., M.R.C.S. (Bexhill).

Vacancies.

For further information refer to the advertisement columns.

Barry Urban District Council.—H.S. At rate of £200.

Birmingham, Highbury Group of Hospitals.—Jun. Surg. O. £350.

Birmingham, St. Chad's Hospital.—Res. M.O. £100.

Bolton County Borough.—Asst. M.O.H. and Asst. Sch. M.O. £600.

Brighton, New Sussex Hospital for Women and Children.—Hon. Asst. Anæst.

Brighton, Royal Sussex County Hospital.—Hon. M.O. for Dis. of Ear, &c.

City of London Hospital for Diseases of the Heart, Victoria Park, E.—H.P. at rate of £100.

Colwyn Bay and Colwyn Urban District Council.—M.O.H., &c. £800.

Eastbourne, Princess Alice Memorial Hospital.—Res. H.S. At rate of £175.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—H.P. At rate of £125.

Essex Administrative County.—Asst. Tuberc. O. £600.

Greenwich, Dreadnought Hospital.—S. in charge of Out-patients.

Hospital for Sick Children, Great Ormond-street, W.C.—Med. Reg. and Pathologist. £300.

Hospital for Women, Soho-square, S.W.—Pathologist and Reg. £100.

Liverpool Hospital for Consumption and Diseases of Chest, Mount Pleasant.—Hon. Asst. P.

Metropolitan Hospital, Kingsland-road, E.—Sen. and Jun. H.P. Sen. and Jun. H.S. Also Two Cas. O.'s. Each at rate of £100.

National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Res. M.O. £200.

Newark Hospital and Dispensary.—Res. H.S.

Poplar Hospital for Accidents, East India Dock-road, E.—Second Res. Surg. O. £175.

Prestwich County Mental Hospital, near Manchester.—Med. Supt. £800.

Queen's Hospita lfor Children, Hackney-road, Bethnal Green, E.—Asst. S.

Rochester, St. Bartholomew's Hospital.—Third Res. M.O. At rate of £200.

Royal Chest Hospital, City-road, E.C.—Phys. to Out-patients. £50.

Royal London Ophthalmic Hospital, City-road, E.C.—Sen. H.S. £150.

St. John's Hospital for Diseases of the Skin, 49, Leicester-square, W.C.—Pathologist. £100.

St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. and Asst. Res. M.O. At rate of £175 and £150 respectively.

Stoke-on-Trent, North Staffs. Royal Infirmary.—H.S. £150. Also H.P. £125.

Seychelles Government.—Asst. M.O. and Res. S. Rs.6500.

Births, Marriages, and Deaths.

BIRTHS.

HEYWOOD-WADDINGTON.—On Oct. 5th, at St. Catherine's-road, Littlehampton, to Dr. and Mrs. Heywood-Waddington—a daughter.

MURPHY.—On Oct. 7th, the wife of James Murphy, M.B.E., F.R.C.S.E., Middlewich, of a daughter.

RICHARDSON.—On Oct. 6th, at Edinburgh, the wife of Major D. T. Richardson, R.A.M.C., of a daughter.

URQUHART.—On Oct. 12th, at the Little House, Farnham, Surrey, the wife of J. L. T. Urquhart, L.D.S. R.C.S., of a son.

MARRIAGES.

CHAVASSE—JACKSON.—On Oct. 14th, at St. John's, Putney, Charles Cecil Howard, M.A., B.M. Oxf., son of Mr. and Mrs R. E. Chavasse, of Barnards Green House, Great Malvern, to Mabel, daughter of the late Mr. Jackson and Mrs. Jackson, of 67, Clarendon-road, Putney.

MCKENDRICK—EVANS.—On Oct. 7th, at St. Martin-in-the-Fields, William McKendrick, M.B., Ch.B., to Dorothy, third daughter of Howell T. Evans, M.R.C.S., and Mrs. Evans, The Laurels, Blackwood, Mon.

SNODGRASS—OWEN.—On Oct. 3rd, at St. Saviour's Church, Walton-street, S.W., Captain William McElrea Snodgrass, M.C., R.A.M.C., to Kathleen, elder daughter of A. D. Owen, of Pont-street, S.W.

WALKER—CLOUSTON.—On Oct. 6th, at Frodingham Parish Church, Arnold Learoyd Walker, M.A., M.B., B.Ch., to Gwenville, youngest daughter of the late Mr. and Mrs. J. Clouston, of Middlesbrough.

WATSON—LEA.—On Sept. 15th, at Christ Church, Mussoorie, Major W. L. Watson, O.B.E., I.M.S., Meerut, to Dorothy Ellen, eldest daughter of Mrs. H. Lea, Burton-on-Trent, and the late Henry Lea.

WILSON—ELLICOCK.—On Oct. 7th, at Holy Trinity Church, Aldershot, Captain J. A. Lawther Wilson, R.A.M.C., to Gladys Vera, daughter of Captain Ellicock, Aldershot.

DEATHS.

COOPER.—On Oct. 10th, Percy Robert Cooper, M.D., F.R.C.S., of Glenthorne, Bowdon, Cheshire.

LAWRIE.—On Oct. 8th, from pneumonia, Alexander Lawrie, M.B., Ch.B., of Hither Green-lane, S.E.

PREST.—At Glenafton, New Cumnock, Ayrshire, on Oct. 8th, Jessie Annie (née Creighton), the loved wife of Edward Ernest Prest, M.D.

SERPELL.—On Oct. 11th, at nursing home in Plymouth after operation, Hugh Hamilton Serpell, M.R.C.S., L.R.C.P., late Lieut.-Colonel R.A.M.C., of Polyphant House, Lewannick, Cornwall, aged 48.

SONNTAG.—On Oct. 10th, at his residence, Belsize Park-gardens, N.W., Charles Frederick Sonntag, M.D., Ch.B. Edin., Prosector to the Zoological Society of London.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

His Majesty the King's Royal licence and authority has been granted to Dr. Percy Glyn Savours Williams, Principal Medical Officer of Health, Cairo City, to wear the decoration of the Order of Ismail, Insignia of the Third Class, which has been conferred on him by the King of Egypt

Notes, Comments, and Abstracts.

HOSPITALS, GENERAL AND SPECIAL.*

BY N. BISHOP HARMAN, M.B. CAMB., F.R.C.S. ENG.,
SENIOR OPHTHALMIC SURGEON TO THE WEST LONDON HOSPITAL, ETC.

The Question at Issue.

THE part that should be played by general and special hospitals in a comprehensive hospital organisation is a matter of growing interest. It is of interest whether the problem be viewed from the national or local standpoint. Hospital organisers must necessarily view the problem as it applies to the area of their work, but these same workers should on occasion take the larger view of national requirements, and envisage the problem as it appears to those whose duty it is to strive to adjust the demands of area and area. Few areas can or do stand alone. Modern facilities for intercommunication have laid flat the boundaries of formerly self-contained areas, so that there can be found but few which can now claim that they are independent of the greater whole. It is well at the outset to define our terms, and to do so in relation to present-day practice. Whatever the connotation of the terms may have been in the past, we now use the words "general" and "special" in a strictly regular manner. We mean by a general hospital one that admits to its services all kinds, or almost all kinds, of disease in any age or sex; and we mean by a special hospital one that restricts its services to one type of disease or one type of patient as defined by age or sex. The question at issue is the relative advantage or disadvantage of such general or special hospitals.

Origin of Hospital Types.

It is of interest to look back upon the origin of these types of hospitals. The earliest hospitals were almost entirely general hospitals. They admitted to their services patients suffering from any kind of disease that needed treatment. Special hospitals are for the most part of modern origin. In the early decades of the nineteenth century, concurrent with the rapid increase of industry in this country and the growth of large urban populations, there was an equally rapid development of medical science. There was an increasing knowledge of and ability to treat general diseases, and also an immense development in the recognition of and skill in the treatment of disease of special regions of the body. The advance was so rapid that large additional clinical facilities were needed. In this country, where the enthusiasm and energy of volunteer works have always blazed the path of progress and brought new fields of work into cultivation, the process of development of hospital service followed what is to us the natural mode. For instance, keen workers in the field of eye diseases started clinics, or dispensaries as most of them were first called, for the treatment of these diseases. One or two doctors in association established in a small way in some convenient house an institution which later has become a recognised eye hospital. This is the story of most of our best known ophthalmic hospitals—e.g., Moorfields in London; the hospitals in Edinburgh, Glasgow, Oxford, and Maidstone, to cite only a few.

It would appear that there was no idea in the minds of these early founders of special hospitals of separation or isolation from or competition with general hospitals. There was a need, so they proceeded to meet it in the simplest way. To expand an existing institution was or might be difficult. To set up something new was easy, and the new made a ready appeal to philanthropists. This method of working accounts for conditions that seem to us to-day extraordinarily anomalous. There is at Charing Cross in London a large general hospital with its own eye department and next door to it there is an eye hospital; the walls of the two buildings are conterminous. There is in Maidstone at one end of a short street a general hospital and at the other end a hospital for the diseases of the eye, nose, and ear. These seemingly anomalous conditions are explained by the natural idea of the founders of the later special hospitals to provide for new wants, as near as might be to the older foundations, which formed as it were a focus of medical work in their own and the public eye.

In later days there was indeed some spirit of rivalry in the formation of further special hospitals. General hospitals recognised the necessity for special departments in their own organisation, and these with the increasing number of new special hospitals engendered a competition for patients which was not altogether healthy in that it led to abuse of hospital facilities. These conditions are less evident now. New hospitals are not easy to form, the tendency is to improve and expand existing institutions, but there is still some sign of excessive specialisation, especially, under the pressure of social-reformers, in the provision of special clinics under statutory authority—e.g., tuberculosis dispensaries, &c.

The Acid Test of Efficiency.

The determination of the relative value of special and general hospitals must be based upon their working efficiency in regard to the patient. Which type of hospital is best for the patient, whatever be the nature of his ailment; and which in the long run fosters the best type of medical practitioner—that is to say, the practitioner most able to cope with the disability of the patient.

My answer to these questions may be given now, so that there may be no doubt in the mind of the reader as to the trend of the argument. In my judgment there can be no doubt that the general hospital is better than the special hospital, better for the patient, and better in that it cultivates a superior type of medical work.

The human body must always be considered as a whole if the medical practitioner is to minister successfully to its needs. The members of the body cannot and must not be considered as detached units. Modern medicine reaffirms and proves the Pauline dictum, "all the members of the body, being many, are one body." A defective eye may react upon the whole body or the defect of the eye may be a reaction brought about by a general bodily ailment. And so it is with disease of any other of our special organs. To limit the diagnosis to the "eye," the "nose," or whatever may be the organ under examination, is to limit the power of curative medicine and the prospects of the patient. Work in a special hospital tends to be limited, bounded as it were by a ring fence. It is a natural effect of a limiting name. That this tendency is being resisted there is ample evidence, and some of this evidence will be noted later. On the other hand, in a general hospital there is a constant recognition of the full field of medical work. There is daily contact between the general physician and surgeon, the eye surgeon, the gynæcologist, the dental surgeon, and so forth. Each of these gives to the other a daily hint of his field of work, and with that there is an unconscious widening of outlook for each member of the staff, so that no matter to what department a patient may be drafted after the preliminary examination the chief of that department is always conscious of the whole anatomy of his patient. The physician or surgeon of a department recognises that he is one of a team, every member of which is at his service in elucidating the primary origin of the disease under investigation, and through such combination there is laid the foundation of ever-widening extensions of preventive medicine.

Recent Tendencies.

The advantage of the general hospital plan of work is demonstrated by recent developments of special hospitals. It is rare now to find in a special hospital the members of the staff limited to practitioners of that speciality. On the staff of an eye hospital there will be found neurologists, aurists, and even dental surgeons. On the staff of a nerve hospital there will be found eye surgeons, aurists, gynæcologists, orthopædic surgeons, and so forth. On the staff of a lying-in hospital will be found physicians and surgeons, a physician for antenatal work, another for infant consultations, and also ophthalmic and dental surgeons. Such a range of staffing in special hospitals is proof of the desire for a wide outlook and comprehensive team work; in fact, it is an attempt to make the work of the special hospital as near akin to that of a special department in a general hospital as is possible. Again, in recent years there have been amalgamations and close associations formed between general and special hospitals whereby the special hospital has become an integral part or department of the greater general hospital.

It may be asked: Is there no countervailing advantage in the special hospital—e.g., in the intensive cultivation of one branch of work in one place? There is such an advantage. Doctors are as gregarious as other human workers. It is of interest to us to work together, especially when we are doing the same work. Minds are stimulated, ideas are kindled, and on occasions special advances are secured. But there is a risk of one-sided growth through loss of contact with general medicine and surgery or of loss from failure to know what other branches of medicine are doing. Special hospitals are not the sole means whereby we specialists intercommunicate. We have our special medical societies, our sections in the greater medical societies, and our clinical meetings in hospitals.

The Rule and Exceptions.

My conclusion is that a general hospital with a range of departments covering all modern requirements is the ideal unit of hospital organisation. It provides the maximum of benefit with the minimum of risk. But that does not mean that special hospitals should cease to exist. In a great city special hospitals may be of convenience in dealing with large numbers of patients of a presumably distinctive type, also for concentrating special research and teaching in universities. There may be limitation in the ground space available for a central general hospital, so that outlying clinics attached to the central hospital may be more economical, and if these are annexes of the central organism the disadvantages of excessive specialisation are reduced. Again, certain kinds of disease need long periods of treatment, and treatment in the country rather than in the towns—e.g., orthopædic cases and tuberculosis. Other disease might present danger or inconvenience in the general hospitals —e.g., specific fevers and mental disease. Safety and convenience make for separate accommodation in these cases. But there is no physician who will not agree that so far as fevers are concerned separation is a matter of convenience only and not an ideal medical arrangement. Whilst in the case of mental diseases the evidence given before the Royal Commission now sitting is conclusive that the ideal for mental cases is treatment in association with general hospitals. Something more than convenience justifies children's hospitals; they are, in fact, general hospitals for children, their smaller size makes them better units for the little ones; but even with these hospitals there are occasional difficulties in dealing with the older children, and in finance because of the relatively high cost of laboratory and physical equipments in small hospitals; both these difficulties make an association with the larger general hospital desirable. The treatment of disease of the nervous system and of orthopædic cases is commonly of such long duration and requires such complicated and special equipment that there is a real justification for separate provision. But there is no such justification for separate hospitals for disease of the eye, nose, ear, throat, skin, heart, rectum, urinary organs, for cancer cases, nor for radiological treatment. All these are better provided for in, or at least in association with, the unit of hospital organisation, the general hospital.

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* Appendix to the Sixth Annual Report of the Voluntary Hospitals in Great Britain (excluding London).

British and American Opinion.

So far as my information goes, this is the trend of opinion within the British medical profession both amongst men in general and in consulting practice. It is also the expressed opinion of the most recent writers on American hospitals, where the English system of voluntary initiative is dominant. Corwin[1] in a survey of the hospital situation in Greater New York writes: "The fact that so large a percentage of hospital beds in the City is to be found in the special hospitals (about 37 per cent.) raises the question of the desirability of such development." He concludes, "It is safe to say that in the City of New York in the development of special institutions the zenith has been reached, and that hospital development in the future will probably proceed along lines of greater scope on the part of general hospitals."

The situation in this country calls for the direction of wise statesmanship. The British Medical Association[2] after consideration of this matter has urged that the local voluntary committees, now existing, should be expanded so as to enable them to survey all the hospital accommodation of their areas, to determine the adequacy of this accommodation, to foster coördination between existing special and general voluntary hospitals and municipal and Poor-law institutions for the treatment of the sick; and to do so without interfering with the domestic autonomy of the several hospitals, each being encouraged to work upon those lines of local initiative which have proved so vital in local work. Further, that the duties of the Voluntary Hospitals Commission should be extended so as to make it a Standing Consultative Hospitals Committee for England and Wales, representative of all the local voluntary hospitals committees, and to act as between the Ministry of Health and the local committees in all matters concerning the hospital policy of the Ministry.

The time is ripe for a move in this direction, and it is better that such a move should come from within the hospitals rather than from without.

THE IDEALS OF SOCIAL HYGIENE.

SPEAKING at King's College on Oct. 8th on biology and social hygiene, Prof. Arthur Thomson said that the contrast between civilised society and wild nature is in many ways disquieting. Among mankind constitutional disease is rife, whereas in wild nature it is rare. Nature is all for health, whilst to man health is *often secondary.* Nature is always sifting for health, but civilised society shelters cobbles and coddles. The lamentable exhibition of the pathology of sex amongst men is due partly to repressions and suppressions, partly to mental materialisation, and partly to the departure from the old method of preferential mating. Amongst animals sex pathology is rare. In a plea for clear thinking, Prof. Thomson condemned "the fallacy that the endocrine glands determine the personality in ordinary men and women." The healthy body without the healthy mind is only half way to happiness. There is need for a freshened enthusiasm for health and incidentally for beauty. Prof. Thomson suggested ways of promoting such enthusiasm, but insisted that social organisation and ideals must be improved. "We are enmeshed," he said, "in a net of social traditions and trammels handed on from the early industrial or palæotechnic age." Wealth without health is vanity.

The lecture was the first of a series to be held on Thursdays, at 5.30 P.M., at King's College under the auspices of the British Social Hygiene Council. The subject of the course is the Ideals of Social Hygiene, and the lecturers will include Prof. Cyril Burt, Dr. Malinowski, Prof. Percy Nunn, Prof. Winifred Cullis, and Sir Arthur Newsholme.

THE FOULING OF FOOTWAYS BY DOGS.

To the Editor of THE LANCET.

SIR,—I am glad to see from your annotations that you are taking notice of the fouling of the pavements by dogs in Kensington. I have felt very strongly in the matter and went to the M.O.H. for Kensington about it, and I think it was on my suggestion that a notice on the subject was inserted in the tax-note for dogs, but I wish I could feel that any real good has so far been done. The pavements are as foul as ever. I do not think any good will be done until the police can be persuaded to deal with the nuisance, and perhaps your powerful words may help them. I do not think that the traffic can have anything to do with the case. It is a matter for the owners of dogs, who do not take the trouble to train them properly. Why Kensington should be the only borough to take the matter up I do not know. The need for remedy is obvious in all big towns.

I am, Sir, yours faithfully,

WALTER RIGDEN.

West Bolton-gardens, S.W., Oct. 11th, 1925.

A LOCAL PUBLIC HEALTH GUIDE.

THE medical officer of health of St. Pancras, Dr. G. Sowden, has compiled for the use of the medical practitioners in the borough an extremely useful booklet of information. This booklet was circulated during Health Week. It is of handy size for the pocket and contains about 13 pages of printed matter, showing in alphabetical order not only the various public health activities of the borough council, but also information with regard to ambulances, voluntary hospitals, and voluntary societies of all kinds. The function of the maternity and child welfare centres is explained in detail, in order to remove any misconceptions that may exist. The duties of medical practitioners with regard to notifiable diseases, including those notifiable under the Factories and Workshops Acts, are given. The work of the tuberculosis dispensary is explained and the facilities provided with regard to special schools and school clinics, &c., are enumerated. We think the booklet will prove very valuable, especially to those practitioners who have recently begun to practise in the borough. The idea seems well worthy of imitation in other districts.

Messrs. L. G. Coade and Co., electrical engineers, of 55, Temple-row, Birmingham, invite medical men to inspect various models of the K.B.B. ultra-violet lamps for medical therapy.

Mr. John C. Carr (Registered Dentist, 1922) writes that after abundant opportunity of observing the various methods of anæsthetic administration by dentists in America and this country, he is satisfied that gas and oxygen is the one and only general anæsthetic that should be used in the extraction of teeth. But however secure the dentist may feel of his anæsthetic and of his skill as anæsthetist, in any case of doubt as to the presence of existing disease or debility a dental operation should be postponed until the patient has been referred to his medical adviser for examination. In dealing with male patients Mr. Carr's practice is, generally speaking, to give a local anæsthetic and extract only a limited number of teeth at one sitting. Should a general anæsthetic be insisted upon, the physical condition being equal to it, gas and oxygen is given. In women he regards gas and oxygen as perfectly safe, even during pregnancy. He uses the combined apparatus of Hewitt and Weller, the valve being controlled by the left hand.

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[1] The Hospital Situation in Greater New York. Report of or Survey of Hospitals in New York City by the Public Health Committee of the New York Academy of Medicine, prepared by E. H. Lewinski-Corwin, Ph.D., New York and London, G. P. Putnam's Sons, 1924.

[2] Policy affecting Hospitals. Section A. on Inter-relation and Coördination of Hospital Provision. British Medical Association, London, W.C. 1, 1925.

The Harveian Oration

ON SOME DEVELOPMENTS OF HARVEY'S DOCTRINE

"OMNE VIVUM EX OVO."

Delivered before the Royal College of Physicians of London on Oct. 19th

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[AFTER referring to the greatness of Harvey as an investigator and to the value of his "De Generatione Animalium," Sir Frederick Mott described the growth of the knowledge of genetics since that work was published. The expansion of Harvey's dictum, *Omne vivum ex ovo* into Virchow's *Omnis cellula e cellula* had opened up a new chapter in physiology and pathology and the investigations which followed had thrown new light on the conceptions of fertilisation. The reviviscence of Mendel's great discovery (1865) of segregation of unit characters had awakened in 1900 an interest in the chromosome theory of heredity, and Sir Frederick Mott gave a brief summary of this theory, in so far as it applied to his subject. Turning to his own research into the function of reproduction and genetics in relation to certain mental diseases, he continued :]

From time immemorial the influence of the sexual function on physical structure, character, and conduct has been known, but it is only within recent times that experimental investigations and clinico-anatomical observations have shown that this influence is dependent upon an internal secretion of an interstitial gland of the testis and ovary respectively, which can function independently of the genetic structure. The testis secretes a hormone which determines, prior to birth, the physical and mental sexual characters, and, at puberty, the secondary sexual characters. The reproductive organs are functionally correlated with the endocrine system of glands, especially the cortex adrenalis, the pituitary, and the thyroid. As the sex instinct gradually matures, a progressive mental and bodily evolution takes place in the male and female, in accordance, not only with the innate dispositions due to sex, race, and familial ancestry, but with the evolution of character due to good or bad habit formations. Habits acquired in early life, although not germinal and transmissible, nevertheless form such stable organised reflex patterns in the nervous system as to be capable of profoundly influencing such inborn dispositions as the moral sense, the self-regarding sentiments, the emotions and passions, and their proper control. At the adolescent period a new great vital urge, stronger even than self-preservation, comes into being to energise all the organs and tissues of the body, especially the nervous system, for the supreme biological end of reproduction and preservation of the species.

THE INTERSTITIAL CELLS OF THE TESTIS.

I will now give a short account of my own investigations regarding the interstitial cells in man and their functions. Examination of the testis of a full-term twin fœtus showed tubules containing embryonic spermatogenic cells ; between them, lying in loose connective tissue, were seen abundant polygonal cells with a round nucleus lying in an eosin-stained cytoplasm. Many of the cells had the appearance of young cells. There was plenty of evidence of nuclear mitosis, and I came to the conclusion that numbers of the cells had attained maturity and were on the way to a regressive atrophy, leaving only the nuclei. These cells contain a lipochrome substance and lipoid granules. I found that about the fourth month the seminiferous tubules are twice the size of those at birth ; instead of being separated by loose connective tissue containing abundant Leydig cells, they are closely approximated. the Leydig cells have almost disappeared, and there are no lipoid granules visible. At the eleventh year I observed very little change in the size of the tubules and the interstitial cells are only discernible by examination with an oil immersion lens. Little or no interstitial lipoid is seen. There are commencing manifestations of nuclear activity and karyokinetic figures, but no spermatids nor spermatozoa. The Leydig cells do not reappear until puberty, when the generative function commences, and the sexual hormone from the interstitial cells begins again to pass into the circulation and determine the bodily and mental secondary sexual characters.

Seeing that the male sexual hormones are active for probably more than six months in prenatal and postnatal periods, it follows that this influence must have been operating on all the somatic cells, including the nervous system, during all that time. If ther be an elective storage of the sexual hormone in th nervous system, as Steinach's experiments indicate then a masculine behaviouristic tendency may thu early be engraven upon the nervous system. Moreove by the sensitising influence of the testicular hormon the primary male characters are thus early in li made dominant in all the bisexual somatic cel The belief in the occurrence of male sex-dominan at an earlier age than the existence of a secretion of t female sex hormone has received fresh support in t very interesting solution of the riddle of the "fr martin" by Lillie. He reports a case in which t female characters of a female twin calf were more less completely suppressed and certain male structur developed as a result of anastomosis of the placent blood-vessels with those of the associated male tw calf. This can only be explained by the influence a soluble and diffusible hormone derived from t male and carried to the female by the circulati blood. We can thus understand why castrati even in early life, cannot remove entirely the hormo effect thus early impressed upon the nervous syste nor eliminate entirely the physical primary m sexual characters already determined in the tissues

OTHER ENDOCRINE INFLUENCE.

There can be no development of sex charac without all the other organs of internal secre participating ; all of the ductless glands, and especi the thyroid, the pituitary, and the adrenal, influenced by the internal secretion of the se glands, and the latter are undoubtedly influenced the former ; indeed, there is a harmonious functi interrelation between the reproductive organs the whole endocrine system. I have recently inv gated a case of dystrophia adiposo genitalis affec an epileptic imbecile, aged 20 at death. There no hair on the face ; there was polyuria and ma sugar tolerance ; there was infantilism of the exte genitals ; the atrophous undescended testes wer larger than peas and showed microscopically interstitial cells and spermatogenic cells replace fibrous tissue and fibroblasts. Associated with testicular atrophy was a markedly atrophous pitu and atrophous thyroid gland ; moreover, the c adrenalis was much diminished in thickness.

The increase in growth of the long bones of y castrated in early life is due to retardation of chondral ossification, and supports the view the internal secretion of the testis controls ca metabolism. Similarly in the female there is a rel between the ovarian internal secretion and ca metabolism, for removal of the ovaries benefit sometimes cures osteomalacia. Again, the rele calcium from the pelvic bones during pregnanc parturition may be regarded as a physiological p brought about by an internal secretion of the the phosphate of lime thus released being utili the mammary gland. It is generally assume the source of the sexual hormone of the fe connected with the development of the G follicle, and that the cells of the zona granulosa and the internal thecal cells of the follicle secrete a specific soluble substance which passes into the blood and determines the female characters. It may, therefore, be supposed that a continuous conversion of primordial follicles into immature Graafian follicles, from earliest infancy onwards, provides a feminising hormone to counteract the pre-established male dominance in the bisexual cells of the body. This formation of atretic follicles, and subsequently corpora atretica, continues until menstruation occurs and maturation with dehiscence of the follicles takes place. I have found that ovaries at birth and in early infancy contain numerous immature Graafian follicles. Should this follicle formation not occur to a normal physiological extent, it is conceivable that, having regard to the selective action of the hormone on the central nervous system, as revealed by Steinach's experiments, there would be a tendency to masculinisation, especially revealed in mental qualities. The whole of the somatic cells of male and female are, until the dawn of adolescence, engaged in growth and self-preservation, in preparation for reproduction and preservation of the species.

Disorders and diseases of the mind have long been associated with two conditions—namely, heredity and the critical periods of life (adolescence, when the sex instinct matures, and the climacterium, when the sex instinct wanes). These are physiological conditions. Pregnancy, parturition, and lactation in the female are likewise physiological conditions. Two distinguished Harveian orators, the late Dr. J. A. Ormerod and Sir Bryan Donkin, have dealt with the subject of heredity in relation respectively to nervous diseases and criminology, based upon wide experience, but neither of these has treated of the relation of heredity to insanity based upon the study of pedigrees, statistical data, and pathological findings.

MENTAL DISEASE WITHOUT EXOGENOUS CAUSE.

There are three conditions which prove my argument that there are certain types of mental disease in which the naked-eye appearances of the brain do not afford any indication of an exogenous cause of the disorder and loss of mind presented by the symptoms during life. They are termed respectively dementia præcox, manic-depressive insanity, and involutional melancholia, of which the two latter may terminate in dementia. Through the study of a large number of carefully constructed pedigrees by myself and co-workers, extending in many instances to four or five generations, and of statistics based on a card system extending to 4000 related individuals who have been or were at the time in one of the ten London County asylums, I have come to the conclusion that there is a signal tendency to *antedating* in respect to these types of insanity. That is to say, if a parent suffered with manic-depressive insanity, or a parent or grandparent with involutional melancholia or senile dementia, one or more of the descendants may suffer during adolescence with dementia præcox. In the construction of pedigrees I was particularly struck by the fact that two, three, or even four or five members of the same co-fraternity at about the same age suffered with mental disease—usually dementia præcox; sometimes with manic-depressive insanity; not infrequently with dementia præcox *and* imbecility. This is a more striking proof of hereditary transmission than when a mental disease is transmitted in successive generations.

When there is evidence of insanity or epilepsy in both stocks, or a general neuropathic tendency indicative of mental instability, the liability to dementia præcox is greatly increased in the descendants; therefore in advising (as one often has to do) in regard to marriage, evidence pointing to these special forms of mental disease in both stocks, on one side, still more on both sides even if shown in collaterals, induces one to say definitely from a eugenic point of view that it would be inadvisable—inasmuch as the risk of an insane inheritance for the children is so much the greater. Moreover, in some of the pedigrees it looked as if there were segregation of unit characters, for I was able to find healthy children who married and had a healthy grown-up progeny in the same co-fraternity with cases of dementia præcox and imbecility. But, as the late Dr. Ormerod and Sir Bryan Donkin pointed out in their interesting Harveian Orations, there are too many complicating factors to permit of Mendelian principles, which are so striking in animals where breeding can be controlled, specially in relation to mental diseases. I have to omit here the statistical data, but I should like to refer to one result of them, because it supports my premiss. Prior to the war the number of cases of dementia præcox admitted to asylums was about equal in the two sexes, likewise the average age incidence (about 23 years). During the war there were half as many male admissions of dementia præcox as females whose parents were or had been in the London county asylums. The age of these males averaged 17·5 instead of 23·5; the reason being that those over the age had been conscripted, and I may state that 14 per cent. of the insane in the Army were cases diagnosed as dementia præcox.

DEMENTIA PRÆCOX A VITAL DEFECT.

By a comparison of the mental and bodily conditions of an acquired mental disease—general paralysis of the insane—with the mental and bodily conditions found in dementia præcox, I shall endeavour to show that dementia præcox is a vital defect of the reproductive organs, and of the brain in particular, and probably of the whole body.

Spermatogenesis.—I have investigated spermatogenesis in 108 cases dying in hospitals and asylums at different ages and in different bodily states, including normal death from shock of injury. I have found it active from puberty to old age (81) with individual variations in degree. In cases where severe chronic disease occurred in early life there has been found absence or deficiency of spermatogenesis. In adults dead of shock following accident, tuberculosis, dysentery, broncho-pneumonia, enteric fever, gangrene of lung, active spermatogenesis was found. It was absent in several cases of prolonged extensive suppuration and in several cases of cancer. But these were diseases in which an active prolonged cell proliferation had taken place.

In general paralysis local patches of atrophy of the testes with dense fibrosis occurred in many of the cases examined, but with very few exceptions, in a large number of cases, active spermatogenesis in all stages was found in spite of intercurrent disease. The atrophied patches were due either to gonorrhœal epididymitis or localised syphilitic inflammatory affection of the testes. The dense white fibrous patches microscopically examined exhibited tubules consisting of thickened basement membrane without Sertoli cells or spermatogenic cells of any kind. The atrophic process was due to a regressive atrophy, as in dementia præcox. This, moreover, was shown to be the case by the fact that normal tubules with active spermatogenesis and Leydig cells could be found in the midst of the atrophied tubules. In spite of this secondary atrophy which affects the testes of many paralytics, the average weight of the pair after removal of the epididymis and tunica vaginalis is 8 grammes heavier than the testes of dementia præcox; whereas in the majority of cases of dementia præcox examined an emulsion of the testes revealed no spermatozoa, the converse was found in paralytic dementia.

In 27 cases of dementia præcox of which the testes were examined, either a commencing, a partial, or a complete primary regressive atrophy was evident by the morphological and micro-chemical changes in the spermatogenic epithelial cells and the interstitial cells, with a corresponding thickening of basement membranes and overgrowth of interstitial connective tissue. With a few exceptions these testes of dementia præcox cases showed less evidence of active spermatogenesis than the testes of an old senile case aged 81 at death. In 27 per cent. of the cases the interstitial cells showed the pigmentary degeneration found in old age.

Circulating Toxins.—I have no time to deal with the very important question of the influence upon the germ-plasm of circulating toxins in the blood. But the study of the testes of 100 cases dying of all forms of disease, and yet, except in dementia præcox and imbecility, showing with very few exceptions active spermatogenesis, appears to me to find a solution in the fact that a barrier of lipoid granules, similar in chemical composition to the lipoid granules in the cortex adrenalis, was found. These granules consist of a lecithin-cholesterin ester. The cholesterin acts as an antitoxin. Now I found in cases of microbial toxæmia that the lipoid-cholesterin ester disappears from the cortex adrenalis, and some people speak of this gland as antitoxic in function on this account. It seems to prove that Nature will provide as long as it can for the protection of the germ-plasm. There is evidence to show that these lipoid granules are connected with oxidation processes, and would therefore protect the germ-cells against poisons like alcohol circulating in the blood. Whereas in general paralysis clumps of eosin-stained cells could be seen in sections of the testes with a low-power magnification, in the great majority of cases of dementia præcox eosin-stained clumps were not visible; the appearances suggest a failure of these interstitial cells to maturate. Fibroblasts and dense fibrous tissue tend to replace the Leydig cells. It is less easy to show the regressive atrophy in the ovaries for various technical reasons, but the study of 100 patients dying in hospitals and asylums led me to the conclusion that there is, similarly to the male reproductive organ, a tendency to regressive atrophy of the reproductive organs in the female in dementia præcox, as evidenced by the deficiency of the chromatin in the nucleus of the primordial follicles, their disappearance and replacement by fibroblasts. The organ shows a sclerotic condition even in many young women suffering with this disease.

A CASE OF ACUTE DEMENTIA PRÆCOX DESCRIBED.

To the first volume of "Libro en Honor" of Ramon y Cajal I contributed a paper upon the Genetic Origin of Dementia Præcox, giving the clinical history and pathological findings in the brain and reproductive organs of a case of acute dementia præcox. The following is a summary:—

There was a family history of insanity on both sides. A brother died in Charing Cross Hospital from a self-inflicted bullet wound of the brain. The testes were sent to me in 1916, as I had asked for the testes of cases dying of injury; pronounced regressive atrophy was found. I put them aside, after finding they were very abnormal, and forgot all about them. Five years later I was asked to see a case at Claybury Asylum of acute adolescent insanity, and I was struck by the patient's name and by the history of the brother having died from a self-inflicted bullet wound. I then recollected the name and recognised that it was that of the brother who had died in Charing Cross Hospital. There was a history of a sister who had been admitted four times to an asylum with manic-depressive insanity with sexual delusions; a brother and sister were normal; all the five were highly intelligent. The blood and cerebro-spinal fluid examined during life were both sterile; and there was only slight leucocytosis. The patient died 11 days after admission. The duration of the mental symptoms was about two months; they were characterised by depression, suicidal tendency, and delusions of persecution. He died of heart failure with cerebral congestion and oedema. The testes, freed from tunica vaginalis and epididymis, weighed only 8 g. each, which is less than half the normal weight. They presented a uniformly grey instead of a white appearance, quite like the organ in advanced cases of dementia præcox. The microscopic appearances of regressive atrophy were in all respects a counterpart of those I had found in the testes of the brother. Sections of the testis revealed tubules in all stages of primary regressive atrophy. Some of the tubules showed only a thickened basement membrane lined by Sertoli cells without any spermatogonia or spermatocytes; in others there were all stages of regressive degenerative atrophy of the spermatogenic epithelium, shown by a diminution or even absence of nuclear chromatin in spermatogonia, spermatocytes, and spermatids. Where spermatids or spermatozoa were seen there was evidence of a micro-chemical or morphological change similar to the condition I have found and described in other early cases of dementia præcox. The interstitial tissue displayed an overgrowth of fibroblasts, the cells of Leydig were diminished in size and numbers, the nuclei of the cells were deficient in chromatin, smaller than normal, irregular in shape instead of round, the cytoplasm was deficient in eosin-staining substance, and the appearance of the cells generally was that of a regressive atrophy. Pronounced nuclear and cytological changes were found in the cortical neurons generally, but the small stellate cells of Cajal were particularly affected.

The microchemical and morphological changes of the nuclear material of the cortical neurons and of the testis in this case indicate an hereditary bio-chemical deficiency of nuclear material in two structures essential for the preservation of the individual and the species. It has been asserted that the nuclear changes in the reproductive organs and the cortex of the brain in this disease are due to tuberculosis. In neither of these two young men was there any evidence of tuberculosis, but a strong family history of mental disease on both paternal and maternal sides.

CORRELATION OF DEMENTIA WITH PHYSICAL CHANGES.

In general paralysis the degree of dementia can be correlated with the degree of decay and degeneration of the cortex caused by the spirochætal infection and the escape of toxins into the cerebro-spinal fluid. There is a proportional extent of chronic inflammatory change, thickening and adhesion of membranes, and atrophy of the convolutions, obvious to the naked eye and sufficient to account for the loss of mind. The parallelism is shown in the fact that if there is well-marked speech defect the left hemisphere will weigh usually 20 to 40 g. less than the right. Chance is everything, hereditary disposition nothing, in this disease. There is chance of the individual being infected, but only 5 per cent. of those infected owing to colonisation of the spirochæte in the brain suffer from general paralysis. Likewise chance is everything in the juvenile form due to congenital syphilis.

In dementia præcox the macroscopic appearance of the brain exhibits nothing abnormal, and even microscopic examination shows little. How can the mental symptoms, then, be correlated with the microscopic changes found in the cortex? Before considering this matter more fully let me state what are the fundamental symptoms of dementia præcox: they are a weakening of judgment, of attention, of mental activity, of creative ability; the dulling of emotional interest; loss of energy; and, lastly, the loosening of the inner unity of psychic life. The biological view I take is that there is an inherent defect in the fertilised ovum, which shows itself in later life in two structures connected with the primal instincts of self-preservation and preservation of the species, and in those very structures where active nuclear formative processes take place—namely, the cortex cerebri and the reproductive organs. The brain does not waste in dementia præcox because the axon remains alive and the white matter surrounding the axon does not degenerate. Now the grey matter of the cortex, where all the essential chemico-physical processes take place, according to Donaldson, does not amount to more than one-fiftieth part of the white matter of the cerebrum. Yet if there is functional or structural synaptic dissociation there will result a corresponding failure of psycho-physiological processes and disintegration of the psychic unity according to the nature and degree of dissociation. Accordingly, to the naked eye, the brain may appear normal, and even microscopic investigation may not disclose in many cases (where the mental symptoms are mainly due to suspension of function) histological changes sufficient to account for the symptoms, as in manic-depressive insanity, where the patient returns to normal mentality.

Genetic Inadequacy.

How can we explain the dissociation (schizophrenia) from a physiogenic point of view? I should say by genetic inadequacy—namely, an inherent defect of the vita propria of the neurons, especially of those developed from the telencephalon. This portion of the neural tube is the latest to develop phylogenetically and ontogenetically. The countless millions and millions of neurons which constitute the cortex of the cerebral hemispheres have developed from relatively a very small portion of the original neural blastema. At birth further neuronic formation ceases, and further formative activity consists only in growth and extension of nerve-cell processes. This continues until at 2½ years the brain has attained a size nearly two-thirds of that of the adult. After this growth proceeds slowly until adolescence. There may be a varying amount of prenatal complete arrest of neuronic development, affecting especially those neurons of the highest level which are of evolutionary latest development—namely, the supragranular layer of pyramids—and various grades of amentia may be the result. There may be various degrees of partial arrest of growth and extension of the dendrons, by which there is only incomplete synaptic junction of many neurons of the highest evolutional level. Such a condition may lead to a failure in the highest level of control without much morphological evidence of a mental defect.

Lastly, there may be an inherent lack of durability of the neurons by which they are incapable of performing their functions of storage and transformation of energy during the life of the individual. In normal physiological conditions the neurons should be capable of functioning as long as the whole organism lives. Through an inherent defect they are apt to fail to function at the critical periods of life—namely, adolescence, the climacterium, and senescence; physiological conditions of stress—gestation, parturition, and lactation—may occur in the female. Again, such causes of psychological stress as emotional shock, repression and frustration of the sex instinct, causing endocrine disturbance and insomnia, are exciting causes of the onset of disordered functions of the highest level of neurons. If a deficiency of thyroid secretion can arrest structure, and thereby function, producing cretinous idiocy, it is not surprising that a deficiency of thyroxin in the blood should cause slowing of nervous function when the growth of the neurons is completed. But the thyroid gland's function is correlated with the whole reproductive endocrine system.

A noticeable histological feature in the brains I have examined of cases of dementia præcox is a morbid change in the nucleus. This change was first described by Nissl as occurring in the cortical cells. It was later described by Alzheimer and by most investigators since. It shows a swelling with often irregular infolding of the nuclear membrane, and deficiency or absence of the basophil staining of the intranuclear network by Nissl stain. In the light of recent researches on the chromosomes in relation to heredity this defect of nuclear chromatin, which occurs also in the reproductive organs, suggests a primary genetic defect. Now the nucleus of the neuron plays undoubtedly an important part in the function of transformation and discharge of energy from the cell. Although the Nissl granules are artefacts and do not exist in the living cell, yet their presence in the body of the cell and dendrons, and the microchemical reaction they give—showing that
they contain phosphorus and iron—indicate that in
præcox is g neuron there is a continuous interaction
fore in advis surface of the granules and the nucleus
marriage, evid tion of the cytoplasm.
mental disease i idence that the granules which are
on both sides even body of the living neuron and its
to say definitely fro in the axon, may form an oxygen
would be inadvisable iron of the nucleus may act as
insane inheritance for there is a nuclear failure, as
greater. Moreover, in so s show, this may account for
the neurons being unable to transform and discharge energy along the axon. The neuron is still able to live and its axon is not wasting, therefore the brain does not waste. How, then, can we associate this evidence pointing to a defect in the specific functions of the evolutionally latest and highest developed level of the brain with the philosophical teaching of Hughlings Jackson? The latter, in his discourse on the Factors of Insanity, points out that positive symptoms such as illusions, hallucinations, and delusions, which are so frequently met with in this disease, are evidence of functional activity brought into relief by the negative condition of the highest evolutional level.

What, then, is the original cause of this abnormal variation in the inborn vis propria of the fertilised ovum? It has been suggested that syphilitic antecedents may be the cause of dementia præcox, but I have been unable to find proof of this after examination of the cerebro-spinal fluid of a large number of cases of dementia præcox. It is a fact that these diseases do occur in primitive peoples, only the symptoms, such as hallucinations and delusions, are coloured by social usages, customs, and beliefs.

Tendencies Inborn and Acquired.

Lastly, from a practical consideration of the subject of insanity, it is very necessary to recognise that the germ-cells of every person who is certified as insane and sent to a mental hospital are not necessarily possible potential transmitters of a mental disease. General paralysis of the insane and many other microbial infections leading to disordered mental functions are acquired diseases and are not hereditary. Neither is it right to assume that simple senile decay affecting the brain is transmissible, yet a large percentage of inmates of asylums are sent there on account of senility. These legal administrative conceptions of mental disease must therefore vitiate all statistics in respect to heredity as a cause of mental diseases, because based upon *data* in which admissions to a mental hospital are in many instances the sole evidence.

This does not apply to the same extent to carefully recorded pedigrees; but even these are not free from error, for often all the information that can be obtained is that one or more members of the stock had been in an asylum. How is the public to know the difference between an inborn tendency to insanity *ab initio* in the ovum, true heredity, and a condition which may arise after conjugation of the male and female germs while the developing embryo is still in the body of the mother? As Sir Bryan Donkin pointed out, congenital disease was confounded with hereditary disease even by medical witnesses who gave evidence before the Royal Commission on Feeble-mindedness. The term "hereditary syphilis" is a misnomer. Much may happen while the embryo is still in utero. The normal biological processes of nutrition of the developing embryo may fail; abnormal mechanical conditions may arise in the uterus, interfering with the proper development of the embryo; or mechanical conditions in the process of development of the embryo may arise, interfering with the development of structure. Of all the structures in the body of the embryo likely to be affected by a departure from normal dynamic biological conditions of growth, the great brain or cerebrum is the most likely. The neo-encephalon—new brain—of mammals appears first as two hollow buds from the telencephalon, which by rapid cellular proliferation grow upwards and backwards to cover up completely the basal ganglia and mid-brain to form the cerebral hemispheres. In that process many mechanical failures and accidents may occur, interfering with the vascular supply or nutrition of the rapidly proliferating cells, whereby the process may be arrested altogether, as in anencephaly, or partially arrested, as in the brain of the idiot or low-grade imbecile.

There is evidence of a possible vascular cause through a lack of correspondence in the normal rate of growth of the dura mater and soft membranes and the growth of the brain. Owing to this the veins enter the longitudinal sinus in a direction opposite to the current of the blood-stream in the frontal lobes—an anatomical condition which favours venous stasis. This I have put forward as an explanation of the fact that the frontal lobes are the seat of early and most pronounced meningo-encephalitis and atrophy in paralytic dementia, because the spirochætes, being anaerobic, would develop more easily where there is venous stasis. Again, prolonged labour and difficulties in delivery requiring the use of instruments may be responsible for injury of the brain. Idiots and imbeciles occur in all grades of society (frequently they are the first-born), and it is not at all uncommon to find nothing in the paternal or maternal family history—even when a pedigree can be obtained of three or four generations—to account for this pronounced failure of development of the anatomical basis of mind. The late Dr. Henry Ashby considered that 25 per cent. of the cases of idiocy and imbecility were due to other causes than heredity.

Cameron Lectures

Delivered at the University of Edinburgh on Oct. 19th, Oct. 20th, and Oct. 22nd, 1925,

BY HARVEY CUSHING, C.B., F.R.C.S. ENG.,
PROFESSOR OF SURGERY IN HARVARD UNIVERSITY.

LECTURE I.*—THE THIRD CIRCULATION AND ITS CHANNELS.

> "Cet enfant a de l'eau dans la tête, dit le vulgaire; cet enfant est hydrocéphale, dit gravement le médecin, répétant littéralement par un mot grec ce que dit l'ignorant dans sa propre langue. Mais quelle est cette eau? d'où vient elle? Voilà ce dont les médecins auraient dû s'occuper."—*François Magendie, 1842.*

As a tribute to the memory of François Magendie, I propose to devote the first of these lectures to the subject of the cerebro-spinal fluid, for just 100 years have passed since the appearance of the earliest of his epoch making publications in which attention was drawn to the physiological importance of the peculiar watery medium which bathes the central nervous system.

Something of the state of our knowledge before Magendie's time may be gathered from a paper (1768) on Dropsy in the Brain by the celebrated Robert Whytt, one-time professor of medicine in this university, wherein is given the first recognisable description of what must certainly be tuberculous meningitis.

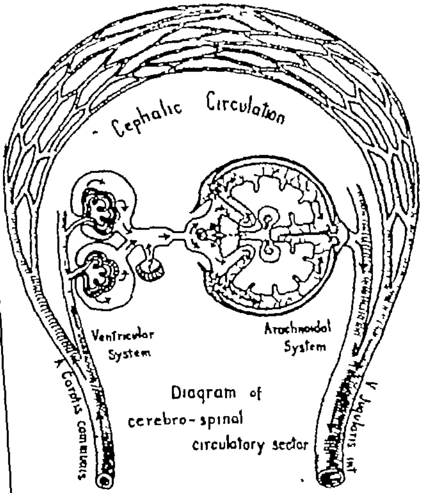
> "The immediate cause of this disease," he says, "and indeed of every kind of dropsy, is always the same—viz., such a state of the parts as makes the exhalant arteries throw out a greater quantity of fluids than the absorbent veins can take up."

But Whytt, though a man ahead of his time, could have had no possible conception that the cerebro-spinal liquor was a specialised medium with a peculiar circulation of its own. And as my chosen title indicates, it is this particular feature of the fluid—namely, its circulating character—that I wish to emphasise, and I shall have less to say about its biochemical and cytological characteristics in health and disease, so thoroughly studied by many, than about the channels through which it percolates.

THE FLUID AND ITS CONFINES.

On Movement in a Circle.—It is quite evident that Magendie, who believed the fluid was secreted by the pia, much, for example, as pericardial fluid is secreted, had no idea of its movement as other than an ebb and flow. And this truly Galenic conception of a cerebro-spinal fluid circulation still holds in most modern text-books of physiology, even though Key and Retzius gave a hint of the actual state of affairs by demonstrating the continuity of the fluid-holding leptomeninges as distinct from the subdural space, and by suggesting (without satisfactory proofs, to be sure) that the granulations of Pacchioni represent portals through which the fluid passes from the arachnoidea into the large meningeal sinuses. . . .

FIG 1.



On the whole, it would appear medical students get little information about the fluid as a circulating medium in their course in physiology, and what they get is mostly wrong.

This curious neglect of a vascular system which teems with biophysical problems can only be explained on the grounds that the subject of intracranial dynamics is one of the few on which Carl Ludwig, the father of modern physiology, did not focus his fertile mind, and his pupils unto the third generation have followed suit. . . .

That the arterial and venous blood has "a motion as it were in a circle," in contradistinction to the Galenic idea of an ebb and flow, was the conception, when put to proof, by which the immortal Harvey transformed medicine. For even though the idea, from the heart around and back to the heart, was not entirely new, at least so far as the lesser pulmonary circulation is concerned, it was a view against all authority, and in the case of Servetus was burned with its author at the stake.

But the existence of another fluid besides blood which "circulated" was soon suggested by Aselli's discovery of the lacteals, and Picquet's of the thoracic duct; and finally William Hunter, or was it again your Monro secundus, who first postulated that the lymphatics represented a system of absorbent vessels which were supposed to conduct the watery constituents of the tissues? To be sure, the movement of the chyle and lymph, under this conception, is not actually in a circle in a strictly Harveian sense, but rather in what one might describe as across a sector of the blood circle. And the same is true of the cerebro-spinal fluid which proves to be in continual movement, in a definite direction, through a highly specialised pathway, that cuts across the blood circle to envelop an organ in which a lymphatic apparatus of the usual type does not exist (Fig. 1).

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* Lectures II. and III. will appear in subsequent issues of THE LANCET. They are slightly abridged for issue in our columns, and will be published shortly as a small volume, dedicated to a group of young collaborators.—ED. L.

In Explanation of Hydrocephalus.—Though these matters which concern the brain en masse may have failed to intrigue the attention of physiologists, they have been, if anything, of even greater interest and concern to the neurosurgeon than the localisation of function, since the success or failure of many of his undertakings depends more upon his familiarity with the fluid circulation and its possibilities as a complicating factor in his procedures than upon any other one thing. For the fluid, indeed, may prove his most stubborn enemy or his most valued ally. . . .

My own interest in the dynamics of the intracranial chamber was first aroused while engaged 25 years ago in the Hallerianum in Berne on a problem suggested by the late Theodor Kocher, who was preparing a monograph on cerebral compression for Nothnagel's "Specielle Pathologie" (1901), wherein he laid far more stress on the results of my researches during that happy year than they perhaps deserved.

On my return to Baltimore, with the intention of specialising in the surgery of the nervous system, among the first of my patients—as will probably have been true of most young men entering this particular field—were *infants with what is known as essential* hydrocephalus, for which a greater number of treatments have as yet been advocated than successes recorded; indeed, if there are any clear-cut successes recorded. I had only the vaguest possible ideas of the cerebro-spinal pathways; and if Leonard Hill's statement, made in the course of his admirable Hunterian lectures in 1896 were true—"That no pathological increase of cerebral tension can be transmitted to the cerebro-spinal fluid, because the fluid can never be retained in the meningeal spaces at a tension higher than the cerebral veins"—I could not understand how it was that a fluid which acted chiefly as a water-bed for the brain could give surgeons so much trouble, and so determined to find out something more about it if that were possible.

One of my early co-workers in the Hunterian Laboratory in Baltimore, Dr. Lewis L. Reford, undertook to study the development of the leptomeninges by injecting India ink under light pressure into the spinal canal and into the spinal subarachnoid spaces of living pig embryos of various ages. After the tissues had been "cleared" so that the course of the injection-mass could be observed, it was found that in the younger embryos fluid introduced into the canal passed headwards into the ventricles from which there was no escape; *that later on*, whether injected into the canal or into the subarachnoid space, the mass would spread from the region of the fourth ventricle around the base of the brain; and, finally, that in older pigs it would extend up over the hemispheres in what appeared to be developing meningeal spaces which had no connexion with the extracranial lymphatics. . . .

With this small beginning, and without any definite sequence, a variety of studies were undertaken during the next few years, which were merely along by-paths to the actual goal we continued to bear in mind—namely, furtherance of our knowledge of the mechanism of hydrocephalus, of which there probably were many kinds. Numerous examples of this most distressing condition in infants had meanwhile come under observation in the clinic, and it was found that in most of them the fluid could be withdrawn from the ventricles by lumbar puncture. Moreover, when a needle attached to a manometer was inserted through the bulging fontanelle into the ventricle and another in the lumbar sac, the pressure level of the fluids in both usually remained the same and fluctuated equally with crying, straining, or jugular pressure, as well as on the withdrawal of fluid from either end of the system. At the same time we observed, as many others doubtless have done, that even though large amounts of fluid might be withdrawn—as much as a completely collapsed fontanelle would permit, and amounting at times to over 300 c.cm.—within 24 hours the fluid would have reaccumulated, albeit with slightly altered chemical and cellular characteristics, and perhaps with slightly increased tension.

From these simple clinical tests I became convinced that some fault of development in the portals of outflow for the fluid from the meningeal spaces, or their occlusion by disease, was more likely to be the cause of hydrocephalus in infants than either an acquired obstruction to the passage of fluid from ventricles to the subarachnoid spaces, or a "block" somewhere in the course of these mesh-like though abundant channels. . . .

As we knew nothing at this time about the portals of drainage other than that Key and Retzius had associated them in some way with the Pacchionian bodies, structures not demonstrable in infants, and being then under the impression that some of the fluid, as maintained by many, normally escapes into the extracranial and extraspinal lymphatics which might therefore be utilised as pathways for absorption, the attempt was made to drain the subarachnoid lumbar fluid directly into the retroperitoneal tissues through a trephine opening in the body of the fifth lumbar vertebra. It was thought that this loose tissue in direct proximity to the thoracic duct would be a medium more favourable for permanent drainage than the subaponeurotic layer of the scalp which had been previously utilised for the purpose with disappointing results. . . .

Baffled in this, which proved to be a futile procedure, and believing that somehow or other in curing hydrocephalus the fluid must be allowed to get directly into the venous circulation, attempts were made to accomplish this by Dr. R. D. McClure who, as an improvement on the method of Payr, essayed to transplant a vein between the subdural space and a vessel in the neck; and by myself, with the placement of a specially devised silver tube which led from the dilated third ventricle through the corpus callosum directly into the longitudinal sinus. As in most other surgical experiences with "essential" hydrocephalus the results were inconclusive, but the observations at least taught us that no blood subsequently passed from the sinus into the ventricle, which was regarded as an indication that *the tension* of the fluid must at all times be greater than that in the veins.

Filling Gaps in our Knowledge.—These early endeavours all tended to show how imperfect was our knowledge of the source or sources of fluid supply, and of the method whereby it was absorbed. *In other words, too much attention* had been paid to the bath itself and too little to the tap, to the construction of the tub as a container of the bath, and to the place and mechanism of its outlet. Accordingly, on my transfer to Boston in 1912, Dr. Lewis H. Weed and I set ourselves to these problems, and the following questions for which we needed answers were gradually formulated.

Granting that the choroid plexuses are the chief source of the cerebro-spinal fluid—and this has not been conclusively proved—is the process, as some believe, a transsudation, or a secretion, or as Mestrezat regards it, a mere *dialyzation from the blood?* What conditions activate and what conditions inhibit these choroidal glands? Have they an internal as well as an external secretion? *To* what primary diseases are they subject? How early in embryonal life do they secrete? Why does the fluid which they elaborate differ so greatly from that secreted by most other glands? Why are the cells so impermeable to the passage from the blood-stream of drugs *and of* substances such as the bile pigments, which in conditions of jaundice quickly stain all other body tissues and fluids.

Granting that the fluid thus secreted by the choroid plexuses leave the ventricles and spreads over the brain and down the cord in the subarachnoid spaces, does it receive accessions from elsewhere, from the ependyma or from pituitary or pineal glands? Are there lymph channels in the brain, and if not, how does the *central nervous* system dispose of its products of tissue waste? If there are [anything comparable to] cerebral lymphatics do they discharge into the subarachnoid spaces, and is the subarachnoid fluid therefore of the same character chemically, physically, and cytologically as the ventricular fluid? Why normally is the fluid practically limited to the subarachnoid spaces, and under what conditions does it become subdural?

Granting that fluid may escape by way of the Pacchionian granulations, is this the chief or only manner of escape? If an important avenue, why are these structures lacking in the lower animals and in the human infant? Are these granulations, therefore, pathological processes, and, if so, what are their precursors? Are there other means of fluid absorption along the nerves by way of the lymphatics, and, if so, how important are they? How do the spaces in the pia-arachnoid develop, and do the choroidal glands mature and secrete before or after their formation? Are there faults of development at these meningeal outlets for fluid which can account for congenital hydrocephalus and for malformations such as spina bifida and cephalocele? Are there analogies in the fluid circulation of the eye to which we may attribute the disturbances of circulation of the intra-ocular fluids?

It so happened that we came to attack these questions in reverse order, "upstream" as it were; and instead of beginning with the plexus, though this was not wholly neglected, attention was first paid to the portals of exit. Dr. Weed soon hit upon a satisfactory method of identifying these structures, which was free from the objections raised against those employed by his predecessors. This consisted of a long-continued subarachnoid injection in the living animal, of potassium ferrocyanide and iron ammonium citrate in isotonic solution, under a pressure but slightly above the normal, with the subsequent immediate fixation of the tissues in an acid medium. This procedure, which served to precipitate Prussian-blue granules out of the foreign salts introduced in solution, made it possible to utilise histological methods to identify the situation of the granules in the tissues and tissue spaces.

To shorten a long story, it was found that the fluid had passed through the mesothelial cells which cap the arachnoid villi that project in large numbers through the dura into its many venous sinuses, large and small, in all parts of the cranial chamber. This, broadly speaking, was confirmatory of the view of Key and Retzius, but it substituted these innumerable and widely disposed microscopic structures for the Pacchionian granulations to which they had ascribed the function of drainage, and which merely represent pathological enlargements of some few of the villi. . . . With this substitution of countless microscopic arachnoidal villi for the occasional Pacchionian granulation as the essential portals of escape for the fluid, our conception of the process of absorption was greatly clarified; and Weed's subsequent demonstration of the ease and certainty with which a chronic hydrocephalus of high grade may be experimentally produced by the simple injection into the subarachnoid channels of lamp-black, which serves to occlude the arachnoid villi, would seem to make it most probable that damage or imperfect development of these structures is the most common cause of otherwise unexplained cases of early or congenital hydrocephalus.

The Perivascular Channels.—But to return to the views of others in regard to the process of absorption. In a study of the brains of animals subjected to experimental anæmia, Frederick W. Mott had observed that the perivascular "lymphatics" of Robin (better known to pathologists as the Virchow-Robin spaces), which represent prolongations of the leptomeninges around the vessels that dip into the brain substance, were particularly well shown (Fig. 2). These observations led him to conclude that absorption of the fluid from the subarachnoid spaces normally took place by way of these "lymph" channels with the natural corollary that the cerebral capillaries represented the chief absorbent vessels. This same view, if I read him aright, came to be held by E. F. Goldmann and is set forth in his classical monograph (1913) on vital staining of the central nervous system.

It may be assumed that both pathologist and anatomist are talking of the same thing when the one mentions the perivascular spaces of Virchow and of Robin, and the other the space of His. However, all three of these distinguished investigators originally gave such casual descriptions of the spaces in question that it is surprising that they should have become eponymic. . . . One might naturally suppose, since the superficial vessels of the brain and cord lie within the subarachnoid space, that they would carry down with them only a sleeve of pia, but as a matter of fact the so-called pial vessels of the surface, like the trabeculæ within the subarachnoid spaces, are, as Weed has clearly shown, covered by an endothelial lining. Hence, the perivascular sleeve is necessarily a double one, and there can be no question but that the space enclosed, whatever its function, lies in direct communication with the subarachnoid spaces; nor can there be any doubt as to its having a "visceral" (vascular) lining of arachnoid and a "parietal" (nervous) lining of pia rather than that, as generally conceived, it is formed by a sleeve of the pia alone which lies adjacent to the limitans glia.

FIG. 2.

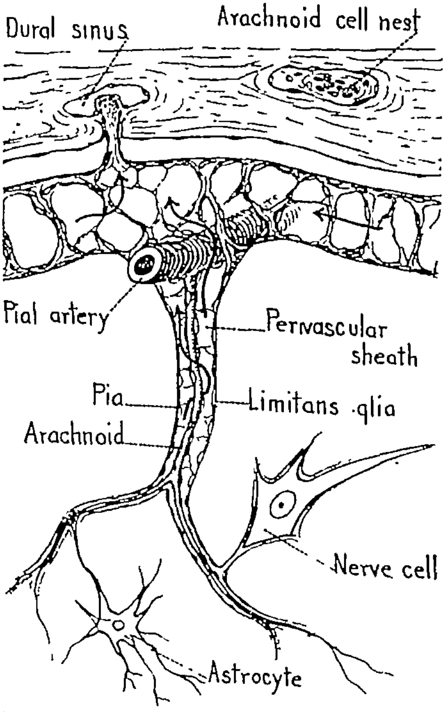

Diagram to show the sleeve of pia-arachnoid constituting the perivascular space surrounding a branch of a pial artery (modified from Weed).

But to return to our personal story. Under the condition of Weed's earliest experiments, no deposit of Prussian-blue granules was found in these perivascular spaces unless the animal were bled during the course of the injection. However, our interpretation of these facts was contrary to Mott's, for to us it seemed more probable that the normal flow in these channels should be from the brain towards the subarachnoid spaces rather than the reverse as he had assumed; and it was even then beginning to be known that these perivascular spaces become packed with cells in many disorders affecting the brain, which accounts for the early pleocytosis in the fluid.

Light on the Monro-Kellie Doctrine.—In further explanation of the direction of flow in these perivascular spaces, we must revert to the doctrine first formulated by your Monro secundus, but properly known as the Monro-Kellie doctrine, since it was further elaborated some years later by another Scotsman, Dr. George Kellie, of Leith. According to this doctrine, which introduces certain principles of physics relative to the flow of fluids through an incompressible retainer, the contents of the intracranial chamber with its three elements, nervous tissue, blood, and fluid, must always remain the same in bulk. Any increase in blood volume, for example, can only take place at the expense of one of the other elements, and conversely a diminished blood volume must be compensated either by an expansion of the brain or by an increase of cerebro-spinal fluid which probably amounts to the same thing. Hence, if an animal is bled and the brain in consequence shrinks in size, it becomes, as Weed termed it, a "thirsty brain," and the additional fluid which must necessarily be provided to compensate for the shrinking becomes sucked down into the perivascular channels.

Moreover, since these changes all take place rapidly—a matter of minutes—it is hardly possible that the great increase of fluid which the process entails could be the result of mere transudation. George Kellie was close to the facts a century ago when he said, in speaking of the effect of cerebral anæmia, that "watery effusion within the head is a pretty constant concomitant or consequence of great sanguineous depletion."

All this is part and parcel of the extraordinary phenomenon of cerebral œdema, for the brain, owing to its sponge-like structure, is apparently more capable than any other of the body tissues of taking up fluids with an enormous and rapid increase in its bulk; and it was, perhaps, through some such sequence of ideas that Dr. Weed, with his own pupils in turn, a few years later, while in charge of an experimental laboratory during the war, made the discovery that prompt changes in brain volume ensue upon the intravenous injection of hypertonic and hypotonic fluids. This discovery not only has served to provide a new method of attack on many old problems associated with the Monro-Kellie doctrine, but it has proved in the clinic to be a veritable boon for certain desperate states.

The practical applications of the discovery were obvious, and they were immediately pounced upon for therapeutic purposes. In the first place, it was apparent to the physician that drugs like salvarsan, to which the choroid plexus was impervious, might be brought more intimately in contact with the nervous tissues owing to the probable reversal of the current in the perivascular channels when the brain was shrunk by hypertonic solutions. The surgeon, on the other hand, promptly adopted the procedure as a means of lowering intracranial tension; and it is truly amazing how rapidly certain patients in deep stupor, even with Cheyne-Stokes respiration, may be brought back to consciousness after the intravenous administration of a hypertonic solution. . . .

Development of the Arachnoidea.—But I am getting far ahead of my story. Having proved to our satisfaction how it was that the fluid became absorbed, Dr. Weed on his return to Baltimore proceeded, as I have expressed it, to work "upstream," and ere long completed his extensive and now classical monograph on the development of the meningeal spaces. These spaces, as he convincingly demonstrated, are produced by a seepage through the roof of the fourth ventricle of fluid which permeates and breaks down the perimedullary mesenchymal syncytium. This occurrence practically coincides, as we had anticipated, with the development of the choroidal tufts, and supposedly therefore with the initial flow of cerebro-spinal fluid which comes to supplement the stagnant pre-existing fluid, for the undifferentiated cells of the ependyma up to this time may be assumed to have a secretory activity of some sort.

These illuminating studies of Dr. Weed's not only confirmed but greatly amplified the observations made by Reford ten years before. They serve to show with some finality: that at about the fifth week of embryonic life fluid begins to percolate through the remaining fragment of the roof plate overlying the fourth ventricle; that it finds its way through leptomeningeal channels which are thereby formed in the mesenchyme; and finally, that it escapes by way of persisting leptomeningeal communications, the villi, that project through the dura into its major venous sinuses. All of which assuredly indicates the birth of an actual circulation under the pressure of a secretion.

Meanwhile, in 1913–14 W. E. Dandy had been pursuing his ingenious studies of experimental hydrocephalus in association with Kenneth Blackfan, and though our ideas, as stated, differed from theirs in regard to the process of absorption, Dandy succeeded in making two notably crucial experiments which filled gaps in our previous knowledge. One of these was the demonstration that ventricular hydrops would occur if an inflammatory reaction were set up so as to encircle the cerebral peduncles at the level of the tentorium, which goes to show that the major course of the fluid, after its emergence from the foramina of Magendie and Luschka, is upward by way of the arachnoidea through the incisura tentorii to bathe the cerebrum.

The other of his crucial experiments relates to the actual source of the fluid concerning which, from lack of exact proof, doubts have frequently been raised. In the spring of 1911 I had had a most suggestive surgical experience with a patient[1] who had a unilateral hydrocephalus due to a cystic intraventricular tumour arising near and occluding the right foramen of Monro. After two unsuccessful efforts to give pressure relief, the ventricle, which proved to be filled with xanthrochromic clotting fluid, was opened, emptied, and the choroid plexus laid bare. From the naked plexus thus exposed, fluid could be seen to be freely exuding, but when a silver "clip" was closed on the entering choroidal artery the organ became blanched and the secretion apparently ceased. The plexus was then excised, but unhappily the patient succumbed to a subsequent attempt to remove the tumour.

In his laboratory experiments Dr. Dandy was more fortunate in his demonstration that when one foramen of Monro is occluded a *unilateral* hydrocephalus results, whereas if the plexus is removed coincidentally the ventricle remains collapsed. This observation could hardly leave doubt in the mind of the most sceptical that the plexus is the *active* spring whence the river of cerebro-spinal fluid arises, whether the actual process be one of *filtration*, secretion, or dialyzation. There hardly seems need of belabouring the argument further, yet Weed has recently added additional evidence by his demonstration that after the intravenous injection of hypotonic solutions, which greatly *augment* the amount of cerebro-spinal fluid, the choroidal cells show histological evidence of its passage into the ventricles, even though this may not be a reversible process when hypertonic solutions are injected. . . .

Hydrocephalus therefore may apparently be produced in at least three major ways: (1) by occlusion of the villi through which the fluid is normally absorbed into the sinuses (and, as a corollary, extensive sinus thrombosis, should it be compatible to life, would have the same effect); (2) by obstructions easily produced by inflammation or tumour in the narrower portions of the pathway, notably at the foramina of Monro, in the aqueduct, at the fourth ventricle, and in the narrows of the incisura tentorii; and (3) more rarely, by an increase in the amount of fluid secreted in excess of what can be cared for by the normal portals of absorption; and this is what, hypothetically, would take place could the hypotonicity of the blood, under the conditions of Weed's experiments with the injection of watery fluids, be long maintained.

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[1] Johns Hopkins Hosp. Surg., No. 27733.

In connexion with these meningeal channels there remains to be discussed another matter, the importance of which has only been stressed of late years—namely, the physiological activity of the cells which constitute the lining of the fluid pathway. Now it is a *remarkable thing*, if one stops to think of it, that Nature should have provided this watery fluid, which, on the general biophysical principle of diffusion, contains the salts and sugars of the blood, but practically none of its other elements. What could have been her reason for interposing in the blood-stream this peculiar circulatory switch with its choroidal barriers and impervious pia, which keeps the fluid free from practically all known substances, whether drugs or vital dyes, which may be put into the blood-stream? Unquestionably one purpose was to provide a medium for the washing out of products of metabolism—a substitute for a lymphatic apparatus if you will—for we have learned that the intraventricular and subarachnoid fluids have a slightly different chemical composition. Then, too, it seems not improbable that something may be added to the fluid in transit which may be necessary to the economy.

Vascular or lymphatic channels might well enough have served for both these purposes it would seem, and just why another medium had to be provided within spaces, which, as we shall see, are particularly intolerant of the presence of blood cells, remains unanswered. Moreover, as may be observed, there is no method whereby a collateral circulation for the cerebro-spinal fluid can be spontaneously established in cases of obstruction, and, since it passes through a very specialised pathway, it is to Nature's provisions to keep the pathway in *repair* and free from foreign substances which might obstruct the fluid outlets that I wish to devote the remainder of this hour.

The Cellular Lining of the Meningeal Pathway.

The "Meningocytes" and Reparative Processes.—The mesothelial cells which line the extraventricular fluid spaces possess a most remarkable capacity for repair as must have been observed by many. I may give an example. The efforts which were made many years ago to drain the hydrocephalic ventricles by establishing a communication with the subaponeurotic layer of the scalp, in the expectation that the fluid would permanently escape into the lymphatic spaces, led to disappointments. For under these circumstances a very peculiar and striking thing happens. The scalp at first becomes widely oedematous, but in the course of a few days the oedema gradually subsides, and finally a circular pool of fluid a few centimetres in diameter is all that remains. This disc-like subaponeurotic pool, which continues in free communication with the ventricle, becomes promptly lined with a layer of glistening serosal cells, like those lining the dura, which are impervious to the further escape of fluid into the tissues.

Early in our surgical experiences with what is known as a subtemporal decompression a comparable observation was made—namely, that a new dural membrane would promptly re-form without any adhesions to the brain, provided the leptomeninges over the surface of the exposed temporal lobe were not injured in the process of opening the dura. This neo-membrane would so perfectly repair the defect over the bulging lobe that anyone who might happen after an interval to re-operate upon the patient or to conduct a post-mortem examination would be likely to doubt whether the pachymeninx had ever been opened. . . .

Practical applications have been made of this extraordinary *capacity for the formation of neomembranes.* For example, there is a common intracranial tumour (meningioma), to whose source of origin reference will subsequently be made, the removal of which often necessitates not only the leaving of a defect in bone but in dura as well, so that the scalp alone covers the raw and oedematous cortical *area stripped of its pia-arachnoid.* The natural consequences of this would be an adherent scar between scalp and brain, with practically no re-formation of membranes, or at best of very imperfect ones, for some fluid will naturally be exuded through the intact perivascular spaces which would encourage their formation. However, should a piece of gutta percha tissue ("*protective*") be placed over the raw area at the close of the operation, glistening serosal surfaces will form in the manner described in a surprisingly short time, a matter of days, perhaps of hours.

Before entering into a consideration of the particular cells which take part in these reactions there is something more to be said about the processes of meningeal healing in general. Much light has been thrown on the subject by the ingenious experiments of my former assistant, Dr. S. C. Harvey, and his co-workers, who have shown the futility of patching a dural defect by the transplantation of fat or fascia as is often advocated; for if the arachnoidea over the cortex remains intact, the dura will *spontaneously* re-form without adhesions, whereas should the pia-arachnoid and cortex have been damaged dense adhesions will form and incorporate the dura even though its *inner surface* has been uninjured. In other words, as Dr. Harvey puts it, "the inner surface of the dura does not act as a limiting membrane in the presence of an attempted repair *in the* underlying meninges, but, on the contrary, enters intimately into the process"; and he contends that there are not only morphological but actually functional differences in the two membranes, one of which merely lines a potential subdural space, whereas the other is a more highly differentiated structure.

My own explanation of the difference in the behaviour of the two surfaces to injury would have been that the arachnoid exudes fluid, thereby providing a space which, as we have seen, becomes promptly lined by cells that migrate from the mesenchyme to make a new membrane; the dura, on the other hand, does not exude fluid, and since there is nothing to keep the *surfaces* apart when the pia-arachnoid has been damaged, adhesions form. But Dr. Harvey has recently brought forward additional proofs in support of his view.

He conceived the idea that the cells of the leptomeninges might be derived from the same source as the sheath cells of the peripheral nerves, which arise, as R. G. Harrison *had* shown, from the embryonic neural crest, whereas the dura itself merely develops from the mesenchyme. Employing Harrison's methods he removed a bit of the cerebral hemisphere of one *amblystoma* embryo and transplanted it into the mesenchyme in the region of the fore-limb of another, where the explant during its subsequent growth came to be surrounded *by* an *incompletely formed* dura, but with no leptomeninx. On the other hand, when a portion of the neural crest was included in the explant, a choroid plexus developed and leptomeningeal spaces were formed *in addition* to the duraloid membrane of the control experiment. But here again we may have to consider the normal reactions of mesodermal tissues to the infiltration into them *of* cerebro-spinal fluid with the inevitable formation around the fluid spaces of a serosal membrane.

This brilliant contribution by Dr. Harvey to experimental *embryology* and to that much neglected part of it to which Weed had already contributed—namely, the embryology of the meninges—is extremely interesting and important from many points of view; but as a matter of fact we may be stretching matters in the endeavour to show differences between the endothelium of the vascular and lymphatic channels and of the mesothelium of the serous cavities and cerebro-spinal fluid spaces; for they all are but part and parcel of the circulatory apparatus as a whole. But even though the cerebro-spinal fluid channels appear to be lined by supposedly fixed pavement cells, certain specialised cells are found to lie here and there in clusters, notably in association with the villi, in nests incorporated within the fibrous mesh of the dura, and in the leptomeningeal stalk of the plexus. It would seem to me that Dr. Harvey's disclosure of the difference in origin of these cells from those lining the dura—the one being ectodermal in origin, the other mesodermal—is of particular significance. Let us for a moment consider some of the duties of these particular cells, which, merely because of their situation and in complete disregard of their histogenesis, we may for convenience call *meningocytes*.

Phagocytic Properties of the Meningocyte.—If the pathway for this specially elaborated fluid is as important as we are led to assume, there would certainly have been provided some method whereby its intricate channels could be kept clear of debris, especially of blood or inflammatory products of one kind or another which might get into the stream, for otherwise these foreign particles would inevitably be swept into the microscopic villi and effectually stopper them. The experimental observations in this direction have been mentioned in discussing hydrocephalus. Moreover, it is safe to say that the head of every infant is sufficiently traumatised during parturition to cause the extravasation into the fluid of red blood corpuscles, so that from the first moment of extra-uterine life the mechanism for absorption for the fluid may be seriously interfered with.

An effective method of keeping these microscopic pathways open seems to have been provided through the phagocytic activity of the meningocytes under the stimulation of foreign particles. This property was first noted, it seems, by Quincke, who found that cinnabar granules introduced in the fluid become engulfed by large phagocytic cells—the same cells that Goldmann subsequently found to be stained by vital dyes; but more recently it has been shown by Essick in Weed's laboratory that, though this reaction might be evoked by a great variety of substances, it was particularly pronounced after the subarachnoid injection of laked blood, under the stimulus of which the cells enlarge, become vacuolated, and detach themselves from their moorings to swim out as free macrophages into the cerebro-spinal current. Thus Nature saw to this need from the first, and the surgeon has only just tardily come to a realisation that she can be considerably aided in her purpose by the prompt and repeated withdrawal of bloody cerebro-spinal fluid. . . .

The *plasma cells* of Waldeyer, the *mastzellen* of Ehrlich, the *endothelial leucocytes* of Mallory, the *pyrrol-zellen* of Goldmann, the *amœboid macrophages* of Metchnikoff and Evans, the *polyblasts* of Maximow, the *histiocytes* of Aschoff, and the *clasmatocytes* of Ranvier (the term in most common use by American authors) are probably one and the same type of cell which possesses active migratory and phagocytic properties. But in regard to their source of origin, their relation to the phagocytic monocytes, and their capacity for transformation into more fixed cellular types when they have ceased their wanderings, there are divergences of opinion.

Maximow, for example, claims that the three cell types in inflammation have a single origin in the lymphocyte; Sabin and her co-workers, on the contrary, strongly favour the absolute specificity of the several cell strains; the Lewises are convinced that the macrophages (clasmatocytes) and the epithelioid cells are merely functional stages of the monocytes, but make their position somewhat less clear in regard to the origin of the fibroblasts; whereas Carrel states he has definitely seen amœboid macrophages become transformed into fibroblasts. The final decision in these matters unquestionably lies with the experimental cytologists who have already devised and will further perfect methods of studying living cells in tissue cultures which permit direct observation, not only of their behaviour and manner of division, but also of their specific reactions to vital dyes.

What to the surgeon is of greater concern than the genesis of the active meningocyte is what it may be able to accomplish not only as a scavenger but also as a reparative agent. Certainly when it comes to the prompt replacement of a dural defect, say of 30 square cm., by a neomembrane, it is inconceivable that the pavement cells could grow in from the edges; and since it is doubtful whether these fixed pavement cells are capable of further division, we must assume either that clasmatocytes or monocytes have wandered in from the mesoderm or else that, in the guise of meningocytes, they are already present in the cerebro-spinal spaces and ready to act as reparative agents. In either case we must assume further that they are capable of ultimate transformation not only into pavement cells but also into duraloid fibroblasts.

Whether the cells which participate in these activities are cells which wander in or cells which in a resting stage are normally moored in the leptomeninges perhaps makes very little practical difference, provided one appreciates their behaviour when called into action.

Formation of Biliary Pigments.—There remains a further matter for consideration in connexion with these meningocytes. After Edwin E. Goldmann's discovery that the clusters of endothelial cells of the Kupffer cell type which lie clustered in the blood channels of various organs have a selective affinity for the vital stains of the benzidine series, the suggestion, I believe, was first clearly formulated by H. M. Evans that these cells as a group, wherever they occurred, within the blood-stream or free in the tissues, should be looked upon as an endothelial organ of major physiological importance which in his belief is concerned in the production of immune bodies. It is this organ to which Aschoff has recently drawn renewed attention as the reticulo-endothelial apparatus, one of the functions of which—and there are probably many—is the phagocytosis and disposal of broken-down blood-cells.

Little or no attention, however, seems to have been paid by those interested in this subject to the existence of a similar apparatus in the meninges, though Goldmann, whose early death was a great loss to experimental pathology, in the last of his remarkable papers clearly described the pyrrol-staining monocytes which normally reside therein. Though misled, as so many others have been, into the belief that the cerebro-spinal fluid chiefly escaped by way of the *pericranial lymphatics*, he observed that, whereas the central nervous system itself remains unstained by vital dyes, the choroid plexus as well as the anterior lobe of the hypophysis becomes highly coloured; and at the same time certain cells of the meninges (in places which we now recognise to be those where clusters of meningocytes particularly abound) and also occasional cells of the same type scattered through the brain take the stain faintly. He regarded it as probable that these cells played the essential rôle of phagocytosis for the locality.

Let us for a moment return to a consideration of the curious fact that this specialised endothelial apparatus of the leptomeningeal spaces appears to be called into action more effectively by the introduction of blood corpuscles than by any other foreign substance. And in this connexion attention may be drawn to the different behaviour of the pachymeningeal and leptomeningeal surfaces following the extravasation of blood into the subdural space, for as is well known the clot adheres to and begins to organise from the dural side, whereas it fails to adhere to the arachnoid. Now the subdural space, as we have seen, has an outer and inner lining of quite different origin, and the different manner of reaction of the two surfaces to these subdural hæmatomas has been investigated anew by my recent assistant, Dr. Tracy Putnam. He has shown how, in the process of their digestion and organisation from the dural side, communicating or non-communicating endothelial-lined spaces appear to be formed, which are distinct from the newly formed blood channels. But there is another feature of these subdural hæmatomas which seems to have escaped attention—namely, the greenish surface colour which they acquire due to the deposition of biliverdin.

The presence of bile pigments, indeed, may be identified in cerebro-spinal fluids after almost any extravasation of blood into the spaces. This is the more peculiar when one takes into consideration the fact that the bile pigments themselves do not normally pass the barrier of the choroid plexus, but are only found in the fluid in small traces in long-standing cases of deep jaundice, and perhaps only then because of functional damage to the choroidal epithelium. And though the information is not likely to be forthcoming, at least from clinical cases of icterus, I believe that even when a trace of bilirubin can be detected in the subarachnoidal fluid it will not be found in the ventricles; and if this should prove to be so, it would indicate that the pigment finds its way into the arachnoidea by way of the perivascular spaces rather than by passage through the filter of the plexus . . . .

The Meningiomas.—There remains one thing more to say of these meningocytes. It indirectly concerns the much-mooted question as to whether the cells of the reticulo-endothelial apparatus can, as Marchand and Maximow and Carrel believe, become transformed into fibroblasts. Though this is a matter more likely to receive a definite answer by the modern methods of tissue culture and supravital staining which would permit the transformation to be actually observed, nevertheless clinical and histopathological experiences may add something to the subject. And this leads me to speak of the tumours which might be expected to take origin from the cells of the apparatus under consideration, if it actually possesses the important physiological functions ascribed to it.

Endotheliomata, so-called, are known to arise in the liver, spleen, bone-marrow, and lymph glands where the cells of the apparatus in question abound, but in no situation are tumours of this category more common than in the meninges. They, consequently, are lesions long familiar to the pathologist and to the neurologist. A famous example, often referred to, was reported (as a sarcoma) by Byrom Bramwell in his early monograph on "Intracranial Tumours" (1888)—a young girl of 20 who had been admitted to the Newcastle Infirmary, Jan. 5th, 1877, in a terminal stage of compression from a growth which had given no localising symptoms. This, be it said, is a characteristic of these meningeal tumours, to slowly deform the brain in which they make a nest for themselves, often without any local symptoms whatsoever, nor indeed any pressure symptoms until the lesion may have attained an amazing bulk.

These tumours all have a common histogenesis, whether they occur in the spinal canal, taking their origin from the cells of the arachnoidal villi at the points of emergence of the spinal nerves, or as is more frequent from those which project into the venous sinuses of the cerebral dura. Unfortunately, however, they have been given by histopathologists so great a number of conflicting names that it has seemed best, partly for the purpose of emphasising their common origin and partly to get away from the unfortunate misnomer of "dural" endothelioma, to speak of them simply as meningiomas.

To the fact that they undoubtedly arise from the arachnoid cell-clusters of meningocytes Dr. Weed and I called attention in one of our early papers, though, as we found, it was not an original observation, for the suggestion had been made before by M. B. Schmidt (1902), and also long before him (1864) by the late Prof. Cleland, of Glasgow. But no one seems to have offered any explanation of the remarkable fact that the tumours invariably take their origin from the arachnoid and never from the pial side of the fluid pathway, for though "endothelial" tumours may in rare instances appear to arise from the pia they are of vascular and not mesothelial origin . . . .

Though we have only made a small beginning in the study of tumour cells by modern culture methods, such as have permitted Alexis Carrel to see macrophages become transformed into sarcoma cells, we have at least succeeded in cultivating the cells of a meningioma, and have seen cells which, unstained, were indistinguishable from tumour cells, engulf red blood corpuscles. Only by the employment of such methods can light be thrown on the much-mooted question as to whether the meningocytes actually become transformed into fibroblasts. The larger number of these clinically unmistakable tumours are almost wholly composed of endothelial cells, but certain of the older and psammomatous growths come to take on a fibrous change and may actually contain deposits of true bone; but even in the more purely fibrous examples one may always find nests of mesothelial cells. From this histological evidence, if it is dependable, one would certainly be led to conclude that the cells comprising the reticulo-endothelial apparatus of the body, and of which the cell clusters of meningocytes are obviously important representatives, may actually undergo fibroblastic transformation.

Thus we have seen whence the cerebro-spinal fluid takes its origin, how it comes to make pathways for itself by percolating through the primitive mesenchyme, how these pathways which originate from cells of the neural crest become lined with a specialised mesothelial membrane, and how minute outlets for the absorption of the fluid into the large venous channels are formed—in short, how this circulatory switch for a fluid peculiar to the ventricular and meningeal spaces comes into existence, and how it communicates with the deeper parts of the brain by perivascular tubes of the pia-arachnoid.

We have seen, too, that in addition to the fixed pavement cells lining these spaces certain other cells termed meningocytes tend to become deposited in clusters which we may figuratively describe as moored fleets of destroyers ready to cast off and engage any objectionable invader. In this respect the phagocytic functions of these cells are in every way comparable to those exercised, for example, by the clusters of Kupffer cells in the hepatic vessels, for they have the same affinity for vital dyes, the same capacity to engulf and destroy red blood corpuscles, elements which are foreign to the circulating medium of the meningeal spaces, and they possess also the capacity in this process of blood destruction of transforming hæmoglobin into bilirubin. Hence these cells may be taken to represent the reticulo-endothelial apparatus for the meningeal spaces.

We have seen also how these clusters of meningocytes may become the seat of tumefactions which, because of their being in most cases incorporated with the dura, are commonly supposed to arise from it, but which actually take their origin from the meningocytes and may be conveniently designated as meningiomas. And it would appear from the study of these tumours that their endothelial ground cells may become metamorphosed into fibroblasts.

So by a consideration of the cerebro-spinal fluid and of the cells of the membranes which enclose it, one may be led into problems of wide concern in general pathology. But with the indented purpose of this lectureship in mind, it is improper to leave the subject without calling attention to the fact that, though we may not appear to be much nearer to a cure for congenital hydrocephalus in quest of which we started out, we have at least learned many things on the way which are essentially of practical therapeutic value.

ANATOMICALLY IRREGULAR SPHENOIDAL SINUSITIS WITH OPTIC NEURITIS,

LOCALISED BY THE SUCTION SYRINGE; WITH TWO EXAMPLES.

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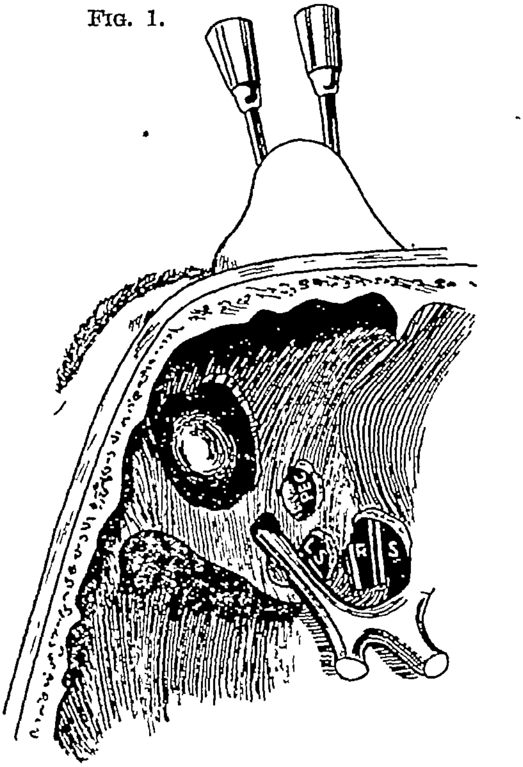
THE occurrence of so-called "canalicular optic neuritis," enlargement of the blind spot, and relative scotoma, due to pyogenic infection in the sphenoidal sinuses or posterior ethmoidal cells, or less frequently in the other nasal sinuses, is well recognised, and the detection of the infective focus by the suction syringe has been described in previous communications by the writer.[1] The investigation of the sinuses in patients suffering from these optic nerve defects suspected to be of nasal origin, sometimes presents special difficulties, owing, on the one hand, to the absence of any visible purulent discharge,[2] and on the other to the irregular anatomical conformation of the sphenoidal sinuses and the ethmoid cells.

Anatomical Variations in Sinuses.

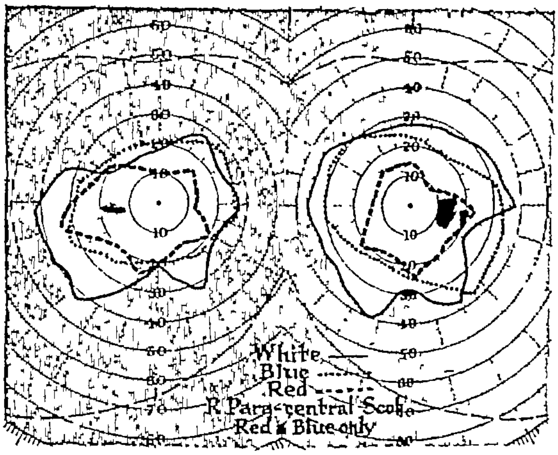
Thus, one sphenoidal sinus may be large and over-developed at the expense of the other, so that the large sinus extends far beyond the mid-line and consequently the small ill-developed sinus may be, so to speak, packed away into a corner difficult of access. Again, the posterior ethmoidal cell may be unusually large and over-developed at the expense of the corresponding sphenoidal sinus, which may be so encroached on that the large ethmoidal cell occupies more or less the usual site of a sphenoidal sinus or it may lie above the sphenoidal sinus, much as a first floor room lies above the corresponding one on the ground floor. While these anatomical variations are of no moment in health, it is quite another matter when the sinuses become infected and the focal infection causes partial or complete loss of vision, or, may be, is the primary and essential cause of rheumatoid arthritis, neuritis, neurasthenia, unsoundness of mind, and so forth, any or all of which do occur. If there is plentiful purulent discharge the indications for opening and draining the involved sinuses are sufficiently plain, but unfortunately such cases are less frequently associated with the complications mentioned than are the cases where the discharge is slight, macroscopically non-purulent, and often unnoticed until inquired into. It is therefore important to detect and to localise precisely the source of any infective focus and, when confronted with anatomical irregularities in these, relatively small deep-seated sinuses, to avoid overlooking the focus, an error which may cost the patient his sight or worse.

FIG. 1.



CASE 1.—Showing the cannulæ passed through the right and left nasal passages, but both entering the large right sphenoidal sinus (R S). It will be seen that both optic nerves are in anatomical relationship with this one sinus, hence both eyes affected The small left sinus (L S), which was proved non-infected, is lying well to the outer side of the median line.

L. FIG. 2. R.



CASE 1.—July 4th, 1922. (McH. perimeter and scotoma verified by Bjerrum screen.) The visual colour-fields are all markedly contracted. The right eye chart also shows the large relative central scotoma and a smaller paracentral scotoma for red and blue only.

Clinical Records.

The two subjoined examples afford an interesting contrast; in the first the large sphenoidal sinus was infected and the smaller was sterile; in the second the large sinus was sterile and the small one, so difficult to locate, was highly infected. In the first case I failed to detect my mistake until I was led to make a further exploration; this helped me to avoid a similar mistake in the second, where the error would have been disastrous to the patient, because I should perhaps have left the essential focus unrelieved.

I know of no means, other than that of the adaptation of the method of exploration by the sinus syringe, by which the focal infections could have been localised during life; while post mortem such localisation could only have been of academic interest.

CASE 1.—C. R D., male, aged 21, was referred to me by Dr. S. H. Modi (Calcutta) and Dr. F. Gotla (London) for chronic sinus infection with headaches, mainly right supra-orbital. At age 9 he had undergone operation for removal of tonsils and adenoids, at age 13 further operation of turbinectomy, and again turbinectomy at age 15. At age 19 the right antrum was opened and drained, that was two years before I saw him. (Fig. 1.)

When I explored his nasal sinuses the right antrum yielded thick ropes of pus by the suction syringe, the left being clear.

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[1] Long Fox Lecture, 1907; Bristol Med.-Chir. Jour., 1908; Rhinology, Longmans, Green and Co., 1910.

[2] Les Sinusitis sans Pus. P. Watson-Williams, Archiv Internat. f. Laryng., &c., April, 1922.

The sphenoidal sinuses were explored and "found to communicate"; and further, the posterior ethmoidal cells were explored by cannula and suction syringe.

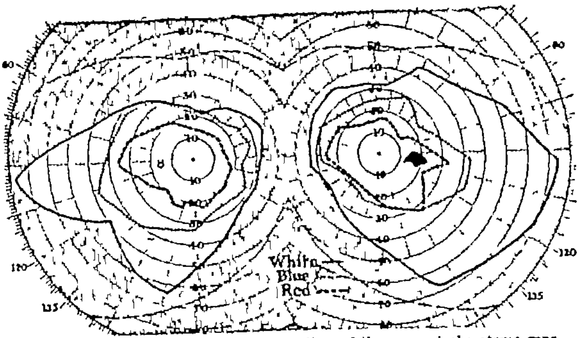
Film stain and culture of the sinus contents by Dr. A. T. Todd yielded results as follows: Both maxillary antra and the large right sphenoidal sinus and the posterior ethmoidal cells right and left yielded pneumococcus, polymorphonuclear cells being present in every one. But the small left sphenoidal sinus that was detected and explored later yielded neither organisms nor polymorph leucocytes, thus showing that it had escaped infection.

Examination of Visual Colour-fields, &c.—Ocular details of Mr. A. E. Iles's reports are given below under the various dates. It suffices here to state that his first revealed right enlarged blind spot and paracentral scotoma for red and blue; the left eye being normal and so corresponding to the non-infected sphenoidal sinus. (Fig. 2)

It had appeared from the first nasal exploration that the right and left sphenoidal sinuses were both infected, but this was an error due to the one large sinus having been entered through both nasal passages. Further examination was therefore made and, by directing the cannula more outwards, one entered the true left sphenoidal sinus well to the outer side of what had been mistaken for the left sinus, and this latter did not communicate with the more central sphenoidal sinus on this the left side. Cultures of the sphenoidal sinuses showed that the smaller left side sinus which was outside the mid-line was non infected, while the more central sinus, entered through the left nasal passage which was really the right extending across and encroaching on the left side, was highly infected with streptococcus, &c. Hence the explanation of canalicular optic neuritis restricted to the right side with apparently a double sphenoidal sinus infection.

All the nasal sinuses were opened and drained pernasally, and later a submucous resection of the septum was done to afford a more normal nasal air-way. As the result of the pernasal operations the visual colour-fields, as well as the general condition of the patient, became greatly improved. (Fig. 3)

FIG. 3.



CASE 1.—Nov. 10th, 1922 Scotoma in R smaller and the paracentral scotoma gone. (Later, September, 1923, white fields normal.)

Reports by Mr. Iles.—Vision in each eye 6/5

4/7/22: Fields show enlarged blind spot for red, white, and blue on right side; contraction of blue field, especially nasally right and to a less extent left. Small paracentral scotoma *red and blue* right eye.

10/11/22: Scotoma smaller, field fuller, especially R.E. white

12/5/23: States that the right eye has "become smaller"; this was not found to be the case; the eye was as prominent as the left; no squint was detected by any test.

8/9/23: Still discharge from the nose. Paracentral scotoma right eye *to blue only*. White field not yet full, but fields of vision, especially as regards the blind spot, show improvement.

CASE 2.—C. E. C., male, aged 41, July, 1924. Markedly defective vision in right eye, which had persisted since influenza 14 months before, attended with severe pain at back of eyes and photophobia, and followed by double vision on looking towards right. Diplopia increasing, he consulted Mr. H. Snell, who noted paresis of right external rectus and suspected dental sepsis which, however, was excluded. Visual defects increased in right eye, objects being seen dimly, and Mr. Snell found the right eye divergent, the right optic disc slightly pale on the temporal side, and a central scotoma, but visual fields normal. The left eye he reported normal. The patient had noticed no nasal catarrh, but the rhinologist to whom he was referred kindly sent the following note:—

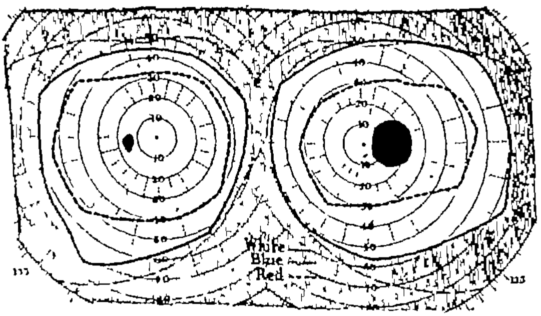
"No pus seen in nose. Sphenoid and posterior ethmoid cells washed out with Watson Williams' syringe, also right antrum—washings clear. Culture report: No growth obtained on aerobic cultivation for 48 hours."

The negative nasal findings in view of the symptoms at this stage led to the case being diagnosed as a missed encephalitis lethargica

Meanwhile the post-nasal catarrh had become much more noticeable, and it was at this stage, 14 months after the initial attack, that the patient came under my notice.

The fundus oculi and visual colour-fields, right and left, were examined by Mr R. E Chambers, who found a very large blind spot on the right side and some contraction of visual fields, both fundi normal, and no trace of diplopia nor of past optic neuritis. Anterior rhinoscopy revealed nothing abnormal and no discharge observed. Endo-rhinoscopy (Holmes) showed only a few indefinite strings of muco-pus, but the mucosal vessels were abnormally full on the right side posteriorly (Fig 4)

FIG. 4.



CASE 2.—Visual colour-fields and blind spots. (McHardy perimeter and enlarged blind spots verified by Bjerrum screen with 1 mm. white disc.) (Mr. E. R. Chambers.)

Exploration by the Author's Suction Syringe.—Right antrum.—Film stain: A little pus, mononuclear polymorphs, some phagocytosis, streptococcus. Culture: Pure streptococcus. Left antrum.—Film: Occasional leucocyte Culture: Negative. Right sphenoid.—Film: Mononuclear pus, streptococcus, no phagocytosis. Culture: Pure streptococcus. Left sphenoid (per right nose): Debris only. Culture and film negative Right posterior ethmoid.—Film: Mucus—few mononuclears. Culture: *Staphylococcus aureus* only. (Fig 5)

After repeated lavage, &c., of the opened sinuses, Mr.

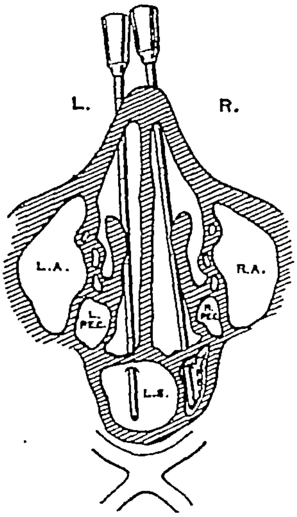
Chambers examined the eyes and reported August 16th, 1924—i.e. five weeks after his first report: Vision in both eyes normal, visual fields for white and colours quite full, and there was no pathological blind spot selected by the perimeter. Central colour vision normal.

Seen again and tested in October, 1924, and he was then normal in every way from the ophthalmological point of view.

Discussion.

An interesting point is that the sterile left sphenoid extending well across the midline was entered as readily through the right as through the left nasal passage. Suspecting, therefore, that the right sphenoid was probably small and ill-developed and had been missed, another cannula was entered, directed well outwards, and the real right sphenoid was thus entered and explored, and yielded pure streptococcus on culture and film. The test applied was as follows. Two cannulæ were inserted, one through the right nasal passage, the other through the left, so that both had entered what was presumed to be the large left sphenoidal sinus. Then, on attaching a syringe to one cannula and syringing down sterile water, it escaped out through the cannula in the other side. Again two cannulæ were inserted both through the right nasal passage, one into the left sphenoid, the other directed outwards to enter the right sphenoid sinus, and on syringing water down the one it did not come up and escape by the other, showing that the two cannulæ passed in through the right nose were in different cavities. This is the method I usually adopt to determine whether one has entered one cavity with two cannulæ or that the two cannulæ are in different, though adjacent, cavities and was used in connexion with both of these cases.

FIG. 5.



CASE 2.—The cannula in order to enter the small infected right sphenoidal sinus had to be directed well to the outer side.

The practical point is that one thereby gains precise information as to the actual source of the extracted sinus contents and the bacteriological investigation tells us whether it is or is not infected.

CONGRESS ON VENEREAL DISEASE AT PARIS.—Following the Wembley Congress, organised by the British Social Hygiene Council, a meeting was held in Paris of the Union Internationale contre le Peril Vénérien, where decisions were taken with a view of further combating venereal disease. Great Britain, France, Germany, the United States of America, and 12 other countries were represented by delegates from the recognised social hygiene organisations, by delegates from the various National Red Cross Societies, and by a number of official Government representatives. Of the many decisions reached the most striking was the unanimous decision that the regulation of prostitution was inconsistent with efforts to eliminate venereal disease. This same point was brought out so long ago as 1913 at the International Medical Congress held in London. In Paris the system of control of prostitution was condemned on medical grounds, and thus after 12 years the decision reached in London was endorsed. The Congress dealt particularly with the difficulty of eliminating disease from the mercantile marine, with the measures which should be taken in connexion with frontiers, with the problem of prostitution, and with emigration situations. Certain of the shipping interests agreed cordially to coöperate by financial assistance with the measures recommended in the mercantile marine. The Council of Direction adopted a report recommending measures against prostitution. These include wider propaganda and stricter legislation.

THE RELATION OF NEPHRITIS IN EGYPT TO INTESTINAL INFECTION.

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IN a paper published in THE LANCET [1] five years ago I stated that nephritis, as met with in Egypt, was usually due to bacilli of coliform type derived from the intestine. This opinion was based on the results of bacteriological examination of the urine, the experimental reproduction of nephritis in animals by injection of the bacilli isolated, and the favourable effect of vaccines in human cases. These findings are not supported by the general run of experience in this country. Most observers report that streptococci appear the commonest cause of acute glomerulonephritis and that in many patients sore throat precedes the attack.[2,3] In some cases, however, coliform bacilli are deemed responsible, especially when signs of urinary tract infection are present.

In this paper I wish to bring forward evidence to show that in Egypt we have largely to deal with a form of nephritis that is intimately connected with intestinal disease. For this purpose I have analysed some 100 cases of nephritis with œdema admitted to my wards in Kasr-el-Ainy Hospital, Cairo, during the last few years. The distinguishing feature of œdema has been chosen as indicating a lesion sufficiently advanced to cause failure of an important renal function and not as a necessary criterion of acute or parenchymatous nephritis. While the ordinary case of granular kidney has thus been excluded, a further omission has been made of renal patients who had developed dropsy in connexion with signs of heart failure.

Clinical Types.

For investigations into ætiology, the more acute forms are most suitable. Hence a simple division of the series into (*a*) acute, (*b*) syphilitic, and (*c*) chronic forms has been made. The distinction between acute and chronic cases is beset with certain difficulties, but apart from considerations of onset, duration, symptoms, and course, there is one feature which certainly reveals the existence of an acute inflammation of the kidneys—namely, the presence of abundant blood casts or cellular casts in the urine. This feature has therefore been taken as the main criterion of an acute nephritis, although perhaps unduly exclusive. To this group one-third (34 cases) of the total number belong. In five patients out of the total of 100 there was strong evidence that syphilis was responsible for the renal lesion. These cases have been grouped together irrespective of the nature of onset or the duration of their symptoms. The remaining group, comprising 61 out of 100 cases, is mainly composed of chronic forms of nephritis. In what proportion the onset had been acute or gradual was impossible to determine; five patients described a previous attack with subsequent return of dropsy.

Causative Factors.

Antecedent Conditions.—In 85 per cent. of the acute cases there appeared a causal connexion between the renal inflammation and some antecedent or concomitant infection. A similar connexion could only be established in a minority of the more chronic forms, for the patients had often forgotten slight illnesses in the past, and the appearance of œdema only fixed the date of gross renal failure and not necessarily the time of onset of kidney disease. Among 27 cases of acute nephritis whose clinical history was recorded, no less than 20 had been incapacitated by a definite illness for some time prior to the appearance of renal symptoms. This history was often substantiated by the persistence of such antecedent symptoms after admission to hospital, while other patients showed similar signs which had not been the subject of complaint owing to their milder nature.

These preceding conditions are tabulated below:—

—	Antecedent history of	Persisted on entry.	Found in others.
Fever—generally prolonged	8	6	5
Fever followed by dysentery or diarrhœa	7	4	3
Acute dysentery	5	1	2
Total	20 (of 27)	21 (of 34)	

In no instance could an antecedent fever be identified with scarlet fever; the prolonged course was usually sufficient to negative this. The fever was proved to be malaria in one patient, and in two others may have been due to an acute pyelitis.

While the importance of bowel infections is brought out in the above table, examination of the patients disclosed some conditions frequently associated with nephritis, which explained the significance of the fever and dysentery described.

(*a*) *Bilharzia Mansoni Infection.*—Definite signs of this were present in 55 per cent. of acute cases of nephritis, a much higher proportion than is found among hospital patients in general. The early signs are prolonged fever followed by more or less dysentery (often transient), and later an enlargement of the liver and spleen. Egyptian patients only notice these symptoms when pronounced, and frequently one or other is slight. Hence it appears that the preceding illness described by so many patients was due to this type of bilharzial infection, and that nephritis was apt to occur at the time when ova had made breaches in the intestinal mucosa. Among patients admitted for splenomegaly in a later stage without obvious intestinal lesions, there was no special tendency to nephritis. But renal disease was fairly common in cases of chronic bilharzial dysentery or advanced cirrhosis, when the general wasting and loss of resistance associated with hepatic and pancreatic insufficiency often predisposed to intestinal disorder and infection.

(*b*) *Bilharzia Hæmatobium Infection.*—Urinary bilharziasis was found in one-third of the renal cases, an incidence too low to be significant in itself, considering the wide prevalence of this disease. But while bilharzial disease of the bladder alone appeared to have little influence on the development of nephritis, the frequent involvement of the ureters undoubtedly predisposes to renal infection. The experiments of Lepper[4] showed that injections of *B. coli* into the blood-stream of rabbits regularly caused kidney lesions if the ureter was temporarily obstructed.

(*c*) *Intestinal Worms.*—Of these infestations, so common in Egypt, ankylostomiasis was most frequently associated with nephritis, though much less often than affections of the large intestine. Mistakes in diagnosis may occur in severe cases of anæmia when widespread œdema is present and sometimes albuminuria from œdema of the kidneys, thus simulating nephritis.

Bacteriological Results.

A routine bacteriological examination of the catheter urine was made in every case, and the results confirmed the work mentioned previously. Great care is necessary in the collection of samples and was rewarded by very uniform results in males, though in females contamination was relatively frequent. The procedure adopted was as follows:—

The external parts were carefully cleansed with antiseptic solution; since male Egyptians are circumcised one source of contamination was absent. A soft rubber catheter was passed by gloved hands and some urine allowed to escape. [illegible] attendant then compressed the catheter; the end [illegible] clear of urine and sterilised in a flame. A few c cm. of urine were next collected quickly in a sterile tube during momentary removal of its rubber stopper. The specimen was kept standing for an hour (unless turbid) to allow suspended matter to settle, when a culture tube was inoculated from the deepest portion. The culture and urine tube were kept 24 hours at 37° C. Should the culture tube show no growth in this time a fresh inoculation was made from the deposit in the urine tube that had been incubated for 24 hours.

The results may be summarised thus:—

(*a*) In cases of acute nephritis positive results from the first culture were almost invariably obtained. One patient—seen in private and not included in the series—gave a negative result on two separate occasions. In this case the acute nephritis had followed influenza, and ordinary media were used.

(*b*) The urine from cases of chronic nephritis showed a general correspondence between the microscopical picture of the sediment and the bacteriological examination. When cells were visible, included in the casts or free, a positive culture was usually obtained either from the fresh or the incubated specimen. If only granular and hyaline casts were present the urine proved sterile in the great majority of cases.

(*c*) The three uncomplicated cases of syphilitic nephritis showed a sterile urine.

(*d*) From patients whose urine contained definite collections of pus cells, usually from a cystitis complicating old bilharzial disease, a growth of staphylococci was usually obtained, either pure or in addition to bacilli. When there was much pus a bacillary or mixed growth was the rule. Streptococci were found in one case of septic nephritis.

(*e*) In uncomplicated cases of nephritis a pure growth of bacilli of intestinal types was generally found on culture of the urine. Their cultural properties were investigated by Dr. J. K. Clarke, who found that most belonged to the coli-typhoid type. Alkaligenes, non-lactose fermenters, and *B. pyocyaneus* were found in several.

Experimentally, the nephrotoxic properties of these organisms varied considerably. The more typical *B. coli* obtained from cases of nephritis with obvious bacilluria had little effect, whereas the coliform organisms obtained from the more common form of nephritis reproduced nephritis in a series of animals inoculated either subcutaneously or intraperitoneally. A diversity was also noted by E. Lepper, who reported that one strain of *B. coli* used in her experiments had a decided toxic action on the kidneys of rabbits injected intravenously.[4] The effect on the kidneys persisted long after the initial phase of bacillæmia in the animals, and similar lesions were found in the liver, as in cases of nephritis induced by chemical poisons. The staphylococci found in cases of pyuria had no selective effect on the kidneys of animals injected.

Agglutination tests on patients yielded unsatisfactory results, in keeping with the similar experience of pathologists regarding simple bacilluria.

Complications.

Among the complications that developed in the course of a nephritis there are two forms of special importance.

1. *Respiratory.*—Bronchitis was tolerably common and evenly distributed among the various groups, occurring in five acute, one syphilitic, and nine chronic cases, but it appeared more commonly as a later complication than an antecedent condition. In one patient pulmonary tuberculosis definitely preceded nephritis. One renal case was admitted with severe pneumonia which proved fatal, and another died as the result of an acute serositis affecting the pleuræ and peritoneum. During their stay in hospital two patients contracted influenza (then epidemic), another developed broncho-pneumonia, and three others a febrile pleurisy. In all six patients recovery was uneventful and only temporarily delayed progress.

2. *Intestinal.*—An acute febrile diarrhœa or dysentery developed suddenly in nine of the nephritis cases. Unless promptly controlled this complication had a most prejudicial effect on the renal and general condition, and in four cases was rapidly fatal. There is much reason to fear that cross-infection from other patients suffering from intestinal disease was often responsible—a disaster most difficult to avoid with patients of the most unhygienic habits in crowded wards. The condition certainly seemed of infective origin, and in most of the patients there was no apprehension nor signs of uræmia beforehand.

Treatment.

As a result of the investigations described—both clinical and bacteriological—the conclusion seemed warranted that most cases of nephritis in Egypt arose as a complication of an intestinal infection. Hence the opportunity was taken to treat suitable cases on this assumption, while not neglecting usual measures. For the ordinary case without present diarrhœa, the usual purgative treatment given for acute nephritis may help to diminish a source of intoxication. Intestinal antiseptics proved of very limited value. For patients with obvious intestinal lesions a direct therapy was indicated. Some forms of chronic dysentery of amœbic or bilharzial origin responded to emetine injections and showed a distinct improvement in the renal condition as soon as the intestinal infection was controlled. Similarly patients with nephritis complicating ankylostomiasis benefited by specific treatment, as in the case illustrated by Chart 1.

A man of 25 had suffered from fissure of the anus for six months and general dropsy for the last four months. On admission there was extensive œdema with ascites. The urine contained a large trace of albumin with fine, long granular and a few larger cellular casts. He was anæmic (Hb. 60 per cent.) and the stool contained ankylostoma ova. Appropriate anthelmintics were given in addition to the usual treatment for nephritis. A slow improvement followed, with a sudden diuresis as soon as the worms had been removed. In about three weeks after entry the dropsy had disappeared with a loss of 30 lb. in weight.

For acute cases of nephritis and pyelitis when bacilli were plentiful in the urine, the free administration of alkali appeared beneficial, as in bacilluria. Urinary antiseptics were of little avail and the impaired excretory powers of the kidneys prevents the usual degree of concentration in the urine.

Vaccine treatment proved the best means of treatment in most cases of bacillary nephritis. Some examples of their action have been given in a former publication,[1] but here I wish to describe a few cases which illustrate special points in their use. Chart 2 shows the effect of small repeated doses in a chronic case which had not responded to the usual treatment.

A man, aged 26, was admitted for general œdema which had lasted for 14 months. The urine averaged 900 c.cm. daily with a low sp. gr. but an albuminuria of 6 parts per 1000. There were irregular recurrences of fever with chronic enlargement of the liver and spleen, not at that date recognised as evidence of *Bilharzia mansoni* infection. Examination of the urine showed a deposit of muco-pus containing some granular casts, and a catheter specimen gave a good growth of a coliform bacillus. The administration of an autogenous vaccine induced a definite diuresis with relief of œdema.

Through the courtesy of a colleague, Dr. Abd'el Aziz Ismail, I was enabled to try vaccine treatment on a case of nephritis when the patient stayed sufficient time in hospital to show the full effect (Chart 3).

A male, aged 40, had suffered from severe dysentery for six weeks, and for the two months following from an œdema which had reached formidable dimensions by the time of admission. There was irregular fever associated with chronic dysentery (five to six stools daily), probably founded on bilharzial infection. The urine showed the usual features of a chronic nephritis. In this case urea was tried as a diuretic on account of the oliguria present; its use was followed by a marked rise in the amount of urine excreted, but the albuminuria just afterwards increased from 3 to 10 parts per 1000. Meanwhile emetine injections had been given perseveringly, but without effect so far on the fever and dysentery. The injection of an autogenous vaccine had a diuretic effect, and the albuminuria was reduced. Continued treatment with emetine and vaccine resulted in abolition of the fever, then abatement of the diarrhœa, with a marked diuresis and disappearance of the dropsy. The albumin diminished rapidly to a trace.

Experience in other cases showed that vaccines generally had a very definite effect on the renal condition and often on fever, if present, but did not check a diarrhœa. The explanation is probably that diarrhœa results from various lesions, such as ulcers originally due to amœbic or bilharzial infection through which coliform bacilli have been absorbed. Appropriate vaccine then checks the effects of such absorption without influencing the intestinal lesion.

While an autogenous vaccine was naturally preferred, equally good results were often obtained from an allied strain of organism. In one patient temporary improvement followed the use of a stock vaccine, while an autogenous vaccine used later brought about a relapse. In the light of later experience this anomaly is explained by the inappropriate dosage, a matter of considerable importance.

The first patients selected for vaccine treatment were non-resolving cases of nephritis in whom œdema persisted. These reacted to doses of 25 to 50 millions as a rule. But when the nephritis is acute, with oliguria or fever, or if high albuminuria is present, the kidneys seem much more sensitive and such doses may do more harm than good. Should a non-autogenous vaccine be used, a comparatively large dose may prove safe and beneficial when the same dose of autogenous vaccine is too large. A particularly interesting case, illustrating the importance of the right dose, is shown in Chart 4.

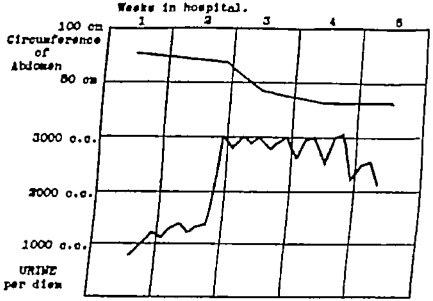
The patient, a woman of 25, who had had no previous illness nor been pregnant, was admitted to another section for a general œdema of a fortnight's duration. The daily quantity of urine averaged 600 c.cm. and there was a considerable amount of albumin. Under the usual treatment the œdema diminished and the output of urine rose to 900 c.cm. when she took her discharge. A week later the dropsy recurred and so rapidly increased that in a few days she returned to hospital and was admitted to my ward. Her condition now resisted the treatment which had proved beneficial before. The urine averaged 750 c.cm. daily, with an albuminuria varying from 10 to 20 parts per 1000, and contained a large number of casts—granular and hyaline with few included cells. There were no signs of complicating disorders, and the Wassermann reaction was negative. A catheter specimen gave a good growth of Gram-negative bacilli, which did not ferment lactose. Renal efficiency tests gave good results; the urea concentration was high, blood-urea 61 mg. per 100 c.cm., and the phthalein excretion 43·5 for the first hour and 32·5 for the second. The blood pressure was normal: 120 and 80 mm. Hg.

The condition therefore corresponded clinically to Epstein's nephrosis. Intravenous injections of calcium chloride and the administration of urea by mouth (15 g. daily) were ineffective. Increased protein feeding unfortunately increased the œdema and was abandoned.

Vaccine treatment with the bacillus found in the urine was begun with an initial dose of 25 millions which rather aggravated the oliguria, and smaller doses of 10 and 15 millions used subsequently failed to improve her condition. The patient had now been two months in hospital without benefit. I then tried giving the vaccine by mouth on an empty stomach. The first dose, 15 millions, caused a slight fall in the urinary excretion followed by a gradual rise; a week later a dose of 20 millions by mouth caused a fall without a rise later. A third dose of 15 millions caused no fall, but the later effects were apparently neutralised by the onset of a septic infection in the flank accompanied by fever. As soon as this subsided the oral administration of the vaccine was recommenced, using quite small doses, 10-15-20 millions at short intervals. This induced a diuresis which removed the extensive œdema. Owing to the breakage of the bottle the autogenous vaccine was lost, but fortunately a substitute vaccine tried proved equally efficacious.

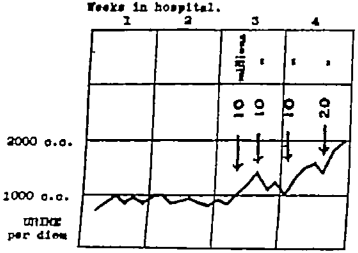
On discharge there remained an albuminuria of about 5 parts per 1000. The patient attended regularly as an out-patient and at first showed an increase of albuminuria

CHART 1.



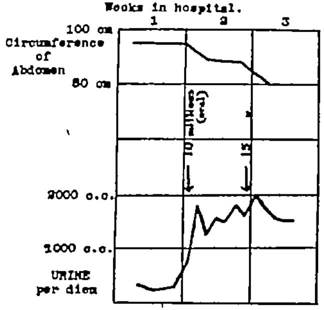
Case of ankylostomiasis complicated by nephritis with general œdema and ascites for four months. Anthelmintic treatment caused a gradual improvement with a sudden diuresis as soon as all the worms were expelled.

CHART 2.



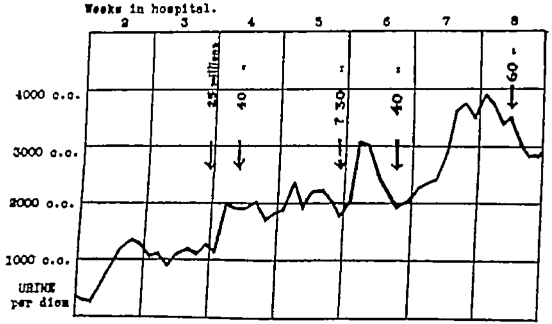
Case of chronic nephritis with œdema that had persisted for 14 months. Patient had *Bilharzia mansoni* infection with recurrences of pyrexia. Treatment by injection of an autogenous vaccine, as indicated by the arrows, caused diuresis and relieved the œdema.

CHART 5.



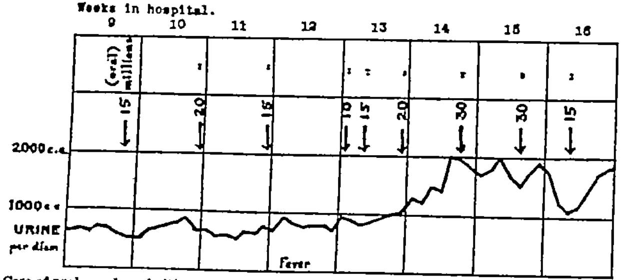
Case of severe nephritis with high albuminuria, oliguria, and extreme dropsy with ascites. Chart shows immediate diuresis (accompanied by a striking diminution in the albuminuria) on treatment by vaccine given orally. This occurred in spite of an acute diarrhœa and fever that had developed two days before.

CHART 3.



Case of prolonged dysentery with fever (due to *Bilharzia mansoni* infection) complicated with nephritis. On admission there was much œdema and oliguria. The chart shows some diuresis in the second week following the administration of urea. An autogenous vaccine was afterwards given by injection as indicated in the chart. Emetine was given during the third, fourth, and fifth weeks. The fever and dysentery declined in the sixth week. By the eighth week the albumin had decreased to a trace; the diuresis continued for another month.

CHART 4.



Case of prolonged nephritis with much œdema and high albuminuria. No improvement took place during the first eight weeks in hospital, before the chart commences. The chart records the effect on the urinary output of doses of an autogenous vaccine given by mouth. The last dose shown was of a substitute vaccine.

with a slight return of œdema on the resumption of her ordinary life, but with weekly doses of vaccine (oral) the albuminuria was reduced till it reached a steady level of 3 per 1000.

Since no further improvement was expected, the patient was again admitted to hospital. The phthalein test now revealed a considerable deterioration of renal efficiency, the figures being 11 per cent. in the first hour and 14 per cent. in the second, a total of 25 as compared with 76 obtained six months previously. Decapsulation was therefore performed on both sides under stovaine anæsthesia. Recovery was uneventful, and on discharge the urine had a sp. gr. of 1020 and 1½ parts per 1000 albumin. The patient has been very well since, has only slight albuminuria (¼ per 1000), a normal blood pressure, and excellent renal efficiency by the phthalein test—58 per cent. in the first and 25 per cent. in the second hour.

The experience gained from this patient suggests that in some cases there is a hypersensitiveness of the kidneys acquired in the course of a renal inflammation towards the exciting antigen, which may be reduced by small doses of vaccine. On the assumption that the intestinal tract is the original source of bacillary infection, immunisation by the oral route appears a logical procedure, following the observations of Besredka[6] and other French workers. The immediate response to such treatment shown in the next case (Chart 5) suggests that the dissolved antigen in the vaccine may be responsible, as has been shown by Perlweig and his co-workers to exist.[7]

This patient, a boy of 15, had been ill three months with severe nephritis. On admission there was extreme œdema with ascites and double hydrothorax. Only 250 c.cm. were passed daily, the sp. gr. was 1031, and the albumin content 18 and 20 parts per 1000, as measured on two separate occasions. Microscopically the casts were mostly of the granular variety, some being of large diameter. There were few free cells and not many embedded in the casts. On account of the swelling of the genitals a catheter was passed with difficulty and the specimen only yielded a growth of staphylococcus which appeared a simple contamination. The Wassermann was negative. The abdomen was tapped the day after admission and 2200 c.cm. withdrawn, but no benefit to the renal condition ensued during the following week. A small dose (10 millions) of the vaccine used as a substitute in the preceding case was then given by mouth. The result was immediate. Diuresis was established and next day the urine contained but a trace of albumin.

Considerations of space prevent reference to other cases which showed satisfactory results from this treatment. Of special interest is the favourable action of stock vaccine in some chronic renal cases when bacilli were not found in the urine.[1] It would appear that kidney disease may be kept up by absorption of toxins from the intestine without excretion of bacilli being detected. The suggestion that the vaccine acts as a simple diuretic is negatived by its failure to influence the output of urine in non-renal cases when used in similar doses.

Summary.

The onset of acute or subacute nephritis in Egypt is commonly preceded by intestinal infection. Bacteriological examination of the urine in such cases shows the presence of bacilli of intestinal types. These bacilli are capable of reproducing nephritis in laboratory animals. Cure of an intestinal lesion was found to benefit a consecutive nephritis. Vaccine treatment was frequently successful in these cases of infective nephritis. The dose should be inversely proportional to the severity of the renal symptoms. The oral administration of vaccine was found efficacious.

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RESPIRATORY CATARRH IN CHILDREN.[1]

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THE catarrhal child has received far too little attention, and though common enough in all classes its frequency is not sufficiently realised. It may be that until we started to examine in a routine manner so-called healthy infants we saw few cases; the doctor was not called in except for acute bronchitis or broncho-pneumonia, and the consequences, or rather the beginnings of catarrh in children, were overlooked.

The first surprise that I had when conducting routine examinations in young infants, 3 to 6 weeks old, was to note that at least half of them already had respiratory catarrh. I have been through the last thousand of my case-sheets and find that 499 were already infected. On questioning the mothers the usual answer was "Yes, 'e was born with it." The percentage of affected seems very high, but it must be remembered that the patients were drawn from the lower social strata of the population.

The signs on which the diagnosis was based in this series were: (1) Snuffles; (2) sucking in of the lower ribs (Harrison's sulcus); (3) definite bronchial catarrh, found by auscultation.

Before examining the reasons for this extensive infection of the respiratory tract in early life, the effects, immediate and remote, arising directly or indirectly from it, may be noted; some of them are from direct observation, and some of them may be classed as hypotheses.

(1) *The Nose.*—The first thing that happens when an infant gets a cold is that the nose becomes wholly or partially blocked. One effect of this is that the whole respiratory mechanism gets thrown out of gear, owing to the amazing efforts that a young child makes to breathe through a blocked nose, and its reluctance to breathe through its mouth. Anyone can observe this by holding the nostrils of a very young infant. After several unsuccessful efforts to breathe through its nose it wakes up and cries and then, but not till then, will air enter the chest. This nasal obstruction from catarrh leads immediately to sucking in the lower ribs, and to the formation of what is known as Harrison's sulcus. Tradition and the text-books attribute this sign to rickets, but it is so often seen in non-rickety babies, indeed, as a permanent deformity in infants too young for rickets. Rickets may, when combined with nasal obstruction, help to exaggerate and fix the deformity, but the disease has, in my view, nothing to do with its original formation.

The next serious effect of partial nasal obstruction is the difficulty of feeding. Modern opinion attributes the failure of breast-feeding, when it occurs, to the baby and not to the mother. It is thought that all women are potentially good milkers, but that some babies are bad suckers, and that the milk ceases from lack of stimulus. In such cases there is no more potent cause of inadequate sucking than partial or complete nasal obstruction, and where the result—a too frequent one—is failure of the milk-supply, a disaster occurs of the first magnitude in the poorer classes.

The earlier the infant suffers with nasal catarrh, the longer the complaint takes to clear up; in fact, in the majority of instances it never clears up entirely, but becomes more or less chronic with acute exacerbations. And the results of chronic nasal catarrh as the baby grows up are serious; probably it is the one and only cause of the disease known as "tonsils and adenoids." This is to adopt the view that chronic enlargement of the pharyngeal and faucial tonsils is merely one manifestation of chronic nasal catarrh, the condition being the effect of infection of the upper air passages renewed and re-renewed. Another result is chronic suppurative rhinitis with mal-development of the nasal passages, leading to chronic sinus troubles and all their complications and sequelæ.

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[1] An address given to the Bristol Medico-Chirurgical Society.

An indirect result of bad nasal catarrh in infants, especially if combined with sore buttocks and failure to gain weight from the feeding difficulty, may be a mistaken diagnosis of congenital syphilis, for snuffles, napkin rash and malnutrition, give a fairly complete picture of that disease.

(2) *The Ears.*—Among the hospital class, discharging ears in infants are sadly common. In fact, the medical officer is seldom told of it, as it is regarded as an inevitable concomitant of teething and of no real importance. It generally clears up quickly and relapses with every fresh acute exacerbation of the catarrh. It is not unreasonable to consider that the otitis media of school-children is generally a relapse, a supposition which explains the fact, with which all of us are familiar, that the vast majority of the out-patient class are deafish—to put it mildly. Histories of previous infantile attacks of otitis media are difficult to get, but often I have had the experience of the mother denying a previous attack, when I have had the previous occurrence noted.

(3) *The Chest.*—The following may be rather a surprising statement, but every baby that I have examined under 4 weeks old, and it is something over 400, that has had nasal catarrh has had definite signs of bronchial catarrh. In fact, in almost a majority, the bronchial catarrh is the plainest feature of the disease; the nasal catarrh may not be obvious, though the mother will generally have noticed it, but the tell-tale sucking in of the lower ribs is present.

A few infants from 4 to 6 weeks old escape bronchial catarrh with a cold, but after the age of 3 months this is usual. In only two cases have I noted it after 6 months in a chest previously clear. It would appear that every day of its life that one can put off the inevitable cold in an infant, the more remote becomes the chance of infection of the lower respiratory tract. Under 3 weeks of age the infection is a certainty, but every week after decreases the risk, which is negligible after 6 months of age.

Once a child is bronchitic, every fresh cold, in the words of the nursery, "flies to its chest" and causes an exacerbation of bronchial signs and symptoms. In fact, there is many a child of under 6 months that one would describe as a chronic bronchitic.

As these children grow up the acute attacks continue, though in the intermissions there are always signs in the chest, if they are carefully listened to. If we watch such an infant week by week we find signs either of chronic or acute bronchitis always. I have not watched these children yet beyond 6 years old and only a few up till then, but I submit that the process probably goes on, if to a less degree, through school life, and it is not an improbable speculation that the bronchitic baby is the precursor of the bronchitic school-child and that the bronchitic child is father to the chronic bronchitic adult. As far as I am aware, this has not been suggested before, and one observation in its support is that on the pensions boards nearly every ex-soldier pensioned for chronic bronchitis shows a well-marked Harrison's sulcus, as a fair proof that they were catarrhal babies. This idea that the catarrhal bronchitic baby is the sole ancestor of the chronic bronchitic is speculative, but it is worth following up. The proof of it presents difficulties in the adult, as infantile histories of bronchitis are hard to obtain with any accuracy.

There are at any rate very severe handicaps to the bronchitic child, for attacks of broncho-pneumonia occur with frequency, while measles, whooping-cough, and even the administration of an anæsthetic present added risks to such a child. From these clinical observations one main deduction may be drawn; it is that the earlier in life and more frequent the attacks of catarrh on the child occur, the more damage do they do and the more disastrous is the result.

The question of the pathogenesis is bound up with the factors which control the spread of infectious disease and with the local and general immunity. The position is well put out by Dudley,[1] and I am in entire agreement with his views as expressed.

The development of respiratory catarrh probably depends on two main factors: (1) The number and virulence of the catarrhal organisms which attack the mucous membrane; (2) the local resistance of the mucous membrane and the general immunity of the body.

It is probable that a given mucous membrane can deal with a given number of organisms in a given time—it can deal with x organisms per minute, the value x depending on the virulence of the organism and the resisting power of the mucous membrane.

An individual with a catarrh breathes out organisms suspended in particles of moisture very much in the same way that a person breathes out smoke when smoking tobacco. That is, as the smoke leaves the mouth there is first a concentrated puff and then it gradually disseminates into the room where, in the absence of proper ventilation, it hangs about the room. So it is with a person suffering from a respiratory catarrh. The concentrated breath is highly charged with organisms, which in the absence of proper ventilation will gradually diffuse throughout the room. On this theory then, one can get the $x+1$, the morbid dose, either by a direct hit from a cough, sneeze, &c., or by staying too long in an atmosphere too heavily loaded with organisms. This has been proved by exposing plate cultures in such circumstances. This morbid dose, this $x+1$, is determined by the virulence of the organisms and the local and general resistance, but the local resistance, the mucous membrane, must be the main barrier to catarrhal infection. That the mucous membranes have local resistance has been proved by A. Fleming.[2] Apart from the possibility of chemical disinfectants, he has shown that the mucous membrane secretes a definite bacteriolytic agent. What would appear from clinical observations is: (1) that the very young mucous membrane is deficient in resistance; (2) that the mucous membrane, which has been the object of early and repeated attacks, either loses or never acquires an adequate resistance.

The view that the general immunity of a very young baby is less than that of its mother is not generally held, but there is a good deal of clinical evidence to support the theory by analogy that the local resistance is deficient. For instance, the intestinal tract is notoriously easy to infect in the young infant, and the skin is extremely susceptible to staphylococcal infection. In the respiratory tract the frequency of catarrh under 3 weeks old, the undue chronicity of it when it does occur, and the rapid spread into the lungs under 6 weeks old affords considerable proof of early local deficiency. And pathological attacks of catarrh on these mucous membranes, respiratory and intestinal, do not confer immunity but rather the reverse. The ideas of Prof. Kenelm Digby, of Hong-Kong ("Immunity in Health," 1919), are to my mind correct—a normal child acquires its local, and in part its general resistance to catarrhal organisms, by frequent submorbid doses of these organisms. But morbid doses—that is to say big enough doses to cause an inflammatory reaction, do not confer local immunity, but cause more or less permanent damage to the epithelium of the respiratory mucous membrane. This would be true whether respiratory catarrhs are caused by well-known catarrhal organisms, or whether some unknown filter-passer is the "villain of the piece."

In the prevention of this condition these theoretical views become of extreme importance. The morbid dose of catarrhal organisms on the respiratory mucous membranes—what may be styled the "knock out" dose—must be postponed as long as possible. There can be no fear of the child missing the submorbid or immunising dose. This postponement may seem impossible to secure among the badly housed lower stratum of the population, though among the decently housed and not overcrowded class it is fairly easy. We have the two things to aim at—viz.: (1) to avoid what has been styled the direct hit, and (2) to keep an infant out of stuffy places.

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[1] THE LANCET, 1924, i., 1141.

[2] Proceedings of the Royal Society, 1922.

To avoid the direct hit attention must first be devoted to the mother. If she suffers from chronic suppuration of the upper air passages, it will be difficult, but antenatal nasal hygiene and treatment should be carried out. If she has the misfortune to have an acute catarrh when the baby is born the direct hit may be avoided by instructing her to wear a folded handkerchief over the mouth and nose while "doing" or feeding the baby. My personal experience of the value of this precaution has been most satisfactory, and it should be extended to the maternity nurse and children's nurse. All persons coming to view the infant should be inspected for colds and shut out if a cold is admitted, and always be requested neither to breathe on or kiss the baby.

To avoid the other main method of infection, the germ-laden atmosphere, is an easy matter in an uncrowded house. The infant should either be kept out of doors or in a draught. It is difficult to overcome prejudice in this matter, especially during the daily bath, but it is certain that no infant can come to any harm if efficiently bathed in front of a fire with all the windows open. How often is this rite performed in the complete absence of ventilation, with steam on the windows and in the presence of admiring, but highly infectious grandmothers and aunts.

Thus far for the more fortunate classes, but with overcrowding and housing difficulties among the less well-to-do, we have a more difficult problem. But much may be done, though, if an intelligent mother uses the mask, keeps the baby in a cot under the open window, and keeps it during the day time either out of doors or in her bedroom opposite the open window, as opposed to the stuffy kitchen.

The almost insurmountable difficulty is the parent, nurse, or other children who are what may be termed carriers—i.e., suffer from chronic respiratory catarrh. The position recurs again and again of the catarrhal mother with the catarrhal child, and I am convinced that by far the most potent cause of recurring catarrh, leading to chronic bronchitis and enlargement of the tonsils and adenoids, is infection from some one in the house renewed and re-renewed. It is possible to argue that heredity plays a part, but I do not believe it myself. It is just as frequently caused by an infected nurse. If the parents are infected prophylaxis breaks down. A nurse can be got rid of, but a mother cannot be done away with. Treatment, and the use of the mask, is the only possible method. For the rest, children should be kept away from people with colds and children's parties should be cut down to a minimum and—I want to lay stress on this—kept in a draught. Anyone who has closely observed children will agree that as far as their personal comfort goes, cold does not count.

The treatment of the catarrhal child is the prevention of fresh infection, after affected lymphoid tissue, if present, is removed. The longer that such a child can be kept "free from a cold" the more it will resist the next one. Cod-liver oil is a good stand-by.

THE TOXIC EFFECTS OF LEAD ADMINISTERED INTRAVENOUSLY. By Prof. W. BLAIR BELL, Dr. W. R. WILLIAMS, and Dr. L. CUNNINGHAM.—Owing to a misunderstanding this paper was printed before corrected proofs were received. The errors will be made good in the reprints which the authors will be glad to supply.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF THERAPEUTICS AND PHARMACOLOGY.

A MEETING of this Section was held on Oct. 13th, Dr. GEORGE GRAHAM, the President, being in the chair. He delivered his presidential address on

Some Difficulties in the Use of Insulin,

and began by recalling the enthusiastic welcome accorded to the new discovery of insulin at a similar meeting two years ago. Insulin had shown itself to be a very potent drug, and its use during the succeeding two years had proved to be attended with considerable danger. It was not a cure for diabetes, but so effective a counter-agent that most patients under treatment enjoyed the best of health, and their condition was only betrayed by the food on their tables. Only a comparatively small portion remained invalids and very few died. With the help of some very instructive statistics he analysed a collection of 85 patients who had been treated with insulin at St. Bartholomew's Hospital. These fell into three groups: (1) those he had personally supervised during the last two years; (2) out-patients under the care of his colleagues since January of this year; and (3) earlier patients whose after-history had been followed up. Of these, 17 had died with various symptoms, such as vomiting, pyrexia, blood poisoning, cerebral hæmorrhage, or coma. Some had refused the diet ordered. The deaths mostly occurred outside hospital, and in 12 cases there was evidence of some other disease, such as influenza, which had precipitated the fatal issue. One case, which died in hospital, had been discharged once and subsequently returned. It was fairly certain that she had not taken the prescribed diet at home; when she came back to the ward it was found that her insulin requirement had increased from 10 units to 110. She had no signs of sepsis except a discharge from the ear. She was given 100 units in the course of 15 hours, became comatose, and died after 18 hours. At the post-mortem nothing abnormal was found except that the pancreas was smaller than usual with fewer islets. The staining reactions were not quite normal but seemed to be healthy. It seemed certain that in this case there was a progressive degeneration of the islets of Langerhans which insulin was powerless to prevent; indeed, the injections given precipitated the coma.

Home Treatment.

The two difficulties encountered in treating patients at home after discharge from hospital were the estimation of the blood-sugar and the regulation of diet and insulin dose so as to keep it normal. He believed it best for the patient to maintain the percentage of sugar within normal limits if possible, although he had had cases do well with a persistently high blood-sugar. He aimed at keeping the morning value below 0·13 per cent., but the dosage of insulin required must not cause discomfort to the patient and the sugar should be kept down without insulin as far as possible. The sample of blood for estimation should be taken between 10 and 12 A.M. after an ordinary breakfast, and should not be preceded by any fast or insulin. A blood-sugar which was normal at 10 o'clock had often risen by noon, and the variation gave a rough idea of the patient's power of resistance. A high blood-sugar meant a low resistance. In some cases the blood-sugar would come down without any apparent reason and in others rise equally inexplicably. The usual dose for mild cases was 15–30 units a day, and one dose only should be given if this was possible. If a patient developed a high blood-sugar he should be instructed to raise his morning dose by 2 units at a time until the percentage fell again, but in some cases this increase might cause signs of overdose at midday without lowering the percentage in the morning sample. Sometimes two small doses instead of one large one overcame the difficulty, and to these patients an evening dose might be given. Some people, indeed, seemed able to take a bigger dose in the evening than in the morning, though usually he advised them to keep the evening dose smaller than the morning one in case hypoglycæmia should occur during the night. The speaker showed the chart of a boy of 9 years of age in whom 4 units produced at first symptoms of overdose. He had pyrexia, and a tuberculous lesion in the larynx was discovered. It was probable that he had a subacute infection of the lungs also. He was discharged from hospital in January with the blood-sugar normal. In October the blood-sugar rose and the insulin was proportionately increased. In the following January it rose again, but a further increase in the morning dose of insulin produced no effect. When, however, the evening dose was increased the percentage was controlled, and after ten months the child was still doing well. He was now having 6 units in the morning and 8 in the evening, and his diet represented 1705 calories (carbohydrate, 25; protein, 91; fat, 180). Possibly the evening dose was required to counteract the pyrexia, which tended to raise the blood-sugar.

Spacing of Doses.

Two patients under his care showed symptoms of overdose every time their insulin was increased. One woman was having an interval of only eight hours between doses, another of nine hours. The symptoms in both cases disappeared on increasing the interval to 11 and 13 hours respectively, and it was then possible to increase the insulin dosage. Patients should be warned against the danger of hypoglycæmia, but it had only occurred in two of his cases, one of whom became unconscious and the other hemiplegic. Both recovered when sugar was given, and after that it was found that the insulin requirement had decreased.

Infections.

Minor infections had the effect of raising the blood-sugar. His present practice was to increase the dose by 1 to 3 units directly a minor infection, such as a cold in the head, showed itself. It was too soon as yet to report the results of this method. Sometimes such infections were followed by a drop in the insulin requirement. When a *major* infection occurred the insulin dose should be increased immediately and courageously. Sometimes a patient who had been receiving 20 units might have to be raised to 200. The urine should be collected every three hours and tested for sugar, the large dose being continued until the sugar content dropped. Then the insulin was immediately stopped and none given until the sugar in the urine began to rise again. The danger came with convalescence, as hypoglycæmia was liable to supervene when the temperature dropped. Sugar must be kept ready for such an emergency.

Relation between Insulin and Exercise.

Dr. R. D **Lawrence** spoke of the very marked effect of exercise in decreasing the blood-sugar, which was especially noticeable in people who constantly alternated between sedentary and active pursuits. Hard exercise might produce severe hypoglycæmia. He mentioned the case of a gardener whose diet had been constant for 18 months. Last winter his regular insulin dose was 10 units in the morning and 6 in the evening, which kept a good balance, his blood-sugar falling to 0·1 four hours after the dose. About May he started to work very much harder and also took up cricket; after one week he suffered from dizziness caused by hypoglycæmia, and in July he was keeping a good balance with 6 units once a day. At the end of that month he stopped work and cricket and his blood-sugar went up. He restored his balance with 8 units in the morning and 5 at night. Following medical advice he returned to work and found that 5 units daily were then sufficient. He now carried out urine tests nearly every day and had learned to adjust his own insulin to correspond with his activities. Another patient of sedentary habits, who had been receiving 16 units in the morning and 12 at night, suffered from hypoglycæmia two or three hours after his Sunday tennis if he had more than 10 units in the morning; 8 kept him in good condition. He went on a vigorous holiday, and for three weeks was able to double his carbohydrate intake on the same insulin dose without passing sugar. He even suffered from hypoglycæmia if he took exercise before meals. This exercise factor would account for the apparent improvement of patients on their discharge from hospital and return to active life.

Dr. Lawrence showed a very interesting chart illustrating the effect of intensive exercise on the blood-sugar after a measured meal compared with the blood-sugar if no exercise were taken. Diets were more difficult to alter, however, than insulin doses. His practice was to teach the patients to treat themselves by diet as far as possible and to increase the insulin dose, when this became unavoidable, by 2 units morning and night. All his cases had returned to normal life and on the whole were taking less insulin than Dr. Graham's, the average being 15 units in the morning and 10 at night. Some, especially coma cases who had recovered, started on 25 in the morning and 20 at night. The uniform diet he used tended to produce a uniform insulin requirement. He had had no cases of infection in the patients who were attending regularly, except for colds in the head and influenza, which had only produced glycosuria in one case.

Dr. E. P. **Poulton** showed an interesting chart made by a patient himself showing blood-sugar variations and Rotherer reactions side by side, the latter giving a more sensitive indication of his condition. He thought that mild cases did better with small doses of insulin combined with dieting than with dietetic measures alone. He quoted the case of a medical man who had had diabetes since 1900. His attacks of giddiness increased in severity in 1922, and he entered hospital and found that small doses of insulin made a great difference to him. After a month the insulin was dropped and the improvement was maintained without it. In very wasted patients insulin was dangerous without carbohydrate. He had had the same experience as Dr. Lawrence that the insulin requirement of patients tended to settle to a common level.

Dr. C. H. **Best** (Toronto) said that the problems encountered in the birthplace of insulin were just the same as those of this country. Out-patients who attended regularly did very well, but the irregular ones caused difficulty, so much so that a special social service department had been organised at the Toronto General Hospital to keep in touch with these cases. He agreed with the President on the danger of infection and regarded it as the greatest bugbear of the clinician. There seemed no solution of the problem except early recognition and counter-action by an increased dose of insulin or modification of the diet. The path of those who did not contract infections was smooth. The first person ever to receive a dose of insulin, a lad named Leonard Thompson, was now a healthy young man. Dr. Lawrence's experiences were just what he would have expected.

Insulin in Children.

Dr. G. A. **Harrison** spoke of the special difficulties of treating diabetic children. Since it was essential to give a diet of sufficient calories to permit growth the food intake had to be large. The difficulty was, therefore, to keep pace with these comparatively rich diets without giving too much insulin. Several American writers maintained that one injection daily was sufficient unless the dose exceeded 10 units, when it had better be divided into two or more. In several cases where large doses were necessary three or four doses were given daily before meals, and another at midnight. The multiplication of doses, however, was extremely bad for children, partly because of the hardening effect on the skin and partly because of the alarm caused to the child by the whole process of injection. In fact, parents were often unable to give the insulin for this reason. The maximum number should therefore be reduced to two if possible, but severe cases tended to show a rise in the blood-sugar after a night's rest. With careful spacing of meals, however, and a 10- or 12-hour interval between doses the blood-sugar could often be kept down. Parents should be told to supervise the exercise of the children in order to prevent a sudden drop in blood-sugar from this cause. In children intercurrent sepsis was liable to be very sudden and serious. The prescribed diet was very difficult to give when the child was sickening for some infection and the doctor, hearing that all the food was not being taken, was liable to fear hypoglycæmia and reduce the insulin. Unless he could test the blood-sugar often it was difficult to recognise the true cause of the anorexia. Insulin should never be stopped entirely, even if no food were being taken at all, as a patient suffering from an acute illness might have a large carbohydrate store. The family doctor must strike a balance between the factors of increased requirement and decreased tolerance. It was far better to send the child to a nursing home, but in the interval he might as a general rule substitute milk for the prescribed diet, as it was the only food most sick children would take. If the normal dose of insulin were 10 units it should be reduced to 5; if over 10, then two-thirds of the usual dose should be given. Sugar should be kept handy, but insulin should never be given at the same time as glucose. After 24 hours, when the glycogen stores were depleted, a little might be given. The hypoglycæmic reactions of children were not so marked as those of adults; often an attack started with fretfulness and then the child became quiet and pale. It was naturally extremely difficult to distinguish these signs from those of pyrexia. He summarised the difficulties as inverse to the facilities for blood-sugar estimations.

High Blood-sugar a Mendelian Recessive.

Dr. P. J. **CAMMIDGE** remarked that it seemed to be assumed that all forms of diabetes were essentially the same. In his opinion there was a vital difference between the adult and the childish form. Juvenile diabetes had a distinct ætiology and origin. He had recently undertaken some research which would indicate that a constitutional high blood-sugar was a Mendelian recessive character. An animal with high blood-sugar produced a normal progeny, but the offspring of these showed a Mendelian proportion of individuals with high blood-sugar. Mice illustrated this principle very clearly and probably other animals would also. If it was, as he believed, a true Mendelian recessive it would almost certainly appear in man as well. He had come to the conclusion that there was no such thing as a normal blood-sugar, but that individuals varied between wide limits. Low blood-sugar might also be recessive, but the experiments on this were not yet complete. The theoretical reason for these results lay in the interaction of the endocrine secretions. Definite chemical experiments had proved that insulin and adrenalin had opposite effects upon the activity of certain glycogen ferments. Insulin and pituitary extract, on the other hand, did not have opposite effects but chemically neutralised one another. Excessive doses of insulin therefore tended to exhaust the pituitary and set up diabetes insipidus in a mild form. Another influence in elderly diabetics was hyperthyroidism. There was no activity between thyroid and insulin, but the thyroid activated the adrenalin which opposed the insulin. If the thyroid were diminished by diet and treatment signs of overdose of insulin tended to appear.

A great deal of difficulty arose from always doing tolerance tests with sugar. It was rapid and easy, but people ate other things besides sugar, and much truer results were obtained from testing after an ordinary mixed meal. Another source of error was the practice of giving insulin half an hour before a meal and making the tolerance test three-quarters of an hour after. By this method the maximum of insulin reaction was reached considerably before the maximum food reaction, especially in hypothyroidic patients. If the insulin were given earlier, say an hour or an hour and a half before the meal, the maxima would be more likely to coincide.

NEWCASTLE-UPON-TYNE AND NORTHERN COUNTIES MEDICAL SOCIETY.

THE first meeting of the session was held in the Royal Victoria Infirmary, Newcastle, on Oct. 8th, when Dr. **NEIL MACLAY** delivered his inaugural presidential address on

Modernism in Medicine.

As an observer of medical life for 30 years he had been able to view it from two different standpoints. First as a general practitioner, and later from the somewhat narrower sphere of a specialist. This had been a period of great changes and advances in medicine, but nevertheless there were disquieting signs of retrogression. On all sides there was a steady growth of superstition, both in religion and medicine, and an inclination on the part of the public towards quackery. Dr. Maclay went on to deal with the part which medical men might play in combating these influences. The crowded curriculum of the student intensified the difficulties. As a result newly qualified men seemed to be now less able to judge what was commercial quackery and what scientific truth.

Exhibition of Clinical Cases.

Mr. J. S. **ARKLE** showed various ophthalmic cases, the chief of which were (1) a recent extensive hæmorrhage into the vitreous in a woman of 24, seven months pregnant; (2) ruptured choroid following concussion; (3) a severe neuro-retinitis with well-marked "star" figure at the macules, in a patient without any obvious cause.

Mr. **JOHN CLAY** showed a man, aged 36, from whom he had removed an astragalus 16 years earlier after an injury. Since then the man had been able to serve as an infantryman in the Army and pursue heavy work regularly.

Dr. **HORSLEY DRUMMOND** showed a case of aortic aneurysm with dislocation of the inner end of the clavicle: also cases of mediastinal tumour and subacute combined degeneration of the cord.

Dr. H. E. **GAMLEN** demonstrated various radiological films.

Dr. W. E. **HUME** showed a case of erythræmia in a man of 48, where the symptoms had started six months earlier with hæmoptysis; also cases of crossed paralysis from pontine softening and auricular fibrillation treated with quinidine sulphate.

Mr. C. G. **IRWIN** showed a case of extensive syphilitic osteitis of the skull which appeared in spite of previous antisyphilitic treatment.

Dr. F. J. **NATTRASS**: A case of myasthenia gravis; a woman of 26 with weakness of palate and external ophthalmoplegia.

Dr. A. **PARKIN**: A case of tuberculous spine with pressure myelitis in a child, and cases of different types of aneurysms.

Mr. F. C. **PYBUS**: A case of trigeminal neuralgia successfully treated by operation; also cases of axillary aneurysm and congenital dislocation of the hip.

Mr. R. J. **WILLAN** demonstrated a group of cases with pyelographic records which illustrated the value of pyelograms in localising and differentiating kidney lesions. These were congenital cystic kidneys in an adult woman; a woman with right-sided pyonephrosis; a case of left-sided hydronephrotic kidney.

Reviews and Notices of Books.

TEXT-BOOKS OF MEDICINE.

Taylor's Practice of Medicine. Thirteenth edition. By E. P. POULTON, M.D. Oxon., F.R.C.P. Lond., Physician to Guy's Hospital; formerly Radcliffe Travelling Fellow and Belt Memorial Research Fellow. With the assistance of C. PUTNAM SYMONDS, M.D. Oxon., F.R.C.P. Lond., Assistant Physician for Nervous Diseases, Guy's Hospital; formerly Radcliffe Travelling Fellow; and H. W. BARBER, M.B. Camb., F.R.C.P. Lond., Physician-in-Charge of Skin Department, Guy's Hospital. London: J. and A. Churchill. 1925. With 48 plates (8 coloured) and 93 text-figures. Pp. 1003. 28s.

Dr. E. P. Poulton has again produced a revised edition of the late Sir Frederick Taylor's famous text-book. The extent of revision rendered necessary by the advances of medical science may be gathered from the fact that new articles have been added dealing with meliodosis, tularæmia, octoscopy, manganese poisoning, Mönckeberg's degeneration, the recent work on the ætiology of cancer, and half a dozen other subjects, whilst the authors have had to rewrite or largely revise their previous articles on anaphylaxis, jaundice, pernicious anæmia, the spleen, cerebro-spinal fluid, epilepsy, and many other equally important topics. In addition to these revisions and amplifications, there are several new features which call for special comment. In the first place, Dr. Poulton has seen fit to introduce at the end of each section a list of important references, with numbers corresponding to places in the text. In this manner he has not only eliminated from the text many unnecessary quotations, but he has provided for his readers a selected bibliography most useful as a guide to further reading at a time when medical literature has become so ponderous. The illustrations too in the new volume have undergone considerable improvement. A generous provision of radiograms enables the student to make a proper study of this increasingly important aid to diagnosis. The eight new coloured plates include excellent illustrations of normal and abnormal leucocytes. It is perhaps open to question whether the plate of nucleated red cells facing p. 520 is of sufficiently common interest to merit inclusion. If so, it requires more detailed explanation than is at present to be found in the text.

A survey of the text confirms a previous impression of accurate and scholarly writing. Those who are not reading the book from cover to cover would do well to turn to Dr. Poulton's articles on asthma, diabetes, pernicious anæmia, and peptic ulcer. Laboratory tests are given their proper place, although it is curious to see so little stress laid on frequent measurement of the specific gravity of the urine as an index of renal efficiency. Yvon's method of estimating blood-urea is given preference to the more useful analytical methods of Folin. The section dealing with diseases of the central nervous system has again been written by Dr. C. Putnam Symonds, who has revised or rewritten the articles dealing with examination of the cerebro-spinal fluid, neuritis, cerebral diplegia, epilepsy, and several others. New and excellent photographs illustrate the topical diagnosis of lesions of the cord by means of lipiodol injections. The section, while it contains only what is necessary for the use of students and practitioners, achieves a high standard. The full description of rheumatic chorea included in this section might with advantage be transferred to the chapter on rheumatic fever. Dr. H. W. Barber once more deals with the diseases of the skin, and this section, too, is now enriched with coloured illustrations to its countless benefit. This section of the book has always been well done as far as that was possible without pictorial help. The illustration of psoriasis facing p. 939 might be improved. Dr. Barber has adopted the classification of Dr. Darier, to whose famous book he acknowledges his indebtedness, but the section as it stands bears the stamp of Dr. Barber's own extensive experience and learning.

To have accomplished all this within three years of the previous edition is a tribute not only to the learning and industry of Dr. Poulton and his collaborators, but also to the deserved popularity of the work among students and practitioners.

A System of Clinical Medicine. Seventh edition. By THOMAS DIXON SAVILL, M.D. Lond. London: Edward Arnold and Co. 1925. Pp. 1004. 28s.

THIS carefully planned text-book dealing with disease from the standpoint of symptomatology was first published over 20 years ago, and may now be said to have established its position as a modern classic. Since Dr. Savill's death in 1910, just after the publication of the second edition, the task of keeping the subsequent issues up to date has been ably performed by his widow, Dr. Agnes Savill. The seventh edition has in considerable part been re-written and fully revised, though in bulk the volume has increased by some 50 pages only; for assistance in this labour Dr. Agnes Savill expresses her indebtedness to Dr. Harry Campbell, Dr. J. Strickland Goodall (Diseases of the Heart), Dr. J. D. Rolleston (Fevers), Dr. S. W. Patterson (Diseases of the Stomach and Liver), Dr. Angus MacGillivray (Diseases of the Eye), Dr. Robert Cole (Mental Diseases), Sir James Dundas-Grant (Diseases of Ear), Mr. Philip Franklin (Diseases of Nose and Throat), Colonel W. S. Byam (Tropical Diseases), Prof. Louise McIlroy (Diseases of Women), Dr. Skene Keith (Immunity), Dr. Leonard Williams (Thyroid Gland), Dr. Langdon Brown (Diabetes Mellitus), Dr. Gordon Ward (Diseases of Blood and Spleen), and Dr. V. E. Sorapure (Basal Metabolism and Animal Measurement). Dr. Thomas Savill's plan of designing a text-book of medicine "from the patient's point of view," was no simple matter to carry into effect, but there can be little doubt that his ambition has been fulfilled, nor is anything neglected in the way of ætiology, pathology, and treatment to make the work complete. Important diseases are indicated by the use of large type, rarities are described in smaller type, and abundant cross references are given to avoid repetition and increase the utility of the book. We can with increasing confidence recommend for the seventh time "Savill's Medicine" to senior students and practitioners on the look-out for a sound summary of clinical diagnosis.

The Principles and Practice of Medicine. By the late Sir WILLIAM OSLER, Bt., M.D., F.R.C.P. Lond., F.R.S. Tenth edition, thoroughly revised by THOMAS MCCRAE, M.D., F.R.C.P. Lond., Professor of Medicine, Jefferson Medical College, Philadelphia. London and New York: D. Appleton and Company. 1925. Pp. 1234–xxxxi. 30s.

"The Principles and Practice of Medicine" first appeared over 33 years ago, and those who have read the biography of Sir William Osler by Harvey Cushing will have noted the large part which this text-book took in Osler's life. The value of the book is so well known and universally recognised that it requires no further commendation on our part; in the tenth edition, which has been thoroughly revised by Prof. McCrae, a constant effort has been made to retain the features characteristic of its author, who "felt that a text-book should contain well-established knowledge and not every new wind of doctrine." Since the previous edition which passed through Prof. McCrae's hands there has been a complete resetting of the book, and many subjects which are new or the discussion of which is altered have now been incorporated, among them scarlet fever, car and sea sickness, carbon monoxide poisoning, epidemic diaphragmatic pleurodynia, many tropical and local diseases, hypotension and hypertension, and so forth. Additions have been made throughout to the sections on symptoms and signs, diagnosis and treatment, the aim being to include material which is of established value. This edition will not only maintain but enhance the reputation of its predecessors.

A Synopsis of Medicine. Fourth edition. By H. LETHEBY TIDY, M.D., B.Ch. Oxf., F.R.C.P. Lond., Assistant Physician to St. Thomas's Hospital; Physician to the Royal Northern Hospital. Bristol: John Wright and Sons, Ltd. 1925. Pp. 1000. 21*s.*

THIS synopsis was first published in 1920, and the measure of its success may be gauged by the present appearance of the fourth edition, revised and enlarged. The most extensive alterations are in the chapters on diabetes, and have been necessitated by the rapid advance of knowledge since the discovery and use of insulin. The article on jaundice has also been rewritten, and is based on the views of MacNee. Other articles which have been entirely, or almost entirely, rewritten include botulism, visceroptosis, hæmatoporphyrinuria, infarction of the lung, primary purpura, and acholuric jaundice. Considerable alterations have been made in the chapters on gall-stones and bronchial asthma, while that on splenic anæmia has been recast. New chapters have been added on blood diseases of childhood and on thrombosis and embolism. The object of this précis of medicine is to assist those who have to revise rapidly their knowledge of medicine in general or of some disease in particular—the worried student, the general practitioner, or possibly even the teacher—and Dr. Tidy's painstaking work, in fulfilling this purpose, has met with the success which it deserves.

CLINICAL FEATURES OF HEART DISEASE.

An Interpretation of the Mechanics of Diagnosis for Practitioners. By LEROY CRUMMER, M.D., Professor of Medicine, University of Nebraska. New York: Paul Hoeber. London: Henry Kimpton. 1925. Pp. 353. 12*s.* 0*d.*

THE introduction of new methods in diagnosis may temporarily upset the sense of perspective, but in the course of time such methods find their level, which is generally to supplement rather than to replace those which have been previously in vogue. The cardiologist of to-day is fully prepared to admit the extent of his debt to the work and teaching of the great clinicians of the past. Many of their doctrines have stood the test of time, while others have had to be discarded in the light of more recent knowledge; but to restate those doctrines more clearly or more convincingly than they have been stated by the writers of past generations is no easy matter. As his text Dr. Crummer takes a concisely worded document prepared by the American War Department in 1917 for the guidance of medical officers employed in the examination of recruits. He deals in turn with the various important facts which may be elicited in taking the history of a cardiac case, with the different methods of physical examination, with valvular disease, and with other branches of the subject. His views on the components of the first heart sound arising in the right and left ventricles respectively are interesting; but apart from this he adds little to what has been written before. Some of the terms employed, such as the "onward" murmur, are unfamiliar to the English reader. The author appears to take an unduly pessimistic view of the clinical powers of the modern physician when he says that "Even when . . . . obtained or corrected by the most experienced members of the staff . . . . the history is quite apt to be absolutely worthless," or again, that "the discovery of albumin in the urine no matter what the source is called Bright's disease." In the treatment of auricular fibrillation he expresses the opinion that "a sudden reduction in heart-rate to 80 or below indicates overdosage with digitalis." This is over-cautious. In a book of this size it is not possible to discuss the evidence on which statements of opinion are based, and the impression is left that the author has attempted to cover too wide a field.

SURGERY.

Some Encouragements in Cancer Surgery. By G. GREY TURNER, F.R.C.S., Surgeon to the Royal Infirmary, Newcastle-upon-Tyne. Bristol: John Wright and Sons. 1925. Pp. 75. 7*s.* 6*d.*

THIS is an account of a wonderful series of patients with advanced cancer who have been operated upon by the author and who have lived for many years without recurrence or have died only after a long respite of apparent health. As was to be expected, these gratifying results have been obtained more particularly in certain types of growth, or in cancer in certain situations. It is strikingly brought out how successful operative treatment may be in carcinoma coli, and a very remarkable case is the complete cure of a man with a chondrosarcoma of the tibia. There is a certain excuse for the gloomy outlook which prevails in the minds of many surgeons with regard to the operative treatment of malignant disease, but no one could fail to be spurred to increased efforts along recognised surgical lines by reading this book. Mr. Grey Turner has done a great service in recording these results.

Chirurgische Operationslehre. Fourth edition. By Prof. Dr. FRIEDRICH PELS LEUSDEN. Berlin: Urban and Schwarzenberg. 1925. Pp. 832. M.18.

THIS well-known text-book has an established position which it is likely to retain, for it has been brought thoroughly up to date. It is a rather larger book than the average English student reads, as it is very comprehensive. Many operations which have very seldom been done are described. This is one of the features which add to its value, as also the fact that minor surgical operations are not neglected. It reflects, of course, German teaching; but this does not make it very different from the usual English text-book, for surgical practice all over the world tends increasingly to conform to a single standard. The book can be recommended.

THE EVOLUTION OF ANATOMY.

A Short History of Anatomical and Physiological Discovery to Harvey. Being the substance of the FitzPatrick Lectures delivered at the Royal College of Physicians of London in the years 1923 and 1924. By CHARLES SINGER, M.A., M.D., F.R.C.P. London: Kegan Paul, Trench, Trübner and Co., Ltd. 1925. Pp. 209. 12*s.* 6*d.*

DR. SINGER in his two courses of lectures has set forth in a pleasing and scholarly manner the growth of anatomical, and to some extent of physiological, knowledge. He begins with allusions to the dawn of anatomical ideas as exemplified in drawings of animals from the Magdalenian caves and by a model of an arm from Knossos, and then passes in rapid review such knowledge of anatomy as was exhibited by Assyrians, Egyptians, Greeks, and Romans. He includes the great poem of Lucretius under the head of Latin anatomical literature, but we cannot agree in his dictum that "as an observer he (Lucretius) is negligible." Of course, he occasionally made gross mistakes, but his observation of ordinary natural phenomena was singularly acute, a fact which every commentator has noticed. In his section upon mediæval anatomy Dr. Singer refers to a drawing in an MS. of Guy de Vigevano preserved in the Musée Condé at Chantilly, representing a dissection, and remarks: "The relation of the dissector to the subject in this and other miniatures of the same MS. shows that the body was suspended." Dr. E. Wickersheimer, however, in his paper on the same MS., published in the *Archiv für Geschichte der Medizin*, 1913, considers that the upright position was a traditional method of representation and probably originated from the fact that in this position it was far more easy to show the action of the surgeon in making incisions. Almost the entire latter half of the book is devoted to Vesalius and Harvey, whose researches are described with a simple clarity worthy of imitation by other writers who may feel inclined to discuss similar matters. Dr. Singer concludes by reminding his readers that William Sharpey, the first holder of the first chair of physiology established in England, was himself a student of Padua.

A TEXT-BOOK OF OARSMANSHIP.

By GILBERT C. BOURNE, Secretary of the Oxford University Boat Club, 1884 and 1885. Oxford University Press. 1925. Pp. 376 18s.

THE author has carried for so many years a name of such weight among those who are experts in rowing, judges of its art, and instructors of famous crews, that his considered opinions, after 40 years' experience of Oxford oarsmanship, are entitled to respect. This work began as an essay written in undergraduate days; the author was firmly established in correct principles by the celebrated Dr. Warre while at Eton, so that the book contains the conclusions of a lifetime's study of the subject. It deals in order with the theory of rowing, the art of rowing, oars and boats, coaching, and muscular action in rowing. It is with the last of these sections that we are called upon to deal particularly. These chapters do not pretend to be written for the anatomist, but they seem to be admirably suited to the purpose the author has in view. An intelligent oarsman, especially if supervised by a coach who has good knowledge of and belief in the value of the subject, ought to find these anatomical details of great use to him in his effort to understand how the greatest amount of work may be got with the least expenditure of effort. The short accounts of muscles and their actions are correct and excellent, and sufficiently full to present a picture, while the figures in the text are clear and good; it may be pointed out that the coraco-brachialis is wrongly labelled in Fig. 48. Attention should, however, be called to the common but mistaken notion that the humerus and scapula move at different times when the arm is raised above the head, for the swing forward is essentially an act of raising the arms above and in front of the head. The analysis of the act of raising the arm, recognising the necessity of fixing the scapula, thereafter speaks of the raising of the humerus on the fixed bone, and of the amount of upward raising made possible by the additional rotation of the scapula; but it must be understood that the two motions are not consecutive but concurrent. The scapula begins to move at the same time as the humerus, although more slowly, and its movement continues throughout the greater part of the raising of the arm. In other words, the scapula is overfixed from the beginning, affording in this way a point d'appui for the action of the humerus. In this complex the trapezius acts alone at first and the serratus magnus comes in automatically at a certain point; it cannot be brought in before this, and the trapezius cannot by itself manage the whole affair. The lower fibres of the trapezius are mainly concerned, the middle fibres coming in toward the end of the movement to give the final touch to the scapular action. The upper fibres have little to do beyond giving active support, and it seems not improbable that the contracted condition of these fibres observed at the end of the forward swing, in overreaching, or even in turning the oar off the feather, may be really associated with an effort to lift up the head. We have laid some stress on this because an appreciation of its bearing may lead to modification of some of the theoretical views advanced by the author when dealing with the movements concerned; but it is naturally impossible to be sure of what does take place, exactly and fully, and in practice it probably matters little whether the teacher makes use of the correct description or the correct but misleading analysis. We confess to some doubt about the action of the gluteus maximus, at any rate in the first part of the stroke, but this, again, is of secondary importance, and the chapters on muscular action may be commended for their clearness and practical value.

The rest of the book is of the same high level in exposition and is illustrated by clear and useful diagrams and drawings. The work is, in fact, most interesting; to anyone who has ever handled an oar, however incompetently, it is fascinating. The whole production is of that excellence which we are accustomed to associate with the Oxford Press.

JOURNALS.

JOURNAL OF INDUSTRIAL HYGIENE. August, 1925.—W. I. Clark and E. B. Simmons describe their own observations over a period of 14 years upon the dust risk in the abrasive industry, where such artificial abrasives as aluminium oxide (emery) and silicon carbide (carborundum) are made and handled. Results of clinical and X ray examinations are given, together with a statement of the occurrence of pulmonary tuberculosis. The conclusion is arrived at that inhalation of these dusts does not lead to fibrosis, and that the use of artificial abrasive wheels, instead of sandstone wheels, reduces the risk of pneumonoconioses for grinders to an enormous extent. The negative evidence against emery and carborundum here given is of particular importance.—P. K. Thomson reports upon investigation into whether small amounts of zinc from biologic material ashed by the incineration process can be recovered. The volatility of zinc suggested there was considerable risk of losing the metal during incineration. A series of experiments made are carefully described, and the author found that even small amounts of zinc can be easily and safely detected after biologic material has been ashed at 450° C.—A new hazard in industry is reported by W. B. Castle, K. R. Drinker, and C. K. Drinker as occurring among workers employed in applying a luminous paint containing radium. Five cases of necrosis of the jaw were discovered. The necrosis was a chronic progressive condition closely resembling that resulting from phosphorus poisoning. There were opportunities for the paint to be smeared on the fingers and so absorbed through the skin, or even swallowed through the practice of pointing paint brushes in the mouth; but the inhalation of dust presented another source of risk. The luminosity of the material enabled its deposition as dust on chairs, tables, clothes, and even on the skins of the workers to be easily demonstrated. The reporters, although not considering their investigation absolutely conclusive, state their opinion that the necrosis is due to the radium paint. Blood examinations demonstrated an over-exposure to radium. Radium is deposited in bone, and literature presents cases of jaw necrosis among those who have received radium treatment for mouth cancers. This paper is clearly of interest to those using radium for remedial purposes. —— *September*: A method for sampling dust in alveolar air is reported by R. M. Thomson, who shows that such dust can be sampled directly by using Owen's jet dust counter, Kotze's konimeter, or Hill's dust counter, in conjunction with Haldane's alveolar air sampler. Analyses of exhaled air justify the assumption that samples of true alveolar dust are obtained by this method. A description of experiments in sampling alveolar dust is given, illustrated by photomicrographs. The method possesses a broad field of usefulness in studying the actual particles reaching the lungs of persons engaged in dusty trades, and it is apparently adaptable for use in analysing problems of bacterial inhalation in infected atmospheres.—A long and important article appears by M. Oppenheim on the statistics, definition, and clinical aspects of occupational dermatitis. This capable summary, based on Prof. Oppenheim's work over many years at Vienna, cannot fail to be of great interest to industrial physicians. It is, however, a summary, and its contents cannot be shortly exposed.

Reports and Analytical Records.

(1) "TABLOID" DIGITALIS LEAF (1 GR.); (2) "TABLOID" IODICIN (0·03 G.).

(BURROUGHS WELLCOME AND CO., SNOW HILL BUILDINGS, LONDON, E.C. 1.)

(1) The administration of dried digitalis leaves in cases of organic cardiac disease is credited with physiological results of a uniform character. But there has been uncertainty as to the glucosidal content of the leaves which varies with the kind of seed, the method of collection and drying, and, of course, with the accurate physiological control of the finished drug. A welcome will therefore be extended to a 1 gr. product of digitalis leaf under the "Tabloid" brand. The cultivation of the digitalis has taken place at the "Wellcome" Materia Medica Farm at Dartford, where pains have been taken that the seed should be of the correct variety, and that the leaves are gathered and dried in the correct manner. Finally, the drug has been subjected to physiological control by the laboratories of the firm. The tabloids are issued in bottles of 25 and 100.

(2) "Tabloid" Iodicin (0·03 g.) (with chocolate base) provides a means for the prolonged administration of iodine to children. It is palatable and odourless, the chocolate base being designed to make the product acceptable to young patients. Its medicinal constituent, Iodicin, a calcium salt of iodoricinoleic acid, contains a high percentage of iodine in organic combination. One "Tabloid" Iodicin, 0·03 g., secures the administration of 0·01 g. (approximately ⅙ gr.) of iodine. Iodicin is unaffected by the gastric juice and is absorbed only after passing into the duodenum. It is particularly suitable for prolonged administration as it does not cause digestive disturbance or iodism. It is issued in bottles of 25 and 100. The suggested prophylactic dose is one "Tabloid" product weekly, the curative dose from two to three products weekly up to one daily for 30 days. The drug meets the need arising out of the well-known Austrian and Swiss experiences in respect of goitre, which have been confirmed both in the United States and New Zealand.

(1) AGAROL BRAND COMPOUND (WARNER); (2) IDOSAL.

(FRANCIS NEWBERY AND SON, LTD., 31-33, BANNER-STREET, LONDON, E.C. 1.)

(1) Agarol Brand Compound is a preparation of modified mineral oil with phenolphthalein and agar-agar. It is a homogeneous emulsion free from alkalies and sugar, and evidence is forthcoming that it acts as the named constituents suggest that it should. Thus it is a lubricant mixing with waste matter, rendering it soft and adding to its bulk, a normal bowel activity being in this way aided. The preparation is manufactured by Messrs. William R. Warner and Co. in New York.

(2) Idosal is a combination of the iodide and chloride of sodium, carbonate of magnesia, and phosphate of calcium, and has been recommended by medical men as a useful method of administering iodine in an assimilable form. Its description as a "supertonic table salt" is correct, but a warning is properly added upon the bottle that it should *only* be used as an ordinary table salt in moderation. The active ingredient is a prophylactic against goitre and useful in hypothyroidism, and having a definite iodine content can be recommended for therapeutic use. We noticed recently another preparation with similar claims to value in the treatment of goitre, and refer readers to an annotation which appeared in THE LANCET of Sept. 19th, p. 615. The successful results obtained in different parts of the world in the treatment of endemic goitre by means of iodine are there recorded, though the ætiology of the disease has not been made as clear as the treatment.

(1) DOUBLE CREAM SOYA MILK AND YEAST; (2) SOYA MILK (SYNTHETIC MILK IN POWDER FORM) DOUBLE CREAM (UNSWEETENED).

(THE GARDEN CITY PURE FOOD CO., LTD., LETCHWORTH, HERTS.)

(1) *Double Cream Soya Milk and Yeast.*—This yellowish brown powder mixes with water in all proportions. It has a slightly saline and distinctly "meaty" flavour. On analysis the preparation was found to have the following composition:—

Moisture	2·00	per cent.
Ash	8·38	,,
Fat	56·70	,,
Protein	16·80	,,
Nitrogen-free extract	16·12	,,
Caloric value per lb.	2858	

Starch, cane-sugar, and reducing sugars were absent.

This material contains an unusually large percentage of fat and this, in conjunction with the protein, accounts for the high caloric value. The entire absence of starch and sugars, the ready miscibility with water (when a whisk is used), the high fat content, and the "meaty" flavour go to show that in this product the makers have furnished a valuable and highly nutritious addition to the limited dietary suitable for the use of diabetic patients.

(2) *Soya Milk (Synthetic Milk in Powder Form) Double Cream (Unsweetened).*—This is a yellowish powder, which, when mixed with water, produces a fluid very closely resembling a rich milk in appearance and flavour. When analysed the following figures were obtained:—

Water	2·24	per cent.
Ash	6·00	,,
Fat	66·00	,,
Protein	12·25	,,
Nitrogen free extract	13·45	,,
Caloric value per lb.	3139	

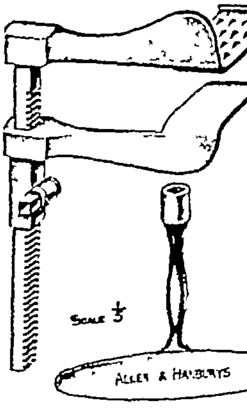
Starch, cane-sugar, and reducing sugars were absent.

For the purposes of comparison it may be noted that ordinary dried milk contains 25–27 per cent. of fat. The claim of the manufacturers that this milk may be valuable to persons suffering from diabetes is substantiated by the analytical data.

New Inventions.

A MODIFIED TUFFIER'S THORACOTOMY RETRACTOR.

AFTER using Tuffier's thoracotomy retractor for several lung cases, I found the instrument was often unsatisfactory. The retraction obtainable by this instrument is usually inadequate owing to the difficulty in opening the blades by means of the thumb screw, attempts to do this often resulting in torn gloves. De Quervain's retractor, although mechanically efficient—retraction being controlled by means of a ratchet or cross handle—I find too unwieldy for general use. I have therefore had made a modification of Tuffier's retractor fitted with a powerful ratchet screw, which is operated by a removable T-shaped key (see illustration). This instrument has the advantage of being small and yet sufficiently powerful to give good retraction. Furthermore, the key can be removed and does not hamper the operator. Messrs. Allen and Hanburys, of Wigmore-street, are the makers.



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The Physician
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A Plea for Early Antitoxic Treatment.

" *Antenatal supervision, which implies the care of the health of the mother, not only at the time of her confinement but throughout the whole period of pregnancy, is our most effective means of reducing maternal mortality.*"

Annual Report of the Chief Medical Officer,
Ministry of Health, 1924, p. 115.

" *The maternal mortality from Sepsis in Britain has not appreciably diminished during the last twenty years.*"

Franco-British Medical Review, April, 1925, p. 171.

The faultless obstetrical technique of recent years does not obviate the frequent occurrence of sepsis in parturient women whose

Tissue Resistance is Lowered

at some period of pregnancy by

Toxin Invasion of the Blood

whether partial or profound.

THE MOST COMMON CAUSE OF TOXÆMIA AND PERVERTED METABOLISM IS INTESTINAL PUTREFACTION.

It is a logical conclusion, therefore, that the well-being of mother and child would be promoted by the limitation of putrefactive changes in the gastro-intestinal tract; and now that the new benzene derivative, Dimol, has established its claim unequivocally as the most potent non-toxic intestinal bactericide at present available, its administration throughout the last two or three months of gestation is clearly indicated.

Dimol, as a bactericide, is 35 times more efficient than pure phenol; it destroys the causal agents of infection and putrefaction—*it does not merely inhibit their growth.* Dimol is not absorbed; after doing its work it is voided with the fæces. With the introduction of Dimol, the bactericidal equivalent of 140 grains of pure phenol can be administered four or five times a day, *without affecting the mucosa or producing any toxic effect whatever.*

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DIMOL LABORATORIES LIMITED, 40, Ludgate Hill, London, E.C. 4.

THE LANCET.

LONDON: SATURDAY, OCTOBER 24, 1925.

NON-UNION IN FRACTURES.

The factors influencing the normal growth of bone are as yet imperfectly known; still less reliable knowledge have we of processes essential for the union of the fracture of an adult bone. That general metabolic derangement has a potent influence, the existence of bone changes in acromegaly and other diseases shows. It is therefore not surprising that unfavourable conditions of general health have always been held to cause delay in the healing of fractures. But in numerous cases of hindered union this factor can be definitely excluded. The cause seems to be a local one.

A fortnight ago we published a lecture by Prof. E. W. Hey Groves, who reviewed such causes, voiced his own opinions, and gave advice as to treatment. He believes that one important cause of delayed union is unrestricted mobility, and he makes a very important distinction between two forms of non-union. In the one the unifying process seems simply in abeyance; the bone-ends, in X ray plates and if cut down upon, appear just to have remained unaltered from the time of the accident, whilst in the other there has been much activity of the bone-ends which have become sclerosed and eburnated, give a darker shadow with X rays, and are joined by dense fibrous tissue. The first variety will often yield to non-operative measures, whilst the second calls for them. Prof. Groves insists that proper fixation is essential for union to take place. On this point Mr. J. W. Dowden joins issue with him in a letter appearing elsewhere in this issue. In an experience of 25 years he has but once met a fracture which would not unite, and that was of the clavicle, a result he attributes to having adopted the principle of mobility in the treatment of fractures. It does not seem likely that union would be favoured by free movements of the bone-ends on one another, a movement which would break down the adhesions between the opposing layers of granulation tissue. A laparotomy wound would certainly not heal if constantly dragged open. The granulation tissue bond must quite obviously remain intact for union to take place. This does not prohibit movements of surrounding muscles and neighbouring joints, and even a non-destructive bending of the granulation tissue junction at the site of fracture. Such movements improve the local circulation, empty the clogged lymphatics, and generally promote the healing process. Limited movements have proved their worth in the treatment of fractures. There is probably no real conflict of opinion on the subject of mobility, for the one surgeon advocates fixation of the fragments with movement of neighbouring joints whilst the other in recommending mobilisation treatment insists that movements should be active in character and painless. A patient with a fracture cannot very well be induced to move his limb enough to cause actual disturbance of the relation of the bone fragments to each other, for this provokes great pain and by reflex muscle spasm limits the causative effort.

In spite of careful treatment surgeons do meet with cases of non-union, and Prof. Groves's classification into two types is of great practical importance. In the form in which cell activity fails, measures which further local nutrition should be instituted, a fact which suggests that such non-union may depend upon injury to the nutrient vessels occurring as part of the original accident. The slow repair after plating operations can certainly be attributed to extensive stripping of the periosteum which sometimes is unavoidable. When firm fibrous union with eburnated bone-ends occurs, an operation which removes the sclerosed tissues and opens up new paths for the osteoclasts becomes necessary. This points to some barrier to the growth of osteoblasts across the interval between the fragments being present from the first, since bone formation in the actual bone-ends is stimulated. The obstruction can conceivably be intucked periosteum, which as Macewen showed opposes great resistance to the through passage of bone-cells and possesses, in fact, bone-absorptive, as well as bone-forming properties. Nothing but an open operation will remove such an obstruction and allow the normal healing process to proceed. In the treatment of fractures both fixation and movement have their place. To apportion the right relative value to them, perhaps, would be to say that fixation of the bone-ends is an essential, whilst movement of the surrounding soft parts is desirable.

THE MELANOMATA.

The suggestive fact emerges again and again that the advances of morbid anatomy are often incompatible with the most sacred dogmata of orthodox biology. Thus, the "law" of the "specificity of the germinal layers" decrees that, once these layers are formed in the embryo, they proceed in their differentiation in certain directions only and give rise only to certain kinds of tissue for which they are "predestined" by this law. When, for instance, the formation of mesenchyme by budding from the primary germinal layers, the cells of which are of an epithelial habit, ceases, it ceases for ever. From now onward the cells of the ecto- meso-, and endo-derm remain epithelial. We may well ask: Why should a process that takes place upon an extensive scale during the early stages of development necessarily terminate at the precise moment at which it ceases to be observed by embryologists? May it not be that the capacity is now merely latent normally but subject to revival by the action of a pathological change? It might be well for biologists, before they tell pathologists that their education has been neglected when they describe phenomena that are contrary to "biological laws," to ask themselves if these "laws" do not, perchance, require revision in the light of pathological knowledge. There have been heterodox biologists—to mention only Maurer, Schuberg, and more especially Retterer, who claim that mesenchyme formation continues throughout life. It is to be feared that their writings are not much read. Retterer insists that practically the whole of the cutis is derived from the epidermis by post-embryonic budding of its cells.

Pathologists can, of course, form no authoritative opinion of the merits or demerits of writings which are concerned with the phenomena of normal growth, but there are many instances of abnormal growth of an analogous nature which are within the province of pathology. The whole of the October issue of the *Edinburgh Medical Journal* is given up to a monograph[1] by Dr. J. W. Dawson upon the melanomata, which is heretical and open to the severest disapprobation of orthodox biologists since he is unafraid to tell us what he has learned from the study of his material. He has approached his subject with an unbiased mind and, after careful consideration of the contending views, has been driven to the conclusion that the melanomata are epithelial tumours, the result of post-embryonic, pathological attempts at the conversion of epithelium into mesenchyme, attempts that are often crowned with success. The idea is not new. It was propounded nearly 40 years ago by Kromayer, Unna, and others, and has since then gained an ever-increasing number of adherents. Dr. Dawson's material is rich and well digested. His illustrations are admirable, and unlike so many morbid anatomists he realises that they form the surest proof of his arguments. His conclusions fall into two groups. He shows that the pigment melanin is produced solely by the epithelial cells of the ectoderm—i.e., the epidermis and its appendages and the central nervous system. True "melanoblasts" are epithelial cells which may, however, enter the deep tissues. They are distinct from the mesenchymal "chromatophores" which ingest the pigment by phagocytic action but do not produce it. He traces the formation of the "nævus" cells from the epithelium in cutaneous moles and the melanotic tumours which arise in them. With the help of beautiful drawings he shows the extreme polymorphism that the cells of these tumours assume and that the melano-carcinomata, -sarcomata, -fibro-sarcomata, &c., are but different forms of the same tumour. He concludes that even the most "sarcomatous" melanomata are epithelial tumours and extends this conclusion to the ocular melanomata. It is to be regretted, for the sake of completeness, that he does not deal more fully with the rare recorded instances of melanomata of other parts of the body. Dr. Dawson does not go so far as Kromayer and admit a complete "desmoplasia" (or assumption of all the characters of connective tissue) of epithelial cells. He is perhaps wise not to do so. His paper is a valuable contribution to the question of the specificity of the germinal layers, which will have to be considered not only by pathologists but by general biologists.

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[1] The Melanomata; their Morphology and Histogenesis. By James W. Dawson, M.D., D.Sc., F.R.C.P.E., Histologist, Royal College of Physicians' Laboratory, Edinburgh.

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A CONQUEROR OF INSECT PESTS.

Prof. Maxwell Lefroy, whose obituary notice appears on another page, was perhaps the foremost economic entomologist in the British Empire. In the course of his career he had three really spectacular successes. The first was when he went to the West Indies. The sugar-cane, on which the prosperity of the islands depended, was being destroyed by a beetle which bored into the stems. Lefroy discovered that the eggs of this insect were laid on the backs of the leaves; he described the appearance of the egg-clusters, and small native boys were employed to scrape them off the leaves and the sugar-cane crop was saved. When he arrived in India the corn crops in certain districts were being devastated by a plague of locusts. The seriousness of the situation may be judged from the fact that the crop reaped was only 25 per cent. of the normal yield, and in India, where the peasant proprietors live close to the margin of subsistence, there was imminent danger of famine. Lefroy discovered that the locusts kept flying about the same locality until the rains came and softened the ground; they then descended to the ground and laid their eggs in holes bored in the earth. Once the period of oviposition was determined, it was easy to calculate when the wingless young (*nymphs*) would hatch out, and Lefroy constructed what may be termed shrimping-nets out of light bamboo and sent the native boys with them through the growing corn, with the result that the young locusts were captured by the sackful and the next year's crop was normal. Lastly, when he was sent to Australia in the latter part of the war he had also a very serious situation to deal with. The Imperial Government had purchased large amounts of Australian wheat which was stored in Australia where it was being rapidly destroyed by weevils. Lefroy discovered that the wheat was contained in sacks which were piled on the ground covered with insufficient roofing and inadequately protected against rain and damp. The lowest bags burst and the grain exuded and thus easy access was afforded to the weevils. Lefroy found that the grain weevil was an insect which had lost the use of its wings and that it always began its attacks by entering grain lying on the ground, so he directed that the grain should be housed in sheds provided with an adequate flooring raised two or three feet above the ground and that the soil beneath them should be treated with disinfectants such as naphthalene. These measures were entirely successful in stemming the weevil plague. Lefroy always insisted on the importance of studying insects in the open under natural conditions. Quite early in his career he laid down the thesis that to attack an insect pest successfully its whole life-history must be studied; then the weak links in its chain of developmental stages would be discovered where the attack could be successfully pressed home. Whilst he recognised the importance of a knowledge of their structure, which is as indispensable a pre-requisite as the study of grammar in learning a language, he maintained that all further knowledge should be gathered in the field. "One must live with insects," he said, "in order to know them."

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VACCINIA AND VARIOLA VIRUSES.

The ultramicroscopic viruses are notoriously difficult to study, for obstacles, in some cases seemingly insurmountable, are encountered by whatever avenue the territory of these smallest of living creatures is approached. Too small to be directly visible with the microscope, difficult to cultivate, and, even if cultivable, without distinctive reactions, we have been left only with the crude test of demonstrating their presence by inoculation of a bacteria-free filtrate into living animals. Filtration and inoculation experiments, depending as they do on such variable factors as the construction of the filter and susceptibility of the animal, have not hitherto encouraged accurate quantitative work. Perhaps some entirely new method of approach must be discovered before these ultramicroscopic viruses can be scientifically classified. In this connexion it is instructive to notice that Dr. Mervyn Gordon, in his studies on the viruses of vaccinia and variola (summarised in our last issue), has departed from the conventional technique of bacteriological examination, for we read practically nothing in his report of attempts to see these viruses with the microscope, or to stain them, or even to cultivate them in the customary fashion. He has relied entirely on experimental work on animals and is to be congratulated on having succeeded in introducing more accurate quantitative methods of analysis. He found the shaved skin of the rabbit a delicate indicator for vaccinia virus and devised methods for measuring the minimal vaccinial dose, and has made a careful study of the properties of antivaccinial serum by quantitative means. The most sensitive test for the presence of vaccinia virus is undoubtedly the cutaneous test of virulence, but the complement-fixation and agglutination tests, though their range is shorter, are not lacking in specificity, and, since they provide an independent measure, they form a welcome addition to our armamentarium. The special feature of Dr. Gordon's work is the successful employment of serological methods, which has been made possible by employing homologous (rabbit) pulp as a virus, and the proof that complement fixation and agglutination occur with vaccinia virus in much the same way as with pathogenic bacteria brings vaccinia into line with the latter group. The experiment in which an immunised serum produced a definite immunity are also of interest.

Some of the experiments which Dr. Gordon reports in the permeability of various surfaces of the rabbit to the virus of vaccinia raise the question whether the main natural method of spread of this bovine disease may not be in part by the respiratory tract rather than by fortuitous cutaneous inoculation as hitherto supposed. He found the most certain way of introducing the vaccinial virus to be by scarification of the skin, but in the absence of mechanical injury the most susceptible and permeable of the surfaces of the rabbit seems to be the nasal mucous membrane. When vaccinia virus gains access to the nasal mucosa, after an incubation period of six to eight days, a condition of acute nasal catarrh develops, accompanied by a muco-purulent nasal discharge which at the onset contains the virus of vaccinia in abundance. Animals thus infected became immune to vaccinia. Confirmatory evidence of the capacity of the nasal mucosa to absorb antigen was furnished by control observations in which the application of killed *B. coli* to the mucous membrane of the nose was followed by the appearance of specific antibodies to that micro-organism in the blood. He observes that the limits of this physiological property of the nasal mucosa and the degree to which it can be exploited for prophylactic purposes have still to be determined. The acute attack of nasal catarrh which follows after an incubation period when the vaccinial virus has gained access to the nasal mucous membrane links up the disease which we call vaccinia to the group of influenza and the common cold. It is important that we should obtain further information on the natural distribution and mode of spread of vaccinia virus in the animal kingdom. Thanks to the accurate analysis which Dr. Gordon has made we now possess a triple index—namely, the cutaneous virulence test, the agglutination, and complement-fixation tests, wherewith to identify the presence of vaccinia virus and to estimate its abundance.

A point of great practical importance demands a word of emphasis. Dr. Gordon found when studying seven different kinds of calf lymph in use in this country for purposes of vaccination that these varied very greatly in their potency. Some were active at a dilution of 1 in 100,000 and others only at a dilution of 1 in 100 or even 1 in 10. Since calf lymph is known to deteriorate on keeping it would have been interesting to know something more of the history, particularly the age, of the samples examined. No information on this point is given in the report, but as the facts are presented they seem to suggest that a very significant and inexcusable variation exists in commercial samples of calf lymph. Obviously this is a question which requires official attention. A further feature of Dr. Gordon's work which has practical implications is his research on the comparative value against vaccinia of disinfectants. The striking powers of potassium permanganate which he reveals should encourage its use in small-pox, which has hitherto been largely empirical.

Annotations.

"Ne quid nimis."

THE CATARRHAL CHILD.

THE importance of catarrhal conditions in childhood in laying the foundations of future disease has received a greatly increased measure of recognition during the present year. This recognition is evidenced by the appearance of several contributions to medical literature which show not only that pædiatrists of high standing in medical practice and in the public services have given their serious attention to the subject, but that their observations have led them to differ in important respects from many of the earlier accounts of catarrhal states. A notable instance of this difference is to be found in the age which is regarded as typical for the onset of catarrh. The "catarrhal child," as hitherto depicted, is usually in the second year of life, or older, and presents features which are either typical or suggestive of rickets; by many writers the catarrhal symptoms have been regarded as essential manifestations of rickets, the causative factors being, at any rate, nutritional and environmental. The article by Dr. R. C. Clarke, which appears in our present issue, introduces some striking modifications of this conception of the ætiology and incidence of catarrh. According to his account, respiratory catarrh is extremely common in the first few weeks of life, being present in as many as 50 per cent. of the infants which he examined. He has frequently noted the presence of Harrison's sulcus in young infants, and regards it as evidence, not of rickets, but of nasal obstruction consequent upon catarrh; he bases the diagnosis of respiratory catarrh on this sign in conjunction with snuffles and bronchial râles. In early infancy nasal catarrh is almost always accompanied by bronchial catarrh, whereas in late infancy the majority escape this complication, hence the prime importance of protecting the infant from infection *during the first* three or four months. Dr. H. K. Waller, in a memorandum on the catarrhal child, which appeared in the recent report of Sir George Newman to the Minister of Health, gives a description of this type of case, which is in many respects in close agreement with the views expressed by Dr. Clarke. The prevalence of catarrh in the first weeks of life is emphasised, as are also the interference with efficient sucking, and hence with nutrition, the development of "tonsils and adenoids," and the increased susceptibility to febrile attacks and to infection with pyogenic organisms. Both Dr. Clarke and Dr. Waller lay stress on the necessity of protecting the infant from catarrhal organisms, and recommend as the most useful measure for this purpose the use of a mask or folded handkerchief by the mother or nurse who is attending to the child. On the more speculative problem of ætiology the agreement between the two articles is less complete. The traditional association between rickets and catarrh must necessarily be called in question by those who regard the latter as an ailment of early infancy. Dr. Clarke does not discuss this point; Dr. Waller meets it with a suggestion which inverts the hitherto established view of the causal sequence. "The rachitic child's tendency to febrile reactions has been frequently described. It is possible that the catarrhal diathesis has been overlooked as a predisposing factor in producing rickets." A further question inevitably arises if the typical age-incidence of a morbid state is found in the first weeks of life: Does heredity play a part in the ætiology: Dr. Clarke answers this decidedly in the negative: Dr. Waller gives cautious expression to the idea that a hereditary element is likely. Should both Dr. Waller's suggestions receive further elaboration, he may provide one more complication to the vexed problem of the ætiology of rickets.

THE CARE OF THE CONVALESCENT.

WHEN a patient has "turned the corner" of a grave illness and it is safe to relax the vigilant care he has hitherto demanded, the doctor is liable to lose interest to some extent in the further progress of the case. It is a very natural reaction from the strain of his heavy responsibilities; when recovery is practically assured he can minimise the output of his mental energy and with a cheery "How are we to-day?" can chat of irrelevant matters with a vague idea of "cheering the patient up." Yet to the patient himself the period of convalescence is, perhaps, the most trying part of the illness. In the acute stage he lies passive, concentrated on the one supreme effort of battling for life, and released from all other responsibilities by the assiduous care of doctor, nurse, and friends. As life comes back gradually from this relatively simple form to the highly complex thing that modern civilisation has made it, his enfeebled powers are apt to groan under the burden they have once more to pick up and carry. The "fractiousness of convalescence" is so unimportant compared to the life-and-death issues we have to control as best we can that doctors and nurses are too prone to dismiss it with a patronising smile and forget that the patient is not fractious from love of evil or original sin, any more, indeed, than is the child; both are struggling with an adjustment to life that is slightly overtaxing their powers of adaptation. The convalescent period is well worth the thoughtful attention of the practitioner. The Public Health Committee of the New York Academy of Medicine recently appointed a sub-committee to consider the problem of convalescent care. In presenting their report[1] the Committee say that "it is remarkable that more has not been accomplished in the way of making provision for the care of convalescent patients. Homes have been established on no coördinated plan . . . . without much realisation of the various types of convalescence, and the needs of adult convalescents have received scant attention. No doubt one of the main reasons is that hitherto not enough study has been made of the subject." They begin by drawing a clear line of distinction between patients progressing towards recovery from some acute illness and those with persistent symptoms of functional disturbance but with slight or no evidence of organic disease. The first group they classify, according to the type of disease, as cardiovascular, dietetic, respiratory, and miscellaneous, and for each a different régime of convalescence should be provided. Those for whom special dietetic supervision will be required must further be subdivided according to whether they are diabetic, nephritic, or alimentary. But the medical classification, although it may be adequate enough for acute stages of illness, is only a small part of the total to be considered in catering for the convalescent. Age, sex, social status, religion, financial resources must all be allowed for, as well as that ever-present problem of the slum-worker: the convalescent mother with a toddling family that cannot be left at home alone. Last, but by no means least, is the individual temperament. One case will fret himself ill with boredom if sent to a country house five miles from the station; another will lose half the benefit of his convalescence if it is spent hectically at a popular seaside resort.

The American report deals chiefly with the convalescent home, and is of the opinion that the ideal home is a system of cottage units, arranged in single rooms, and three- or four-bed wards situated a little distance outside the urban area it serves. The patients should be selected according to the classification suggested, and should be subjected to a daily schedule of living, prescribing their hours of rising, rest, and retiring, physical exercise, recreation, social diversions, and diet. The cardiac group must have a home of two floors only in a low-lying district, while the respiratory group need more than their share of fresh air. The aim of the home should be educational as well as restorative, so that the patients learn habits of hygiene which they can carry back to their own homes. The Committee recommend the appointment of a resident medical officer to every convalescent home—a far-reaching reform if a possible one. While the ideal—if somewhat bureaucratic—conditions laid down by the Committee are not likely to be attained in this haphazard world, they will have done a real service to the profession and the community if they stimulate the average practitioner to giving more real thought and care to the planning of his wealthier patient's convalescence or the choice of home for the poorer.

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[1] Hospital Social Service, 1925, xii., 26.

CANCER-LIKE CHANGES IN TISSUE CULTURES.

IN a recent paper[1] Dr. R. J. Ludford described nuclear changes occurring in the fibroblasts from the kidney of rats cultured in vitro. Fixed preparations show a partial extrusion of nucleolar matter into the cytoplasm where it is surrounded by a vacuole, and eventually disintegrates. This process is accompanied occasionally by a similar passage of a portion of the nuclear contents into the cytoplasm by a process of budding off. The extruded nuclear contents may persist for a time as a secondary nucleus and then break down. In fresh unstained cells kept in a warm chamber amœboid movements of the nucleolus could be observed, and also a movement of the nucleolus towards and away from the nuclear membrane with occasional indications of a discharge of nucleolar material into the cytoplasm. Prolonged observations in fresh cells were rendered difficult by the fact that at body temperature the nucleolus and nuclear membrane are more difficult to distinguish than when the preparation is allowed to cool to room temperature. Such nuclear extrusions occur also in normal cells in the living animal, though infrequently, but they are of common occurrence in cancer cells, where in the past they have been mistaken for cancer parasites. Dr. Ludford does not attempt to interpret these changes except as giving evidence of an interaction of nucleus and cytoplasm. But it seems reasonable to suggest that their frequent occurrence in cancer and in normal cells cultured in vitro may be associated with abnormal conditions of growth and nutrition.

Writing on the same subject,[2] Prof. A. Maximow records and figures even more pronounced changes occurring in the mammary gland cells of the rabbit cultured in vitro under special conditions. The special conditions are the addition of bone-marrow extract, instead of embryo extract. The addition of bone-marrow extract elicits not only a rapid growth especially of the cells lining the ducts, but also hypertrophy of the cells, changes in their form, formation of cell nests, and even an infiltration of the connective tissue. It is noteworthy that these changes are exhibited almost entirely by cells derived from the epithelium lining the ducts. As a result, many of these cultures present appearances which are morphologically indistinguishable from those of a carcinoma. Indeed, Maximow speaks of these appearances as "carcinomatous changes." He realises that definite proof of such a change having actually occurred in these cells can only be brought by reimplanting these cultured cells into a living animal. If these cells have really undergone a carcinomatous change they should, on reimplantation, continue to grow *in vivo*. But while a positive result would prove his contention, a negative would, according to Maximow, not necessarily disprove it, because even spontaneous carcinomata do not always give positive results on transplantation.

The resemblance of Prof. Maximow's tissue cultures to carcinoma is so suggestive that his contention deserves to be submitted to exhaustive experimental tests. At the same time it is well to bear in mind that this resemblance is merely morphological and may be no more than the manifestation of growth under abnormal conditions. It may, in fact, bear the same relation to cancer as the noise and clatter of a passing train has to the electricity that moves it.

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[1] Proc. Roy. Soc., B, 1925, xcviii., 457.

[2] Cancer-like Changes of the Mammary Gland in Tissue Cultures, Virchow's Archiv f. Path. Anatomie, 1925, cclvi., 813.

VITAL STATISTICS OF SCOTLAND IN 1924.

THE seventieth annual report of the Registrar-General for Scotland contains many tables of interest to the student of vital movements. But he can hardly fail to regret that this report, like other Scottish statistical reports, is not tabulated and classified on identical lines with the corresponding English reports, and that no comparative figures for the two countries and some other countries are given. The value of both the English and the Scottish reports is materially lessened thereby. The course of the Scottish birth-rate is downward, like that for other countries, but its cause has differed in detail from that of England. Until 1894 it was always over 30 per 1000, but is now only 21·0. As is well-known, the illegitimate birth-rate is high in Scotland. In 1924 it varied from 9·3 in the larger burghs per 1000 unmarried women of child-bearing ages to 18·3 in the country districts. It was as high as 21·8 in Moray, and as low as 4·7 in Shetland. This high rate is not a correct index of sexual morality, and must be corrected inter alia by reference to the marriage laws of Scotland. The average age at marriage is of interest in this connexion, having been 29·35 years for all bachelors and 26·50 for all brides. This shows a gradually increasing postponement of marriage.

From the public health point of view, the review of the Scottish vital statistics presents features of much interest. The rate of infant mortality was 97·7 per 1000 births, a low rate compared with past experience, but high, relatively, to that of England. It varied in the larger burghs from 132·9 in Paisley and 118·5 in Glasgow to 90·7 in Edinburgh and 90·6 in Perth. There is no full index to the report, but no attempt appears to be made to analyse for the whole of Scotland or for its chief towns the distribution of infant mortality in the months of the first year of life, information which is an indispensable preliminary to any attempt to ascertain at what ages infant mortality is most excessive, at what ages it is higher in some burghs than in others, and to what causes these local excesses are due. Such information as is here indicated, but expanded, is an urgent necessity for public health purposes. It is necessary that it should be done comparatively for different areas in Scotland; and the rates thus published would be invaluable as guides to medical officers of health in pressing forward accurately-directed public health work. It is satisfactory to note that for the first time in its statistical history no deaths occurred last year from typhus fever. The tuberculosis death-rate was 110 per 100,000 of population, a lower rate than in any preceding year. This is higher than that of England, and the variations in different parts of Scotland are so remarkably great as to bespeak the need for special public health investigation. Thus, in Shetland the tuberculosis death-rate was 247 (per 100,000). The population being small, this means 50 deaths; but evidently this is a case in which intensive effort at public health administration with better housing might be expected to effect rapid improvement. The next highest tuberculosis death-rates were 158 in Sutherland, 150 in Ross and Cromarty, the counties with a large population having the lowest rate being Fife (87 per 100,000) and Ayr (84 per 100,000). In Lanarkshire, which comprises nearly one-third of the population of Scotland, the rate was 132. Only a short paragraph is devoted to the important public health problem of puerperal mortality. For the whole of Scotland this reached the high figure of 5·8 per 1000 births, varying in the larger burghs from 12·2 in Coatbridge and 11·7 in Perth to 5·8 in Glasgow, 4·7 in Aberdeen, and 3·0 in Dundee.

Further tables bearing on the main problems of public health, including those indicated in the preceding paragraphs, would add greatly to the value of the Scottish statistical report, and it may not improperly be suggested that a chief value of the tabulation of registered deaths according to age and cause of death lies in the extent to which they make manifest areas of excessive mortality in one or other respect, and enable medical officers of health and sanitary authorities to direct their efforts to improve the national health where they are most needed and where their effect will be greatest.

RADIOTHERAPY AT LEEDS.

THE General Infirmary at Leeds is to be congratulated on the recent addition of a new radiotherapeutic department, the creation of which has been made possible by the generosity of two donors, Mr. J. B. Sykes, of Horbury, who has presented the building, and Miss Walker, of Chapeltown, Leeds, who has met the cost of the artificial sunlight apparatus. Through this gift Leeds now possesses one of the largest and best departments of its kind in Britain. The new building measures over 100 ft. by 45 ft., and contains 11 treatment rooms as well as instrument rooms, waiting rooms, staff rooms, dressing rooms, and workshop. The building is very airy and well lighted, and a broad corridor down the centre provides access to the various rooms. Five of the treatment rooms are devoted to deep X ray therapy, and each cubicle is equipped with apparatus capable of generating 200,000 volts and upwards. Provision is made for the housing of the apparatus in a large instrument room at the back of the cubicles. Special care has been taken to provide for the adequate protection of the staff by heavy lead linings in all the cubicles, and the controls are placed in a special room outside within easy reach of the operator. The cubicles are lofty and are lighted from above, while central heating has been adopted throughout the building. The "artificial sunlight" department consists of six treatment rooms; the two largest, measuring 20 ft. square, are for men and women respectively. Dressing rooms are attached to each, and an observation room is provided so as to control both treatment rooms. Each room is equipped with two "Mountain Sun" mercury-vapour lamps, and two arc lamps together with special radiant heat lamps. A separate room for the treatment of cases unable to sit or stand is equipped with lamps which can be used while the patient reclines on a couch. Another room is reserved for children, and similar equipment of arc and mercury-vapour lamps has been provided here. A special room for treatment by the Kromayer lamps is placed at the end of the long corridor, and one of the largest rooms has been set apart for Finsen light treatment of lupus and similar diseases. At present upwards of 100 cases a day have been receiving "artificial sunlight" treatment, but the new department will extend the scope of daily treatment to over three times that number. With this equipment we may confidently expect that Leeds will achieve results not only of immediate benefit to local patients, but of value to the progress of this branch of medical science.

PIONEERS IN TROPICAL MEDICINE.

WE are apt to regard tropical medicine as a child of recent infancy, but several years before the battle of Waterloo it was a well-grown stripling, although it did not come into its full inheritance until the present century. Pioneers in Tropical Medicine was the subject of Dr. Andrew Balfour's presidential address to the Royal Society of Tropical Medicine and Hygiene held at 11, Chandos-street, London, on Oct. 15th, when, with the aid of beautifully prepared portraits on the epidiascope, he gave cameo biographies of the men who throughout the nineteenth century—and before—had toiled to raise the symbol

THE CARE OF THE CONVALESCENT.

WHEN a patient has "turned the corner" of a grave illness and it is safe to relax the vigilant care he has hitherto demanded, the doctor is liable to lose interest to some extent in the further progress of the case. It is a very natural reaction from the strain of his heavy responsibilities; when recovery is practically assured he can minimise the output of his mental energy and with a cheery "How are we to-day?" can chat of irrelevant matters with a vague idea of "cheering the patient up." Yet to the patient himself the period of convalescence is, perhaps, the most trying part of the illness. In the acute stage he lies passive, concentrated on the one supreme effort of battling for life, and released from all other responsibilities by the assiduous care of doctor, nurse, and friends. As life comes back gradually from this relatively simple form to the highly complex thing that modern civilisation has made it, his enfeebled powers are apt to groan under the burden they have once more to pick up and carry. The "fractiousness of convalescence" is so unimportant compared to the life-and-death issues we have to control as best we can that doctors and nurses are too prone to dismiss it with a patronising smile and forget that the patient is not fractious from love of evil or original sin, any more, indeed, than is the child; both are struggling with an adjustment to life that is slightly overtaxing their powers of adaptation. The convalescent period is well worth the thoughtful attention of the practitioner. The Public Health Committee of the New York Academy of Medicine recently appointed a subcommittee to consider the problem of convalescent care. In presenting their report[1] the Committee say that "it is remarkable that more has not been accomplished in the way of making provision for the care of convalescent patients. Homes have been established on no coördinated plan . . . . without much realisation of the various types of convalescence, and the needs of adult convalescents have received scant attention. No doubt one of the main reasons is that hitherto not enough study has been made of the subject." They begin by drawing a clear line of distinction between patients progressing towards recovery from some acute illness and those with persistent symptoms of functional disturbance but with slight or no evidence of organic disease. The first group they classify, according to the type of disease, as cardiovascular, dietetic, respiratory, and miscellaneous, and for each a different régime of convalescence should be provided. Those for whom special dietetic supervision will be required must further be subdivided according to whether they are diabetic, nephritic, or alimentary. But the medical classification, although it may be adequate enough for acute stages of illness, is only a small part of the total to be considered in catering for the convalescent. Age, sex, social status, religion, financial resources must all be allowed for, as well as that ever-present problem of the slum-worker: the convalescent mother with a toddling family that cannot be left at home alone. Last, but by no means least, is the individual temperament. One case will fret himself ill with boredom if sent to a country house five miles from the station; another will lose half the benefit of his convalescence if it is spent hectically at a popular seaside resort.

The American report deals chiefly with the convalescent home, and is of the opinion that the ideal home is a system of cottage units, arranged in single rooms, and three- or four-bed wards situated a little distance outside the urban area it serves. The patients should be selected according to the classification suggested, and should be subjected to a daily schedule of living, prescribing their hours of rising, rest, and retiring, physical exercise, recreation, social diversions, and diet. The cardiac group must have a home of two floors only in a low-lying district, while the respiratory group need more than their share of fresh air. The aim of the home should be educational as well as restorative, so that the patients learn habits of hygiene which they can carry back to their own homes. The Committee recommend the appointment of a resident medical officer to every convalescent home—a far-reaching reform if a possible one. While the ideal—if somewhat bureaucratic—conditions laid down by the Committee are not likely to be attained in this haphazard world, they will have done a real service to the profession and the community if they stimulate the average practitioner to giving more real thought and care to the planning of his wealthier patient's convalescence or the choice of home for the poorer.

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[1] Hospital Social Service, 1925, xii., 26.

CANCER-LIKE CHANGES IN TISSUE CULTURES.

IN a recent paper[1] Dr. R. J. Ludford described nuclear changes occurring in the fibroblasts from the kidney of rats cultured in vitro. Fixed preparations show a partial extrusion of nucleolar matter into the cytoplasm where it is surrounded by a vacuole, and eventually disintegrates. This process is accompanied occasionally by a similar passage of a portion of the nuclear contents into the cytoplasm by a process of budding off. The extruded nuclear contents may persist for a time as a secondary nucleus and then break down. In fresh unstained cells kept in a warm chamber amœboid movements of the nucleolus could be observed, and also a movement of the nucleolus towards and away from the nuclear membrane with occasional indications of a discharge of nucleolar material into the cytoplasm. Prolonged observations in fresh cells were rendered difficult by the fact that at body temperature the nucleolus and nuclear membrane are more difficult to distinguish than when the preparation is allowed to cool to room temperature. Such nuclear extrusions occur also in normal cells in the living animal, though infrequently, but they are of common occurrence in cancer cells, where in the past they have been mistaken for cancer parasites. Dr. Ludford does not attempt to interpret these changes except as giving evidence of an interaction of nucleus and cytoplasm. But it seems reasonable to suggest that their frequent occurrence in cancer and in normal cells cultured in vitro may be associated with abnormal conditions of growth and nutrition.

Writing on the same subject,[2] Prof. A. Maximow records and figures even more pronounced changes occurring in the mammary gland cells of the rabbit cultured in vitro under special conditions. The special conditions are the addition of bone-marrow extract, instead of embryo extract. The addition of bone-marrow extract elicits not only a rapid growth especially of the cells lining the ducts, but also hypertrophy of the cells, changes in their form, formation of cell nests, and even an infiltration of the connective tissue. It is noteworthy that these changes are exhibited almost entirely by cells derived from the epithelium lining the ducts. As a result, many of these cultures present appearances which are morphologically indistinguishable from those of a carcinoma. Indeed, Maximow speaks of these appearances as "carcinomatous changes." He realises that definite proof of such a change having actually occurred in these cells can only be brought by reimplanting these cultured cells into a living animal. If these cells have really undergone a carcinomatous change they should, on reimplantation, continue to grow in vivo. But while a positive result would prove his contention, a negative would, according to Maximow, not necessarily disprove it, because even spontaneous carcinomata do not always give positive results on transplantation.

The resemblance of Prof. Maximow's tissue cultures to carcinoma is so suggestive that his contention deserves to be submitted to exhaustive experimental tests. At the same time it is well to bear in mind that this resemblance is merely morphological and may be no more than the manifestation of growth under abnormal conditions. It may, in fact, bear the same relation to cancer as the noise and clatter of a passing train has to the electricity that moves it.

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[1] Proc. Roy. Soc., B, 1925, xcviii., 457.

[2] Cancer-like Changes of the Mammary Gland in Tissue Cultures, Virchow's Archiv f. Path. Anatomie, 1925, cclvi., 813.

VITAL STATISTICS OF SCOTLAND IN 1924.

THE seventieth annual report of the Registrar-General for Scotland contains many tables of interest to the student of vital movements. But he can hardly fail to regret that this report, like other Scottish statistical reports, is not tabulated and classified on identical lines with the corresponding English reports, and that no comparative figures for the two countries and some other countries are given. The value of both the English and the Scottish reports is materially lessened thereby. The course of the Scottish birth-rate is downward, like that for other countries, but its cause has differed in detail from that of England. Until 1894 it was always over 30 per 1000, but is now only 21·0. As is well-known, the illegitimate birth-rate is high in Scotland. In 1921 it varied from 9·3 in the larger burghs per 1000 unmarried women of child-bearing ages to 13·3 in the country districts. It was as high as 21·8 in Moray, and as low as 4·7 in Shetland. This high rate is not a correct index of sexual morality, and must be corrected inter alia by reference to the marriage laws of Scotland. The average age at marriage is of interest in this connexion, having been 29·85 years for all bachelors and 26·50 for all brides. This shows a gradually increasing postponement of marriage.

From the public health point of view, the review of the Scottish vital statistics presents features of much interest. The rate of infant mortality was 97·7 per 1000 births, a low rate compared with past experience, but high, relatively, to that of England. It varied in the larger burghs from 133·9 in Paisley and 118·5 in Glasgow to 90·7 in Edinburgh and 90·0 in Perth. There is no full index to the report, but no attempt appears to be made to analyse for the whole of Scotland or for its chief towns the distribution of infant mortality in the months of the first year of life, information which is an indispensable preliminary to any attempt to ascertain at what ages infant mortality is most excessive, at what ages it is higher in some burghs than in others, and to what causes these local excesses are due. Such information as is here indicated, but expanded, is an urgent necessity for public health purposes. It is necessary that it should be done comparatively for different areas in Scotland; and the rates thus published would be invaluable as guides to medical officers of health in pressing forward accurately-directed public health work. It is satisfactory to note that for the first time in its statistical history no deaths occurred last year from typhus fever. The tuberculosis death-rate was 110 per 100,000 of population, a lower rate than in any preceding year. This is higher than that of England, and the variations in different parts of Scotland are so remarkably great as to bespeak the need for special public health investigation. Thus, in Shetland the tuberculosis death-rate was 217 (per 100,000). The population being small, this means 50 deaths; but evidently this is a case in which intensive effort at public health administration with better housing might be expected to effect rapid improvement. The next highest tuberculosis death-rates were 158 in Sutherland, 156 in Ross and Cromarty, the counties with a large population having the lowest rate being Fife (87 per 100,000) and Ayr (84 per 100,000). In Lanarkshire, which comprises nearly one-third of the population of Scotland, the rate was 132. Only a short paragraph is devoted to the important public health problem of puerperal mortality. For the whole of Scotland this reached the high figure of 5·8 per 1000 births, varying in the larger burghs from 13·2 in Coatbridge and 11·7 in Perth to 5·8 in Glasgow, 4·7 in Aberdeen, and 8·9 in Dundee.

Further tables bearing on the main problems of public health, including those indicated in the preceding paragraphs, would add greatly to the value of the Scottish statistical report, and it may not improperly be suggested that a chief value of the tabulation of registered deaths according to age and cause of death lies in the extent to which they make manifest areas of excessive mortality in one or other respect, and enable medical officers of health and sanitary authorities to direct their efforts to improve the national health where they are most needed and where their effect will be greatest.

RADIOTHERAPY AT LEEDS.

THE General Infirmary at Leeds is to be congratulated on the recent addition of a new radiotherapeutic department, the creation of which has been made possible by the generosity of two donors, Mr. J. B. Sykes, of Horbury, who has presented the building, and Miss Walker, of Chapeltown, Leeds, who has met the cost of the artificial sunlight apparatus. Through this gift Leeds now possesses one of the largest and best departments of its kind in Britain. The new building measures over 100 ft. by 45 ft., and contains 11 treatment rooms as well as instrument rooms, waiting rooms, staff rooms, dressing rooms, and workshop. The building is very airy and well lighted, and a broad corridor down the centre provides access to the various rooms. Five of the treatment rooms are devoted to deep X ray therapy, and each cubicle is equipped with apparatus capable of generating 200,000 volts and upwards. Provision is made for the housing of the apparatus in a large instrument room at the back of the cubicles. Special care has been taken to provide for the adequate protection of the staff by heavy lead linings in all the cubicles, and the controls are placed in a special room outside within easy reach of the operator. The cubicles are lofty and are lighted from above, while central heating has been adopted throughout the building. The "artificial sunlight" department consists of six treatment rooms; the two largest, measuring 20 ft. square, are for men and women respectively. Dressing rooms are attached to each, and an observation room is provided so as to control both treatment rooms. Each room is equipped with two "Mountain Sun" mercury-vapour lamps, and two arc lamps together with special radiant heat lamps. A separate room for the treatment of cases unable to sit or stand is equipped with lamps which can be used while the patient reclines on a couch. Another room is reserved for children, and similar equipment of arc and mercury-vapour lamps has been provided here. A special room for treatment by the Kromayer lamps is placed at the end of the long corridor, and one of the largest rooms has been set apart for Finsen light treatment of lupus and similar diseases. At present upwards of 100 cases a day have been receiving "artificial sunlight" treatment, but the new department will extend the scope of daily treatment to over three times that number. With this equipment we may confidently expect that Leeds will achieve results not only of immediate benefit to local patients, but of value to the progress of this branch of medical science.

PIONEERS IN TROPICAL MEDICINE.

WE are apt to regard tropical medicine as a child of recent infancy, but several years before the battle of Waterloo it was a well-grown stripling, although it did not come into its full inheritance until the present century. Pioneers in Tropical Medicine was the subject of Dr. Andrew Balfour's presidential address to the Royal Society of Tropical Medicine and Hygiene held at 11, Chandos-street, London, on Oct. 15th, when, with the aid of beautifully prepared portraits on the epidiascope, he gave cameo biographies of the men who throughout the nineteenth century—and before—had toiled to raise the symbol of Æsculapius along with the British flag in all corners of the world. The list of British pioneers, and in this field Scotsmen are well to the fore, is a long one; in the course of an interesting hour Dr. Balfour could do no more than briefly touch on the more outstanding figures of that company. The stimulus to the study of tropical diseases was first felt in the fighting services in their campaigns overseas in the warring years of the late eighteenth century, and it was Sir John Pringle (1707–83), "a pursy and peppery gentleman," who founded military hygiene, groping his way in the dark without the aid of such useful things as statistics or precedents. He published a book in 1775 on Observations on *Diseases in the Army, and was subsequently elected* President of the Royal Society. From his works we know how common in those days was helminthiasis, and he specifically recommends bleeding in the crises of malaria, "which," Dr. Balfour said, "was not at all a bad idea"; but he is best remembered as a hygienist who made a careful study of the rationing and the diet of the soldiers. His parallel in the senior Service was James Lind (1767–94), perhaps a greater man even than Pringle. He served in the tropics and there gained a first-hand knowledge of local diseases. He was a man singularly modern in his ideas, an earnest worker, and a clear thinker. With him two other names are associated, Sir Gilbert Blane, who introduced lemon juice into the Navy as an antiscorbutic, and Surgeon (Thomas) Trotter. They were a wonderful trio, thrown together in the wars against France. Pringle was followed by Donald Monro (1729–1802), who wrote an amazingly modern essay on the preservation of the soldier's health in camps. Among many names worthy of record are those of Benjamin Rush, who first described dengue, and by his energetic efforts did much to quell the outbreak of yellow fever in Philadelphia in 1793, and Annesley, of Dublin, who recorded the experience of 30 years' service in the tropics. In the middle of the nineteenth century George Biddy showed that the spread of cholera was due to human intercourse; Edmund Parkes (1819–76) suggested the possibility of healthy carriers, and John Snow went a step further and reasoned out that the poison of cholera was contained in human excrement. Biddy also introduced humane treatment of the insane in India, and in 1886 he instigated the systematic inspection of Indian school-children. Among the Americans after Rush who have done pioneer work in tropical medicine comes Josiah Clark Nott, while Walter Reed and Surgeon-General Sir William Crawford Gorgas are familiar names. Women, too, have played their part in this great work, although not perhaps in a strictly medical or scientific field, and Dr. Balfour gave a brief history of the lives of *Florence Nightingale*, Mary Kingsley, of West Africa, and Mary Slessor, of Calabar. The spirit and achievements of Dr. David Livingstone was the vanguard of medical advance in the dark continent. Dr. Balfour drew shrewd conclusions from the portraits he showed on the screen as to the characters of the subjects, which made his lecture one of living and personal interest.

PEPYS AND SCIENCE.

THE Master of Christ's College, Cambridge, himself a writer of picturesque accuracy, is the very *man* to write with understanding and sympathy about that delightful seventeenth century Horace Walpole whom we know as Samuel Pepys, secretary to the Admiralty. In the current *Quarterly Review* Sir Arthur *Shipley* points out how science in Pepys's time was the "object of an insatiable curiosity, perhaps in a way childish," and how Pepys himself was insatiably curious. Nothing was too odd or too *trivial for* his notice and record. On March 14th, 1662, he met a German, Dr. Kuffler, who came "to discourse with us about his engine to blow up ships," a subject naturally interesting to a high official of the Admiralty. Although he only began to *learn the first four* rules of arithmetic in his thirtieth year, he was yet a great friend of Edward Cocker, who engraved a slide rule for him. On *account* of his defective vision he took much interest in optics and records how in company with Mr. Spong and "my twelve foot glass"—i.e., one with a focal length of 12 feet—"we did see Jupiter" and had "several fine discourses upon the globes this afternoon, particularly why the fixed stars do not rise and set at the *same* hour all the year long, which he could not demonstrate, nor I either." Let us hope *that comprehension is wider nowadays. Pepys* was elected to the Royal Society *in* 1665 *and in* 1684 became its President. It was during his term *of* office that Newton's immortal work, the "Principia," was accepted and published by the Society under Pepys's imprimatur. *Many passages in the diary are* quoted by Sir Arthur Shipley, which show how constantly Pepys attended meetings and demonstrations, several of which dealt with transfusion of blood. He also at "my Lord Crewe's" and other places met various learned persons who told him extraordinary stories about swallows hibernating, a belief which even Gilbert White held, and one of these, Mr. Templer —"*an ingenious man and a person* of honour he seems to be," says Pepys with unwonted caution—told a story of how serpents in Lancashire catch larks by crawling under a soaring lark and with wide open mouth eject their poison, whereupon the lark falls down into their jaws. Many similar startling episodes in natural history will be found in the pages of the Revd. Edward Topsell, who wrote a "History of Beasts and Serpents," to which Dr. Muffett contributed a section upon insects. Pepys relates a story from Muffett about Dr. Caius, and it is not unreasonable to suppose that he was acquainted with Topsell's book, the matter of which would certainly have interested him. So many facets did Pepys present to the world that, as Sir Arthur Shipley puts it, "he appears to have been almost globular."

RADIOGRAPHIC DIAGNOSIS OF SPINAL DISEASE.

IT seems that French radiologists of eminence have found difficulty in distinguishing between a malignant metastasis and a tuberculous condition such *as* Pott's disease. French descriptions of the differential diagnosis are brief and inadequate, one recent publication dismissing the matter with the statement: "The invaded bodies show abnormal transparency. The spongy tissue progressively disappears; the vertebral body *crumbles*; *as a result* there are deformities analogous to those of Pott's disease." A well-illustrated *monograph*[1] by Prof. J. A. Sicard and MM. J. Belot, Coste, and Gastaud makes good this defect. These investigators divide metastatic cancer into three main types—osteoporotic, osteo*plastic, and* para-cancerous changes. *Under the first heading* they discuss the differential diagnosis of Pott's disease and neoplastic metastases, pointing out that the latter are primarily and always osseous, and *never cause* any alteration in the intervertebral discs, even in an advanced stage. Generally the destruction results in a thinning of the vertebra until it becomes less than a fifth of its normal height. The *disintegration* of the vertebra is always *more* visible on the side than on the front, and is often the only radiological evidence. The compression of the body *seems to* compensate, from *the point of view of transparence*, for the *structural alteration*. Screening the *spine may* be the only means of diagnosing new growth of the prostate, so often symptomless at *the primary* focus. It is characterised *particularly by an* osteoplastic metatasis first described by Recklinghausen in 1891. At post mortem a great many of the *bones* are found thickened, eburnated, and *abnormally hard*. The remarkable diffuseness *of the* lesions is the most striking feature; starting from the primary focus in the prostate the process attacks *first* and most extensively the lumbar region and pelvis, but extends even up to the ribs and humeral heads. Naturally, the resulting anæmia is marked, and Assman diagnosed a prostatic growth on this anæmia combined with *bilateral sciatica alone*. A less exuberant osteoplastic form of metastasis is met with in mammary and *pyloric cancers*. The thyroid metastases, on the other hand, are exclusively of the decalcifying, destructive, "osteoclastic" type. The osteoplastic reaction may also take the form of "opaque vertebra," a condition reported by MM. Souques, Lafourcade, and Terris from a case of mammary scirrhus at the Salpêtrière. These opaque vertebræ are seen in cases where syphilis is present and may be the cause, but *the authors prove conclusively from post-mortem* cases that cancerous "opaque vertebræ" exist. Under the heading of "paracancerous lesions," the authors discuss whether a cancer can destroy bone from a distance without the actual presence of its cells, thus preparing the way for a metastasis. At present they do not feel justified in postulating more than paracancerous bony dystrophy. In a case of prostato-pelvic cancer under their care a radiological examination revealed a *medullary-osseous fibrosis* with hypercalcification throughout *the whole skeleton*, exactly similar to that associated with epithelio-matous infiltration in the lumbar region. H. Roger[2] has recorded a case of cancer of the breast showing a similar change in parts remote from any direct infiltration or metastasis. Primary tumours of the vertebral column are not common. Sarcoma tends to start on the outside and grow into a large tumour of the back without compression of the cord. Secondary neoplasms, according to Fraenkel, never give this large enveloping shadow, but the distinction is not quite so absolute as he implied. The radiological diagnosis of vertebral rheumatism, infectious arthritis, osteomalacia, traumata, and malformations are also discussed.

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[1] Aspects Radiographiques du Cancer Vertébral. Jour. de Radiol. et d'Electrol., August, 1925.

GERMAN MEDICAL CONGRESS.

The Deutscher *Aerzte-Vereinsbund* held its annual meeting this year in Leipzig in association with the Leipziger Verband, the great medical union which is now called Hartmann-Bund in honour of its late founder; 267 delegates were present, representing medical societies and local branches with a total membership of 33,581. After the usual addresses of welcome the meeting discussed the suggested codification of medical etiquette. The proposal contained rules on professional secrecy, on advertising, and on the question of the qualification of specialists. The sale and the purchase of a medical practice is held to be unprofessional except in cases where the widow or the children of a deceased medical man offer his practice for sale. It is further unprofessional to criticise other medical men, to give medical advice, or to practise during a holiday stay in a health resort where other medical men are settled, and to give testimonials for "secret" medicines. The establishment of a joint practice is allowed only between specialists of the same branch or between general practitioners, but not between a specialist and a general practitioner. Canvassing is strictly forbidden and contracts allowed only under the rules of the Hartmann-Bund. Owing to the difficulties of the matter the codification was entrusted to a special committee for consideration. Another subject of discussion was the rôle of medical men with regard to the extensive physical culture activities which are now very popular among the younger generation of the German people. Special courses of instruction in the examination of amateur athletes have been instituted in several cities and universities. It was resolved that the medical advisers of sports societies must examine the members only as to their ability for the particular sport practised, but must strictly refrain from attending members in a general way. The forthcoming reform of the German criminal code, although it has not yet been brought before Parliament, was then discussed from a medical point of view. The principal items of medical interest are that a criminal shall be held responsible for his actions even when in a state of diminished consciousness caused by drunkenness, drunkenness being no longer regarded as an extenuating circumstance. Drunkards shall be *subjected to special measures*, such as compulsory *detention in an asylum, prohibition to obtain intoxicating* liquor, loss of civil and voting rights. Other items of interest deal with homosexuality which shall continue to be a criminal offence for men but not for women. Professional secrecy shall not be binding when it conflicts with the public interest as, for instance, in the case of infectious and venereal diseases. On the question of criminal abortion, which had already been discussed in the Bavarian branch of the Association (see The Lancet, Sept. 19th, p. 620), this meeting came to the same *conclusion as that branch*. A communist delegate pleaded for absolute liberty in the matter of abortion as existed in Russia, because, he said, abortion should be regarded not from an ethical but from an economic standpoint. Finally the Congress discussed the question of quackery and unqualified practice and voted for its absolute suppression and *for an alteration of the law* to that end. Jointly with the Aerzte-Vereinsbund, the Hartmann-Bund discussed questions connected with club practice, the extension of the club *system* to the middle classes, and the systematic distribution of medical men throughout the country.

ATHLETICS AND ECONOMY.

The review which we publish of Mr. Gilbert Bourne's book on oarsmanship recalls to mind part of Prof. A. V. Hill's *address* to the British Association on the Physiological Basis of Athletic Records.[1] Wasteful effort in muscular movements may be usefully demonstrated by the slow-motion cinematograph, and the economical use of energy is of no less interest when studied physiologically. According to the observations of A. V. Hill and H. Lupton *the maximum efficiency of* human muscular movement is *obtained* at speeds of about one maximal movement *per second*. In rowing, experience agrees that such a speed is about the optimum; in an eight-oar boat the recovery takes almost as long as the stroke, and 32 strokes per minute is generally regarded as the most efficient rate. By a muscular mechanism depending on the formation of lactic acid the body can get into debt for oxygen, and the amount to which this is possible varies with the individual; but when the account has been overdrawn *to the* extent of more than about 15 litres of oxygen (1 litre of oxygen consumed liberates enough energy to raise one ton about seven feet), the average athletic man becomes incapable of further effort. Thus, although it is *permissible* in a very short rowing race to work less *efficiently* by adopting a faster stroke, the work done will *not be* proportionately greater, and exhaustion will soon *set in*. When the body is working against an external resistance as in rowing there is an optimum speed, and if the effort is *to be* long continued it must be made at a speed not far from this optimum. In running, however, the work is absorbed by the viscous-elastic properties of the muscles or internal friction, and there is no optimum speed; the expense *of the* movement increases continually as the speed goes up. According to Prof. Hill a speed of 280 steps per minute requires 24 litres of oxygen per minute, whilst a *speed of* 240 steps per minute requires only 8 litres. Great effort is obviously not economical. It is said that to run a railway train at 50 miles an hour needs *twice* as much coal as to run it at 40, and *accordingly* the railway companies are prejudiced in favour of the latter speed. In the same way the average citizen in sedentary employment rightly refuses to develop his muscles and his powers to the pitch advocated *and* demonstrated by the late Mr. Eugen Sandow. Training may increase the ability *to* get into debt for oxygen and it certainly makes for accurate muscular movement, but whilst none can deny the value of exercise it is unnecessary to develop great athletic power in those whose station in life does not give a high value to strength or rapid movement. "The little more, and how much it is" is of great value in creating records, but the immediate or ultimate price is often unduly high. Writing in The Lancet (1914, i., 950), Sir Thomas Oliver mentioned the premature ageing of professional footballers, drew attention to the dangers of sudden overstrain, and continued: "One of the consequences of hard rowing, running, and football playing is an increase in the size of the heart, especially of the left ventricle. While enlargement of the heart may be good enough for the youth of 22 who takes exercise freely, it is not the best for a sedentary clerk of 30. The man of 30 would find himself with more heart than he requires; his circulation would be rather embarrassed than lightened; for it is difficult to tone down the heart to the diminished needs of the economy." The lesson seems to be that excess should as far as possible be left to those who make their living by it, and it is a lesson not without application.

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[2] Marseille Médical, Feb. 15th, 1925.

[1] The Advancement of Science. 1925. Published by the British Association for the Advancement of Science, Burlington House, London, W. 6s.

THE MEDICAL OFFICERSHIP OF LONDON COUNTY.

Dr. F. N. Kay Menzies is to succeed Sir William Hamer in January next as chief medical officer for the County of London. The decision was taken by the Council on Tuesday of this week. Dr. Menzies joined the medical department of the Council in 1909, and for the last ten years has identified himself with the organisation of work in connexion with tuberculosis, venereal disease, and child welfare. Eighteen months ago, with the approval of the Council, he succeeded the late Sir Napier Burnett as Director of the Hospital and Medical Services Department at the Red Cross, and two reports have already issued from his pen, showing how the voluntary hospitals of Great Britain outside London may be used to greater advantage and economy. Dr. Menzies was struck with the deficient provision for the treatment of such disorders as ophthalmia neonatorum and infantile paralysis, and he urged hospital boards to acquaint themselves with the particular needs of the area which they serve and especially to consult the general practitioner as to how they may best assist him in the diagnosis and treatment of his patients. It would, he thought, be very unfair for the Hospitals Commission to find a voluntary hospital to be failing in its duty, until it had been definitely established whether the public authorities in that area were doing their duty to those for whom they were legally responsible. He outlined a scheme for a comprehensive survey of existing facilities for the treatment of the sick, with a central bureau of hospital information. This experience and this broad outlook will now be directed towards the solution of hospital problems in London. The time is not long distant when the admirable buildings and equipment of the Poor-law institutions must be fitted into a concerted scheme for the care and treatment of the sick in the metropolis. Anyone who takes a bird's-eye view of London might be surprised to see the extent and the enviable sites of these institutions. Should they come under the jurisdiction of the Council, Dr. Menzies will have an opportunity with which we have every confidence he is competent to deal.

We have already given expression to the sincere regret felt by the very large number of medical men, hygienists, and officials, who have come into relations with Sir William Hamer, at his impending retirement. The blow will be mitigated by the Council's decision to retain his services for a further two years in a consultative capacity. Sir William Hamer entered the service of the Council in 1892 and has thus served the Council continuously for nearly 34 years. One of the most important developments with which William Hamer has been associated has been the th and organisation of the school medical service. When he took up his appointment in January, 1912, the scheme of medical inspection and treatment was in its infancy. Under his control it has become a far-reaching undertaking, under which every year 300,000 children are medically inspected, the same number are seen by school dentists, over 1,000,000 examinations are made by the school nurses in connexion with the personal hygiene scheme, 230,000 children make 1,500,000 attendances at hospitals and treatment centres, and over 100,000 attendances are made at cleansing stations. The activities of the school medical service during this period have resulted in striking improvements in the health and physique of the children in the schools. On the epidemiological side of his work, the General Purposes Committee of the Council has put on record: "Sir William's researches into the incidence of infectious diseases have made him one of the most distinguished of authorities upon epidemiology. In particular his work upon typhoid fever and upon influenza and its associated group of diseases has furnished a series of brilliant reports to the Council, and has contributed materially both to establish clearer conceptions of the nature of these diseases, and to open up new lines of preventive measures." This is no more than Sir William Hamer's due, for it is rare indeed to find a sanitary officer loaded with administrative duties who yet keeps a mind ever fresh in the pursuit of epidemiological problems. Some of these problems are appreciably nearer solution for his life-work.

At the Royal Society of Medicine the first Social Evening of the session will be held on Tuesday next, Oct. 27th, at 8.30 p.m., when the President, Sir StClair Thomson, will give a short address on Shakespeare as a Guide in the Art and Practice of Medicine.

At the Royal College of Physicians of London on Oct. 19th, after delivery of the Harveian Oration by Sir Frederick Mott, the Baly Medal was presented by the President to Prof. R. Magnus, of Utrecht. The Harveian Dinner was held in the evening, Sir Humphry Rolleston presiding. In regard to future arrangements the Bradshaw lecture, by Dr. Edwin Bramwell, on the Myopathies (Nov. 5th), and the FitzPatrick lectures, by Dr. Arthur Shadwell, on *Medicine in Ancient Egypt, Assyria, and Palestine* (Nov. 10th and 12th), will be delivered at the College, at 5 p.m., on the respective dates. The Lloyd Roberts lecture, by Sir Arthur Keith, on Man's Structural Defects, will be given on Nov. 16th, at the Royal Society of Medicine, 1, Wimpole-street, W., at 5.30 p.m.

Coöperation in Hospital Management.—On the purely business side of hospital management, coöperation is essential from two points of view, as was clearly pointed out by Sir Arthur Stanley in his presidential address to the Incorporated Association of Hospital Officers on Oct. 16th. These two points of view concern the hospital staffs and the subscribing public respectively. The time had come, Sir Arthur Stanley said, when hospitals must be considered to be business concerns, certainly to the extent of their administration and management, and as such they must be conducted upon the lines found to be most efficient in the business world. During the past year the Association had been invited by the King Edward's Hospital Fund to consider and report upon the proposed draft revision of the *Revised Uniform System of Hospital Accounts*, a revision which all were agreed was essential. Further, he stated that the Council of the Association had been most energetic in their efforts to secure the introduction of a pensions scheme for hospital officers. A concrete scheme was prepared in conjunction with one for nurses by the College of Nursing; with its adoption in London it would spread to the provinces, and they looked forward to the time when there would be one pensions scheme in operation for the staffs of all voluntary hospitals. Thus coördination in hospital management will greatly enhance the harmonious and effective functioning of the hospital system as a whole. Of hardly less importance is the effect of good business management on the subscribing public. The public wants business methods, said the President, because it wants to feel that its money is being efficiently used. A good balance-sheet is perhaps the strongest appeal that a hospital can issue.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CLXIV.

TREATMENT OF HYDROCELE, HÆMATOCELE, VARICOCELE, AND SPERMATOCELE.*

III. *Varicocele.*

THE ætiology of the varicose condition of the veins of the pampiniform plexus which is known as varicocele is often obscure, though its more frequent presence on the left side of the body suggests that the right-angled opening of the left spermatic vein into the renal renders its radicles more liable to obstruction than the sloping opening of the right spermatic into the inferior vena cava, and the condition is undoubtedly aggravated in constipated individuals by the drag of the loaded sigmoid colon and rectum, compressing and distorting the left spermatic vein as it crosses the pelvic brim just behind the pelvi-rectal junction. Varicocele may occur secondarily to neoplasms of the left kidney obstructing the venous return into the left renal vein, or to carcinoma of the pelvi-rectal region causing similar congestion, while more rarely retroperitoneal teratomata or sarcomata may cause varicosity of one or both pampiniform plexuses. In every case, therefore, especially where the history of onset of the varicocele is sudden, the urine should be examined for blood and the abdomen carefully palpated. Should one of these primary causes be discovered it obviously calls for urgent treatment by removal, if possible, when the secondary scrotal condition will certainly improve.

In the majority of cases, however, unilateral varicocele, usually left-sided, exists with no obvious cause, even constipation being absent; and in these cases it cannot be too strongly urged that no treatment is called for unless the condition is causing pain and discomfort to the patient. Unless his attention is directed to it, and his mind disturbed by unfounded tales of danger of impotence if the condition be left untreated, he is rarely troubled by its presence. In some few cases, especially in hot countries and in patients taking riding exercise, if the scrotum be pendulous, pain and a congested feeling result from exertion, and it is then, as also in candidates for the services, where a varicocele may be used as a cause of malingering, justifiable to interfere.

In elderly patients all that is usually necessary is a well-fitted net-suspender to support the scrotum against the perineum; this need be worn only during the day, and is a source of comfort to the patient. Suspenders are not to be recommended in the case of neurotic young men, as their presence tends to concentrate the patient's attention on the genitalia. In those cases where a suspender is ill tolerated, or where the patient is a candidate for one of the services, operation may be undertaken and the main mass of the pampiniform plexus ligated.

Operation.

The pubes having been shaved and purified, the patient is anæsthetised, and a short incision made upwards and outwards from the pubic spine on the affected side so as to expose the spermatic cord as it passes out of the external abdominal ring and down into the scrotum; there is no need to open the inguinal canal by incising the external oblique aponeurosis. The cord is elevated on a retractor, and the fascial sheath around it opened longitudinally, the cremaster muscle-fibres separated, and the vessels exposed. The vas deferens, lying behind the main mass of the pampiniform plexus, should be isolated together with the deferential artery and veins which closely accompany it. The veins are now held up on the retractor and search made for the spermatic artery, with which are usually associated one or two smallish veins; when found this also should be isolated together with the accompanying veins, but no very prolonged search should be made for the vessel, as although its ligation is not desirable, actual atrophy of the testis rarely follows. The remaining veins of the plexus are now dissected clear of the vas and artery for about two or three inches, ligated at the upper and lower limits of the cleared space, and the intervening mass removed, care being taken not to cut them within a quarter of an inch of the ligature for fear of this slipping off. A stitch is now passed through the parts of the veins distal to the ligatures, and these are approximated, a proceeding which holds up the testicle and saves the patient much discomfort and the need of a post-operative scrotal support. I do not consider it necessary to evaginate the testis through a slit in the tunica vaginalis, as the occurrence of a hydrocele of the tunica vaginalis, consequent on the cutting off of the venous return, is so rare if the operation is carried out as described above. The patient should be kept in bed for five or six days, after which he may be allowed up wearing a well-fitting net-suspender, which must, of course, be fitted after the operation. The use of this suspender is a great comfort to the patient for the first fortnight after operation, when its use should be discontinued, except in cases where the patient is indulging in occupations, such as riding or bicycling, where friction occurs to the scrotum and perineum, when the suspender should be worn for at least a month after operation, on all occasions when such exercise is indulged in.

IV. *Spermatocele.*

A further condition of interest in connexion with abnormalities of the scrotal contents is that of spermatocele, a condition usually met with in elderly men and frequently bilateral, the patient's attention being drawn to the presence of an abnormality by a sensation of fullness and discomfort in the testes. The condition arises from the blocking of the ducts of the epididymis, with subsequent distension of the tubules behind, so that one or more rounded cystic swellings occur in the course of the epididymis, usually around the upper and back part of the testes, and may be found to vary in size from a pea to a chestnut; occasionally such a swelling may arise from distension of the vestigial hydatids of Morgagni at the upper end of the testes, in which case they may be seen in younger subjects.

Treatment consists in excision of the thin-walled cysts from the surrounding epididymis, an easy task if no inflammatory reaction is present, the testis being exposed through an inguinal incision as for hydrocele. The tunica vaginalis usually needs incision to expose the cysts, and it is wise to leave it evaginated as described in order to obviate the risk of a hydrocele consequent on the handling at operation. The condition of spermatocele is not in itself dangerous, but removal of the tense cyst causes both physical and mental relief to the elderly patient, and is therefore advisable, although recurrence, usually from formation of new cysts, is by no means uncommon. Operation on both sides is liable to be followed by sterility, though it is somewhat comparable to Steinach's operation in that it is often followed by a temporary improvement in both general and sexual power.

PHILIP H. MITCHINER, M.D., M.S. Lond.,
F.R.C.S. Eng.,
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NAVAL MEDICAL COMPASSIONATE FUND.—At the quarterly meeting of the directors of the Fund held on Oct. 6th, Surgeon Vice-Admiral Joseph Chambers, C.B., C.M.G., Medical Director-General of the Navy, in the chair, the sum of £124 was distributed among the several applicants.

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* Parts I. and II. appeared in THE LANCET last week.

Special Articles.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

James Mackenzie Institute for Clinical Research, St. Andrews.

AT a meeting of the Institute on Oct. 13th Dr. Douglas Guthrie (Edinburgh) introduced the subject of prognosis in middle-ear suppuration. Though this is known to be a common condition he believed that it was often overlooked. Pus did not flow from the ear in all cases and might be small in quantity so that the disease was frequently undiagnosed. That common type of deafness, otosclerosis, was held by some authorities to be the result of previous inflammation in the middle ear which might have escaped notice. He was convinced that a proportion of deaths attributed to "meningitis" owed their origin to middle-ear disease. In many cases persistent otorrhœa resulted in chronic ill-health, while secondary pulmonary and digestive diseases were common. He alluded to the unsatisfactory terminology in use in regard to otitis media, commenting on the vagueness of meaning of such terms as "acute" and "chronic" and "catarrhal" otitis media, all of which merely represented degrees of the same process. He directed attention to several anatomical features which affected the nature and progress of the condition—e.g., the occurrence of bony pockets in the middle ear, the short, wide, straight Eustachian tube of infants, and so forth. In this connexion he emphasised the danger of common cold in the infant. He referred to cases of unexplained pyrexia in children in which, in spite of a normal appearance of the drum, pus was proved to be present on paracentesis (so-called latent otitis media). The bulk of Dr. Guthrie's paper dealt with the results of an investigation of the subsequent history of 345 cases of otorrhœa over a period of years, which was undertaken on the instigation of the late Sir James Mackenzie. This had proved most illuminating. The ultimate results of various operative procedures as regards life and deafness were illustrated, and as a result of comparison of these it became clear that the more radical forms of surgical procedure should be discarded in favour of more conservative methods. From his figures it was also evident that deafness was more commonly the result of previous middle-ear inflammation than was supposed.

Anderson College of Medicine, Glasgow.

The formal opening of the winter session took place on Tuesday, Oct. 13th, when Mr. Alexander Miles, secretary to the Royal College of Surgeons, Edinburgh, gave an address on Coördination in the Study of Medicine. Mr. Miles pointed out that the purpose of the medical curriculum, as drawn up by the licensing authorities and approved by the General Medical Council, was to qualify men and women for the practice of the profession of medicine as family doctors. In the earlier scientific subjects the student learned something of the great biological, chemical, and physical laws, and by his own observations and experiments was able to verify at least some of them. This paved the way for exact study of the human body, by means of anatomy, physiology, and pathology, with pharmacology as the equipment for treatment of morbid conditions. Hospital work followed with medicine, surgery, and midwifery, and here the student first dealt with the human subject as a sick person. Public health and medical jurisprudence taught him his relations and duties to the community as a whole. On the motion of Prof. Carstairs Douglas, Dean of the College, a vote of thanks was accorded Mr. Miles, who was afterwards entertained to lunch by the governors and staff in the Central Station Hotel.

Edinburgh: Prof. John Fraser's Inaugural Lecture.

Prof. John Fraser, who was appointed Regius professor of clinical surgery at the University of Edinburgh in March of this year on the retirement of Sir Harold Stiles, recently delivered his inaugural lecture in the anatomy lecture theatre of the University. Principal Sir Alfred Ewing presided. Under the title of "De Novo," Prof. Fraser spoke on the course he would wish his education to follow were he given a fresh start, or in other words, on his educational ideals. He said that he had regretfully to confess that with every year the profession of medicine became more of a science and less of an art, and that to keep abreast of the times in medical teaching grew increasingly difficult. In this age of specialisation the medical curriculum made such demands upon the student that there must be specialisation in the preparation for it. The education of the average student when he entered a university was deficient in one vital aspect—he had never been taught the logical processes upon which the acquisition of knowledge was based. The science of induction, observation, elimination of the irrelevant and inference were a closed book to him, or, if he used them, it was as a blind and purposeless instrument which bore no fruit because it was never enriched by the stimulus of purpose. From bitter experience he would say that that was a matter of the most extreme importance. Between man and man there was little material difference where the mental machinery was concerned; it was the manner by which it was worked and the method on which it was treated that spelt the difference between success and failure. He would suggest that the most productive course for the later school years would be a liberal general education, a sufficient knowledge of Latin and Greek to enable the student to understand the etymology of his profession, as perfect a knowledge as it was possible for him to acquire of French and German, and progressively intensified instruction in the basic or natural sciences—physics, chemistry, and biology. On leaving school he considered it a great advantage for a student to take an arts course before embarking on the study of medicine, because, in the words of Sir George Newman, it was "essential to his proper professional education that it should be deeply infused and inspired by the broadest and most liberal culture, from which he may derive mental discipline, the scientific habit, and an intellectual mastery of the principles involved in his profession." Were he again a medical undergraduate, Prof. Fraser said, he would desire to be taught analytically, he would welcome the extended use of the revision and tutorial class, and he would like to see note-taking at lectures abolished, its place being taken by printed synopsis slips distributed the day before. If medicine was once the foster-mother of science, Prof. Fraser concluded, science was now the mother of medicine, and a medical career, preparatory, undergraduate, and postgraduate, must therefore be planned scientifically.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

The Health of Belfast.

THE annual report for 1924 of the medical officer of health for Belfast is, on the whole, satisfactory reading. The birth-rate was 23·9, a decrease of 1·1 as compared with the preceding year, when the rate was 25·0. The death-rate was 14·3 per 1000, an increase of 0·5 compared with the year 1923, but 2·8 below the average rate for the ten preceding years. Of the total deaths registered, 1948, or 30·78 per cent., were caused by chest diseases, 605 being due to phthisis, 623 to pneumonia, and 720 to other diseases of the respiratory system; 107 deaths of children under 1 year old per 1000 births were registered during the year. This is an increase of 6 per 1000 compared with the preceding year. Epidemics of scarlet fever and of encephalitis lethargica occurred during the year; 1818 cases of the former were registered with 57 deaths, a case-mortality of 0·44 per cent.; 221 cases of the latter were registered with 30 deaths, a case-mortality of 14·2 per cent. The epidemic of encephalitis lethargica was almost confined to the months of May, June, and July. No case of typhus fever was registered during the year; 44 cases of typhoid fever were registered with 8 deaths. The number of deaths registered during the preceding year was 4, and the average number registered annually during the ten years 1914–23 was 20. The disease, formerly very prevalent in Belfast, is rapidly dying out, due mainly to the city's excellent water-supply. The various health services have been well maintained. Maternity and child welfare work has been steadily developed. There were six centres in operation during the year. The number of babies medically examined was 2230, and the total number of attendances at the centres was 29,903. This work is progressing in a satisfactory manner, and its utility is becoming more and more recognised. Infant mortality remains too high, though there has been a marked decline in the last 20 years. The figure in 1904 was 154, and in 1905 it was 130, compared with 101 in 1923 and 107 in 1924. It is worthy of note that the birth-rate has fallen from 33·4 per 1000 in 1881 to 23·0 per 1000 in 1924.

Royal Victoria Hospital, Belfast.

The opening address of the present session was delivered in the King Edward Hall of the hospital on Oct. 15th by Prof. C. G. Lowry, who recalled the history of the hospital, its large developments in recent years, and the rapid growth of the Belfast Medical School. He emphasised the great importance of clinical studies, and expressed the opinion that the three years allotted to these studies were insufficient. The medical student should remember the motto of Sir Spencer Wells, "Do to-day's work to-day," and the words of Sir William Osler, "Do the day's work well, and take no thought for to-morrow." Carlyle had admonished them "not to see what lies dimly at a distance, but to do what lies clearly at hand." The lecturer stressed the importance for the student of taking careful clinical notes, which should be brief. It had been well said that "to study the phenomena of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all." The lecturer urged the importance to the student of the study of medical biography. It was not fitting that the medical student should know the name of Donoghue's Derby mounts but know nothing of Dupuytren or Dover, or be more familiar with the names of Lenglen and Lacoste than those of Lister and Laennec. The memoirs of Sir James Paget and of Pasteur were to be specially commended. They formed a medical and scientific history of the greatest period of progress in the history of mankind—the Victorian era. Those who were beginning their clinical studies at the present time were fortunate. Their art was at a most interesting period of its development. During the past quarter of a century there had been great advances in the knowledge of bacterial infection, venereal diseases, disorders of metabolism, X ray diagnosis, the art of anæsthesia, and the technique of surgery and obstetrics. Some of them might see the conquest of malignant disease, the elucidation of cardiovascular degenerations, and a reduction in maternal mortality in childbirth. Where the vanguard camped to-day, the rearguard would rest to-morrow. Let them always remember that courage, discipline, and perseverance were the keys to success in life.

A memorial tablet to the late Dr. J. W. Mullen has been placed in the Ladywell Sanatorium, Eccles New-road, Salford. Dr. Mullen was medical superintendent of the institution for 42 years.

PARIS.

(*FROM OUR OWN CORRESPONDENT.*)

The Safety of Railway Travellers.

THE Academy of Medicine recently received a communication from the managing committee of the French railways asking whether the Academy had ever passed a recommendation dealing with the protection of travellers against accidents, in so far as such protection lay within the province of medicine. It appears that the Academy issued only one such recommendation in 1922, and that dealt merely with urban traffic, particularly motor omnibuses. During the last few years the number of trains, especially of express trains, has increased, and the heavy demands on the working staff calls for employees of the best type, with first-class eyes and ears, and who are decisive and quick in judgment. Alcoholism is now on the increase, and although the incidence of syphilis has apparently diminished since 1918, there is at the present time a likelihood of some increase of general paralysis of the insane, for syphilis, although promptly and efficaciously treated, was rife during the war. It is of prime importance that responsible employees such as guards, signalmen, and pointsmen, should be selected with care, and be examined exhaustively as regards their mental and physical equipment. The Academy has therefore nominated a commission, on the proposal of Dr. Maurice de Fleury, consisting of a medico-legal expert, two surgeons, a cardiologist, a neurologist, a psychiatrist, an oto-rhino-laryngologist, and an ophthalmologist. The value of the ophthalmologist is very great, for apart from testing the visual acuity of those, such as engine-drivers, in whom it is a sine qua non, he may be the first to detect the presence of an Argyll Robertson pupil, and thus be led to suspect an early affection of the central nervous system.

Hydatid Cysts of the Pancreas.

Mr. Auvray recently made a communication to the Academy of Medicine on a case which had come under his observation, the pathological interest lying in its rarity. Very few cases of hydatid cyst of the pancreas are recorded in medical literature. Dr. Vegas and Dr. Cranwell, of Argentina, record one instance of pancreatic cyst among 1700 cases of hydatid cyst, and Teichman, in a total of 2452 echinococcus cysts, found 8 in the pancreas. Dr. Villar, of Bordeaux, described in a paper read in 1905 before the Surgical Congress some 13 cases; 6 were discovered post mortem and 7 were operated upon. In 1912 Hauser collected 28 cases, of which 11 had been operated upon with 1 death, and 17 were revealed post mortem. Since Hauser's work 6 cases have been recorded, which brings the total, including Auvray's case, up to 35, of which 17 were diagnosed and operated upon. Distinction must be drawn between cysts originating in the pancreas and those which, arising elsewhere, come into association with that organ by contiguity. Six cases of the latter variety are included in the above statistics. Cysts in the tail of the pancreas are quite exceptional; the majority develop at the level of the head.

Surgical Treatment of Angina Pectoris.

Dr. Danielopolu and Dr. Marcu, of Bucharest, communicated to the Academy of Medicine the results of their observations on the modification of the electrocardiogram caused by excision of the stellate ganglion after ligature of the coronary arteries. When the myocardium has been weakened by occlusion of the coronaries, the excision of the stellate ganglion causes modifications of the electrocardiogram which are of very serious clinical import. Bearing in mind that by the excision of the stellate ganglion the majority of motor nerve fibres and certain coronary vaso-motor fibres are put out of action, and comparing experimental results with the frequently fatal phenomena of myocardiac insufficiency caused by removal of the ganglion, it must be concluded that this surgical procedure may be dangerous in many cases of angina pectoris. The researches of the two Roumanian doctors show that while the excision of the first thoracic ganglion produces important effects on the electrocardiogram, removal of the superior cervical ganglion effects no change. This fact proves that the modifications following excision of the first thoracic ganglion are caused by the blocking of the cardiac motor fibres. Jonnesco's operation consists in the removal of the stellate ganglion along with the cervical sympathetic; but the clinical and experimental results of Danielopolu and Marcu, along with operation results already recorded in medical literature, lead to the conclusion that the stellate ganglion should not be interfered with in this condition. The operation proposed is as follows: excision of the cervical sympathetic, leaving the superior cervical ganglion and the first thoracic ganglion, resection of the vagus and all its branches which supply the thorax, resection of all the rami communicantes uniting the inferior cervical ganglion and the first thoracic ganglion to the lowest cervical nerves and the first dorsal. The advantage of this operation is that while a large number of cardio-aortic sensory fibres are resected, the important afferent fibres which pass through the stellate ganglion remain unimpaired.

Conference on Hereditary Syphilis.

Speaking at a dinner held in connexion with the conference on hereditary syphilis, Mr. Durafour, Minister of Labour, Hygiene, and Social Welfare, stated that every year in France syphilis caused 40,000 abortions, 20,000 deaths among infants, and 80,000 deaths among adults. Moral progress, however, has taken place, he said, and syphilis is no longer regarded as a disease to be hushed up. As regards treatment, every day brought forth some new remedy. The campaign was becoming organised, but the State could not at present grant more than 4 million francs annually for this purpose, and there were only 450 organised centres in France.

An Index of Scientific Journals.

Although Paris abounds in large and rich libraries, it is often a very difficult matter for the research worker to know just where is filed the special scientific journal he seeks. Thanks, however, to Mr. Alfred Lacroix, permanent secretary of the Académie des Sciences, this difficulty has been removed. He conceived the idea of compiling a general inventory of the scientific journals available in the Paris libraries, indicating where each journal could be consulted. The first section of this index appeared last year, and the second, from M to Z, has just been published. The journals are classified alphabetically according to the first letter of their titles. With the help of MM. Léon Bullingaire and A. Richard, Mr. Lacroix has collated more than 17,000 journals, defunct or extant. A third section of the work will be published in a few months, containing geographical and analytical tables, to assist the inquirer who is not sure of the exact title of the journal he requires. The index is on the same lines as, but of wider scope than, the excellent index which Prof. Leiper has dedicated to those who have made the weary pilgrimage of your London libraries.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Visit of Spanish Medical Men.

A PARTY of leading Spanish medical men recently visited the medical institutions of Germany. They travelled from Cologne and Hamburg to Berlin where, notwithstanding the holidays, a special meeting of the united medical societies was convened in their honour, Prof. Kraus, President of the Berlin Medical Society, being in the chair. The Dean of the Berlin Medical Faculty and President of the Pathological Society, Prof. Lubarsch, welcomed the guests in a Latin address; Prof. Ferran, of Madrid, read a paper on the mutation of the Koch bacillus and the prophylactic vaccination of children against tuberculosis which had given favourable results. A report on the study of medicine and scientific research in Spain was given by the leader of the Spanish medical men, Prof. Rosell, of Barcelona. The party then visited the home for tuberculous children, the infants home, the Westend and Virchow Hospitals, and the Robert Koch Institute. Although a great number of medical men were away on holidays the meeting was well attended, as was the dinner at which the Spanish doctors were entertained before they left Berlin for Munich.

A Plea for Modern Dress.

The modern fashion in dress has been the subject of many and severe criticisms in this country by moralists, women's associations, and the clergy of every religious denomination because of its alleged indecency. Prof. Friedberger, of Greifswald, however, has taken up the cudgels on behalf of the modern girl, for, speaking as a hygienist, he has recently stated that modern fashions for women are almost ideal and in every respect preferable to male attire. The modern fashion not only allows free access of air and light to the body, but it has an educational influence by compelling women of every class to extend their ablutions beyond the hands and face. The advantage of the modern shoe, which only covers the heel and the toes, leaving the other parts of the foot free, is that the perspiration evaporates easily. Short frocks and very thin stockings of porous material expose the legs to the salutary influence of the sun and the air, while arms, neck, and shoulders, which have no cover at all, benefit in proportion. The "bobbed" or "shingled" coiffure, which has replaced the former fashion of wearing great masses of hair and artificial tresses, together with the light modern hat made of thin straw or felt, leads to good ventilation of the head. With the disappearance of the corset chlorosis has become almost unknown among the rising generation. Chills are less frequent in women than in men. The dress of men, notwithstanding the increased amount of physical exercise now taken, has not undergone such a radical revolution as that of the female sex. It is true that the high collar and the starched shirt have disappeared except for evening dress and that shoes have taken the place of boots, but the high waistcoat still exists. Prof. Friedberger makes proposals for reform which, however, will probably not meet with the approval of fashionable circles. Instead of long trousers, breeches should be generally worn in summer, as is already the mode for sporting purposes. A combination of shirt and pants similar to that worn by ladies should become the rule. A collar, even a soft one, Prof. Friedberger holds, is highly unhygienic and should be replaced by a sort of decolleté. Sporting dress should be generally worn in offices and for visits. Prof. Friedberger found that the dress of his assistant weighed 3220 g., while his wife's clothes weighed only 741 g. There is no reason why in an office the clerks should wear dress which is five times heavier and 20 times less hygienic than that of their lady colleagues.

A Penholder in the Abdominal Cavity.

Before the Surgical and Gynæcological Society of Hamburg Dr. König showed the case of a woman, 42 years of age, who had had several normal births and miscarriages. The last normal birth had happened one year ago. In the spring of this year a miscarriage had occurred and a putrid fœtus was removed by a medical man. She was conveyed with high fever to the Hamburg General Hospital where, besides the symptoms of abortion, a tumour of the uterus was found. It was believed that a myoma of the uterus infected by the septic abortion was present and the uterus accordingly removed. In the course of the operation, however, a piece of vulcanite penholder, 4 cm. in length, was found between the bladder and the uterus. The woman admitted that she had introduced the penholder into the uterus four years ago to produce abortion. The penholder had obviously penetrated the wall of the uterus into the peritoneal cavity. It is remarkable that a foreign body remained within the peritoneum for four years without producing any symptoms and without preventing subsequent normal births until it was detected in the course of an operation.

A Curious Verdict.

A well-known alienist had been asked by the family of a patient to give a certificate of insanity for the purpose of a divorce. He did so and charged a fee of M.1000 (£50), which was paid. As the certificate was eventually not required in the suit, the family asked the medical man to refund part of the fee, which he, of course, declined to do. The family accordingly prosecuted the medical man before the special Anti-Usury Court, alleging that the sum charged was too high. The defendant pleaded that the case had been a specially complicated one, that he had to examine the patient on three occasions for several hours at a time, and that his certificate was based on scientific deductions. In spite of these facts the court gave a verdict against the defendant because the fee was held to be not in accordance with the service rendered, and that the case thus fell under the Anti-Usury Act. The medical man was condemned to refund M.700, and moreover, in addition a fine of M.150 (£7 6s.) for usury was imposed. This verdict has aroused much interest because the provisions of the Anti-Usury Act are directed against overcharging for food, clothes, and other necessaries, and therefore according to this ruling a medical certificate falls into a category that appears a little strange.

PUBLIC HEALTH ADMINISTRATION.

ADMINISTRATIVE MACHINERY.*

(Continued from p. 771.)

IX. JAPAN.

THE Empire of Japan covers an area of 236,000 square miles and has a population of 80 million (339 persons to the square mile). There are four large islands and over 4000 small ones.

Central Health Organisation.

The first body created in Japan for sanitary administration on a scientific basis was the medical bureau which was established at the Department of Education in 1873. Before this time there were hardly any health regulations; the "Medical Code," which was drafted in the following year, was the first unified medical statute. In 1875 the bureau was transferred to the Home Department, and since then the Ministry of Home Affairs has been responsible for the health services. The Sanitary Bureau, as it is now called, manages all the general sanitary administration except industrial hygiene, which comes into the sphere of the Bureau of Social Work. It is divided into a public health section, a medical section, and sections for the prevention of chronic and of acute infectious diseases. There are 19 members of the staff of the bureau under a director, and there are another 10 officers who act in a temporary capacity as experts. These figures include clerks. School hygiene is in charge of the Ministry of Education; the Navy and War Departments also have medical bureaux, whilst railway and prison sanitation come under the control of the Ministries of Railways and Justice. Besides these administrative bodies there are three advisory councils—namely, the Central Board of Health, the Council for the Investigation of the Japanese Pharmacopœia, and the Board for the Investigation of National Hygiene. The principal function of these bodies is to frame advice in response to inquiries made by the administrative departments, but they may put forward their views without being consulted. The Board for the Investigation of National Hygiene, which is under the chairmanship of the Minister for Home Affairs, is not a duplicate of the Central Board of Health, but is occupied in considering new measures which may be required by the unsatisfactory state of the public health. The Central Laboratories include the Infectious Diseases Investigation Institute, attached to the Imperial University, which manufactures sera, vaccines, and the like; the Hygienic Laboratories at Tokio and Osaka, which are responsible, amongst other things, for the examination of drugs; and the Research Institute of Nutrition. All of these are under the supervision of the Home Department.

Local Health Organisation.

The provincial bodies for sanitary administration are the local governors, chiefs of police stations, and chiefs of cities, towns, and villages, in addition to custom house and port quarantine authorities. In provinces the governors are the highest officials, and under them are the police departments in which are established sanitary sections to take charge of health affairs. To each of these sanitary sections experts of various kinds and a laboratory are attached. In the Tokio prefecture responsibility for sanitary administration is divided between the Governor and the Inspector-General of the Metropolitan Police, but it devolves mainly on the latter, and there is a sanitary department in the Metropolitan Police Board. The intermediate provincial authorities in Japan are the heads of subprefectures and the chiefs of police stations. As a rule, however, sanitary affairs are supervised by the chiefs of police stations, who generally have jurisdiction over subprefectures and cities, and look after health conditions therein. Cities, towns, villages and their heads have also public health responsibilities of their own, in accordance with the laws and regulations. Most cities and towns have a sanitary department and a hygienic laboratory, but in villages certain officials represent the whole health organisation. There are six ports with permanent health quarantine organisations, and the customs authorities take charge of the procedure. If temporary quarantine is needed provisional quarantine stations may be set up, and these come under the supervision of the local governor and the immediate charge of the chief of the police department of the prefecture concerned. Rural sanitation has been very elementary, and measures are being devised for its improvement on the basis of elaborate investigations which have been undertaken; but these are still incomplete. In large cities there are municipal disinfecting stations, which despatch sanitary squads for domestic disinfection. In the villages the work is undertaken by the local sanitary official, and there are lecture courses for such persons to instruct them in the work. There are regular factory inspectors attached to the staff of local governors, and a great many private organisations are interested in improving industrial conditions.

Hospitals, Schools, and Training.

Hospitals are at present controlled by the regulations of the local prefectures rather than those of the Minister. At the end of 1913 the available beds were accounted for as follows: general hospitals—public 7028, private 48,884; hospitals for infectious diseases, 25,037; isolation wards, 74,910; and hospitals for licensed prostitutes, 5000 beds. (In Japan there were over 50,000 licensed prostitutes in 1923.) The total number of beds available for tuberculosis was about 3000 in 1923, and for leprosy about 5000. The care of *schools* is in charge of the Section of School Hygiene in the Ministry of Education, and there are specialists attached to each prefectural local government. Public schools appoint school physicians, who act under the instructions of the central authorities, and private schools are following this example. Nurses are frequently employed as well. There are many training schools for *medical practitioners*, and the total number of these was over 43,000 in 1923 (7·36 per 10,000 of the population). The examinations for a practising diploma include the subject of hygiene. Midwives are required to pass an examination or take an approved course lasting two years, and there are about 40 schools of midwifery. At the end of 1923 there were over 39,000 midwives. Nursing is governed by similar regulations, but not more than one year's training is needed before application can be made to the local governor for permission to practise. There are also regulations dealing with acupuncture and moxa-cauterisation, for the practice of which four years' study is required. Much attention has recently been given to *health propaganda*, which is carried on by pamphlets, cinemas, lectures, and exhibitions, and by voluntary organisations, and there is a *Health Insurance Act*, which compels insurance by workers employed under the Factory or Mining Acts, provided that their income is below a certain figure.

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* Based on a Series of Reports on National Health Organisation to the Health Section of the League of Nations. Obtainable in Great Britain from Constable and Co.

Statistics are collected by the Public Health Section of the Ministry for Home Affairs.

THE LONDON MEDICAL EXHIBITION.

(*Concluded from page 831.*)

Last week an account was given of exhibits classified broadly under the heading of Drugs and Foods. We now deal with the following exhibits: Instruments and Appliances, Spas and Waters, and Medical Publishers.

Instruments and Appliances.

Among the large assortment of surgical instruments and appliances shown by **Mayer and Phelps** (Chiron House, 59/61, New Cavendish-street, W.), much interest was taken in the artificial larynx for use after complete extirpation of the larynx, and in the Yates set of instruments for exploration of the nasal sinuses. A new jack for Davis's gag was also shown, and the Reavell-Moseley Electric Rotary Pump for pressure and suction was examined with interest by a large number of visitors.—**Down Bros., Ltd.** (21 and 23, St. Thomas's-street, S.E.), showed surgical instruments and appliances in wide variety, many of them being made in stainless steel. The exhibit included the "Up-to-Date" Operation Table with oil pressure pump for raising and lowering, Carruther's Saline Infusion Apparatus, and Keynes' *Blood Transfusion Apparatus*.—**John Weiss and Son, Ltd.** (287, Oxford-street, W.), who make a feature of rustless steel, had a good display of general surgical instruments and consulting-room lamps, and drew particular attention to May's electrical ophthalmoscope.—**Holborn Surgical Instrument Co., Ltd.** (26, Thavies-inn, E.C.), covered a wide range of surgical instruments and appliances, including Blair Bell's vulva retractor, Cumberbatch and Robinson's diathermy electrodes, mouth gags, urethroscopes, stainless steel forceps and trocars, ophthalmoscopes, auroscopes, bone drills, and so forth.—The **Genito-Urinary Manufacturing Co., Ltd.** (64, Great Portland-street, W.), in addition to a comprehensive exhibit of instruments for bladder and kidney surgery of the latest pattern, prominently exhibited instruments for bronchoscopy and œsophagoscopy, together with diathermy apparatus and apparatus for use in the treatment of venereal disease.—**Surgical Manufacturing Co., Ltd.** (83 and 85, Mortimer-street, W., and at Glasgow, Belfast, Dublin, and abroad), exhibited medical and surgical apparatus and appliances of many kinds, together with weighing machines, couches, and sterilisers, and made a prominent feature of the Barton Sphygmomanometer.—**Scholl Manufacturing Co., Ltd.** (1–4 Giltspur-street, E.C.), displayed in great variety foot supports and appliances for the relief and correction of acquired foot troubles, and **De Vilbiss Co., Ltd.** (West Drayton, Middlesex, and 27, Old Bond-street, W.), a collection of medical sprays, some of which have a convenient adjustable tip.

One of the features of **Allen and Hanburys, Ltd.** (37, Lombard-street, E.C.), large exhibit of surgical instruments and accessories was the St. Bartholomew's Hospital Pattern Operation Table with several important improvements. Among exhibits attracting particular attention were a motor blower and suction apparatus which can be run off any current, is portable, and is comparatively silent in working, and a transformer and resistance which is economical in working and can be used for many purposes. Mercury-vapour arc lamps were shown in operation and the use of the carbon arc and tungsten arc were also demonstrated.—Another firm making a special feature of artificial light treatment was **General Radiological and Surgical Apparatus Co., Ltd.** (Incorporating M. Schaerer, S.A.) (204/6, Great Portland-street, W.), who showed many forms of X ray and artificial light apparatus. A powerful high-tension transformer of small dimensions called the "Peo" for use with all types of Coolidge tubes and gas tubes attracted attention, as did also the Artificial Mountain Sun Quartz Lamp, constructed to work successfully from alternative current direct. A combined couch and screening stand was also shown, and many other useful appliances. The Model X de Quervain Operation Table fitted with pump action allowed every possible position to be obtained with little exertion on the part of the operator or his assistant.—**T. Clark and Son** (69, Marylebone-lane, W.) exhibited many forms of ultra-violet ray lamps and demonstrated economical methods of using the tungsten arc. One lamp was designed for treating five children at a time with five-minute exposures. Among other apparatus of this kind attracting attention was a bath for the whole body, fitted with six lamps. The patient is enclosed by means of curtains fitted with windows that cut off the ultra-violet rays from the operator.—**X Rays, Ltd.** (incorporating F. R. Butt and Co., Ltd.), 11, Torrington-place, Gower-street, W.C.), drew attention to a "New" X ray outfit especially designed for cottage hospitals, nursing homes, and for general practitioners. It occupies the space of an ordinary wardrobe, is entirely self-contained, and has one control switch only. Lamps for sunlight treatment were also prominently exhibited.—**Kodak, Ltd.** (Kingsway, W.C.), had an interesting exhibit of "Dupli-Tized" X ray films and negatives and prints demonstrating the utility of the photographic materials made by this firm.—"**Radio-coil" Electro Magnetic Blanket, Ltd.** (4, Manchester-street, Manchester-square, W.). The appliance shown by this company consisted of a blanket the surface of which is covered by parallel spirals of wire joined in series through which an electric current can be passed. The voltage is controlled by a resistance. A specially constructed pad containing a coil of wire can be used in conjunction with the blanket to intensify the treatment at local spots. Many claims are made for this appliance in the treatment of acute and chronic diseases which can only be confirmed by trial.

Chas. Hearson and Co., Ltd. (68, Willow-walk, Bermondsey, S.E., 27, Mortimer-street, W., and 24, Fenchurch-street, E.C.), in addition to a wide display of biological apparatus, made a prominent feature of a new dark field condenser, combined with an arrangement for giving transmitted light, devised by Prof. L. Arzt, of Vienna. This takes the place of the ordinary condenser and can be fitted to any microscope. Reichert microscopes were also shown with combination monocular and binocular eye-tubes, the change being made by the turn of a screw. A feature of these microscopes is that they approximate in height to the monocular instrument. Another microscope of unusual interest can be affixed to a wall by a bracket, universal joints enabling the instrument to be directed to the eye, skin, or other special part of a living subject.—**Herbert E. Kendrick** (342, St. John-street, E.C.) exhibited several kinds of metabolism and blood chemistry apparatus, special prominence being given to Benedict Portable Metabolism Apparatus, designed for completing metabolism tests at the patient's bedside without analysis; the Clinical Colorimeter, for the estimations of uric acid, urea, creatinine, and sugar in the blood; and the Clinical Blood-Sugar Outfit, designed for blood-sugar determinations by medical practitioners who lack the time and convenience for preparing the solutions and putting together the necessary apparatus.—**Hawksley and Sons** (83, Wigmore-street, W.) showed a wide selection of sphygmomanometers, blood diagnostic instruments, recording instruments of several kinds, blood-urea apparatus, and ophthalmoscopes. The outfit for injection of insulin, as suggested by Prof. H. MacLean, was also shown, as well as the cabinet model Baumanometer standard blood-pressure apparatus.—**Tintometer, Ltd.** (Colour Laboratories, Salisbury), who are the sole makers of the Lovibond patents and apparatus for colour analysis, included in their exhibit Dr. Dudley Corbett's Radiometer for use with Sabouraud's and other pastilles, a new and improved form of Oliver's Hæmoglobinometer, and Major H. St. A. Agate's Red Cell Suspensionometer.—**Short and Mason** (Macdonald-road, Walthamstow, E., and Atlantic House, Holborn Viaduct, E.C.) showed portable and surgery types of sphygmomanometers, clinical thermometers, as well as the thermograph recording thermometer and the micro-barograph, which records most minute changes of atmospheric pressure.—**G. H. Zeal, Ltd.** (75 and 77, St. John-street, E.C., and St. John's-lane, E.C.), exhibited their well-known and reliable clinical thermometers, some of them designed with the special objects of facilitating re-setting, easy sterilisation, and easy reading of the index.—BRITISH WOLMUTH SANAWAVES CO., LTD. (35, High Holborn, W.C.), demonstrated apparatus for electro-galvanic treatment, the *INHALING* DRUG AND APPARATUS Co. (30, Grosvenor-place, S.W.) exhibited an apparatus which enables any drug to be transformed into an exceedingly fine vapour, W. J. WILSON AND CO. (2b, Hand-court and 46, Bedford-row, W.C.) showed artificial limbs, hospital furniture, and radiant heat lamps, and PEDESTROS, LTD. (Roehampton House, Roehampton, S.W.), had a comprehensive display of the latest types of light artificial limbs.—RELIANCE RUBBER CO., LTD. (312/213, Upper Thames-street, E.C.), displayed rubber goods made by a new process which gives high tensile strength and great durability, and A. G. SHELDON and Co. (59, Weymouth-street, W.) exhibited sterilised surgical dressings and accouchement outfits in sealed tins.—The "QUICKSET" CABINET MANUFACTURING Co. (10, *Cromwell House, Fulwood-place*, W.C.) showed medical cabinets for consulting rooms and other purposes.—H. E. CURTIS AND SON, LTD. (7, Mandeville-place, W.), showed a wide assortment of belts for surgical purposes, including the well-known abdominal and colostomy supports. The Curtis abdominal support is an admirable appliance for abdominal ptosis, for the protection of abdominal scar tissue during consolidation, for mobile or displaced kidney, and for different forms of umbilical and ventral hernia. This firm also exhibited Kaylene, a colloidal hydrated silicate of alumina and *Colonol*, a liquid paraffin of extra high viscosity.—DOMEN BELTS CO., LTD. (456, Strand, W.C.), exhibited belts, bandages, and supports for pregnancy, accouchement, gastroptosis, umbilical hernia, and floating kidney.

Appliances for the deaf were shown by "ARDENTE-ACOUSTIQUE" (95, Wigmore-street, W.) who had a wide range of different types of "Ardente-Acoustique" aids for the deaf which in their improved form are smaller and lighter than hitherto. A feature of these instruments is their inconspicuousness and their perfectly natural tone, reverberation and metallic sounds being practically absent. There is a special type for use in public buildings, while the types for personal use number 30. A special stethoscope for deaf doctors was demonstrated, and the attention of medical men was called to the fact that instruments are always allowed to be tried in their homes by patients.—GENERAL ACOUSTICS, LTD. (77, Wigmore-street, W.), displayed many electrical and non-electrical aids for the deaf. This firm supply the Acousticon for multiple installation for use in churches and in large gatherings. A point is made of the fact that patients are permitted to have the instruments on trial.—W. H. PETTIFOR (11, Victoria-street, S.W.) showed a large range of electrical aids for the deaf and a test instrument for estimating the most suitable pitch, sound-wave form, and volume of sound for each individual case.

GAS LIGHT AND COKE Co. (Horseferry-road, Westminster, S.W.) demonstrated radiant gas stoves and fires, showing at the same time the advantages of gas over coal in regard to atmospheric pollution.

SPAS AND WATERS.

The attractive display by some of the principal spas and watering-places of this country indicated a growing activity among our balneological centres. Unfortunately the advantages of British spas in the matter of treatment is too frequently overlooked, while in these days of enforced economy travelling expenses necessitated by a visit abroad are items of importance. The demand, too, for spa treatment for insured persons added interest to the exhibits.

All the British spas advertised their advantages both for treatment and recreation by photographs, books, and pamphlets giving an analysis of the waters, the technique of particular treatments, and the organisation of the establishments. BATH provides for every form of balneotherapy and electrotherapy. The hot springs are the only ones in Great Britain which rise at a natural temperature of 120° F., and they yield every day half a million gallons of the most highly radio-active mineral water in this country.—BUXTON has radio-active thermal waters at 82° F., and one of the strongest chalybeate springs in Great Britain. The thermal water emerges from the limestone rock by nine springs, which are identical in temperature and composition.—DROITWICH, a natural brine baths spa, is a summer and winter resort which has many attractions, is sheltered from cold winds, and the brine which is supplied from springs 200 ft. below the town is about ten times the strength of the ocean. The treatment consists of baths and douches, in some cases in combination with massage either given under the spray in the form of massage douche baths or administered in the form of dry massage.—HARROGATE has 87 springs, of which 10 are used internally, and all continental methods of treatment are available in addition to special treatments originating at this spa. Latest developments include a nose and throat department and the ultra-violet ray treatment.—TORQUAY, which has an equable climate, has available 60 different treatments and is equipped with all the latest appliances. Special features are the seaweed baths for muscular and articular rheumatism and the Dartmoor peat baths and packs.—Messrs. INGRAM AND ROYLE, LTD. (Bangor Wharf, 45, Belvedere-road, S.E.), importers and exporters of natural mineral waters, salts, and pastilles, prominently displayed their bottled Vichy Célestins, Evian-Cachat, Carlsbad, Hunyadi Janos, and other waters. A pamphlet issued by this firm shows how the Contrexéville cure can be continued by the patient at home.

MEDICAL PUBLISHERS.

Medical books were shown by:—

ADLARD AND SON AND WEST NEWMAN, LTD. (23, Bartholomew Close, E.C.); BAILLIÈRE, TINDALL AND COX (8, *Henrietta-street*, W.C.); WILLIAM HEINEMANN (20, Bedford-street, W.C.); H. K. LEWIS AND CO., LTD. (136 and 140, Gower-street and 24 and 28, Gower-place, W.C.); and STANLEY PHILLIPS (45, Brondesbury-road, N.W.).—*The* FOOD EDUCATION SOCIETY (21, Tufton-street, Westminster, S.W.) made a feature of books and pamphlets on food cookery and hygiene, notable among them being a series of little books entitled "Facts for Patriots," dealing with the physiological and economical uses of food. These books deserve a wide publication.

The LANCASHIRE AND GENERAL ASSURANCE CO., LTD. (Lancashire House, 8, Bucklersbury, E.C., and Oxford, Cambridge, and London), made a special feature of their Comprehensive Medical Policy at a premium of £20 per annum, covering a complete medical indemnity with an unlimited amount for damages and cost, sickness and accident, motor-car, contents of house with full protection for servants under the Workmen's Compensation Act, and against other liabilities.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt. (D) L. M. Hughes to the *Impregnable*, tempy.

ROYAL ARMY MEDICAL CORPS.

ARMY RESERVE OF OFFICERS.

Maj. E. N. Graham, late Malay States Volunteer Res., to be Maj.

TERRITORIAL ARMY.

Lt. B. G. Thompson resigns his commission.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. H. M. Brown, from the Active List, to be Capt.

ROYAL AIR FORCE.

Flying Officer W. J. Hutchinson is transferred to the Reserve, Class D2.

INDIAN MEDICAL SERVICE.

Capts. Bankim Behari Das and Ram Chand Mahajan relinquish their tempy. commns.

The King has approved the retirement of Maj. A. G Coullie.

LECTURES ON HYGIENE TO CADETS.

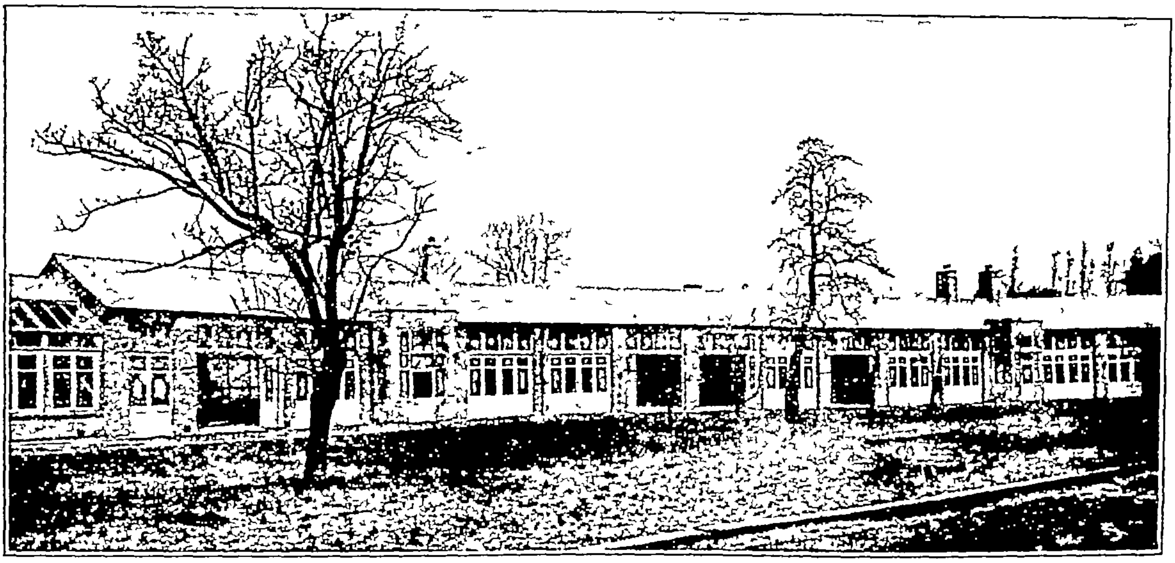
A course of lectures on hygiene and sanitation are to be given in each term to the cadets of the Senior Division at the Royal Military Academy and the Royal Military College by an officer nominated by the Director-General, Army Medical Services.

ROYAL PORTSMOUTH HOSPITAL.—The enlargement of this hospital has become so urgent that the governors have appointed a special committee to consider the whole question of further hospital accommodation in Portsmouth. Dr. Scott Ridout states that the waiting-list includes 19 cancer patients. Meanwhile an endeavour is being made to purchase a small property on Portsdown Hill for the provision of a convalescent home for children. It is believed that by the erection of simple chalets accommodation can be found for 50 children at a time.

THE MANCHESTER BABIES' HOSPITAL.

THE new buildings of the Manchester Babies' Hospital were opened on Oct. 19th by the Earl of Derby.

The hospital began its career in 1914, on the first day of the war, in a semi-detached house which accommodated 12 infants and the nursing staff. By 1918 it was already recognised as a useful training centre for welfare workers and the number of patients had risen to 30, all of them under 1 year of age. The transfer of the work to the grounds of Cringle Hall, Levenshulme, in 1920 was a further step in the desired direction, and it is here that the new buildings have been put up which will go far towards realising at last the ideals of the founders. The objects of the hospital as it now stands are three: to give institutional treatment to babies suffering from disorders of nutrition, including epidemic summer diarrhœa and rickets; to train girls in the care of infants; and to give opportunities for research into disorders of nutrition. The new arrangements are the fruit of much anxious thought and study, and they should provide a hospital which will be a model for others. Cringle Hall itself is to be used as an administrative block and for the accommodation of the three nursing mothers who supply breast milk for use in the wards; an adjoining house called Northbrook has been bought as a nurses' home, whilst the new block, which is illustrated above, is designed for the 80 patients. Twenty of these will be children below 2 years of age who are suffering from rickets or some other nutritional disorder.



The Manchester Babies' Hospital: The new wards before completion.

The wards, ten in number, are on the ground floor, and the central four face due south. Running to south-east and south-west at an obtuse angle to one another are two large wards, and each of these ends in a smaller ward and a sun parlour whose walls and roof are mainly of glass. In a sheltered angle are two smaller rooms intended for specially delicate or premature babies, and the fronts of the wards are made with doors that fold back, so that in summer they will actually be open-air verandahs. The east and west wards have large windows behind, but to the rear of the central wards runs a corridor and on the other side of this are the bathrooms, two at each end, with the diet kitchen and dispensary in the centre. The wards are divided into units of 20 beds, and for each 20 is supplied a bathroom and changing room and large ward store cupboards, the whole being so arranged that any ward and its service can be completely isolated from the others. The divisions between the wards are of glass, and the whole length of the building can thus be easily supervised. Two baths are supplied for each 20 infants, and these baths are specially designed and fitted with spraying tables. Attached to the wards is a block containing a small laboratory and an X ray room with equipment for electrotherapy and massage.

Along the front of the hospital and at each end run concrete terraces so that the cots can be wheeled out into the sunshine; around these are lawns, with a few shady trees, and the building itself, as should be clear from the description, is specially adapted for open-air treatment. At some distance away a temporary house, with three small rooms and a bathroom, has been fitted up for the isolation of infectious cases for observation. A covered corridor connects the new block with the main building, and in this is a dining-room for the nurses and a large room for use as a library and doctor's office, where lectures may be given. Here also are the quarters of the resident medical officer and the matron, the board room, and the secretary's and matron's offices. In the adjoining house good quarters are provided for the nursing staff; there are common rooms for sisters and nurses, a study room, and a sewing room, besides pleasant bedrooms. It is believed that the conditions will be very satisfactory.

The record of the hospital is excellent and the extension of its facilities is likely to lead to useful work. During last year 223 children were treated. Dr. Catherine Chisholm, the chairman of the medical committee, has shown how the regular provision of milk from wet nurses may be placed on a satisfactory basis, and there is a good system by which a certain number of beds may be allotted to a medical woman, not on the honorary staff, who desires to gain special experience in infant work. Recently these beds have been used, under the direction of Prof. H. S. Raper, by Dr. E. F. Willock, the medical registrar, for her research on the value of oxygen administration in the treatment of atrophic infants. The hospital is a centre for post-graduate instruction, whilst its usefulness in the scientific education of nurses and welfare workers is already well known. The address is Burnage-lane, Levenshulme, Manchester.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics of three cities for 1924:—

Name of city.	Estimated mid year population (R.G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternity mort. from childbirth.
Birmingham ..	946,980	19·2	11·6	1·10	1·30	2·6	35	83	3·9
Bradford ..	290,200	16·9	14·9	1·05	1·50	3·9	40	92	1·0
Leicester ..	241,800	18·1	12·1	1·43	1·16	2·1	29	79	3·2

Birmingham.

Sir John Robertson says the general health of Birmingham during 1924 may be considered to have been satisfactory, and that the death-rate was a low one, considering the amount of unemployment and the proportion of the people who are wretchedly housed. The death-rate, he says, is only a crude measure of estimating the healthiness of a town and the amount of sickness ought to be considered. During 1924 it was ascertained that in the public health department and in a number of industrial concerns with good working conditions the average amount of sickness among males was 10 days per annum and among females 11. In other words, about 1 employee in every 30 was permanently absent. Influenza and respiratory catarrhs accounted for from one-third to one-half of the sick absence. Sir John Robertson states that the methods of birth control are becoming widely known among young people and lead to promiscuous intercourse without inconvenient results. A knowledge of such methods also incidentally supplies information as to the prevention of venereal disease. He considers that a spread of this movement may be a serious menace to the family life of the country. The eugenic idea of improving the human stock is impossible so long as our present customs exist, and is there any reason to suppose that, granted equal environmental conditions, it would be better to breed from the upper or the lower half of society? During the past 20 years the birth-rate in Birmingham has been materially reduced, and if the rate of reduction continues for another 20 years the birth-rate will be lower than the death-rate. Sir John Robertson states the arguments in favour of large families, and thinks that since birth control is much more likely to be put into operation by the skilled artisan and middle class than by the poorest of the community, it is consequently liable to be dysgenic.

Illustrations are given in the report of a building which has been adapted for light treatment. The new Carnegie Institute has also been so equipped, and in November a light department was opened at Yardley Road Sanatorium for the treatment of various forms of tuberculosis by ultra-violet rays. Mr. W. Brennan De Vine, F.R.C.V.S., reports on tuberculosis and the milk-supply. Of 303 samples of milk from outside farms, 20 were found to be infected with tubercle. As the result of visits to the farms 23 cows affected with tuberculosis were found and slaughtered. It was not possible to trace all the offending cows because in several instances cows had been disposed of between the time of taking the sample and the visit of the veterinary inspector to the farm. Three cows were found in the city cowsheds suffering from tuberculosis of the udder and were slaughtered by arrangement with the owners. At the beginning of 1924 there were 18 herds included in the Birmingham scheme for securing tubercle-free herds. One of these herds dropped out during the year owing to the large number of reactors. Out of 120 head of cattle in this herd 37 failed to pass the test and two were doubtful. During the year ten owners applied to be included in the scheme, but three of them gave the matter up. The cows in these three herds numbered 30, 38, and 24, and the number of reactors were 23, 25, and 18 respectively. At the end of the year there were 24 herds left in the scheme, which was an increase of six over the previous year. There were 431 cows tested for the first time, and of these 223, or 51·7 per cent., failed to pass the test. The herds included in the scheme are classified according as to whether they are maintained by breeding, by purchase, or by both methods. In the case of the one non-breeding herd 19 cows were tested and eight failed to pass the test. In the case of the four herds maintained by both breeding and purchase there were 20 failures in 115 tests, 37 in 132, 10 in 53, and 2 in 21 respectively. There were 12 herds maintained by breeding; of these, 8, including 283 head of cattle, furnished 22 reactors, while 4, with 55 head of cattle, had no reactors. An investigation was carried out during the year of the methods employed by various dairymen for the washing of milk bottles. The results indicated that steaming was the only satisfactory process, and that methods of washing by hand with or without the use of some simple machinery are not satisfactory.

Dr. Ethel Cassie submits the first annual report of the Carnegie Institute, which replaces the Farm-street Centre, and has already more than justified itself. There were 145 dental clinics held, with 1883 attendances of mothers and 983 of children under 5 years of age. Anæsthetics were used 1088 times. In addition to other advantages there is an observation ward, and Dr. Cassie considers that it would be difficult to exaggerate the value of such a ward in connexion with a large child welfare centre. Encephalitis lethargica showed a greatly increased prevalence in Birmingham during 1924. There were 282 cases notified with 44 deaths. A description of the types most prevalent in Birmingham was prepared by Dr. Stanley Barnes and circulated to all the medical practitioners in the city. During May, 1925, an inquiry into the condition of the 220 survivors of acute attacks during 1924 showed that only 46 had at that time made a complete recovery.

Bradford.

Dr. John J. Buchan's report on smoke inspection shows that there were 15 prosecutions and that the total penalties and costs only amounted to £13 11s. He expresses his regret at such nominal fines which may well place the offending party in a better position than the manufacturers who try to do their duty. Mr. W. Halstead, the veterinary inspector, reports that the average number of dairy cows in the city is 3406, housed in 276 dairy farms. They produce about 7500 gallons of milk in the day, whilst about 7000 gallons come into the city by rail or road. Among the city cows 18 cases of tuberculosis of the udder and 8 cases of advanced tuberculosis were found. Of these 26 cows 14 were slaughtered, while 12 were removed from the city and lost sight of. No "designated" milk is produced within the city. At the municipal milk depôt over 51,000 gallons of milk were obtained from six sources outside the city, including 8700 gallons of Grade A tuberculin-tested milk. During the year 90 samples of shell-fish (65 of mussels, 20 of cockles, and 5 of oysters) were submitted to the bacteriologist; 80 of the samples were obtained at the wholesale market within a very short time of delivery by the railway companies. Of these 18 were reported to be good, 53 were reported to be bad, and 20 to be doubtful. The tuberculosis officer, Dr. H. Vallow, reports as to the unsatisfactory results which, up to now, have been obtained in the training of tuberculous ex-Service men under the 1922 scheme.

Of 35 men referred by the Ministry of Pensions to the tuberculosis officer, 16 were considered suitable for training. Of the 11 who accepted it, 8 completed their course, and the final result was that only one continued in the occupation in which he was trained. Though the results as regards work were poor, Dr. Vallow points out that the long treatment and training has had a lasting effect on the health of these men. The experience gained has also been useful, and an extensive survey of the various methods of providing employment for the tuberculous is being made. The number of new houses (694) was larger than in any year since the war; 375 of them were municipal. In addition to those completed there were at the close of the year 639 municipal houses in course of erection, and 484 houses, mostly of a superior type, being built by private enterprise. In spite of this, many very serious cases of overcrowding came to the knowledge of the department during the year, and at the close of the year applicants for new houses numbered 5493, of whom 4012 were ex-Service men, 2775 of them living in lodgings.

Leicester.

Dr. C. Killick Millard says the most unsatisfactory feature of the year's record was the serious epidemic of diphtheria which began in the third quarter and continued for several months. There were 429 cases reported with 34 deaths. The "Schick" test has not hitherto been used at the isolation hospital, and seven of the staff contracted the disease, one of the cases ending fatally. As a result the staff were inoculated before going on duty in the diphtheria wards. Subsequently two nurses and the medical superintendent had mild attacks of the disease, probably because sufficient time had not elapsed to establish their immunity. Small-pox, after being absent for 19 years (with the exception of one case in 1913), again visited the city in 1924. There were two importations resulting in five cases, all very mild. During 1925 the disease has again been introduced and, though this last outbreak has been more serious, there have been no fatalities as yet. The principal difficulty has been the prevailing mild type of the disease and the absence of many of the classical symptoms. With a view to meeting this difficulty the medical practitioners of the city have been invited to attend demonstrations at the small-pox hospital. Dr. Millard points out that the essential difference between the practice in Leicester and elsewhere seems to be that, when a case of small-pox occurs in Leicester, no effort is made to secure the vaccination and revaccination of the general population, but the use of vaccination is confined to contacts. Forty years ago, in 1885, the Leicester Board of Guardians by an overwhelming vote decided not to prosecute for default under the Vaccination Acts, and since then these Acts in Leicester have been virtually a "dead letter." Thus, during the 17 years 1908 to 1924 the percentage of infants vaccinated has been 6·7. There were 22 cases of encephalitis lethargica notified with seven deaths, as against an average of nine cases and five deaths for the four previous years. The Leicester health committee has formed a local cancer committee, which is carrying out statistical investigations and has issued a leaflet of advice to women on the subject of cancer of the breast. Under the heading "goitre" it is pointed out that two or three firms have now placed an iodised table salt on the market. Dr. Millard gives some particulars indicating a hopeful view of the "Spahlinger" treatment of tuberculosis. As regards housing, Dr. Millard states that a "very substantial measure of relief is in sight in the near future." The procedure as regards the cleansing of dirty houses is discussed, and he inclines to the view that it is better for the tenants to do their own cleaning, including whitewashing of ceilings and the treatment of the walls. In Leicester tenants expect their walls to be papered by the landlords. The recent Birmingham case is quoted in which a notice was issued by the city corporation requiring certain repairs including painting and papering, and the Ministry of Health decided that where the plastering was sound and the surface smooth the requirements that an owner shall re-paper the walls shall be satisfied if the walls are stripped, cleansed, and distempered, and that where the ceilings are not to be scraped one coat of whitewash shall be sufficient.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 10TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 34; scarlet fever, 2287; diphtheria, 1118; enteric fever, 68; pneumonia, 842; puerperal fever, 54; cerebro-spinal fever, 7; acute poliomyelitis, 12; acute polio-encephalitis, 3; encephalitis lethargica, 36; dysentery, 7; ophthalmia neonatorum, 120. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 4 deaths from enteric fever, 14 from measles, 8 from scarlet fever, 20 from whooping-cough, 28 from diphtheria, and 57 from influenza, as compared with 51, 41, 20, and 11 in the preceding weeks. In London itself there were 7 deaths from diphtheria, 2 from whooping-cough, and 12 from influenza, as compared with 9, 5, 7, and 1 in the preceding weeks.

Obituary.

CHARLES FREDERICK SONNTAG, M.D., CH.B. EDIN.

Dr. C. F. Sonntag, whose death occurred at Hampstead on Oct. 10th, was born at Glasgow 38 years ago, and was educated at Edinburgh and at the Middlesex Hospital. He graduated as M.B. in 1910 and as M.D. (with honours) in 1913, and held obstetrical and surgical appointments in Scotland. Soon after the outbreak of war he joined the Royal Army Medical Corps and saw active service as regimental medical officer in several units of the Salonika Expeditionary Force. In 1916, being incapacitated by tuberculosis from further foreign service, he was invalided home and became medical officer to the Red Cross Clinic for Disabled Officers in Great Portland-street. Here he threw himself with energy into the investigation and application of the new methods of physical treatment which had been brought together, and proved his ability by his researches. He produced papers dealing with the influence of temperature on muscular work, with ergometers, and with thermal debility. Thence he was recommended as hydrologist to the Military Orthopædic Hospital at Shepherd's Bush, where he pursued his studies on stimulant and sedative baths, and though in 1919 he accepted the post of prosector and anatomist to the Zoological Society of London and took up research on comparative anatomy, he continued as a hydrologist in consultant practice.

In 1922 Dr. Sonntag was appointed demonstrator in anatomy at University College. During the six years he worked at the Zoological Gardens he published in the Proceedings of the Society no less than 30 papers on comparative anatomy, all of which bore witness to the thorough and painstaking way in which he carried out his work. His publications included a series of papers on the comparative anatomy of the tongues of the mammalia, and were mainly descriptive in form. His later papers dealt with the anatomy and physiology of the anthropoid apes, and in 1924 he summarised his findings in a treatise on the morphology and evolution of the apes and man, which will be the standard work on the subject for many years to come.

Dr. Sonntag's early death has removed a man whose critical enthusiasm has left its mark on both the subjects in which he interested himself.

RUPERT CECIL CHICKEN, F.R.C.S. ENG., L.R.C.P. LOND.

Mr. R. C. Chicken, consulting surgeon to the Nottingham General Hospital, died on Oct. 3rd at the age of 75. After studying at Guy's Hospital, he held the appointments of house surgeon and obstetric assistant there, and became registrar at the Evelina Hospital. He became F.R.C.S. in 1875, and was appointed prosector of anatomy at the Royal College of Surgeons. Later he returned to Nottingham and was unexpectedly left in charge of a large mixed general practice. His training and natural aptitude fitted him for surgery, and in spite of other work he was able to maintain his operative skill; in 1891 he was elected to the staff of the Nottingham Hospital, and in 1892 was president of the Nottingham Medico-Chirurgical Society. Mr. Chicken was the author of a long series of surgical papers, and was in addition a man of wide reading and culture, with an active interest in archæology. He retired from the executive staff of the hospital in 1907, but during the war served as surgeon to the Whipps Cross War Hospital, Leytonstone. He leaves a widow, one son, and two daughters.

HAROLD MAXWELL LEFROY, M.A. CAMB., F.E.S., F.Z.S.

THE science of entomology has sustained a severe loss by the untimely death at the early age of 48 of Prof. Harold Maxwell Lefroy, professor of entomology at the Imperial College of Science and Technology. Prof. Lefroy died as the result of an accidental exposure to poisonous gas in the course of experiments designed to discover a suitable method of dealing with flies and their maggots. He lay unconscious for three days and in spite of all possible medical assistance succumbed in the evening of Wednesday, Oct. 14th.

Harold Maxwell Lefroy was educated at Marlborough and King's College, Cambridge. He took the Natural Sciences Tripos, choosing zoology for one of his subjects. At that time the zoology taught in Cambridge was rather of the laboratory and formal type, and it is on record that Lefroy's attention to this aspect of the subject was but half-hearted. The passionate love of insects and their ways seems to have been born in him, and he deserted the laboratory demonstrations in order to practise "bug-hunting" in all the country surrounding Cambridge. After taking his degree, as at that time entomological posts were almost non-existent, he was forced to adopt the profession of teaching natural science in a school. But the memory of his devotion to insects was preserved by his teachers in Cambridge, and when the demand came for a man to go to the West Indies and deal with the pests which were destroying the sugar-canes there, it was Lefroy whom they recommended for the post.

After a successful career in the West Indies Lefroy was appointed as the first Imperial entomologist to the Government of India, and it was during a period of leave in England in 1910 that he was induced by the authorities of the Imperial College of Science to deliver a course of lectures on entomology. The success of this course made the governors of the College resolved, if possible, to secure him permanently, and the next year he became professor of entomology, a post which he retained until his death.

During the war his services, like those of all the rest of the College staff, were placed at the disposal of the Government, and he went to India in 1915 to investigate the silk industry, and in 1917 to Australia to deal with the pests which were destroying grain. His success in grappling with these and other pests is told in a leading article on another page. His immediate relation to medical questions was slight, but during the war, when house-flies and blue-bottles were recognised as disseminators of disease, he devoted considerable time to devising fly-traps of various kinds and measures for dealing with the maggots. It was, indeed, as we have already mentioned, during the course of experiments with gases as a means of destroying flies that he met his death. He leaves a gap in the staff of the Imperial College and in the entomological world which will not be easily filled.

EDMUND ARCHIBALD ARMSTRONG, M.A.

WE record with deep regret the untimely death of Mr. Archibald Armstrong which occurred on Oct. 15th at Oxford and Cambridge Mansions in his sixty-seventh year. He had been a valued member of our staff for nearly 30 years.

Archibald Armstrong was the son of the Rev. John Armstrong, rector of Dinder and prebendary of Wells. He was educated at Haileybury, where he was captain of the school, and Jesus College, Cambridge, where he was a Rustat scholar, and at both places he distinguished himself also on the running-track. He graduated with classical honours and was called to the Bar, but turned aside almost at once to literature. He wrote stories and verses for many of the popular magazines, one series contributed mainly to the *St. James's Gazette* appearing in volume form under the title of "Tales from the Temple." This was followed by a novel with a particularly ingenious plot, "Under the Circumstances," while a play supplied to the German Reeds proved a modest success in the old Queen's Hall. He became editor shortly after of the illustrated weekly paper, *Black and White*, but his control of the paper was only partial, and he found the position untenable. During this period he wrote intermittently for various London and provincial papers, and regularly for THE LANCET on the legal side of medical affairs, work which he was discharging until his death. We have many reasons for knowing that his well-informed and even pronouncements upon many difficult professional problems were of great value to our readers, while the public derived indirect advantage from much of his work. In this connexion there may be instanced a ruthless exposé of the proceedings of a dangerous group of quacks, who were defrauding women, as well as inciting them to misbehaviour or crime, by the sale of abortefacients.

In the course of general journalism he grew to be a considerable expert in certain artistic fields, with the result that he became one of the managers of the Fine Art Society's gallery in Bond-street, under the late Marcus Huish. Here he was working when the war broke out, when he entered the Censorship Department, where his duties were prolonged some time after the armistice in view of the preservation and arrangement of the records. When this work came to an end he returned to his duties at THE LANCET, and also joined the staff of the *Daily Express*, to which paper he was attached at his death, while he resumed his connexion with the Fine Art Society by joining the directorate.

He had not been physically strong for some years and probably worked beyond his powers, but quite recently his health appeared to have much improved, and the announcement of his death will come as a shock to many friends and journalistic colleagues. For he was held in high esteem for his exact knowledge, his careful and accurate methods, his fairness, and unfailing courtesy. We owe him a great debt at THE LANCET.

He married early in life the daughter of the late Rev. Lancelot Errington, rector of Midgham, Berkshire, by whom he had one daughter. To these we offer our sincere sympathy.

ST. MARY'S HOSPITAL FOR WOMEN AND CHILDREN. Sir Alfred Fripp describes this hospital at Plaistow as a model as far as the in-patients' department is concerned, but in a backward state in regard to accommodation for out-patients. An endeavour is being made to improve this state of things by the preparation of a scheme which will cost £25,000 eventually, though the first portion of the work is expected to cost no more than £8000.

Correspondence.

"Audi alteram partem."

THE SANATORIUM AND AFTER.

To the Editor of THE LANCET.

SIR,—All who are interested in the solution of the tuberculosis problem will agree with your statement that "the after-treatment of ex-sanatorium patients is one of the most urgent and elusive problems which medical and social science has to face."

Many of those who have been considering for some years this aspect of the question will welcome the admission that "from the strictly medical standpoint . . . . the combination of sanatorium, settlement, training centre, and workshop offers the ideal conditions for after-care." This is the ideal for the general acceptance of which Dr. Varrier-Jones, without much outside support, has, at Papworth, been striving for years, and it will doubtless be a source of much satisfaction to him to find that the success of the pioneer work which he had carried out there has at length received public recognition. On a recent occasion Mr. Neville Chamberlain expressed his complete approval of the settlement plan and stated that henceforth it would receive the full support of the Ministry of Health.

The observation that "settlements can only deal with a fraction of the tuberculous population" should possibly have been slightly modified and to be strictly accurate should read, "are at present only dealing with," but at Papworth alone the fraction is even now ten times larger than is being dealt with under any other combined scheme with which I am acquainted, and when Preston Park, near Maidstone, which has recently been taken over by the British Legion and which at their request is now being reorganised by Dr. Varrier-Jones on Papworth lines, is reopened the fraction will be still larger. Private individuals are, of course, free to support such charitable efforts as appeal most closely to their sympathy, but with regard to public money and quasi public funds the case is different, efficiency and the welfare of the community as a whole are then the guiding principles of action.

Having had somewhat exceptional opportunities of judging of the relative value of the methods mentioned in your annotation I have come to the unhesitating conclusion that the development of settlements on Papworth lines around those of the existing sanatoria which admit of such an evolution holds out the most hopeful prospect of a continuous advance towards the solution of the problem of the after-care of the tuberculous worker, and to that end I propose to devote such energy and influence as I possess.—I am, Sir, yours faithfully,

JAMES K. FOWLER.

Clarges-street, Mayfair, Oct. 19th, 1925.

LUMINAL, BORAX, OR BROMIDE IN EPILEPSY.

To the Editor of THE LANCET.

SIR,—Concerning the relative value of luminal, bromide, and borate in epilepsy, I was interested to read of the very satisfactory results obtained by Dr. Figdor with combinations of bromide and borax. For many years my initial treatment—apart from any general treatment or psychotherapeutic measures necessary—has been to prescribe a combination of sodium bromide and sodium biborate, and it is seldom indeed that some degree of improvement is not obtained, at least in decreased frequency and severity of the seizures and in the patient's symptoms. A start is made with 15 gr. sodium bromide and 7 gr. sodium biborate, together with 3 minims liquor arsenicalis, given morning and evening, and increasing to three times daily if improvement is not obtained. The addition of a few minims of liquor arsenicalis is useful in preventing a bromide rash. The prescription is really an old one and well established; its value would appear to lie chiefly in the bromide rather than in the borax, although the latter may assist. With borax alone, even in large doses, in epilepsy, I have never met with any success. If a good result is not obtained with the combination of sodium bromide and biborate, my experience has been that it is useless to persevere with bromides and that one must seek for another remedy.

In a contribution to the discussion on the Nature and Treatment of Epilepsy [1] at the B.M.A. meeting, Bradford, July, 1924, I gave the results of treatment with different remedies in a large number of cases of idopathic epilepsy, analysed in conjunction with Dr. H. C. Beccle. We found that several cases responded to luminal in a most remarkable manner. I am, however, in entire agreement with Dr. Williams-Walker that more than 3 gr. luminal per day is undesirable, and I stated in the above communication that my experience had been that if one did not obtain a satisfactory result with 1½ gr. luminal morning and evening the case was unlikely to respond to luminal at all. If a dose of 3 gr. per day be not exceeded, none of the unpleasant symptoms mentioned by Dr. Figdor and Dr. Carlill will be seen. In general, I have not found that luminal loses its effect after a few months, and have some cases that have been continuing on 3 gr. a day over a period of more than two years without experiencing an attack. In patients who do not show an adequate response to either the bromideborate or luminal, a combination of sodium bromide (10 to 15 gr.) and luminal (1½ gr.) night and morning will often produce a good result. In three cases so treated attacks had been entirely absent for over a year. Of other remedies, some cases—especially those in which the fits are nocturnal—respond to dialacetin (1½ gr. either at night or twice daily) when other drugs have failed.

I am, Sir, yours faithfully,

C. WORSTER-DROUGHT, M.D.

Cavendish-square, W., Oct. 19th, 1925.

UNUNITED FRACTURES.

To the Editor of THE LANCET.

SIR,—With some statements in Prof. E. W. Hey Groves's interesting address on this subject, published in THE LANCET of Oct. 10th, it is impossible for me to agree. Prof. Groves states that "unrestricted mobility" is one of the mechanical causes. This recalls vividly to my mind the case of a man with an unreduced dislocation of the humeral head. It was of several weeks' duration. In the attempt to reduce it the surgical neck of the humerus was fractured. As house surgeon my instructions were to apply no splints and to carry out passive movement at the site of fracture frequently and fully so as to establish a false joint. The proceedings were naturally very painful, and the result was absolute and strong union. This impressed me much, for at that time the teaching in fracture of the humerus was to immobilise the whole upper extremity, with even a shoulder-cap and a splint carried to the end of the fingers, lest non-union should result. This case was an example of the most unrestricted mobility that I have ever heard of.

The next statement made with which I do not agree is that "in the case of the shaft of the humerus the difficulty of efficient fixation is the prime cause of frequent non-union." Much depends on what is meant by "efficient fixation." In any arm it is impossible to apply splints that will in any way absolutely control the fragments from movement. That is the case in all fractures. How much more so when the arm is swollen with the effused blood. There is only one way to produce immobility and that is open operation. There is no need, however, for any operation, nor do patients want an operation if they will get equally good results without and no likelihood of non-union. Personally I am unaware of a case of non-union of the humerus where the principle of active movement has been adopted from the first. There has been only one case of delayed union to my knowledge, and that took six months to solidify. It was treated by making the patient tap her elbow frequently on a firm cushion, with the humerus straight up and down, and otherwise using it as much as she could. Such is the record for simple fractures, and in septic fractures I have not had a case either, though many came under my care with gaps and foreign bodies during the three years I was in charge of wards at the Edinburgh War Hospital, Bangour.

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[1] Brit. Med. Jour., 1924, ii., 1054.

The last statement with which I do not agree is that "The importance of mobility as a cause of non-union has been obscured by the teaching of those who advocate early movement of a limb as conducing to rapid restoration of function." If Prof. Groves had seen and followed the wonderful results obtainable by early active movement he would probably have been much less drastic in his remarks. It is close on 25 years since I adopted the method of treating fractures of the upper extremity by early active movement *short* of pain and gradually increasing the movement. No splints are employed unless some obvious gain will result. Naturally the upper extremity lends itself to this type of treatment. The lower extremity is different as it is weight-bearing in character. So profoundly have the excellent results impressed me that I consider this method of treatment a "principle" which should be taught widely. There has been only one case of non-union in my experience, and that was in a simple fracture of the clavicle. With such a record this method of treatment is certainly worthy of consideration, as not only are the results quicker but are better than by other means.

I am glad to say that my old house surgeons and many of my old pupils are at present engaged in carrying out the treatment of fractures on this principle, and so far I have not heard of any of them being disappointed.

I am, Sir, yours faithfully,

Edinburgh, Oct. 13th, 1925. J. W. DOWDEN.

PROPOSED MEMORIAL TO THE LATE MR. HAMILTON DRUMMOND.

To the Editor of THE LANCET.

SIR,—The tragic death of Mr. Hamilton Drummond is so fresh in the minds of the medical profession that it is unnecessary to detail the circumstances of that calamity. He was so well known and so greatly beloved by those in all walks of life that it is felt that some memorial should be promoted. A committee of his colleagues on the staff of the Royal Infirmary, together with some non-medical friends, has been formed for the purpose of carrying out this object. It is proposed that the memorial should be connected with the Newcastle-upon-Tyne Infirmary and the Medical School which he served so faithfully, and in which he was so much interested. The exact form of the memorial must be decided at a later date, and will largely depend upon the amount subscribed. The committee has decided to appeal for subscriptions up to a limit of 5 guineas, but it is hoped that all who cherish his memory will subscribe irrespective of the amount.

The following is a preliminary list of subscribers for amounts totalling £305 14s. already received or promised:—

Mr. H. B. Angus, Dr. Arnison, Dr. Armstrong Atkinson, Mr. J. Anderson, Mr. Arkle, Dr Allison, Dr Adams.

Mrs. J. L. Boyd, Dr. R. A. Bolam, Dr. V. E. Badcock, Mr A. H. Burgess, Dr Beattie, Dr. A. Brumell, Mr Barclay, Dr Bishop, Mr. S. Barling, Dr. Edgar Babst.

W. T. Cochrane, Mrs. W. T. Cochrane, Mr. J. Clay, Mr. Arthur Cooke, Colonel Cookson, Dr. J. Charles, Dr Mabel Campbell.

C. Davey, Mr. Dickie, Dr. W. Davidson.

Mr. H. Evers.

Mr. Ernest Finch.

Dr. Gamlen, H. A. Graves, Sir C. Gordon-Watson, Dr. M. Glasse, Mr. Gilmour.

Dr. W. E. Hume, Dr. Hall, Dr. Hunter, Dr. Hindmarch, Mr. Hodgson.

Mr. Irwin.

Mr. A. M. Johnston.

Miss Kirkhouse.

Sir Alexander Leith, Bart., Mr. J. W. Leech, Dr. R. P. R. Lyle, Dr. Lloyd.

E. Matheson, Mr. A. M. Martin, Dr. Muirhead, Mr. John Morley, Mr. K. W. Monsarratt, Dr. H. E. Moyes, Dr. F. Murray, Dr. S. McDonald, Dr. Mona McNaughton.

Sir George Noble, Bart., Mr. Philip Noble, G. P. Noble, H. W. Noble, P. E. Noble, Dr. Nattrass.

Dr. Ogden, Sir Thomas Oliver.

Mr. F. C. Pybus, Dr. Parkin, *Dr. Patterson*.

Dr. Ruxton.

T. N. Sample, Mrs. T. N. Sample, Dr. James Smith, Mr. Graham Simpson, Dr. Spence, Dr. Slade, Dr. Wilkie Smith, Dr. A. Smith, Dr. E. D. Smith, Mr. Herbert B. Speke.

J. E. Taylor, Mr. G. Grey Turner, Dr. Thompson.

H. A. Westmacott, Mrs. Westmacott, Mr. Wilson, Mr. R. J. Willan, Mr. J. D. Wardale, Mr. S. S. Whillis, Dr. Weidner, Mr. G. E. Wilkinson, Dr. F. S. Walker, Mr. A. Whitelocke, Mr. Wardill, Dr. Hedley Whyte, Dr. Welsh.

Prof. R. P. Ranken Lyle and Mr. Philip E. Noble have been appointed joint treasurers. Subscriptions may be sent to the former at 11, Osborne-terrace, or to Messrs. Lloyds Bank, Ltd., Grey-street, both in Newcastle-upon-Tyne, or to any of the following: Prof. H. B. Angus, Prof. Thomas Beattie, Sir Alexander Leith, Bart., Mr. A. M. Martin, Mr. Philip E. Noble, Sir Thomas Oliver, Mr. Herbert B. Speke.

I am, Sir, yours faithfully,

G. GREY TURNER,
Oct. 16th, 1925. Convenor of Committee.

THE DANGER OF SELF INSULIN INJECTION.

To the Editor of THE LANCET.

SIR,—All patients are not as apt as *Prof. Pirquet's* (THE LANCET, Oct. 10th, p. 765). A recent case under the care of Dr. H. Batty Shaw illustrates the risk to patients of self-injection of insulin.

A. B., aged 22, had been receiving 75 units of insulin per diem for eight months. The injections were made by the patient himself at home, *some* into his upper arm, but most into the upper part of both thighs. According to the patient, a small lump formed at the site of injection, which in some cases discharged, leaving an ulcer. *He was admitted* to University College Hospital in a semi-comatose condition, with air-hunger, and the urine was found to reduce Fehling's solution. A diagnosis of diabetic coma was made, repeated injections of insulin were given (100 units in all), and rapid recovery ensued. The statement made by the patient showed that the injections were not properly performed; some of the fluid escaped from the needle and was not introduced into the tissues. There were 15 ulcers, 12 on the right leg and 3 on the left, the largest being 4/5 × 2/3 in. The ulcers reached a certain size and then spread *no further*. The bases consisted of smooth granulation tissue, pink in colour; the edges were slightly raised, but the ulcers were shallow. Round some of the ulcers there was considerable thickening, which involved the tissues beneath the skin. In certain parts of the thigh thickened subcutaneous tissue could be palpated, and these had not ulcerated. Over these thickenings some slight reddish discoloration of the skin was observed. There seemed to be no attempt on the part of the skin to grow over the ulcerating areas. The technique of the injection as performed by the patient was as follows: The needle was placed in boiling water and the site of the injection was cleaned with methylated spirit.

No doubt similar cases *have* occurred and others will continue to occur as the use of insulin becomes more widespread. Some better arrangement is needed to avoid the development in these cases of diabetic coma directly due to faulty technique.

I am, Sir, yours faithfully,

A. C. M. ELMAN, M.B., B.S. Lond.,
Late House Physician, University College Hospital,
Oct. 15th, 1925. London, W.

Dr. Henry Alfred Alford Nicholls, C.G.M., has been appointed an Unofficial Member of the Executive Council of the Presidency of Dominica.

Medical News.

UNIVERSITY OF OXFORD.—Dr. Richard Stephen Creed, of Trinity, has been elected to a Fellowship in Physiology at New College. Dr. Creed held a Millard Scholarship at Trinity, was subsequently elected to a Senior Demyship of Magdalen College, and has since had various appointments at St. Thomas's Hospital.

UNIVERSITY OF GLASGOW.—The following medical degrees were conferred on Oct. 19th by the Vice-Chancellor, Sir Donald MacAlister:—

M.D.—Grenville W. St. Clair Ramsay (with high commendation) and Alexander M. Macqueen.

M.B., Ch.B.—With honours: Janet S. F. Niven and John V. Thomson. With commendation: Gavin S. Anderson, Elias Bloch, Alexander Dale, Josiah R. Bailey, and Catherine A. Brown. Ordinary degree: William J. Aitken, James W. M. Alexander, William Allison, John Anderson. John G. Anderson, David E. Aspin, William J. C. Auld, William J. Barbour, Arthur D. Briggs, James C. Brown, Douglas N. Buchanan, James H. Burnside, Alexander M. Campbell, Jeanie G. Campbell, John Campbell, John B. Carrigan, John F. Christie, William A. S. Couper, Francis A. Coutts, Alexander W. Cuthbert, John G. Dalgleish, Thomas H. Dalrymple, Jack V. M. Davies, Jean M. Dixon, Matthew K. Dunlop, Maurice Freeman, Mary A. Frew, Sydney M. Galbraith, Annie Gartly, Elena Gill, Douglas W. Gillies, Gordon Gillies, Agnes M. Hamilton, Everard Henderson, Nettie S. Hendry, William Hope, William Hosie, Jeanie M. Howitt, David G. Hunter, Elizabeth F. Hunter, William Hutchison, James Jarvie, David Johnston, Julia P. Johnston, Robert Johnstone, Annie C. Kerr, Charles S. Kerr, James G. Kidd, Isobel C. King, Peter S. Kinloch, Andrew P. Laird, Elizabeth H. Livingston, Mary C. Livingstone, John L. Macaulay, Robert P. J. McBroom, John A. McCluskie, William J. McCulley, James MacDonald, James S. Macdonald, Archibald MacEwan, John F. Macfarlane, David G. D. McGregor, George T. MacGregor, Jean N. McGregor, William McIlvenna, James McIntyre, Archibald A. MacKelvie, Helena M. McKnight, Murdo H. Maclaine, Agnes F. H. McLean, William MacLean, Donald Macleod, Susan M. MacMurray, Mona H. Macnie, John S. McTavish, William Mercer, William Murray, Arthur F. Nimmo, John Parker, Margaret F. Paton, William D. Peock, Pauline Podlashuk, Elizabeth M. Rattray, Joseph Ribchester, Christopher G. Rippin, Ruth M. L. Ross, Alfred G. Shanks, Helena M. Shanks, Thomas M. Sharp, Robert K. Shearer, Jean W. Smellie, Vida J. M. Stark, Hugh Stewart, Edith K. Stocker, Frederic Syson, David Thomas, Jean G. Thomson, Hugh A. Walker, Maggie B. Walker, James B. Watson, Henrietta C. Weir, Evelyn A. Weyman, Dorothy F. M. Whiteford, Elizabeth C. Whyte, Alexander F. Wood, Thomas Young, and Tchi-waang Yun.

Janet S. F. Niven gains the Brunton Memorial Prize awarded to the most distinguished graduate in medicine of the year, and Morton A. Foulis gains the West of Scotland R.A.M.C. Memorial Prize awarded to the candidate with the highest aggregate marks in medicine, surgery, and midwifery in the Final Examinations for the degrees of M.B. and Ch.B. held during the year 1925.

UNIVERSITY OF DUBLIN, SCHOOL OF PHYSIC, TRINITY COLLEGE.—At examinations held recently the following candidates were successful:—

FINAL MEDICAL EXAMINATION.

Part I.—Solomon Behr (passed on high marks), Wilfreda D. C. T. Pigott, Wilfred F. Lane, Richard M. Moore and Gilbert M. Smith (equal), Paul M. Garry, Thomas F. M. Woods, Lenox R. S. MacFarlane, Charles L. Day, Nathaniel Burstein, David M. Carson, George M'Donald, Andrew C. C. Charles, and Joseph A. K. FitzGerald.

In completion.—Kathleen R. Byrne, Evelyn E. Connolly, and Desmond Blewitt.

DIPLOMA IN GYNÆCOLOGY AND OBSTETRICS.

Joseph Rego and Amy B. R. A. Perriton.

THE L.C.C. AND IMMUNISATION AGAINST DIPHTHERIA.—In March, 1924, the Public Health and Education Committees of the London County Council were directed to "consider and report whether or not the treatment carried out by the department of health in New York City for rendering children immune from diphtheria should be adopted in the London schools." In their consideration of the subject, the two Committees have had before them a report by the medical officer of the Council, presenting a review of the work which has been carried out in connexion with active immunisation for the control of diphtheria both at home and abroad, and it is understood that the Ministry of Health are conducting inquiries with regard to immunisation of the staffs of fever hospitals, and in connexion with maternity and child welfare work. The L.C.C. Committees have been advised that these lines of investigation should be thoroughly explored before further consideration is given to the question of immunisation of children of school age. The Committees have, therefore, reported to the Council that, in their opinion, it is not advisable at the present time that toxin-antitoxin treatment in connexion with the prevention of diphtheria should be adopted as part of the Council's scheme of medical treatment of school-children.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The annual dinner of this Society was held on Oct. 16th at the Piccadilly Hotel, Dr. George F. Buchan, President of the Society, being in the chair. A large number of medical officers of health, several of whom had passed the chair, were present, while the guests included Sir Alfred Mond, M.P., Minister of Health in one of Mr. Lloyd George's Cabinets; Sir H. Kingsley Wood, M.P., Parliamentary Secretary to the Ministry of Health; Sir Walter Fletcher, Secretary of the Medical Research Council; Sir StClair Thomson, President of the Royal Society of Medicine; Sir Arthur Chapman, Chairman of the County Councils Association; Sir George Newman, Chief Medical Officer to the Ministry of Health; Sir William Leishman, Director-General, A.M.S.; Sir Bruce Bruce-Porter; Colonel F. E. Fremantle, M.P.; Dr. Alfred Cox, Medical Secretary of the British Medical Association; and Sir Squire Sprigge, Editor of THE LANCET.

The principal toast, that of "Prosperity to the Society," was proposed by Sir Kingsley Wood, who acknowledged warmly for his department the loyal coöperation of the medical officers of health during the past year. He said that he refused to give way to the new disease of "pessimitis" in respect of health progress, and reminded his hearers, giving dramatic figures for comparison, of the decline which had taken place in the national death-rate of recent years, and the great improvements in the expectation of life and in the infantile mortality-rate, amounting to a revolution in medicine. A similar story of progress could, he said, be told in connexion with the incidence of enteric fever and of tuberculosis. He concluded by alluding to the necessity of a closer linking up of the various health authorities of the country.

Dr. Buchan replied for the Society in a studiously quiet manner with a gratifying story of good work done. He pointed to the progress of public health along most lines of its numerous departments, and made the valuable suggestion that no medical man should proceed to his final degree or diploma until he had ascertained something of the pattern of public health administration at any rate in his own area. But he urged that if workers in public health were to obtain good results local authorities must take a closer interest than at present in the research work necessary to modern preventive medicine, while he enumerated the future objectives of public health endeavour in a succinct series of headings.

The toast of the Guests was proposed by Dr. W. J. Howarth in very generous mood, and was responded to by Sir Alfred Mond in a humorous reply. Protesting against the introduction of a new disease by the Parliamentary Secretary to the Ministry of Health, he said that the duties of the medical officer of health were sufficiently heavy already, comprising, as he conceived them, the equipment of an architect and builder, a land surveyor, an engineer, a medical practitioner, and a chemist, while he himself had had something to do with the new responsibilities in respect of milk. How efficiently those multifarious duties were at present discharged he considered proved by the fact that our national pattern of public health administration had been copied by all advancing civilisations, while no nation as yet had attained to the high level of the pattern. He closed by a reference to the establishment, through the generosity of the Rockefeller Foundation, of a new College of Hygiene in London. Sir Arthur Chapman and Sir StClair Thomson also replied, the latter speaking for the Royal Society of Medicine: "One of the revolutionary bodies passionately admired by Sir Kingsley Wood, a Conservative Minister, although their house at 1, Wimpole-street had not yet been raided. But the medical revolution raised by medical men did not, as one poet put it, bring red ruin and the breaking up of laws, but as another poet put it, it moved towards drinking in larger life from fuller air." Sir Kingsley Wood, he added, had so eloquently pointed out the gain to the country in health and wealth brought about by the activities of the M.O.H.'s that no doubt a grateful country and a generous Government would recognise the situation by steady increases of salary. Due acknowledgment was made of the services of Mr. G. S. Elliston, executive secretary of the Society and editor of the *Medical Officer.*

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Monday, Oct. 26th, at 5.30 P.M., Dr. Marcus Paterson will give the second lecture for the Fellowship of Medicine on the Treatment of Pulmonary Tuberculosis at the Medical Society of London, 11, Chandos-street, W. All members of the medical profession are welcome. During the month of November the London Lock Hospital will hold a comprehensive course in venereal disease. At the Chelsea Hospital for Women there will be a three weeks' course in Gynæcology from Nov. 2nd to the 21st. From Nov. 3rd to the 28th Dr. Porter Phillips and Dr.

Thomas Beaton will give twice weekly lecture-demonstrations on Psychological Medicine at the Bethlem Royal Hospital. There will be a course in Diseases of the Chest, Heart, and Lungs at the Victoria Park Hospital from Nov. 9th to the 21st. The Royal Waterloo Hospital will give a course in Medicine, Surgery, and Gynæcology from Nov. 23rd to Dec. 12th, embracing all the departments pertaining to diseases of women and children. A late afternoon course (4.30 to 6 o'clock) will be held at the London Temperance Hospital from Nov. 23rd to Dec. 4th for the benefit of the general practitioner. Application for copies of each syllabus and for the general programme should be made to the secretary at 1, Wimpole-street, London, W. 1.

UNIVERSITY OF BRISTOL: ASSOCIATION OF ALUMNI (LONDON BRANCH).—The annual dinner will be held on Friday, Nov. 6th, at 7.30 for 7.45, at Pagani's Restaurant, 43-48, Great Portland-street, London, W. Viscount Haldane will preside and Prof. Lloyd Morgan will be the guest of the evening. Tickets may be obtained from the hon. secretary at Holloway Sanatorium, Virginia Water.

VIENNA: POST-GRADUATE COURSE.—The Vienna Medical Faculty has now prepared the syllabus of its nineteenth post-graduate course on syphilology and dermatology with special reference to treatment, for native and foreign medical practitioners, which will be held from Nov. 23rd to Dec. 5th. Copies of the syllabus and further information may be obtained from the Dean, Prof. Richard Wasicky, Ring des 12 November, Universität, Vienna.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.—The annual meeting of the College was held on the morrow of St. Luke's Day, when the following officers were elected. President: Dr. T. H. Wilson. Censors: Drs. W. A. Winter, G. FitzGibbon, G. E. Nesbitt, R. J. Rowlette. Treasurer: Dr. H. T. Bewley. Registrar: Dr. T. P. C. Kirkpatrick. Dr. Wilson, the new President, has been a Fellow since 1898, and has been King's Professor of Midwifery in the School of Physic since 1911.

TWO VACANT CHAIRS OF MEDICINE.—Dr. John Mallet Purser has resigned the Chair of the Regius Professor of Physic in Dublin University, to which he was appointed in 1917 after the death of Dr. James Little. Dr. Purser had been King's Professor of the Institutes of Medicine in the School of Physic from 1874 to 1902. He has recently been in ill-health. The vacancy will be filled in December. Dr. Joseph O'Carroll has resigned the Chair of Medicine in University College, Dublin, National University of Ireland, to which he was appointed in 1912 on the death of Sir Christopher Nixon.

WELSH SCHOOL OF MEDICINE.—A special meeting of the Court of the University of Wales was held on Oct. 16th at Llandrindod Wells to consider the following resolution: "The University Court, having considered the present position of the Welsh National School of Medicine in the University, and having taken account of the correspondence between His Majesty's Privy Council, the University Council, and the Council of the University College of South Wales and Monmouthshire in regard to the position of the school, is of the opinion that, with a view to providing for the full development of the School of Medicine as a national centre for medical education and research in Wales, the best interests of the school will be served by constituting it an independent school in the University. The University Court, therefore, hereby resolves, on the recommendation of the University Council, to submit a humble petition to His Majesty in Council for a charter incorporating the school as an independent school of the University of Wales." After full discussion, in which the Principal of Cardiff College, Sir Isambard Owen, and Prof. Joseph Jones, among others, took part, the motion was put and carried by 71 votes to 41. It was agreed to refer the drafting of the scheme to the University Court in consultation with the University Council of Cardiff College.

MANCHESTER AND SALFORD MEDICAL CHARITIES.—At the annual meeting held on Oct. 15th of the Hospital Sunday Fund it was stated that the income for the year, £26,181, represented an increase of £19,000 on the previous year's figures, due principally to the inclusion in the accounts for the first time of the Alexandra Day Fund, amounting to over £3000, and to an increase of nearly £6000 in the ordinary income. Particular praise is due to the students of the University of Manchester, who have increased the yield of their "rag" on Shrove Tuesday to over £6000, being £3000 in excess of the corresponding contribution the previous year. The one disappointment was the fall of £1000 in the amount collected in the churches on Hospital Sunday, probably due to the execrable weather on that day. Amongst the various local medical institutions £23,050 was distributed, being £10,000 more than was distributed last year. In spite of this satisfactory result the committee of management are faced with a serious difficulty owing to the fact that the cost of maintaining patients from the outside districts was considerably more than the amounts contributed by these districts. During the year 40,520 cases were treated from outside districts at a cost of £103,776, while the amount contributed was only £57,605. A contribution of one penny per week by every employed person in the district would realise £50,000 in each year.

MANCHESTER MEDICAL SCHOOL.—The annual dinner of the school will be held in the Grand Hotel, Manchester, on Thursday, Nov. 19th, Mr. C. Roberts in the chair.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.—At the first meeting of the session on Oct. 30th Sir StClair Thomson will give an address on Dysphagia and Some Diseases of the Œsophagus. Mr. H. Bell Tawse will be in the chair.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH.—The Tetley Theatre, the Winifred Bertha de la Chare Isolation Ward, and the X ray department of this hospital, at 40, Grove End-road, London, N.W. will be formally opened on Thursday, Oct. 29th, at 3.30 P.M.

CHESTER MATERNITY HOSPITAL.—The Marchioness of Cambridge recently opened a new maternity hospital provided by a combined effort of the Chester Benevolent Institution, founded in 1780, and the District Nurses' Association, both of which are now amalgamated with the hospital. The first baby born in the institution was presented with a silver cup.

HOSPITAL SAVING ASSOCIATION.—The contributors to this association now number over 180,000. From the beginning, in 1922, about £100,000 has been received, £63,000 of which has been paid to coöperating hospitals. Refunds amounting to £11,350 have been paid to contributors admitted to non-coöperating hospitals, and a further £10,000 has been refunded to contributors in respect of extra hospital benefits.

KING'S COLLEGE HOSPITAL DEBT.—Having failed to repay completely the debt to the bank, the committee of management have decided to sell all their war loan on general account, which has appreciated in value. This will leave a debt of only about £5000 which it is hoped to clear by contributions without the necessity of selling the remaining securities, the value of which has decreased since the hospital became possessed of them.

MEDICO-LEGAL SOCIETY.—A meeting of this society will be held to-day (Friday), at 8.30 P.M., at 11, Chandos-street, Cavendish-square, W., when Dr. Nathan Raw and Mr. D. Harvey J. Hartley, the society's representatives at the International Prison Congress held in August, 1925, will present their report, which will form the basis of the subsequent discussion. Lord Justice Atkin will be in the chair.

WE have received a decorative booklet on "Artificial Sunlight" from Watson and Sons (Electro-Medical), Ltd., of Parker-street, Kingsway, London, W.C. The cover and general production are intended to be in keeping with the subject and do not lack brightness. Messrs. Watson conclude that "it is impossible to cover all the exigencies of phototherapy with one type of equipment," and give an excellent account of the lamps which they supply.

CHELSEA CLINICAL SOCIETY.—The annual dinner of this society was held in the Café Royal, Regent-street, on Oct. 20th, when over 60 members and their guests assembled. The President, Dr. Seymour Price, was in the chair. The toast of the Society was proposed by Sir Holburt J. Waring, President of the Medical Society of London, who spoke of the value of medical societies in, amongst other things, training members to take part in municipal and civic affairs. There are, he said, far too few members of the medical profession at present in the House of Commons. Dr. Seymour Price, in reply, mentioned two innovations in the society's programme which would come into effect during the winter, first that the meetings would be held in the board room and not in the smaller club room, as formerly, of St. George's Hospital, and second that two dinner meetings would take place in the Florence Restaurant, Wardour-street, in the course of the session. Mr. Ivor Back, in a speech sparkling with amusing anecdotes, proposed the Visitors, coupled with the names of Sir Holburt Waring; Dr. Howard Humphris, President of the Hunterian Society; Dr. H. W. Armstead, President of the West London Medico-Chirurgical Society; and Dr. V. Dickinson, Master of the Society of Apothecaries. Dr. Dickinson replied on behalf of the guests. The President was then proposed by Dr. K. E. Eckenstein, the treasurer of the society; Dr. Seymour Price defended himself satisfactorily, and paid a tribute to the work of the secretary, Mr. Ralph Thompson, who dutifully urged greater attendance at the society's meetings, tempering his reproof with humour.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, Oct. 26th.

ODONTOLOGY: *at 8 P.M.*
Presidential Address:
Mr. J. Lewin Payne: The Origin and Growth of the Odontological Society.
Paper:
Mr. A. T. Pitts and Mr. J. Howard Mummery: A Melanotic Epithelial Odontome in a Child.

Tuesday, Oct. 27th.

MEDICINE: *at 5.30 P.M.*
Clinical Meeting at the Middlesex Hospital, W.
Tea will be served at 5 P.M.

SOCIAL EVENING: at 8.30 P.M.
At 8.30 P.M. Fellows and their friends will be received by the President, Sir StClair Thomson.
At 9.30 P.M. the President will give a short address on Shakespeare as a Guide in the Art and Practice of Medicine.
There will be an interesting exhibition, arranged by Mr. C. J. S. Thompson, of the Wellcome Historical Medical Museum, to illustrate the subject of medicine in the Elizabethan period and the references to medicine in the plays of Shakespeare.

Wednesday, Oct. 28th.

COMPARATIVE MEDICINE: at 5 P.M.
Presidential Address by
Mr. Frederick T. G. Hobday.
Paper:
Dr. W. H. Andrews: Some Recent Advances in Our Knowledge of Plant Poisoning.
A discussion will follow, to be opened by Prof. A. J. Clark.

PSYCHIATRY: at 8.30 P.M.
Joint Meeting with the British Psychological Society (Medical Section).
Discussion on
The Early Treatment of Mental Disorders, to be opened by Sir Maurice Craig and Dr. William Brown.

Thursday, Oct. 29th.

UROLOGY: at 8.30 P.M.
Presidential Address:
Mr. R. H. Jocelyn Swan: Some Reflections upon Villous-covered Tumours of the Bladder.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
Monday, Oct. 26th.—8.30 P.M., Clinical Evening: Exhibition of Cases and Skiagrams.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

THE FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
Monday, Oct. 26th, to Saturday, Oct. 31st.—Fellowship of Medicine lecture, Medical Society, 11, Chandos-street. Mon., 5.30, Dr. Marcus Paterson: The Treatment of Pulmonary Tuberculosis.—London School of Hygiene and Tropical Medicine, Endsleigh-gardens. Tues. and Thurs., Clinical demonstration by Dr. G. C. Low and Dr. Manson-Bahr.—Royal Northern Hospital, Holloway-road, N. Intensive Course in Medicine, Surgery, and the Special Departments.—St. John's Hospital, Leicester-square. Daily demonstrations in the Out-patient Department. Bi-weekly lectures. Tues., Dr. Barber: Immunity, Anaphylaxis. Thurs., Dr. Griffith: Principles of Treatment. General. Practical Pathological Demonstrations.—St. Peter's Hospital, Henrietta-street, W.C., Special Course in Urology. Clinical work every afternoon and lecture.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Thursday, Oct. 29th.—3 P.M., Demonstration: Mr. W. E. Tanner: Selected Surgical Cases. 4.30 P.M., Lecture: Mr. H. W. Carson: The Differential Diagnosis of Conditions Simulating Appendicitis.
Daily: Clinics and demonstration in the Wards and various Out-patient Departments, Operations, &c.

UNIVERSITY COLLEGE, London.
Monday, Oct. 26th.—5 P.M., Mr. R. J. Lythgoe: The Physiology of Hearing and Vision. Fifth lecture.
Wednesday.—5 P.M., Sixth lecture.

ST. JOHN'S HOSPITAL, Leicester-square, W.C.
Tuesday, Oct. 27th.—5 P.M., Dr. H. W. Barber: Immunity. Anaphylaxis.
Thursday.—5 P.M., Dr. W. Griffith: Principles of Treatment. General.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.
POST-GRADUATE COURSE: October-November, 1925.
Clinical Lectures and Demonstrations.
Monday, Oct. 26th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., The Psychical Aura in Epilepsy: Dr. Kinnier Wilson.
Tuesday, Oct. 27th.—2 P.M., Out-patient Clinic: Dr. Walshe. 3.30 P.M., Compression Paraplegia from a Surgical Standpoint: Mr. Armour.
Thursday, Oct. 29th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Ocular Palsies: Dr. Gordon Holmes.
Friday, Oct. 30th.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Demonstration of Swedish Remedial Exercises (in Exercise Room): Mr. Elmquist.
The fee for the Course, including Pathology Lectures, is £5 5*s.* For those who hold Perpetual Tickets the fee is £3 3*s.*

Course of Lectures and Demonstrations on the Pathology of the Nervous System.
Thursday, Oct. 29th.—12 noon, Periaxial Degeneration: Dr. J. G. Greenfield.

Course of Lectures and Demonstrations on the Anatomy and Physiology of the Nervous System.
Monday, Oct. 26th.—12 noon, The Brain Stem and Cerebellum: Dr. J. L. Birley.
Dr. H. J. MacBride will give a Course of Eight Clinical Demonstrations, chiefly on Methods of Examination of the Nervous System, in the Wards at 10 A.M. on Tuesdays and Fridays, commencing Oct. 20th. The fee for this Course will be £2 2*s.*
Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.
Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.
Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.
J. G. Greenfield, Dean of Medical School.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
Tuesday, Oct. 27th.—4.15 P.M., Mr. W. H. Hey: Prognosis in Abdominal Disease.
Friday.—4.15 P.M., Prof. E. D. Telford: The Diagnosis of Chronic Arthritis in Children.

ANCOATS HOSPITAL POST-GRADUATE LECTURES.
Thursday, Oct. 29th.—4.15 P.M., Mr. E. E Hughes: The Significance of Urinary Symptoms.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
Wednesday, Oct. 28th.—4 P.M., Dr. J. D. Rolleston: Prevention and Arrest of Diphtheria.

PEOPLE'S LEAGUE OF HEALTH, Fyvie Hall, Regent-street Polytechnic.
Friday, Oct. 30th.—6 P.M., Prof. B. Collingwood: Sewage Systems of the Human Body.

Appointments.

Brentnall, C. P., M.B., Ch.B. Liverp., has been appointed Honorary Assistant Surgeon to the St. Mary's Hospitals, Manchester, and Honorary Assistant Gynæcological Surgeon to the Northern Hospital, Manchester.

Butt, E. S., L.D.S., School Dentist for Cheshire.

Cook, F., M.B., B.S. Lond., F.R.C.S. Eng., Surgeon *to* Out-patients, Chelsea Hospital for Women.

Darwent, C. T., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg., Assistant Medical Officer to the Dundee Education Authority.

Menzies, F. N. Kay, M.B., Ch.B., F.R.C.P. Edin., D.P.H., Medical Officer of Health and School Medical Officer to the London County Council.

Thomas, H. A., M.B., Ch.B. Liverp., Assistant Medical Officer of Health and School Medical Officer for Denbighshire.

Royal Infirmary, Liverpool: Nuttall, H. C. W., F.R.C.S. Eng., F.R.C.S. Edin., Honorary Assistant Surgeon; Wilson, J. St.G., Ch.M., F.R.C.S. Eng., Honorary Assistant Gynæcological and Obstetrical Surgeon; Herd, S. B., M.D., Ch.B. Liverp., Additional Honorary Assistant Gynæcological and Obstetrical Surgeon.

Salford Royal Hospital: Bird, Elizabeth, M.B., Ch.B. Glasg., Radiologist; Earl, C. J. C., M.R.C.P., L.R.C.S. Irel., Medical Registrar; and Brough, A. Lothian, M.B., Ch.B. Glasg., District Medical Officer.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Asst. S. to Ear, Nose, and Throat Dept.

Anamallai Medical Assoc., S. India.—M.O.

Bengal and North-Western Railway Co., Ltd.—Sen. and Jun. M.O.'s. Rs.1200 and Rs.750 per mensem respectively.

Bolton County Borough.—Asst. M.O.H. and Asst. Sch. M.O. £600.

Brighton, New Sussex Hospital for Women and Children.—Hon. Radiologist.

Cardiff, Welsh National School of Medicine.—Asst. to Surg. Unit. £250.
Charing Cross Hospital Medical School.—Lectureship in Hygiene.
Chelsea Hospital for Women.—Anæsthetist. £31.
City of London Hospital for Diseases of the Heart, Victoria Park, E.—H.P. At rate of £100.
Colchester, Severalls Mental Hospital.—Second Asst. M.O. £650.
Crichton Royal Mental Hospital, Dumfries.—Clin. Pathologist. £400.
Eastbourne, Princess Alice Memorial Hospital.—Res. H.S. At rate of £175.
Essex Administrative County.—Asst. Tuberc. O. £600.
Greenwich, Dreadnought Hospital.—S. in charge of Out-patients.
Grove Park Hospital, Lee, S.E.—Med. Supt. £770.
Haywards Heath Hospital.—Hon. Ophth. S.
Hospital for Sick Children, Great Ormond-street, W.C.—Med. Reg. and Pathologist. £300.
Infectious Hospitals Service, Metropolitan Asylums Board.—Jun. Asst. M.O. £500.
Leicester Royal Infirmary.—H.S. and H.P. At rate of £125 and £120 respectively.
Liverpool Hospital for Consumption and Diseases of Chest, Mount Pleasant.—Hon. Asst. P.
Manchester City Education Committee.—Asst. Sch. M.O. £600.
Middlesex County Council.—Asst. M.O. £600.
Northampton General Hospital.—Hon. Asst. S.
North Middlesex Hospital, Edmonton, N.—Asst. S. £500.
Oxford, *Warneford Mental Hospital.*—Asst. M.O. £250.
Perthshire Joint Medical Service Scheme.—First Asst. M.O. £600.
Plaistow Fever Hospital, E.—Second Asst. M.O. At rate of £300.
Poplar Hospital for Accidents, East India Dock-road, E.—Second Res. Surg. O. £175.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. S.
Royal Free Hospital, Gray's Inn-road, W.C.—H.P., First H.S., Second H.S., and Asst. Cas. O.
St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. and Asst. Res. M.O. At rate of £175 and £120 respectively. Also Hon. Dental S.
St. Pancras Dispensary, 39, Oakley-sq., N.W.—Res. M.O. £225.
Stoke-on-Trent, North Staffs, Royal Infirmary.—H.S. £150. Also H.P. £125.
Stourbridge, Worcestershire, Corbett Hospital.—H.S. £150.
Wakefield, City of.—Deputy M.O.H. £900.
Wallasey, Victoria Central Hospital.—Jun. H.S. £160.
Westminster Hospital, S.W.—M.O. Two Asst. M.O.'s to X Ray Dept. Also Asst. Path.

THE Chief Inspector of Factories, Home Office, London, S.W., announces a vacant appointment for a Certifying Factory Surgeon at Friockheim, Forfarshire.

Births, Marriages, and Deaths.

BIRTHS.

COSSHAM.—On Oct. 14th, at "St. Aldwyns," Cirencester, Glos., the wife of D. G. Cossham, M.B., of a daughter.
FARMER.—On Oct. 17th, the wife of F. J. Farmer, L.D.S. R.C.S., of a son.
WELCH.—On Oct. 17th, at West Norwood, the wife of Cyril H. Welch, M.D., of a daughter.

MARRIAGES.

ANDERSON—WHARTON.—On Oct. 9th, at St. Nicholas's Church, Great Yarmouth, Archibald Stirling Kennedy Anderson, D.S.O., M.C., M.A., M.B., Ch.B., D.P.H., to Joyce, elder daughter of Mr. and Mrs. W. S. Wharton, of Great Yarmouth.
LAUDER—THOMPSON.—On Oct. 3rd, at St. James's, Sussex-gardens, Harold Victor Robert Thomas Lauder, M.R.C.S., L.R.C.P., to Phyllis Anna Lynn, daughter of the late Alfred Lynn Thompson and Mrs. Lynn Thompson, of Westbourne-street, Hyde Park, W.

DEATHS.

AUSTIN.—On Oct. 12th, at Fernleigh, Lingfield, Sydney Charles Austin, M.R.C.S., aged 81.
GOODALE.—On Oct. 15th, at Little Bowyer, Wrotham, Kent, Henry Goodale, M.R.C.S.
HAGGARD.—On Oct. 18th, at St. Bartholomew's Hospital, Thomas Barker Amyand Haggard, B.A., M.R.C.S., L.R.C.P., late Capt. R.A.M.C., aged 50.
HINDE.—On Oct. 20th, at Mundesley, Eric Clark Hinde, M.B., B.S. Lond., aged 30.
KELLETT.—Alfred Featherstone Kellett, M.B., B.S., B.A., St. John's College, Cambridge, Associate of Birmingham University; for 33 years practising at Lewisham, S.E., aged 59.
ORRIN.—On Oct. 18th, at "Ferndale," Halstead, Essex, Beth, the wife of Herbert Charles Orrin, O.B.E., F.R.C.S., Surgeon, Ministry of Pensions Hospital, Newcastle-on-Tyne.
PRITCHARD.—On Oct. 16th, at St. Teresa, Chesham Bois, Bucks, Urban Pritchard, M.D., F.R.C.S., in his 81st year.
ROWLAND.—On Oct. 18th, at Albert-mansions, Battersea Park, John William Rowland, C.M.G., M.B., C.M.
SERPELL.—On Oct. 11th, at a nursing home in Plymouth, after operation, Hugh Hamilton Serpell, M.R.C.S., L.R.C.P., late Lieut.-Colonel R.A.M.C., of Polyphant House, Lewannick, Cornwall, aged 45.
WHITRED.—On Oct. 14th, suddenly, at "Rukloh," Tilehurst, Reading, James Longland Whitred, M.R.C.S.E., L.R.C.P., aged 74 years.

N.B.—*A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

Notes, Comments, and Abstracts.

THE EQUABLE COOLING POWER OF ALPINE HEALTH RESORTS.

BY LEONARD HILL, M.B.LOND., F.R.S.,
DIRECTOR OF THE DEPARTMENT OF APPLIED PHYSIOLOGY, MEDICAL RESEARCH COUNCIL;
AND
BERNARD HUDSON, M.D.CAMB., M.R.C.P.LOND.,
SWISS FEDERAL DIPLOMA; PHYSICIAN TO VICTORIA SANATORIUM, DAVOS-PLATZ, SWITZERLAND.

AMONG many other things of interest, the recent Climatological Congress at Davos brought out the fact that one of the chief points about the Alpine climate is the absence of high wind and the equable cooling power of the air, as measured by the kata-thermometer. Dr. Dorno, the distinguished meteorologist at Davos, has made observations illustrating the latter fact, and Dr. Paul Gotz has recently communicated to us figures which show that this equable cooling power holds good also for Arosa. On a balcony with south aspect, the average dry kata cooling power for the different months of the year varied there only 7½ to 15. In the open at Davos the variation is from 10 to 21. The Davos valley, running north to south, is peculiarly sheltered, and the perfectly straight, slender growth of the pines illustrates the fact that neither gales nor stunting winds blow there. The variation of dry kata cooling power is very great in the changeable and windy climate of Great Britain, in the open from 7 to 50 or even 60, with a monthly average varying from 21–40, but confined city courts are sheltered, and offer near the ground equable cooling power, as is shown by the anemometer and temperature records taken in a court in Camden-square, from which dry kata thermometer cooling powers of 5½ to 10 were calculated for the year. In comparison may also be cited the monthly average cooling powers calculated for Sierra Leone 7½–12, Kimberley, S.A., 13–25, and Quebec 18–63.

In the Alpine health resorts the winter sunshine and ultra-violet rays have high values in contrast to the city courtyard. The acetone blue gauge shows that the ultra-violet radiation in Kingsway is about one-third of that in clean country air. In the Alps the hours of winter sunshine equal those in summer on the south coast. Moreover, the physiological saturation deficit is higher in the Alps—that is, the difference between the weight of water vapour in the inspired air and that in the expired air which has been saturated and warmed in the lungs. The phthisical patient gets advantage not only from the sunshine and ultra-violet radiation, but also from the high evaporative power of the air acting upon the lungs and promoting the passage of blood, lymph, and secretion through the respiratory membrane. The attenuated cool air, by promoting deeper breathing, increases these effects. He also gets advantage from absence of warm, close days and cold wind and from the equable cooling power. The cooling power in the Alps is just within those limits which are felt to be fresh and pleasant, particularly when there is available a source of radiant energy such as is given by sun- and sky-shine. The patient is pleasantly cooled by the winter cooling power of the Alpine air, and his resting metabolism is kept up at a high level, his general well-being and his appetite thus being improved. The increase of resting metabolism found by one of us (L. H.) and Argyll Campbell in tuberculous patients submitted to open-air treatment has been confirmed recently by observations made by Dr. Vogel-Eysern at Davos. The patient in the Alps is never overheated whilst in the cool, shady air with high drying power, and great care must be taken that he does not become overheated in enclosed balconies or sun-boxes by direct exposure to hot sun and insufficient circulation of cooling air around him. He can get all the ultra-violet rays he needs from sky-shine and from the direct sun of the cool early morning hours. The absence of high wind prevents discomfort arising from too high a cooling power, and allows light clothing to be worn and does not make exercise difficult, for the patient is not tempted to walk too far with the wind behind him and then have to struggle back against it, arriving home in a state of fatigue, having derived harm instead of benefit from his exercise. Also, owing to the clear, dry, windless air, the patient is enabled to sit down and rest in comfort when necessary, whether in winter or in summer. These advantages, together with the beautiful and exhilarating scenery and the pageant of winter sports to watch, are offered by the Alps. We can, in our cities, make good the absence of sunshine by the use of arc lamps, a great help, but it is not possible to make good all the other things which appeal particularly to young adults.

While benefit may thus be derived by patients suffering from pulmonary tuberculosis in the Swiss Alps, it should be mentioned that only those cases should be sent who have sufficient resistance and power of response to react in the right way to the altered conditions which obtain at a height of 5000 feet or thereabouts. It is no use sending out to the mountains cases in the last stages with active spreading disease, emaciated, worn out, and with no reactive power. It is early cases and even those in later stages, if with sufficient resisting power, which make satisfactory and stable recoveries in the Alps if sufficient time is given. An average sojourn certainly should not be for less than six months, and it is better still to devote one year and even longer, with periods of change of environment when necessary, if permanent results are to be obtained. The danger of catarrhal infections during periods of change of environment must be borne in mind. The patient who returns from the Alpine open-air treatment to crowded trains and cities is susceptible to catarrhal infections against which the citizen is more or less vaccinated by frequent small doses.

KARLSBAD MEDICAL WEEK.

SEVEN years ago Karlsbad instituted an international medical week, consisting of lectures and demonstrations with special reference to the famous Czecho-Slovakian baths. The seventh of these short courses was held last month and was attended by a large medical public from many countries. Prof. Otfried Müller, of Tübingen, described the Müller-Weiss method of examining the capillaries by micro-photography. Though the capillaries are regulated and controlled by the central nervous system, they cannot be considered a "peripheral heart." Certain forms of neurosis caused irregularity in the action of these vessels, and he spoke of this phenomenon in connexion with gastric ulcer, various forms of catarrh, neurotic muscle pains, and high blood pressure in the absence of kidney disease. Dr. Alfred Gigon, of Basle, set forth the present position of our knowledge of metabolism, and described the blood changes observed after courses of Karlsbad waters. Prof. von Hösslin, of Berlin, showed that in a dying patient when the pulse and the heart sounds were imperceptible the electrocardiogram gave evidence that the heart continued to function for some considerable time. Prof. Sellheim, of Halle, dealt with the improvement of methods of blood examination in connexion with gynæcology, and emphasised the advantages of the so-called "Lüttge-Mertz-Berg organic extract serum reaction" over the Abderhalden reaction in the early diagnosis of pregnancy. A reaction is obtained with the new method within half an hour. This reaction can also be used, he claimed, to determine the sex of the fœtus. Dr. Josefson, of Stockholm, discussed the connexion between personality and the organs of internal secretion, showing that there was a possibility of moulding the personality at an early stage by adjustment of the endocrine system. Dr. Balin, of Budapest, gave an interesting lecture on auto-digestion and the formation of fatty acid in the tissues of a patient with gastric ulcer. His researches had shown that the hydrogen-ion concentration in such patients' blood was high. The administration of alkalies caused no increase of fatty acid in the urine; the tissues retain the alkali. Prof. Mühlens, of Hamburg, and Prof. R. Kraus, of Vienna, discussed recent progress in the treatment and prophylaxis of tropical diseases, with special reference to South America. It is of interest to note that "Bayer 205" is now called "Germanin." Dr. Tannhauser, of Heidelberg, discussed the relations of obesity to the endocrine organs, and classified several types of that condition. Prof. di Gaspero, of Graz, dealt with the biological functions of the skin, and the particular effects of hydro-, thermo-, and balneo-therapy on the organism, acting through the skin as a medium. he course was organised by Dr. Edgar Ganz, of Karlsbad, nd proved pleasant and profitable to all who took part.

LONGEVITY OF THE LEARNED.

To the Editor of THE LANCET.

SIR,—The annotation in THE LANCET of Oct. 10th which deals with literary death-beds might at first sight lead one to suppose that men of letters during the nineteenth century were mostly short-lived. Yet there were notable exceptions to what was probably not meant to be a generalisation. Mr. Stewart Ellis, author of "Mainly Victorian," in a letter to the present writer, says amusingly: "I rather pride myself upon the closing scenes of my subjects' lives," but he draws no macabre conclusions therefrom.

Viewed as a whole, men of letters and the learned generally have often reached great ages. In his well-known book, invaluable up to its date, "Remarks on the Influence of Mental Cultivation and Mental Excitement upon Health," Dr. Amariah Brigham, of Boston, Mass., appends to his essay a table containing over 280 names of celebrities in all ages and the years of their earthly pilgrimage. Some of the centenarian records included in the list are perhaps fabulous. Thus the list is headed by Hippocrates, father of medicine, who, one tradition asserted, died at the prodigious age of 100; more modest estimates of his age are 100 and 80 respectively. Gorgias, the sophist, is said to have reached 107 years. Fontenelle, the man of universal science, was a centenarian, as also were Saadi, the Persian poet, and Herodian, the historian of the Roman emperors. Zeno, the stoic, Simonides, the poet and philosopher, and Isocrates, the orator, were said to be 98 when they died, and tradition asserts that the first named had bitten out his tongue and had spat it in the face of a tyrant many years previously. Among the nonagenarians numbers increase. They are headed traditionally by Sophocles, who was glad in his day to escape from the importunities of Eros, and they include Hobbes, of "Leviathan" fame, and Sir Christopher Wren. Octogenarian men of science or learning are numerous in Dr. Brigham's category, and among them we find Harvey, Roscoe, Kant, Arthur Young, Mead, and Buffon. Dr. Brigham collected his statistics carefully, but did not bring his record beyond 1832, the year of the first publication of his book. Hence the list would be greatly extended by including nineteenth century names such as Darwin, Wallace, Richard Owen, and a host of others. The expectation of life is, of course, far greater now than in the 'thirties of last century. "England is superior in salubrity to any other country in Europe. The average mortality throughout the whole of England and Wales has been, of late years, about 1 in 60 . . . In London the annual mortality in the middle of the last [eighteenth] century was 1 in 20." Thus wrote Dr. Brigham in 1832, and he quotes Dr. Bisset Hawkins, author of "Elements of Medical Statistics" (1829), who notes that in Geneva good mortuary tables have been preserved since 1560, and that the probability of life there during the seventeenth century was no higher than 11¼ years.

Writing as an American, Brigham envies England its health and sanity. He is of opinion that men of letters shorten their lives by neglecting their digestions, but he differs from his contemporaries in attributing dyspepsia mainly to "irritation of the brain," the diagnosis made, as you recall, in the case of Frank Smedley. This irritation, thinks Brigham, is only rarely due to disease. More often it is simply the result of mental tension, which can be relieved by a proper attention to exercise and general health. He notes incidentally that American women of the easy classes are lamentably feeble owing to their sedentary habits, and he urges on the lettered of either sex the necessity for more physical activity.

Athletic exercises, undertaken for pleasure or for health reasons, were neglected in Brigham's day all over the world, and children's brains were crammed, à la Paul Dombey, at the expense of their bodies. Men of letters everywhere were, like the American women, home-staying people, and they suffered from having been often treated as mental prodigies during their early education.

I am, Sir, yours faithfully,
BIBLIOGRAPHER.

Oct. 12th, 1925.

THE "EUPHOROS" SELF-ADJUSTING ARM-SLING.

To the Editor of THE LANCET.

SIR,—Far more important than the manner of supporting the arm-sling seems to me the correct way of fixing the sling itself. Very often one sees the arm fixed in the wrong way, as the illustration of the "Euphoros" self-adjusting arm-sling (THE LANCET, Oct. 10th, p. 790) shows. To secure immobility of the arm, the outward part of the sling must be put over the sound shoulder. Only then will the arm be immobilised, as a simple try will prove.

I am, Sir, yours faithfully,
E. C. VAN LEERSUM.

Nederlandsch Instituut Voor Volksvoeding,
Amsterdam, Oct. 16th, 1925.

APOPLEXY OF THE SOFT PALATE.

To the Editor of THE LANCET.

SIR,—I have recently had a case similar to those described in THE LANCET of Oct. 3rd (p. 731). In September, 1924, I saw a lady who was very much alarmed in consequence of a hæmorrhage which she thought came from the lung. Nothing to account for the bleeding could be found after careful examination of the chest; on inspecting the fauces, however, small capillary cavities could be seen, and the patient was satisfied when told the hæmorrhage proceeded from one of these which had given way. In August of this year, when in London, she had a similar attack, when she consulted Dr. F. G. Crookshank, who found the same condition existing and reassured her.

I am, Sir, yours faithfully,
W. R. BATES.

Ilkley, Oct. 16th, 1925.

WE are informed that the Schering specialties (Atophan, Veramon, &c.) are now distributed by the firm of Schering, Limited, 3, Lloyd's-avenue, London, E.C. 3, to whom application for literature and samples should be made.

Cameron Lectures

Delivered at the University of Edinburgh on Oct. 19th, Oct. 20th, and Oct. 22nd, 1925.

BY HARVEY CUSHING, C.B., F.R.C.S. ENG.,
PROFESSOR OF SURGERY IN HARVARD UNIVERSITY.

LECTURE II.*—THE PITUITARY GLAND AS NOW KNOWN.

> "In those creatures that have the *glandula pituitaria* large, (as in Calves, for instance) the two Carotid Arteries meeting about the *sella* of the wedge-like bone presently divide themselves into small twigs, which being interwoven . . . . make on each side a notable *plexus*, called *Rete mirabile* . . . . So that in these creatures that gland seems to be of the same use to the *Rete mirabile*, as the *glandula pinealis* is to the *plexus choroides*, viz., to separate a serous matter from the Arterial Blood. But in Man, (according to the best Anatomists) this *Rete* is wholly wanting; so that . . . . the *glandula pituitaria* is of less use in him, than in other creatures that have the *Rete*."—*Thomas Gibson's "Anatomy"* (1688).

THE subject before us, in view of the time-honoured association of the pituitary body and the cerebro-spinal fluid pathways, is not so far removed from that of the preceding lecture as might be supposed. But there is still so much about the gland that remains unknown we cannot afford to smile at those who once thought that it served as a strainer for the sedimented waste products of the brain which passed out by the infundibulum as pituita or slime into the nose. This Galenic conception, indeed, persisted for 15 centuries, and as late as 1631, in his "Integrum Morborum," Robert Flood explained the ætiology of coryza on the principle of the siphon action between the ventricles and the nose. Could he have known that the hypophysis is present in all vertebrates and that in the low order of amphioxus a canal lined by ciliated epithelium affords a communication between the buccal and cerebral cavities, he would have had something more than tradition with which to substantiate his beliefs.

But Schneider (he of the membrane), in his "Liber de Osse Cribriformi" (1655), denied the existence of any demonstrable communications; nor could either Willis or Richard Lower or Vieussens find any by the experimental methods at their command. And yet how could a spontaneous cerebro-spinal rhinorrhœa, of which these learned men most certainly have had knowledge, have been accounted for on any other basis? Even Magendie leaves one with the impression that the hypophysis may represent a sort of lymph gland interposed in the fluid pathway.

Truth assuredly lies at the bottom of a well; and that out of these gropings in the dark, the pituitary body, in the past decade or two, should have come to occupy a position in medicine out of all proportion to its size is the more remarkable. Of this I need not remind the members of a school whose professor of physiology not only was a pioneer contributor to our knowledge of its functions, but who has inspired many of his pupils to the making of further discoveries. Indeed, if I am not mistaken, it was he who in his admirable Lane Lectures in 1913 actually baptised the "Endocrines" of which we hear so much to-day. . . .

During the first decade of the century great confusion prevailed in regard to the disorders of the gland. To be sure, acromegaly and gigantism were recognised as clinical entities known to be associated with hypophysial tumefactions, but Pechkranz (1899), Fröhlich (1901), Axenfeld (1903), Müller (1905), Brissaud (1907), and probably a good many others, ophthalmologists and gynæcologists in particular, were calling attention to the existence of tumours of the gland or its neighbourhood associated with combinations of optic atrophy, amenorrhœa, infantilism, adiposity, and sometimes diabetes insipidus—in short, a most heterogeneous array of symptoms which had no apparent relation to acromegaly whatsoever.

The attempted reproduction of any of these mysterious syndromes by extirpation methods had been unavailing; and though physiologists had shown the existence of an active substance in the posterior lobe, it was generally believed that the organ must be vestigial, since those pioneers who had undertaken its experimental removal claimed that no symptoms whatsoever ensued. However, because of the gland's inaccessibility and small size these experiments were particularly difficult to carry out, and the results, to say the least, were undependable. Certainly, were hypophysial tumours ever to be operated upon successfully, it was necessary to know something more about the function of the gland if for no other reason than to avoid such mistakes as had been made in the process of developing the operation of thyroidectomy.

Experimental Apituitarism.—In 1907 a Roumanian investigator, Paulesco, devised a new operative approach to the canine hypophysis which enabled him to expose the gland so that it could be successfully and cleanly extirpated. The animals invariably died with a peculiar train of toxic symptoms, and he naturally concluded that the organ was essential to the maintenance of life. Here, then, out of all the vagueness of the past was something tangible, if the astonishing statement was to be believed. Dr. L. L. Reford and I in the same year undertook to repeat Paulesco's experiments and came to the same conclusions. The animals with proven total removals all died with what, in imitation of Kocher's designation for the symptoms provoked by a total thyroidectomy, we termed *cachexia hypophyseopriva*. . . . After all, the important thing to have shown is not whether the gland is actually essential to life, but that, instead of its being merely a vestigial structure of no consequence to the organism, as was claimed by Paulesco's predecessors, it is in reality an organ of extraordinary importance for the maintenance of a normal physiological equilibrium.

One would suppose, with the present-day activities of surgeons in operating upon the gland, that the clinic would by this time have provided corroboratory evidence bearing upon this matter one way or the other, just as the extirpation of the thyroid served to bring to light the essentiality of the parathyroid bodies to the maintenance of life; and though extensive operations for the removal of tumours such as the congenital lesions arising from the relics of Rathke's pouch are occasionally followed by a slow train of symptoms with fatality from inanition, I have never but once known of a clinical case in which the symptoms resembled the experimental cachexia hypophyseopriva which is so quickly fatal in animals.

This case was that of a middle-aged woman who, while in normal health, had a sudden headache which was soon followed by stupor, coma, and death in three days. The abruptness of this unexplained illness led to a detailed medico-legal examination of the body. Nothing whatever was found which could possibly account for the death but a small and unsuspected pituitary adenoma. Into this adenoma a spontaneous hemorrhage had occurred with complete intracapsular destruction of the gland.

But to return to our laboratory studies. We naturally felt that if the train of symptoms were actually due to the removal of the gland, they could be offset by preliminary or coincidental glandular transplantation; and during the following year (1908–09), with Dr. S. J. Crowe and Dr. John Homans, an attempt was made to answer this and the many other questions which crowded in upon us. . . .

When I re-read to-day our report on the prolongation of life by transplantation of the gland after total hypophysectomy, I am less impressed with our partially successful results than I am with the many sources of confusion which beset us. We were vainly endeavouring to distinguish between the comparative importance for the maintenance of life of the epithelial *versus* the nervous portion of the gland; and in respect to the latter had been entirely misled in regard to its relation to diuresis by the studies (1901) of Schafer and Magnus—an error which at least put us in very good company. There is, however, perhaps one thing in our report which is deserving of attention to-day—namely, the appearance, in the vicinity of a transplant made into the cerebral cortex, of Herring's hyaline bodies which we regarded as evidence of activity of the posterior lobe. But this concerns a mooted question to which I shall return.

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* Lecture I. appeared in THE LANCET, Oct. 24th, 1925, and Lecture III. will appear in a subsequent issue. They are slightly abridged for issue in our columns, and will be published shortly as a small volume, dedicated to a group of young collaborators.—ED. L.

Experimental Hypopituitarism.—These things were of minor significance when compared with a far more important observation made in the course of these experiments—namely, that many animals which survived partial hypophysectomies became in time adipose, inactive, and sexually dystrophic—a train of symptoms, in other words, resembling in many respects the confusing clinical syndromes produced by tumours of the gland which failed to cause acromegalic overgrowth, but on the contrary were accompanied by an adiposo-genital dystrophy. It is a curious fact that we had long been surrounded by these fat and lethargic animals before we really "saw" them, and before the idea burst upon us that we had actually produced states of pituitary insufficiency. . . .

An array of problems was immediately exposed for attack by this disclosure. Could the symptoms, as in the case of thyroid deficiencies, be offset by feeding of extracts or by glandular transplantations? What was the active principle with which we were dealing and where did it reside; in the posterior lobe, which alone possessed an active substance so far as physiologists could tell us, or in the anterior lobe, or in both, or were there several principles? Why should these experimental hypophysectomies have produced so many striking changes in the other ductless glands? What would be the effect on growth, provided the experiments were made on puppies rather than on the adult animals selected at random for our earliest series of experiments? Some of these questions like the last were soon answered; some of them still remain unanswered, for the riddles of physiology are not so easily solved as all that.

A series of hypophysectomies in puppies was soon carried out with Dr. Emil Goetsch, giving results, so far as the retardation of growth is concerned, in entire agreement with those reported by Ascoli and Legnani (1911) and by Aschner (1912), whose admirable papers forestalled us. We, however, doubted the truth of Aschner's contention that the effects he had obtained were due to uncomplicated total removals, in view of the operative approach through the mouth which he had employed; and yet, though we still clung to the view of essentiality of the gland, we had to admit that the fatal cachexia following its total removal in puppies was much less prompt in its onset than in older animals.

But when it occurs, this state of apituitarism, as we had observed it, is unmistakable, characterised as it is by somnolence, a slowed pulse and respiration, and a subnormal body temperature which tends before the end to fall almost as low as that of the surroundings; and Dr. Goetsch observed that the hearts of some of these animals continue to beat after death much as does the heart of a batrachian. We naturally inferred that the loss of the gland leads to some profound disturbance of metabolism and heat regulation. These effects we were inclined to ascribe chiefly to deprivation of the anterior lobe, for in confirmation of Paulesco's observation we had found that the dislodgment of the infundibular lobe (pars nervosa), leaving the pars anterior intact, led to no recognisable disturbances—an observation the more surprising in view of the active principle it was known to contain. We were not then aware, of course, that the infundibular stalk, and even the tuber, contains pathways in connexion with the pars tuberalis resembling those in the body of the lobe, and also that extracts of these areas contain traces of the active principle. Even so, it is quite probable that all of this posterior lobe tissue, pars nervosa and intermedia included, could be spared, and no untoward symptoms supervene provided the anterior lobe remains intact. . . .

Let us first of all turn our attention to this seemingly unimportant posterior lobe, to its secretory product, and the manner of its discharge.

THE PARS POSTERIOR.

As later experiences taught us, we had been barking up the wrong tree in our original conjecture that it was deprivation of the anterior lobe which caused the serious alterations in physiological equilibrium in our extirpation experiments; but leaving this aside, a more important pursuit was that in connexion with the series of animals in which incomplete extirpations had been made, particularly those with stalk division which Paulesco erroneously regarded as equivalent to a total extirpation.

In the quotation used as a caption to this lecture, Gibson makes reference to the *Rete mirabile* of the older anatomists, and Dr. Heuer, Dr. Goetsch, and Dr. Dandy made studies of the circulation of the canine gland which showed that the entire supply to the anterior lobe passed down the infundibular stalk from the Willisian vessels, whereas the posterior lobe had an additional blood-supply from vessels which enter it from behind. We therefore knew that it would be possible, in the dog at least, t divide or to obstruct the pituitary stalk withou subsequent necrosis, and this led to a series of exper ments the consequences of which may at this junctu be discussed.

Formation and Discharge of Posterior Lobe Secretion.—In the course of their studies here in Edinburgh on the cat's hypophysis, Schafer and Herring had called attention (1908) to the faintly staining hyaline or colloidal masses in the loose tissue spaces of the pars nervosa, and suggested that these masses might represent the secretory product of the lobe. In properly fixed preparations of the canine hypophysis we found likewise that these amorphous masses, which appear to be a product of the epithelial investment of the lobe, are at times abundant, and appear to be streaming through the loose tissue spaces which obviously radiate towards the tip of the infundibulum. This had intrigued our interest from the first, and though these presumably colloidal bodies are very elusive and are easily dissolved out of the specimens, leaving the tissue spaces empty, we nevertheless, in full agreement with Herring, frequently saw the masses in the act of seeming to extrude themselves between the ependymal cells into the ventricles.

This naturally led to an effort to detect an active substance in the fluid, and though we found this a most difficult matter, capable of false interpretations and necessitating innumerable controls, Goetsch and I came to believe that posterior lobe secretion was normally discharged into the cerebral ventricles, and ere long succeeded as we thought in demonstrating its presence in the cerebro-spinal fluid, secured from the hydrocephalic ventricles of clinical cases. Doubts as to the correctness of our conclusions promptly appeared. Edinger (1911), while admitting that the spaces in the pars nervosa appear to lead brainwards, had never seen an injection mass enter the ventricle. Carlson and Martin took exception to our findings (1911), also Houssay (1918), and even in our own laboratory the subsequent studies of Dr. Conrad Jacobson, not published till ten years later, failed to corroborate them. Dr. S. C. Harvey and I returned to the matter again in 1915–16, using the plain muscle-contracting (oxytocic) test for pituitrin without results sufficiently uniform and dependable for publication, and there the matter on our part might have rested.

However, certain more successful studies controlled by the oxytocic test were at the same time being carried out in the Pharmacological Laboratory in Cambridge by Douglas Cow (1915), who showed that the active substance in the fluid, which is most variable in amount, can be increased by the intravenous injection of certain extractives, particularly of the duodenal mucosa. And since the war, independently of one another, W. E. Dixon in Cambridge (1923) and Carl Trendelenburg in Frankfurt (1924) have taken up the subject anew with results that lend support to our original views.

Like many others (Capelletti, Petit and Gerard, Meek, Dixon and Halliburton, Frazier and Peet, to mention a few of them), we became engaged at one time or another, in the course of our cerebro-spinal fluid studies, in the elusive and uncertain pursuit of substances which might increase the flow of fluid. For reasons associated with the closed-chamber factors of the Monro-Kellie doctrine, experiments of this sort offer unusual difficulties and are prone to misinterpretation. However, we felt that we had avoided the more common sources of error by measuring the fluid production as it came from the ventricles rather than from the arachnoid cisternæ; and in our Cerebro-spinal Fluid Studies No. 8, Weed and I reported (1915) that "pituitrin," presumably from its direct action on the plexus, had a particularly marked effect in producing what we called a "choroidorrhœa." As our conclusions in this respect were not confirmed by Dandy and Blackfan (1913) and were opposed also by Dixon and Halliburton (1916) we may well enough have been misled. This, however, is less important than the confirmation by Prof. Dixon and Prof. Trendelenburg of the underlying assumption that under certain circumstances the cerebro-spinal fluid actually contains demonstrable amounts of posterior-lobe secretion.

There are, however, evidences from another source which support our hypothesis and to which we may for a moment refer. In repeating Paulesco's experiments on stalk separation, we had found on subsequent histological examination that the posterior lobe had become so extraordinarily cellular and so infiltrated with hyaline masses that we naturally came to regard this appearance as an evidence of secretory stasis, although we know of no comparable process in connexion with any other organ of the body. We had at this time also been given opportunities to study a certain number of hypophyses from clinical cases of hydrocephalus due to tumour or otherwise in which the posterior lobe had shown a similar invasion by cells from its epithelial investment. And since many of these patients, as explained in my monograph on the pituitary disorders, had shown constitutional symptoms such as lethargy, adiposity, subnormal temperature, amenorrhœa, and so on, suggesting a deficiency of pituitary secretion, we were led to believe that under these circumstances also there must be an obstruction to the normal discharge of the secretory product from the pars nervosa.

Not only did we find, in agreement with Herring, that these hyaline bodies were greatly increased in amount after thyroidectomy, but they seemed to be even more abundant after a "near total" extirpation of the pancreas, which merely goes to show how closely the endocrine organs are functionally interrelated. But the experiments, carried out with Emil Goetsch in our 1909–10 series, which gave us the most striking picture, were ones in which a silver-wire "clip" was bloodlessly closed on the hypophysial stalk after exposing the gland by the usual operative method.

During the past year with Dr. Maddock a new series of these "clip" experiments has been conducted for another purpose, to which we shall return; suffice it to say, the histological picture of extreme cellularity of the posterior lobe with increase of hyaline and the production of great masses of colloid in the inter-glandular cleft has been invariably obtained. Certainly this striking appearance can only be interpreted as the result of an obstruction to the discharge of the products of posterior-lobe activity, or at least of products which are in transit through the lobe, for some destination or other.

Histogenesis of the Pars Nervosa.—But we know lamentably little about the actual histogenesis and structure of the neuro-hypophysis. The pineal body, a far less important organ, is much better understood and has an easily demonstrable basis of neuroglia; but there are peculiar difficulties which stand in the way of comparable studies of the pars nervosa. We have recently made an effort with the specific dyes introduced by the School of Ramón y Cajal to determine just what may be the nature of the loose tissue strands which radiate through the lobe towards the infundibulum and between which the hyaline masses accumulate. They are supposed to be neuroglial, but they do not take the specific stains for glia, and certainly the cells have none of the morphological characteristics of the glia cells. Delicate nerve-fibres of uncertain destination may be seen passing down the stalk to become lost for the most part in the upper portion of the lobe. Occasional fibrillæ which take the specific glia stains are also demonstrable in the stalk running for the most part crosswise to the course of the nerve-fibres; but neither glia nor nerve-cells can be demonstrated by methods at present at our command in the body of the lobe itself. . . .

Meanwhile, certain experimental zoologists in Germany, England, and America have hit upon a most significant consequence of posterior-lobe extirpation in the amphibia. They have shown that the lobe provides a substance which controls the pigmentary responses in the skin, for after the removal of the anlage of the epithelial portion of the hypophysis from the embryo frog, for example, the tadpole not only becomes retarded in its growth, but remains pale or albinoid owing to contraction of its cutaneous pigment cells (B. M. Allen and P. E. Smith (1916)). These pale animals serve as a most delicate indicator for posterior-lobe (pars intermedia?) secretion, for on its injection in minute amounts the melanophores expand and the animal acquires the normal colour.

This melanophore reaction to posterior-lobe extracts has not as yet, so far as I am aware, been utilised as a test for the presence of this substance in the cerebro-spinal fluid. But whatever future studies may bring forth in this respect, it may suffice to say that the posterior lobe is a unique organ surrounded by an investment of indolent-appearing epithelial cells, seemingly under the direct control of non-medullated nerve-fibres, and that stimuli of one sort or another cause these cells to divide and bud off directly into the loose tissue reticulum wherein they appear to undergo some sort of amorphous transformation as they progress towards the stalk and the infundibular cavity. At this point they not only have the appearance of passing between the ependymal cells into the ventricle, but when this apparent outlet is experimentally occluded, the gland becomes packed with the transforming cells and their secretory products. . . .

Carbohydrate Tolerance.—But I must return again to our second series of hypophysectomies to pick up the threads of another pursuit conducted with Dr. Goetsch and Dr. Jacobson, which led us to investigate the carbohydrate tolerance of our experimental animals, and from this into studies of their basal metabolic rate, which in turn was indirectly responsible for the introduction of the calorimeter into the clinic.

As already stated, we had observed, in connexion with our first series of experiments (1908–09), that definite histological changes occurred in many of the other ductless glands, notably in the thyroid and gonads, as a consequence of the hypophysectomy; and vice versa, as was well known, that changes in the hypophysis occurred subsequent to thyroidectomy, castration, and so on. We naturally wondered whether the syndrome which we had ascribed to a state of hypopituitarism might not be due to these secondary changes rather than to the primary hypophysial lesion.

All this was part and parcel of a developing conception of the inter-relations of the ductless glands, so convincingly presented ere long by the work of

Eppinger, Falta, and Rudinger. We had observed, for example, that a nearly total pancreatectomy appeared to activate posterior-lobe secretion if the associated increase in the hyaline bodies of the lobe could be so interpreted; and we also found that our adipose and lethargic animals with a pituitary deficiency seemed to tolerate the loss of the major portion of the pancreas better than normal animals would have done. We had learned also that the manipulation of the hypophysis sometimes caused a transient hyperglycæmia with glycosuria; that, corroborating Borchardt (1908), the injection of pituitrin, particularly in rabbits, had a similar effect; and, of course, we were aware that acromegaly which we had come to ascribe to a state of glandular overactivity was sometimes accompanied by symptoms resembling diabetes mellitus.

But when in a series of carefully controlled experiments we came to investigate the sugar tolerance of our partially hypophysectomised animals, we were surprised to find that the temporarily lowered assimilation limit for carbohydrates ultimately became raised, and that this increased tolerance for the ingestion of sugar could only be overcome by the coincidental administration of either pituitary or thyroid extract. Since extracts of the anterior lobe had no influence in these reactions, we accordingly were led to explain the symptoms of pituitary deficiency—the adiposity, subnormal body temperature, and so on—to an impaired oxidising or metabolising capacity of the body from loss of posterior-lobe extract, with resultant transformation and storage of sugar as fat. A definite parallelism with these experiments was found to exist in clinical cases of hypopituitarism, though under these circumstances, of course, the precise extent and nature of the functional damage could only be surmised.

As was stated in our first paper (1911) on the subject:

> "If loss or diminution of the internal secretion of the pancreas robs the tissues of their power of metabolising carbohydrates, certainly loss or diminution of the secretion of the hypophysial posterior lobe greatly enhances their power in this respect."

And this naturally led us to conjecture that an injection of the active principle of the pancreatic islets would lower the amount of sugar in the blood and that the active principle of the posterior lobe would raise it—in other words, that the two substances counteract one another, which proves to be true.

Our observations in these matters led us to a reconsideration of the so-called encephalic glycosurias which naturally date from Claude Bernard. Though his celebrated sugar piqûre was well established as a physiological experiment, it had come to be appreciated in the clinic that lesions, traumatic or neoplastic, in the neighbourhood of the hypophysis were more likely to provoke glycosuria than similar lesions near the fourth ventricle, and as early as 1898 M. Loeb had postulated the existence of a sugar centre in the tuber cinereum.

We naturally turned to investigate the manner of discharge and of action of the posterior-lobe secretion in producing hyperglycæmia. In a study of the hypophysial nerve-supply by Ehrlich's intra-vital methods, W. E. Dandy had shown (1913) that sympathetic fibres radiate along with the numerous branches from the Willisian vessels towards the pituitary stalk, and we assumed, from what was known of the nervous control of the adrenal, that the glycosuric effects of these anterior piqûres might be due to a stimulation of the autonomic fibres to the gland. We accordingly undertook to determine the pathways of these impulses, and in an elaborate study conducted in the Laboratory of Surgical Research at Harvard, with L. H. Weed and Conrad Jacobson, it was found, when what we termed "available glycogen" is present in the body, that:

1. A piqûre of the hypophysis in the rabbit is comparable, in its glycosuric response, to a piqûre of Bernard's so-called sugar centre in the fourth ventricle.
2. Stimulation of the superior cervical ganglion, by faradisation or even by the manipulations necessary for its exposure, causes glycosuria in the rabbit, cat, and dog.
3. Stimulation of the superior cervical ganglion after exclusion of all possible downward impulses to the abdominal viscera by way of the vagi, cervical sympathetic trunks, or spinal cord, leads to glycosuria.
4. Stimulation of the superior cervical ganglion after separation of all synapses of the sympathetic system by administration of nicotine causes glycosuria.
5. Direct faradic stimulation of the hypophysis itself, after exposure to a transphenoidal operation, gives glycosuria even after preliminary transsection of the spinal cord and cervical sympathetic trunk.
6. If the posterior lobe of the hypophysis has previously been removed by operation the usual stimulation of the superior cervical ganglion fails to give glycosuria.
7. Direct faradic stimulation of the hypophysis provokes glycosuria even after transsection of the spinal cord above the splanchnics.
8. A classical Bernard piqûre will likewise cause glycosuria even after transsection of the spinal cord above the splanchnics.

We naturally concluded that the infundibular lobe acts under the influence of impulses which pass from Bernard's centre in the brain-stem and reach the gland by way of the cervical sympathetic, there to liberate a chemical messenger which causes glycogenolysis, hyperglycæmia, and glycosuria; and in view of what has gone before, we assumed that this hormone was discharged into the cerebro-spinal fluid pathway.

But with all this, should these findings come to be substantiated (and so far as I know they have never been repeated) they merely throw some further light on the physiology of the posterior lobe and leave us as far as ever from an answer to the pertinent question as to whether the glycosuria of acromegaly is hypophysial or pancreatic in origin.

In an attempt to answer this question Mr. Dott applied himself a year ago, while attached to the Brigham Clinic, without coming to any definite conclusions. We know that acromegalic glycosuria is associated with a hyperglycæmia, and that it reacts to insulin as does pancreatic diabetes. We also know that an acromegalic may die from diabetic coma and no histopathological changes be apparent in the islets, though this does not necessarily imply that they may not be seriously deranged from a functional standpoint. On the other hand, as was first pointed out by J. H. Burn,[1] pituitrin will counteract the effect of insulin, an observation our early studies would fully confirm; and latterly R. C. Moehlig and H. B. Ainslee[2] have shown that the hypoglycæmic convulsions in rabbits produced by insulin may be checked by posterior-lobe extract, which causes a rise in the blood-sugar. Moreover, we know that acromegalic diabetes is capable of spontaneous recovery. . . .

Before leaving this general discussion of the posterior lobe and its manifold activities, there is still another subject which deserves discussion, for it has led to discordant views. It concerns the much-mooted question of the hypophysial polyurias.

Diabetes Insipidus.—Is this disorder primarily neurogenic or primarily hypophysial in origin? This question has divided students of the subject into two opposing camps. Indeed, as may be recalled, a similar discussion once raged in regard to Graves's disease which some still attribute to a neurogenic disorder in which the thyroid plays merely a secondary rôle.[3]

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[1] Journal of Physiology, June, 1923, lvii., 318.

[2] Jour. Amer. Med. Assoc., May, 1925, lxxxiv., 1398.

[3] In this connexion should be recalled Cannon's ingenious experiments on cats in which the phrenic nerve and the cervical sympathetic were anastomosed low on one side of the neck. By this procedure the rhythmic efferent impulses associated with respiration passed along the sympathetic, presumably to the thyroid, and provoked a most curious state with excitability, rapid pulse, increased metabolism, and so on, which was interpreted as an evidence of experimental hyperthyroidism. Dr. Gilbert Horrax in 1914, at my suggestion, repeated these experiments, and, as a control, removed the thyroid lobe on the side of the anastomosis. His results (unpublished) were the same as those obtained by Cannon. We naturally claimed that our friend the hypophysis was more concerned than Cannon's friend the thyroid. There the matter rests.

It must have occurred coincidently to many of those who were interested in the subject of diabetes insipidus that the supposed renal sources of the disease would have to be abandoned. For our own part, the early experimental hypophysectomies, with their resultant polyuria, had led us definitely to associate this symptom with a functional derangement of the gland, and this view was supported by certain clinical observations in which patients with bitemporal hemianopsia and primary optic atrophy, unmistakably due to tumour in the region of the hypophysis, *had* at the same time persistent polyuria of high degree. We have seen that non-myelinated nerve-fibres pass down the infundibular stalk, and it is perhaps natural that the hypothalamus (tuber cinereum) whence they may originate should be a favourite place for the predication of centres such as the sugar centre of Loeb, of which we have already made mention. Erdheim, I believe, was among the first to suggest that an injury of these centres was responsible for these polyurias, rather than that they were due to an actual pituitary derangement; in other words, that they were of *nervous* rather than glandular origin. He had arrived at this conclusion, I assume, during the course of his well-known studies of the congenital cysts of the infundibular region rather than from the actual identification of any centres by physiological experiments. However this may be, the view doubtless influenced other Viennese investigators, among them Aschner, who explained the polyurias following his experimental hypophysectomies on the same basis, just as did Narbut the diminished oxygen consumption shown by these same animals. . . .

Personally, I find myself in discord with these views both on experimental and clinical grounds; on a pure neurogenic basis it is difficult to explain why the supposedly hypothalamic polyuria should be promptly checked by the administration of posterior-lobe extract. After all, it is perhaps an academic question whether an injury to adjacent nerve-centres whose very proximity is enough to suggest that they preside over the activities of the gland, or whether damage of the gland itself by injury or disease is the actual cause of a given syndrome.

But the whole subject of the non-diabetic polyurias has from the first been in a tangle of inconsistencies, and indeed it was not until 1912 that studies such as those by E. Frank in Minkowski's laboratory served to point strongly towards their hypophysial rather than renal origin. The chief source of confusion lay in the fact that diuresis provoked by posterior-lobe extracts is but a transient effect, and it was not until the acute physiological experiments on which this opinion was based were checked by long-enduring observations that the extract was found to have precisely the reverse effect—namely, to provoke an oliguria rather than a polyuria. The experiments of Ketil Motzfeldt carried out in the Harvard Laboratory (1917) were among the first to make clear that pituitrin actually has antidiuretic properties, and thus to explain the apparent disharmony of the physiologists and clinicians; for it had been clinically observed by both Farini and Von den Velden (1913) that the extract given hypodermically, contrary to expectation, would actually inhibit the polyuria of diabetes insipidus.

This was a disclosure which justifies all the time and thought which many have given to the subject of these polyurias, for it has put into our hands what Andrew Cameron was after—namely, a practical therapeutic treatment for the amelioration of a most distressing disease. Still, we are no nearer an actual explanation of diabetes insipidus, for if the disorder is due to an injury of some centre in the tuber cinereum, it is remarkable that it is so rarely an accompaniment of the craniopharyngeal-pouch tumours which compress and deform not only the tuber where the centres supposedly lie but the hypophysis itself.

It was for the purpose of reconsidering the interpretations which Bailey and Bremer had put upon their experiments, and in the hope of reconciling our conflicting views on the subject, that Dr. Maddock and I this past winter have made a control series of experiments in which, as stated, we have reverted to the method employed in our earlier studies of placing a silver "clip" on the hypophysial stalk. By the aid of Weed's brain-shrinking method these operations are conducted more easily to-day than they formerly were, and the "clip" can be closed on the stalk of the dangling canine gland quite bloodlessly and without any appreciable or histologically demonstrable injury of any adjacent structures. When this procedure is carried out, precisely the same train of symptoms is evoked that Bailey and Bremer describe—viz., a prolonged polyuria with subsequent tendency to adiposity.

Probably, therefore, the effects are the same whether produced by: (1) an injury to the hypothalamic centres; (2) a "block" of the nervous impulses with obstruction of the secretory products in the posterior lobe; or (3) a partial hypophysectomy with actual removal of the lobe. In other words, a break in the mechanism of posterior-lobe secretion from nerve-centre to gland produced by any agency tends to upset the normal water balance and to cause an hypophysial polyuria; and, conversely, the administration of pituitrin serves to check the experimental polyuria thus produced wherever the break in the mechanism may have occurred.

This explanation at least harmonises the differences which lay between my own preconception in this matter and the views of my pupils. But it will not, I fear, quite satisfy those who, like J. J. Abel, if I understand him correctly, believe that the responses are entirely by chemical messengers and that the direct nervous influences may be wholly disregarded.

The antidiuretic property we have been discussing is but one of many which extracts of the posterior lobe possess, and some of which are already utilised for practical therapeutic purposes. The attention of the pharmacologist has tardily become focused on a study of the biochemical nature of the substance or substances responsible for these various reactions. Some have postulated the existence of three or four separate hormones. Others, like Prof. Abel, believe that there is only one specific hormone which alone, as appears to be the case with his tartrate, is capable of evoking all the known responses, cardiovascular, antidiuretic, oxytocic, respiratory, and melanophore-expanding.

THE PARS ANTERIOR.

In what has gone before overmuch has perhaps been said in regard to the physiology of the pars nervosa, and we may now turn to the epithelial lobe, where there are fewer functional straws at which to grasp, though there are many reasons for ascribing to this portion of the gland the premier rôle among the endocrines—if, with all said and done, we are entitled to consider separately the function of the two or three anatomical subdivisions of the gland. However this may be, the customary physiological weapons of attack are unavailing in the case of the pars anterior and we must have recourse to roundabout ways if we would spy into its secrets. The fact that we are not all in agreement as to whether the various cellular elements, chromophile and chromophobe, comprising this highly vascularised lobe represent different stages of activity of a single cell type or are cells of quite different function, shows the present great limitations of our knowledge. As Abel has said in regard to the posterior lobe hormone, there are Unitarians and Trinitarians among us.

Metabolism Observations.—In considering the relation of the posterior lobe to the utilisation of sugars, the question was discussed whether the glycosuria of pituitary disease should properly be regarded as an hypophysial or a pancreatic effect. A similar question is naturally raised in regard to the alterations which the clinical cases show in their metabolic rate. Are they primarily hypophysial or secondarily thyroid in origin? To this subject we may now turn for a moment.

While we were engaged in our studies of carbohydrate tolerance in 1908–10, I knew nothing about metabolism estimations, hardly knew, indeed, what the term with its modern implications signified. We had observed in the clinic that outspoken states of hypopituitarism, in addition to the adiposity and sexual dystrophy which they showed, were accompanied by periods of profound and long-enduring somnolence, by a slowed pulse and respiration, by a subnormal body temperature, and by an apparent insensitivity to external stimuli—states comparable to those of our experimentally hypophysectomised animals. Certainly these individuals were burning their tissues at a low fire, and it was perhaps not unnatural that the clinical syndrome should have suggested resemblances to what we vaguely knew as the state of hibernation. Since the experimental extirpation of no other ductless gland except the hypophysis, so far as we knew, caused this particular train of symptoms, Dr. Goetsch and I were led to make some studies in this direction, and we found, as others had found before us, that in the hibernating state the ductless glands, notably the hypophysis and gonads, appear to be in a resting stage, whereas at the period of awakening they become markedly hypertrophied; but aside from these simple histological studies which served to disclose these facts, we found ourselves dealing with a subject of unanticipated difficulties which was intertwined with chemico-metabolic problems beyond our reach.

A more important lead came from another direction, for Dr. John Homans, after his year in the Hunterian Laboratory, enlisted the interest of Francis Benedict in the subject of our dyspituitary dogs, whereupon Dr. Benedict devised a respiration calorimeter for determining the carbon-dioxide production of small animals. With the aid of this apparatus, as described in their detailed report (1912) from the Carnegie Nutrition Laboratory, they observed, among the other general effects of a partial hypophysectomy in puppies heretofore discussed, that in the course of time there was a marked post-operative fall of the total metabolism as measured by the carbon-dioxide production per kg. of body-weight per hour, a fall which was the more striking owing to the amount of inert body fat the animals gradually acquired. . . .

It may suffice to say after this lapse of a dozen years that the hypopituitary cases show, as did Homans's animals, a lowered rate, whereas the metabolism in the active stages of acromegaly is raised, though never to so high a percentage as may be seen in hyperthyroidism. The extremes which have been observed are −39 for the former and +65 for the latter.

But this does not answer the question at hand—Is the increased rate in acromegaly due to a secondary thyroid hyperplasia rather than to some influence on metabolism possessed by the hypophysis itself? We, of course, are all aware that acromegaly has notable polyglandular manifestations, and I believe the view is held in the Mayo Clinic, where Dr. Boothby and Miss Sandiford have gone, that the increased metabolic rate shown by these cases is a secondary phenomenon; for it has been observed that removal of the enlarged thyroid of an acromegalic lowers the rate. But even this does not settle the point. The only proof could come from a lowering of metabolism by the partial removal of an hypophysial adenoma leaving the enlarged thyroid untouched; and an example of such an effect has been cited in a recent study of the pituitary adenomas by Dr. Bailey and Mr. Dott. . . .

Hypophysial Relation to the Glands of Sex.—Among the most definite consequences of hypopituitarism, whether produced by experimental procedures, by glandular tumours, even by hydrocephalus, so frequent a source of interference with the gland's activity, are the secondary effects on the gonads to which attention has often been called. Infants fail to acquire normal sexual adolescence; adults lose their sexual desires and potency; amenorrhœa in women is one of the first tell-tales of disturbed function.

It is difficult to tell whether these symptoms and the histological changes which accompany them are ascribable to the anterior or posterior lobe or to the combined action of both, but reversible effects show at least that the anterior lobe is an important element. Erdheim and Stumme, for example, first clearly showed (1909) the remarkable alteration in the cells of the anterior lobe associated with the amenorrhœa of pregnancy. The secondary enlargement of the hypophysis in eunuchs had been noted before this by Fischera (1905) and by Tandler and Gross (1905); and it is stated that in castrated hens the gland almost doubles in size. Indeed, the hen's plumage acquires male characteristics just as in certain clinical endocrine disorders we may see a suggestive reversion of the female to the male type and vice versa. All told, modern experiments on the gonads and sex physiology read like a story from the Arabian Nights.

Naturally, while we have been waiting for the biochemist to isolate the active principle or principles of the gland, efforts have been made both in man and animals to see what would be the effect of prolonged feeding of pituitary substance and of glandular transplantations. The attempts have been innumerable, and the results, so far as growth is concerned, quite negative, though Prof. Schafer was led to believe that "the addition of a small amount of pituitary substance to the food appears to favour the growth of young animals." . . .

In 1913–14 Dr. Goetsch took this matter up anew. In a time-consuming and most carefully controlled study of a series of young rats of known pedigree and growth curve he found that the daily oral administration of bovine anterior lobe extract during the preadolescent period had a remarkably stimulating effect upon the development of the reproductive glands of both sexes, shown not only by their early sexual maturity and their precocity in raising families, but by demonstrable histological evidences of precocious ovulation and spermatogenesis. . . .

The Hypophysis and Growth.—The experimental zoologists have turned their attention to the relation of the pars anterior to growth, and P. E. Smith (1917) showed that the retarded development of hypophysectomised tadpoles could be accelerated if they were fed upon certain residues of the anterior lobe. But the most convincing experiments yet conducted have been those of Herbert M. Evans (1922–5). Dubious of the effects to be expected from the oral administration of pituitary extracts in the higher animals, Evans gave to a series of rats daily intraperitoneal injections of the emulsion of fresh bovine gland, and succeeded in producing such marked overgrowth as to justify him in designating the condition as one of actual gigantism. Thus the assumption that the overgrowth of clinical acromegaly and gigantism is an expression of hyperpituitarism receives its first really striking experimental proof. . . .

Encouraged, as others doubtless have been, by Dr. Evans's remarkable results, we have undertaken on our own account some further studies in regard to growth. Dr. Leo Davidoff, who has for the past two years been concentrating his attention on our series of acromegalics, undertook to see, by using Evans's methods, whether in animals, which had presumably attained their full stature, acromegalic characteristics might not be observed. But this proves to be a most difficult quest; and since preparations such as Evans employed are not tolerated by larger animals such as rabbits, cats, and dogs, when given intraperitoneally, we cast about to find some standard pharmaceutical preparation which at least might appear to possess traces of an active anterior lobe principle.

One of these preparations was found to have a prompt effect in checking the œstral cycle in female rats, and though this in the light of Goetsch's experiments would seem contradictory, it at least showed the presence of an active substance of some sort. Accordingly, a series of rats was subjected to prolonged intraperitoneal injections with results which suggested, at least, that the preparation contains the growth principle as well. The experiments, indeed, taken in conjunction with P. E. Smith's experiences on hypophysectomised tadpoles, were regarded as sufficiently encouraging to justify an attempt in the clinic to stimulate growth in one of our little patients whose stature for the two years following a successful removal of a Rathke's pouch cyst had remained unchanged.

These children are peculiarly coöperative and intelligent patients, and this particular child submitted, with his parents' consent, to receiving an intraperitoneal injection of 5 c.cm. of this substance every second day for a period of over two months. We had hoped that the effect of the substance, were *it actually* present, would be more marked in a case of pituitary infantilism than in a normally developing individual; but no effect whatsoever was observed. We evidently have much more to learn about these extracts before we can adopt them to clinical use, and the many apparent contradictions had far better first be untangled, so far as possible, in the laboratory where observations can be controlled. . . .

SURGICAL CONSIDERATIONS.

The Tumours.—As emphasised in many places, had it not been for the tumour and its local pressure effects the surgeon would hardly have come to meddle with the questions which up to this point have been under consideration. Having been drawn in, because there were mechanical difficulties to overcome, it was inevitable that he should take something more than a mechanical interest in the subject. So it was with the thyroid. Certain goitres by displacing and flattening the trachea caused a mechanical dyspnœa which could only be relieved by some surgical procedure. Kocher and the Reverdins first had the temerity to undertake operations under these desperate circumstances, and it is common knowledge that clues for solving some of the thyroid and parathyroid puzzles were thereby supplied.

But the thyroid goitre offered a simple problem compared to that of the hypophysial goitre. One was exposed to view for the layman to diagnose; the other was concealed and affected not only the eyes of its victim, but obscured the vision of the professional observer as well. Consequently those who now have on their hands the responsibility of tardily developing the operative treatment of hypophysial disorders may comfort themselves by the recollection that those who have relayed to their successors the surgery of the thyroid adenoma had a 20-year head start, and our problem is a far more complicated and difficult one. We meanwhile have profited greatly by their experiences; have more or less followed in their footsteps and avoided some of the pitfalls they had pointed out.

I have already touched on the fact that one or two of the earliest operations on the hypophysis were in cases of acromegaly, and that those who had undertaken them were led to believe that there had been a definite amelioration of the constitutional as well as of the local symptoms. But these were precocious steps taken in imitation of partial thyroidectomy for Graves's disease, and as we now understand the matter they were steps taken out of turn. For even to-day one may as well admit that the treatment of pituitary tumours consists of little more than the prevention or relief of the local pressure-effects of pituitary or parapituitary tumours. True, this is a great boon, and the neuro-surgeon now shares with ophthalmic surgeons the thrills and satisfactions of restoring vision to persons on the verge of blindness.

But in his desire to share in this satisfaction, the surgeon may get into infinite trouble unless he has some knowledge of just what he is after. I recall the remark made by a companion while watching a small dog bounding across the fields in pursuit of a railroad train: "I wonder what he'll do with it when he catches it." So it behoves us to be thoroughly aware of the nature of the various tumours of the hypophysial neighbourhood, and there are perhaps three main groups: the suprasellar meningiomas and craniopharyngeal pouch tumours which, in addition to their local pressure effects, may evoke typical hypopituitary syndromes, and, thirdly, the hypophysial adenomas proper, some of which give the reverse clinical picture. Without a definite understanding of the precise situation, behaviour, and manner of growth of these several lesions, it would be foolhardy to attack them; and the surgeon consequently must know his morbid anatomy no less well than his physiology of the gland.

We, of course, are indebted to the pathologist for our primary conception of these several lesions, but by the time they have come under his observation it is inconceivable that they could ever have had any surgical bearings. The fairly common suprasellar meningioma, which takes its origin from the arachnoidal cell-nests as described in the preceding lecture, may slowly in the course of years attain the size of a fist before it causes death; and yet these lesions when small are not only capable of being diagnosed, but can be exposed and totally removed with preservation of vision in spite of their awkward position between hypophysis and chiasm.

The Congenital Cysts.—And the same is true of the more common craniopharyngeal pouch cysts first clearly described by Erdheim in 1904, though there is very little in the literature concerning the surgical treatment for these remarkable congenital lesions. They usually, though not invariably, begin to manifest their presence in preadolescent life both by local signs of tumour as well as by their pressure-effects on the hypophysis as a whole. Hence in these little patients one may see in most outspoken form the combined syndrome of anterior-lobe disturbance (sexual and skeletal infantilism) and of posterior-lobe disturbance (adiposity, a high sugar tolerance, a low metabolism and sometimes diabetes insipidus).

These lesions, moreover, are usually suprasellar and need not in any way deform the sellar outlines as shown by the X ray. But there is a tell-tale of their presence which to-day is demonstrable in fully 80 per cent. of the cases owing to the refinements of roentgenological technique which the invention of the Potter-Bucky diaphragm has made possible. This concerns the deposits of lime salts which occur in connexion with the keratinised epithelial lining of the cysts. The diagnosis, however, is not quite so easy as all this, for sometimes the congenital tumour does not ride so high, but may actually develop within the capsule and distend the sella precisely as does the more common adenoma. . . .

With the congenital cysts, however, the difficulty is not so much in the diagnosis as in knowing how to deal with the cyst when it is exposed. The mere evacuation of its contents gives only temporary relief since there is an early refilling. Extirpation is necessary, and this is difficult because of the relation of the tumour to the optic nerves. These cases, of course, are operated upon from above by an osteoplastic approach; different surgeons advocate different procedures, but personally I prefer to come down upon the lesion from in front rather than from the side.

Though I do not intend to bore you with descriptions of operations, it may be said that the chiasm, in justification of its name, represents the crux of the matter. Though some of the cysts have sufficiently thin and tough walls so that after evacuation they may be drawn out from between the distorted optic nerves practically intact, more often the calcareous and keratinised part of the wall is so adherent and extensive as to make this impossible. I have never quite had the courage to take what may be the proper step under these circumstances—namely, to split the chiasm fore and aft, thereby committing the patient to a permanent bitemporal hemianopsia, but at the same time giving free access to the medially placed tumour which at times may assume astonishing proportions. We have seen such a cyst as large as a tennis ball, its walls a solid mass of calcification.

After all, a permanent bitemporal hemianopsia is preferable to the recurrence of symptoms so apt to take place. Only one anatomical structure stands in the way of such an operation—the anterior communicating artery which lies stretched out across the elevated surface of the chiasm, but this vessel, as I have found, can be easily "clipped" and divided. Thomas Willis would be interested to know that a portion of his circle, from which the spokes of the *Rete mirabile* of his predecessors pass to the hypophysis has actually come, after all these years, to be an important factor in a surgical operation.

The Adenomas.—These present quite a different surgical problem from the congenital cysts, and, strictly speaking, should be the main object of our discourse, for they are by far the more common lesion, and primarily rather than secondarily affect pituitary function. They have so recently been made the subject of a detailed report by Mr. Dott and Dr. Bailey that it is hardly necessary to say more. Dr. Bailey has come to believe from a histopathological review of the adenomatous tissues in our collection that he can identify a "mixed type" of adenoma. This differs from the chromophile adenoma of acromegaly and the chromophobe adenoma characterising hypopituitarism, in that a peripheral rim of eosinophilic granules still persists about the cell; and he and Mr. Dott feel confident that this particular type of adenoma serves to explain those mixed clinical syndromes in which traces of acromegaly are seen commingled with the clinical evidences of hypopituitarism.

It is our custom and preference to approach these glandular tumours by a method called transsphenoidal. A small incision is made under the lip; the mucous membrane is separated on each side so that the operative approach is by way of the nose but does not actually enter the nasal cavities. A speculum is inserted, the anterior wall of the sphenoidal cells removed, the thin bulging floor of the sella chipped away, the dural encasement incised, and such an amount of the gland as is thought sufficient to relieve pressure is then spooned or sucked away. It sounds simple, and in a favourable case may be so. What is more, the convalescence is usually rapid and uneventful with rapidly widening fields of vision.

One would suppose that these operations, which necessarily open the enveloping arachnoidea of the gland, would be attended by great risk of meningitis. As a matter of fact they are not, and the mortality of the series taken as a whole, including the early operations, which were foolishly done on patients often in extremis due to a then poorly understood intracranial extension of the growth, is now approximately 7 per cent.[4] However, in the last 50 successive transphenoidal operations there has been only one fatality, which brings the operative mortality of the more recent years well within bounds—namely, at 2 per cent. But what is of more importance is the fact that in about 70 per cent. of all these cases there has been a vast improvement of vision. This, of course, is the proof of the pudding.

In the days when we first began to study these cases in the surgical wards at the Johns Hopkins, the perimeter was a dusty instrument on a shelf rarely used except for demonstration either in the neurological or ophthalmological clinics. To-day we could not get on without it, and the perfected technique of taking the field peripheries which was elaborated by Clifford Walker during the years he was a member of my staff continues to be employed, so far as they are capable of it, by my successive neurosurgical residents. And a neurosurgical group has scarcely less need of the ophthalmoscope and the calorimeter and other instruments of precision. Nor should the microscope be forgotten, for the histopathology of these lesions is no less important to him for diagnosis and prognosis. Subdivisions of responsibility in the routine handling of large groups of patients is probably necessary—diagnostic tests by a series of special people, an operation by another set, the pathological report by still another. But any such system, when progress is to be made in a new field, is unworkable.

I was once told by Prof. Kocher, who I suppose had his experiences with the thyroid in mind, that no satisfactions in medicine were so great as those which came from concentration upon and the mastery of a small subject, and that this necessitated an approach from all aspects, diagnostic, experimental, pathological, and therapeutic, not the least important part of which at one time or another in the history of the subject was likely to be surgical.

It will be given to few to play such an important part in the history of any subject as that which he played in the case of the thyroid disorders. The best that people of lesser intellects and industry than he possessed can do is to come as near to this goal as their abilities permit. But the surgery of the hypophysis at the present time, as I am sure he felt about the surgery of the thyroid in his early days, is practically in the "stone age" of its development. The time will come, ere long perhaps, when the biochemist will have shown us how to cure most of the common functional adenomas of both of these glands without surgery. Prevention will then come in its turn to supplant even these eagerly sought medicinal cures, and this will represent the "golden age" of the subject which not even the youngest of us here are likely to see.

Remarks
ON THE
PHYSIOLOGY OF MUSCULAR ACTION.

Presidential Address given before the Section of Orthopædics, Royal Society of Medicine,

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IT is not long since a well-known surgeon said that surgery was anatomy, pathology, and common sense, while, as for orthopædic surgery, it was nothing but anatomy and common sense. This is a common misconception of orthopædic surgery as a sort of mechanical craft, although the proceedings of this Section alone would convince anyone of the wealth of pathological material with which we have to deal. But orthopædic surgery is more than that. The ultimate aim of orthopædic treatment is *restoration of function*, and those who profess to deal with disorders of bodily function must have some knowledge of the normal functions of the body, that is physiology.

Ten years ago Sherrington remarked that "the publications of zoologists and clinicians do not commonly meet quickly." It is rather humiliating to discover that some cherished belief, some generally accepted theory, and perhaps the treatment based upon it, is about 20 years behind the known facts of physiology. So I thought that I might use this occasion to direct your attention to some bearings of physiology on orthopædic surgery rather with a view to stimulating thought and discussion than with any idea of presenting new facts. And, as so much of our work is concerned with the action of muscles, and time is short, I will confine my remarks to this important part of the subject—the activities of muscle.

Some years ago I drew attention to the significance of Sherrington's work on the postural activity of muscle—work which has not only thrown new light on the nature of posture and the disorders of posture, but has compelled us to revise entirely our ideas concerning the action of muscles generally.

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[4] Out of 219 cases of pituitary adenoma, 214 have been operated upon. The transphenoidal route has been used in 203 cases with 15 fatalities, giving a mortality of 7·38 per cent. The transfrontal route has been used in 35 cases with two fatalities, giving a mortality of 5·7 per cent. The total operative mortality for the entire series is therefore 7·1 per cent.

TWO KINDS OF MUSCULAR ACTIVITY.

It is now known that the skeletal muscles exhibit two kinds of activity. The one is phasic—quick and transient and concerned with the execution of movement; the other is tonic—relatively slow and prolonged and concerned with the maintenance of posture. These two kinds of muscular activity are physiologically quite distinct. They differ in their effects, in their metabolism, in their nervous mechanisms, and recently it has been said that they are anatomically separate. But of this I shall have more to say presently.

Muscle is a specialised substance which has the property of altering its shape in response to a nervous impulse. This alteration in shape, which gives rise to movement, is due to a change of surface tension brought about by electro-chemical means upon the surface of the muscle-fibres. It should be noted that a muscle-fibre undergoes no change in volume; it merely becomes more spherical or less spherical, as the case may be. Both contraction and relaxation of muscle are thus active processes. The change is accompanied by a great expenditure of chemical energy, by the production of heat, and by the consumption of oxygen and output of CO_2. If unduly prolonged or frequently repeated, this kind of activity becomes rapidly fatigued, and the muscle becomes incapable of further action until it has rested.

Except that smooth or unstriated muscle has a certain power of automatic action, the only natural stimulus of muscle is a nervous impulse. The response to a single nervous impulse is a single twitch. Voluntary contraction is a tetanus—that is, a summation of twitches brought about by a rapid succession of impulses down the nerve-fibre at the rate of about 60 per second.

It was shown by Keith Lucas that the propagated disturbance in a nerve-fibre is always of the same intensity, regardless of the strength of the stimulus. It follows, therefore, that the nervous impulses which reach muscle-fibres are always of the same strength. It is now known, too, that muscle contracts on the "all or none" principle—that is, if it contracts at all it contracts for all it is worth. This used to be thought to be a peculiarity of heart muscle, but it is now known to be true of all muscle.

There are, therefore, no degrees of contraction in normal muscle-fibres; there is no such thing as a strong contraction or a weak contraction, apart from the size of the muscle-fibres concerned. The absolute strength of a muscle is determined by the size and the number of its muscle-fibres. The different degrees of response that may be obtained on stimulation of a motor nerve are due to the number of nerve-fibres, and therefore the number of muscle-fibres, excited by different stimuli. A strong stimulus excites many (or all) of the nerve-fibres and therefore brings into action many or all of the corresponding muscle-fibres, and the result is a strong contraction of the muscle; while a weak stimulus excites few nerve-fibres and brings into action few muscle-fibres, and we get a weak contraction.

For a given muscle, therefore, the strength of a contraction is the direct expression of the number of nervous impulses sent into it. Much of what is commonly spoken of as muscular weakness has nothing whatever to do with the muscles, but is entirely a question of nervous energy. I would add here that we speak loosely—perhaps conveniently—of the education or re-education of muscles. But, of course, you can no more educate a muscle than you can educate a liver or a bone. The only thing that you can educate is a reflex—that vital process which occurs exclusively in connexion with the terminations of a nerve-cell. It is not sufficiently recognised that the basis of so-called remedial gymnastics and re-education is neurology.

The muscles on one aspect of a joint are sometimes called the antagonists of those on the opposite aspect. This is an unfortunate choice of a word to express a mere anatomical fact. Muscles do not oppose one another, they coöperate. When movement takes place, the contraction of one group of muscles is accompanied by reciprocal elongation of the opposite group, and the nervous impulses which cause the latter to relax are the direct outcome of those which make the former contract. Even when muscles on both sides of a joint contract simultaneously, as in the fixing of a posture, this is not antagonism, but a concerted action. Paralysis of reciprocal innervation gives rise to a grave functional disorder, which we call spastic paralysis. This, if you like, may be called antagonism.

Now, speaking still of movement in muscle-fibres, it is well known that the nature of the response differs in different kinds of muscle. Thus the typical twitch in striated or skeletal muscle is a sudden quick contraction which rapidly reaches its maximum and almost as rapidly falls away; while the contraction of smooth or unstriated muscle is relatively slow and prolonged, presenting a gradual rise and a still more gradual fall. What is the difference? Both kinds of fibre are subjected to a similar change of surface tension; why does one respond quickly and the other slowly?

I introduce this question here because, as we shall see, it has an important bearing upon another question which has become prominent recently—namely, the question of the dual structure of muscle. Note that we are now considering the phenomenon of movement in two different kinds of muscle-fibre. It seems that the different rates of response to stimulation of striated and unstriated muscle respectively can only be due to the fact that one kind of fibre offers more, and the other less, resistance to the force which brings about its change of shape. In other words, it is a question of the internal resistance or viscosity of the cell substance. Now, viscosity is a physical property which can be made to change, and it is significant that in certain circumstances, for example, in veratrin poisoning and in the condition known as decerebrate rigidity, the contraction of striated muscle approximates in character to that of unstriated muscle.

POSTURAL ACTIVITY OF MUSCLE.

The postural activity of muscle is concerned, not with the execution of movement, but with the prevention of movement—that is, the posturally acting muscle develops within it a state of tension or resistance to a force, which is trying to stretch it without itself necessarily undergoing any outward change.

The most remarkable features of this activity are: (1) The "lengthening" and "shortening" reactions by which the muscle adapts itself to different lengths while maintaining the same tension. It was this property which led Sherrington to apply the term "plastic tonus" to postural activity. (2) The fact that it entails hardly any appreciable increase of metabolism, so that it can be maintained almost indefinitely without exhibiting any signs of fatigue.

Now, this state of tension or resistance might be brought about by a change of surface tension of the muscle-fibres, similar to that which produces movement—by an isometric contraction of the muscle, in fact—and this actually is the means by which resistance is offered to a force greater than that which is developed in ordinary postures. But, as we have seen, this phasic activity of muscle is accompanied by a great expenditure of energy and by the rapid onset of fatigue, so that it cannot be maintained for long. On the other hand, the postural activity of muscle is maintained with hardly any perceptible increase of metabolism, and it is almost incapable of fatigue.

Clearly we are dealing here with quite a different mechanism. It has been likened to a ratchet or catch mechanism by which a state of tension may be maintained indefinitely without the expenditure of any energy. In the living cell such a condition can be attributed only to some change in the physical characters of the cell substance.

The viscosity of cell substance is known to vary significantly at different times in the life of the cell, and Bayliss showed that visible changes in viscosity may be brought about by disturbances such as are called stimuli. It is known that colloidal solutions in certain circumstances have the property of setting or clotting—like the setting of a solution of gelatin on cooling—and that they then offer a resistance to deforming forces many times greater than they could while in the fluid state. This is a physical reaction and reversible, and it has been suggested that the postural activity of muscle is a similar reaction controlled by its special nervous mechanism. So that in the language of physical chemistry the postural activity of muscle consists of a change from sol to gel, and herein lies the explanation of a state of tension or resistance developed without preceptible increase of metabolism and maintained without fatigue.

From the physiological point of view there appears to be no reason why these two functions, movement and posture—the one a change of surface tension and the other a change in the molecular arrangement of the cell substance—should be performed by different structures, by different parts of the muscle-fibres, as originally suggested by Bottazzi, or by actually different muscle-fibres, as recently claimed by Hunter. Indeed, in view of the close coördination that exists between movement and posture in higher animals, an anatomical separation would appear to be a positive disadvantage. Such a primitive arrangement obtains in some invertebrates in whom these functions are of the simplest order. But, in vertebrates, so far as can be made out, movement and posture are different reactions of the same muscle-fibres. Indeed, the more closely the question is studied, the more it appears that postural activity is but a further degree of that viscosity or internal resistance which we have seen is a variable quality in muscle-fibres performing movements.

THE QUESTION OF SYMPATHETIC INNERVATION.

It is necessary, therefore, to examine somewhat critically the evidence recently put forward by Hunter and Royle in support of their contention that the functions of movement and posture are performed by entirely different sets of muscle-fibres, the movement fibres being supplied by the ordinary spinal nerves and the postural fibres by the sympathetic. An excellent review of the whole question by Walshe has just appeared in the last number of *Medical Science, Abstracts and Reviews*,[1] so I shall be very brief.

It has long been known that the skeletal muscles receive accessory, non-medullated, or sympathetic nerve-fibres in addition to the ordinary spinal nerves. These consist of fine fibres connected on the one hand with the perivascular sympathetic nerve plexuses and ending in the muscle-fibres independently of the motor end-plates.

The presence of these fibres seems to have caused some surprise, and there has been much speculation as to the functions which they could possibly serve. But there are two points which I have not found mentioned in any of these discussions. First, are not all functioning tissues supplied by the sympathetic? Function is accompanied by an increased blood-supply which is ensured by reflex vaso-dilatation through the sympathetic. Second, in warm-blooded animals the skeletal muscles are the chief source of heat. Heat is conserved by muscular activity and peripheral vaso-constriction, while heat loss is promoted by muscular relaxation, peripheral vaso-dilatation, and sweating. These are nicely coördinated sympathetic reactions, and it is therefore not surprising to find that sympathetic nerve-fibres go to the skeletal muscles. It should also be noted that it is phasic, not tonic, muscular contraction that gives rise to heat.

Hunter's work started from the observation of Kulchitsky that "the medullated and non-medullated fibres never end in the same muscle-fibre." This is at best a negative observation and contrary to the findings of Boeke, Agduhr, and others. In fact, Hunter himself said that the question must be decided on the experimental evidence.

EXPERIMENTAL AND CLINICAL EVIDENCE.

For a criticism of the experimental and clinical evidence in detail I shall refer you to Walshe's excellent paper.[1] Here I shall content myself with quoting his main conclusion that the experiments and the clinical cases are not conclusive, and the descriptions thereof contain details not explicable on any theory of sympathetic function. Others working on the same lines have failed to obtain results approaching those claimed by Hunter and Royle. In short, it may be said that the whole weight of evidence —histological, experimental, and clinical—is against the hypothesis of a specific innervation of the tonic or postural activity of skeletal muscle by the sympathetic; against the separation of muscular tone into two elements—"contractile" tone and plastic tone; and against the conception of a dual structure of muscle.

To this I will briefly add my own small experience on the clinical side. I have done the operation of sympathetic ramisectomy ten times, lumbar ramisectomy nine times, and cervical ramisectomy once. All but one were typical cases of spastic paralysis exhibiting the plastic tonus described by Sherrington. The odd case was one of paraplegia in flexion with pronounced flexor spasms, and it is interesting to note that the result, such as it was, of the operation in this case was at least as well marked as in any other case that I have seen. In four cases no appreciable effect on the muscular condition was noted after operation. In six there appeared to be a definite, though slight, diminution of the muscular spasm. It has seemed to me to be about comparable to the amount of relaxation that might be expected from the accompanying vaso-dilatation. In no case have I been able to persuade myself that it was of real benefit to the patient.

This experience seems to be similar to that of all others who have tried the operation of sympathetic ramisectomy in this country and in America. Similar results were also obtained in the two cases chosen by Hunter and Royle out of a series of 25 cases specially selected for the purpose, and operated upon by Royle in Boston in October, 1924. It therefore seems unlikely that this operation will survive long as a method of treating spastic paralysis, and I would reaffirm my belief that for the treatment of uncomplicated spastic contracture Stöffel's operation on the peripheral nerves remains the best method hitherto devised. Physiologically it is the nearest approach we can get to the natural means of regulating the strength of a muscular contraction.

A PROPRIOCEPTIVE REFLEX EVOKED BY STRETCHING.

Sherrington has shown that the tonic or postural activity of muscle is a proprioceptive reflex arising in the muscle itself. Further, Liddell and Sherrington have shown that the adequate stimulus for this reflex is stretching of the muscle. Thus, the tendency of the lower limbs to bend under the body-weight evokes a stretch reflex or tonic action of the extensor muscles, which persists as long as the stretching force is acting. This, then, is the mechanism by which the upright position of the body generally is maintained. Normally, postural activity is found only in the antigravity muscles—that is, those which constantly resist and counteract the action of gravity. The centre for this reflex is in the mid-brain, and it is known to be controlled and influenced by the labyrinths, the cerebellum, and the cerebral cortex.

I have dealt elsewhere[2] with the bearing of these facts upon the ætiology of postural deformities. Here I will only remind you that postural deformities are due to default of the normal postural activity of the muscles, and their treatment comprises: (1) correction of the deformity, if possible; and (2) re-education of the postural reflex.

For these purposes remedial exercises or gymnastics are extensively employed, consisting almost entirely of movements performed in various ways. And, in view of what has already been said, we may ask ourselves this question: If movement and posture are two entirely different mechanisms, what is the good of performing movements in order to educate posture? Experience proves that it is some good. Movement and posture, though distinct, are nevertheless closely associated. Postures are changed by movements, and change of posture is the adequate stimulus for postural activity. The important point is that it is not the movement *per se*, but the fixing of the postures attained by movement that constitutes the real exercise.

There is too much arm-and-leg wagging in the schemes of most gymnasts. Conventional Swedish exercises are based upon the erroneous idea that postural deformities are due to weak muscles, and it is sought to strengthen these muscles by making them perform repeated movements. An interesting experiment has been made in applying the technique of certain forms of dancing—so-called operatic dancing—to the re-education of posture. It is interesting because not only does it provide for most patients an attraction which is wholly wanting in ordinary remedial exercises, but the essence of this form of dancing is the posing or fixing of postures as distinct from the movements employed to attain them. A recasting of remedial exercises on these lines is long overdue.

MOVEMENT AND POSTURAL ACTIVITY.

But it is a mistake to think of posture as merely a state of immobility. Movement and postural activity are closely associated in many, if not most, of the ordinary actions of muscles. It has been shown that the simple stretch or myotatic reflex—as Sherrington calls it—consists of two parts: a short-lasting relatively intense phasic reaction, and a less powerful longer-lasting tonic reaction. So that, for instance, when weight is suddenly thrown upon a partly bent limb there is a brief powerful phasic contraction of the extensors to take up the sudden strain, and a prolonged tonic reaction to maintain the posture, or, in other words, to prevent the limb from bending. Thus at every step in walking and running and in many other movements a postural reaction is evoked which fixes the part, if only for a moment, in the position to which it has been brought.

Students are taught that the action of a muscle is the effect of approximating its origin and insertion. Thus, for example, the student learns that the action of the quadriceps is to extend the knee-joint. It is nothing of the sort. It is true that the quadriceps does extend the knee, but that is a very small part of its action. The great function of the quadriceps is to prevent the knee from bending. It is one of the great postural muscles of the lower extremity, and as its action is of considerable interest and importance to orthopædic surgeons it may well be taken as a type.

The functions of standing, walking, and running are essentially reflex in character. Of course, they are influenced in various ways by voluntary action; but essentially they are reflex. The postural reflex activity of the quadriceps is essential for all these functions. Failing this, the individual may be able to control the knee for a time by an extraordinary voluntary effort. But voluntary effort cannot be continued indefinitely, and when it fails, the muscle lets the knee down. This is the familiar condition of quadriceps insufficiency so common after injuries and diseases of the knee-joint, and it is noteworthy that powerful voluntary extension of the knee may be possible in cases of marked quadriceps insufficiency.

WHAT IS REFLEX ATROPHY?

In every serious injury or disease of the knee-joint rapid wasting of the quadriceps is one of the first signs to appear and the last to disappear. As we are now taking the quadriceps as a type, these remarks apply equally to many other regions of the body. So far as I know, no adequate explanation of this muscular atrophy has ever been suggested. It is much more than a mere disuse atrophy. It is obviously some active process. It has been called reflex atrophy; but what is reflex atrophy? There is no evidence of any specific trophic innervation of muscles.

I would suggest that there are two physiological factors responsible for this type of atrophy. One, a reflex inhibition of the postural or tonic activity of the muscle, about which there is no doubt whatever, and the other, a reflex excitation of the phasic activity of the same muscle, or, in other words, an attempt at reflex protective spasm.

Now, postural activity alone is able to maintain a state of tension for long periods with hardly any increase of metabolism, as in maintaining ordinary postures. With the help of postural activity a mild phasic activity also can be maintained very economically, as in the condition of decerebrate rigidity. But without the support of postural action prolonged phasic activity is a most extravagant form of energy and it leads to a rapid using up of the materials from which the energy is derived.

Some years ago Langley[*] suggested that the atrophy of paralysis following nerve injuries was due, not to disuse, but on the contrary to excessive activity of the muscle brought about by the traumatic excitation of the nerve. He did not mention the tonic or postural activity of the muscle, but, as this is abolished in peripheral nerve injuries, the same explanation may be applied also to this case.

TREATMENT MUST INCLUDE ADEQUATE STIMULUS.

It is worth while perhaps to consider for a moment the means which are commonly employed in treating quadriceps insufficiency, apart from the treatment of any underlying cause. The means are: (1) massage, (2) electrical stimulation, and (3) exercises consisting almost invariably of movements of extension of the knee. Each of these methods is capable of developing a wasted muscle, but not one of them is an adequate stimulus for the postural activity of muscle. Sherrington remarked upon the difficulty of producing anything approaching postural activity by artificial means, such as electrical stimulation. However, by what I regard as for the most part a fortunate accident, the mere development of a muscle makes it better able to regain its postural activity by taking natural exercise. But we have all met with cases of quadriceps insufficiency which have responded to treatment up to a certain point and then have ceased to improve. It is well then to remember that the adequate stimulus to the postural reflex is stretching of the muscle, provided, of course, that the muscle is able to resist it, and cases of quadriceps insufficiency will often show an astonishing improvement as soon as they are put on adequate resistance exercises.

It is instructive to put beside this the well-known clinical fact that stretching of a muscle, when it fails to evoke the corresponding reflex, as in a paralysed muscle, is a most injurious factor.

Sometimes, when the quadriceps muscle is paralysed, the operation of transplanting the hamstrings or some of them into the patella is performed with the idea that the transplanted muscles shall take the place of, and function as, the paralysed one. This operation is as physiologically unsound as it is generally useless. Such cases are often shown holding the knee extended or walking at surgical meetings. But the condition is at best one of complete quadriceps insufficiency. Postural activity is not normally found in the flexors of the joint, and no one has ever yet succeeded in imposing a postural reflex on a muscle transplanted from the flexor group. Therefore, when the patient forgets his knee and ceases to walk with voluntary effort, as he must do sooner or later, the muscles let him down. A similar objection applies also to some other tendon transplantation operations, especially in the lower extremity. For example, the peronei cannot be made to take on the postural action of the tibial muscles, nor can the tibials be made to take part in the stepping reflex which is normal to the peronei.

In contrast to these are some tendon transplantation operations in the upper extremity, notably that for musculo-spiral paralysis. Here the muscles are concerned with voluntary movements of precision, and the true substitution of one muscle for another is frequently possible.

There are many other questions concerned with muscular activity that one would like to hear discussed. The influence of muscular activity on bone growth; the significance of postural deficiency in rickets; the nature of organic contracture of muscle. What is cramp? Is not chronic constipation a symptom, rather than a cause, of postural deficiency? And if you think that here I have overstepped the bounds of orthopædic surgery, let me remind you (1) that there are many people who think that intestinal stasis plays an important rôle in orthopædic conditions, such as chronic arthritis; (2) that Sherrington has shown that the postural activity by which the muscular walls of the intestines and other hollow viscera adapt themselves to changes in the volume of their contents is precisely similar to the postural activity of the skeletal muscles by which the upright position of the body generally is maintained; and (3) that Arbuthnot Lane has said that he was led to his views on chronic constipation by his observations on scoliosis. Now, scoliosis is a subject about which orthopædic surgeons, rightly or wrongly, think they know something, and surely, if it is permissible to argue from scoliosis to constipation, an orthopædic surgeon may be allowed to hold an opinion.

THE NEW SURGERY.

In these rather scattered remarks I have tried to indicate what I believe to be the most distinctive feature of orthopædic surgery to-day. A change is coming over surgery. The old surgery, by long tradition based exclusively upon anatomy and pathology, is passing away, and its place is being taken by a surgery which takes into account also the functions of the living body. In other words, mechanical surgery—mere technique—is not everything, and physiology is coming into its own.

In this respect orthopædic surgery undoubtedly leads the way, and it is already far ahead of any other branch of surgery. This is the explanation of the long treatment—often miscalled after-treatment—which is so unpopular with the surgeon who looks for quick returns, but which is so essential a part of orthopædic methods. This also is the reason why fractures must be treated by orthopædic methods—whether by orthopædic surgeons or others. For a fracture is not only a broken bone, but a grave disturbance of function, and we know to our cost—or should I say, to our profit?—that the mere mending of a fracture in good position is not necessarily followed by perfect restoration of function.

The physiology of muscular action, with which I have dealt so imperfectly here, is but one instance of the fundamental relationship between physiology and orthopædic surgery.

References.—1. Medical Science, Abstracts and Reviews, vol. xii., No. 6, p. 437; see also vol. x., No. 6, p. 484. 2. Brit. Med. Jour., April 23rd and 30th, 1921. 3. Ibid., Aug. 14th, 1920.

NORFOLK AND NORWICH EYE INFIRMARY.—This institution, which was founded in 1822, has now been amalgamated with the Norfolk and Norwich Hospital. The rearrangement provides for the maintenance of the Eye Infirmary as a separate entity administered by a committee appointed by the board of management of the hospital, and until the new premises which it is hoped to obtain are available the work will be carried on in the present building.

ON THE NATURE OF URINARY PROTEIN,

WITH SPECIAL REFERENCE TO CASES OF ECLAMPSIA.

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OWING to the very large number of hypotheses advanced concerning the ætiology of eclampsia, Zweifel some years ago aptly described it as "the disease of theories," and although, since then, as will be found in reviews of the subject in *Medical Science* (1921) and also by Hammett (1924) and by Bailey (1924), much work has been done and many suggestions offered to elucidate this perplexing condition, the ætiology of eclampsia still remains an unsolved problem.

Although cases of eclampsia have been described without any protein being detected in the urine, proteinuria is almost a constant finding, and is frequently very pronounced. The protein in such cases has usually been regarded as a mixture of serum albumin and serum globulin, with perhaps proteoses in addition, but definite proof of this seems lacking, and the experiments described in the present communication throw doubt on the statement.

About three years ago, in the course of an examination of the urine from a typical case of eclampsia, the author determined the optical activity of the urine and found it considerably less lævo-rotatory than was expected considering the protein content of the specimen. As search for the presence in measurable amount of other optically active compounds proved negative, and as removal of the protein yielded an inactive filtrate, the matter was more carefully investigated, as is detailed in the experimental part which follows.

Experimental Methods.

The experimental methods employed were identical in every case.

The urine was collected under a layer of toluene in glass-stoppered bottles, and as large a volume of urine as was available, usually about half a litre, was employed, but in Cases No. 1 and No. 3 as much as two litres were worked up, while the smallest quantity utilised was 270 c.cm. in Case No. 26. After separating any excess of toluene, the reaction of the specimen was adjusted, by the addition of sodium carbonate or acetic acid as the case required, till practically neutral to litmus paper, and the urine then filtered through a folded paper. As a rule, no difficulty was experienced in obtaining a perfectly bright clear filtrate, though a number of cases were encountered which gave turbid solutions. As this turbidity, being due to bacteria, was found to persist at the later stages, thus rendering polarimetric observations not only difficult but unreliable, all such cases were discarded.

The globulin and albumin present in the clear filtered urine were then fractionally precipitated by means of sodium sulphate at 40° C. As the protein content of the final solutions was calculated from nitrogen estimation by Kjeldahl's process, sodium sulphate was preferred as a precipitant to the more convenient ammonium salt, and the pure anhydrous sodium sulphate was used so as to avoid the large increase in volume which occurs with the crystalline salt. As Howe (1921) has shown that all the globulins are thrown out of solution when the sodium sulphate reaches a concentration of 21·5 per cent., sufficient of the finely powdered anhydrous salt was added to the urine to bring the concentration to approximately 22 per cent., and the mixture left in an incubator at 40° C. for some hours. The precipitated globulin was removed by filtration while warm, and the filtrate then saturated at 40° C. with anhydrous sodium sulphate to obtain the albumin. As the globulin fraction in practically every case represented only a small proportion of the total protein, attention was directed to the albumin fraction. The crude albumin, obtained as just described, was dissolved in cold water, the solution filtered, and the globulin and albumin fractionally precipitated with sodium sulphate at 40° C. as before. This process was repeated several times, usually six or seven, and as a rule after the fourth precipitation no globulin was present. The final precipitate of pure albumin (that is, free from globulin) was redissolved in water, and the solution dialysed until free from sulphate. The protein content of the resulting solution was then estimated and its optical activity determined.

The protein from two litres of urine from a case of typical eclampsia (see No. 1 in Table II.) was isolated, and the albumin separated from the globulin as described above. After dialysis against running tap-water for six days, then for two days against large volumes of distilled water, the solution of albumin was quite clear, only slightly brownish in colour, and free from sulphate as indicated by the absence of the ring test with barium chloride. The rotation of the solution was then determined, using a Hilger polarimeter with tripartite field, by which readings accurate to 0·01° are obtained. The mean of 12 readings for α in a 1-decimetre tube was −0·23°, and as the protein content by Kjeldahl's method (mean of four determinations, which all agreed closely) was 0·5806 per cent., hence the specific rotation of the albumin present in the urine was −37·80°.

Owing to the small amount of material available no attempt was made to obtain the albumin in the crystalline state, but the experiment was repeated with another quantity of urine from the same case, and a similar result was obtained—the value for the specific rotation of the albumin present in the urinary protein being −39·48°. As the preliminary examination of the urine and these two carefully conducted experiments with purified albumin clearly indicated the presence of an albumin with a lævo-rotation considerably less than the published values for serum albumin (see Table IV.), it was decided to determine the optical power of the albumin excreted in all the available cases of albuminuria in pregnancy, where the amount of protein was of a sufficiently high order.

TABLE I.—CASES DIAGNOSED AS "ALBUMINURIA OF PREGNANCY."

Case No.	Age in yrs.	No. of pregnancy.	Month of pregnancy.	Condition of patient.	Mammary gland.	Child.	Urine.	% protein.	$[\alpha]_D$ of protein.
									Degrees.
5	18	1	9	Œdema of feet and legs; B.P. 160/110.	—	Alive, slightly premature.	Catheter specimen; hyaline and granular casts.	1·27	−50·3
11	22	1	6	Considerable œdema.	—	Dead, premature.	Slight deposit of urates; no casts detected.	0·78	52·07
15	23	1	9	Nothing abnormal except proteinuria.	A.	Alive, mature.	Catheter specimen; turbid due to bacteria.	0·808 2·00	49·5 48·9
16	23	1	—	Marked œdema generally.	I.A.	Dead, mature.	Very dark-coloured urine.	0·274	65·7
21	24	1	9	—	A.	Alive, mature.	Catheter specimen; bacteria numerous.	0·31	51·02
25	26	1	9	—	—	Discharged from hospital undelivered.	Some R.B.C. and polymorphs.	0·166	54·2
27	19	1	9	Œdema of legs; eyelids puffy.	—		Urates and a few polymorphs.	0·265	49·05
30	—	1	8	—	—		Leucocytes and a few R.B.C.	0·226	53·21
31	—	—	8	—	—		Leucocytes; granular casts; a few uric acid crystals.	0·16	60·0
38	—	—	—	—	—	—	Numerous R.B.C. and acetone bodies present.	0·357	56·00
41	—	1	—	Had one fit after delivery.	—	—	Numerous hyaline and granular casts.	0·14	64·28
42	25	1	9	—	V.A.	Twins, alive and mature.	Brown colour; trace of bile pigment.	0·55	62·31

Experimental Results.

Twenty-six cases have now been examined in the manner just indicated. Twelve of these were diagnosed by the clinician in charge as albuminuria of pregnancy, and are tabulated in Table I., while 14 were described as of the eclamptic type and are tabulated in Table II.

In the cases of albuminuria of pregnancy (without convulsions), the specific rotation of the urinary albumin excreted ranged from −48·0° to −65·7°, with a mean value of −55·81°. Inspection of the cases in Table II. at once reveals the fact that the cases diagnosed as "eclampsia" are sharply divided into two groups, which for convenience may be referred to as the "low" and the "high" optical group respectively. In the "low" group, consisting of eight cases, the specific rotation of the urinary albumin ranged from −33·92° to −41·01°, with a mean value of −38·5°, while in the "high" group of six cases, the specific rotation varied from −49·4° to −58·07°, with a mean value of −56·87°. The possible significance of these values will be dealt with later.

The same method of examination of the urinary albumin was applied to five cases of proteinuria not accompanied by pregnancy. These are tabulated below in Table III. and include two typical cases of chronic nephritis and three of functional or orthostatic albuminuria—two of the latter being girls of about 12 years of age and the third a youth of 16 years. The value of the specific rotation of the albumin excreted by the kidney in these cases varied only slightly—namely, from −52·23° to −57·55°, with a mean value of −54·27°.

Optical Rotatory Power of Human Serum Albumin.

An experiment was then carried out to determine the optical rotatory power of human serum albumin, which had been subjected to identically the same treatment as the urinary albumin. For this purpose, Dr. X volunteered to provide the necessary blood, and 100 c.cm. was removed by vein puncture in the usual manner. After standing overnight, fully 50 c.cm. of clear serum were removed from the clot by means of a pipette and then centrifuged. The globulin present was then separated by the addition of the necessary amount of sodium sulphate following the same method as already described for the urine. Thereafter, the albumin was isolated from the globulin-free filtrate by saturation with sodium sulphate at 40° C. The precipitated serum albumin was removed by filtration, redissolved in water, and the process repeated four times. A portion of the solution of albumin then resulting was filtered through a No. 2 Chamberland candle and the optical activity and nitrogen content of the clear yellow-brown solution determined. From the Kjeldahl estimations, the protein content of the solution was calculated to be 1·285 per cent., and α in a 2 decimetre tube was −1·30°, so that the specific rotation of the serum albumin equalled −52·02°.

The remainder of the albumin solution was dialysed until free from sulphate. The resulting solution had a protein content of 5·121 per cent., and gave in a 1-decimetre tube $\alpha = -2·70°$, so that $[\alpha]_D = -54·47°$. The protein in solution was then precipitated by the addition of five volumes of alcohol, centrifuged, washed twice with alcohol and then with ether, and afterwards dried in a vacuum desiccator over calcium chloride. Approximately 1 per cent. solutions of the human serum albumin obtained as just described gave the undernoted rotations in the solvents indicated in Table IV.

TABLE II.—CASES DIAGNOSED AS "ECLAMPSIA."

Case No.	Age in yrs.	No. of pregnancy.	Month of pregnancy.	Condition of patient.	Convulsions.	Mammary gland.	Child.	Urine.	% protein.	[α]$_D$ of protein.
										Degrees.
1	26	1	7	Face puffy; no œdema of ankles; had severe headache before convulsions started. Uninterrupted recovery.	10 fits; patient quite unconscious after the third fit.	I.A.	Dead, premature.	Considerable albuminuria with hyaline and granular casts. Chloride excretion low. Only a trace of protein 9 days after delivery.	0·5806 0·5825	−37·89 39·41
2	24	1	9	Patient became blind (temporarily).	No fits.	I.A.	Alive, mature.	Moderate albuminuria; only a trace of protein 2 days later.	0·748 0·4017	40·11 39·65
8	—	—	—	—	Post-eclamptic.	—	—	—	0·57	39·54
13	27	1	9	B.P. increased to 158 in spite of treatment. Mental condition abnormal for about 10 days after eclamptic seizure. A week later patient discharged quite recovered.	First fit 1 hour after delivery; had 22 fits.	I.A.	Alive, mature.	Catheter specimen; marked albuminuria. Deposit of urates.	1·06	33·92 34·97
22	35	3	7½	Œdema of feet and ankles; sudden amaurosis, severe headache and vomiting before fits began. B.P. rose from 140 to over 200 and continued high until delivery 3 weeks later. Discharged well a fortnight after birth.	3 fits; patient comatose afterwards.	I.A.	Dead, premature.	Granular and hyaline casts; considerable albuminuria. Trace of protein in urine 3 months later.	0·4567 0·0716 0·482	35·02 38·1 37·35
32	37	1	7½	Swelling of face and legs. B.P. 170 to 200. 2 fits. Labour induced. After labour urine output increased and œdema gradually disappeared. Discharged 11 days after labour, with no albumin.	1 fit before admission and 1 fit after admission, which lasted a minute.	I.A.	Alive, premature.	Triple phosphate crystals present. Numerous hyaline and granular casts. Acetone bodies present. Only very slight trace of protein a month later.	1·72 1·65 1·820	39·57 41·21 41·61
34	37	—	—	Œdema of ankles for 3 weeks. Headache and dimness of vision B.P. 145/100. Severe headache before convulsions. Patient died 2 hours after delivery (hæmorrhage, toxæmia, and shock).	6 fits (antepartum).	I.A.	Alive, mature (died 2 hours after).	Urine had a very marked red-green fluorescence. Marked albuminuria with many R.B.C. and hyaline and granular and epithelial casts. Acetone bodies present.	1·65 1·307 0·6225	39·39 37·03 38·58
40	21	1	9	Patient admitted to hospital in comatose condition. Face cyanosed. Typical eclamptic convulsions. Mentally unstable for 3 weeks. B.P. 135–140 after delivery. Patient well nourished (instrumental delivery).	11 fits before delivery, 25 after.	—	Alive, mature	Urine had a greenish-red fluorescence.	1·4	40·7
12	21	1	7	Pre-eclamptic. B.P. 158.	6 fits.	—	Discharged undelivered.	Deposit of urates; marked albuminuria; 4 days later only a trace.	2·372 2·439	57·32 55·76
14	28	1	9	Œdema under eyes. B.P. 158.	17 fits; first being 1 hour after delivery.	—	Alive, mature.	Catheter specimen; deposit of urates.	0·0277 0·0275	49·4 56·06
16	26	1	9	Œdema of legs and feet. B.P. 165.	8 fits; immediately after delivery of head.	A.	Alive, mature.	Catheter specimen; deposit of urates.	0·5917	58·48
17	22	1	9	Œdema and headache. B.P. 210. Patient died probably of septicæmia.	9 fits after delivery.	I.A.	Alive, mature.	Catheter specimen.	0·1554	57·9
20	22	—	8	Patient unconscious. B.P. 150.	18 fits.	—	Alive, premature.	Catheter specimen; deposit of urates, and some casts detected.	1·687	58·67
29	27	1	—	Patient slightly confused. B.P. 165. Instrumental delivery. Developed chest symptoms and abdominal distension. Discharged after a fortnight with slight albuminuria.	A number of fits both before and after delivery (7 fits in all).	—	Dead, mature.	Triple phosphate crystals; a few W.B.C. and R.B.C. Granular casts.	0·2264	57·4

A. = active. I.A. = inactive. V.A. = very active.

TABLE III.—*Cases of Albuminuria not Complicated by Pregnancy.*

Case No.	Age in yrs.	Sex.	Condition.	% protein.	$[\alpha]_D$ of protein.
					Degrees
3	32	F.	Chronic nephritis, July, 1922	0·395	−53·3
			" " Aug., 1922	0·8776	57·55
			" " April, 1923 (d. Oct., 1924)	2·5895	55·42
4	40	F.	Chronic nephritis.	0·98	52·60
10	16	M.	? Orthostatic albuminuria.	0·476	52·23
24	12	F.		1·125	53·32
26	12	F.		0·1421	56·7

TABLE IV.

Solvent.	Concentration of solution.	Specific rotation.
Water	0·937 %	−52·80°
1 % sodium chloride ..	0·991 %	−52·5°
N/4 sodium hydroxide .	0·933 %	−68·25° → −17·55°

The racemisation curve for the human serum albumin was also determined for a 1 per cent. solution in N/4 sodium hydroxide, as described by Woodman (1921). It was hoped that this might later prove useful for comparative purposes. The data are given in Table V.

TABLE V.—*Human Serum Albumin.*

1 % in N/4 NaOH.

A = Time in hours. B = Specific rotation.

A.	B.	A.	B.	A.	B.
1	−68·25°	27	−45·60°	150	−24·92°
3	60·67°	55	34·90°	200	18·38°
7	53·09°	80	29·25°	240	17·55°

Optical Rotatory Power of Cow's Lactalbumin.

As it was impossible to obtain sufficient human milk for the isolation and polarimetric examination of human lactalbumin, the optical rotatory power of cow's lactalbumin was determined. Two quarts of fresh dairy milk were allowed to stand for some time and the cream then removed as completely as possible by skimming. To the skimmed milk (1850 c.cm.) two volumes of water (3700 c.cm.) were added, and the casein precipitated by the gradual addition of acetic acid with stirring. To complete the precipitation 17 c.cm. 10/1 normal acetic acid were required. Sufficient toluene was then added to form a film on the surface of the mixture, which was left to settle overnight. The clear supernatant fluid was syphoned off and then evaporated to a tenth volume at 30° to 40° C. under diminished pressure. The concentrated solution, after filtration through a folded paper, was warmed to 40° C. and treated with sufficient anhydrous sodium sulphate to give a 17·5 per cent. solution. The resulting precipitate was filtered off and the filtrate saturated with sodium sulphate at 40° C. The precipitated proteins were then dissolved in about 300 c.cm. of water, and the fractionation of the globulin and albumin carried out as previously described for urine and blood serum. The albumin solution was then dialysed until free from sulphate, concentrated somewhat in vacuo at 30° C., and after filtration through a No. 2 Chamberland candle its rotation and protein content were determined. From the Kjeldahl estimation the protein content was 0·9108 per cent., and the mean of ten readings for α in a 1-decimetre tube was −0·375°, so that the specific rotation of cow's lactalbumin

$$= \frac{-100 \times 0{\cdot}375}{1 \times 0{\cdot}9108} = -41{\cdot}17°$$

Nature of Urinary Protein.

Considerable attention has been directed to the nature of the protein excreted in the urine in different diseases, but apart from the well-known case of Bence-Jones's protein (1848), and the crystalline globulin isolated by Noel Paton (1892), the coagulable urinary protein almost invariably has been regarded as a mixture of serum proteins. Senator (1874) drew this conclusion as far back as 1874, and this view, supported as it was by later biochemical tests, has persisted in spite of the fact that the presence of other proteins in the urine has been established (van Noorden, 1907). Consequently greater attention was given to investigations, such as those by Cloëtta (1891) and more recently by Mandelbaum (1910) and others, in which attempts were made to correlate the various diseases exhibiting proteinuria with the magnitude of the albumin to globulin ratio. Work of this type has proved of little value (Noel Paton, 1890), but with our increasing knowledge of the proteins themselves and improvements in our methods not only of distinguishing the different types of proteins, which may occur in urine and to which Cavazzani (1921) has recently urged attention, but also of differentiating the several members of the same group of proteins, it seems likely that by a more careful study of the chemistry of the proteins excreted in the urine some light may be thrown on at least certain types of proteinuria, the clinical importance of which has been fully appreciated by all physicians for many years.

It is well recognised that in the study of the carbohydrates, the determination of the specific rotatory power as a means of characterising and establishing the identity of the various members of the group has proved of the greatest value. In spite of the adverse opinion of Robertson (1918), the use of the polarimeter in the study of the proteins would seem to be equally useful, and recent work points in this direction. Thus the important results obtained by the racemisation method, introduced by Kossel (1912) and elaborated by Dakin (1912) and others (1913), are dependent on the detection of changes in optical activity. Further, the observation of Sebelien (1885), made 40 years ago, that the specific rotations of the albumins in serum and in milk were different is supported by the most recent chemical analyses (Hartley (1914), Crowther and Raistrick (1916), and Woodman (1921)). In the experiments described in the present communication it is shown that the albumin excreted in the urine in different conditions has not always the same rotatory power. From this the reasonable conclusion is drawn that the urinary albumin may vary in kind—a result which would be difficult to obtain by any other method, although recently Ishiwara (1923), by a modified Abderhalden reaction, has differentiated the protein appearing in the urine in pregnancy from those in chronic and acute nephritis. Moreover, the polarimetric method has the further advantage that it indicates the *possible* nature of the protein in question. Thus, the mean value for the specific rotatory power of the albumin excreted in the cases of "albuminuria of pregnancy" without convulsions (Table I.) was −55·81°; that in six cases of the "high optical" eclamptic group (tabulated in Table II.) was −60·37°; and that in five cases of albuminuria not associated with pregnancy (tabulated in Table III.) was −54·27°. All these values agree closely with those obtained by the author for human serum albumin prepared by an exactly similar process—namely, −54·47°, −52·02°, and −52·80° (see above). It may be noted also that the values, while considerably less than the exact figure, −62·88°, reported by Young (1922) for crystalline horse serum albumin, approximates the values given by Lewis (1922) and also the earlier values recorded in the literature for serum albumin. These are summarised in Table VI.

From Table VI. one is tempted to conclude that the albumin excreted in the urine in the conditions referred to above is probably identical with serum albumin. This is in agreement with the generally accepted view, but the results obtained by *Sammartino* (1922) must be considered. This worker applied van Slykes's method of analysis to differentiate between the protein excreted in amyloid disease and in Bright's disease. At first sight the values reported, as is evident from Table VII., would seem to fit in with the protein excreted in both conditions being a mixture of serum albumin and serum globulin; but the values obtained for the cystine fraction not only differ widely in the two conditions (being four times as great in amyloid disease as in Bright's), but also amount to only a very small fraction of the cystine present in the blood proteins. It is difficult to reconcile this result with the close agreement of the optical activity of normal human serum albumin and of the urinary albumin excreted in the cases of albuminuria of pregnancy, chronic nephritis, and orthostatic albuminuria examined by the writer. Consequently, until further investigations of this type have been carried out on "purified" urinary proteins, it seems preferable to regard the albumin in these conditions as probably serum albumin. On the other hand, the urinary albumin in more than 50 per cent. of the cases of "eclampsia" investigated by the author is probably different from serum albumin, as in this "low optical" group the mean value for the specific rotation of the albumin present was found to be $-38 \cdot 5°$. It would seem a significant fact that while in no case of proteinuria uncomplicated by pregnancy nor in "albuminuria of pregnancy" *without* convulsions has an abnormally low specific rotation for the urinary albumin been observed, in a large percentage of the eclamptic cases the albumin excreted in the urine is considerably less lævo-rotatory than serum albumin. Experiments have been in progress to determine the nature of this low optically active urinary albumin, but owing to the difficulty of obtaining material suitable for such investigation, so far no definite conclusion has been come to and further work will be necessary. The value of the specific rotation, however, suggests that the albumin may be lactalbumin. As far as the author is aware, no record exists of the specific rotation of human lactalbumin, but it probably does not differ widely from that of cow's lactalbumin, for which Sebelien (1885) quotes − 36·4° to − 36·08°. This value is a little lower than the more recent figure—namely, − 41·23°, given by Piettre (1924). The latter agrees closely with that recorded in the experimental part of this paper (− 41·17°). Though, as the result of biological tests, such as those carried out by Hamburger (1901), Schlossmann and Moro (1903), and Bauer and Engel (1911), it seemed to be established that the serum proteins were identical with the corresponding milk proteins, it has now been shown that while serum globulin is chemically identical with lactoglobulin, lactalbumin and serum albumin are distinct chemical individuals (Hartley (1914), Crowther and Raistrick (1916), and Woodman (1921)). This, as already indicated, is in agreement with the observed difference in the specific rotation of the two albumins.

TABLE VI.

Observer.	Date.	Remarks.	Specific rotation.
Fredericque ..	1880	Amorphous material.	−56·07° to −58·41°
Starke	1881	Do. in aqueous solution.	−60·05°
Sebelien	1885	Dialysed solution in water.	−60·1° to −62·6°
Michel	1896	Crystalline material.	−61°
Maximovitsch	1901	" "	−47·47°
Piettre and Vila	1921	Amorphous material (acetone); horse.	−54° to −58°
Lewis	1922	Horse serum.	−57·40°
Lewis	1922	Normal human serum (small amount $(NH_4)_2SO_4$).	−50·58° to −54·83°
Young	1922	Crystalline horse serum.	−62·83°

TABLE VII.

—	Urinary protein from—		Serum *or* lacto-globulin	Serum-albumin	Lact-albumin
	Bright's disease	Amyloid disease			
NH_3 nitrogen ..	7·79	8·78	7·77	5·8	7·93
Melanin nitrogen ..	2·72	3·19	2·14	1·1	1·82
Total N_2 of bases ..	*30·27*	*28·0*	*26·12*	*36·9*	*26·72*
Cystine N_2	0·08	0·33	1·87	3·5	2·18
Arginine N_2 ..	11·72	10·77	10·96	10·4	7·56
Histidine N_2 ..	4·15	4·78	4·47	6·7	4·44
Lysine N_2	14·32	12·12	8·82	16·3	12·54
Total N_2 of filtrate ..	*60·34*	*61·42*	*63·10*	*66·5*	*62·49*
Amino N_2 of filtrate	58·40	60·63	61·65	54·2	59·84
Non-amino N_2 ..	1·94	0·79	1·45	2·3	2·65
Total	*101·12*	*101·39*	*99·13*	*100·3*	*98·96*

Possible Significance of Lactalbumin in Relation to Eclampsia.

If, then, the suggestion that the "low optical" urinary albumin is lactalbumin be accepted, we have in certain cases of eclampsia an analogous condition to the lactosuria which not infrequently occurs in the later months of pregnancy or soon after labour. While corresponding to the symptomless albuminurias of pregnancy, there exists the fairly common glycosuria of pregnancy. However, while the presence of lactose in the blood and its excretion in the urine would do little or no harm to a patient, the presence in the blood-stream of lactalbumin, which must be regarded as a foreign protein, might entail grave danger. It may be that normally small amounts of lactalbumin find their way into the blood-stream during pregnancy, but that, as a rule, an immunity to this foreign protein is established. When this immunity is not established, or when a sudden release of a large amount of lactalbumin occurs corresponding to a "shock" dose of foreign protein, then eclampsia is the result. This view may suggest that eclampsia might be liable to occur in cases where a child dies at or soon after birth, or in cases where the mother for any reason does not breast-feed the child. No record of such an occurrence, however, is known to the author. If it be assumed not to occur, the fact is in perfect harmony with the theory suggested, for the mother in the majority, if not in all such cases, would be completely immunised against lactalbumin. Consequently, no eclampsia would ensue. The above view may also have a bearing in explaining the fact, now well established, that the incidence of eclampsia is much greater in primiparæ than in multiparæ.

The condition of eclampsia would thus be regarded as of the anaphylactic type, a view which has been strongly upheld by some workers, including Veit, Hofbauer, Roseman and Anderson, Gräfenburg and Lockmann, and also adversely criticised by others, amongst whom are Frank, and Heiman, and Zweifel, but, nevertheless, this view cannot altogether be ignored, for although Zweifel (1921) has stated that eclampsia cannot be considered as an anaphylactic reaction, that was only with respect to fœtal and placental proteins. Further, Levi (1922) has recently reported benefit produced by intramuscular injections of sterile milk in cases of pregnancy toxæmias including eclampsia.

A possible alternative explanation of the part played by lactalbumin is that in response to its introduction into the blood proteolytic enzymes would likely appear. By their action proteoses or other toxic decomposition products of the foreign protein would result, and unless the foreign protein and its hydrolysis products could be detoxicated by the liver or eliminated by the kidney rapidly enough, symptoms characteristic of eclampsia (or the pre-eclamptic state) would ensue. In this connexion it may be added that Hülse (1924) has presented evidence to prove that the increased blood pressure in eclampsia is caused by peptone in the blood; while Esch (1912) and Franz (1912) found in the serum and urine of eclamptics substances resembling anaphylactic poisons in their action and presumably derived from proteolysis somewhere in the body.

As recent work (Woodman, 1921) has shown that lactalbumin, like caseinogen, must be synthesised by the mammary glands, these glands are implicated in the causation of eclampsia. This idea, however, is not new. Sellheim (1909) suggested that eclampsia might possibly be due to toxins elaborated in the mammary glands, and Kastle and Healy (1912) advanced the view that parturient paresis (milk fever) in cows is caused by the absorption of toxic substances produced in the formation of colostrum and that the condition bears some resemblance to human eclampsia. Gessner (1921) also, in criticising Hofbauer's views on eclampsia, has pointed out that it also occurs in young cattle.

Further, unlike the proteinuria of, say, acute nephritis, that occurring in pregnancy is usually very materially influenced by the amount of protein in the diet. This fact, taken along with the well-known practice amongst farmers that a diet rich in protein is best for a good milk-supply, and the recent observations by Adair (1925) on the influence of diet on lactation in the human subject, would tend to support the view that the mammary gland is an important factor in the causation of eclampsia. In all the cases of the "*low optical*" group (Table II.), in which the condition of the breasts is reported, they are stated to be practically inactive. This inactivity may be explained by the stimulus for milk production coming too early, perhaps as the result of over-activity of the *corpus luteum* (Swale Vincent, 1924; Wallis and Williams, 1922), and thereby bringing about eclampsia. It is well to remember, however, in this connexion the observation by Hartwell (1921) that certain protein *dietaries* apparently render milk poisonous and finally check its flow.

The experiments described in this communication are only of a preliminary nature, but owing to the comparative rarity of eclampsia and the consequent difficulty in obtaining suitable material for such investigations the results so far obtained are published. The author is well aware, however, that much further work will be required and a greater number of cases investigated before the suggestions offered in the foregoing pages can be accepted as established facts.

Summary.

1. Experimental evidence is submitted which shows that the protein excreted in the urine in various conditions is not always identical.

2. In the 12 cases investigated of "albuminuria of pregnancy" without convulsions the specific rotation of the urinary albumin averaged −55·81°, and thus agreed with that found for human serum albumin under similar treatment—namely, −54·47°.

3. A similar close agreement in specific rotation—namely, −51·27°—was found in five cases of proteinuria not associated with pregnancy.

4. On the other hand, the 14 cases of eclampsia investigated were *sharply* divided into two groups, one group of six having an average $[\alpha]_D$ of −56·87°, and the other group of eight having an average $[\alpha]_D$ of −38·5°.

5. The optical activity of the albumin in the former group agrees well with that of serum albumin (−51·47°), while that in the latter approximates closely to that of cow's lactalbumin (−41·17°).

6. Accordingly, it is suggested (*a*) that in certain types of eclampsia the urinary albumin may be mainly lactalbumin; (*b*) that eclampsia may be an anaphylactic reaction due to the circulation in the blood of this foreign protein; and (*c*) that the mammary gland may be an important factor in the causation of eclampsia.

In conclusion, the author wishes to express his thanks to the staff of the James Mackenzie Institute for Clinical Research for assistance in various directions; also to Dr. A. E. Chisholm, of the Royal Infirmary, Dundee, for supplying the majority of the specimens; and also to Prof. P. T. Herring, of St. Andrews University, for much encouragement and advice.

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A CASE OF ABDOMINAL LYMPHADENOMA.

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THIS case is recorded on account of the unusual features presented as regards diagnosis, distribution of the lesions, and mode of death.

A female, aged 26, was admitted to the Royal Hospital for Diseases of the Chest on August 5th, 1924, from the Willesden General Hospital, whence, having been observed to be febrile and to lose weight, she was transferred for observation as to her chest.

She had suffered for about a year from pain in the right thigh and leg, in the sacral region, and occasionally in the left thigh. She also complained that some curvature of the back had developed.

Condition on Admission.—The patient was thin and pale. Temp., 102·8° F.; pulse, 144; resp., 22. Mucous membranes were of good colour, no cyanosis or jaundice, there were some small deep ulcers on the face. Tongue red and glazed; no glandular enlargement in the neck. Pulse regular, blood pressure 100 mm. Hg systolic and 75 diastolic. Heart and lungs presented no abnormal physical signs. The abdomen was rigid and difficult to palpate, particularly in the upper part. A few hard glands in the right groin. A definite kyphosis of the lower dorsal and lumbar region was present with rigidity, but no redness or tenderness. No sensory changes in lower limbs or trunk; nothing significant in reflexes. Urine, sp. gr. 1010, acid, contained trace of albumin but no sugar. There had been amenorrhoea for 12 months. The findings did not suggest disease of the chest or central nervous system. The patient was quite definite that the spinal deformity was of recent (within six months) development.

Course and Progress.—Temperature fluctuated between 98° and 101°; pulse-rate varied from 144 on admission to 92; respiratory-rate from 20 to 26.

Blood Count (August 9th, 1924): Hæmoglobin, 77 per cent.; red blood corpuscles, 4,000,000, some anisocytosis and polychromatophilia. White blood corpuscles, 23,000 with *differential count: Polymorphs*, 91 per cent. (20,930 per c.mm.); small lymphocytes, large lymphocytes, and large hyaline, each 3 per cent. (690 per c.mm.); eosinophiles and basophiles, 0.

Urine.—No casts. On culture *B. coli, B. proteus*, and an organism resembling a fæcal streptococcus were recovered. There were occasional attacks of severe pain down the back of the thighs.

Pelvic Examination revealed no abnormality. A swab taken from the cervix uteri showed pus cells with a streptococcus as the prevailing organism.

X Ray Examination of the Spine by Dr. C. Gouldesbrough showed abnormalities of ninth and eleventh dorsal and fourth lumbar vertebræ, which were wedge-shaped. "The outlines of the vertebræ are very regular and do not suggest tuberculous caries so much as mechanical pressure." Rarefaction of the body of eleventh dorsal was noted. On August 20th, 1924, the right side of the face was noted to be puffy. Albumin was present in the urine in small quantity. On the 28th the face and ankles were definitely œdematous, and the urine showed increase of albumin. From the 31st the daily quantity of urine varied from 12 to 28 oz., and the albumin rose from ¼ parts per mille (Esbach) to 9 (Sept. 2nd), remaining afterwards fairly constant at that figure. Microscopical examination of urinary deposit showed pus cells and leucocytes—small epithelial cells and a few doubtful granular casts. Urea-concentration test indicated a definite urea retention. On Sept. 13th hyaline and coarsely granular casts were found with some pus and epithelial cells. The abdominal condition remained much as before, the liver was felt and was apparently tender.

The condition was provisionally diagnosed as amyloid disease, supervening on a chronic streptococcal infection of the vertebral column, or alternatively neoplasm of the vertebral column. The œdema continued, vomiting, dyspnœa, and headaches supervened, and the patient died in coma Sept. 21st, 1924.

By the courtesy of Dr. Vickery, resident medical officer of Willesden General Hospital, we learned that while there the temperature ranged from 98° to 100° with occasional evening rise to 101°. There had been no albuminuria.

Post-mortem Appearances.

External Appearance.—Generalised œdema, marked abdominal distension, several small facial ulcers, no palpable enlargement of glands.

On Section.—1. Thorax: About 2 pints clear brownish fluid in each pleural cavity; lungs showed very marked collapse; no pleurisy or pleural scarring. On section lungs contained no excess of blood or any œdema fluid; there was a purulent exudate in bronchi. Heart: Small excess of clear pericardial fluid, very slight roughening of pericardium over left ventricle; valves competent; muscle poor. 2. The abdomen contained about three pints of yellowish-brown fluid containing a few flakes of fibrin. Some cheesy fibrinous exudate over the pelvic floor; no inflammation of uterus and adnexa. The liver showed a large nodular, pale yellowish area on its anterior surface, and was generally enlarged, extending well below (2 inches) the costal margin. On section this pale area, which was about 3 inches in diameter and irregular in outline (with small outlying area), extending deeply into liver, and resembled a *malignant* tumour. The spleen of normal size or rather smaller. On section was a typical "sago-grain" spleen, the grains of considerable size, and the intervening tissue dark purple (iodine test negative). The kidneys were of medium size and of extreme pallor, in colour slightly yellowish-grey. They stripped with some difficulty. On section this pallor was still more noticeable, the colour being grey-white with some yellowish streaks in the medullary region. Iodine test negative. The pancreas was large and unususally tough. *Lymphatic system*: All lumbar and sacral glands were densely matted together and to surrounding structures, exceedingly tough and hard, but only moderately enlarged. The matting appeared to be of the nature of a chronic inflammatory fibrosis rather than malignant extension, the great veins being attached to, but not infiltrated by, the glands. Some glands were firmly fixed to the anterior ligaments of the lumbar spine in the same way. No other gland groups appeared to be affected. Spinal column: The eleventh dorsal vertebra was about half the thickness of adjacent vertebræ. The discs showed no abnormality, but the body of the vertebra was soft and pulpy. Adjacent vertebræ were not affected, but the body of the second lumbar vertebra was also found to be soft to the knife. (The eleventh dorsal vertebra was removed for section.)

Histology.

Examination of sections from the lumbo-sacral glands, the spleen, and the deposits in the liver and bone show the characteristic picture of lymphadenoma of the acute type ("malignant type" of some authors). At the growing edge of the deposits in the liver the granuloma showed most clearly the varied nature of its cells, many endothelioid cells with some giant endothelioid cells containing one to three large irregular hyperchromatic nuclei, reticular cells, a few small lymphocytes, fairly numerous eosinophiles, and some *plasma-cells. The spread in the liver was primarily from* Glisson's capsule along the inter-lobular connective tissue, and then by direct extension into the lobules themselves. At the edge of the granulomatous areas the liver cells showed shrinkage and degeneration, and marked increase of the supporting and endothelial cells and deposition of pigment. In the walls of a few of the capillaries small amyloid deposits were found.

A similar appearance was found in the more outlying glands of the lumbo-sacral group (apparently those most recently infiltrated). But in the more central glands of the group, which were densely matted together, considerable fibrosis had taken place. Sections of the spleen showed enormous increase of reticular structures, generalised fibrosis, and collagen deposition. In the fibrous tissue a few endothelioid cells were present, and in the less fibrous areas the typical cells of the granuloma were found. Areas of pigmentation and some small amyloid deposits in relation to capillaries and fibrosed Malpighian corpuscles were also observed.

Sections of the body of the eleventh dorsal vertebra show considerable bone destruction, although few active osteoclasts were seen. The bone and marrow appear to be largely displaced by a scantily cellular tissue with a few areas of lymphocytic infiltration containing some endothelial cells, reticular cells, and "giant cells" (the latter quite distinct from the multinucleate cells of the marrow). The nature of the granulomatous infiltration was less obvious here than elsewhere.

Sections of the kidney show advanced amyloid degeneration of the walls of the glomerular capillaries and of the capillaries running parallel with the pyramidal tubules. The kidney shows also granular and cloudy changes in the tubular epithelium and a considerable increase of inter-tubular connective tissue, partly fibrous in nature but rather more cellular than the interstitial tissue of chronic interstitial nephritis. This tissue showed early endothelial hyperplasia and may possibly represent an early infiltration similar to that found in the liver.

Conclusions.

Diagnosis by examination of an excised gland is not available in the "abdominal form" of Hodgkin's disease because only deep lymphatic glands are affected. In this case the clinical picture was obscured by a polyleucocytosis (probably of secondary origin), radiological appearances and postural changes of an uncommon nature, and the late onset of renal amyloidosis. Bony infiltration and amyloidosis are both recognised sequelæ of Hodgkin's disease, although comparatively uncommon.

DONCASTER INFIRMARY.—It is proposed to build a new infirmary at a cost of £300,000. The existing buildings, which contain 95 beds, have been twice enlarged in the last 20 years, but are still so inadequate that many patients have to be sent to Sheffield, Leeds, Hull, and Nottingham. When the infirmary was established in 1792 the population of this area was 15,000; it is now nearly 200,000. The miners and railway men, who form 80 per cent. of the working population, together with the glass-workers, have submitted to a weekly deduction from their wages towards a building fund, and their payments amount to £12,000 a year.

SHEFFIELD HOSPITAL SITE.—Sheffield recently has been fortunate in securing Norton Park as its future hospital site. This park, situated in an elevated position well above the city, is 120 acres in extent, and within 12 minutes ambulance service of the city centre. The value to the hospitals of this site has been considerably enhanced by the generous gift from Councillor and Mrs. J. G. Graves, of Sheffield, of the remaining 154 acres of adjacent land and wooded estate, making an open space of 274 acres, thus safeguarding for all time the future voluntary hospitals of Sheffield from any proximity to industrial and residential buildings.

Clinical and Laboratory Notes.

A NOTE ON THE GLOBULIN AND COLLOIDAL GOLD REACTIONS OF THE CEREBRO-SPINAL FLUID

AFTER THE MALARIAL TREATMENT OF GENERAL PARALYSIS OF THE INSANE.

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AND

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DURING the observation of 80 cases of general paralysis treated with therapeutic malaria, it has been found expedient to re-examine the cerebro-spinal fluid in 25 cases at varying dates after the termination of the pyrexia. Although recent observers, including McAlister[1] and Houston and Armstrong,[2] have stated that little or no alteration in the reactions of the cerebro-spinal fluids is to be seen, our findings hardly seem to support their views, at least in so far as the globulin and colloidal gold tests are concerned.

From the results we quote below it will be seen that more than half the cases mentioned now show a negative reaction to the globulin test, whereas all showed a positive result before treatment.

As regards the colloidal gold reaction, even allowing for the human element in taking the readings, the changes more or less correspond in their occurrence with the conversion of a positive globulin reaction into a negative one; furthermore, the change has not only been the "displacement to the left and upwards" mentioned by Pappenheim, but is also of the nature of a conversion of a true paretic reading to that more usually associated with a diagnosis of cerebro-spinal syphilis. (Table I.)

TABLE I.

Case.	Before treatment.		Period since treatment.	After treatment.	
	Coll gold.	Glob		Coll. gold.	Glob.
1	5555554321	Pos.	16 months.	4555544300	Pos. weak.
2	5555310000	"	18 "	0144432100	Neg.
3	5555555532	"	22 "	2215554300	"
4	5555512222	"	19 "	1165553100	Pos.
5	5555554310	"	4 "	2555543000	"
6	5555421100	"	8 "	2444433211	Pos. weak.
7	5555554321	"	21 "	0234331000	Neg.
8	5555513210	"	11 "	1333331100	"
9	5555532000	"	17 "	0123432200	"
10	5555333110	"	12 "	0122322300	"
11	5555521000	"	10 "	0133332100	"
12	5555542100	"	22 "	5555554420	Pos.
13	5555421000	"	11 "	0112332100	Neg
14	5555551100	"	14 "	0022321100	"
15	5555555410	"	15 "	0155432000	"
16	5555542100	"	16 "	0124432200	"
17	5555322100	"	16 "	3335444300	"
18	5555541000	"	15 "	0123443100	"
19	4555542200	"	12 "	0255544321	Pos.
20	5555554100	"	15 "	4555553311	"
21	5555555542	"	13 "	0125513300	Neg.
22	1125555510	"	14 "	5555544300	Pos. weak.
23	4555555412	"	13 "	4555544300	Pos.
24	5555555430	"	7 "	5555555432	"
25	5555554200	"	6 "	4555553220	"

It must be pointed out, however, that changes in the globulin and colloidal gold reactions do not necessarily correspond with the presence or absence of definite clinical improvement. (Table II.)

TABLE II.

Reaction.	Physical condition.		Mental condition.	
	Improved.	Not improved.	Improved.	Not improved.
Altered	8	6	5	9
Not altered ..	7	4	6	5

Of the ten cases shown as not physically improved it should be pointed out that six were admitted in fair health and are still in that condition.

Although we do not attempt to draw any conclusions from our findings, it may be of interest to note that of those cases admitted in an advanced condition of general paralysis (showing progressive dementia and faulty habits coupled with physical debility), out of a total of 12, 8 have shown no appreciable alteration in the reactions of the cerebro-spinal fluid after treatment with malaria. On the other hand, out of the 13 early cases, 10 have shown definite changes in these respects.

We are indebted to our medical superintendent, Dr. F. M. Rodgers, for permission to report our findings.

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[1] W. M. McAlister: Journal of Mental Science, January, 1924, and April, 1925.

[2] T. Houston and E. Armstrong: Ibid., October, 1924.

TRAUMATIC LESION OF THE CAUDA EQUINA; LAMINECTOMY; RECOVERY.

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THIS case of injury to the cauda equina presents several features of interest that render its record desirable.

The patient, a stone-mason, aged 45, fell 40 feet to the ground in a scaffold accident on Sept. 3rd, 1924. He was admitted at once. In addition to severe shock he had extensive contusions over the lower ribs and in the lumbar region, and he had a Pott's fracture on the left side and some fractured metatarsals on the right side. The abdomen rapidly became distended and tender, and there was vomiting and hiccup. The lumbar spinous processes appeared to be somewhat irregular and the power of the lower limbs impaired, but an exact investigation was rendered difficult by reason of the fractures.

The following day the man had retention of urine and complained of severe lumbar pain, and on Sept. 5th there was loss of control of both urine and fæces. On the 6th the lumbar cerebro-spinal fluid was found to be intimately mixed with blood.

Examination on the 7th showed weakness of the lower limbs but no palsy at any joint and no abnormality of cutaneous sensibility. Tuning fork vibrations were correctly perceived. The knee-jerks were normal, the ankle-jerks were abolished, the calf-jerks were normal. The epigastric and abdominal reflexes were all normal. On the 10th there was paresis of the lower limbs. The knee-jerks were exaggerated equally and both ankle-jerks remained abolished. The abdominal reflexes were all healthy, but the plantar responses and the superficial anal and bulbo-cavernosus reflexes were found to be all absent. Erections had not occurred since the accident. Sensibility to every variety of stimulus was normal throughout. The lumbar cerebro-spinal fluid contained still a little blood. A lesion of the cauda equina, below the second lumbar segment, was diagnosed and a radiogram showed a fracture of the first and second lumbar vertebræ.

Laminectomy was performed on Sept. 11th and disclosed much extra-thecal blood clot. Within the theca there was no blood clot and the cord, which did not pulsate, appeared to be otherwise unaffected. A catheter was passed freely upwards and downwards within the theca. The bony canal was diminished in its antero-posterior diameter at the site of the fractures by a posterior displacement of the bodies of the last two dorsal and first lumbar vertebræ. The pressure on the cord had been exerted, so far as could be ascertained, opposite the second and third lumbar segments, causing it to be bruised on its anterior aspect. Not until the firm, partly organised, decolorised extra-dural clot had been completely removed did the cord pulsate.

Two days after the operation the man complained of tingling and shooting pains in the lower limbs. There was already some return of power in the legs and by Sept. 24th they were still stronger. On Oct. 1st the ankle-jerks were still abolished. During the first week of October convalescence was interrupted by bronchitis and slight mental derangement. He improved after phlebotomy. On the 8th he passed urine naturally for the first time since the accident, and by the 14th there was still further improvement in this respect and in his general condition. On the 20th the ankle-jerks were elicited and on the 23rd he was allowed out of bed. He walked for the first time on Nov. 10th, and he now had fair control of both sphincters. This control was almost complete by Dec. 5th, and on the 8th he was walking normally on the level and on stairs and without pain. The bulbo-cavernosus reflex was now present on the left side, absent on the right. The superficial anal reflex was absent. Erections had not returned. He was discharged on Dec. 8th, 1924, on the eighty-ninth day after operation.

He was again seen on June 13th, 1925. Apart from total impotence, slight delay in commencing micturition and the occasional leaking of a little urine at the end of the act, and some precipitancy of defæcation, he was well, but he complained of a little pain in the lower spine. Knee- and ankle-jerks were healthy. The epigastric, abdominal, cremasteric and plantar reflexes were all normal. The bulbo-cavernosus reflex on each side was normal and the superficial anal reflex had recovered its activity.

INTESTINAL HÆMORRHAGE CONTROLLED BY COAGULEN (CIBA)

DURING A SEVERE ATTACK OF TYPHOID FEVER.

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THE knowledge of an easily administered and reliable styptic is a great mental comfort in emergency, so I am placing on record an instance of the successful use of coagulen (Ciba) in a case of typhoid with intestinal hæmorrhage. Coagulen (Ciba) is the name given to a preparation of fibrin ferment, the properties of which were established [1] by Dr. Fonio in Kocher's clinic in Berne. It is now marketed by the Clayton Aniline Co., and its rapid action in two striking cases, one of tonsillar hæmorrhage, the other of hæmoptysis, has been recently recorded.[2] In the following case the drug was instrumental in saving the patient's life.

E. L. C., aged 19, contracted typhoid on the continent of Europe early in July, 1925, and the case came under my care on July 24th. It was a severe attack, characterised, as also in her sister, who simultaneously contracted the disease, by the high initial temperatures. On August 2nd the temperature, which had dropped after much struggling from the region of 105° to 103° F., shot up again to 105° and a sharp hæmorrhage made itself evident. A dose of 1·5 c.cm. of coagulen (Ciba) was given intramuscularly and repeated four hours later. Though a large quantity of altered blood and blood-clot was evacuated during the next two days there was no more fresh bleeding. On August 17th there was another hæmorrhage, even more severe than the first, without the rise in temperature that had announced the former. Two more intramuscular injections of 1·5 c.cm. at four-hourly intervals were given and again the bleeding ceased and was no more repeated. A careful watch has been kept ever since for any signs of venous thrombosis, but there has been none, and the patient's convalescence has progressed far enough now, though she is still in bed, to justify the hope that that tiresome complication will not manifest itself.

I have used coagulen (Ciba) in a fair number of cases of hæmorrhage from various causes without it once failing me, and it is satisfactory to record its successful use in a patient desperately ill without any unpleasant after-effects or reaction.

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[1] THE LANCET, 1914, ii., 173.
[2] THE LANCET, 1925, i., 176 and 1238.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

THE TEACHING AND PRACTICE OF SURGERY.

THE first meeting of this Section for the session was held on Oct. 21st, when Sir LENTHAL CHEATLE, the new President, delivered an address on the Present State of the Teaching and Practice of Surgery. He divided his subject into three main portions—research, specialties, and treatment.

Research.

Concerning research, he said that he had an intimate talk during last year with a surgeon from the provinces, who remarked that provincial surgeons no longer looked towards the surgeons of London for new notions or leadership, and the reason given was that little or no original research was being done by the London men. Perhaps, Sir Lenthal Cheatle said, all surgeons had had some such thoughts themselves. Taking the first allegation, that London was losing its surgical leadership because it had few men engaged in research work, that must be due to the fact that, in these days, mere technical ability was not enough to maintain leadership or to regain the lost ascendancy. He who was only a so-called clinical surgeon had lost his position as leader in his profession; he could add very little to knowledge, and could himself acquire little more except added skill in technique. Indeed, without research work there was not much encouragement for him to think at all, and so he had a limited outlook. Every surgeon should conduct some research, however little, in association with his actual operating. As a rule, a man could find time for the things he really wanted to do. He had advised students to start original investigation by cutting at different edges wounds of the skin which had healed by first intention. By studying intently some such subject for six months a student would know more than anyone in his year on that subject. If such a man, in the course of his study, came across such a statement as that malignant ulcers of the stomach commonly arose from simple ulcers, he would not accept it as a fact, but would seek to test the statements on which such a belief was founded. He would then find that ulcers excised under the idea that they were simple were really extensively carcinomatous, and that ulcers reported upon as early carcinomata were simple ulcerations in which epithelium was dislocated. There was no pathological evidence that malignant ulcer of the stomach was a complication of a previously simple one. Research work perfected a man's data and led others to perfect theirs; it also kept the mind young, and supplied a constant inspiration, as well as supplying facts and notions not to be found in books. An instance of this was the research of Prof. C. L. Bagg, of New York, who took a healthy strain of mice and mated them, and immediately on the birth of the litters separated them from their mothers so that they could not suckle, then re-mated those mothers, and their next litter was treated in the same way; 87 per cent. of those mothers developed fulminating carcinoma of the breast, and the same result followed ligation of the mammary ducts on one side (the litter being allowed to suckle from the other side), the carcinoma appearing in the ligated breasts. He thought the experiment may have proved that there was another factor essential to the organism than Gye's specific factor—namely, the preparation of the epithelial cell—or it might be that the specific factor had been made more active. He said he considered the term research covered any means by which one strove to add to knowledge of the cause, prevention, and treatment of disease, and he urged, as he had done on former occasions, a much closer collaboration between the clinician and the specialist. The great hope for the future lay in the encouragement of research by the unit system of teaching. Money could not subsidise genius, but he thought it would create a body of men more capable of leading in their profession than any who had existed in the past, and, in due course, genius would come along. The surgeon should always have a skilled assistant available; at present his assistant became skilled when he was due to leave, and a novice took his place, and the same process was repeated. Yet a skilled assistant meant halving the time of an operation and lowering the mortality. The director of a teaching unit should be allowed to have private practice; it would render him a more human and tactful soul, make him a better teacher and operator, and give him a better conception of a surgeon's duties.

Specialties.

Dealing next with specialties, the President said that a further cause of the atrophic state of surgery was the breaking up of this practice into various and completely unnecessary specialties—a system wrong in principle and profoundly wrong in practice. Nature did not specialise, and specialists often lost sight of great guiding principles. The problems of infection, tumour formation, and biochemical changes concerned all parts of the body, and exclusive attention to a small part of the body precluded attention to other tissues as well, unless several specialists acted in conjunction. Already the rigid confines of specialties were being broken down; modern gynæcologists operated on everything connected with the female, except a cerebral lesion, and the laryngologist was now including in his purview extralaryngeal conditions such as goitre, carcinoma of the tongue, and glands of the neck. He would like a means to be discovered whereby this separation of the specialties might be stopped, and he would be glad to see new facts and interests propounded to the whole of the Royal Society of Medicine, whoever the specialists might be who could bring such facts forward.

Treatment.

His last heading, Sir Lenthal Cheatle divided into qualified and unqualified. With regard to qualified practice, he said there was a great and increasing demand on the part of the public for surgical aid near at hand, especially for acute cases, while the body of patients suffering from surgical disorders which were not acute was so enormous that it could not be dealt with in the great centres. Hence large suburban hospitals had been built, and these were staffed by surgeons of first-rate calibre, and they could no longer be regarded mainly as nurseries for men whose ambition was to become attached to the staff of their teaching hospital and school. The men at the outer hospitals must be competing with the teachers and practitioners in the centre. The old system, he said, was really obsolete, and unfortunately the "old" system was the present one. The kudos attaching to a surgeon on the teaching staff, considerable at one time, was now insignificant. The idea seemed to be, "If you teach our students, you shall not run a private practice." It was the younger teachers who were feeling the effects of the decentralisation. And if the best men were prevented from teaching, what would become of efficient teaching? The demand for efficient teachers could only be met by offering high salaries. The problem could only be solved by Parliamentary action, by a controlling Ministry of Health which must be quite free from political fetters; he was not referring to a body such as the present Ministry, which was so hampered by political lumber that it had little or no time to devote to the problems of public health. The headship of it should not be a prize bestowed on a politician for services to his party.

His own views on unqualified practice, he said, were well expressed in the recent presidential address of Sir Holburt Waring to the Medical Society of London, but the condition of affairs revealed in the discussion on that address could not have occurred if a carefully selected doctor had been head of the Ministry of Health.

Prof. C. C. CHOYCE proposed and Prof. C. A. PANNETT seconded a cordial vote of thanks to the President for his address, both expressing general agreement with its main theme.

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE.

A MEETING of this Section was held on Oct. 23rd, Dr. J. MCVAIL, the President, being in the chair.

Dr. T. STACEY WILSON opened a discussion on the management and treatment of

Scarlatinal Epidemics in Boarding Schools.

He said that his 25 years' experience in the Royal Institution for Deaf and Dumb Children at Edgbaston led him to class the difficulties of recognition under two heads: (1) Where the patient had only very slight initial symptoms, and (2) where he had no initial symptoms at all, desquamation being the first sign of the illness. Both classes were highly contagious. A child might show nothing but an attack of vomiting or slight pyrexia and yet infect everyone with whom he came in contact. The epidemic was very persistent and would run on for three months in spite of every effort to stop it. It was not always possible to isolate incipient cases, for the only symptom might be a slight flush on the skin of the thigh. This flush might spread or alter its position from day to day or might be gone altogether in 12 hours. The patient was fairly certain to show peeling after a fortnight or so. Although it was not generally accepted, his experience amply proved that many patients showed no symptoms at all before desquamation. In an epidemic that had broken out in the middle of the term he inspected the hands and feet of all the children and found a girl with typical desquamation but no symptoms whatever. He suspected her of being the original cause of the outbreak and one child infected by her died. He had sent 30 or 40 such cases to the fever hospital in the course of 25 years. The difficulties of diagnosis were illustrated by his experience on one occasion when he isolated six or eight children with typical scarlatinal roughness of the hands and feet, and a few more with roughness that he thought was not scarlatinal; of the suspects not one broke out but two or three of the others did. When he said that some cases had no rash at all he admitted the possibility that there had been a rash too slight to attract notice, but since noticeable rash was always attended by symptoms such as sore throat, pyrexia, and a fever-tongue, he thought it legitimate to infer that when these symptoms were not present there was no rash. These patients with no symptoms constituted the chief difficulty in managing the epidemic.

Types of Desquamation.

The disease was often so mild that it only caused exfoliation where the skin was very thin, as between the toes or on the division between the hard and soft skin of the feet and hands. Even in these places the friction of clothes, &c., was likely to destroy the evidence. Since the feet of many people were in a constant state of desquamation diagnosis could not depend entirely on this sign. The true eruption was punctiform, the epidermis broke over small areas, an eighth to a twelfth of an inch in diameter, making small rings or blisters which expanded and became irregular and ragged at the edge. The presence of two or three of these rings was strong evidence of scarlatina. It was important to remember that where skin had become sodden through washing circular breaks might appear in normal people. If these did not increase in size they were not scarlatinal. The appearance of fresh circles between the toes on successive days was fairly good evidence of the disease. Sometimes these eruptions were only visible immediately after washing the feet, and were often so evanescent that only a weekly examination would detect them. If 160 children were examined simultaneously many would have to sit about with wet feet for 20 minutes, which was apt to produce the spurious desquamation described above. Some children became known in time for a chronic spurious desquamation, the rings of which did not increase in size. The edges of the scarlatinal rings did not get dirty but always showed a border of white. (He then showed a most interesting series of photographs prepared with great care by one of the assistant masters which illustrated several types of true and spurious desquamation.)

Discussion.

Dr. E. W. Goodall remarked that, for purposes of observation, an institution such as that in which Dr. Stacey Wilson had gained his experience had the advantage over a fever hospital that the population was fixed, while that of the hospital was constantly shifting, and no patient could be watched continuously for months, or even for weeks. It was true that scarlet fever had long been known to occur without a rash, and he admitted that it was much the most difficult of the fevers to diagnose. He would far sooner have to diagnose a case of small-pox. Not a single symptom was characteristic and every one might occur in some other disease; diagnosis had to depend on a combination of symptoms. Some of the severest cases had no rash and were only detected after they had caused an outbreak of scarlatina in a diphtheria ward. Desquamation might be caused by the pressure of the bed or the clothes. In spite of what Dr. Stacey Wilson had said, he maintained that there was no typical desquamation in scarlatina. He had once thought that the pinhole form was typical, but had since seen it in an enema rash, an antitoxin rash, rubella, measles, and even in a rash caused by rubbing with camphorated oil. The disease might even occur without any desquamation; the more brilliant the rash the more liberal the peeling. The strawberry tongue was far more a sign of measles than of scarlatina. So untrustworthy a sign was desquamation that no patient in the North-Western Hospital was ever placed in a scarlatina ward without a period of isolation. He had once admitted a case with liberal desquamation of exactly the scarlatinal type; the peeling was due to a scald some days old, but the patient contracted scarlatina in the ward and died. A true scarlatina case had developed acute nephritis three weeks after a slight rash had broken out, showing that the required period of isolation was sometimes very long. He remarked that Dr. Stacey Wilson's inspection, thorough though it was, did not seem to have cut short the epidemic. He also questioned very strongly whether desquamation was really infectious in itself. The infection was surely spread, not from the peeling skin, but from the mucous membranes of the throat and nose. The returned case-rate had not gone up since he began to send out large numbers of children still desquamating. Perhaps the Dick test and other new methods would help to cut short epidemics.

Dr. F. M. Turner remarked that another cause of desquamation was sunburn, especially from intensive sunlight treatment. This caused an erythema followed by peeling very similar to that of scarlatina, so that it was well to inquire if a suspect had been undergoing light treatment. Peeling under the toes was far too general and unreliable to be a sign of scarlatina except to a very experienced observer. A desquamation exactly similar to that of scarlatina occurred occasionally in measles.

Dr. D. Forbes said that in school-children where daily inspection was not possible, it was very difficult to distinguish accidental desquamation from scarlatinal peeling, especially if the child were dirty. It was possible for true peeling to become so covered by dirt as to be indistinguishable from spurious. A child was not infectious when peeling unless the throat and nose showed positive signs of the disease.

Sir John Broadbent agreed that infection was spread from the throat and nose and not by desquamation. A peeling tongue was a valuable sign after the disappearance of the rash; this never occurred in measles. He described a throat carrier, a child who had had scarlet fever, with headache, vomiting, and sore throat, and who spent eight weeks in hospital, during which time she peeled. Ten days after discharge she went to stay with two old ladies, both of whom developed scarlet fever, one fatally. After a time in a convalescent home the child went home and infected her brother, although she had been perfectly well since she left hospital.

The Dick Test.

Perhaps the Dicks' cultures would help to detect scarlatina carriers as the Schick test detected diphtheria carriers. He had seen cases of bleaching rash detected by the Dick test. When the toxins and their doses had been properly standardised they would be invaluable in testing suspects. A positive reaction would show that the child had never had scarlatina.

Dr. R. A. O'Brien said that in his experience the Dick test was not as reliable as the Schick test. Theoretically, the Dick test should give a positive reaction during the first three days of the rash, but in England it had been found that only 70–90 per cent. gave it with 1/1000 toxin. The Dick test would be helpful, in a school like Dr. Stacey Wilson's, in isolating the right children. A child who gave a negative result was almost certain to be immune, though the evidence for this was not quite conclusive. It might be useful to know how soon in an infection a positive Dick reaction became negative. A hæmolytic streptococcus had been isolated from the throat of scarlatinal patients, and he was hopeful that some way of identifying this coccus would be found before long. Gordon's agglutination test for crusts in small-pox had proved of great value, but since scarlatinal skin was now known not to be infectious it was no use there. Possibly some agglutination test might be devised for sputum in scarlet fever.

Dr. S. Monckton Copeman said that the disease was much less severe now than when he was a boy. It was much more intense in New York than in this country. The best way of dealing with an outbreak was to carry out the Dick test and immunise susceptible children. A child who gave a negative reaction on admission with a doubtful rash had never caught bad scarlatina in the wards, therefore a Dick negative, although not quite so certain as a Schick, practically meant immunity. A child who gave a Dick negative was not infectious.

Dr. Major Greenwood said that isolation measures had not been successful in diminishing the scarlatina incidence; the only hope lay in immunisation.

Dr. T. Carnwath said that in Salford cases were discharged after four weeks, sometimes desquamating heavily, and the disease was no worse there than in Manchester where they were kept in six weeks. In Wallasey, where they were only kept three weeks, there were no more return-cases than in other towns. He mentioned a child who had been discharged five weeks and then caught a cold and immediately infected his three brothers. This suggested a latent virus in the throat, liberated by another infection.

Dr. G. C. Trotter said that in Paisley they discharged cases after four weeks if they had no nasal or pharyngeal discharge, and had had fewer return-cases than when they kept them in longer. He had known a spurious desquamation caused by playing with lime. Second cases occurring in a family were often missed because there was no system in London by which the second case went to the same fever hospital.

The President, in concluding the discussion, s
that the malignancy was worse in every way 50 ye
ago. Hospital isolation had not affected the incider
but gave the children much better treatment an
better chance of recovery. Future control of the dise
would depend on immunisation, but public apa
and dislike of these measures made the work diffic

SOCIETY OF SUPERINTENDENTS OF TUBERCULOSIS INSTITUTIONS.

Diagnosis and Treatment of Pulmonary Tuberculosis.

AT a meeting of this Society, held on Oct. 10th, Dr. J. W. LINNELL related his experiences at the Victoria Park Hospital, National Hospital, Ventnor, Mount Vernon Hospital (under the late Sir James Mackenzie), London Hospital, and at St. George's Hospital, in coöperation with the late Dr. Arthur Latham. Any value there might be in his conclusions lay in the fact that time had placed them in their proper perspective. As regards general treatment, he considered graduated rest to be more efficacious than graduated labour, and strongly advocated absolute rest in bed for pyrexial cases, his motto being, "Let sleeping dogs lie." He described the tuberculin treatment as practised at Mount Vernon from 1909 onwards. These trials were made for about three and a half years, gradually increasing doses being given subcutaneously and orally, avoiding reaction. It was found that though tuberculin had beneficial effects in cases of tuberculous glands and eye conditions, much the same results were obtained by the injection of any foreign protein. At St. George's Hospital the Spahlinger treatment was tried on specially selected cases. In no pulmonary case did positive sputum become negative; there was no convincing evidence of improvement of lupus after three months' treatment. Surgical cases were equally disappointing. The healing of the ulcer occurred, but the intact nodules were unaffected. This would be noteworthy were it not equally well attained by the injection of either mixed-infection vaccines or peptones. He quoted a case where increasing doses of the latter were administered at weekly intervals to a boy suffering from extensive ulceration of the face and ankles with incredibly satisfactory results. He also referred to his experiences, and their unconvincing results, with mixed-infection vaccines, pneumosan, and intravenous injections of iodoform in ether. He expressed his further disillusionment with Dreyer's vaccine, aurocyanide, and sanocrysin, all of which he had investigated. In fact, he agreed with an eminent bacteriologist who had recently stated that nothing further could be expected from vaccine therapy. Artificial pneumothorax appealed to him as a logical procedure in specially selected cases. Speaking of diagnosis, he urged that all medical students should do "six weeks hard" at a chest hospital before their final examination, and that senior men working in special lines should keep in touch with general work by regular attendance at the out-patient department of a general hospital.

SALFORD ANALYST'S REPORT.—The Salford borough analyst, Mr. S. D. Elsdon, in his annual report for 1924, states that during the year 1700 samples have been submitted for analysis and of these 1544 were taken in connexion with the Sale of Food and Drugs Act, and 156 were submitted by various corporation departments. Of the 1544 samples, 66, or 4·3 per cent., were returned as adulterated, a figure considerably better than that for any year since 1919, when the proportion was 8·8. Of 833 samples of milk, 22, or 2·6 per cent., were returned as adulterated, which figures show that Salford's milk-supply compares not unfavourably with that sold in other districts. All samples of butter examined were found to be genuine, though 18 samples were preserved with boron preservative, equal to 0·3 per cent. as expressed as boric acid in each case. None of the margarine samples was adulterated. Of 55 samples of Cheshire cheese, 6, or 10·9 per cent., were returned as adulterated. Of sausages, in 15·4 per cent. boron preservatives in comparatively large amounts were found. An amount of boric acid which exceeds 2·5 per cent. is undesirable. Of drugs, 10 per cent. were adulterated, chiefly paregoric, turpentine, and almond oil—in the last peach kernel oil being substituted. Of 76 samples of dispensed medicine two were unsatisfactory. In one case the pharmacist was fined, there being a shortage of 20 per cent. of the correct quantity of potassium bromide.

Reviews and Notices of Books.

DENTAL INFECTIONS, ORAL AND SYSTEMIC.

By WESTON A. PRICE, D.D.S., M.S., F.A.C.D. Cleveland, Ohio: Penton Publishing Co. In two volumes. Vol. I., pp. 673; Vol. II., pp. 471.

THESE two volumes of over 1100 pages are devoted entirely to the subject of dental sepsis and its relationship to systemic disease. The book is by far the largest single contribution to this subject and undoubtedly the most important. Though there has been a steady output of literature on dental sepsis since attention was first focused on the subject by Dr. Hunter little more than 20 years ago, we are still far from a complete understanding of the nature of dental sepsis and its results in other parts of the body. Even these volumes, which in their wide scope and thoroughness go far beyond anything hitherto written, still leave the matter in considerable obscurity. They cover a wide field and it is difficult to appraise or even summarise them. Each chapter, or rather essay, discusses a definite problem which is stated at the beginning like a problem of Euclid, and is more or less complete in itself, ending with a brief summary of the evidence. The really remarkable feature of the book is the original investigations carried out by the author. Very many animal experiments have been performed to test the degree of infectivity of organisms from dental lesions under different conditions, and Dr. Price has reached many interesting conclusions. He points out the possible fallacy of judging the degree of dental infection by radiographs. The actual amount of bone-absorption may not be revealed, for it may be concealed by the shadow of the malar bone or hidden by another tooth, or obscured by a more superficial layer of condensing osteitis. He considers that the dental granuloma which so frequently occupies the rarefied apical areas shown in a radiograph, is a defensive membrane which protects the body against the local infection. The protection may sometimes be adequate for a long period. A large area of rarefaction at the end of a tooth may indicate a high defence, whilst an absence of local reaction may indicate a far more dangerous condition. Dr. Price finds that an infected tooth placed beneath the skin of a rabbit tends to become encapsuled and that the membrane round it is histologically indistinguishable from the dental granuloma. It must not be assumed that Dr. Price regards the radiographic evidence of rarefaction as being of negligible significance. What he suggests is that the condemnation of a tooth because of apical rarefaction may not always be necessary, and that the assumption, so often made, that all areas of apical rarefaction represent a serious menace to the general health which is roughly proportional to the degree of the absorption is incorrect. By correlating many factors it is possible within limits to determine the degree of defence of the individual to dental infection. Such infection lowers the ionic calcium of the blood, and the blood-sugar may also be increased. On the question of elective localisation Dr. Price is somewhat guarded, but he finds considerable evidence to support Rosenow's views.

In his second volume he treats of the clinical aspects of focal infection in its relation to diseases of the circulatory, alimentary, nervous, excretory, and other systems. The book is far from being the familiar monotonous record of amazing cures brought about by extraction of infected teeth; the number of cases dealt with is comparatively few, and each one is described in unusual detail. Thus, in a case of myocarditis, not only is the general and cardiac condition fully described, but the dental condition is gone into minutely. The result of inoculation into animals is given, as well as the results of a blood examination before and after dental treatment. This is the ideal method of investigating dental sepsis as a possible cause of a systemic lesion. It is to be feared that it will never become the general method, but the completeness with which Dr. Price has investigated and recorded his cases has provided a most illuminating and helpful commentary. Some of the views put forward are novel and may be regarded as contentious until further investigation has been made; but the value of this book is beyond doubt, and it will probably long remain the fullest exposition of the subject of focal infection in the teeth and jaws—one which no serious student of the subject can afford to ignore. Unfortunately, the extreme length of these volumes may make them a closed book to many. Dr. Price's style is somewhat diffuse and a considerable compression might be effected without in any way impairing the value of the book. The production is admirable and there are nearly 500 illustrations of high technical excellence.

ABDOMINAL SURGERY.

The Early Diagnosis of the Acute Abdomen. Third edition. By ZACHARY COPE, B.A., M.D., M.S. Lond., F.R.C.S. Eng., Senior Surgeon to Out-patients, St. Mary's Hospital, Paddington; late Hunterian Professor and Arris and Gale Lecturer, Royal College of Surgeons of England. London: Humphrey Milford, Oxford University Press. 1925. Pp. 233. 10*s.* 6*d.*

THE fact that a third edition of this little book has been required so shortly after the two impressions of the second edition is proof of its popularity. The general principles of the new edition are the same and but few changes have been made.

The sections on acute pancreatitis and pneumococcal peritonitis have been rewritten, and one of the few errors in the last edition—the statement that the rigidity of the abdomen in cases of acute pancreatitis is more marked than with perforation of the stomach—does not appear. The clinical account of acute pancreatitis is well written and will be helpful to practitioners, but more stress might have been laid upon the fact that the disease occurs in several distinct clinical forms, and too much emphasis is laid upon the presence of a pancreatic tumour and of jaundice. But these are relatively small points. The book as a whole is clear and concise, with useful and practical diagrams.

Chirurgie der Niere und des Harnleiters. By Prof. Dr. J. ISRAEL and Dr. W. ISRAEL. Leipzig: Georg Thieme. 1925. Pp. 584. R.M.36.

THIS is a large book, but it would be difficult to dispense with any of its sections without detracting greatly from its value, for there is an absence of that overlapping all too common in big treatises. Surgical diseases of the kidneys are systematically described, and Prof. Israel gives his views on urological questions with the simplicity that comes from the conviction of truth. An enormous experience has evidently been drawn upon as is shown by the interesting clinical case-histories dispersed through the text. Due acknowledgment is given to workers in countries other than his own. The printing and the illustrations, a number of which are coloured, are excellent. Surgeons engaged in the study of urology will find much of interest in this book.

Pathogénie des Calculs Biliaires et Indications Opératoires. By THORKILD ROVSING, Professeur de Clinique Chirurgicale à l'Université de Copenhague. Paris: Masson et Cie. 1925. Pp. 125. Fr.20.

IN this book Prof. Rovsing is mainly concerned with the causation and treatment of gall-stones. Briefly stated, his conclusions are that they have their origin in the intra-hepatic bile canals and never arise as the result of infection. He thinks it probable that as a result of some transient toxic condition the metabolism of the liver is upset and inspissation of bile occurs; thick soft masses of "calcium bilihumin" are then passed into the gall-bladder, where they serve as nuclei for continuous accretions of cholesterol. The author believes infection to be always secondary to the presence of stones and never their cause. He adduces a wealth of data, both from his own experience and the work of others, but entirely omits to mention one very important piece of evidence in support of his theory, to wit, the almost universal presence of gall-stones—usually unaccompanied by symptoms and in the absence of infection—in cases of acholuric jaundice. Prof. Rovsing is a stalwart opponent of cholecystectomy as opposed to cholecystotomy—he has a disconcerting habit of referring to these operations as "tectomies" and "tomies," respectively—and produces data seeming to show that removal of the gall-sac is no safeguard against the recurrence of gall-stones, and, moreover, providing some grounds for belief that its extirpation may bring about disturbances in the general health. His views are in direct opposition to those of Naunyn, which have gained a wide acceptance: but this acceptance is not quite so general as Prof. Rovsing appears to think. Had Prof. Rovsing omitted polemics from his book, which he might have done with advantage, it would have been considerably shorter and easier to read.

BIO-CHEMISTRY.

Nature of Enzyme Action. Fifth edition. By Sir W. M. BAYLISS, M.A., D.Sc., F.R.S., late Professor of General Physiology, University College. London: Longmans, Green and Co. 1925. Pp. 200. 9*s.*

THIS was the first of a series of "Monographs on Bio-Chemistry," and when it appeared 15 years ago was not a little responsible for the immediate popularity and success of its companion volumes. The present edition was prepared prior to the author's last illness, and we learn from the preface that Sir William Bayliss's daughter completed the corrections after his death. No attempt has been made to add or to remove other than as he wished. It is unnecessary to repeat here what has been said before regarding the clarity of style, the breadth of vision, and the completeness of the material. The subject is treated on the broadest lines, and the detailed description of the properties of a large number of specific enzymes already known finds no place in this monograph, which confines itself to general properties more or less common to enzymes. The reader is given, therefore, a general idea of such properties of enzymes as their physical and chemical nature, methods of preparation, reversibility, mode of action, and so on. Perhaps in a future edition fuller accounts of oxidases and of the glutathione system might be added.

Physical Chemistry, its Bearing on Biology and Medicine. Third edition. By JAMES C. PHILIP, O.B.E., D.Sc., F.R.S., Professor of Physical Chemistry, Imperial College of Science and Technology, London. London: Edward Arnold and Co. 1925. Pp. 307. 8*s.* 6*d.*

THIS book is written with the object of providing the medical and general student with a brief outline of physical chemistry. In this new edition the author has included recent work upon hydrogen-ion concentration, plasmolysis, and permeability, otherwise the general scheme is the same, and in the 14 chapters the reader is taken over the subjects of gases, osmotic pressure, solutions, colloids, and mass action. The treatment is, in every case, clear and explicit; perhaps the best chapter is that on salt solutions, but the exposition of such confusing subjects as specific and equivalent conductivity is particularly lucid. Where all is so good we may yet regret the absence of what might be termed a thermo-dynamic background to the work. Deductions, such as Le Chatelier's theory and Gibb's surface-tension laws, could then have been handled better. There is need for simple, non-mathematical treatment of these subjects, and Prof. Philip is evidently the person to give it. We shall look forward to a thermo-dynamic consideration in the next edition of this useful volume.

Electro-therapy and Ionic Medication.

By Harold H. U. Cross, Ph.D. Med., formerly Research Worker at the Stanford University, California. London: Charles Griffin and Co., Ltd. 1925. Pp. 253. *10s. 6d.*

This book is chiefly devoted to the principles and practice of ionisation. Short introductory chapters have been added on high frequency, diathermy, and X rays, and there are also notes on the subject of muscle and nerve testing. The book concludes with a chapter on the electrical treatment of cancer.

The author gives full details for the treatment of suitable diseases by the introduction of ions, and describes some interesting experiments which he has conducted in order to show the migration of metal ions into jelly masses, the depth of penetration being shown by the X rays. His book is written in an interesting and attractive manner. Those who are beginning the study of electro-therapeutics will find a clear and encouraging exposition of the subject of ionic medication, and the experienced reader will find interesting accounts of the treatment of sinuses by a distinctly novel method, and of atony of the uterus by the combined faradic and galvanic currents. He will be surprised to read that the author has obtained good results in the treatment of trigeminal neuralgia by the unidirectional *pulsating* current. It is stated that when solutions for ionisation are being made rain-water or good tap-water can be used, but Dr. Cross insists on distilled water for treatment of wounds or ulcers. Certain statements are somewhat hard to understand—e.g., on p. 95, "The resistance of the tissues is due to their capacity for electro-chemical action more than to mere ohmic considerations." The account of muscle and nerve testing is too short to be of much value, and the definition of partial RD would not be accepted in this country. Nor would the statement on p. 100 that "in cases in which there is no reaction to either current the nerve is evidently divided and surgical interference is required" without qualification and amendment.

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This supplement contains a subtitle, Applied Hygiene in the Tropics, with the name of Lieut.-Colonel G. E. F. Stammers, R.A.M.C., attached. The supplement covers a very wide range in the headings, including disease prevention, water, food conservancy, small-pox, vaccination, disinfection, child welfare, medical inspection of schools, and industrial hygiene. There follows a section in which reports and vital statistics of various tropical regions are briefly abstracted, and in conclusion several reviews of books on more general subjects. A notice is attached to the *Bulletin* to say that this series of "Sanitation Supplements" will close with the third supplement, which is to appear on Oct. 30th, and will be replaced by a monthly "Bulletin of Hygiene," the first number of which will be published in January, 1926. This new Bulletin, we are informed, will review in all its aspects the literature of hygiene and preventive medicine with special reference to the needs of the Dominions and the tropical and other colonies and India. Dr. J. F. C. Haslam, late Government medical officer, British Guiana, recently appointed Assistant Director of the Tropical Diseases Bureau, will give most of his time to the *Bulletin*, and will be responsible for the Section of Applied Hygiene in the Tropics, while for the rest some 35 contributors have undertaken to assist in the provision of material. The subscription rate for the *Bulletin* will be 21s. per annum, and orders may be lodged with the Tropical Diseases Bureau, 23, Endsleigh-gardens, N.W.

JOURNALS.

Journal of Pathology and Bacteriology. Vol. XXVIII., No. 4. *Pp. 541–717. October, 1925.*—The Bacteriology of Subacute Infective Endocarditis, by H. D. Wright (London), an important paper which will be made the subject of separate editorial comment.—Effect of Hæmorrhage on the Hæmolytic Titre of the Serum of Rabbits, by J. Mills (Cambridge). Rabbits immunised against sheep corpuscles were bled and the hæmolytic titre of their blood compared with its content in hæmoglobin. The two usually run parallel. Hence, either the tissue fluids from which the blood volume is made up after a bleeding contain no hæmolysin or the capillary wall is not permeable to it.—Complement Fixation with Bilharzia, by N. H. Fairley (Bombay). The active substance in worm extracts is lipoidal not protein in nature.—The Normal Weight of the Human Thymus, by A. B. Bratton (London). See p. 931.—Liver Necrosis and Cirrhosis produced Experimentally by Coal-Tar, by J. Davidson (Edinburgh). Tar painted on the skin or injected subcutaneously in rabbits causes necrosis similar to acute yellow atrophy; this *may* be followed by cirrhosis.—The Early Phases of Cell Injury, by J. Lorrain Smith and T. Rettie (Edinburgh). Cloudy swelling and necrosis however produced (ether, chloroform, acidosis, &c.) always show first in changes in the mitochondria.—Tuberculous Guinea-pigs and Diaplyte Tubercle Vaccination, by J. S. C. Douglas, J. W. Edington, and F. W. Simson (Sheffield). No effect on the course, extent, or duration of the experimental disease was produced by Dreyer's vaccine.—The Blood Cells of the Rabbit after Splenectomy, by R. H. Mole (Liverpool). Removal of the spleen causes a decrease of red corpuscles followed after several weeks by an increase to more than the normal number.—Observations on the Action of the Convulsant Thujone, by H. Florey (Cambridge). A pharmacological study of the active principle in absinthe.—The Preservation of Testes for Transplantation in Rabbits and Dogs, by N. M. Shustrov, S. O. Karpova, and I. V. Tikhomirov (Moscow). Rabbits' testicles may be transplanted effectively after five days in cold Ringer's solution.—Diphtheria Toxin-antitoxin Flocculation (Ramon Test), by P. J. Moloney and C. B. Wild (Toronto). The Ramon method for titrating toxin and antitoxin *in vitro* does well for rough tests, but there are many discrepancies between its results and those of guinea-pig tests which it cannot replace. The nature of the flocculation is not understood; it seems to have some relation to the agglutination of the bacilli.—Apparatus for Obtaining Plate Cultures of Anaerobes, by W. J. Wilson (Belfast).—Coliform Organisms in the Trachea, by N. D. Ball (London). Present in 55 of 70 unselected post mortems. Friedländer's bacillus was found eight times; the different strains failed to show any cross-agglutination.—Unusual Serum Agglutination in Typhoid Fever, by J. F. Taylor (London). Agglutinated paratyphoid A to an unusual degree.—Variation in Platelet Count after Splenectomy in Acholuric Jaundice, by S. C. Dyke (Wolverhampton). The rise and subsequent fall in the number of platelets had no relation to changes in red cells or leucocytes.—The Obituary Notices of Deceased Members (12 in number) include Two Interesting Accounts of the Early History of Bacteriology as Notices of Dr. E. Klein (1844–95), by Prof. W. Bulloch, and of Prof. C. J. Salomonsen (1847–1924), by Prof. T. Madsen.—Books received.—Annual indexes.

Journal of Physiology. Vol. LX., No. 3. 1925. The Effect on Muscle Contraction of Sympathetic Stimulation and of Various Modifications of Conditions. By Helene Wastl. The question whether the sympathetic system has any direct influence upon striated muscle has been widely discussed during the last ten years. Many observers who have supported the theory that such influence exists have considered that it consists of an increase of some form of tonic contraction. So far, however, no one has been able to cause increase of muscle tone by stimulating the peripheral end of any sympathetic nerve. Other observers consider that if a muscle is fatigued its activity is more or less restored by stimulating the sympathetic—i.e., that the sympathetic has all the effects on striated muscle that it has on the heart. The author carried out a number of experiments on anæsthetised cats, but no evidence was found that the sympathetic nervous system affects striated muscle, except by modifying the circulation.—The Effect of Changes in Venous Blood Pressure on the Rate of Flow Through, and the Gaseous Metabolism of the Kidney. By E. W. H. Cruickshank and K. Takeuchi. The experiments were carried out on cats under urethane anæsthesia. An increase in the venous pressures in the renal veins produces a proportionate decrease in the blood flow through the kidneys, with an increase in oxygen used per c.cm. of blood. An increase in venous pressure up to 100 per cent. does not necessarily render the kidney anoxæmic; this is shown y the average figures for oxygen percentage saturaion at the end of the experiments—viz., arterial blood 88·8 per cent., venous blood from the kidney, 69·9 per cent. For a certain time, varying from one to two hours, the kidneys under conditions of increased venous pressure amounting to about 50 to 100 per cent. utilise an amount of oxygen per c.cm. of blood, which, in relation to the blood flow, gives a constant utilisation of oxygen per minute.—The Relation of the Thyroid Gland to the Action of Insulin. By J. H. Burn and H. P. Marks. Thyroidectomy diminishes the hyperglycæmic reaction to adrenalin and increases the hypoglycæmic reaction to insulin. Thyroid feeding, so long as the glycogen store in the liver is not diminished, increases the hyperglycæmic reaction to adrenalin and decreases the hypoglycæmic reaction to insulin. When, as a result of prolonged thyroid feeding, the liver glycogen disappears, the hyperglycæmic reaction to adrenalin diminishes and the hypoglycæmic reaction to insulin increases.—On the Effect of Adrenalin on the Respiratory Centre. By Yas Kuno. Adrenalin, as known, produces apnœa by causing complete cessation of respiratory movements. From experiments on rabbits the author concludes that adrenalin does not cause apnœa by constricting the cerebral vessels, but partly by increasing the cerebral blood flow and washing out CO_2, and partly by a direct action on the nerve-cells of the respiratory centre.—On the Production of Anhydræmia with Insulin. By David L. Drabkin. Large doses of insulin in dogs cause a rapid increment in the percentage of hæmoglobin (14·5–44·2 per cent.), a great increase in the cell count, a decrease in the total blood volume, a reduction in the percentage of plasma, and also physical evidence of blood dehydration—increased viscosity and apparent anoxæmia. After large doses of insulin, associated with a rapid, pronounced hypoglycæmia, dogs invariably developed anhydræmia. Unæsthetised rabbits were irregular in their response and were found to be ill-adapted for such a study. The use of "mass" doses of insulin is essential in this type of experiment. The sudden profound hypoglycæmia—the virtual purging of the blood of its sugar—is thought to be the primary cause of the anhydræmia.—The Relation of Ovarian Function to Menstruation. By Wilfred Shaw. After a short account of the work done by other observers, the author describes first his own histological results obtained by the examination of curettings from patients who were menstruating regularly, and from some 40 specimens of the non-pathological endometrium of uteri removed by operation. Evidence suggests that the corpus luteum is responsible for the production of the pre-menstrual changes and of the decidua if pregnancy occurs.—The Relation Between the Size of the Heart and the Oxygen-Content of the Arterial Blood. By K. Takeuchi. It is known that a sufficient degree of anoxæmia produces cardiac dilatation. The experiments were made on cats anæsthetised with urethane and C.E. The chest was opened, artificial respiration maintained, and the inspired air varied in composition in four periods. Cinematograph pictures were taken of the heart beating at each period of the experiments, enlarged and measured in length, width, and area of the hearts. The percentage saturation of oxygen was determined in blood samples taken from the carotid at each period. It was found that the reduction of oxygen in the air breathed produces immediate enlargement of the heart. The readministration produces immediate reduction.—M. L. Anson and A. E. Mirsky contribute two chemical papers, one on Hæm in Nature, and the other on Helicorubin and its Relation to Hæmoglobin. By hæm is meant an iron-pyrol complex associated with a proteid in such compounds as hæmoglobin and hæmochromogen. Hæm is constantly and widely distributed in nature—e.g., hæmoglobin in the blood of all vertebrates—in a haphazard fashion, and a number of natural pigments are related to it. Helicorubin was discovered in 1870 by Sorby in the large snail *Helix aspera*. Its properties, affinities, and composition are described; its properties seem to be adaptations to the acid medium of the snail's gut in which it is found. Its function is unknown.

The other papers are: The Pulmonary Circulation in the Heart-Lung Preparation (Dog), by G. V. Anrep and E. Bulatao; The Double Innervation of the M. gastrocnemius, by S. de Boer; The Effect of Pituitary Extract on the Secretions and Composition of the Urine, by Raymond L. Stehle and Wesley Bourne; and a description of a new apparatus designed for the study of the conditions of respiration with the chest open, by K. Takeuchi, whereby artificial respiration can be maintained for nine hours or more with the chest open, without producing emphysema and which does not cause more than a trivial decrease in the oxygen saturation of the arterial blood.

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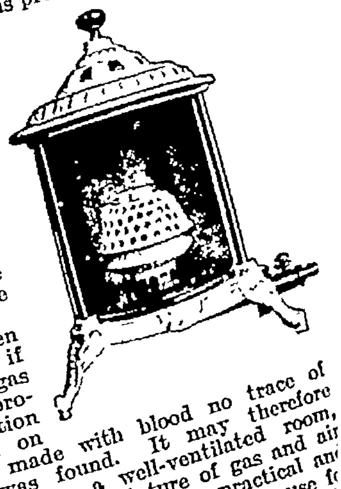

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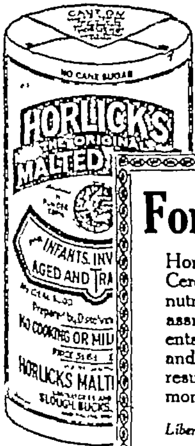

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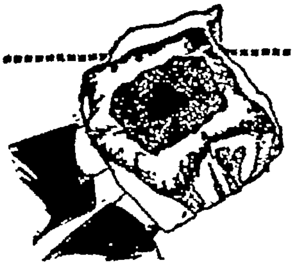

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THE LANCET.

LONDON: SATURDAY, OCTOBER 31, 1925.

WALES AND ITS MEDICAL SCHOOL.

As was noted in our columns last week, a further stage in the controversy regarding the government of the Welsh National School of Medicine was reached at a meeting of the Court of the University of Wales at Llandrindod on Oct. 16th, when, on the proposition of Alderman WILLIAM GEORGE, a resolution was passed by 71 votes to 41 expressing the opinion that the School should be constituted as an independent school of the University and resolving that His Majesty in Council should be petitioned for a charter to bring this about.

The controversy is of some standing, and the salient points may not be within the recollection of all. In 1916 a Royal Commission, presided over by Lord HALDANE and composed of many distinguished educationists, unanimously recommended that the School should be a separate entity of the University of Wales. This course was not followed, and in 1921 the complete School was established as a part of the University College of South Wales and Monmouthshire at Cardiff, with special arrangements, including the formation of a board of medicine to administer the School under the Council and Governors of the Cardiff College. A draft supplemental charter to ratify these arrangements was submitted by the Cardiff College to the Privy Council, which rejected it, and affirmed the recommendations of the Haldane Commission. As the College did not agree, the Privy Council referred the question to the University, which through its Council recommended a school directly under the University and submitted a draft scheme to the Privy Council. Approval of such a scheme has now been obtained from the Court, the governing body of the University, at its Llandrindod meeting. The advocates of an independent school separated from the Cardiff College contend that thereby the School will be truly national, its prestige greater, its administration simplified, and its financial support larger and more assured. Those against separation from the College point out the advantages to medical staff and students of College association and stress the difficulties of separation as regards land, buildings, and money. A very animated discussion, which lasted most of the day, took place at the Llandrindod meeting. Members of the Court had already received a considerable amount of literature which included, as expressing outside opinion, statements from Sir CHARLES SHERRINGTON and Sir THOMAS LEWIS in favour of separation and from Prof. ADAMI against it. The arguments employed by the opponents to the policy of separation have been summarised in the frank statement circulated from the Vice-Chancellor of the University of Liverpool, and while admitting that on the constitution and conduct of universities he must be considered a first-class authority, we do not find the views of those who think with him broadly correct on general principles. Under the policy of separation it should be realised that the University connexion will be retained. Further, the apprehension that the other constituent Colleges of the University will be led to the burden of starting departments of anatomy and physiology out of rivalry to Cardiff seems to be far-fetched, for the number of students requiring courses on these subjects but not wishing even to enter the medical school of the University can hardly be large enough to warrant any dissipation of energy.

We have nothing but sympathy with the aspirations of Wales to establish a good medical school, and our sympathy is extended also to the Cardiff College which founded the School and naturally desires to keep it. A school of medicine, however, with its associated hospital organisations (and it is to be noted the Cardiff Royal Infirmary is in favour of separation) is too big a thing for a single university college to manage. The opinions and desires of the Royal Commission and Privy Council must carry weight. Association of staff and students cannot be forced; it will come naturally by work in institutions situated side by side. Only by an untrammelled and simplified administration can the School realise itself and develop on the best lines in the future. Granted goodwill on all sides, which should be forthcoming, disentanglement of mutual possessions should be a simple matter, especially as school properties are only held on trust by the Cardiff College and it has no power to deviate them from school purposes. We are of opinion that only by the constitution proposed by the University of Wales will the School undergo proper development and become not only a national but an international institution for medical education and research.

THE ÆTIOLOGY OF ECLAMPSIA.

PHYSICO CHEMICAL methods are continually being applied to the medical sciences, and the harvest which is being reaped as a result of this application is of significantly ingravescent magnitude. It may be regarded as an axiom that every principle involving the inorganic world will ultimately be involved in the attempt at a rational interpretation of the organic. As long ago as 1690 HUYGENS, when studying the refraction of light through a crystal of Iceland spar, discovered the fact of plane polarisation. Over a century later ARAGO noticed that when a plate of calcite cut in a plane perpendicular to the axis was placed in the beam of light traversing a path between two crossed nicols, no rays passed the analyser. If, however, a plate of quartz were substituted for the calcite, part of the beam of light was transmitted. Evidently the plate of quartz had rotated the plane of polarisation which had been impressed on the light-waves during their passage through the first nicol. Some substances were found to rotate the plane in a clockwise, others in an anti-clockwise direction, and were consequently given the names dextrorotatory and lævorotatory. A more puzzling phenomenon was brought to light when it was found that certain liquids—e.g., turpentine—also produced rotating polarisation and that this power was not lost even when the substance was in the state of vapour. Clearly the phenomenon was one intimately connected with the structure of the individual molecules. Solutions of some substances likewise exhibit this phenomenon, and the fact that the degree of rotation is proportional to the concentration of solute at once gives the possibility of quantitative analysis to this principle. If two or more rotatory substances are in solution together, then the degree of rotation is the algebraical sum of their individual rotations when separately investigated in the same concentrations. The application of these principles, as is well known, has been of great industrial value in the determination of sugar and is also made use of extensively in the estimation of sugar in biological fluids.

We publish in this issue a paper by Dr. ALEXANDER HYND on some preliminary experiments on the nature of urinary protein, in which the principle of rotatory polarisation is invoked. Some extremely interesting facts have come to light. Investigation of the rotatory power of the urine from a case of eclampsia showed that this was considerably less lævorotatory than would have been expected from the amount of protein present and from the assumption that the protein present was serum albumin. This result led to a more careful and systematic investigation of the rotatory power of the carefully purified albumin obtained from the urines of 12 cases of albuminuria of pregnancy (without convulsions) and of 14 cases of eclampsia. Five cases of proteinuria not complicated by pregnancy were similarly studied. In all the cases of albuminuria of pregnancy without convulsions the specific rotation of the urinary albumin ranged from −48·9° to −65·7°, with a mean value of −55·81°, a figure which agrees extremely well with the mean value of the specific rotation of the albumin excreted by the five cases of proteinuria uncomplicated by pregnancy, viz., −54·27°. Since the specific rotation of human serum albumin prepared by a process exactly similar to that employed in the purification of the urinary albumin gave a value which approximated closely to those given above, one is tempted to conclude that the albumin excreted in these conditions is serum albumin, a tentative conclusion which agrees with the commonly accepted view.

In the cases diagnosed as eclampsia, however, the rotatory power of the urinary albumin is in many instances much below the serum albumin figure and warrants a division of the series into a high and a low rotatory group. The specific rotation in the latter group varied between the limits of −33·92° to −41·61°, with a mean value of −38·5°; that in the former between −49·4° and −58·67°, with a mean value of −56·37°, a figure agreeing closely with that of serum albumin. Dr. HYND shows that cow's lactalbumin has a specific rotatory power of −41·17°. The figure for human lactalbumin would probably be of like magnitude, and "it would seem," he says, "a significant fact that while in no case of proteinuria uncomplicated by pregnancy, nor in 'albuminuria of pregnancy' *without* convulsions, has an abnormally low specific rotation for the urinary albumin been observed, in a large percentage of the eclamptic cases the albumin excreted in the urine is considerably less lævorotatory than serum albumin. Experiments have been in progress to determine the nature of this low optically active urinary albumin, but owing to the difficulty of obtaining material suitable for such investigation, so far no definite conclusion has been come to, and further work will be necessary. The value of the specific rotation, however, suggests that the albumin may be lactalbumin." If this suggestion be accepted, "we have in certain cases of eclampsia an analogous condition to the lactosuria which not infrequently occurs in the late months of pregnancy or soon after labour, while corresponding to the symptomless albuminurias of pregnancy there exists the fairly common glycosuria of pregnancy. However, while the presence of lactose in the blood and its excretion in the urine would do little or no harm to a patient, the presence in the blood-stream of lactalbumin, which must be regarded as a foreign protein, might entail great danger." The suggestion is tentatively promoted that eclampsia is the symptomatic expression of a supersensitiveness to lactalbumin and is essentially of an anaphylactic nature.

We shall look forward with interest to the results of a more extensive investigation on the nature and origin of the urinary protein in eclampsia, and to the effect which these will inevitably produce on the fascinating suggestions made in Dr. HYND's paper as the result of his preliminary and carefully conducted experiments

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MALARIA AND AGRICULTURE IN BENGAL.

A REPORT[1] to the Government of Bengal, on malaria in relation to agricultural conditions in that province, by Dr. C. A. BENTLEY, Director of Public Health, raises questions of general interest no less than of vital local importance. The report urges that the Gangetic Delta depends both for prosperity and health on annual inundation, which leaves on the land a deposit of fertilising silt, and hinders anopheline breeding during many weeks of otherwise favourable conditions. Nevertheless the very circumstances which bring richness to the land tend to its decay; for with each annual flood the layer of fertilising silt, while deposited broadcast, yet reaches its greatest depth close to the river banks, so that natural embankments are there formed over which the normal annual flood finally fails to escape. During flooding, silt is also deposited in the river beds themselves, whence however it is ordinarily scoured out, for the now clarified flood water drains back into them as the river level falls. If this process do not occur, such waterways are left, in the dry season, choked, stagnant, and dead. This condition, as would be expected, is most advanced about the apex of the Gangetic Delta where land is extensively derelict, wild and cultivated vegetation indicate soil drought, and malaria is excessive. It is, moreover, held that this natural decay of the Bengal river system is accelerated by embanking the rivers, and is intensified by the building of thousands of miles of raised roads and railways; for—and the point is stressed—embankments of this kind, fallow land, and malaria are all more abundant in Western than in Eastern Bengal; thus it is definitely concluded that such embanking is the cause both of the existing agricultural depression and of malaria. Among examples is cited the Hoogly district, where embankment of the left or eastern bank of the Damodar has prevented the river from spilling eastwards across that district into the Hoogly river, the westernmost of the stream of the Gangetic Delta. Crop experiments have shown that the average out-turn of the rice plant is greater by half when irrigated by Damodar water than when not so irrigated, while the Hoogly district is now one of the most malarious in the province, to which condition is also largely attributable the fact that its population in 1921 was less than in 1872. Further, comparatively healthy Eastern Bengal, which is yearly flooded, has, relative to area, 28 per cent. of the railway and 6 per cent. of the road mileage of the more malarious Western Bengal. It is therefore argued in the report that, to prevent extension of malaria in the Delta, normal inundation must be encouraged by maintenance of channels and spill areas, and by absolute prohibition of all embankments, including those of railways and roads, until these can be constructed without obstructing natural irrigation and drainage. In the meantime the effects of embankments upon the water table should be investigated and a survey should be made of malarial distribution, of agricultural conditions, and of the various watercourses, drainage maps of the district being prepared.

These recommendations lead naturally to a scrutiny of the proffered evidence that embankments of these various kinds have indeed caused the ills attributed to them. That the actual process of embanking may induce temporary malarial outbreaks is unquestionable; that completed embankments have permanently altered the health of Bengal is admittedly difficult to prove, or disprove; but the evidence offered for their harmfulness appears too little convincing. It is, of course, clear that embankments for rivers, roads, and railways will be built preponderatingly upon those upper parts of the Delta which have nearly, or actually, become raised above ordinary flood level, and where flooding is felt to do more economic harm than good. These higher tracts may be taken as evidence that land is permanently emerging from the waters and that hydraulic conditions are being radically altered. It will surely be felt by many, in spite of the facts cited in this Report, that there is still no answer to the following question: "To what extent is this natural alteration, with its concomitant agricultural and hygienic deterioration, aggravated by man's efforts?" There are undoubtedly those who are satisfied that there is another side to the whole question. Witness the Damodar embankment, just cited, and to which the ill-health of the Hoogly district has been referred. No one who has looked out daily for months upon a pleasant midstream island in a big Indian river and has awakened one monsoon morning to unbroken wastes of rushing water—a deep channel where palms and huts stood the evening before—can ever leave out of count the well-established vagaries of rivers on Indian alluvial land; so that it is difficult to reject as ill informed the definitely held opinion that the main current of an unembanked Damodar river, diverted in the usual freakish manner, might readily follow the example of other well-known rivers, scour out one of its numerous spill channels across the few miles of intervening Hoogly district, and enter the Hoogly river above, instead of below, Calcutta. The existing river bed could not hold both waters; the damage entailed to the city and port of Calcutta none can estimate. Bonification, carried to its greatest success in Italy, is defined in the Report as the regulation of all surface waters, the improvement of soil fertility, the cultivation of crops best suited to local conditions, and the increase in numbers and prosperity of the population. Dr. Swellengrebel, in an appendix to the report to the League of Nations of its Malaria Commission upon a European tour of investigation in 1924, describes Italian *bonificazione* as comprising the measures of social hygiene taken to improve the hygienic condition of the inhabitants, to increase their well-being and ultimately their resistance to malaria; sanitary ends are gained by economic measures. He adds, however, that the problem of housing is given constant attention, and that the difference between districts completely "bonified" and those untreated or only partly so was much more evident in the condition of human habitations than in the amount of anophelism, which was not appreciably different. The value of housing is in the forefront of the Malaria Commission's representation. The Commissioners class as "primary," and always indispensable, antimalarial measures those limited to malaria-infected individuals and the houses in which they dwell, and they include among them the discovery and full treatment of all cases of malaria by home-to-house inspection, and the instruction of inhabitants in their homes as to where mosquitoes are to be found, how they are to be caught, discouraged, and repelled.

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[1] Calcutta: Bengal Secretariat Book Depot. 1925. 4s.

Full of promise, then, for Bengal, as Dr. Bentley notes, is Rai Gopal Chundra Chatterji Bahadur's movement for the formation of coöperative antimalarial societies; and more than good wishes are his due in an uphill fight. Based largely, no doubt, on experience of Algeria, where a pestilent, avoided region has become a reasonably healthy one of intensive cultivation with scarce room for another blade of grass, as is picturesquely said, the view is becoming evident in French literature that the best way to exterminate malaria is to improve well-being, and that good administration can pre-eminently aid this. It is, however, well to keep in mind the extraordinary effects produced in the Malay Federated States—associated with the name of Sir Malcolm Watson—which have followed intensive study of the conditions which favour the breeding of the particular anopheline species locally implicated in malarial transmission. In agreement perhaps with Colonel Fry's report, written in 1914, that, since all Bengal *anopheles* have similar breeding habits, identification of the species acting as optimum host is merely of academic interest, the present report holds no mention of "species sanitation." It is becoming widely held elsewhere that identification of implicated species promises well for future preventive work. No later work on these lines than Fry's is traceable in Bengal, and it is difficult to believe that species with identical habits are implicated in the different conditions of Western and Eastern Bengal. Fry dealt only with Western Bengal and wrote "It would appear that different factors concerned in malaria production and maintenance . . . inextricably overshadow each other." It follows that only by future patient extrication of the tangle can that scientific lead be given to the administration without which its efforts at social and hygienic amelioration must prove risky, expensive, and, not improbably, futile.

SURGICAL DEVOLUTION.

In his Presidential Address to the Section of Surgery of the Royal Society of Medicine, which we report on another page, Sir Lenthal Cheatle was both stimulating and inspiring. He took for his text the thesis: Surgeons in London are in danger of losing their place as leaders of surgical thought—and, without affirming or denying it, he admitted danger and suggested how to meet it. Real leaders in surgical thought are necessarily few in number and they may crop up anywhere. The London routine of surgical training can hardly alter one way or the other what is essentially a biological phenomenon, but Sir Lenthal Cheatle touched the spot when he said that the leaders of surgery, if they are to lead, must always have before them the ideal of investigating. Surgical technique in particular cases—e.g., appendicitis—has been developed to such a point that nine out of ten patients can be operated upon nearly as efficiently by the less experienced as by the more skilled surgeon. Much of what may be called routine surgery is done in present circumstances by operators in outlying districts who may be general practitioners. This is the natural result of the opportunities for surgery offered in the schools to house surgeons and others, but the operating practitioner does no more than follow accepted surgical teaching. Leadership involves work on problems more difficult than these and something more than mere technique. The surgical leader must be a thinker and an investigator. Sir Lenthal Cheatle believes that surgical specialisation has been carried too far, and in this he has the support of a brother-surgeon who holds that patients should only be segregated out of the general surgical ward so long as interest is focused on the particular region or the particular morbid condition; investigation being complete and the lines of treatment settled, they resume their beds in the general ward. The good general surgeon is probably now in every way as good as he has ever been, and it is not difficult for him to acquire some special things, such as cystoscopic technique, whereas the specialist can only extend the area of his special subject with difficulty. Happily, the standard of work at a teaching hospital is constantly kept up not only by the collaboration of colleagues, but by the insistent criticism of students. The surgeon, like any other craftsman, may be inclined to magnify the importance of technical ability, and technique is more important in surgery than it is in any other faculty, but the judgment born of experience and wide contacts is as important for the right handling of the individual case as it is for the advancement of the science. One who is only a clinical surgeon and nothing more cannot hold a position as leader in his profession. We are sure that Sir LENTHAL CHEATLE's address will do good. He has put into measured words thoughts which have been exercising the minds of surgeons for many years past, and if his remarks should lead to some searching of heart, nothing but good can come from it.

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AN ENCYCLOPÆDIA OF INDUSTRIAL HYGIENE.

THE first two brochures have reached us of the "Encyclopædia of Industrial Hygiene," which is being brought out under the title Occupation and Health by the International Labour Office at Geneva. The object of the work is to disseminate as widely as possible the information required for the detection of occupational diseases, to indicate the steps to be taken for their cure and prevention, and to lay down general principles for the better protection of the workers. It is intended not merely for industrial physicians, who must find it a standard work of reference, but for workers, manufacturers, and their organisations. Consideration is given to the work, the worker, and his environment. The work is analysed according to process and risk. The worker is envisaged in relation to the products with which he is in contact. Environment is concerned with such matters as ventilation, lighting, dust removal, and sanitary accommodation. The importance of such an international publication can hardly be overestimated to-day, when matters of industrial legislation, aimed at establishing health in occupations, are so much to the front in every civilised country. The list of expert collaborators who are engaged upon its production, chosen from France, Britain, Austria, Belgium, Germany, Italy, United States, Switzerland, Holland, Sweden, Spain and Poland, is sufficient to vouch for the authenticity of the articles which are all submitted for comment to a correspondence committee before issue. The encyclopædia is appearing in two languages, French and English. The first two brochures contain 12 articles dealing with definite industrial poisons, such as mercury, carbon monoxide, phosphorus, and benzene; one concerned with hatters furriers' processes is well illustrated, and each contains a useful bibliography. The price (£1 12s.) charged for the total issue, which promises to be an extensive work, is such as should appeal to a wide circle of readers. We tender our congratulations to the International Labour Office for undertaking this useful and important piece of work.

Annotations.

"Ne quid nimis."

THE ECONOMIC ASPECT OF SMOKE.

AT the Plymouth Gas Conference on Oct. 21st Dr. R. Veitch Clark, medical officer of health for Manchester, made an important pronouncement on the conservation of human energy from the point of view of smoke pollution. The gloom which envelops the great industrial belts of England and Wales during the winter months is due very largely to pollution of the atmosphere with the products of combustion of raw coal, and even in the height of summer the Manchester sun records only slightly exceed the winter records of such places as Southport, Brighton, and Eastbourne. Dr. Clark does not claim that the abolition of the smoke evil will abolish even one disease, but he does insist that it will greatly diminish the incidence of disease and produce enhanced efficiency in adult life. There are few who do not react to the depression of atmospheric dinginess, and the Industrial Fatigue Research Board has demonstrated the diminished output of work when lighting conditions are bad. Dr. Clark, as did our Berlin correspondent last week, drives his attack home through the atmospheric envelope to the personal envelope, remarking that ultra-violet rays will not pass through clothing. He regrets that man, particularly male man, does not adapt his costume more sensibly to climatic conditions. Prof. J. B. Cohen and Dr. A. G. Ruston, in a new and enlarged edition of their book on "Smoke,"[1] think that the effect of smoke on health will have to be clearly proved before the Ministry of Health, for example, will take any steps. Without entering into the question of health, however, save to include a rather unsatisfactory appendix containing certain statistics by Dr. Ascher, of Hamm, Westphalia, these authors have brought forward a startling indictment of smoke in their account of the ravages for which it is responsible on vegetation, metal work, and masonry. The fact that the crumbling of the House of Commons is due to the effects of products of inefficient combustion of coal in London air may perhaps bring legislation a little nearer. Domestic soot is particularly deleterious in its effects on vegetation, for the high percentage of tar it contains makes it more adhesive, and soot affects the growth of plants by blocking up the stomata and impeding transpiration, by reducing the intensity of sunlight absorbed by the leaves, and by the corrosive action of the acid it contains. The effect of soot on crops has been studied both in the laboratory and in carefully planned field experiments. One crop of lettuces, for example, grown in the centre of the industrial part of the city of Leeds, was only a quarter of that obtained in an outlying agricultural area. By special methods these authors showed that the smoke cloud over the industrial part of Leeds shuts out 40 per cent. of the daylight, and with regard to the effect of soot on the laundry bill they quote figures which indicate that a big town in the north of England would save about £250,000 a year in household washing expenses if only the city smoke were eliminated. The deleterious effects of smoke on masonry and metal work are due principally to the presence in the air of towns of sulphuric and sulphurous acids derived from the coal. The action of such acids upon all stones having lime or magnesia in their composition is rapid and progressive. Striking illustrations of this are shown in this book, including photographs of portions of the masonry of certain public buildings. In this connexion Sir Frank Baines has asserted that H.M. Office of Works would save at least £120,000 per annum if the air in towns were as clear and as pure as in rural districts.

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[1] Smoke: A Study of Town Air. New and enlarged edition. London: Edward Arnold and Co. 1925. Pp. 108. 8s. 6d.

Prof. Cohen and Dr. Ruston have certainly collected an imposing list of crimes for which smoke is responsible, and it is surely a matter which affects the public weal so closely that interference by the authorities, even although this means tampering with the home fires, would be a thoroughly justifiable procedure. Dr. Cox has, however, been quoted as saying that it may require the death from fog of three Cabinet Ministers before any action is taken.

PROGNOSIS IN BILATERAL BREAST CANCER.

We reviewed last week Mr. Grey Turner's incitement to encouragement in cancer surgery, and no one reading his book can take a gloomy view of surgical intervention for tumours in many localities. There is a widely held opinion that when cancer involves both breasts the prognosis in regard to cure, or even marked prolongation of life, by operation is almost hopeless. This outlook is combated by Dr. Clarence A. McWilliams,[1] who records the results in 98 cases of bilateral breast cancer, of which 87 cases had cancer developing consecutively and 11 cases in which cancer developed simultaneously in both breasts. He calculates, from grouped statistics, that of patients with operable cancer in one breast 5 per cent. will develop cancer in the remaining breast. Of the 11 cases of simultaneous cancer only one lived longer than four years after operation. But of the 87 consecutive cases 54 per cent. after the first operation and 24 per cent. after the second operation lived for five years. McWilliams considers, from these figures, that in the simultaneous cases the prognosis is practically hopeless, but in the consecutive cases very fair. In the consecutive cases he regards the growth in the second breast as primary, and not an extension or a metastasis from the growth in the first breast, and gives good reasons for his belief.

NATIVE DIETS.

The problems of diet are still very much under discussion at the present day, and among the many theories put forward to explain this or that defect in the health of civilised man is the superficially attractive one that his diet has also become much too civilised. The alleged freedom of the primitive tribes from cancer, for example, is ascribed by enthusiasts variously to their simple foods, to the small amount of cooking employed, or to the absence in certain cases of meat in their dietaries. In this respect information as to what the primitive tribes actually do eat and what effect, if any, their diet has upon their general health and well-being is certainly needed. A recent discussion on native diets reported in the *Kenya Medical Journal* (August, 1925) brings out many interesting points. Dr. C. J. Wilson, who opened the discussion, attempted to answer the two principal questions brought up by this subject—namely, What do the natives of Kenya eat? and What ought they to eat? The natives in the reserve live upon a diet described as being on the border-line of food deficiency, being preponderant in carbohydrates with meat in some form as, at any rate, an occasional part. Such a low diet appears to render the native more susceptible to disease than the well-nourished individual and unable to cope with hard manual labour. In connexion with the Carrier Corps (the native labour employed during the war), in certain of the native prisons and with some business concerns employing native labour, actual diets have been worked out and adjusted so as to get the best results. One such diet which proved very satisfactory consisted of 2 lb. of mealie meal daily, 2 lb. of chiroko beans weekly, 2 lb. of meat weekly, and one lemon weekly. The difficulty facing anyone dealing with natives whose staple food consists largely of maize is to get sufficient protein of biological value into the daily diet since the proteins in maize are very low in the scale—2 lb. of maize, for example, contain excess of carbohydrate and only about half of what is conceived to be the minimum amount of protein according to European standards. The difficulty immediately arises that most of the known facts on diet have been worked out on Europeans or Americans. Does the native need meat? In the opinion of one of the subsequent speakers all the tribes need meat if they are going to keep fit for hard work, and he quoted in support of this contention the fact that a certain company giving the diet detailed above to the natives in its employ was quite sure that "their boys worked better with it." Another speaker stated that every contractor for some railway construction work "gave his boys meat because it cheered them up," and on a liberal diet containing meat there was stated to be an improvement in health and in capacity for work. It may be argued that the diet to which a native is accustomed is the best diet for him, but the experience of the acting Chief Native Commissioner, Colonel Watkins, who took part in the discussion, was that the native must be trained to take a better diet, for this, it was urged, would make him more adaptable to changes in surroundings and climate and more resistant to disease. The Chairman, closing the discussion, brought forward some significant figures which showed that on a rough estimate the result of an improved diet at a Carrier Corps hospital was to lower the death-rate from 33 to 3 per cent. It will be interesting to see if the improved diets of the primitive tribes will in any way approximate to the simple diets to which civilised man is sometimes advised to return.

THE TARGOWLA REACTION FOR SYPHILIS.

Most of the modifications made in the original technique of the Wassermann reaction have had simplification as their object, but even the simplest of the reputable variations is beyond the time and experience of the general practitioner. If, then, a simple test for syphilis could be found its value for the busy practitioner would be great, but though there have been many such suggested they have all been rejected as useless. The reaction introduced by Targowla in 1923 did not apparently receive much attention in this country, but an investigation of its value in 200 cases of syphilis by Bernard and Ruelle[1] has produced some striking results. This reaction depends upon the curious fact that mixture of normal cerebro-spinal fluid and "elixir paregoric" produces a colloidal suspension, while with certain pathological fluids a precipitate is formed. The "elixir paregoric" of the Belgian Pharmacopoeia contains tincture of opium, 50 g.; benzoic acid, 5 g.; camphor, 8 g.; anethol, 2 g.: and 70 per cent. spirit, 910 g. Fifteen drops of this are mixed with five drops of water and 15 drops of cerebro-spinal fluid in a test-tube, while a control tube contains 20 drops of water and 15 drops of elixir. At the end of 24 hours there is either more or less precipitation in the first tube (a positive reaction), or no precipitate at all (a negative reaction). The positive reaction is said to be given in cases of cerebro-spinal syphilis and in disseminated sclerosis only, and in 100 cases investigated by Targowla the parallelism between this reaction and the Wassermann reaction was complete in 91 cases. In six of the remainder, all cases of undoubted syphilitic infection (general paralysis, meningitis, and congenital syphilis), the Targowla reaction was positive and the Wassermann reaction negative. In the other three cases the Wassermann was positive and the Targowla reaction negative. Bernard and Ruelle investigated this reaction on 200 cases of syphilis in all its stages, and found that the results of the Wassermann and the Targowla reactions were discordant in only 28 cases. In 14 of these the Targowla was positive and the Wassermann negative; all but three of these 14 cases had definite symptoms and signs of cerebro-spinal syphilis with a history of infection. Of the other 14 cases, which gave a negative Targowla and a positive Wassermann, nine were cases of general paralysis or tabes; one had suffered from an acute syphilitic meningitis (during which time the Targowla reaction was positive), while the four remaining were without any signs or symptoms whatever. These authors therefore claim that not only is the parallelism of this simple test with the Wassermann reaction sufficiently striking to make it of great value, but also that in cases of cerebro-spinal syphilis other than general paralysis or tabes it is actually even more reliable. Difficult biochemical and pathological problems immediately arise if these results can be repeated by other observers, but the very simplicity of the reaction certainly seems to warrant its close investigation in this country.

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[1] Annals of Surgery, July, 1925, p. 63.

[1] Bruxelles Médical, Sept. 13th.

DENTAL PROPAGANDA.

Though pain will often recall the prodigal patient to his dentist, the population at large suffers dental disease more or less gladly because it produces no discomfort comparable with the harm it is causing. The insidious nature of the damage gives a real and special importance to public instruction on the care of the teeth. What form this propaganda should take may be in question, but the necessity for it is beyond doubt. In an address on the subject at the British Dental Hospital on Oct. 15th, Dr. James Wheatley rightly laid more stress on the cultivation of hygiene than on preventive dentistry, and emphasised the need for providing an incentive to right living as well as instruction on how to achieve it. Knowledge is one thing, conduct is another. In particular, he believes, it is necessary to find an incentive for the adolescent who has thrown off the control of parents without accepting the bonds of purpose or of any real object other than pleasure. To excel in sport and to excel in beauty are aims which can be legitimately exploited, and it must be more generally realised that health is a thing to be proud of and that disease is usually the reverse. The ambitious scheme for widespread propaganda put forward by the Dental Board has already been described in our columns.[1] Dr. Wheatley welcomes the action of the Board as likely to educate the public in oral hygiene, but is concerned that it should fit in with the general scheme of public health education. The influence of the Board might be very valuable in a central propaganda organisation loosely attached to the Ministry of Health which should coordinate and assist the work of the health services and voluntary organisations; but in direct public propaganda its influence would be less useful. Dental propaganda, he considers, should be an inseparable part of general health propaganda; it must continue over many years and can only be effectively undertaken by those bodies which have access to the homes and schools. Its presentation to the public depends as much or more upon understanding the mental capacity, titude, and general environment of the people proached, as upon a complete knowledge of the ience, and advocacy of dental treatment is less kely to be suspect to the more ignorant section of the population if it does not come directly from the dental profession. Dr. Wheatley again drew attention to the significant fact that after 50 years of universal education 20–70 per cent. of parents refuse skilled dental treatment for their children when it is provided free of charge, and he suggests to education authorities that they should look upon acceptance or refusal of dental treatment as evidence of the true success or failure of the education in their districts.

A MEXICAN PUBLIC HEALTH BULLETIN.

The appearance of the first number of what is intended to be a quarterly Bulletin[2] affords satisfactory proof of the intention of the present rulers of Mexico not to lag behind the rest of the civilised world in matters of hygiene. If the programme outlined in this volume is effectively carried out, no easy task in a country with such a turbulent population, it will be a great achievement for the Government, and in any case is evidence that in the matter of public health they have high standards before them. With a view to greater efficiency, the department seems to have been more or less reorganised at the beginning of this year, and now consists of the following sections: Infectious diseases; disinfection; tropical diseases; sanitary engineering; legislation; demography; chemistry and pharmacology; and food and drinks. It also controls the following services: Sanitary inspection; the direction of venereal dispensaries; the institute of hygiene; the Hospital Morelos (maternity); the section of propaganda and hygienic education; the antirabic institute; and the school of health—a sufficiently comprehensive list of sections. As regards its actual work, a strong line has been taken with regard to vaccination. Authorised by a clause in the Federal constitution, the department "established a sanitary dictatorship in the State of Vera Cruz and sent down vaccination brigades" to carry out the law which now makes it compulsory on all. The central department has power to compel the enforcement in individual States of sanitary measures which are not provided for by the State laws, and is convening a congress of State sanitary authorities to consider the unification of the whole administration throughout the Federation. Besides small-pox, special measures were taken against cerebro-spinal fever, malaria, rabies, and bubonic plague, whilst it is recorded with satisfaction that the fight against yellow fever has resulted in its almost complete disappearance. The campaign against tuberculous and venereal disease is being actively carried on, and in both cases dispensaries for treatment are being established. It is of some importance to note that apparently in the future it will be necessary for those wishing to practise in Mexico to pass examination by the university there, but the conditions are not made clear. The main part of the Bulletin is taken up with the usual reports of the activities of the various departments and statistical returns. An unusual feature is a sectio devoted to sanitary progress abroad, and here th editors pay a high compliment to England by reprin ing in full a translation of Sir George Newman's address on Public Education in Hygiene, with some short papers from France and the United States. The volume is well printed and produced. If succeeding volumes show similar results, Mexico will have no need to be ashamed of its Ministry of Health.

BEFORE AND AFTER THE PANEL CONFERENCE.

The annual conference of local medical and panel committees, of which an account appears on p. 934, was held on Oct. 22nd in London. The impending shadow of the Royal Commission's report tended to cool the atmosphere of its deliberations, though here and there a speech recalled the warmth of a smaller meeting on the day before. A resolution of confidence in the Insurance Acts Committee as the one and only body qualified to represent the panel committees to the Government provoked a discussion from which it was learnt that all parties appreciated the value of unity in the profession, and this was reassuring. It would, indeed, be unfortunate if this unity were imperilled on minor differences of policy rather than of principle. The policy of the majority is at present noticeably cautious, and whatever may be the advantages of individual initiative there is no doubt that Unity is most easily wooed amongst the big battalions which she invariably patronises. It was abundantly clear that the value of personal liberty and the possible dangers of bureaucracy are acknowledged throughout the profession, and if that liberty should be definitely and deliberately challenged united action would doubtless take the place of the united inaction which the majority now desires. The relations of the insurance practitioner, the Ministry of Health, and the law, whilst they deeply interested the Panel Conference, did not, however, take up most of its time. Deficiencies or inaccuracies in the present machinery were suitably exposed, and the interesting question of collecting statistics was discussed at some length. It is admitted that the available information on panel and private practice, its costs, and their repayment, is at present deficient, and if a clearer case is to be presented for raising capitation fees and altering present conditions it is very desirable that accurate knowledge should be obtained. In answer to a proposed scheme it was suggested (to misquote J. M. Barrie), that the fault, dear Brutus, lay not in our staffs but in ourselves, and it is undoubtedly true that whatever organisation comes into being for collecting statistics must have the real personal coöperation of members of the profession if it is to accomplish anything useful.

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[1] The Lancet, August 15th, p. 342.

[2] Boletín del Departamento de Salubridad Publica, No. 1, 1925. Editorial Cultura Mexico D.F. Pp. 254.

THE SIZE OF THE THYMUS.

The real facts about the weight of the thymus have been fairly well known for some time, but the general opinion of morbid anatomists has been always a good deal coloured by their own experience. And it is in connexion with the thymus that the rarity of chances of carefully dissecting the normal human body soon after death has been particularly misleading—truly ignorance of the anatomy of the average people who walk about the streets is one of the main obstacles to the further progress of pathology especially along statistical lines. In the current number of the *Journal of Pathology and Bacteriology* will be found an analysis by Dr. A. B. Bratton of data which, collected in Prof. H. M. Turnbull's Institute at the London Hospital, probably form as satisfactory a mass of material as can be had. They comprise 337 persons up to 16 years of age who died from accidents, burns or scalds, asphyxia, under anæsthesia, or from the immediate results of these. In other words, the ordinary hospital population is excluded, for it is now realised that it is difficult for a child to get into a hospital and more difficult for it to reach the post-mortem room without suffering from something which causes wasting of the thymus. In line with this, Dr. Bratton shows that the thymus is larger and persists longer than is commonly supposed. It increases rapidly in weight during the first two years, then changes little till the seventh year, when it again increases to fall slightly after the eleventh year till the sixteenth. But more important are two other conclusions which emerge. In the first place, the weight of the normal thymus at any age is so variable that it is practically impossible to say in any individual case whether it is too large or too small. Thus the mean weight at 5 years is about 25 g. But the coefficient of variation of the weights of which this is the mean is about 35, so that a range from 16 to 34 g. will exclude about a third of the cases, and one cannot say that any one thymus is abnormally large unless it weighs fully 42 g. or too small unless it is less than 8 g. The second conclusion is that "we know of no gravimetric evidence that such a condition as 'status thymicus' exists." It seems time that some caution should be exercised in finding in a normal thymus a satisfactory cause of a healthy child's unexpected death.

THE LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

It was on August 1st, 1924, that the London School of Tropical Medicine became merged in the new London School of Hygiene and Tropical Medicine. At a meeting of the court of governors on Oct. 22nd some account was given of the present position and prospects of the school. The site for the new building is near the British Museum and has frontages on Keppel-street, Gower-street, and Malet-street. It was bought by the Ministry of Health in 1923 for £52,610, and it is hoped that on the plans of the architect, Mr. P. Morley Horder, the new home of the school will be ready for occupation in 1928. One cause of anxiety to the governors has been removed by the generous action of the trustees of the Rockefeller Foundation, who have amended their original undertaking, to provide a sum of $2,000,000 by promising to pay £400,830, which is the value in sterling of the money offered in 1922. By this the Rockefeller Foundation has cancelled the loss due to the gradual rise in the cost of sterling which threatened the school with a diminution in the value of the gift of more than £50,000 if conversion had been made at the rate of exchange now established. Concurrently with the task of preparing for the building, the Education Committee and the Director have given considerable thought to the general educational organisation, and the Board has recognised the necessity for taking early steps to secure the services of prospective heads of divisions in order particularly to have their advice and assistance before the details of accommodation in the new building and of its equipment are finally settled. A grant has been made by the University Grants Committee for this purpose, and in order to supplement in some essential respects the teaching for the Diploma in Public Health, which is now given at University College, Middlesex Hospital, and at the Royal Institute of Public Health. Arrangements will also be made for the equipment and organisation of the museum, which will play an important part in the educational work of the school. The Director, Dr. Andrew Balfour, has issued a report on the work of the Tropical Division for the year 1924–25. The number of students was 227, which was a record, and on the research side there have been important developments. A field station has been established in Southern Rhodesia, in pursuance of the view that available research funds should be applied primarily to setting up field stations, though expeditionary work may be undertaken in exceptional circumstances. Four research studentships in London have been arranged, and the general courses in tropical medicine and hygiene will in future be spread over 20 weeks instead of 13, and much more time will be given to clinical demonstrations and to the teaching of tropical hygiene. There is no doubt that this will equip students far more fully for their work abroad, and that the already excellent reputation of the school will be enhanced.

SHAKESPEARE AND MEDICINE.

On the occasion of the first social evening of the session of the Royal Society of Medicine a very large gathering of members and guests assembled at 1, Wimpole-street, W., to hear the President, Sir StClair Thomson, discourse on Shakespeare as a guide in the art and practice of medicine. Having introduced himself as a lecturer, in a neat and witty speech, the President referred to the remarkable knowledge displayed by Shakespeare of the history of medicine, to the references to the status of medicine in his own day, and to many startling clinical pictures scattered through his plays, and then proceeded to consider in how much the wisdom of the great dramatist could assist the doctor as a guide in the practice of his art, for "If our virtues did not go forth of us, 'twere all alike as if we had them not." From a large and brilliantly compiled selection of quotations we may select a few, seriatim, which any modern doctor might study with profit. No finer panegyric of the medical profession could be written than that put in the mouth of Cerimon:—

> By turning o'er authorities, I have
> (Together with my practice) made familiar
> To me and to my aid, the blest infusions
> That dwell in vegetives, in metals, stones;
> And can speak of the disturbances that Nature
> Works, and of her cures; which doth give me
> A more content in course of true delight
> Than to be thirsty after tottering honour,
> Or tie my treasure up in silken bags,
> To please the fool and death.
>
> *Pericles*, iii., 2.

It is to be noticed that Shakespeare, in these lines, recognises even in those Elizabethan days of superstition and wholesale drug-taking the vis medicatrix nature and gives the quite modern idea of curing our patients—

> With good advice and little medicine.
> *Henry IV.*, Part 2, iii., 1.

A justification for "case-books" is found in the wise note-taking of the Scottish doctor who attended Lady Macbeth: "I will set down what comes from her to satisfy my remembrance the more strongly." (*Macbeth*, v., 1.) The doctor must remember his patients are sick folk, and cannot judge their mental condition as he would that of healthy men and women. King Lear excuses the behaviour of his son-in-law by attributing much of his conduct to physical conditions:—

> No, but not yet;—may be, he is not well:
> *Infirmity doth still neglect all office,*
> Whereto our health is bound; we are not ourselves,
> When nature, being oppress'd, commands the mind
> *To suffer with the body:* I'll forbear;
> And am fallen out with my more headier will,
> To take the indispos'd and sickly fit
> For the sound man.
> *King Lear*, ii., 4.

Three centuries before the medical profession had adopted open-air treatment, Shakespeare had advised:

> The most wholesome physic of thy health-giving air.
> *Love's Labour Lost*, i., 1.

and recommended it as one of nature's best restoratives:—

> I pray you give her air,
> Gentlemen,
> This queen will live; nature awakes; a warmth
> Breathes out of her. *Pericles*, iii., 2.
>
> His highness yet doth speak; and holds belief,
> That, being brought into the open air,
> It would allay the burning quality
> Of that fell poison which assaileth him;
> Let him be brought into the orchard here.
> *King John*, v., 7.

Then, on being carried into the orchard of Swinstead Abbey, King John's first exclamation is:—

> "Ay, marry, now my soul has elbow room."

When considering therapeutic measures, said Sir StClair Thomson, we not uncommonly meet with a case which only requires the following pleasant prescription:—

> For so your doctors hold it very meet,
> Seeing too much sadness hath congeal'd your blood,
> And melancholy is the nurse of frenzy;
> Therefore they thought it good you hear a play
> And frame your mind to mirth and merriment,
> Which bars a thousand harms and lengthens life.
> *The Taming of the Shrew*, Induction, Sc. 2.

The advantages of what we would now call the simple life are shown:—

> Come; our stomachs
> Will make what's homely, savoury; weariness
> Can snore upon the flint, when rusty sloth
> Finds the down pillow hard.
> *Cymbeline*, iii., 6.

Encouragement is found in Iago's words:—

> How poor are they that have not patience!
> What wound did ever heal but by degrees?
> *Othello*, ii., 3.

and a patient's self-resistance may be raised by reminding him that:—

> Our remedies oft in ourselves do lie,
> Which we ascribe to heaven.
> *All's Well that Ends Well*, i., 1.

These are but a very few of the wise saws, having countless modern instances, which the lecturer quoted to show why Shakespeare was, and always must be, one of the greatest masters of medicine, in his astonishing acuteness of observation and his sensitive regard for "life's fitful fever." "Shakespeare's plays," he concluded, "will be read by physicians with profit to their patients when most of our modern medical text-books will be lying on the dust-heaps of literature."

Members and guests had the opportunity of inspecting in the course of the evening a most valuable exhibition of objects of Shakespearian interest, prepared by Mr. C. J. S. Thompson, M.B.E., Curator of the Wellcome Museum of Medical History. The collection included portraits of physicians and surgeons who lived in the days of Shakespeare, various portraits of Shakespeare himself, and specimens of plants, herbs, and roots mentioned by Shakespeare in his plays.

THE Chair of Midwifery and Gynæcology in University College, Dublin (National University of Ireland), rendered vacant by the death of Dr. Alfred J. Smith, has been filled by the appointment of Dr. Robert P. Farnan, who was at one time extern assistant to the Rotunda Hospital, and has been for many years gynæcologist to the Mater Misericordiæ Hospital.

Dr. J. H. Burn has been appointed to direct the Central Pharmaceutical Laboratory. It was announced by Mr. F. Pilkington Sargeant in his presidential address last May that the Council of the Pharmaceutical Society of Great Britain had decided to establish a laboratory for the standardisation of substances subject to the provisions of the Therapeutic Substances Act. The Director of the laboratory will have adequate qualified assistance and the help of an advisory committee on which Sir Nestor Tirard, Dr. H. H. Dale, and Sir Humphry Rolleston are serving as representing respectively the General Medical Council, the Medical Research Council, and the British Medical Association. Dr. Burn's distinguished academic record and work as pharmacologist and biochemist at the National Institute for Medical Research will fit him for a post which is likely to become of no little importance. The examination and standardisation of therapeutic substances is one of the really urgent questions of present-day medicine.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CLXV.—THE TREATMENT OF INFANTILE PARALYSIS.

THREE separate and distinct phases are presented by the average case of infantile paralysis and each phase has its particular treatment.

(1) *The Onset.*

There is usually a febrile period accompanied by great lassitude, headache, sickness, and flaccidity of muscles. In severe cases delirium and convulsions may precede a fatal issue. In others there may be absence of fever, and a child, at night apparently normal, may in the morning exhibit weakness of one or more limbs. There is no definite relation between the amount of initial constitutional disturbance and the degree of paralysis which ensues. Hyperæsthesia is almost a constant feature, with great tenderness of skin and muscles. Trophic changes are present early and the affected limbs become cold and reddish-blue in colour. Complete rest and warmth are the two most important essentials during this time. Support must be provided for the limbs, the joints being placed in the "normal" positions—hips and knees extended, ankles at a right angle. In upper limb paralysis the arm should be abducted at the shoulder, elbow at a right angle, and wrist dorsiflexed. The best means of securing such rest and warmth is by the provision of a plaster "shell." The body being first enclosed in cotton-wool, the plaster is then applied with the limbs, head, and back supported in the correct positions. If it is not possible to provide such a shell, a spinal frame with head-piece of the usual type, with the addition of foot or arm splints, makes a good substitute, but requires more attention. At this time no massage or electrical stimulation should be given and everything done to promote quietness and complete absence of mental or physical irritation.

(2) *The Recovery Period.*

This commences after a few weeks. The mental condition improves, irritability is lost, and the child becomes more interested in what is going on around it. Physio-therapeutic measures should now be instituted, commencing with the gentlest form of massage, "effleurage" or stroking movements. The benefit of massage is soon shown by diminution in the degree of coldness and cyanosis. After each massage treatment the joints of the limbs affected should be gently moved through their normal range and every possible active movement encouraged. During the period of muscle-training active movements should be performed against the least possible loads. As an example of this may be given the movement of extension of the knee produced by the quadriceps extensor. In case of weakness of this muscle the patient should not be asked to extend the knee in the ordinary sitting position with the weight of the leg and foot against the muscle, but the patient should be lying down with the affected limb on its side supported on a smooth table. In this way the effort needed to extend the knee is very greatly reduced. At this time electrical stimulation may be introduced. Its greatest use is in the production of muscular contraction in the paralysed muscles where a voluntary contraction is impossible. The muscle is thus exercised and prevented from rapidly degenerating into more fibrous tissue. If a contraction cannot be obtained by a moderate faradic current it will be necessary to use galvanism. Later it may be found that faradism will produce contraction and it should then be substituted. About the same time it is often found that voluntary contraction begins to be possible. By this date the acute stage is well over and the paralysis is beginning to define itself. It may be found, for example, that the right leg alone shows paralysis and that the foot is cold with no power of dorsiflexion, a little power in the calf, no extensor power at the knee, but fair power in the hamstrings. Moderate power is present in all hip movements. Such a limb should be exercised well, bearing in mind that support must always be provided for the weak muscles. The child should wear, at night, a splint to keep the knee extended and the ankle at a right angle. In the application of a splint to maintain the right angle at the ankle it is of the utmost importance that the medical attendant should see that the nurse, masseuse, or mother who is responsible for the putting on of the splint should appreciate the fact that the heel must come down to the foot-piece. One so often sees such a splint applied with the heel a couple of inches away and the forepart of the foot alone meeting the foot-piece. In this way many cases of paralytic equinus are produced. In the daytime a walking appliance should be provided, and, in the case of such a paralysis as we have assumed, a "walking calliper" will be most suitable with a spring added to dorsiflex the ankle. With such an appliance a child will soon get about and will exercise the limb to the fullest possible extent. Should both legs be paralysed two callipers will be needed and in this case a walking machine is of great assistance. After a period of such treatment for 12 months the degree of residual paralysis may be determined.

(3) *Residual Paralysis.*

This is the stage in which little or no further change takes place in the recovery of power and in which surgery must attempt to diminish, as far as possible, the need for appliances and to utilise the residual power to its best advantage. The handicap of steels, leathers, and straps, loaded on a limb already severely enfeebled, must be reduced to its absolute minimum.

Much may be done, and the measures which offer the greatest chance of improvement are: (*a*) tendon transplantation; (*b*) tenodesis, or tendon fixation; (*c*) arthrodesis, or stabilisation of joints. These procedures, which have been largely developed during the past ten years, have proved their worth and are now a well-established part of the surgical repertory. Three simple cases may be taken to illustrate the utility of the three operations.

Paralytic Talipes Valgus.—Here the residual paralysis affects the tibialis anticus and posticus, and the foot is drawn over into a valgus position by the unopposed peronei. In this case the peroneus brevis, and sometimes the tertius as well, is transferred to the inner side of the foot and fixed to the insertion of tibialis anticus and scaphoid bone. In all such operations the transplanted tendon must run in as straight a line as possible from origin to new insertion so as to act at the best mechanical advantage. The foot, after operation, is supported in inversion, preferably by plaster, for six weeks, and at the end of this period the transplant must be "re-educated" and developed to perform its new function. Such a transplant when successful will overcome the valgus and so avoid the need for an outside iron and T-strap.

Drop-foot.—In this hypothetical case the dorsiflexors of the ankle are paralysed and an iron with a "stop" at the ankle-joint or an uplifting toe-spring must be worn so that the toes may clear the ground in walking. The paralysed tibialis anticus is exposed in the lower third of the leg and its tendon is cut across at its upper limit. A tunnel is bored transversely through the crest of the tibia and the cut tendon is looped through the bone and sewn back to itself and to periosteum with the ankle at a little less than a right angle. There is always some "give" after such a tendon fixation, so that it is advised to give the ankle about ten degrees more dorsiflexion than is desired in the ultimate result.

Unstable Ankle.—In such a foot the remaining power is so small that, when weight is placed on it, the ankle "wobbles" to one side or the other and is forced over into a deformed position. There may be some available muscle power, probably in peronei or calf. The precise distribution varies greatly, but the need for stabilisation of such a foot is apparent. The ankle-joint movement, plus the mid-tarsal movement, permits a range about the ankle as great as a ball-and-socket joint would, and it must be our object to remove the mid-tarsal movement and leave only the up and down hinge movement of the ankle-joint proper. There is, of course, a little side-to-side and rotatory movement at the ankle-joint, but it is slight, and amounts to very little when the mid-tarsal "wobble" is removed. Several methods of dealing with the mid-tarsal and astragalo-calcaneal joints have been devised, but the object in each case is the removal of the articular cartilage of the astragalo-scaphoid, astragalo-calcaneal, and calcaneo-cuboid joints and the procuring of bony union in these situations. Three months' fixation in plaster is required after such an operation. In a successful case it is then found that the foot is stable and can bear weight without rocking over. Usually a combination of the measures above mentioned is necessary, stabilisation of the mid-tarsus with the addition of a tendon transplant or tendon fixation being the common procedure. Mid-tarsal arthrodesis should not be attempted before the age of 8 years because of the amount of bone surface needed to ensure firm ankylosis.

Another common site for the use of arthrodesis is at the shoulder-joint, where power of abduction is lost and the arm cannot be carried away from the side, but where the shoulder can be effectively "shrugged" by the scapular rotators and elevators. In these patients it is usual to find a good forearm and hand. The articular cartilage of glenoid and head of humerus is removed and the arm fixed at a little less than a right angle from the side and 30 degrees in front of the transverse axis of the pectoral girdle. The shoulder is fixed in plaster in this position from the time of operation for three months and, after firm ankylosis is procured, the arm can be lifted from the side by the scapular muscles quite strongly, so that very much more use can be made of the non-paralysed forearm and hand. Because of the ossification of the humerus and glenoid it is not wise to undertake this arthrodesis until the age of 14 years.

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Special Articles.

THE PANEL CONFERENCE:

PROFESSIONAL UNITY AND DISCIPLINE.

THE annual conference of representatives of local medical and panel committees met at the British Medical Association's house in Tavistock-square, London, on Oct. 22nd, under the chairmanship of Dr. E. K. Le Fleming, of Dorset. This was the first meeting of the panel conference in the Great Hall, and the Chairman's opening words of congratulation to the British Medical Association on its new premises were cordially endorsed by the delegates.

Report of Insurance Acts Committee.

On the motion to receive the report of the Insurance Acts Committee (hereafter called the I.A.C.) for 1924–25, Dr. H. G. Dain, the chairman of that body, said that the conference agenda raised few big controversial questions because a special conference earlier in the year had dealt with the evidence placed before the Royal Commission, and because plans of development and improvement must wait on the report of that Commission. He drew attention to the new arrangements for ophthalmic benefit,[1] which were experimental and were the first attempt to add a specialist service to the general practitioner service. It was hoped that other similar services might be added. A new standard had been set up and the approved societies would have to be weaned from their previous arrangements. As yet a very small number of insured persons came under the scope of the scheme, and it had also been difficult to ensure that the right ophthalmic specialists appeared on the lists. The other important matter in the report referred to the disciplinary powers of the Ministry of Health. A deputation of the I.A.C. had put before the Minister four guiding principles[2] which had been proposed to the Royal Commission, and the Minister had agreed that these principles were sound, though they might not be easy to apply. There was no evidence as yet whether the interview had borne fruit, but it was noteworthy that there had been no decisions by the Ministry since the interview on June 18th, 1925, which were not in keeping with the principles suggested. That for which they had stood most firmly was that under no circumstances was an officer of the Ministry competent to set up a standard of treatment. Insured persons were entitled to the best services the duly qualified practitioner could give them, but a lay Ministry ought not to insist on a standard of treatment different from that which the doctor offered to a private patient.

Unity in the Profession.

Dr. E. R. Fothergill then moved a special resolution of confidence in the Insurance Acts Committee of the British Medical Association as the one and only body authorised to defend the honour and interests of insurance practitioners and to voice their wishes. The resolution urged all constituent committees loyally to support that Committee only, and to dissociate themselves from any action taken within the profession by others, which could only result in disunion and in rendering collective bargaining impossible. He had put down the resolution that morning on reading in the lay press an account of a conference held on the previous day which had appointed delegates to put its views before the Minister. He recalled the efficient action of the I.A.C. on various occasions; it represented 99 per cent. of insurance practitioners; it was recognised by the Government as expressing the profession's opinion, and it was a body which considered the good of the public as well as of its constituents. If panel committees coquetted with other organisations the public would think that the profession was in revolt. The future was likely to be far from calm and unity was essential.

Dr. Peter Macdonald feared that the proceedings referred to might lead the profession to suppose that the I.A.C. had done nothing, and this entirely wrong impression must be corrected.

Dr. Gordon Ward said that the Medical Practitioners' Union was in existence and was increasing in membership; it claimed no more support than it received. He believed in unity, too, and considered it very unwise to force the M.P.U. into antagonism.

Dr. E. A. Gregg said that the M.P.U. had never received the thanks that its work deserved. Though the I.A.C. seemed satisfied with the Minister's utterances the profession was not thus satisfied. It was their duty to press for the widest possible freedom for the practitioner.

Dr. H. B. Brackenbury thought that, although individual members of the profession could do what they liked, there must be no division of loyalties amongst panel committees. To send a separate deputation to the Ministry was a fatal step. Dr. Fothergill's motion was carried.

Disciplinary Machinery.

In support of a motion by Croydon that all complaints against insurance practitioners should be dealt with in the first instance by insurance committees, it was stated that the Ministry had deducted fines from doctors for failing to send in reports of their patients to tuberculosis officers, and that this had been done without reference to the insurance committee.

Dr. H. G. Dain said that tuberculosis officers reported such defaults to their regional medical officer who reported direct to the Ministry. The Ministry's view was that where no fact was in dispute it was unnecessary to refer to the insurance committee, and in the opinion of the I.A.C. it would be unwise to press against this view. Croydon considered the matter to be one of principle rather than convenience, but the conference did not agree, and the motion was lost.

Right of Appeal from Minister's Decision.

A long discussion followed a motion by Cheshire that insurance practitioners should have a right of appeal from the decisions of the Minister to the High Court, or, when removal from the panel was in question, to a medical tribunal if such were created. This appeal was to be exercised not only on grounds of procedure, but on the merits of the case.

Dr. L. J. Picton said that opponents had objected that litigation would be endless if such a right of appeal were granted; that the idea was unconstitutional; and that to ask for such rights suggested lack of confidence in the Minister, who could interpret the special terms of service of insurance practice which might not be understood by the common courts. But the practitioner had no fear of the common law, and it was regrettable that he was deprived of the right which every citizen enjoyed. This safety-valve had been shut down for fear of excessive litigation, and it had been a great mistake. They did not want to appeal against penalties, but in the rare event of an appeal to the High Courts being demanded they wanted the cases tried again *de novo*.

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[1] Vide THE LANCET, Oct. 17th, p. 823.

[2] The four principles referred to are these: 1. That when a complaint has been dealt with by the bodies set up by the regulations for this purpose there should not be a liability to have the whole matter reopened by separate departmental action, either by the Ministry itself or by those bodies at the instigation of the Ministry. 2. That when a complaint has been made in one prescribed form penalties should not be inflicted in respect of offences not formally alleged or of offences which, if alleged, should have been formulated in a different prescribed way and might have required a different line of defence. 3. That full consideration should be paid to the findings or recommendations of a committee (whether Medical Service Subcommittee or Inquiry Committee) which has itself investigated the details of the case in mitigation of the heinousness of the misconduct even when proved. 4. That it is essential to draw a strict distinction between professional conduct in the attention given to a patient and the nature of the exact professional treatment given to the patient, and that the propriety or otherwise of any particular method or line of treatment should not be made the subject of investigation in connexion with the insurance service.

Dr. D. F. Todd moved an amendment to the effect that the appeal should be made to an independent authority only if the panel committee approved; but the Conference thought that this gave unsatisfactory authority to the committee, and the amendment was lost.

Dr. G. C. Garrott said that the present machinery had broken down; the Ministry's powers were a standing menace to the profession and it could only have gained them by a lamentable oversight. They were more fundamentally foreign to the British Constitution than any other legislation since Stuart times.

Dr. Brackenbury remarked that the I.A.C. had suggested to the Royal Commission that all personal disputes as to judgment, neglect, and the like, should be taken out of the insurance machinery and should be treated exactly as in ordinary practice. It had also suggested that there were only three possible grounds for complaint—namely, giving a false certificate, taking money from a patient after giving an undertaking not to do so, and habit or conduct such as ought to remove a man from the panel.

The Conference decided that for the time being it had been sufficient to ventilate its opinion, pending the Royal Commission's report, and accordingly passed on to the next business.

Administrative Items.

A motion that when a practitioner recommends an approved society to send a member to an ophthalmic surgeon whose name appears on the list he should have the right of nominating the surgeon was amended so that "suggesting" took the place of "nominating." It was pointed out that suggestion was always possible and that the motion had lost point, but the Conference passed it nevertheless as a record of its opinion. The proposal was made that a distinction should be made on the lists between operating ophthalmic surgeons and practitioners whose experience enabled them to do refraction work, but this was not approved. The Conference agreed to a motion by the I.A.C. that a return should be made to the earlier practice of intimating to patients, on the notices sent to them on the death or retirement of their doctor, that unless they made a fresh choice within 14 days they would be transferred to the successor's list.

The question of the abuse of such a rule by rapid re-transference of practices thus transferred was passed on to the I.A.C. for consideration. A resolution against unnecessary records of attendances, which tend to obscure the important clinical notes, was carried with little or no opposition, and a proposal by Lincoln that doctors should have permission to issue intermediate convalescent certificates before 28 days' treatment had been given also received assent. It was agreed that the time of issue should be left to the doctor's discretion and that the maximum period covered should be one month.

Dispensing Allowances.

Essex moved, and the Conference agreed:

> "That, in view of the difference between the average cost of drugs dispensed by a chemist in the area of the Essex Insurance Committee, which amounts to 8·7*d*. per insured person per quarter for the year 1924, compared with the amount of the capitation fee paid to rural practitioners for the purpose of dispensing drugs—namely, 6*d*. per quarter per insured person, the Insurance Acts Committee be asked to take such steps as they may deem necessary to obtain an increase in the remuneration paid to rural practitioners who undertake their own dispensing."

Evidence of an inquiry into the costs of prescribing and dispensing was given by Northumberland, and Dr. J. P. Williams-Freeman said that the rural subcommittee would like to have such evidence from other areas. Fees for serum dispensing were also discussed and referred to the I.A.C., and the Medico-Political Committee was asked to consider further the standardisation of methylated spirit.

Treatment of Seamen: Private Patients.

Essex drew attention to the practice of the Seamen's National Insurance Society in urging its members to go to doctors whom it recommends. The low rates accepted by practitioners who work for this society were also considered.

Dr. Alfred Cox said that the question was an old one, and the B.M.A. Medico-Political Committee was trying to get the society to raise the scale. The recommendation of certain doctors was intended to benefit the seamen themselves, for these doctors were experienced in dealing with them and the seamen preferred their advice. It was, said Dr. Cox, very difficult to induce members not to accept the lowered fees, but Southampton had taken a lead against this practice.

Dr. J. S. Manson, in moving a resolution for Warrington, said that it was not clear what was the position of an insurance practitioner if an insured person not on his list wanted to come to him as a private patient. It was suggested by other speakers that if the patient persisted in his wish to be treated privately *after* it had been explained that he could be treated under the Act there seemed to be no reason why he should not be a private patient; but that it was important to have his assurance in writing.

Collection of Statistics.

Kent introduced a motion deploring the inability of the profession to produce authoritative statistics on such matters as fees, mileage, costs of transport, and the average income of medical men, and suggesting an organised campaign to collect such statistics, for which a part of the National Defence Trust's funds might be utilised. In a preliminary statement, Dr. A. Cox said that 270 practitioners were already making returns of their insured and uninsured patients, and that 150 model account books had been forwarded, of which 20 had so far been filled up and sent back. He thought that the scope of this investigation was big enough if only the doctors would return the figures; it was individual work rather than theoretical plans that were needed.

Dr. Gordon Ward (Kent) said that the country should be mapped out into districts; every practitioner in a district should be personally encouraged by travelling investigators to give the necessary particulars, as the people willing to send in figures by themselves were a special group and not representative. Figures of income in the so-called comparable professions should be collected. The isolated instance was of little value, but the general district survey was invincible as evidence. A central statistical committee should be set up, and, although a minimum of £5000 would be required for the purpose from the National Fund (which stood at £78,000), the evidence that would be collected might eventually mean a difference of 6*d*. in the capitation fee of 15 million insured persons.

Dr. J. W. Bone did not think £5000 would go far.

Dr. Williams-Freeman thought that a permanent statistical committee of the B.M.A. would be very useful. The Conference eventually agreed with Kent that information was desirable, and referred the matter to the I.A.C., without, however, instruction as to the exact methods to be adopted.

Other Problems.

A suggestion that a limit should now be fixed to the National Defence Fund was also referred to the I.A.C. and there was considerable discussion of the failure of many local committees to subscribe. Coöperative action between practitioners and regional medical officers was also considered, and the possibility of redress when unfounded charges were made by approved societies.

The Conference expressed its opinion that insured persons who are no longer entitled to benefit should be notified of the fact by the approved societies.

The Chairman, Dr. Le Fleming, was unanimously re-elected for the ensuing year. The Conference concluded at about 6.45 P.M.

Panel Conference Dinner.

A dinner to the Insurance Acts Committee was held at the Trocadero Restaurant, London, in the evening, at which, as in previous years, Dr. H. J. Cardale, chairman of the London County Panel Committee, occupied the chair. A large number of delegates to the Panel Conference attended and derived entertainment from many witty speeches, from the slightly miraculous efforts of Mr. Herbert Collings and from the songs of Miss Ethel Kemish. Proposing the health of the members and officers of the Insurance Acts Committee, Dr. J. O. Summerhayes said that what was wanted on that Committee was "a strong mixture," and they had got it. The Committee was leading them—though he hardly knew where; in spite of the rivalry of another organisation it would continue to do so, and as long as it made arrangements by which the man who did his duty by his patients was not defrauded of his proper recompense, then he, for one, would be content. Dr. H. G. Dain replied amusingly for the I.A.C.; Dr. Alfred Cox deplored the fact that no doctor ever reads anything, and Dr. G. C. Anderson discussed Dr. Cox's approaching departure for South Africa. Dr. R. A. Bolam proposed the health of the medical Members of Parliament and Dr. Haden Guest, M.P., replied. He said that the medical committee of the House, which had 14 Members, put the medical interests of the community before the particular interests of parties. He considered that medicine was a particularly valuable training for public life; what was needed in politics was a more scientific attitude, and the successful doctor was wanted there far more than the successful financier or grocer. Dr. Graham Little, M.P., also spoke of the Parliamentary Medical Committee, of which he is secretary. There were ten times as many lawyers as doctors in the House, and the balance should be redressed. It was unnecessary and even undesirable to give up practice on entering political life. Sir Richard Luce, M.P., largely endorsed the views of his colleagues and described his own unexpected political debut. The dinner ended with "Auld Lang Syne."

SCOTLAND.

(From our own Correspondent.)

James Mackenzie Institute for Clinical Research, St. Andrews.

On Oct. 20th Prof. Adam Patrick described some observations on temperature and pulse-rate, showing an interesting series of charts illustrative of most of the common fevers. He strongly advocated greater accuracy in recording temperature, drawing attention to the common practice of nurses in omitting to record temperatures below 97° F. Similar inaccuracy was common in regard to high pulse-rates. The physician, wherever possible, should check the records by his own observations. He insisted on the extreme value of graphic records of the pulse-rate, a gradual rise in rate being more readily detected where this method is employed. In rheumatic fever, for example, a pulse chart was the best indicator of the onset of endocarditis. He deprecated the use of the word "normal" in relation to a fixed point of temperature such as 98·4° F. This might be regarded as the upper limit of normal temperature, but in nearly all healthy individuals the average morning temperature was considerably lower. As a rule the pulse-rate increased about ten beats as the temperature rose one degree, but there were wide differences in this ratio in different diseases. He drew attention to the fact that in many febrile conditions the quickened pulse of fever was succeeded during convalescence by an unusually slow rate. He considered that all these matters required more accurate recording and fuller investigation.

Prof. Harvey Cushing's Address.

On Oct. 23rd Prof. Harvey Cushing delighted a large audience with an informal talk, illustrated by references to his own special subjects of study, on the comparison between research work as carried on in hospital and in general practice. He pointed out that the necessary stimulus for research was the same—namely, the common desire to find satisfactory answers to problems of difficulty which present themselves for solution. The worker who saw all his patients in an institution (as he did in America) had better opportunities for obtaining records of his special cases and more time and facilities for investigation than the general practitioner. He himself was directly descended from three generations of general practitioners, who had practised in the same district, and one of his most cherished possessions was a collection of the case-books of these ancestors. Not only were they records of illness in individuals, but they provided, by their continuity, material for the study of familial tendencies which could be obtained in no other way. They demonstrated the extreme value of accurate and continuous records in medicine. To enhance the value of records, he advocated the employment, wherever possible, of instruments of precision; though it must be clearly understood that these must never overbalance the general judgment of a case. He referred to the ophthalmoscope, the sphygmomanometer, the polygraph, the electrocardiograph, and the thermometer, pleading for more accurate use of the latter (as did Prof. Patrick in his address). Routine daily records of facts such as temperature might often appear to be a waste of time, but not infrequently an observation of the greatest importance would crop up.

In connexion with his special study he warned practitioners that, in cases of cerebral tumour, any of the cardinal symptoms (headache, vomiting, choked disc) might be absent, and, indeed, that cerebral tumours of slow growth might attain considerable size with no symptoms whatever. In his experience the intracranial cavity was the commonest site of tumour growth in the body. He spoke of the importance of detailed recording of such a symptom as headache (site, time of occurrence, and character) on Mackenzie's lines. If any symptom was carefully studied in this way important leads were sure to emerge. He commented upon our ignorance of the mechanism of production of headache. In conscious patients direct manipulation of the cerebral substance produced no sensation, but acute pain was experienced if the membranes were pulled upon, or an artery clipped or ligatured. Clinical research, whether by specialists or by general practitioners, was carried out by similar means and with the same object. The inquiring mind, that would not rest till it got an explanation, was what mattered.

Edinburgh: Royal Medical Society.

At the opening of the 189th session of the Society, Sir James Purves-Stewart delivered the inaugural address on comradeship in science. The Senior President, Dr. Drummond Shiels, M.P., was in the chair. Sir James Purves-Stewart, said his subject was selected mainly to address to those of his hearers who would seek their fortunes elsewhere than in Edinburgh. The capacity of combination with one's fellows and the faculty of profiting by such combination was a fundamentally biological principle. The lowest type of herd, said the speaker—quoting examples in the animal kingdom—was that of the communists, where all were equal. There was then the type which had developed specialised classes, consisting perhaps of workers and fighters. And, lastly, there was the type which had a kind of monarchy, where one individual was higher than all the rest—such as in the case of the queen bee. Man could only reach his highest development by following this instinct, with its pride of family, profession, country, or race. Every ordinary individual desired to be one of a crowd. In civilised communities the herd instinct dominated. If the herd instinct was lost in a man he became selfish and vicious. Passing on to discuss the beneficent effects of gregariousness, coöperation, or comradeship in professions, such as the medical profession, Sir James Purves-Stewart said it would be inappropriate at such a time to discuss abstract socialism as a political mode of life. But socialism of a constructive type had been going on in a small but important part of the community. Men of science had pooled their knowledge for the general advancement of science, and more, they let the whole world profit. The working man rode every day for twopence in an electric train. He knew nothing of electricity, and perhaps would never be able to master the application of such knowledge to the problem of his transport. He reached his destination; he was taken to the surface again by a moving staircase, of the mechanism of which he was again entirely ignorant. And if he stopped off with the wrong foot first and was seriously hurt he would be taken to hospital, where medical science, of which he knew nothing, would do all that science could do for him, and would do it for nothing. That was the socialism of science. What did it receive in return from those who profited by it? They all knew the answer. Our hospitals were chronically in debt; research was half-starved. Compared with the manufacturer, the merchant, or the financier, very few scientists were wealthy men. In fact, practically no return was made by the great body of laymen in any way commensurate with the advantages which they so eagerly accepted.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Hygiene and Budgets in Paris.

SCARCITY in the public funds at Paris is noticeable in two striking ways. The onset of winter brings discomfort from cold in apartments, office buildings, laboratories, class-rooms, and assembly halls of all sorts, and the large libraries are greatly hampered by insufficient illumination. The medical profession is thus considerably affected. The Academy of Medicine, whose pre-war budget sometimes rose to 65,000 francs in days antedating later huge advances in general costs, has been so poorly warmed during this autumn that a committee of the academicians has been obliged to wait upon the public powers with a request for adequate fuel. A Paris newspaper observes that, since charity and lotteries are scarcely applicable here, the savants of the Academy will have to remain at home.

Closed Pharmacies.

The closure of pharmacies at night, on Sundays, and on holidays constitutes one of the few drawbacks of our capital. All-night service is available at one pharmacy on the Boulevard de Montmartre, rather a long way from the Opéra, and a pharmacy near the Gare St. Lazare remains open until midnight. These two pharmacies appear to constitute the practical night service at Paris, unless one has recourse to the mairie of his arrondissement for official direction to a pharmacy supposedly open. Pharmacies closed at night, on Sundays, and on holidays usually post up a list of pharmacies, of which one should always be open. One often makes troublesome trips to these places only to find them closed after all. This system of closure is due to action by the pharmacists' union. A pharmacist preferring to keep open shop has recently tried it, with great benefit to the public and displeasure to his syndicate. This case has caused legal action and is not yet settled. Anyone who is ill at Paris had better do his pharmaceutical shopping early.

Surgery and Taxation.

Taxes will continue to hamper life generally in France for a long time to come, as they do everywhere. Imposts on anæsthetics and other drugs and medicinal substances complicate the surgical and medical situation not a little. The maisons de santé, or private hospitals, of Paris, now taxed on a hypothetical profit basis of 20 per cent., are so gravely menaced by this difficulty that surgery is by no means without danger of being relegated to makeshift operations in private houses, since the general raising of prices to cover the taxation is scarcely practicable for large medical and surgical needs. A committee of the French Surgical Syndicate, which has just been in session, is considering this matter.

Treatment of Congenital Syphilis.

The importance of treating syphilis preventively, by prompt attention to the pregnant mother and to infancy and early childhood, is now comprehended universally, and at the Paris conference on congenital syphilis, to which I referred in my letter last week, the following conclusions were adopted: Congenital syphilis should be treated promptly and during a number of years. Not only must symptoms be controlled, but real cure must be sought. Active signs require treatment by progressively increasing doses of arsenicals, contra-indications being duly observed. Fundamental treatment with mercury or bismuth should be instituted when clinical and serological signs have ceased or if the disease remains latent. Opotherapy should accompany antiluetic treatment if endocrine function be insufficient. Breast-feeding by the mother is imperatively demanded, and in no case may a wet-nurse be employed. Observation should continue for a long time after the cessation of treatment.

Music in Hospitals.

While music has been advocated for systematic application after anæsthesia and in other ways, it is also useful simply as a recreation, especially in institutions containing many incurable cases, and patients who must drag out a long, hopeless existence. A group of interested persons has just provided a fine gramophone for a large medical ward in the Hôpital Lariboisière. The instrument cannot well be installed in the general ward, since it could not always be acceptable to all the sick. It is being installed in a small room adjacent to the ward, and to this modest "*salon*" those of the patients who desire may resort for a little solace. The records selected supply a variety of music, but the best of the classics predominate. This thoughtful provision should aid materially in cheering the indigent and resourceless sick, although less ambitious than the plan to provide every hospital bed in London with a listening-in set.

NOTES FROM CANADA.

(BY AN OCCASIONAL CORRESPONDENT.)

Lord Dawson at McGill University.

Lord Dawson of Penn was given the honorary degree of Doctor of Law at the autumn convocation of McGill University, held on Oct. 6th. In an address delivered after receiving the degree Lord Dawson said that a university must not think only of future vocations when providing students with their equipment for life. The training of character, essentially a duty of a true university, would not be effected in an institution that was a mere emporium of facts. Adequate facilities were not in themselves sufficient, unless the student mind received training from the teaching system, and the brilliant and rapid advances that invention was making were apt to obscure the spirit of education. Lord Dawson accorded high praise to McGill as the first University in the Empire to send a fully-equipped hospital to France during the war; no hospital in the Service had surpassed it in reputation. He concluded an eloquent address by urging the students to play their full part in the affairs of the country and of the Empire. Sir Arthur Currie, the principal of the University, laid especial stress on the idea that their duty did not lie in application to study and to study alone; their duty was to realise and participate in the problems of Canada. He showed what McGill had meant in the life of Canada, in medicine and surgery, in commerce, in the schools and colleges, in peace and in war, and reminded them of the young men who had crowded their way to death 11 years ago at the call of their country. Those in the University to-day were born too late to answer that call, but still had their duty. Every great crisis in Canada was an Ypres, a Vimy, a Passchendaele, and a great battle for their country lay before them—a battle against ignorance and prejudice and wrong.

On Oct. 12th Lord Dawson gave an interesting address to the Academy of Medicine, Toronto, on High Blood Pressure. He discussed especially the influence of anxiety and strain.

Objections to Milk Pasteurisation.

The Union of Coöperative Milk Dealers of Montreal object to certain of the milk regulations about pasteurisation, and have asked the city council of Montreal to compel farmers providing milk for pasteurisation to pass the same strict examination and qualify to the same degree as those who furnish natural or raw milk, which is called special milk in the by-law. They base their conclusions on the premise that germs enter milk between the time it is drawn from the cows and pasteurised; if milk be not treated immediately after it is drawn it is useless to pasteurise it because the products of bacterial action are already present though the milk is apparently given a new lease of life. They question adversely a clause in the regulations demanding that milk from a herd in which a tuberculous or doubtful cow is found shall be pasteurised before it is sold, by which no milk may be sold as raw while the suspected cow remains in possession of the owner of the herd. It is pointed out that the enforcement of this regulation does not protect the public, and will allow unscrupulous dealers to circumvent the law and sell natural milk, although a cow in the herd may be tuberculous; the cow is simply transferred to another person for the time being in order to hoodwink the inspectors. They insist that pasteurisation is practically useless unless applied immediately after milk is drawn, and that the only way to guarantee pure milk is to ensure that it is clean and healthy in its origin. It must come from healthy cows which are able to pass a high test such as that required for raw milk.

Standardisation of Education in Canada.

Prof. Stephen Leacock, addressing the students of Queen's University on Oct. 16th on the Work of the Canadian Universities, drew attention to the danger of over-standardisation in education. He pointed out that there was a tendency nowadays, in America at any rate, to reduce everything to a standard or pattern. In the industrial world this was admirable; but though the standardisation of a Ford car was excellent the standardisation of brains was dangerous. It did not do to have every school and every college like every other school and college. There was in Canada a notable contrast between the American ideal of education and the British—or what was till yesterday the British. Prof. Leacock considered that in Great Britain the training of the student was on freer lines, less definite, less mechanical; it was not cut and divided into parts, and more play was left for individual variety, for individual preference, and for individual difference. Education, in short, he said, contained a large element that was more or less at random and spontaneous. He uttered a warning against the spreading tendency in Canada to adopt the American standardising type of education. Education, he said, needs freedom, variety, and elbow room.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics of four seaport cities for 1924:—

Name of city.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Glasgow . . .	1,051,000	24·1	16·1	1·46	1·21	3·7	38	110	5·5
Bristol	380,200	18·7	12·8	1·16	1·34	2·8	34	72	4·6
Hull	296,800	22·4	13·5	1·32	1·23	3·4	32	87	3·0
Newcastle-upon-Tyne. .	285,900	22·2	13·5	1·47	1·25	3·0	45	100	2·4

Glasgow.

Dr. A. S. M. Macgregor (interim medical officer of health) submits the report for the year 1924, during which Dr. A. K. Chalmers was still medical officer of health for the city. The local estimate of the population exceeds that of the Registrar-General by 45,000, and if the local estimate be used the rates per 1000 of the population in the above table would be reduced by about 4 per cent. Thus the Registrar-General's death-rate of 16·1 would become 15·4.

In the maternity and child welfare scheme it was decided to experiment in the provision of home-helps, and in August about 30 to 40 suitable women were enrolled for the purpose, but their services were only sought on nine occasions. The number of women admitted to the antenatal wards of the Royal Maternity Hospital was 706, an increase of 100 when compared with the previous year. The number of new cases attending the antenatal clinics was about 3700, the births being 25,330. There were 592 cases of ophthalmia neonatorum notified. The symptoms of the disease appeared within 12 hours of birth in 46 cases, between 12 hours and 4 days in 221 cases, between 4 and 8 days in 206 cases, and later than 8 days in 119 cases. Of the total cases, 49 were classified as gonococcal, 348 as non-gonococcal, and 195 were unclassified. Of the survivors among the gonococcal cases, 3 had corneal scars in one eye without the sight being impaired, 1 had a corneal scar with impaired sight in one eye, 1 had corneal scars in both eyes with unimpaired sight, 1 had scars in both eyes with impaired sight, and 1 was blind in both eyes. Of the non-gonococcal cases none of the survivors had impaired sight. Owing to the difficulty frequently experienced by midwives in obtaining the services of a doctor in an emergency, an alteration of the rule of the Maternity Hospital, by which admission can only be obtained on the direct request of the medical attendant, has been made, and the Maternity Hospital will now admit such cases when a medical man is not available.

Two cases of small-pox were treated in hospital during the year, both being infected abroad. Infantile vaccination is fairly well maintained in Glasgow, about two-thirds of the infants in the city having been successfully vaccinated during the years 1920 to 1922. The number of conscientious objectors varies, however, in the different wards. Thus in Fairfield and Gowan 37 and 35 per cent. respectively of the infants were not vaccinated during 1924, while in Kelvinside the percentage of conscientious objectors was only five.

An unusually extensive school outbreak of scarlet fever was recorded just after the summer holidays, 45 scholars and 2 teachers being infected out of a total of 1030 scholars and a staff of 18. *Encephalitis lethargica* was more prevalent during 1924, the maximum being reached during the month of May. There were 391 cases with 46 deaths. At Ruchill Hospital serum immunisation against measles has been used to a limited extent. The incidence of the disease was thereby considerably reduced among susceptible contacts, and in a few cases the disease developed in a modified form. A considerable amount of hospital accommodation has always been found for badly housed cases of measles and whooping-cough in Glasgow, and during 1924 it was decided to appoint additional nurses to supervise home-treated cases of these diseases.

A report on the deep X ray treatment of tuberculosis by Dr. J. A. Wilson and Dr. Fergus Henderson shows that beneficial results were obtained in certain cases of chronic non-pulmonary tuberculosis. This treatment was especially satisfactory for cervical glands and for bones and joints when the lesions were single and superficially placed. For the deep joints, such as the hip, and in all joints where there was extensive exudation, the results were unsatisfactory.

Bristol.

Dr. D. S. Davies reports that with a view to the coördination of the medical services of the city the school medical officer has been appointed deputy medical officer of health, and that arrangements were made during 1924 whereby children found by the maternity and child welfare staff to be suffering from eye troubles or crippling diseases, such as rickets, infantile paralysis, &c., are referred to the school clinics for treatment. During the year 97 cases of eye trouble and 43 of crippling diseases were so referred. The health committee contemplate developing Frenchay Park Sanatorium into a complete orthopædic hospital in order to avoid the present inconvenience of sending cases to distant hospitals. Milk samples, to the number of 50, were examined for tubercle with two positive and one suspicious result. Visits to the farms were unsuccessful in finding out the offending cows. The hospital accommodation for infectious diseases has been reported as inadequate for several years, there being 210 beds for a population of 388,000, and in April the council decided to provide 60 additional beds at Ham Green Hospital. The work is now in hand.

During 1924 an inquiry was carried out by Dr. Dorothy Staley as to the sequelæ of encephalitis lethargica. The inquiry covered 76 patients, whose illness began during the years 1919–23. Of the 76 cases, 20 had completely recovered, 4 could not be traced, and 4 had died. Of the remainder, 9 were totally unable to work, 15 showed partial inability to work, and 17 suffered from apathy, dullness, drowsiness, and defective memory. Two were affected by dementia, 2 by viciousness, and 35 suffered from various forms of paresis. Many of the patients presented a multiplicity of nerve lesions, and a number were in a very grave condition. In few was there any appearance of improvement taking place at present. Dr. B. A. I. Peters, the R.M.O. of Ham Green Hospital, reports that during the three years from the adoption of the Schick test for the staff until the end of 1924, no immunised member of the staff has contracted diphtheria nor has anyone been incapacitated from duty owing to the inoculations. Previous to this, an average of five members of the staff was attacked annually by diphtheria, and in 1921 no less than 12 developed the disease.

Hull.

Dr. J. Wright Mason submits his forty-third and last report, and in doing so contrasts some of the statistics of the first and last years of his tenure of office. Thus when 1881 is compared with 1924 the population shows an increase from 165,100 to 290,800, the birth-rate has declined from 36 to 25·8, and the death-rate from 23 to 13·5. The rate from zymotic diseases was 6·12 in 1881 and 0·6 in 1924, whilst infant mortality has declined from 193 to 77.

Dr. Katherine Gamgee reports on the maternity and child welfare work. During 1924 150 cases of eye discharge in babies were investigated, of which 122 were classed as true ophthalmia neonatorum. In three of the 122 cases there was injury to the cornea, in one case there was blindness of one eye, and in one case blindness of both eyes. In the first quarter of the year the maternity home was transferred to Cottingham and was temporarily established in the new pavilion of the infectious diseases hospital. The available accommodation has thus been increased from 11 beds to 20. The sisters of the maternity home act as municipal midwives in turns, and an antenatal clinic is held at 14, Kingston-square for cases seeking admission to the maternity home, for all abnormal cases, and for primiparæ applying for a free midwife. Dr. Ethel Townend, the part-time medical officer to the maternity home, conducts the antenatal clinic, and between June and December, 1924, she saw 800 cases. Of this number, 87 were found to be abnormal and to require treatment. One case of severe heart disease was admitted to the home and treated for some time. Labour was induced prematurely and mother and child were discharged in a satisfactory condition. Of 34 cases of disproportion between the head and the pelvis labour was induced in 12 cases. Amongst the other antenatal patients were six cardiac cases, 12 external versions, seven cases of albuminuria, two of antepartum hæmorrhage, one of acute pyelitis, and eight cases of severe varicose veins. Dr. Gamgee conducts an antenatal clinic for cases sent by midwives or doctors. These cases numbered 160 during the year. A real start has therefore been made in preventive midwifery in Hull.

The notifications of encephalitis lethargica numbered 35 and eight deaths were recorded. Ten of these cases were admitted to hospital and several were found to be suffering from some other disease, and in three cases death ensued from other causes. Hull has begun in earnest to tackle the conversion of privies and pail-closets to water-closets. The conversions effected during the last four years were 183, 594, 1508, and 5103. The number of privies at the end of 1924 was 10,000 and of pail-closets 22,000.

Newcastle-upon-Tyne.

Dr. H. Kerr reports that, in spite of industrial depression, unemployment, and a slight rise in the cost of living, as a whole the year has been exceptionally healthy. The hours of sunshine recorded at Armstrong College were 728 and at Cockle Park, a few miles north of Morpeth, 1318, showing what is lost by atmospheric pollution. There were 20 deaths from diabetes as compared with 38 in the previous year. The improvement may be due to the introduction of insulin, but, on the other hand, the deaths in 1922 and 1921 were only 28 and 20 respectively. Influenza was prevalent during January and February, and caused 71 deaths. Small-pox appeared in the city for the first time since 1910. There were five mild cases among persons unvaccinated or who were over 30 and had not been revaccinated since infancy. The number of infants vaccinated was 70 per cent. in 1923 and dropped to 61 per cent. in 1924. Of the 28 cases of typhoid fever notified, all except two were traced to the consumption of ice-cream at the coast. At the time of the occurrence there were no by-laws in force for controlling ice-cream manufacture at Tynemouth, and ice-cream was discovered to have been manufactured in a house in which a case of enteric fever had occurred. Eight of the Newcastle cases occurred in a single family of nine persons, of whom three died. These were the only deaths in the city from this disease. There were 90 notifications of encephalitis lethargica and 15 deaths. The type of the disease was more severe than in preceding years, and most of the cases occurred in the poorer and overcrowded quarters of the city. Only in three cases was there evidence of transmission of infection from one member of a family to another. It is considered probable that the mental impairment which resulted in 19 of the survivors will be permanent.

Dr. A. F. G. Spinks, in the maternity and child welfare report, states that antenatal work makes some progress. Thus 414 expectant mothers attended the six antenatal clinics. The births for the city numbered 6335. The "handy" woman has almost disappeared in Newcastle and all but six of the 43 practising midwives are trained women. The death-rate among illegitimate babies was less than among the legitimate, and it is pointed out that 174 of the 253 illegitimate babies were under the supervision of the centres.

Dr. Kerr points out that men affected by tuberculosis have little chance of obtaining a new house, and suggests that the health committee might subsidise persons of this class to enable them to obtain corporation houses. He emphasises the futility of benefiting the health of the consumptive in the sanatorium and then allowing him to return to appalling home conditions. The health committee is considering the establishment of a workshop where patients returning from the sanatorium could do work according to their limitations. The open-air school on the Pendower Housing Estate became an established fact during the year, but no adequate provision has yet been made by the health committee for surgical tuberculosis. The health committee purchases "Certified" and "Grade A (tuberculin-tested)" milk for the use of the City Hospital, and the agricultural department of Armstrong College is now conducting much local teaching on the farms of the northern counties, and is also organising clean milk competitions. The transport of milk remains unsatisfactory, but the L. and N.E. Railway are said to be considering the adoption of an improved type of milk wagon. The effort to secure the rinsing of empty milk cans before return is making progress. Thus in 1922 2·5 per cent. were found by the inspectors to be unrinsed, in 1923 0·5 per cent., and in 1924 0·2 per cent. The last figure is the result of the examination of 25,016 empty churns. Dr. Kerr has no improvement to report in housing conditions. Only 11 municipal houses were completed during the year, but some hundreds more were in course of construction at the close of the year. 268 houses were erected by private enterprise. "There is still no power," says Dr. Kerr, "to control the cases of heartless profiteering on the part of the exploiters of so-called furnished lodgings."

MENTAL HOSPITAL REPORTS

THE seventy-ninth annual report of the *Devon Mental Hospital* at Exminster is just what such a report should be. Over 1170 patients are accommodated under the charge of four medical officers, and every effort is made to keep the institution in the front rank. The visiting commissioner mentions the many improvements since his previous visit, which include better baths, more stringent precautions in the administration of medicines, and the provision of bed tables, pianos, and aluminium bedroom, kitchen, and table ware. The recovery-rate for the year was 32·29 per cent. and the death-rate 6·92 per cent., a satisfactory decrease on previous years and the lowest on record since 1899. Post-mortem examinations were held on 60 per cent. of the fatal cases. Twenty cases were discharged on trial with money allowances, and parole has been increasingly allowed. There has been a gratifying increase of private patients able to afford a moderate fee and sent in by doctors practising in the county. The sanatorium has been reopened for the isolation of infectious cases; the hospital has been troubled by small epidemics of dysentery and typhoid. The pathological laboratory has carried out the routine work satisfactorily. Blood cultures in the early days of doubtful fevers revealed seven cases of typhoid, which might possibly never have been recognised clinically. A systematic search for the source of the typhoid infection is now being conducted. A new operating theatre was opened in the course of the year, and the hospital has now a full staff of visiting specialists from Exeter, who visit monthly. The dental surgeon, in addition to his routine work of extractions and fillings, examines all new patients on admission. An X ray department will be in full working order shortly. Every effort is made to bring variety and interest into the lives of the patients. No less than 360 went for all-day motor charabanc picnics during the summer, while many others went out for half-day excursions gathering fruit and flowers. During the winter weekly dances and concerts are held, and a Pathé cinematograph and a wireless set have been installed. The patients much appreciate the new ward socials, which allow them to stay up till 9.30 P.M. Fêtes, sports, and games are also included in the programme. The occupational therapy includes printing, weaving, mat-, net-, stocking-, and shoemaking. Patients who wish to wear their own clothes are allowed to do so, and the workhouse type of garment is being done away with as it becomes worn out. Thirty attendants and nurses hold the M.P.A. certificate, and every effort is made to encourage a high standard of nursing, but the universal difficulty in obtaining satisfactory probationers has been experienced.

The ninety-fifth report of the *Belfast Mental Hospital* is illustrated with photographs showing the excellent system of 11 "villas," in which 1000 patients are housed, according to their condition. The recovery-rate for the year was 24 per cent. and the death-rate 7 per cent. There is rather a high proportion of cases of general paralysis (24 males and three females), which accounted for 17·5 per cent. of the deaths. The malarial treatment has continued to prove satisfactory; out of 48 cases treated, 14 were discharged, 12 were well improved, 8 slightly improved, and 6 died. There have been slight outbreaks of influenza and typhoid fever, rapidly checked by isolation. The typhoid has now been traced to the water-supply and a filtration plant installed. Parole and home visits are allowed wherever possible, and there has been no abuse of the privilege; 60 per cent. of the patients are usefully employed on the farm or in the workshops or wards. A new lending library has been formed, and the "tuck shop" gives innocent pleasure.

The *Monmouthshire Asylum* at Abergavenny supports 1140 patients. The present accommodation is not sufficient to allow of satisfactory segregation, although the system of small dormitories allows classification within wards. The recovery-rate was 40·8 per cent., a great improvement on previous years. The death-rate was 6·2 per cent., and there was no epidemic disease except a few cases of influenza. The dietary has been considerably improved. The dentist has been busily employed, but this institution has at present no specialist visiting staff. An instructor is to be engaged this year for those likely to benefit from physical exercises. Every effort is made to find employment for all patients. Forty-two nurses and attendants hold the M.P.A. certificate. All the visitors remark on the contented and domestic atmosphere of the wards.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 17TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 43; scarlet fever, 2382; diphtheria, 1145; enteric fever, 59; pneumonia, 758; puerperal fever, 36; cerebro-spinal fever, 6; acute poliomyelitis, 10; acute polio-encephalitis, 3; encephalitis lethargica, 56; continued fever, 1; dysentery, 5; ophthalmia neonatorum, 80. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 4 deaths from enteric fever, 26 from measles, 17 from scarlet fever, 20 from whooping-cough, 28 from diphtheria, and 17 from influenza, as compared with 57, 51, 41, and 26 in the preceding weeks. In London itself there were 7 deaths from diphtheria, 2 from whooping-cough, and 10 from influenza, as compared with 12, 9, 5, and 7 in the preceding weeks.

Correspondence.

"Audi alteram partem."

ACTIVE IMMUNISATION AGAINST DIPHTHERIA.

To the Editor of The Lancet.

Sir,—I have pleasure in discussing in more detail the matter dealt with in your annotation of Oct 3rd. The Austrian Ministry of Health, in response to my suggestion, has recommended that the sale of toxin-antitoxin mixture for active immunisation against diphtheria should not be allowed in Austria. To this recommendation was, however, appended the express condition that the matter should be discussed again, if new methods should be devised, or if such an increase occurred in the number and severity of the cases of diphtheria as to make an active campaign against the disease necessary. Research with new antidiphtheritic methods was not forbidden, only the sale of the preparations.

At present the number of cases of diphtheria is actually so small that the use of intensive measures would not be worth while. We fear that the use, without sufficient grounds, of active immunisation in its present form, which is admittedly not wholly without danger, might compromise all immunisation methods in the public mind, as actually occurred after the recent fatal cases in Baden Active immunisation is, in any case, not the only means of defence. For the occasional outbreaks of diphtheria of a mild type, with which we have here to do, we find the passive immunity conferred by antidiphtheritic serum entirely satisfactory.

The wish to offer opposition to scientific methods is, needless to say, far from me, for it is just in the prevention of infectious disease that I have always been particularly interested. You will not forget that in your own country the best and most satisfactory of all immunisation methods, that of Jenner himself, is not universally accepted. By pushing the use of methods that have not been fully worked out, one only gives material for opposition to that unscientific section which makes capital out of every failure.—I am, Sir, yours faithfully,

Dr. Clemens Pirquet,
Director of the University Children's Clinic, Wien
Oct. 21st, 1925.

STANDARDISATION OF BACTERIAL VACCINES

To the Editor of The Lancet.

Sir,—In a review of Kolmer and Boerner's "Laboratory Diagnostic Methods," published in The Lancet of Sept. 19th, p. 600, attention is paid to the nephelometric method of standardising bacterial suspensions, and a preference is expressed for the method of McFarland as compared with that of Brown and Kirwan. The latter was published in the *Indian Journal of Medical Research* in 1915, and was subsequently elaborated in the same journal by the writer in 1919. The main difference between McFarland's method and the other is that in his no allowance is made for the fact that certain organisms are more translucent than others, and the opacity of a certain tube containing a suspension of barium sulphate is stated to be approximately equal to the opacity of a certain definite number of bacteria. In the former paper (Brown and Kirwan, 1915) it was shown that the numerical equivalent of bacterial suspensions of the same opacity varied according to the particular organism under observation.

In my second paper special attention was directed to the fact that the numerical equivalent of bacterial suspensions varied considerably according to the method of standardisation, and I therefore urged that vaccines should be expressed as containing a certain definite weight of dried bacterial substance, a table being given correlating the opacity with the weight of dried bacterial substance for the organisms commonly used in vaccine therapy. Although the dosage of tuberculin has always been expressed in terms of weight, the custom of expressing vaccines in terms of weight instead of number has not come into common use. Cunningham and Timothy realised that a correlation between the opacity and the numerical content of vaccines in common use would probably be more popular than that between weight and opacity, and in a very exhaustive piece of work[1] they correlated, by means of hæmocytometer counts, the number of organisms corresponding to the opacity of the barium sulphate tubes introduced by Kirwan and myself. These observers performed not less than 30, and, in some instances, as many as 100 counts of 80 small squares for each organism, the readings and opacity values being estimated by the two observers separately. Their findings, therefore, are of extreme value. One very noticeable feature of their results is that for the same opacity there are 2·0 times as many cholera vibrios and three times as many *B. influenzæ* (Pfeiffer) as there are *B. coli*, and other bacteria, too, differ in this respect. This is only what one would expect if in the case of the cholera vibrio the translucency of the organism, and, in the case of *B. influenzæ*, the size is taken into account.

Now both these organisms are commonly used in the *manufacture* of vaccines, and therefore it would seem that the method of standardisation advocated by McFarland is capable of giving at least a 300 per cent. error if no allowance is made for the variations in opacity produced by the same numerical equivalents of a vaccine per unit volume. Regarding the comparative simplicity of the two methods, in the one which we advocate there are ten tubes containing varying dilutions of barium sulphate, the opacity of which is compared with a similar tube containing the vaccine; the result is then read either in terms of weight of dried bacterial substance per cubic centimetre or by means of Cunningham and Timothy's table as number in millions per cubic centimetre, as counted by the hæmocytometer method. The procedure of standardising vaccines by this method can easily be accomplished in three minutes. It, therefore, cannot be considered complicated, and with the help of Cunningham and Timothy's table it is hoped that one man's million will no longer be another man's thousand.—I am, Sir, yours faithfully,

H. C. Brown,
Major, I.M.S. (retd.).
Wellcome Bureau of Scientific Research, Oct. 15th, 1925.

AWARENESS OF THE BODY SURFACE.

To the Editor of The Lancet.

Sir,—Normally, one is only aware of the surface of the body when attention is drawn to it, or when one thinks about a special part. The receptors of the superficial parts of the body have a threshold of resistance that unless a stimulus for which they are adapted occurs, such as pain, touch, or temperature, no sensations arise. By usage we come to neglect the ordinary stimuli caused by clothing, &c., and we are not aware of it unless some special discomfort arises. Hence, awareness of the body surface does not normally occupy consciousness. I have recently seen a case where the patient complained of excessive "awareness" of the surface of the body.

The patient, an intelligent woman of 52 with a neurotic temperament, complained that she became tired on doing a slight amount of work, and that she had to lie down for the greater part of the day. She slept badly, was subject to fits of depression, and felt that she could take no interest in anything On questioning her, she said that for some time she has had this uncomfortable sensation of awareness of the presence of every part of the surface of her body. She said that this seemed to occupy her whole consciousness and prevented her from concentrating on anything. The sensation was worse on the body and limbs, and least on the hands, feet, and face. She did not complain of pain although she said that she bruised readily. On examination she had a very marked diffuse panniculitis affecting practically all the subcutaneous tissue. Some parts were tender on pressure, and here fibrous nodules were present, but in the main the condition seemed to be a diffuse infiltration of the subcutaneous tissues. The skin could not be picked up in a fold and it was tightly adherent to the subcutaneous fat. Any handling of it gave rise to a sensation of soreness, and left a bright red flush which lasted for a considerable time.

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[1] Indian Journal of Medical Research, 1924, p 1253.

The generalised thickening of the subcutaneous tissues will involve the superficial nerves, and they are bound down by the inflammatory tissue to the skin and to the muscular aponeuroses. The continual slight movements present in muscles in a state of postural tone will stimulate the nerves embedded in this tissue, and stimuli will be constantly entering the nervous system from all parts of the body surface affected by the condition. There is probably, in addition, a susceptible state of the nervous system, or a condition of lowered resistance to stimulation. From this arises the consciousness of the different regions of the body surface. It is easy to understand that this continual awareness of the body surface would occupy a large part of the conscious field, and render concentration on anything almost impossible.

This case is of interest as showing the physical basis for what would at first appear to be merely a neurotic manifestation.

I am, Sir, yours faithfully,
HECTOR M. WALKER, M.D.
Harrow, Oct. 15th, 1925.

PIONEERS IN TROPICAL MEDICINE.

To the Editor of THE LANCET.

SIR,—With reference to the very kind annotation in THE LANCET for Oct. 24th of my presidential address on the above subject to the Royal Society of Tropical Medicine and Hygiene, may I, in justice to the memory of a great and good man, point out that I did not describe Sir John Pringle as pursy and peppery? I said he looked pursy and peppery in his portrait. This is a very different matter, for portraits, especially reprints of portraits painted in the eighteenth century, may not always give a correct reproduction of the original. As a matter of fact I went on to show that Pringle's portrait belied his character, for he was in every respect a very fine man, and there is no indication that he was either peppery or pursy, although, as I said, there was plenty to make him peppery! I should also, perhaps, state that George Biddy of your annotation should be George *Bidie*, this being the way in which the distinguished surgeon-general of the Madras Presidency spelt his name. Benjamin Rush no doubt did his best to quell the outbreak of yellow fever in Philadelphia in 1793, though, in the absence of precise knowledge as to its method of spread, he could not accomplish very much in this direction, but his chief claim to fame is that, during that epidemic, he formed the opinion that the disease was not contagious.

I am, Sir, yours faithfully,
ANDREW BALFOUR.
London School of Hygiene and Tropical Medicine,
Endsleigh-gardens, N.W., Oct. 23rd, 1925.

*** Pringle's magnificent services to medicine and in particular to military hygiene could not have been rendered unless his face had belied him. He was in many ways far in advance of his time, and may be said to have foreshadowed the Geneva Convention of our own day. Although Benjamin Rush had no exact knowledge as to how yellow fever was spread, his belief that it was the result of filth in the streets of Philadelphia was so faithfully proclaimed as to cause the greatest anger among the citizens, and incidentally to clear up the nuisance. We are glad to learn that Dr. Balfour's informing address will be available in full in the *Journal of Tropical Medicine and Hygiene* when it appears.—ED. L.

X RAYING OF TEETH: THE LATEST CRAZE.

To the Editor of THE LANCET.

SIR,—Have any of your readers, whose patients' teeth have been X rayed, ever received a report that there was nothing amiss with the teeth? Judging by my experience, everyone whose apparently sound teeth are X rayed is said to have diseased ones. Two of my patients recently went to an oculist. He had their teeth X rayed. A patient went to an aurist and one to a laryngologist; they had their teeth X rayed also. The verdict in each case was that several teeth ought to be extracted. All these patients had more or less recently seen their dentists, who had found nothing wrong with their teeth. One can only wonder how any of the lower classes can see or hear or smell! This tooth-extracting mania seemed to be a good deal on the wane, chiefly, I take it, because doctors with the largest experience of "rheumatic" conditions thought it had been greatly abused. But since this X raying of teeth came into fashion the madness is worse than ever. I am informed that continental medical men do not attribute anything like the same importance to the condition of the teeth as we do, and think we have gone crazy on the subject. I am disposed to agree with them.

I am, Sir, yours faithfully,
Cadogan-place, S.W., Oct. 20th, 1925. GOULD MAY.

*** On another page we review a very important book by Dr. Weston Price, of Cleveland, Ohio, which deals exhaustively with the fallacy of judging the degree of dental infection simply from study of a radiogram. The existence of apical rarefaction is not enough to condemn a tooth and he refutes the assumption prevalent in America, that these rarefied areas denote a menace to general health proportional to the degree of bony absorption.—ED. L.

HOSPITALS, GENERAL AND SPECIAL.

To the Editor of THE LANCET.

SIR,—I have read with much interest Mr. Bishop Harman's article in THE LANCET of Oct. 17th. I would like, however, to correct him on one point. Mr. Harman writes: "There is at Charing Cross in London a large general hospital with its own eye department and next door to it there is an eye hospital." As a matter of fact, there is no eye department at Charing Cross Hospital. Some few years ago a working arrangement was come to between the Royal Westminster Ophthalmic Hospital and Charing Cross Hospital by which the latter closed its eye department, small as it was, and the few patients on its books were transferred to this hospital. The staff of this hospital undertook to teach ophthalmology to the students of Charing Cross Hospital Medical School (last year 43 students attended the practice), and a member of the staff was appointed a lecturer to their medical school. In exchange we can call upon their general staff to treat our patients apart from eye diseases, and, if necessary, our in-patients who develop complaints other than "eyes" can be transferred to Charing Cross Hospital for in-patient treatment. Thus there is the daily contact between the specialist and the general surgeon and physician which Mr. Harman advocates. We have here two institutions, working side by side, each carrying on its separate sphere of work in an efficient manner.

As a lay officer to a special hospital of nearly 30 years' experience I may be biased, but I am of opinion that our general hospitals, as at present constituted, could not possibly cope with the vast influx of "special" patients. For instance, in 1924 the five ophthalmic hospitals of London treated 107,792 out-patients, representing 271,819 attendances, with a total of 222 occupied beds. They could not be absorbed in general hospitals. Moreover, the patient is a factor that must be taken into account. It is an undoubted fact that in this age of specialism the patient prefers to go to a special hospital, dealing solely with the complaint from which he may be suffering, whether it is eyes, nose and throat, and so forth.

Again, the special departments of our general hospitals are nothing like so well equipped as the special hospitals. Generally speaking, patients can only attend once or twice a week at the most, against a daily attendance in a special hospital, and taking "eyes" alone, I know of general hospitals where the eye specialist is lucky if he can get six beds set apart for his use. The whole question, if I may use the expression, boils down to the point, What do the patients want? And the answer is that so long as the special hospitals carry on their work in an efficient manner, keeping abreast with the times, so long will they be in demand by the public.

I am, Sir, yours faithfully,

J. H. JOHNSON,
Secretary, Royal Westminster Ophthalmic Hospital, W.C.

Oct. 19th, 1925.

*** We have submitted Captain Johnson's letter to Mr. Harman, who writes: "*The change in the arrangements between the Royal Westminster Ophthalmic and Charing Cross Hospital was not known to me. I had in mind the time when Mr. Treacher Collins was the eye surgeon at the latter hospital.* But the point, had I known it, would only have made me the more able to drive home the lesson I was striving to bring out. *That the R.W.O. Hospital and the general hospital next door have a working arrangement is the better plan and that which I stated was coming into play in place of which I had information.*"—ED. L.

RESPIRATORY CATARRH IN CHILDREN.

To the Editor of THE LANCET.

SIR,—It is most cheering, for such views are still rare, to read Dr. R. C. Clarke's article in your issue of last week, in which he recommends, as a preventive for nasal catarrh, that children should live in the open air or in a draught. I can endorse his experience that under such conditions they do not suffer inconvenience from feeling cold. My own children, when not out of doors, live and sleep in draughts in all weathers, and I have been surprised to find how little clothing they require for warmth and comfort. They never "catch cold" unless brought into contact with people suffering from nasal catarrh, and this chiefly when school life begins. One would like to see all schools built for open-air life on the lines of the hospitals being erected for the treatment of tuberculosis and rickets by direct sunlight.

With regard to babies being bathed in a room with the windows open, I think that mothers and nurses who fear the danger of exposure to cold should be reminded that they leave out of calculation the time element. A baby left naked on the lawn all night will be found dead in the morning, but the effect of cold moving air on the bare skin of a healthy kicking infant for five minutes will only have a bracing effect.

I am, Sir, yours faithfully,

IVY E. HASLAM, M.D., M.R.C.P.

Bromley, Kent, Oct. 26th, 1925.

PREMATURE BURIAL.

To the Editor of THE LANCET.

SIR,—The possibilities of premature burial under existing circumstances are extremely remote, but the mere fact that such a possibility exists is a matter of grave import to the peace of mind of many of the living, as evidenced by the periodical recurrence of the question, which so far has elicited no definite solution. I cannot but think, however, that if the following suggestion were generally adopted as part of the preparation for burial, there would be no further need for any anxiety on this score.

The coffin should be made deep enough for the body, when in situ, to be an inch and a half to two inches below the level of the rim. A thick layer of sawdust is spread at the bottom of the coffin, banking up towards the sides, and on this the lightly clothed body is placed. Then some 12 hours before the coffin is closed down it should be filled carefully with sawdust up to the level of the rim, the face having been previously covered with a soft fabric. It must be seen to that the sawdust fills every interstice around the body, and that it is well and thoroughly pressed down. The coffin is then left without the lid. A special face cloth could be devised reinforced in the part that would cover the mouth and nostrils, so that in case of a sudden gulp the fabric should not form wedge or rupture.

I think it is safe to say that however slow the ebb of life, however deep the state of attenuated animation, no human being, thus hermetically isolated, could live for an hour, probably not for 15 minutes, without that struggle for air being brought about which would cause the person to raise himself up and be restored to the freedom of life.—I am, Sir, yours faithfully,

L. VINTRAS,
Consulting Physician to the French Hospital.

Oct. 21st, 1925.

LUMINAL, BORAX, OR BROMIDE IN EPILEPSY.

To the Editor of THE LANCET.

SIR,—May I suggest that the value of Dr. C. Worster-Drought's prescription for epilepsy (sodium bromide and sodium biborate) might be enhanced in the case of some patients at least, by the addition of, say, ten drops of the tincture of nux vomica? Probably the best routine mixture for epilepsy is one containing these three drugs. I do not advocate the addition of arsenic as a matter of routine, as some patients can take considerable quantities of bromide for years without suffering any serious inconvenience from pustules. As to the value of luminal, either alone or in addition to the bromide mixture, there can be no doubt. Only by carefully experimenting is it possible to discover the most suitable combination of drugs and their dose for individual cases.

I am, Sir, yours faithfully,

Harley-street, W., Oct. 26th, 1925. HARRY CAMPBELL.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. W. E. Ormsby is placed on Retd. List with the rank of Surg. Capt.

Surg. Capt. H. S. Burniston is placed on the Retd. List with rank of Surg. Rear-Admiral.

ROYAL ARMY MEDICAL CORPS.

Maj. E. M. J. O'Farrell to be Temp. Capt. and temporarily relinquishes the rank of Maj.

Lt. W. Boyd, late R.F.A. (Spec. Res.), to be Lt.

MILITIA.

Maj. H. H. Brown relinquishes his commn. and retains the rank of Maj.

TERRITORIAL ARMY.

Capt. R. C. Aitchison (R. of O.) to be Maj.

Supernumerary for Service with the O.T.C.—Majs. G. A. Williamson and H. Emerson resign their commns. and retain their rank.

Lt. C. J. A. Woodside resigns his commn. and is granted the rank of Capt.

Lt. R. E. Holme to be Lt.

ROYAL AIR FORCE.

R. J. K. Chattey is granted a short service commission as a Flying Officer for three years on the Active List.

INDIAN MEDICAL SERVICE.

Lt.-Col. A. Fenton to be Col.

Majs. B. E. M. Newland, L. A. H. Lack, Narendra Singh Sodhi, and W. C. Gray to be Lt.-Cols.

The Admiralty have published the limits of the promotion zones for the half-yearly advancements of commanders in the medical branches of the Service. Surgeon-commanders must be of eight years' seniority and over on the date of selection.

Medical News.

UNIVERSITY OF LONDON.—At a meeting of the Senate held on Oct. 21st, Prof. E. A. Gardner, the Vice-Chancellor, being in the chair, the following bequests were accepted: From the late Sir Rickman Godlee, Bt., a legacy by which, after the death of his wife, one moiety of his residuary estate is given to University College and the other moiety of his residuary estate to University College Hospital. From the late Miss L. S. Gibbs, in memory of her mother, the sum of £150 per annum to be devoted to the establishment of a studentship, to be called "the Laura de Saliceto Studentship," for the advancement of cancer research, either on the physiological or the chemical side.

THE SEMON LECTURE: UNIVERSITY OF LONDON.—Dr. Patrick Watson-Williams (of the University of Bristol) will deliver a lecture on the Toll of Chronic Nasal Focal Sepsis on Body and Mind in the Lecture Hall of the Royal Society of Medicine, 1, Wimpole-street, W., on Thursday, Nov. 5th, at 5 P.M. The chair will be taken by Sir William Milligan. A reception will be held at 4.30 P.M., prior to the lecture.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The Bradshaw Lecture will be delivered on Nov. 11th by Mr. James Sherren, the subject being Gastro-jejunostomy, and the Thomas Vicary Lecture on Nov. 18th by Prof. William Wright, who will take for his subject the Mediæval Conception of the Anatomy and Physiology of the Central Nervous System. Both lectures will begin at 5 P.M.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL: POST-GRADUATE LECTURES.—The following series of post-graduate lectures will be delivered at Queen Charlotte's Maternity Hospital, Marylebone-road, N.W., during November and December on Thursdays at 5 P.M.: Nov. 5th, Mr. A. W. Bourne, Common Obstetric Difficulties; Nov. 12th, Mr. T. Stevens, Meddlesome Midwifery; Nov. 19th, Mr. T. B. Davies, Clinical Aspects of Abortion; Nov. 26th, Mr. L. Roberts, Conditions Leading to Obstructed Labour; Dec. 3rd, Mr. L. C. Rivett, Antepartum Hæmorrhage; Dec. 10th, Mr. L. Phillips, The Failed Forceps Case; Dec. 17th, Mr. Leslie Williams, Albuminuria of Pregnancy.

JOINT TUBERCULOSIS COUNCIL: POST-GRADUATE COURSES.—During September two courses of study in tuberculosis were arranged by the council in consultation with the Ministry of Health, as follows:—(1) A course of two weeks' duration in the pathology and bacteriology of tuberculosis conducted by Dr. Roodhouse Gloyne at the City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, limited to six members. (2) A course in non-pulmonary tuberculosis of one week's duration. Demonstrations were held during the week at Heatherwood Hospital, Ascot; Queen Mary's Hospital, Carshalton; the Dermatological Department of the London Hospital; the Royal College of Surgeons; All Saints Hospital for Genito-Urinary Diseases; Wingfield Orthopædic Hospital, Oxford. The class was limited to 30 members. The courses were very well attended and it is the intention of the Joint Tuberculosis Council to arrange post-graduate courses to be held in 1926. A syllabus will be issued in January.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Dr. J. Campbell McClure will lecture for the Fellowship of Medicine on Monday, Nov. 2nd, at 5.30 P.M., in the Lecture Hall of the Medical Society of London, 11, Chandos-street, W. His subject will be the Climatic Treatment of Tuberculosis, and all members of the medical profession are welcome to attend. Throughout the month of November the London Lock Hospital will hold a comprehensive course dealing with the Study of Venereal Disease, and as the course is only held if there be a sufficient entry early application is requested. There will be a three weeks' course in Gynæcology at the Chelsea Hospital for Women from Nov. 2nd to the 21st, consisting of demonstrations in the theatre, wards, &c. From Nov. 3rd to the 28th Dr. Porter Phillips and Dr. Thomas Beaton will give twice weekly lecture-demonstrations on Psychological Medicine at the Bethlem Royal Hospital. At the Victoria Park Hospital a course will be held in Diseases of the Chest from Nov. 9th to the 21st. From Nov. 23rd to Dec. 12th the Royal Waterloo Hospital will hold a course in Medicine, Surgery, and Gynæcology, embracing the various departments pertaining to diseases of women and children. A late afternoon course (4.30 to 6 o'clock) will take place at the London Temperance Hospital from Nov. 23rd to Dec. 4th for the benefit of the general practitioner. Copies of the syllabus of these courses, as also the general programme, may be obtained from the Secretary to the Fellowship of Medicine at 1, Wimpole-street, London, W. 1.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, and ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following candidates have passed the Triple Qualification Examination:—

FINAL EXAMINATION.

Alistair G. Cruikshank, Kristian Skulberg, Ian E. Dirckze, William A. F. Hurst, Jack Greenstein, Cecil J. R. Morrison, Nathanael J. Knoesen, William A. N. Chanmugam, Archie N. Tong, Isadore Kovolman, Cheng Leng Tan, David Lumsden, Thiam Hock Wee, Coruvakankanage Don Martinus Madappuli, Alfred A. Labinjoh, David D. H. Craig, Irma E. L. Law, Joseph W. McVicker, James Hasson, Constance C. Reid, Ella D. Messenger, John S. Whiteside, Thomas W. Chapman, Cassaly Ismail, John R. Hotherington, Appacuttiar B. C. Doray, Jack Cohen, Mary A. McGill, Tom G. S. Harkness, Louis G. Blaze, Albert E. Williamson, George R. Mitchell, and Arumugam Wyramuttoo Rasiah.

Medicine.—James K. Steel, Robert H. McKinnon, and Marian E. Owen-Morris.

Surgery.—Robert W. Schuch, William McKim, and James W. Wylie.

Midwifery.—James K. Steel, Collin H. Wickremesinghe, Moss M. Bronstein, Robert W. Schuch, William McKim, Joseph B. Stromier, James W. Wylie, John L. Dearberg, Alexander Rankin, Asit Chandra Bagchi, Charles E. Millen, Catherine Millar, and William T. Baker.

Medical Jurisprudence.—John J. Gilchrist, Manikkathuppahige Thosius Fernando, Stephen B. Stoker, Arthur G. Young, Abdalla Abdel Razzak, Labib Abdel Malik-Mansour, Ian G. Sutherland, George R. Day, Ronald A. Paton, Thomas G. McIntyre, Thomas B. Dobson, Archibald Maxton, Alexander S. Speirs, Maud Heaton, William B. Anderson, John T. W. Gale, John Williams, Gwendoline R. Andrews, James Hendry, William Read, and William W. McGlashan.

DIPLOMA IN PUBLIC HEALTH.

Edwin D. M. Wallace, Malcolm J. Miller, Violet Oswald, Charles Melville, Elizabeth W. Miller, Marjorie H. Mitchell, George A. Pollock, William R. Logan, Jeanie M. Strathie, Jane T. Gilmour, Elsie B. Dickinson, and William B. Watson.

Part I.—George B. Walker, David Robertson, John H. D. Lawrie, David W. C. Tough, Ralph S. Begbie, Desmond S. Malone, Jacobus Johannes de Waal, and Khwaja Samad Shah.

Part II.—Jessie G. Service.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College on Oct. 21st, Dr. Arthur Logan Turner was elected President for the ensuing year, Sir David Wallace Vice-President, and Mr. Alexander Miles Secretary and Treasurer.—Mr. David Middleton Greig was awarded the Liston Victoria Jubilee Prize of £100 in recognition of his contributions to practical surgery and surgical pathology.—The following 28 successful candidates, out of 61 entered, who passed the requisite examinations between July 6th and 13th, were admitted Fellows:—

James C. Anderson, Jack R. S. G. Beard, John M. Black, Cecil R. Childs, Bruce M. Dick, Charles S. Fraser, Robert L. Galloway, Israel Goldberg, Robert Grant, John D. Grierson, Dorothy W. Hall, Frederick J. S. Hall, Oscar M. Irwin, Harold W. Johnston, Matilda John, Philip C. Livingston, William J. Macdonald, Harold J. Malkin, Subodh Mitra, John S. Moore, Chandiram H. Primlani, Arnold R. Richards, James H. Robertson, Ronald G. Shackleton, John H. Shaw, Maurice Sourasky, Denis B. Whitlock, and Arthur C. K. Yates.

Dr. Einer Wesley Johnson U.S.A., having passed the requisite examination on Sept. 30th, obtained the diploma of Licentiate of the College.

At recent examinations, out of 20 candidates entered, the following 14 passed the Final Professional Dental Examination and were granted the diploma L.D.S. R.C.S. Edin.:—

John Baker, Philip Henry, Roberta J. T. Morris, Jean Y. Andrew, Henry W. Bambridge, Andrew S. Irving, William C. Archibald, George M. Brown, Noel A. Reid, Evelyn Richardson, Dorothy J. O. Mitchell, Malcolm McDonald, Leslie V. Sherrin, and Harry W. Stewart.

The following candidates passed in the subjects indicated:—

Pathology.—Thomas T. Jamieson, Hector Archibald, and John E. McNicol.

Medicine.—Thomas T. Jamieson and Herbert F. Simpson.

Surgery.—Hector Archibald and John E. McNicol.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The forty-second meeting of the Commission was held at the Home Office, Whitehall, on Oct. 22nd and 23rd, Lord Lawrence of Kingsgate being in the chair on the 22nd and Sir Arthur Worley on the 23rd. Evidence was given by Mr. J. G. F. Price, Principal Assistant Secretary, Ministry of Labour, on the question of utilising the employment exchanges to certify genuine unemployment for the purpose of dealing more generously with the problem of the arrears penalties under the Health Insurance Scheme. Thereafter Sir Walter Kinnear, Controller of the Insurance Department of the Ministry of Health, Mr. L. G. Brock, Principal Assistant Secretary, and Dr. J. Smith Whitaker, Senior Medical Officer of the Ministry, were examined on a wide range of questions affecting Health Insurance on its administrative and medical sides.

ROYAL SOCIETY OF ARTS.—The next session of this society will be opened on Wednesday, Nov. 4th, at 8.30 P.M., at John-street, Adelphi, London, W.C., when the inaugural address will be delivered by Sir Thomas H. Holland, F.R.S., Chairman of the Council, the subject being the Organisation of Scientific Research Throughout the Empire.

MEDICAL PRACTITIONERS UNION.—A Special Conference on Disciplinary Procedure under the Health Insurance Acts was held by the Union at the Russell Hotel on Oct. 21st. At the afternoon sitting there was an attendance of about 35, and about 20 local medical and panel committees sent representatives. At the close of the proceedings these representatives, together with the chairman (Dr. A. E. Gregg), the secretary (Dr. A. Welply), Dr. Gordon Ward, and the solicitor to the Union (Mr. S. G. Davis), were appointed to form a deputation to lay before the Minister of Health the following resolutions passed at the Conference:—

Proceedings Prior to Hearing—This Conference is of opinion (*a*) that when comments are invited from a doctor in order to facilitate a decision as to whether a formal hearing is desired the invitation should be accompanied by a warning that the comments supplied are likely to be considered by two statutory committees, and may form the basis of a demand for disciplinary action by the Minister; (*b*) that before a hearing is arranged, any charge against a doctor should be defined in writing and should state in every case which of the regulations or terms of service is alleged to have been infringed and in what respect the same have been infringed; and (*c*) that the rules relating to complaints are now so generally known that ignorance of them should no longer be allowed as an excuse for delaying notice of a complaint for more than six weeks after the event in which it originated.

Medical Service Subcommittee.—This Conference is of the opinion (*a*) that the proceedings of the Medical Service Subcommittee should be strictly confined to the charge already formulated; (*b*) that a medical service subcommittee ought not to found its report, in whole or in part, on evidence to which the practitioner concerned has had no opportunity to reply; and (*c*) that medical service subcommittees are not suitably constituted for the determination of scientific questions such as frequently come before them.

Removal from Panel.—This Conference is of the opinion (*a*) that successful defendants in these proceedings should be given costs as against the Insurance or other complainant committee on the same scale as those awarded the latter when the doctor's plea fails; (*b*) that there is nothing in the regulations which can excuse the action of the Ministry in withdrawing from the purview of inquiry committees the right to draw inferences of fact as to the question of a practitioner's fitness to remain on the panel; (*c*) that the action of the Minister in permitting inquiry committees to refuse evidence of general good repute is entirely indefensible on moral or legal grounds. This Conference protests against the action of the Ministry in hearing evidence which has come to hand subsequently to the sitting of an inquiry committee and which the practitioner can neither know of nor obtain opportunity to rebut. Particular objection is taken to the hearing in this manner of expert evidence tendered in opposition to the practitioner.

Procedure on Appeal.—This Conference is of the opinion that (*a*) appeal tribunals should be composed of absolutely independent persons not identified in any way with the administration of the National Health Insurance Acts; (*b*) that an appeal tribunal should hear the case de novo and should not have before it any evidence not taken on oath, or otherwise not properly admissible in a Court of Law; (*c*) that the Minister's decision should be such as is consistent with the report of the Appeal Tribunal; (*d*) that the report of the Appeal Tribunal should be promulgated within seven days of the conclusion of the hearing; and (*e*) that the decision of the Minister following appeal or after hearing of representations should be given within one week after the promulgation of the report.

General.—(*a*) This Conference is of the opinion that the standard of service contemplated by the National Health Insurance Acts is the standard enforced by the Courts and no other, and protests against the action of the Ministry in setting up a different standard. (*b*) This Conference calls attention to the great expense in time and money to which a practitioner may be put in defending himself on the same charge before three different tribunals—namely, the Minister, the General Medical Council, and the ordinary courts. (*c*) This Conference recommends that the medical benefit regulations should provide for a general right of appeal to the courts. (*d*) This Conference is of the opinion that the evidence given before it affords ample witness to the injustice of much of the procedure relating to complaints both in theory and in many particular instances, and strongly recommends to the Minister the setting up of a committee, including representatives of this Conference, to report what alterations are desirable.

INSTITUTION OF HEATING AND VENTILATING ENGINEERS.—On Wednesday, Nov. 4th, at 7 P.M., a paper on the Modern Development of Combustion Recording will be read by Mr. J. J. Lasson at Caxton Hall, Caxton-street, Westminster, S.W.

BRITISH MEDICAL ASSOCIATION: COUNCIL DINNER. The fourth annual Council dinner of the British Medical Association was held on Oct. 21st in the Great Hall of the new B.M.A. House, and Dr. R. A. Bolam, who was in the chair, spoke of the pleasure which it gave the officers of the Association to be able to entertain their guests in their own house. The toast of the "Retiring President," proposed with humour and feeling by Sir Richard Luce, gave Mr. J. Basil Hall the opportunity to describe some of the incidents of two happy and busy years. As ambassador for the Association to the Canadian Medical Association and the American Medical Association Mr. Hall had made a happy impression on the other side of the water by his tact and native wit. The "Common Health" was proposed by Sir Thomas Horder, who sketched the diminished mortality of the last 25 years and remarked on the training in preventive medicine obtained by 14,000 panel practitioners who for 12 years past had practised on a system by which they were paid better when their patients were well than when they were ill. He voiced the need for a properly equipped and well-staffed post-graduate school, and concluded an eloquent speech with the three words—education, organisation, coöperation. Captain C. F. Warburg, the Chairman of the London County Council, spoke of the fulfilment of the Council's aim to coöperate with the medical profession in the conduct of school and special clinics. Mr. S. P. Vivian, Registrar-General, also responded. Mr. E. B. Turner, in proposing "Our Guests," specially welcomed two distinguished visitors from South Africa, Dr. W. Watkins-Pitchford and Dr. A. J. Orenstein. Sir Kingsley Wood, who responded, spoke of progress in national health as due largely to a partnership between the State, the local authorities, the medical profession, and the great voluntary agencies. He was himself a believer in voluntary health service; too many people, he thought, were looking to the State for things that they ought to be doing themselves. Voluntary effort was the pride of the country and the general practitioner the backbone of medical organisation. Sir Holburt Waring, who also replied, hoped soon to see an amendment to the Medical Act whereby treatment of disease was limited to men having a proper medical education. Dr C. E. Douglas proposed [illegible] Chairman," and Dr. Bolam, in responding, foreshadowed his intention shortly to retire from the onerous position [illegible] he has ably filled for so long. Dr. Alfred Cox was [illegible] speak a few words regarding his impending visit to South Africa. An admirable programme of music [illegible] intervals.

AT a general meeting of the Surrey [illegible] British Medical Association (Kingston-on-Thames [illegible] to be held at Surbiton Hospital on Tuesday, [illegible] 8.45 P.M., an address will be delivered by Dr. [illegible] on Birth Control and Contraceptive Methods.

ORTHOPÆDIC AFTER-CARE.—As [illegible] the work of the Shropshire Orthopædic [illegible] Agnes Hunt Surgical Home at Oswestry, [illegible] committee for Shrewsbury and the [illegible] formed. From a wooden shelter erected [illegible] in her garden 25 years ago, orthopædic [illegible] has developed until the hospital [illegible] bury was the first town in the [illegible] cripples.

Royal Society of Medicine.—Commencing on Tuesday, Nov. 3rd, the Library of the Royal Society of Medicine will be kept open until 10 P.M. on two evenings of the week—namely, Tuesdays and Fridays.

London Hospital Medical College. — The Schorstein Memorial Lecture will be delivered by Sir Humphry Rolleston on Friday, Dec. 4th, at 4.15 P.M., in the Anatomical Theatre of the College. The subject will be Lymphadenoma.

Liverpool: Royal Southern Hospital Extension.—A scheme for the erection of an annexe to this hospital is in progress, and it is hoped in the near future to take down some old property at the corner of Hill-street and erect on the site a four-storey building close to the hospital, which would provide extra accommodation for the staff and 20 additional beds for patients.

Hackney Maternity Centre.—The Duchess of York last week opened a maternity and child welfare centre in Lower Clapton-road, Hackney, which, it is hoped, will greatly facilitate work which has been going on steadily for a long time past. So successful has this work been that, although Hackney has a population exceeding a quarter of a million and an average of 5000 births a year, last year it had the lowest infantile death-rate on record.

Cancer Hospital, Fulham-road, London.—The Duke of Connaught last week opened two new theatres which have been provided at this hospital in memory of the late Sir Charles Ryall, who was surgeon there from 1898 to 1922. The theatres, which are on the top floor, are arranged as one unit, so that while one of them is occupied the other can be got ready for another operation. The galleries for the students run from end to end of the building, the anæsthetic rooms and other appurtenances being close at hand. The work involved the construction of a new maids' home, the old one having been absorbed by the alterations. Consequently the cost reached £50,000.

Judgment for Durban Doctor.—Our South African correspondent writes: Before Mr. Justice Carter and a special jury the case was concluded at Durban on Sept. 26th, in which Margaret Scott Ferguson, proprietress of a boarding-house at Isipingo, near Durban, sued Dr. C. D. Relton, of Durban, for £1599 damages for alleged wrongful incarceration in the mental hospital, Pietermaritzburg. A verdict was given for the defendant, with costs. The jury recommended the desirability of establishing an observation ward, to be apart from the mental hospital, so that patients could stay there prior to their removal to the hospital itself. Mr. Justice Carter commented favourably on the jury's recommendation.

Newcastle: Post-graduate Study.—The general course of post-graduate study, which commenced at the Royal Victoria Infirmary on Oct. 1st, is being attended by 51 practitioners. The meetings are held on Thursday afternoons, and instruction is given each day in clinical medicine, clinical surgery and pathology, including post-mortem demonstrations. Three special lectures have been arranged as part of the general course, the first of which, on the Post-Operative Treatment of Tonsils and Adenoids, was delivered by Dr. J. Dunlop Lickley on Oct. 1st. Dr. R. A. Bolam will lecture on Nov. 5th on the Present Day Treatment of Syphilis, and Prof. David Burns will give the third lecture on Dec. 3rd on Insulin. A special course in midwifery and gynæcology is being conducted at the Princess Mary Maternity Hospital by Prof. Ranken Lyle and Dr. E. Farquhar Murray. In addition to these courses, which form part of the routine post-graduate instruction of the University of Durham, an intensive course of a fortnight's duration commenced on Oct. 12th. This course was arranged in conjunction with the Ministry of Health and the Northumberland Panel Committee for the benefit of panel practitioners in the rural areas of Northumberland, and was limited to 12 members, who were selected from the applicants by the Northumberland Panel Committee. The Panel Committee, after careful consideration, elected to expend in this way part of their share of the special £10,000 fund, which was also applied to the provision of locums for the members of the class. A very comprehensive syllabus comprising some 60 lectures and demonstrations was arranged, occupying each morning and afternoon. The first hour of each day was devoted to a course of clinical pathology designed to meet the requirements of general practitioners. The remaining hours were occupied by classes in medicine, surgery, midwifery, gynæcology, eye diseases, diseases of infancy, and so forth, the individual subjects being selected with the object of enabling the members to understand the significance and practical application of recent advances in knowledge. The instruction was essentially clinical, and the limited size of the class facilitated the examination of a large number of cases by each member.

Guest Hospital and Eye Infirmary, Dudley.—The recent bazaar for the liquidation of the debt upon this institution has produced a net profit of £14,117.

The Editor of the "Medical Who's Who" asks us to request all practitioners not having done so to return their forms immediately to 8, Stone Buildings, Lincoln's Inn. The 1926 edition is now going to press, and will, it is expected, be ready early in the New Year.

Rontgen Society.—A general meeting of this society will be held on Tuesday, Nov. 3rd, at 8.15 P.M., in the British Institute of Radiology, 32, Welbeck-street, London, W., when Mr. F. W. Aston, D.Sc., F.R.S., will deliver his presidential address on Atoms and X Rays.

Colwyn Bay Hospital.—The new Colwyn Bay and West Denbighshire Hospital was opened on Oct. 17th by Lord Colwyn. It has developed from the smaller hospital erected about a quarter of a century ago. There are in all 60 beds for patients, the old block being used for administrative purposes. The total cost of the hospital, including the equipment and wiping out of a debt of £140, was £35,285. The receipts towards that sum—including £10,000 from the British Red Cross Society and £19,000 from two garden fêtes—come to a total which leaves a balance of £2500. This sum has now been raised so that the hospital was opened free of debt.

University of Manchester.—*Travelling Fellowship in Psychological Medicine.*—Through the generosity of Mr. Ernest A. Knight, hon. treasurer of the University of Manchester, a selected medical graduate will be enabled, this winter, to visit the United States. His mission will be to study and eventually to report upon the methods used in approved institutions, to investigate the part played by mental factors in the development, treatment, and cure of mental disorders. Should the University so desire, he will be required on his return to deliver an address on the subject of his investigation. The competition was open to those who had obtained or had entered upon a course for the diploma in psychological medicine of the University. It is hoped to announce the award at an early date. The purpose of the Fellowship is that of the Knight Prize, which is offered annually in the University, to encourage the study of psychological factors in the causation and cure of mental disturbances.

Cancer Campaign in Manchester.—At a public meeting held in Manchester on Oct. 23rd, called by the recently-formed Manchester Committee on Cancer, it was resolved to issue an appeal for £20,000 with which "to carry out in Manchester during the next three years an approved scheme of investigation into the disease of cancer." Dr. W. E. Gye, pathologist to the National Institute of Medical Research, was the chief speaker. The appeal was particularly directed to the commercial community to support the fund on the ground that it was one of the best investments anybody could participate in. Dr. Veitch Clark, medical officer of health for the city, said that the committee intended to follow the meeting up by a personal appeal to all whom they thought they could approach with success; but at the same time they wanted to reach the general public and impress them with the importance and urgency of the work and the appeal. The Chairman of the Royal Infirmary Board said his board was whole-heartedly in accord with the scheme.

The late Dr. T. Drysdale.—Dr. Theodore Drysdale, of Cadogan-place, Chelsea, died on Oct. 8th, aged 46. He was born in the Central Provinces of India, and was educated in England at St. Paul's School and Jesus College, Cambridge. He received his medical training at St. George's Hospital, qualifying M.R.C.S. Eng., L.R.C.P. Lond. in 1904, and graduating M.B., Ch.B. Camb. the following year. After holding resident hospital appointments, including that of anæsthetist to the Cancer Hospital, Fulham-road, he went into partnership with the late Dr. Reid, of Sloane-square. A keen and energetic worker, he gradually built up one of the largest private practices in London, specialising to a considerable extent in midwifery. Dr. Drysdale was a prominent athlete. While at Cambridge he gained his Rowing Blue in 1902, won the Colquhoun Sculls in the same year, and obtained his Rugby Football Blue in 1900 and 1901. Throughout his professional life he "kept fit" by playing squash racquets, and represented England v. America at this game in 1923. A colleague writes of him: "Dr. Drysdale was a man of great personality, eminently proficient in all branches of his profession, and sound in judgment. He had little time for reading or writing, but, nevertheless, kept himself well up to date with all forms of treatment. He was competent, alert, and above all things loyal, a quality all too rare in these days. Though never in the limelight, to which he objected above all things, his loss, nevertheless, will be felt throughout London."

THE death has occurred at Edinburgh of Dr. John Robertson Henderson, C.I.E., F.R.S.E., formerly curator of the Madras Museum and professor of zoology in the Madras Christian College. Dr. Henderson was an authority on Indian crustacea and South Indian numismatics.

WEST RIDING ASSOCIATION OF EDINBURGH UNIVERSITY GRADUATES.—The annual dinner will be held at the Great Northern Hotel, Leeds, on Wednesday, Nov. 18th, at 7.15 P.M., when Mr. Alexander Miles will be the guest of the association. The dinner will be preceded by a general meeting at 6.30 P.M. Any graduate desiring information should apply to the hon. secretary, 33, Manor-row, Bradford.

NORWOOD SANATORIUM FOR THE TREATMENT OF INEBRIETY AND DRUG ADDICTION.—Dr. Francis Hare has resigned the office of medical superintendent of the Beckenham branch of this sanatorium on grounds of ill-health. His place as medical superintendent at the Mansion, Beckenham Park, Kent, will be taken by Dr. A. W. George, who has been acting as assistant to Dr. Hare. At Rendlesham Hall, the Suffolk branch of the sanatorium, there is a park of 450 acres, containing a private nine-hole golf course.

DONCASTER'S OPEN-AIR SCHOOL FOR DEFECTIVE CHILDREN.—The Doncaster Education Committee are about to build an open-air school to accommodate 210 children who are mentally or physically too backward to be taught at the ordinary schools. The children will be under the constant care of the medical officer of health. Rooms for medical examination and treatment will be provided. It is intended to provide the children with midday meals at the school. Both the back and front of the building will be completely thrown open according to the state of the weather and the direction of the wind. Heat will be radiated from the panels of the walls. The school will be provided with about three acres of garden in which the children can play and practise horticulture.

HOSPITALS AND ROAD ACCIDENTS.—In an appeal for money to reduce the debt upon the Hampstead General and North-West London Hospital, it is stated that a large number of motoring and road accidents have been treated during the last few months and that a heavy burden has thus been thrown upon the institution. Commenting upon this statement, Mr. E. W. Morris, house-governor of the London Hospital, points out that the rapidly growing number of accidents of this kind adds seriously to the difficulty of finding room there for the waiting cases, which now number 1100. Mr. Morris adds that if in cases where compensation is paid for street accidents a contribution were made to the hospitals an addition to revenue would be obtained that would enable it to meet the demands of the waiting-list. It is pointed out by a motor-car insurance company that there are occasions when insurance companies do make contributions to hospitals in consideration of their services to injured persons.

THE LATE DR. E. C. HINDE.—Eric Clark Hinde, M.B., B.S. Lond., who died on Oct. 20th at the age of 30, was educated at Bootham School, York, and entered Guy's Hospital in 1913 with a science scholarship. His studies were interrupted by a period of service with the Friends' Ambulance Unit in Flanders, when he was chiefly occupied with tracking typhoid contacts. After qualifying M.R.C.S. in 1917 he was house physician at the Queen's Hospital for Children in London, and served again in France before taking his London medical degree in 1920. He started in practice, first as assistant and then as partner, with Dr. H. T. Gillett, in Oxford, where he was anæsthetist to the Wingfield Hospital and assistant in the Throat and Ear Department of the Radcliffe Infirmary. In December, 1922, he developed laryngitis, which proved to be tuberculous, and spent the last three years in a consistent, but unavailing search for health at home and abroad. His early death removes an attractive personality and cuts short a career of considerable promise.

DONATIONS AND BEQUESTS.—Mr. James Charles Marshall, of Eastbourne, formerly chairman of Marshall and Snelgrove, Ltd., besides other bequests, gave 1000 preference shares in Debenhams, Ltd., to the Cottage Homes, Mill Hill, and 500 such shares each to Middlesex Hospital, the London Fever Hospital, and the London General Porters' Benevolent Association.—Cheques for £1000 were presented to the Lord Mayor of Liverpool from the Liverpool Fruiterers Association for the endowment of beds bearing the names of the chief magistrate and the lady mayoress in the Royal Liverpool Children's Infirmary and the Liverpool Maternity Hospital.—Mr. R. Rees Thomas, of Llanbedrog, Carnarvonshire, has sent a cheque for £1000 in aid of the extension of the Carnarvonshire and Anglesey Infirmary, Bangor.—The Manchester Royal Infirmary has received from the executors of the late Mr. W. H. Armitage a legacy of £1000, and £10,000 on account from the bequest of the late Miss Ann Russell, of Cheetham Hill. Miss Russell left the residuary portion of her estate, amounting to over £100,000, to six Manchester charities.—Mrs. Fanny Davis, Exmouth, left £500 each to Exmouth Cottage Hospital and the Devon and Exeter Dental Hospital.—In response to the Leeds University's appeal for £500,000, the first list of subscriptions includes donations and promises amounting to £115,370. Among the larger donations contributed are £20,000 from Messrs. Joshua Tetley and Son, Ltd., brewers, Leeds; £18,000 from the Clothworkers' Company, London; £10,000 from an anonymous subscriber; £5000 each from Mr. H. J. Bouring, Kirkby Lonsdale; Sir Algernon Firth, Bt., Knaresborough; and Messrs. Reckitt and Sons, Ltd., Hull; £3000 each from Messrs. E. J. Arnold and Sons, printers, Leeds; Messrs. A. W., Sir Ernest, and J. Bain; Colonel T. Walter Harding, Cowbridge; and the Misses E. G. and E. M. Lupton, Leeds; the *Daily Mail*, London, 2000 guineas.—A bazaar at Dudley, Worcestershire, promoted last June to wipe out the debt of £10,000 on the local hospitals, has had a remarkable success, as the net proceeds amounted to considerably over £14,000.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY, Burlington House, Piccadilly, W.

THURSDAY, Nov. 5th, 4.30 P.M.—*Papers to be Read:* L. Ballif, J. F. Fulton, and E. G. T. Liddell: Observations on Spinal and Decerebrate Knee-jerks with Special Reference to their Inhibition by Single Break-Shocks (communicated by Sir Charles Sherrington, P.R.S.). K. Furusawa: Muscular Exercise, Lactic Acid, and the Supply and Utilisation of Oxygen. Part XIII. The Gaseous Exchanges of Restricted Muscular Exercise in Man (communicated by Prof. A. V. Hill). K. Furusawa: A Spirometer Method of Studying Continuously the Gaseous Metabolism of Man During and After Exercise (communicated by Prof. A. V. Hill). D. T. Harris: The Effect of Light on the Circulation (communicated by Prof. E. H. Starling. *Papers to be Read in Title only:* A. V. Hill: The Surface Tension Theory of Muscular Contraction. J. F. Fulton and E. G. T. Liddell: Electrical Responses of Extensor Muscles during Postural (Myotatic) Contraction (communicated by Sir Charles Sherrington). L. N. Katz: On the Supposed Pluri-segmental Innervation of Muscle Fibres (communicated by Prof. A. V. Hill). L. N. Katz and C. N. H. Long: Lactic Acid in Mammalian Cardiac Muscle. Part I. The Stimulation Maximum (communicated by Prof. A. V. Hill). H. J. G. Hines, L. N. Katz, and C. N. H. Long: Lactic Acid in Mammalian Cardiac Muscle. Part II. The Rigor Mortis Maximum and the Normal Glycogen Content (communicated by Prof. A. V. Hill). Phyllis Kerridge, L. N. Katz, and C. N. H. Long: Lactic Acid in Mammalian Cardiac Muscle. Part III. Changes in Hydrogen-ion Concentration (communicated by Prof. A. V. Hill). W. E. Garner: The Mechanism of Muscular Contraction (communicated by Prof. A. V. Hill). R. W. Riding and E. C. C. Baly: The Occurrence of Helium and Neon in Vacuum Tubes. O. W. Richardson. Structure in the Secondary Hydrogen Spectrum. III. T. R. Merton and J. G. Pilley: On the Excitation of the Band Spectrum of Helium. H. Hartley and J. E. Frazer: The Conductivity of Uni-univalent Salts in Methyl Alcohol at 25° C. (communicated by Prof. J. W. Nicholson). C. S. Beals: The Arc Spectrum of Palladium: its Zeeman Effect and Spectral Type (communicated by Prof. A. Fowler). N. Ahmad: Further Experiments on the Absorption and Scattering of γ Rays (communicated by Sir Ernest Rutherford). R. A. R. Tricker: A Determination of the Variation of the Mass of the Electron with Velocity, using Homogeneous β Rays. Preliminary Results (communicated by Sir Ernest Rutherford). E. H. Boomer: Experiments on the Chemical Activity of Helium (communicated by Sir Ernest Rutherford). R. M. Wilmotte: On the Construction of a Standard High Frequency Inductive Resistance and its Measurement by a Thermal Method (communicated by Sir Joseph Petavel). R. B. Brode: The Absorption Coefficient for Slow Electrons in the Vapours of Mercury, Cadmium and Zinc (communicated by Prof. F. A. Lindemann). P. Kapitza and H. W. B. Skinner: The Zeeman Effect in Strong Magnetic Fields (communicated by Sir Ernest Rutherford). F. R. Weston: The Flame Spectra of Carbon Monoxide and Water Gas. Part II. (communicated by Prof. W. A. Bone). H. S. Hirst and E. K. Rideal: The Thermal Decomposition of Nitrogen Pentoxide at Low Pressures (communicated by Sir William Pope) R. W. Gurney: The Number of Particles in the Beta-Ray Spectra of Radium B and Radium C (communicated by Sir Ernest Rutherford).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Nov. 3rd.

ORTHOPÆDICS: at 5.30 P.M. (Cases at 5 P.M.)

Cases:

Mr. R. C. Elmslie: Unintentional Arthroplasty of Hip-joint.

Mr. St. J. D. Buxton: Charcot's Spine.

Other cases will be shown.

Specimen:

Mr. Blundell Bankart: Ovarian Carcinoma of the Scapula.

PATHOLOGY: at 8.30 P.M., at the Imperial Cancer Research Fund Laboratories, 8, Queen-square, W.C.

Wednesday, Nov. 4th.

SURGERY: at 8.30 P.M.

Discussion on

Precancerous States.

Openers:

The President (Sir Lenthal Cheatle), Mr. Sampson Handley, Dr. Sequeira, Mr. Zachary Cope.

Thursday, Nov. 5th.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.

Specimens:

Mr. T. G. Stevens:

(1) Fibromyoma of the Uterus weighing 47 lb. 5 oz. Removal.

(2) Large Cystic Tumour of the Liver simulating an Ovarian Cyst.

Short Communication:

Dr. D. W. Roy and Dr. R. Donaldson: A Case of Early Endometrioma of the Fallopian Tube.

Dr. Wilfred Shaw: The Origin of the Lutein Cells of the Corpus Luteum.

Paper:

Mr. Victor Bonney: Myomectomy as the Operation of Election for Uterine Fibroids.

Friday, Nov. 6th

LARYNGOLOGY: at 5 P.M. (Cases at 4 P.M.)

Cases and *Specimens* will be shown by Mr. M. Vlasto, Dr. Dan McKenzie, Sir James Dundas-Grant, Dr. O. Popper, Dr. A. L. Macleod, Mr. Leslie Powell, and others.

ANÆSTHETICS: at 8.30 P.M.

Discussion on

Anæsthetics in Children, to be opened by Dr. Harold Sington.

Other Speakers:

Dr. J. Birt, Mr. Twistington Higgins, and Mr. Pitts.

STUDY OF DISEASE IN CHILDREN: Members of this Section are specially invited to attend the above meeting.

Saturday, Nov. 7th.

OTOLOGY: at 10.30 A.M. (Cases at 9.45 A.M.)

Cases will be shown by Mr. Ibbotson, Mr. Layton, Mr. Just, and others.

Paper:

Mr. A. R. Tweedie: The Otolith Reactions (with demonstration).

A discussion will follow.

ROYAL INSTITUTION, 21, Albemarle-street, W.

Monday, Nov. 2nd.—5 P.M., General Meeting of the Members.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

Wednesday, Nov. 4th.—8.30 P.M., Sir Thomas H. Holland, F.R.S.: Inaugural Address on the Organisation of Scientific Research throughout the Empire.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION, 11, Chandos-street, Cavendish-square, W.

Friday, Nov. 6th.—4.45 P.M., Dr. A. I. Simey: The Prophylaxis of the Common Cold and Febrile Catarrhs.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, 1, Pall Mall East, S.W.

Thursday, Nov. 5th.—5 P.M., Dr. E. Bramwell: The Myopathies. (Bradshaw Lecture.)

THE FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.

Monday, Nov. 2nd, to Saturday, Nov. 7th.—Fellowship of Medicine Lecture, Medical Society, 11, Chandos-street. Mon., 5.30 P.M., Dr. J. Campbell McClure The Climatic Treatment of Tuberculosis.—Chelsea Hospital for Women, Arthur-street, S.W. Post-graduate course in Gynæcology, lectures and demonstrations daily, pathology, and operations.—London School of Hygiene and Tropical Medicine, Endsleigh-gardens. Tues. and Thurs., lecture-demonstration by Dr. G. C. Low and Dr. Manson-Bahr.—London Lock Hospital, Dean-street, W. Comprehensive course. Instruction in the Out-patient Department every day and lectures.

UNIVERSITY COLLEGE, London.

Monday, Nov. 2nd.—5 P.M., Mr. R. J. Lythgoe: The Physiology of Hearing and Vision. Seventh lecture.

Wednesday.—5 P.M., Last lecture.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

Tuesday, Nov. 3rd.—5 P.M., Dr. Knowsley Sibley: Principles of Treatment. Local.

Thursday, Nov. 5th.—5 P.M., Dr. A. M. H. Gray: Eruptions Due to External Irritants.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: October–November, 1925.

Clinical Lectures and Demonstrations.

Monday, Nov. 2nd.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Headache and its Treatment: Dr. Risien Russell.

Tuesday, Nov. 3rd.—2 P.M., Out-patient Clinic: Dr. Walshe. 3.30 P.M., Peripheral Neuritis: Dr. Grainger-Stewart.

Thursday, Nov. 5th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Hemiplegia: Dr. Walshe.

Friday, Nov. 6th.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Electro-therapy in Lesions of Peripheral Nerves: Dr. Bailey.

The Fee for the Course, including Pathology Lectures, is £5 5*s.* For those who hold Perpetual Tickets the fee is £3 3*s.*

Course of Lectures and Demonstrations on the Pathology of the Nervous System.

Thursday, Nov. 5th.—12 noon, Acute Inflammation: Dr. J. G. Greenfield.

Course of Lectures and Demonstrations on the Anatomy and Physiology of the Nervous System.

Monday, Nov. 2nd.—12 noon, The Basal Ganglia: Dr. J. L. Birley.

Dr. H. J. Macbride is giving a Course of Eight Clinical Demonstrations, chiefly on Methods of Examination of the Nervous System, in the wards at 10 A.M. on Tuesdays and Fridays. The fee for this Course is £2 2*s.*

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesdays and Friday mornings at 9 A.M., or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.

Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.

J. G. Greenfield, Dean of Medical School.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Thursday, Nov. 5th.—3 P.M., Mr. J. Howell Evans: Cases of Affections of the Breast. 4.30 P.M., Mr. W. Ibbotson: Hoarseness, its Causation, Diagnosis, and Treatment.

Daily: In-patient and Out-patient Clinics in General and Special Departments, Operations, &c.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone-road, N.W.

Thursday, Nov. 5th.—5 P.M., Mr. A. W. Bourne: Common Obstetric Difficulties.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

Tuesday, Nov. 3rd.—4.15 P.M., Dr. D. E. Core: The Oculo-Motor Apparatus from the Physician's Point of View.

Friday, Nov. 6th.—4.15 P.M., Prof. E. D. Telford: The Diagnosis of Chronic Arthritis in Children.

ANCOATS HOSPITAL POST-GRADUATE LECTURES.

Thursday, Nov. 5th.—4.15 P.M., Mr. H. Platt: The Treatment of Common Fractures with Practical Demonstrations.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

Wednesday, Nov. 4th.—4 P.M., Dr. E. Farquhar Buzzard: The Prevention and Arrest of Nervous Disease.

PEOPLE'S LEAGUE OF HEALTH, Fyvie Hall, Regent-street Polytechnic.

Friday, Nov. 6th.—6 P.M., Prof. H. R. Kenwood: Hygiene.

Appointments.

George, A. W., M.D., C.M. Edin., has been appointed Resident Medical Superintendent, Norwood Sanatorium, Beckenham Park, Kent.

Kirk, Miss F. S., M.B., Ch.B. Glasg., D.P.H., to the combined post of Demonstrator in Pathology in the University of Sheffield, and Assistant Pathologist to the Jessop and Children's Hospitals.

Parry, C. P., M.D., C.M. Edin., to be one of the Medical Referees under the Workmen's Compensation Act, 1906, for Circuit 31, the Districts of the Aberayron, Cardigan, Carmarthen, Llandilo Fawr, &c.

Polson, C. J., M.B., Ch.B. Birm., Demonstrator of Pathology, University of Manchester.

Paddington Green Children's Hospital: Dunstan, C. K., M.B., Ch.M. Sydney, House Physician; Mundell, F. G., M.B., B.S. Durh., House Surgeon.

Certifying Surgeons under the Factory and Workshop Acts: Ling, C. C., L.R.C.P. Lond., M.R.C.S. (Ramsgate); Wilson, G., M.B., C.M. Aberd. (Nairn); Gadd, H. P., L.R.C.P. Lond., M.R.C.S. (Guildford); Moran, L., M.B., B.Ch. N.U.I. (Looe).

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Asst. S. to Ear, Nose, and Throat Dept.
Bath, Royal Mineral Water Hospital.—R.M.O. At rate of £130.
Birmingham City Hospitals for Infectious Diseases.—Sen. Asst. M.O. £400.
Birmingham General Hospital.—Asst. P.
Birmingham Union, *Selly Oak Hospital*—Res. Asst. M.O. £300.
Charing Cross Hospital Medical School.—Lectureship in Hygiene.
Chelsea Hospital for Women.—Anæsthetist. £21.
City of London Hospital for Diseases of the Heart, &c., Victoria Park, E.—H.P. at rate of £100.
City of London Maternity Hospital, City-road, E.C.—Obstet. S. Also Asst. Obstet. S.
Coventry and Warwickshire Hospital.—Res. Jun. H.S. £135. Also Res. H.P. £125.
Hospital for Sick Children, Great Ormond-street, W.C.—Med. Reg. and Pathologist. £300.
Infectious Hospitals Service, Metropolitan Asylums Board.—Jun. Asst. M.O. £300.
Manchester, Barnes Convalescent Hospital, Cheadle.—Res. M.O. £250.
Middlesex County Council.—Asst. M.O. £600.
Northampton General Hospital.—Hon. Asst. S.
Oxford, Radcliffe Infirmary and County Hospital.—H.P., H.S., Cas. H.S., and Obstet. H.P. All at rate of £120.
Oxford, Warneford Mental Hospital.—Asst. M.O. £250.
Queen Mary's Hospital for the East End, Stratford, E.—Hon. Asst. S.
Royal Eye Hospital, St. George's Circus, S.E.—Hon. Asst. S.
Royal Free Hospital, Gray's Inn-road, W.C.—H.P., First H.S., Second H.S. and Asst. Cas. O. Obstet. H.S., Gynæcological H.S. Also Asst. for X Ray Dept.
Royal Northern Hospital.—H.S. At rate of £70. Also Two Cas. O.'s. At rate of £90.
St. John's Hospital for Disease of the Skin, 49, Leicester-square, W.C.—Pathologist. £100.
St. Mary's Hospital for Women and Children, Plaistow, E.—Hon. Dental S.
Salford Education Committee.—Asst. Sch. M.O. £600.
Stockport Infirmary.—Third Res. M.O. £115.
Sudan Medical Service.—Three M.O.'s. £E.720.
University of London.—Associate Examiners.
Western Skin Hospital, 44, Hampstead-road, N.W.—Hon. Radiologist.
Westminster Hospital, S.W.—M.O. Two Asst. M.O.'s to X Ray Dept. Also Asst. Path.
Willesden, Park Royal Hospital, Acton Lane.—Second Asst. M.O. £400.
York Maternity Hospital.—H.S. £250.

Births, Marriages, and Deaths.

BIRTHS.

BARLOW.—On Oct. 21st, to Eileen S. P. Barlow, M.B., Ch.B., the wife of A. Malcolm Barlow, M.R.C.S., L.R.C.P.—a daughter.

CARLILL.—On Oct. 24th, at North Gate, Regent's Park, the wife of Hildred Carlill, M.D., of a son.

COATS.—On Oct. 20th, at Glasgow, the wife of Captain D. H. Coats, R.A.M.C., of a daughter.

DOHERTY.—On Oct. 20th, at a nursing home at Croydon, the wife of W. D. Doherty, M.Ch., F.R.C.S., of a daughter.

SOWRY.—On Oct. 22nd, at Newcastle, Staffs, the wife of G. H. Sowry, M.D., M.R.C.P., of a son.

MARRIAGES.

JACKSON—HADLEY.—On Oct. 21st, at St. Luke's Church, Reigate, Lawrence Nelson Jackson, M.B., to Margaret G. N. Hadley, M.B., daughter of Dr. and Mrs. Wilfred Hadley, of Reigate.

SCOTT—HEWETT.—On Oct. 17th, at St. Margaret's Church, Barking, Dr. John Murray Scott, to Valentine, third daughter of R. M. Hewett, J.P., of Roden Lodge, Barking, Essex.

DEATHS.

DUNN.—On Oct. 19th, at Mentone, suddenly, William Edward Nickolls Dunn, M.B. Lond., and Major, R.A.M.C., aged 64.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BRADFORD'S HOSPITAL APPEAL.—Owing to trade depression, it is announced that Bradford's public appeal for £500,000 towards the erection of a new hospital to take the place of the present Royal Infirmary has been deferred. Shortly before the war a site for the new hospital was obtained and plans were prepared for a new building.

Notes, Comments, and Abstracts.

THE PREVENTION AND ARREST OF RHEUMATIC DISEASE.*

BY MATTHEW BURROW RAY, D.S.O., M.D. EDIN.,

HON. SEC., BRITISH SUBCOMMITTEE, INTERNATIONAL COMMITTEE ON RHEUMATISM.

PUBLIC attention is being increasingly focused on the serious position created by the heavy incidence of rheumatic disease in this country. Its far-reaching effects on industry have been made manifest by the publication of Report No. 23 in the series on public health and medical subjects issued last year by the Ministry of Health, entitled the Incidence of Rheumatic Diseases,[1] where it was shown that practically one-sixth of the entire sick absence in this country from all diseases was due to those classed as "rheumatic," and reports from other countries show a similar state of affairs. We may say that the problem of the incidence of rheumatic diseases is one which is seriously affecting the whole of Northern Europe. A committee on rheumatism has been appointed by the International Society of Medical Hydrology and from it a subcommittee to deal with its incidence in this country, which has for its object the formulation of a plan for concerted action in a campaign against rheumatic disability.

Nomenclature and Classification.

If we were asked for a definition of the precise meaning we are to attach to the term rheumatism or rheumatic disease, we could only say that it is a comprehensive name that is applied in an indiscriminate manner to a group of diseases which differ widely in their causation and manifestation. From a scientific point of view, therefore, the name has little to recommend it, and it has frequently been suggested that it be abolished from medical terminology altogether, or, at any rate, limited to those acute and subacute conditions known as rheumatic fever or acute and subacute rheumatism. On the other hand, it has, by reason of its long-continued use, acquired a certain meaning, and if it is regarded purely as a "clinical concept" and not as a "disease picture," its retention in the present state of our knowledge may be justified. Chronic joint changes and painful affections of the connective tissue have obviously little or no relation to those conditions known as acute and subacute rheumatism where the chief damage falls on the heart, and the arthritic changes are merely transient though doubtless very painful in some instances. Indeed, it is a common clinical observation that in the most severe forms of acute rheumatism the joints may escape altogether. We would say then that rheumatic disease appears to fall naturally into three main groups. We have those acute and subacute conditions which are classified under the heading of rheumatic fever which we should place in the first group. The second group would comprise all those painful and disabling conditions which affect the connective tissue that forms the aponeuroses and sheaths of the muscles and nerves. The third group consists of a medley of joint affections chiefly marked by their progressive nature, chronicity, and crippling effects.

These groups are further subdivided into nine subgroups as follows: Group A. (1) rheumatic fever or acute rheumatism; (2) subacute rheumatism, including rheumatic purpura. Group B. (3) muscular rheumatism, sometimes called chronic rheumatism, includes myalgia, fibrositis, pleurodynia, and torticollis; (4) lumbago; (5) sciatica and brachial neuritis. Group C. (6) rheumatoid arthritis; (7) osteo-arthritis, including malum coxæ senilis and most cases of spondylitis deformans; (8) gout, acute and chronic; (9) chronic joint change unclassifiable.

It must be clearly understood that the above is not a classification of arthritis. The whole question of the classification of the arthritides is a very vexed one.

Rheumatic Fever.

Although rheumatic fever is usually regarded as an infective disease, the causal organism has not yet been definitely identified. The disease is essentially one of temperate and humid climates and is apparently rarely found in the tropics. So far as this country is concerned the Ministry of Health point out in their report that it shows a heavy incidence in Bristol, Nottingham, and Cardiff, and a light incidence in the South-Eastern Division and Cornwall.

It is a hopeful sign that the public is beginning to recognise the devastating effect on the health of the community brought about by the occurrence of rheumatic fever in early life. It must be emphasised that it is essentially a disease of childhood. We know comparatively little about its various modes of onset and also what really constitutes the disease. Too much attention is paid to the joint conditions which, from the point of view of prognosis, are of little moment. Many children have had their lives ruined by the failure to recognise the disease in the absence of joint changes.

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* Abstract of an address delivered at the Royal Institute of Public Health on Oct. 21st, 1925.

[1] THE LANCET, 1924, i., 451.

Prevention.—The question of the prevention of acute rheumatism really resolves itself into one of early recognition of the condition. In the first place we have to learn to differentiate the type of child likely to be affected therewith. With the routine examination of all school-children there should be no difficulty in setting aside for special consideration in each school those children who exhibit signs of this diathesis. They are usually pale and anæmic and sweat readily, and careful examination will reveal the presence of small subcutaneous nodes, to which Vincent Coates and R. E. Thomas have already drawn attention. The home surroundings of such children should be specially investigated under the headings of elevation, overcrowding, dampness of house or site, amount of sunlight. It has been pretty well established that low-lying sites near rivers are particularly favourable to the incidence of this condition. Where possible, children who show tendencies to rheumatic affections should be removed to more favourable surroundings. I am quite aware that such a scheme would meet with a good deal of opposition on the part of parents, who naturally dislike to have their children sent away. This difficulty can only be overcome by the enlightenment of the public as to the danger of permanent invalidism to which these children are exposed.

In this connexion the importance of a publicity campaign with the object of educating the public in the need for a concerted effort to protect our children from the devastating effects of this disease cannot be too strongly urged. Special hospitals for the treatment of children who have had an attack of rheumatic fever should be established all over the country. These institutions would differ from the ordinary hospital in that the patients would be kept for prolonged periods. While undergoing their rest there is no reason why their education should suffer, so that these institutions would really be "school hospitals." Until a specific remedy for acute rheumatism is discovered, the best we can do is to place the sufferers under the most perfect hygienic surroundings we can devise. In the Hartfield Hospital, which is run on more or less "open air" lines, in Sussex, it is found that even under the worst climatic conditions the children improve rapidly and very few after admission develop fever and rheumatic pains.

Non-Articular Rheumatism.

This term includes muscular rheumatism, sometimes called chronic rheumatism or myalgia, fibrositis, pleurodynia, and torticollis. The Ministry place myalgia of the erector spinæ muscles (lumbago) in a class by itself as being an easily distinguishable clinical entity. The remaining subclass comprises sciatica and brachial neuritis. Now, when we speak of muscular rheumatism we are really referring to an affection of the white fibrous tissue which forms an envelope that sends its prolongations everywhere throughout the body and supplies the muscle sheaths and coverings for the tendons and aponeuroses. It acts as a supporting tissue for the blood, lymph, and nerve-supply of the body generally. It must of necessity, therefore, be intimately concerned with all the biological interchange of fluids which are continually taking place as a result of bodily activity.

Ætiology.—There are several theories as to the causation of these painful affections, but it can be shown that they largely depend on the retention in the plasma of the waste products of metabolism which interfere with the efficient removal of the products of muscular activity. Intestinal toxæmia is a fruitful source and easily explicable. Cold, especially when prolonged, is another very common cause. The incidence of a stiff neck or an attack of lumbago consequent on sitting in a draught, possibly in wet clothes, is a usual experience; heat is necessary for efficient muscular action, and the chilling of large surfaces of the skin along with its contained blood must interfere with its excretory functions. With regard to the bacteriological side of the question, it would be futile to deny that in many instances the removal of some infective foci in cases of fibrositis or muscular rheumatism has been followed by rapid improvement or a complete cure of the condition.

Prevention should obviously comprise such measures as the avoidance of prolonged surface chilling to the body—the adequate warming of work-rooms, the provision of facilities for drying clothing. Attention should be paid to housing conditions, such as dampness, low-lying situations, and the like. As the condition is, so far as I envisage it, dependent in a great measure to metabolic irregularities, due attention should be paid to the diet. A diet excessive in starch is very apt to cause intestinal fermentation, and it has been observed that patients suffering from both this condition and one which affects the joints in a manner to be described later, show a diminished sugar tolerance.

With regard to the *arrest* of the condition, the treatment is both general and local. Dietetic errors should be corrected. Where possible a course of treatment at a selected spa is, in the majority of instances, of the greatest benefit. The daily intestinal flush combined with local measure stimulates metabolism and quickly promotes a cure. Heat and massage are the most important local measures we have at our disposal for the treatment of muscular rheumatism or fibrositis. There are two objects to be kept in view, one to promote a freer lymph circulation and the other to break up the nodules. When possible a radiant heat bath should be given as a prelude to the massage. If such a bath is not available the old-fashioned hot flat-iron over a few layers of flannel is almost if not quite as effective. To promote free circulation the muscles should be kneaded with the palm of the hand the thumb being kept behind. This method is very well adapted for the neck muscles and for those in the spine and lumbar region. For the nodules, each individual one that can be felt should be treated in turn. The ball of the thumb, previously anointed with a little vaseline, should be employed. The movement should be a combination of pressing and rolling against the underlying bone if possible. Under such pressure the nodules will be felt gradually to soften and disappear. Older ones naturally take longer.

Rheumatoid Arthritis—Two Types.

Rheumatoid Arthritis, Osteo-Arthritis, Gout, and Unclassified Joint Conditions.—It is in connexion with the group of joint affections that difficulties in description chiefly arise. The task is not made any easier by the numerous attempts at classification that each observer feels himself called upon to make. Some classifications have an anatomical basis, others are based on supposed ætiological conditions, while others again are founded on a combination of the two, which only makes confusion more confounded.

Rheumatoid arthritis is an unfortunate name for the condition to which it is applied, because it lacks distinctiveness. It moreover labours under the disadvantage of being applied to what in my opinion are two distinct and separate diseases. Anatomically speaking, they have this in common —i.e., that in the early stages of the condition the changes are mainly confined to the structures round the joints, and the name "infective periarthritis" has been suggested in consequence.

The first type of rheumatoid arthritis or infective periarthritis is characterised as follows: It may be seen in an adult male or female of any age. It may commence suddenly in a large joint such as the knee or wrist, or in a smaller such as the metacarpo-phalangeal of the middle or index-finger, which become swollen and inflamed and later on become spindle shaped. There may be considerable constitutional disturbance at the onset of the condition, and it is sometimes difficult to say whether such a case at first is or is not one of subacute rheumatism or subacute rheumatic fever. The subsequent progress of the case will clear up the diagnosis, as in that the joint affections of subacute rheumatic fever rarely if ever tend to become chronic and progressive. On the other hand, in this variety of rheumatoid arthritis much permanent damage may be done. It leaves in its train wasting of muscles, ankylosis of joints, frequently with much distortion. This is the class of case, perhaps above all others, which eventually becomes a burden to the State or dependent on his friends or on charity.

With regard to the *causation* of this condition, the presence of a local focus of infection—the teeth, tonsils, or an inflamed gall-bladder or appendix—should be considered. Another contributory cause which has not received the attention it deserves is that of derangements in the circulation of the skin and periphery generally. It would appear that the importance of the skin as an organ of defence against disease is even now not fully realised. The prolonged application of cold, therefore, to the surface of the body must of necessity have a powerful effect on the functions of the skin as an excretory organ, in that toxic by-products are retained in the circulation and are thus liable to deposition in the joints, or rather round the joints. This is probably the explanation of the influence of climatic conditions on the incidence of this form of rheumatic disease. This particular type is specially prevalent in cold and humid climates. Humidity of the atmosphere alone is not sufficient. It is not nearly so prevalent in districts with a heavy rainfall and a relatively high mean temperature as in localities with a smaller rainfall but a lower mean temperature. The same explanation will apply equally well to conditions of industrial employment where the workers are exposed to a damp, cold atmosphere. It will also account for its heavy incidence in districts with a damp clay subsoil and in houses with an inefficient damp course.

Prevention.—The general lines on which preventive measures should proceed would obviously include the removal of "hearths" of infection, the avoidance as far as possible of prolonged surface chilling, adequate provision for the drying of clothes in factories, the maintenance of an equable temperature in work-rooms. Dietetic conditions deserve more than a passing mention. There is a firmly fixed idea among the lay public that red meat is unsuitable for rheumatic cases, with the consequence that arthritics are apt to overdo the carbohydrate side of their dietary. In view of the fact that most of these people have a lowered sugar tolerance, the diet should consist as far as possible of red meat, fish, fats, green vegetables, and fruit. The vitamin-content of the food is of considerable importance. In this connexion vitamin B is essential in aiding the efficient action of the intestines. A dietary deficient in this particular vitamin is apt to induce flatulent distension and stasis, two conditions specially favourable to the formation of toxins which may eventually find their way to the joints. Among the industrial population the consumption of tinned and bottled foods is much greater that there is any necessity for. If the advantages of freshly prepared wholesome food could be brought home to many people who attempt to subsist on canned meat and vegetables, it would, to say the least of it, be all to the good.

The treatment or arrest of this condition, after the search for and removal of any discoverable "hearth," must be largely hydrological. Mineral waters are of great value from their flushing action, whereby intestinal toxins are swept from the system. The aim of bath treatment is to produce in the first instance an active hyperæmia. This may be induced by hot air, steam, or immersion mineral-water baths, such as brine, peat, sulphur, mud, or fango. Manipulative baths, either under water or under a douche directed on the part, are also extensively employed with the greatest success.

The other condition to which the name rheumatoid arthritis is applied occurs mainly in young women and is, perhaps, never seen in the male. We have, therefore, at the outset a distinction which should entirely separate it from the affection we have just described. Cases of this type amount to one-sixth of all those of infective peri-arthritis. The French regard this disease as a tuberculous manifestation, and other observers ascribe a neurotrophic origin for it. It has a special prevalence among young women who follow an indoor occupation, dressmakers, school teachers, and the like. It commences slowly and insidiously, attacking the smaller joints of the fingers, the metacarpo-phalangeal, or the mid-phalangeal joints. It is symmetrical and centripetal, involving the wrists and ankles after the toes and fingers. The temporo-maxillary joint is frequently affected. There may be associated nervous conditions such as sweating, glazing of the skin, with atrophy of muscle and bone. The removal of a supposed focal infection does not appear to arrest the disease. Sufferers from this condition show all the signs of a profound metabolic upset. They are pale and anæmic, their circulation is feeble, and trophic changes are common. It is a progressive disease. Ankylosis does not always occur, but subluxation and distortion of the finger-joints are extremely common, and the patients are very neurotic.

Every possible measure that can be devised in the way of building up the constitution and increasing the resistance of the patient must be tried. A course of arsenical waters have repeatedly been found to be of great benefit. The patients must be removed from unhygienic surroundings and placed where they will get plenty of fresh air and sunshine. Treatment by the ultra-violet rays has shown encouraging results, but it is perhaps early to speak very definitely on this point.

Osteo-Arthritis.

This condition has not the same climatological and geographical limitations as the others.

Evidences of osteo-arthritis are found in the skeletons of man and even in prehistoric animals all over the world, and are especially well seen among the bones of ancient Egyptians in various museums. Timbrell Fisher points out that in osteo-arthritis we are faced with a borderland between a frankly inflammatory condition and a neoplasm of the joint structure. He further shows that a striking feature which distinguishes the disease from the more acute and probable infective group of conditions known as rheumatoid arthritis is the almost invariable absence of small cell infiltration.

Osteo-arthritis is gradual in its onset, and is more prevalent in the later decades of life. It is as often as not monarticular and one of the larger joints is usually affected, the hip, knee, or shoulder probably most frequently. Although it usually becomes more or less concentrated in one joint, X ray photographs will often demonstrate an earlier condition in some of the other joints. This condition is very frequently associated with arterio-sclerosis and high blood pressure. The sufferers are usually well-nourished and present quite a different appearance to those suffering from infective periarthritis. One can often form a shrewd idea as to the condition by the first look at the patient before proceeding to the examination of the joints.

Ætiology.—Opinions differ as to the precise ætiology of this disease. There are those who say it is due to a low form of septic infection occurring in the intestinal tract or bladder. Personally, I am not inclined to this view. I have seen a certain amount of improvement follow the removal of an obvious septic focus, but I do not think such focus was a direct cause of the condition. In a great number of cases a history of a strain or injury to the joint, often years previously, can be obtained. The injury in the first place lowers the resistance in the joint and toxins, probably metabolic in origin, find their way to the site of lowered resistance, with the result that the familiar train of symptoms ensues.

Prevention.—The avoidance of metabolic errors, even though a counsel of perfection, would seem to be one of the chief points with regard to the prevention of the condition.

Treatment.—These cases derive great benefit from spa treatment. This is proved by the fact that they return again and again to the spa of their choice. The internal administration of the various aperient waters, saline and sulphur, reduces weight, lowers blood pressure, and corrects faulty metabolism. The local treatment that they undergo improves the condition of the skin and aids in the elimination of toxins. Manipulative douches improve the condition of the muscles round the joints. It is perhaps here that we should utter a word of caution as to the manipulative treatment of the stiff joints. Too vigorous movements and attempts to move fixed joints may do more harm than good. The masseur should confine his attention to the structures round the joint and leave the joint itself alone. Where there is much pain, local applications of steam, hot water, and peat are most comforting.

Acute and chronic gout are included in the Ministry's list of rheumatic disease owing to the difficulty in distinguishing some forms of chronic gout from osteo-arthritis.

Villous arthritis consists, as its name implies, of a chronic villous thickening of the synovial membrance of the larger joints. The knee is perhaps the one most commonly affected. It may be found in the hip and shoulder. It is very common in women about the time of the menopause, and is easily discoverable by palpating the moving joint when a curious soft crepitus will be heard or felt. The thickened synovial membrane can be distinctly felt bulging out from the joint. It is often associated with incipient flat-foot, which in its turn may have been induced by the increase in body-weight.

The treatment is: (1) General: reducing the obesity by suitable mineral waters and attention to the general health. (2) Local: attending to any deformity of the feet by ordering suitable shoes or instep supports. Steam baths, massage, douche, or local douches with manipulation are useful. These are the cases that the cautious exhibition of thyroid extract benefit so markedly. They mostly show slight evidences of hypothyroidism.

Conclusion.

With the exception of the group comprising acute and subacute rheumatism, the employment of baths and water of various kinds occupy a large place in treatment. The majority of these baths are only obtainable at the spas. Those sufferers from rheumatic disease who can afford a three weeks' stay at one or other spa find no difficulty in obtaining them. Insured persons to the number of 370,000 seek advice every year for one or other form of rheumatic disease. The spa hospitals at Bath, Buxton, and Harrogate can only accommodate all told 5000 each year. Not by any means all the patients who seek advice need spa treatment, but a good many more need it than get it; it is obvious, therefore, that increased accommodation is urgently needed at the spas. There is also the urgent need for the provision in London and the larger centres of population of baths and other remedial measures. Many baths and douches of the highest therapeutic value can quite well be given with an ordinary water-supply. Mud or peat can be procured and used as packs. Vapour and hot air baths are quite easy on installation. These proposed remedial institutions should work in liaison with the spas, and would be the "clearing stations" to select cases suitable for spa treatment. A great many cases are sent to spas that are utterly past praying for. It is in the early stages of the malady that physical treatment is most valuable. Lastly, these central institutions would be the headquarters of research. A vast amount of research work is waiting to be done, and up to the present the fringe has hardly been touched. Well-equipped laboratories are already installed at Bath, Buxton, and Harrogate. London and the larger towns are lamentably deficient in such facilities. The expenditure of capital in the provision of facilities for combined research and treatment would well repay the outlay, for the two million pounds at present paid out annually in "benefits" is only a subsistence allowance. Not one penny of it can be regarded as being spent in treatment. There can be no doubt that once the sad situation of this multitude of sufferers from rheumatic diseases was fully realised, means would be quickly forthcoming to relieve their necessities.

PUBLIC HEALTH IN THE UNITED PROVINCES OF AGRA AND OUDH.

THE population of these provinces, according to the 1921 census, was 45,375,787, being less than that of the 1911 census (46,805,913) owing to territorial changes. The vital statistics have been calculated on the 1921 figures, but "the estimated population, worked out up to the half-year ending June, 1923, shows a further increase of 353,737 over the 1911 census figure."

Vital Statistics.

The recorded birth-rate for the Province in 1923 was 30·04 per 1000, as compared with 32·17 in 1922 and 34·38 for the preceding quinquennium. There was marked variation in the different districts, the ratios ranging from 25·47 in Rae Bareli (Lucknow division) and 25·70 in Gonda (Fyzabad division) to 47·27 in Pilibhit, 47·01 in Moradabad, and 49·24 in Bijnor (all in Rohilkhand division). The death-rate was 23·37, as compared with 25·01 in the preceding year, and 45·17 in the quinquennium, the ratios varying from 12·78 in Gonda district (Fyzabad division) and 14·12 in Rae Bareli (Lucknow), to 35·37 in Jhansi and 38·59 in Hamizpur (both in Jhansi division). It is stated (p. 3) that 13,106 births were returned in "notified areas," also that 9793 deaths occurred in these "areas"; but it is not explained what constitutes a notified area, or in what way they differ from the official "districts." The infantile mortality for the Province was 169·37 per 1000 births, a further reduction on 183·8 in 1922, 236·5 in 1921, and 232·3, the decennial average (1911–20); in the urban areas the ratio was 263·91, and in the rural tracts 160·77, as compared with 254·83 and 177·33 in the preceding year. The general mortality in the rural tracts was 22·48, and in urban areas 35·86, as compared with 24·45 and 32·93 in 1922, and 44·86 and 49·07 respectively for the preceding quinquennium.

Epidemic Disease.

Cholera caused 2591 deaths, giving a ratio of 0·06 per 1000, as compared with 0·05 in 1922 and 1·56 for the quinquennium; only five deaths from this cause were registered in the four districts composing Jhansi division (including towns and rural areas), with a total population of 2,065,297, too small a number to yield a ratio of 0·01 per 1000; the highest mortality ratios occurred in Ballia district of Benares division (0·62 per 1000); Naini Tal (0·43), and Aligarh (0·32). For the Provinces as a whole the cholera mortality in rural areas was 0·05, and for the towns 0·17 per 1000; in the former the highest ratios were 0·56 per 1000 in Ballia and 0·45 in Naini Tal; and for the latter 5·40 in Firozabad (Agra district) and 3·40 in Ballia. There was a considerable increase in the small-pox mortality, 747 deaths, as compared with 242 in the previous year (stated as 0·02 per 1000 and 0·01 respectively), but still much below the quinquennial average (0·09); seven districts were entirely free from the disease. In the towns the death-rate was 0·16, and in the rural tracts 0·01; Allahabad district suffered most, with 228 deaths (0·16 per 1000), 174 occurring in children under 10 years of age. Plague also showed a considerable increase, 74,187 deaths, giving a mortality of 1·63 per 1000, against 0·51 in the preceding year, and 1·13 for the quinquennium. Kumaon division (Naini Tal, Almora and Garhwal districts) was entirely free, also ten other districts in various parts of the Province; in Azamgarh district of Gorakhpur division there were 21,227 plague deaths (13·89 per 1000), of which 20,720 occurred in the four months, January to April inclusive. "The attitude of the people towards inoculation was on the whole satisfactory. They realised its value as a preventive measure, but did not volunteer until the disease was actually raging in their villages." The total inoculations numbered 62,015; particulars are furnished as to 5412 persons inoculated, compared with 105,824 not so treated in several districts of the Province; of the latter number 1407 died in the selected areas examined; while of the 5412 inoculated only 4 died. Evacuation was carried out in most districts on the appearance of the disease without any opposition.

Dispensaries and District Boards.

Unfortunately the travelling dispensaries have been reduced from 112 to 45, apparently for financial reasons. Six district boards, Almora, Bulandshahr, Kheri, Gonda, Bahraich, and Gorakhpur have, however, resolved to support them by contributing Rs.1000 per dispensary, the rest of the cost being provided by the Government. During the period under report 1,411,775 patients were treated, and 23,309 operations were performed at these dispensaries throughout the Province. "It is hoped that the experience of one year without them will induce the boards to reconstitute them next year." The district health scheme experimentally introduced in the districts of Gorakhpur and Basti in 1922 was extended to Azamgarh in 1923; instruction was given and hygiene propaganda carried on by lantern demonstrations, lectures to teachers, and articles in the local papers, with good results; owing to financial stringency the extension has been retarded, but it is hoped that it will be resumed as funds permit. "As many as ten municipal boards have not yet appointed medical officers of health on the ground of paucity of funds. It is essential to the welfare of the whole community that towns as large as these should have a properly organised health service. In other civilised countries local bodies of this size, and even of much smaller size are bound by law to employ M.O.H. and sanitary inspectors in adequate numbers." It is time for the United Provinces "to fall into line with other countries in this respect." Moreover, preventive medicine pays, as has been proved over and over again.

PRIMITIVE MORALS.

MR. B. MALINOWSKI, D.Sc., reader in social anthropology at the University of London, in an address on the Contributions of Anthropology to Social Hygiene, delivered recently at King's College, London, under the auspices of the British Social Hygiene Council, reopened some of the most debatable questions of primitive sexual sociology. On the whole supporting the views of Darwin and Westermarck that monogamous marriage and family existed from the beginning of humanity, the lecturer pointed out that while problems of origins and development were of a merely antiquarian interest, the study of cultural function and aim was of practical importance.

Dr. Malinowski proceeded to show by an extensive examination of anthropological evidence, as well as drawing upon his own researches among Melanesian and Papuan tribes, that propagation, training of the young, as well as the satisfaction of full sexual love, were always fulfilled within the family and the individual marriage. Licence occurred in a number of savage tribes, though by no means in all. It was found either in the form of prenuptial freedom, when it played an important part in effecting the selection of a proper mate by the method of trial and error. It acted also as a safety-valve by which the unruly passions of youth are allowed to find a natural vent. Marriage and the family were never really obliterated or overridden by it. Dr. Malinowski analysed from the same point of view the occasional outbreaks of customary licence in orgiastic feasts, in magical or religious ceremonies, in seasonal relaxations of sexual restraint, explaining their occurrence by their cultural utility at a low level of development. Anthropology would advocate early marriages, equal rights for man and woman, a wise reconsideration of the divorce laws, and an equal moral measure for both sexes. Prostitution, with its concomitants of crime, degradation, disease, and disgenics appeared to the anthropologist as the greatest evil of modern culture. Prostitution placed us morally below the savage. The real problem was how to combine a full life for man and woman with a high moral standard. Good family life and a happy marriage could not be divorced from one another. They could not be achieved by a mere propaganda of continence, but rather by the ideal of an intimate association between the satisfaction of instinct on the one hand and the full expression of love and affection on the other. Physical intimacy without spiritual passion was degrading, while mere mortification of the flesh was in most human beings unnecessary.

EFFICIENCY OF MERCURY-VAPOUR LAMPS.

WE have received from Dr. Frederick W. Alexander, medical officer of health for the Borough of Poplar, a special report issued by him on methods of gauging the intensity of ultra-violet rays from artificial sunlight lamps. The booklet is entitled Practical Artificial Light Treatment, and may be obtained from the Public Health Offices, Bow-road, E. 3. Dr. Alexander says that as the ultra-violet radiations from quartz mercury-vapour lamps begin to fall off from the first day they are brought into use, it is most desirable to have a simple means of measuring their efficiency. Brilliancy is not a reliable guide. After referring to the erythema-dosimeter and the acetone methylene-blue gauge and the views of Dr. A. Eidinow and Dr. Leonard Hill (THE LANCET, 1925, ii., 317), he describes a simple apparatus for daily use which depends on the production of fluorescence on a uranium screen by ultra-violet rays which have passed through a Chance filter. He also records results of exposing photographic printing-paper to the rays of a standard lamp when different filtering media are employed. The results obtained with a lamp to be tested may be compared with the standard.

MESSRS. Bengue and Co., manufacturing chemists, have changed their address to 24, Fitzroy-street, London, W. 1.

MR. F. C. Goodenough, chairman of Barclay's Bank, last week unveiled a brass tablet over the bed in the Burdett Ward of Westminster Hospital, which has been endowed with the proceeds of a concert given last April at the Albert Hall by the male voice choir of the bank.

An Address

ON THE

MANAGEMENT OF HEAD INJURIES.

Delivered before the Warwick and Leamington Medical Society on Oct. 31st, 1925,

BY WILFRED TROTTER, M.S. LOND.,
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WHEN one deals with any part of the surgery of head injuries it is natural to approach the subject by the way of theory. This is because there is no department in which what we know of practice is more closely and clearly related to what we know of principle, and where the management of actual cases proceeds more directly from pathological understanding. Little as we may and do know of the ultimate physiology of the brain, in so far as the relatively simple processes set going by mechanical injury are concerned, we can already say in general terms and with some precision how injuries are produced, what injuries are likely to occur, and what effects on function they cause; we can see in the majority of cases the meaning of symptoms as they arise; and we can direct such treatment as is possible by reason instead of having to depend on clinical intuition to the extent that is necessary elsewhere. It would, therefore, be wholly logical to begin what I have to say by a general statement of theory from which the necessary practical applications could easily be made. It must be admitted, however, that the theoretical route is a roundabout one, and one which would take us over ground that nowadays, and especially on this occasion, may be assumed to be in great part, if not wholly, familiar to us all. I propose, therefore, to take for granted as common knowledge the established facts concerning the special features of the cerebral circulation, the relation of circulatory disturbance to symptom production, the mere mechanics of cranial and cerebral injury, and the general body of fundamentals established by experiment and inference from it. We shall thus be able to direct our attention especially to matters of treatment and to deal with them in a severely practical way.

THE RELATION OF CEREBRAL SYMPTOMS TO CEREBRAL LESIONS.

It is a very old custom to describe the lesions that may be met with in cases of head injury as (*a*) intracranial hæmorrhage, (*b*) cerebral laceration, and (*c*) cerebral contusion. In clinical work the attempt to distinguish between the last two is of little or no value, and the clinician need concern himself only with the two broadly distinguishable types of hæmorrhage on the one hand, and lesions of the contusion-laceration type on the other. Now it is well known that the brain is peculiar in showing more clearly than most other organs a gradation of symptoms according to the *intensity* of the lesion that causes them. This series of symptoms of graduated severity has long been roughly divided into two classes, the more severe being called "paralytic," the less severe "irritative." The term irritative as applied to the symptoms called forth by the less intense lesions is, for reasons we need not now discuss, unsatisfactory in theory and misleading in practice; it might very well be replaced by the term "sub-paralytic," which has the advantage of being without fallacious pathological implications. Symptoms of paralytic type correspond with maximal interference with the circulation in the affected part, that is anæmia, while symptoms of sub-paralytic type correspond with a less intense circulatory disturbance, that is venous congestion or stasis. In traumatic cases the abnormal pressure on a given part of the brain, necessary to produce anæmia in it, can in general be produced only by grossly extravasated blood; on the other hand, the pressure on a given region necessary to produce venous congestion can be readily produced by the swelling of contusion. Thus we have two pathologico-clinical sequences fundamental in dealing with head injuries—namely, hæmorrhage, anæmia, paralytic symptoms; and laceration-contusion, venous congestion, sub-paralytic symptoms.

For the uses of practice, then, we must learn to regard paralytic symptoms as conclusive evidence of hæmorrhage; such symptoms will tell us, moreover, not only of the presence of hæmorrhage but also of its situation. It must be admitted, however, that definite local hæmorrhage is a comparatively rare event even among the graver cases of head injury. It is obvious, in fact, that the essential damage always tends to be in the nature of contusion-laceration, while hæmorrhage is an occasional complication due to the incidental tearing of a vessel. Thus, even in a case where hæmorrhage can be recognised and dealt with, the surgeon must always recognise that behind the condition he has been fortunate enough to be able to treat, there probably exists more or less severe and widespread laceration-contusion which may yet deprive him of ultimate success. When we speak of the paralytic symptom as characteristic of hæmorrhage we must bear in mind, of course, that all hæmorrhages produce also sub-paralytic symptoms even more constantly and on a wider scale than paralytic symptoms; the latter owe their extreme importance in diagnosis, then, to being the sure index of a pressure on the affected part of the brain greater than can be produced by the swelling of a mere contusion. Conditions of the contusion-laceration type make up the great body of head injuries as we meet them in practice, and, in consequence, the symptoms we most commonly observe are of the corresponding sub-paralytic kind. Among such symptoms may be irritability, restlessness, delirium, drowsiness, headache, giddiness, vomiting, rigidity, twitching, convulsions, alterations of reflexes, temperature, pulse, and respiration. In occasional cases there will be superadded to the symptoms of this group one or more of the true paralytic variety, indicating that the corresponding region is more profoundly affected and is the seat of hæmorrhage. Among such symptoms may be coma, monoplegia, hemiplegia, aphasia, hemianopia, dilated fixed pupil, loss of superficial abdominal reflex, extensor plantar reflex.

THERAPEUTIC GROUPING OF CASES.

It is plainly impossible to make any complete and logical clinical classification of the almost infinitely various material offered by head injuries. Nevertheless there is possible a certain rough grouping, according to the necessities of treatment, which is useful in description and of some practical value if its distinctions are not too rigidly enforced. We may recognise then the following main therapeutic groups: (*a*) Intracranial hæmorrhage, usually, of course, superimposed on more or less contusion-laceration. This group, relatively small in numbers, owes its great importance to the lesion being usually progressive, and, as such, necessarily fatal unless surgical treatment is applied. Exact diagnosis and adequately prompt operation are therefore urgently called for. (*b*) Cases of severe contusion-laceration without recognisable hæmorrhage. These make up the great bulk of clinical material met with in civil practice. As they display no focal symptoms, these cases are often regarded as not calling for operative treatment. Many are rapidly fatal; in those where recovery occurs there is often a long illness, a longer convalescence, and a residue of disabling sequels. The group is important because of its size, the frequency of incomplete recovery, and because operative treatment in judiciously chosen cases is of value. (*c*) Cases of mild contusion-laceration. These owe their importance to the frequency with which they still pass unrecognised because of the absence of grave initial symptoms, to the disabling nature of the symptoms that develop, and to the fact that treatment (often without operation) is effective. (*d*) Local brain injury with external wound, including gunshot wounds and all kinds of punctured or depressed compound fractures of the skull. This class is included merely that we may recognise its importance in passing. The kind of treatment needed in these cases is now so generally understood that discussion of it is superfluous. It is now necessary to deal in some detail with the first three groups defined above.

INTRACRANIAL HÆMORRHAGE.

The classical picture of an intracranial hæmorrhage over one cerebral hemisphere is familiar to us all. There has been a severe accident, concussion, a more or less complete return to consciousness, then drowsiness deepening to coma, hemiplegic signs, a dilated fixed pupil on the side of the hæmorrhage, slow full pulse, slow stertorous respiration, and a rising blood pressure. It is still perhaps necessary to point out that this picture, often regarded as characteristic of hæmorrhage, is that of a far advanced, indeed, nearly terminal, stage. The state of the pupil indicates that pressure enough to cause paralysis has already reached the mid-brain; the pulse and respiration show that sub-paralytic changes have actually reached the medulla. It should, of course, be our object to make the diagnosis in cases of this class long before so advanced and dangerous a state is reached. As has already been pointed out, the appearance of one definite unilateral paralytic symptom should be enough to indicate the presence and approximate site of the hæmorrhage.

Aberrant Types.—While traumatic intracranial hæmorrhage is usually a rapidly progressive condition becoming manifest within a few hours of the accident, and proving fatal if untreated within a few days, much milder forms, both as to intensity and duration, are occasionally met with. In some of these the condition is scarcely to be distinguished pathologically and clinically from a superficial contusion. A comparatively common type is that in which after a week or ten days of rather generalised "irritative" symptoms the development of Jacksonian fits points to a focal lesion of the Rolandic area. Another well-defined type is the *chronic subdural hæmorrhage*, in which, after an accident (often apparently trivial), there is a prodromal period of many weeks with minor symptoms (headache, slight mental changes) followed by the onset of coma. This coma is apt to show remarkable and characteristic intermissions, and the alternating mental states may merge into one resembling advanced dementia. The lesion found is known as "pachymeningitis hæmorrhagica interna," and is an encysted traumatic hæmorrhage. I shall not attempt to remind you of the very familiar details of an operation for intracranial hæmorrhage, but shall venture to make a few remarks on two matters rather of principle than technique.

Multiple Hæmorrhages.—As a rule an intracranial hæmorrhage is single. Exceptions are, however, not very rare; extradural and intradural hæmorrhage may occur on the same side, and bilateral hæmorrhages are not uncommon. If therefore after the evacuation of an extradural hæmatoma the dura is found to be very tense, it should always be incised forthwith as a precaution. Again, if after the apparently successful evacuation of a hæmorrhage on one side symptoms of abnormal intracranial tension persist unduly, the possibility of a hæmorrhage on the other side must very seriously be considered. In the case of chronic subdural hæmorrhage the lesion is far from uncommon on both sides. These cases are of especial importance, since if both hæmorrhages are not evacuated at the same operation the patient is very unlikely to survive.

The Urgency of Operations.—In dealing with head injuries it is of great value to cultivate a sense of the urgency of any necessary operation that shall be both adequate and reasonable. While guarding against the terrible mistake of undue delay we must be on our guard against being led into untimely action by an atmosphere of false emergency. Rapidly extending lesions, capable of producing widespread paralytic symptoms within a few hours, are invariably fatal and not to be helped by surgery; cases capable of recovery have a margin of safety of more than a few hours, and should have the benefit of a careful diagnosis and deliberately designed operation. It may, indeed, even be doubted whether many lives have been saved by operations much within 24 hours of the accident. In grave cases of head injury there is almost always some contusion of the medulla and pons; it seriously increases the danger of the condition, and the knowledge of its probable presence is a strong reason against any but quite indispensable operations.

SEVERE CONTUSION-LACERATION WITHOUT OBVIOUS HÆMORRHAGE.

As we have already said, this is perhaps the commonest clinical picture presented by cases of severe head injury. From the reaction stage of concussion the patient passes into the condition more or less covered by the old clinical term "cerebral irritation." Some affection of consciousness is the most constant feature. The patient is usually drowsy and inert, but hypersensitive and irritable to stimulation by day and restless or even delirious by night. Sometimes the inertia is replaced by delirium and maniacal excitement that may last for weeks. The reflexes may become generally brisk after the effects of concussion have passed off; there may be rigidity and twitching of the limbs. The pulse and respiration are apt to indicate bruising of the medulla by being persistently slow, and there may be periodic phenomena of an incomplete type. Consciousness is scarcely ever actually lost, and the patient can usually be roused to give quite complicated responses, though after recovery there is little or no memory of this period.

A considerable number of patients succumb, usually to increasing bulbar involvement and a terminal pneumonia. Many recover slowly even after weeks of partial unconsciousness. The patients who recover spontaneously are particularly likely to show slight mental changes, epilepsy, or—most commonly of all—persistent severe headaches. The condition here is an extensive contusion of the brain with secondary œdema. Since the brain is rigidly encapsuled by the skull the state of affairs is different in two important respects from that which obtains in any other organ similarly bruised—(*a*) free swelling is not possible, and thus the extravasated blood of the contused tissues and the œdema exercise a certain pressure on the vessels and embarrass the venous return, hence follow venous congestion and sub-paralytic symptoms; (*b*) since the circulation is persistently embarrassed the absorption of extravasated material is very greatly delayed and is apt to be incomplete even for years; the persistent headache which is an evidence of abnormally high intracranial tension is proof of this.

Treatment.

Although many patients ultimately recover, many are seriously ill for long periods, and a large number suffer from disabling sequelæ. Since the inability of the brain to undergo adequate compensatory swelling is the cause of the symptoms, the rational treatment is obviously to do a decompressive operation in order to allow room for such swelling to occur. Experience confirms this view, and the only points of any difficulty are the determination of the cases in which no satisfactory spontaneous recovery can be expected, and the choice of the best time to intervene. Surgical treatment should be advised when at the end of the first week serious mental changes are present (profound drowsiness and inertia, delirium, or mania) and seem to be fairly stationary. In a few very serious cases operation may be called for at an earlier date, but generally the choice of a time is not a matter of great urgency, though of course once it has been decided that intervention is necessary there is no object in delay.

The operation to be done is the making of a fair-sized decompressive opening low down in the right temporal fossa. It is sometimes necessary to make a bilateral opening in order to give adequate relief; in such cases there are probably hæmorrhages that have escaped diagnosis.

MILD CONTUSION-LACERATION.

We now come to what is in some ways the most important part of our subject. The grosser and graver kinds of head injury have long attracted the attention and interest of surgeons; those which we are now about to consider have been comparatively little noticed and until recently not very thoroughly understood. Nevertheless they are met with commonly in practice and are the cause of persistent and distressing symptoms. I refer to the slight or moderate grades of cerebral contusion that are often left by accidents which seem at the time to have produced no serious effect. The symptoms corresponding with such relatively minor cerebral injuries often appear clinically in the form of sequelæ to an accident that had been regarded as unimportant. They rarely have any focal characters, but are manifestations of a disturbed intracranial tension; thus it comes about that their cardinal feature is headache, though this may be accompanied by other less conspicuous elements such as giddiness, slight changes of disposition, and minor mental and physical disabilities. So clear, however, is the primacy of headache among the clinical phenomena that one refers habitually to the cases under the term "contusion headache."

Contusion Headache.—The condition usually declares itself within a few weeks of the accident; if the patient has been laid up the onset of headache often follows the resumption of active life; sometimes, and especially if there has been no period of rest, headache comes on from the first and increases in severity. In well-marked cases the headache occurs in attacks often many hours in duration. The attacks are brought on by excitement, undue exertion of mind or body, and fatigue. Between attacks the patient may feel perfectly well and be capable of leading an active life. Quite commonly, however, in the intervals there is some evidence that the intracranial tension is disturbed; abrupt raising of the venous pressure, as by coughing, straining, or stooping, may cause a transient discomfort, swimminess, or even pain in the head. The headache may be of extreme severity, and is of a throbbing, bursting character. It makes the patient intolerant of movement, effort, or interference, and he is apt to become irritable and sometimes even dangerously enraged if he is not left to himself. The headache is usually relieved by rest in bed in quiet and darkness, and the attack often ends if the patient can get prolonged sleep.

Such symptoms are met with in all grades of severity. The most characteristic features are the throbbing quality of the headache, its paroxysmal character, and the tendency of the attacks to follow some cause recognised by the patient. Contusion headache of greater or less severity is very common, and as it is an extremely distressing and disabling complaint the diagnosis is of great importance. I do not propose to discuss the problem of diagnosis in detail, but shall limit myself to certain general and perhaps rather dogmatically phrased statements. The majority of cases are well marked and unmistakable, a few cases are very difficult, and will cause doubts as to a neurosis or mental disease.

It is a fallacy to suppose that neuroses are particularly common as sequels of head injury, and there can be no doubt that many symptoms have in the past been regarded as neurotic which are, in reality, due to minor injuries of the brain, producing persistent disturbances of intracranial tension. A complete absence of the classical signs of focal cerebral injury is usual in cases of contusion headache, and in no way conflicts with the organic origin of the symptoms.

Treatment.

When the diagnosis is complete, treatment of contusion headache can be undertaken with every reasonable confidence of a satisfactory result. It should be entered upon under the guidance of a very clear conception of the pathological condition that is to be contended with. The brain has been bruised, and by a mechanism that has already been mentioned resolution is rendered difficult and prolonged. Meanwhile the swollen part encroaches upon the strictly limited space available for the brain and its circulatory movements. The result is more or less interference with the venous side of the cerebral circulation, and a tendency for the intracranial tension to be maintained at a slightly raised level. This state of affairs, while it may of itself cause no symptoms so long as the patient is at rest, renders intracranial conditions unduly sensitive to disturbance. If as the result of active exercise there is an increased arterial inflow, the restricted venous outflow at once reveals itself by causing a rapid rise in the intracranial tension. Similarly, if as the result of the patient stooping or straining the venous pressure in the jugulars is raised, this tells back at once on the already restricted venous outflow from the skull and again the pressure rises. It is disturbances on the venous side which are by far the most effective in adding to the already raised intracranial pressure. Only when the arterial circulation is in its most placid state, and the venous outflow at its freest, is it possible in some degree to prevent the intracranial pressure from rising to the point of producing symptoms. Thus it is that rest in bed is the foundation of the treatment of cerebral contusion. It has long been known and insisted on that prolonged rest after head injuries is the best and an indispensable prophylactic against the development of sequelæ. The theory of cerebral contusion confirms this very old clinical doctrine in the strongest possible way.

Even when contusion headache is definitely established, rest in bed is essential to treatment and may in itself be effective. Its purpose is to prevent the attacks and to maintain conditions favourable to resolution of the bruise in the brain. A period of three or four weeks in bed may be necessary in severe cases.

Another important line of treatment by which the abnormal intracranial tension can be influenced acts through the cerebro-spinal fluid. As in other conditions accompanied by œdema of the brain, there is in cases of cerebral contusion a certain accumulation of cerebro-spinal fluid which tends to contribute to the disturbance of the intracranial tension. There are two ways in which this excess can be influenced: (*a*) by lumbar puncture, (*b*) by administering hypertonic saline solutions. Lumbar puncture is most valuable in its place, but, unfortunately, it cannot be repeated without limit. It has its chief value as an emergency measure in severe attacks, but there is no doubt that its effect in giving relief is often more prolonged than might be expected. Hypertonic solutions of magnesium sulphate administered by preference in the form of an enema of 3 oz. of the salt in 6 fl. oz. of normal saline daily, or even twice daily, is said to be capable of producing very obvious relief of intracranial pressure symptoms. Manifestly its use cannot be carried on indefinitely, but it may well be tried for the relief of severe attacks. Another method of exercising a steadily favourable effect on the intracranial condition, and so encouraging resolution of the contused part, is a very simple device which I have found of surprising value in the relief of headache due to moderate increases of intracranial tension. This is to make use of the influence of posture in favouring the venous outflow from the skull. It is sometimes forgotten how considerably the recumbent position raises the pressure in the jugular veins and thus checks the venous current from the brain. This is well shown in a patient with an opening in the skull. In the sitting position—supposing the intracranial pressure to be normal—

the scalp sinks deeply into the cranial opening; lying down the depression is filled up to the level of the surrounding skull because the intracranial pressure closely follows that of the veins and varies strictly with the jugular pressure. It is probably for this reason that so many headaches of intracranial origin —including those of cerebral tumour and even migraine—begin in the morning, so that the patient wakes to the knowledge that he is going to have an attack. It is usually an easy matter to train a patient to sleep propped up in bed, and in my experience the acquiring of this simple accomplishment has frequently been followed by an astonishing diminution in the frequency and severity of headaches.

We have thus a series of relatively simple measures of proved value in dealing with contusion headache. Two I should regard as indispensable and for prolonged use—rest in bed and a rigid enforcement of the propped up position; two should perhaps be chiefly reserved for occasional use and the relief of definite attacks—the administration of hypertonic salines and lumbar puncture.

If thorough treatment by these means for a period of a month or so has proved ineffective, the making of a small decompressive opening low down in the right temporal fossa should be advised. If the contusion headache has followed a local injury of the skull, as was so often seen in the wounds of war, the opening should be made at the injured spot. That typical contusion headaches will be arrested by an adequate decompression is one of the most trustworthy generalisations in surgery.

The largeness of the subject has, of necessity, made our exposition of it both bare and dry, and has prevented the distribution of emphasis on its various parts as one would have wished. In conclusion, therefore, I may perhaps be allowed once more to call attention to the practical value and to the interest to be obtained from following cases of head injury in the light of physiological and pathological principle; to the great frequency and importance of the minor injuries to which the brain is subject; and to the value in them of non-operative and, so to say, physiological methods of treatment.

Cameron Lectures

Delivered at the University of Edinburgh on Oct. 19th, Oct. 20th, and Oct. 22nd, 1925.

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LECTURE III.*—INTRACRANIAL TUMOURS AND THE SURGEON.

> "In einem gewissen Gegensatze steht die Operation der Hirnabscesse zu der der Hirngeschwülste. Für die erstere leistet die Diagnose noch zu wenig, die chirurgische Technik aber genug, für die letztere hat umgekehrt die Diagnose schon so viel gegeben, dass Nothnagel z. B. sie für eine verhältnissmässig leichte erklärt, unsere Technik aber, soweit sie sich auf eine ausreichende Umschneidung, Blutstillung und Vermeidung des gefährlichen Hirnödems bezieht, ist durchaus noch im Rückstande. Vielleicht gelingt es, sie zu bessern und zu vervollkommnen."—*Ernst von Bergmann, 1889.*

Neuro-surgery: Old and New.

It has been said that three stages—optimism, pessimism, and adaptation—must invariably be passed before any revolutionising principles of surgery can become firmly established. After the introduction of surgical anæsthesia, in which Edinburgh had a hand in the person of James Young Simpson, under whose spell Andrew Cameron must have sat, and after the still more important discovery of surgical cleanliness, the outgrowth of Lister's work which Cameron did not live to see, there was a widespread feeling that the chief obstacles to operations on any part of the body had been overcome. This in a measure was true; but when the surgeon came to attack such non-traumatic lesions within the body cavities as the physician was encouraged to surrender to him, difficulties unthought-of were encountered. It was necessary by slow and devious steps to devise a special technique to overcome these difficulties before the stage of pessimism on the part of the profession as a whole could be overcome.

The first successes were in the lower abdomen, and operative gynæcology, in which another Scotsman, Lawson Tait, had no small part, came into being. Since then the surgeon has been slowly working his way from the lower to the upper abdomen where the liver and gall-bladder, the stomach and pylorus, the kidney and spleen, have, in turn, delayed him. Perfected methods and a novel technique had to be devised before he ventured above the diaphragm into the chest for purposes other than to drain suppurating cavities; and he is now, last of all, coming to feel very much at home in the cranial chamber. But this is so recent a happening that many of us have vivid recollections of the wave of discouragement and pessimism which came on the heels of the generally unsuccessful operations for brain tumours undertaken during the last two decades of the century just gone.

There were some neurologists, among them that Nestor of your local profession, Byrom Bramwell, who, insisting even at that time (1888) that intracranial tumours were common, remarked that the soft brain tissue would seem to be "as fine a forcing and feeding ground for new growths as Koch's nutrient jelly is for micrococci and allied organisms"; and it was stated by Bruns, I believe, not long after, that for a physician to assert he had never encountered a brain tumour in his wards or practice was equivalent to an admission that it had passed under his eyes undiagnosed. But these were voices in the wilderness, unheeded; and in the days before the Wassermann reaction every obscure intracranial lesion was regarded as a potential case of cerebral syphilis. This, at least, was the more probable diagnosis, and, at any rate, something might be done for it therapeutically. Better so than to run the risks of a surgical exploration, with its almost inevitable sequence of a broken-down scalp wound, a fungus cerebri, a cerebro-spinal fluid leak and ultimate fatality, should the condition actually be due to tumour. Such was the lamentable outcome of that first historic operation for a clinically localisable tumour, which Hughes Bennett had the courage to advocate, and which, on Nov. 25th, 1884, his colleague, Rickman J. Godlee, performed.

The young neuro-surgeon of the present day, who only gathers from hearsay or from pictures in his text-books what the horrors of a fungus cerebri used to be, can have no conception of the calamities which commonly followed the intracranial operations for tumour as they were done 30 years ago—unless he looks about him in clinics where old-time methods are still practised by general surgeons blind to what has been going on about them in the development of a specialised technique for these complicated procedures.

Among many others in Great Britain who were pioneers in this work we may salute two outstanding figures: Sir William Macewen, whose major contribution was on the subject of the intracranial infections, now the smallest part of our work; and Sir Victor Horsley, whose troubles are for all to read in the contemporary pages of the British medical weeklies. He was outspoken in ascribing them, right or wrong, to the reluctance of his medical colleagues to surrender their tumour cases, except as a last resort, when it was too late for surgery to accomplish much of anything. But even the echoes of a dispute as to how long a patient suspected of tumour should undergo a course of mercurial treatment before the surgeon was called in have long since died away[1]; and looking back on all this from our present standpoint, one hardly knows which of the two parties needed the more sympathy—doubtless a third party, the patient, most of all. . . .

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* Lectures I. and II. were published in The Lancet of Oct. 24th and 31st respectively. They are slightly abridged for issue in our columns, and will be published shortly as a small volume, dedicated to a group of young collaborators.—Ed. L.

In the course of a sojourn in the Hallerianum in Berne, spoken of in my first lecture, I had learned many things about states of intracranial pressure which were subsequently of more value to me than the acute tension phenomena which were made the chief subject of my reports. They were things, I am sure, long known to others, though it was new to me: that the sinuses are not rigid, but easily collapsed; that respiratory cessation long precedes cardiac failure; that the falx may be markedly distorted by pressure against one hemisphere; that the brain can be widely dislocated without damage if there are contralateral openings; that pressure is not equally distributed throughout the cranial chamber; that choked disc and exophthalmos can be produced by intracranial tension, and so on.

Some degree of familiarity with these matters proved invaluable in my early intracranial operations, and I cannot too strongly emphasise the desirability of anyone proposing to engage in the field of neurosurgery getting his first experience with operations on the central nervous system in an experimental laboratory, particularly should it be one where the ritual of surgical asepsis is observed. I had the further good fortune at the end of this period to pass some months with Prof. Sherrington at the time when he was re-mapping the motor cortex of the higher anthropoids, and as I was permitted to assist at some of these historic operations I became familiar with his methods of unipolar cortical stimulation, which subsequently stood me in great stead.

Armed with these experiences and with a practical, home-made hæmodynometer—an instrument the model of which I had seen in use during a visit to Riva-Rocci's clinic in Pavia, and which promised to enable one, during the course of a serious intracranial operation, to keep a fairly continuous plotted record—comparable to the kymographic tracings on which I had come to depend; armed, I say, with this small equipment, untutored in clinical neurology, and wholly ignorant of neuro-pathology, I returned to Baltimore and lay in wait for I knew not what. Certainly brain tumours could offer no expectation of livelihood, for up to that time, a dozen years since the opening of the Johns Hopkins, there had been admitted to the surgical service only 12 cases of brain tumour, most of which had been brought to light at autopsy.

A successful brain-tumour operation was a rarity, not the rule; and up to the beginning of the century treatises on the subject were apt to tabulate the 50 odd cases which had so far been reported in the entire literature as having survived an attempted extirpation. However, though the early hopes that these performances might safely rest on the tripod of anæsthesia, antisepsis, and localisation of cerebral function had been dashed, these pioneer operations of the 'eighties and 'nineties, in spite of their discouragingly high mortality, had disclosed an important fact which proved the beginning of a new era.

Matters Technical.—Needless to say, the victims of intracranial tumours ordinarily have headaches, and in course of time get blind; but many had observed that even though a cranial opening might fail to disclose a tumour—as it usually did—and even though paralyses or worse might ensue, the patient's discomforts for a time might not only be greatly alleviated, but, what was more surprising, his choked discs might subside with preservation of vision. These, then, must be purely pressure and not toxic effects of the growth; and Horsley's brilliant mind was quick to grasp and promulgate the idea of a premeditated craniectomy for the purpose of palliating the more distressing symptoms of these common lesions, irrespective of their nature and situation.

These early palliative operations, for which Jaboulay, I believe, introduced the term *trépanation décompressive* (1896), were usually made haphazard in any convenient portion of the skull, until Sänger, of Hamburg, suggested that the bone defects had better be made over the right posterior hemisphere, a relatively unimportant area of the brain from a functional standpoint. But the resulting protrusions covered by scalp alone were often so unnecessarily large and unsightly that other silent areas were sought, particularly ones where an undue herniation might be restrained by a securely closed muscle covering.

So it was that the temporal and suboccipital regions—on the one hand for supratentorial, and on the other for infratentorial lesions—were hit upon as preferential areas for the purposes of decompressions. And though these purely palliative procedures are nowadays less and less often requisitioned, they served a most useful purpose and saved a deal of suffering in their time. What is more, they served so to alter the attitude of the profession towards tumour operations that for a patient to become blind from an intracranial growth without some effort having been made to prevent this disaster, whatever else might be accomplished, came to be looked upon as reprehensible.

The old-time exploratory trepanations, which had unexpectedly resulted in giving relief from pressure, had usually been designed to expose lesions of the paracentral convolutions, and it was customary for the neurologist, in accordance with prescribed measurements and angulations, to mark out the fissure of Rolando on the scalp prior to the operation. Unfortunately, however, the very fact that tumours in this surgically accessible region were most frequently diagnosed, made it inevitable that a hemiplegia would ensue from discontinuity of the pyramidal fibres in the subsequent herniation.

Wagner, to be sure, had long before introduced the idea of an osteoplastic flap (1889), but this, in the hands of those who first attempted it was a matter largely of mallet and chisel, or of slowly nibbling a gutter in the bone with special forceps, of which there were many ingenious patterns; and it was not until the wire saw of Gigli was employed (1897) for the cutting of these bone flaps that the temporary osteoplastic cranial resection for exploratory purposes came to be a really practicable operation.

Neither patient nor surgeon likes the idea of a large cranial defect, however great the relief from pressure headaches; and both parties were in equal dread of the paralytic consequences of a protrusion involving the paracentral convolutions. The Wagnerian procedure promised to offset these complications, but unfortunately it was soon found that when an osteoplastic flap was turned down and the dura subsequently opened in the presence of tension which could not be relieved, it might be impossible to replace the flap because of the bulging brain; and it was for this reason, I assume, that Horsley abandoned the making of these flaps as a matter of general principle. The difficulties, however, can usually be overcome by what is known as "a combined procedure," in which the large flap essential for thorough exploration of the hemisphere is reflected with its base to the temporal region where, under the protecting muscle, a bone defect with opened dura can be made in the same situation and with the same purpose in view as when the ordinal subtemporal decompression is made from outside in. In the general run of cases the outward dislocation of the relatively "silent" temporal lobe then makes possible the replacement of the bone flap. . . .

But essential as the technical features of craniocerebral operations may be, these are dull matters to most people, and I prefer to dwell on what goes before and what follows them; on the preliminary studies which lead up to the diagnosis; and on the histopathological nature of the lesion so far as it affects prognosis and the surgical end-results. If the tumour question is to be covered as a whole, these are its more intellectual aspects; and my pupils, I am proud to say, have made contributions to diagnosis and symptomatology which are no less important than the additions which may have been made to mere craftsmanship.

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[1] Horsley, in 1890, pleaded with the clinicians to agree on a definite probation period of drug treatment and suggested six to eight weeks, instead of as many months, as the time limit. Three years later Allen Starr proposed as a compromise a preliminary three months' trial with drugs, after which, if cure had not resulted, surgical measures should be resorted to.

Matters Diagnostic.—There were two important instruments—the ophthalmoscope and the perimeter—with which at the outset we had to familiarise ourselves, for it was an imposition to ask our ophthalmological colleagues to give the time necessary for the often daily observation of the changes in eye-grounds and fields that we were anxious to follow. Fortunately for us, the invention of the electric ophthalmoscope at about this time made possible the bedside employment of this indispensable instrument and did more to popularise its use than the vigorous though vain appeals to the profession, even of such as Hughlings Jackson and Clifford Allbutt, in the years gone by.

The perimeter of the two is the more difficult instrument, for it entails an interpretation of the patient's subjective responses, and Dr. Bordley and I were led at the very outset into a misinterpretation of our findings in describing the interlacing of the colour fields as an early evidence of pressure. However, this error, soon corrected, proved to be not wholly a liability, for it encouraged us and others to employ perimetry in the routine examination of all tumour cases; and this led to a series of papers on the distortions of the visual fields with Dr. George Heuer and with Dr. C. B. Walker, whose contributions to the subject are well known to ophthalmologists. Perhaps the most valuable disclosures were: (1) the progressive changes in the field mentioned in my last lecture as accompanying the usual hypophysial adenoma; and (2) the advancing homonymous defects on which we place great reliance in the diagnosis of temporal lobe lesions.

Though a brain tumour, even a large tumour as is well known, may be accompanied by no changes in the eye-grounds or fields, when these changes are present, as one or both usually are, and are followed from day to day, they prove the best possible gauge as to whether the process is advancing or receding. The neuro-surgeon, in short, needs for his daily use the ophthalmoscope and perimeter, no less than the physician, in following the condition of a consolidated lung, needs his stethoscope. No disinterested second party can be satisfactorily called upon for these purposes. What happened when the anatomist ceased to make his own dissections and employed a barber for the purpose is a matter of history; nor is this a far-fetched comparison.

These instruments, to be sure, the ophthalmoscope and perimeter, were in the hands of our predecessors, over whom, however, we are enormously advantaged by another instrumental aid to diagnosis, the X rays. Stereoscopy and the improvements in rontgenography which have followed the introduction of the moving diaphragm enables us in many cases not only to confirm our clinical diagnoses, to assure us by tumour shadows of the nature of the lesion and its precise situation, to lateralise it either by what Dr. Naffziger calls the pineal "shift," or by Dr. Dandy's method of ventriculography, but at the same time the rays give us promise of therapeutic aid as well.

But with all said and done, no instrumental aid to diagnosis can equal in importance a detailed and exact history of the symptoms in the chronological order of their appearance. This must ever remain our chief reliance, and the ability to elicit a dependable and correct clinical story is an art requiring perhaps even greater experience and skill than the making of a detailed neurological examination.

In assembling the clinical and laboratory data he regards as essential, the neuro-surgeon has evolved his own peculiar programme. This differs considerably from that generally followed by neurologists, since we have a somewhat different therapeutic objective; and in view of the great number of patients under the suspicion of harbouring a brain tumour who pass through our hands it would be humiliating did we not become more adept in making a diagnosis and giving a prognosis than those who see these cases less often, even had we not the added advantage of immediately checking our conclusions and correcting our mistakes by the invaluable experiences of exposing and dealing with the lesion on the living subject.

An operating surgeon is a peculiar animal. Of this perhaps no one is more aware than surgeons themselves, should they stop to analyse their conditioned reflexes. There is an unexplainable mental process that precedes what is known as a surgical inspiration, or to use an undergraduate's vulgarism, a surgical "hunch." This means nothing more than that after blindly puzzling and agonising over a difficult problem in the effort to determine just what course to pursue, there is a sudden and unaccountable clearing of obscurities, and an operator enters upon his task with a conviction of just what he will encounter and just what will happen, as though he were possessed of a sixth sense. I think most surgeons are more or less conscious of this state of mental preparedness for what to others may seem a desperate throw. But there is nothing uncanny about it; it is little more than the subconscious fusion of past experience which concentration brings to bear on a given problem. And as these inspirations in difficult cases are the outgrowth of personal and repeated bedside studies of the patient whose equation also enters into them, he who neglects this portion of his work and merely operates at the behest of another misses much.

No less should the surgeon and his staff shirk the responsibility of the detailed subsequent study of the tissues. Only by familiarising himself with the microscopic appearance of the lesions with which he is to deal and by making his own post-mortem examination of his fatal cases can the operator's experience be properly rounded out. He otherwise becomes a mere tool, misses all the intellectual satisfaction which should pertain to his work, and his technical facility is prone to become developed out of all proportion to the soundness of his judgment.

Matters Pathological.—On the old basis, when one group pronounced on the diagnosis, another group performed the operation, and a third was left to study the histopathology of the lesion, no one was sufficiently concerned thoroughly to study the case as a whole and to follow the victim of the disease to the end, for better or for worse. The surgeon unquestionably is, or should be, the person most vitally interested, the person most likely to take the trouble to assemble and weigh all the facts on which subsequent operations and the patient's ultimate fate may depend, the person, moreover, whom the patient is most likely to keep informed of his progress.

Twenty years ago it was the usual custom for the brain, on its removal at autopsy, to be promptly sectioned according to the time-honoured method of Virchow, which would assuredly bring to light a concealed lesion, but would at the same time permanently destroy the topographical relations of the lesion and its effect upon the brain as a whole, which, to the surgeon, is a matter of paramount interest. I therefore cannot sufficiently express my obligations to my pathological colleagues, first at the Johns Hopkins and in after years at the Brigham Hospital, for their generosity in making it possible for us to conduct our own post-mortem examinations on these cases.

This privilege has put in our hands a rare collection of tissues which are continually worked over; and since the brains have all been "fixed" in situ before their removal, it has been possible for us to study and restudy them at our leisure. There could scarcely be a more informing process than to review the clinical history with such a specimen in hand, and the gross examination of these tissues in this process has incidentally led to certain observations of interest relating to foraminal herniation, the vascular strangulation of nerves as a source of false localising signs, and so on.

But of even greater value has been the opportunity this collection of specimens gives for the periodical reinvestigation and reclassification of the tumours from a histological point of view as our familiarity with their differing clinical behaviour widens. . . .

So it is the neuro-surgeon's present ambition to concentrate upon one kind of tumour after another in a given situation, rather than to discourse, as we were once accustomed to do, upon brain tumours of all kinds on a broad front; for though they have certain behaviouristic features in common, their dissimilarities rather than their resemblances is the important thing. And there is an ever-increasing number of lesions which we can now, with a fair degree of accuracy, actually visualise and so be the better prepared to approach with the fewest strokes. One may gauge his shots better and be less likely to get into the rough when he is familiar with the course.

This allusion prompts me to mention still another element in all this not to be ignored. The results of a series of operations for a given lesion in a given situation provides a score for the surgeon to play against; and an audience north of the Tweed need not be reminded of the importance of this as an incentive in improving one's game. Only by a carefully checked and posted score, such as is now available both for the acoustic tumours and for the pituitary adenomas, can a tentative "par" for the procedure in question be established. So we are constantly striving to better our record on the double basis of lower mortality percentages and of longer and more livable survival periods in the case of the more rapidly growing tumours. A neuro-surgeon's responsibilities would be insufferable if he did not feel that his knowledge of an intricate subject was constantly growing—that his game was improving.

Certain mid-cerebellar gliomas of childhood which Dr. Bailey and I have recently described as "medulloblastomas," may serve to illustrate my meaning. These tumours, composed of undifferentiated cells, are among the most malignant and, from their situation over the roof of the fourth ventricle, rapidly fatal of all intracranial new growths. Five years ago we would no more have presumed to foretell the presence of one of these lesions than we would have ventured to remove it if it happened to be exposed in the course of an exploration. The average survival period of these cases, if left to run their course, proves to be six months from the time of onset of symptoms; this period may be prolonged on the average for another six months by a suboccipital decompression, with or without fragmentary removal of the tumour, whose activity, meanwhile, may perhaps be checked by radiation.

With this fore-knowledge we have become more and more radical in attacking these lesions, and now have a case living three years after what appears to be a total removal at a second operation; and there are a number of other children who remain free from symptoms well over the six months' period, which encourages us to feel that we are making progress and that the isolated three years' case was not purely accidental. But this matter of score, even for brain tumours of a single kind, becomes increasingly complicated as our tumour list has grown, and to keep abreast of our changing percentages and shifting diagnoses requires the undivided attention of a highly trained secretary, who keeps in close touch with the living patients and their physicians.

Someone has remarked that all this attention being paid to brain tumours has caused them to multiply. There is a modicum of truth in this somewhat Hibernian statement, for tumours unsuspected in times gone by are now uncovered, and it is not an exaggeration to say that more patients with presumed or proven intracranial tumours annually pass through a modern neuro-surgical clinic than were seen in a lifetime by those of a past generation who were interested in the subject. But though we may be more alert than our predecessors to recognise them for reasons that I have mentioned, the tumours with which we have to deal to-day, and which we have thus unwittingly bred, are from a percentage basis quite different from those of 30 years ago.

In a much-quoted paper read by Byrom Bramwell before the Medico-Chirurgical Society of Edinburgh on Feb. 21st, 1891, there is recorded a series of 60 personally observed intracranial tumours which had been disclosed at autopsy. In half of these cases the lesion was secondary to a scrofulous, malignant, or syphilitic process elsewhere in the body, and most of the others were clearly inoperable gliomas. Only 6 of these 60 cases, it is stated, might have been favourable for operation had a localising diagnosis been possible—a sorry outlook indeed for the surgeon of those days.

Nor were the tumour lists subsequently compiled by others from the general literature of the subject any more encouraging. One of the most optimistic of neurologists in his unchanging advocacy of surgical intervention in brain tumours has been M. Allen Starr, of New York, and yet in his compilation (1893) of 300 tumours there were 103 tuberculomas, mostly in children; indeed, tuberculous and luetic lesions comprise 71 per cent. of his assembled cases, whereas they represent less than 4 per cent. of our present-day tumour list.

TUMOUR CLASSIFICATION.

One essential to the dissemination of information is the coincidental adoption of some convenient term which serves to convey a definite meaning, however ill-chosen it may happen to be. In our early efforts to subdivide and tabulate our growing list of tumour cases we came to group them in the following three major categories: (1) the *tumour suspects*; (2) the *unverified tumours*; and (3) those *histologically verified*. The purpose of these subdivisions has been made clear from time to time by one or another of us, and needs at this time only a brief word of explanation.

In their desire to eliminate the possibility of an intracranial growth as the cause of persistent headache, disturbances of vision, convulsions, and so on, many physicians send their patients primarily to the surgical clinic for examination, and this group of cases puts our diagnostic capacity for differentiation severely to the test. They represent the old-time "*pseudo-tumour*" group, and among them occur examples of cerebral arterio-sclerosis, chronic abscess, aneurysm, cisternal arachnoiditis, subdural hæmatomas, multiple sclerosis, retrobulbar neuritis, mental derangements, and a multitude of other disorders which may be exceedingly difficult to distinguish from tumour and which are listed as "suspects" to be kept track of until the diagnosis comes to be assured in one way or another, should there be any immediate doubt about it. I do not know which is the greater source of humiliation—to operate unnecessarily upon a patient for a pseudo-tumour syndrome and to find merely an œdematous and arterio-sclerotic brain, or to send a patient to an asylum and learn a year or so afterwards that a frontal meningioma has been found at autopsy.

The unverified cases comprise the group of unlocalisable or inaccessible tumours whose existence is betrayed by an unmistakable tumour syndrome and for which temporary palliative measures may have been carried out. The list naturally contains many examples of tumour which will subsequently become verified by secondary operation or by autopsy, but it also includes those cases in which the story has already been closed and no post-mortem examination made. The criterion of verification rests on the microscopic examination of tumour tissue, for even if the lesion has been exposed at operation and its presumable nature recognised, without the actual histological study of a fragment removed for this purpose it is classed as unverified.[2] . . .

With this preliminary explanation to account for the presence in our records up to Sept. 1st of 513 tumour suspects and of 584 unverified tumours, we may turn to a more detailed consideration of the list of verified tumours grouped in Table I. under their family names.

TABLE I.—*Verified Tumours to Sept. 1st, 1925.*

Gliomas (varia)	492
Pituitary adenomas: Chromophile, 50; chromophobe, 154; mixed, 15..	219
Meningiomas (dural endotheliomas)	141
Neurinomas (acoustic)	100
Congenital tumours: Craniopharyngeal pouch cysts, 55; cholesteatomas and dermoids, 8; teratomas, 4 ..	67
Granulomatous tumours: Tuberculomas, 24; syphilomas, 13	37
Metastatic and invasive tumours: Carcinomas, 27; sarcomas, 13; hypernephroma, &c., 4.	44
Papillomas (choroid plexus)	7
Blood-vessel tumours (pial): angiomas, 9; angio-endotheliomas, 5; peritheliomas, 3	17
Miscellaneous and unclassified	22
Total	1146

What will first of all be noted is the subordination, in this modern list, of the lesions which dominated those of some years ago. It is gratifying to see that the infectious granulomata represent so small a percentage of the cases. Whether this means that these lesions are disappearing as tuberculosis and syphilis are getting under control is not certain, but we may at least assume this is the case. Certain of the other tumours, the papillomas and the meningiomas, have been sufficiently commented upon in their connexion with the cerebro-spinal fluid pathway, as have the hypophysial adenomas and the craniopharyngeal cysts in their relation to the pituitary question. Special reports have been made on the cholesteatomas in the series, and during the past year Dr. Boris Fried has undertaken a special study of the blood-vessel tumours, some of which had gravitated to the group of unclassified tumours; and a few others, through inadequate study, had come to be included among the gliomas. Moreover, the familiar acoustic tumours which I have just cited as an illustration of the importance of concentrating upon neoplasms of a single type in a single situation have perhaps already had sufficient attention paid to them for a short address, particularly since I wish for the remainder of the time to dwell upon the hitherto much neglected growths which outnumber all others—the gliomata.

THE GLIOMAS IN PARTICULAR.

Mere numbers of cases, however, mean little. It is what is done with the few that actually counts; and numbers, even though they add to personal experience, may in reality prove a handicap to the advancement of knowledge by absorbing the time which might otherwise be spent in assuaging curiosity. All neuro-surgeons must certainly have had their curiosity aroused by the undependable behaviour of the gliomas after operation. Why were some apparently so favourable, others so malignant? How could one possibly account for divergent experiences, such as were had in cases like the following?

1. From the cerebellum of a young man of 23 a large tumour was removed in 1910. The diagnosis was "glioma." He was given a *bad* prognosis, but there has been no recurrence and he remains well and free from symptoms now 15 years later.

2. An apparently benign tumour was enucleated from the right hemisphere of a man of middle age. He was given a *good* prognosis. The pathological diagnosis again was "glioma"; and he died of an extensive recurrence within three months.

3. Two years ago a large subcortical tumour mass was removed from the left hemisphere of a woman of 43, who was rendered thereby almost completely hemiplegic and aphasic. It proved to be a "glioma" and the prognosis seemed hopeless. She has recovered, and except for a slight residual of her paralyses considers herself well, and is earning her livelihood as an expert photographer.

4. In a young man with advanced cerebellar symptoms a large "gliomatous cyst" of the right cerebellar hemisphere was merely evacuated. He remained well for 13 years when there was a return of his former symptoms, which led to a secondary operation, and a solid "glioma" was successfully removed from the situation of his former cyst.

5. A woman of 36 was operated upon in 1916 because of persistent Jacksonian seizures originating in the right face. There were no evidences of tumour and the bone flap was replaced. Nine years passed before she again came under observation. Her attacks during this long interval had been moderately well controlled by drugs, but she had begun to notice a progressive weakness of her face and arm and a defect in speech. Re-exploration disclosed an infiltrating "glioma" of the cortex.

These inexplicable experiences come readily to mind and the list might be indefinitely prolonged. Generally speaking, the gliomas have heretofore not only been the *bête-noire* of the surgeon, but a most amorphous subject to the pathologist. Yet they are unquestionably the most interesting of all intracranial tumours from many points of view. In our efforts to classify them from their surgical aspects in years gone by, about the best we could do was to divide them into the gliomatous cysts, the cystic gliomas, and the non-cystic gliomas.

We were aware, of course, that a tendency to cystic degeneration was not only common, but was in a certain respect favourable; and three years ago Dr. Paul Martin made a special end-result study of the gliomatous cysts, which served to show that the expectation of life after operation in these cases was at least as good as that for malignant tumours elsewhere in the body, such as cancer of the breast, for example. This was an encouraging disclosure, but it was not based on an histopathological study of the varieties of glioma which were concerned, nor were we then capable of differentiating them. Moreover, we had hit upon a most baffling type of lesion in our first effort to discourse upon a specific glioma in a given situation—namely, that involving the optic nerves and chiasm.

It is commonly assumed that a glioma, in spite of its degenerative tendencies, is a tumour of such hopeless malignancy that its attempted extirpation, however radical, is inevitably followed by recurrence; and there was some reason to believe that the mere operative meddling with the lesion was likely to stir it into increased activity. Here, then, was a lesion representing the chief bulk of our work, so far as tumour operations were concerned, cut off from the prospect of any surgico-therapeutic aid, apart from the mere temporary palliation of symptoms.

But in the course of a long and largely discouraging experience in dealing with these lesions, there had been a number of most unaccountable happenings. There were mystifying cases in the series like some of those just cited, in which either an extensive tumour, unquestionably glioma, had been found on the surface of the brain and been abandoned as hopeless; or in which a similar tumour was encountered and an obviously incomplete removal undertaken; or ones in which, after a radical extirpation, a pathological report of "glioma certain to recur" was returned; and yet the patients had remained well for years, free from any indications either of progression or return of the growth. From this only one conclusion could be drawn: that gliomas differed markedly in their behaviour under variable influences which were unknown, or else that there were many different kinds of them.

To the unpromising task of disentangling these true tumours of the nervous system, which so greatly preponderate over all other intracranial neoplasms, Dr. Percival Bailey and I set ourselves three years ago, he devoting himself to an investigation of their finer histology, far the most onerous and specialised part of the work, my small portion being to correlate his findings with the clinical histories and surgical experiences.

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[2] We were led into making a single exception to this rule in the case of the gliomatous cysts whose yellow, clotting fluid contents are sufficiently characteristic to justify the diagnosis of glioma 99 times in 100. However, had we then known that the benign peritheliomas may undergo a similar cystic degeneration we would probably not have made even this exception, though these latter tumours are exceedingly rare.

To be sure, many different varieties of glioma have been described in the past, and in a sense no two gliomas are precisely alike if one takes into consideration size, manner of growth, situation, gross appearance, and microscopical architecture. But so complex had the matter of histopathological differentiation become that in our own pathological laboratory, as in most others I assume, the simple diagnosis of glioma, with little attempt at characterisation, served to cover the entire group. The only exception to this was in the case of certain distinctive tumours called neuroblastomas, which, as a matter of fact, we have now come to believe are not composed of neuroblasts.

It was necessary, of course, to begin at the beginning, and Dr. Bailey set out to familiarise himself with the normal glial elements and their reaction to the specific stains, it being a natural expectation on our part that could the several varieties of cells known to constitute the supporting substance of the central nervous system be identified in the normal tissues, the cytoplasm of these cells would not lose its specific tinctorial affinities even when they had acquired neoplastic tendencies.

Needless to say, the several glial elements have long been objects of study, even though neuro-histologists, following Golgi, have been more interested in the neural than in the supporting tissues. The difficulty has been to find dyes with a specific affinity for the cytoplasm of the several glial elements which would leave the remainder of the tissue largely unstained; and to the contributions of Ramón y Cajal and his pupils neurology is almost wholly indebted for success in overcoming these difficulties. Others, of course, had been intrigued by the same problem, one of them that brilliant Scot, the late W. Ford Robertson, who 25 years ago described and pictured as "mesoglia" what Cajal calls the *third element*, and Hortega the oligodendroglia, those small round cells whose scanty cytoplasm is so difficult to stain and which abound near blood-vessels in the long fibre tracts of the central nervous system. But his method is one of the lost arts; at least, the platinum salt he employed, or believed that he employed, even in Bailey's practised hands, gives mediocre results not to be compared with Robertson's original preparations, some of which his son has been kind enough to send us. . . .

During the progress of this work descriptions of some of the more easily identifiable tumours, such as those composed of ependymal cells and of the pineal elements, have been published; and more recently the common mid-cerebellar gliomas of children,[3] composed of undifferentiated cells, have been made the subject of a special report.

Meanwhile the tissues of all the glioma cases in our possession were being recut and reinvestigated by the newer histological methods, and as the series up to January of 1924 proved to contain of the various types a sufficient number—viz., 412—of examples for the purposes of clinical correlation, this was then separately undertaken. Accordingly, from the clinical histories, tabulations were made of the survival period from the onset of symptoms, as well as from the time of operation for the cases up to this date, in correspondence with each of the histopathological subdivisions.

We had no preconception of what the results would show, though, had we been inclined to make prophecies before the figures were spread before us, it might have been anticipated that, other things being equal, the tumours composed of less well-differentiated elements would have the shortest antecedent history with the briefest post-operative survival period, and, conversely, that those composed of the more highly differentiated glial elements would have a longer pre- and post-operative story. We were, however, quite unprepared to find what the following highly condensed table betrays (Table II.), that certain definite tumour types show a longevity far and away beyond what one would expect for a glioma. The table, in other words, serves to show us the kinds of glioma that had seemingly responded so favourably to surgical intervention and to roentgenisation as to have been the source of our previous confusion.

TABLE II.—*Average Survival Period in Months for the Classified Gliomata.*

	Months.		Months.
Medulloepithelioma ..	8	Astroblastoma	28
Pineoblastoma	12	Ependymoma	32
Spongioblastoma multiforme	12	Spongioblastoma unipolare	40
Medulloblastoma ..	17	Oligodendroglioma ..	66 +
Pinealoma	18	Astrocytoma protoplasmaticum	85 +
Ependymoblastoma ..	19	Astrocytoma fibrillare ..	86 +
Neuroblastoma	25		

The details of this long study which is in process of publication need not detain us; it may suffice to say here that up to Jan. 1st, 1924, we had 412 so-called verified gliomas with which to deal. From these many eliminations had to be made: the cases "verified" merely on the basis of cystic fluid; those in which tissues had been improperly preserved for our purposes; certain atypical tumours which as yet baffle classification, and so on.

Table III., which lists the total number of verified gliomas in the series brought up to date, gives a sufficiently clear idea of the proportion of the tumours we have succeeded in classifying, and our reason for discarding about a third of them which fail to meet the criteria essential for the purpose.

TABLE III.—*Verified Gliomas to Sept. 1st, 1925.*

Verified by cystic fluid alone	54
Unclassified because differential study impossible ..	61
Unclassified gliomas of optic chiasm, pons or mid-brain: Optic chiasm, 12; brain stem, 19	31
Unclassified for other reasons: Atypical gliomas, 21; transitional forms, 9	30
Classified: Medulloepithelioma, 2; medulloblastoma, 41; pineoblastoma, 4; pinealoma, 7; ependymoblastoma, 5; ependymoma, 8; spongioblastoma—multiforme 100, unipolare 9; neuroblastoma, 3; astroblastoma 16; astrocytoma—protoplasmaticum 61, fibrillare 49; oligodendroglioma, 11	316
Total	493

Tables of classification are forbidding objects with which to punctuate a lecture. But there are one or two things to which, in passing, I may call attention. It will be seen in the first place that the 316 "classified" gliomas fall into three major groups—41 medulloblastomas, 100 spongioblastomas, and 110 astrocytomas. The medulloblastomas, to which I have already referred, are so malignant that when they once break through the limiting pia they tend to spread in the subarachnoid space in such a fashion as to have led to the term "sarcomatosis of the meninges." The spongioblastomas are scarcely less malignant and represent the so-called gliosarcomas of the older literature which have given their bad name to these tumours as a whole. But with the astrocytomas it is an entirely different story in view of their average survival period exceeding 80 months or over seven years. And when one considers that these 110 astrocytomas, together with the oligodendrogliomas which are equally favourable, represent approximately 40 per cent. of all the gliomas, the neuro-surgeon may feel much heartened in his tasks.

What all this means to us from the important standpoint of prognosis no less than of treatment is incalculable. But there is one thing more of which we are greatly in need—namely, the development of more rapid laboratory methods, if the clinic is to get the full benefit of these classified diagnoses.[4] What the surgeon must cultivate is the ability to tell with some exactitude just what kind of glioma he has exposed, and in the past it has taken so long to fix, to cut and differentially to stain the tissues that his picture-memory of the gross characteristics of the tumour, in spite of an operative sketch and a careful description, has become so faded before the exact returns come in, as to have lost much of its permanence. Moreover, the patient, as like as not, has in the meantime been discharged, and since the recollection of his particular lesion has become overlain by other impressions, it is difficult to get a dependable composite of one's operative and microscopical pictures.

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[3] These are rapidly growing tumours which have been the source of great confusion since they have been variously described as "neuroblastomas," which is distinctly a misnomer, and as "round-celled sarcomas," because of their tendency to "infect" the leptomeninges, which is still worse. Dr. Bailey originally gave to these unmistakable tumours the name *spongioblastoma indifferentiale*, but since Strauss and Globus first used the term *spongioblastoma* for quite another lesion, we have gladly given way to them and have settled upon the term *medulloblastoma* as a suitable designation.

[4] Some tentative short cuts in this direction with promising results have been made by Miss Grace Hiller who has become highly efficient in the specialised technique of staining these tissues.

I may give an illustration of what this all implies by the story of a patient who at the moment has just left the hospital after the removal of a glioma from her left hemisphere. She is the wife of a physician whose experience with brain tumours had led him to expect the worst, and when what I took to be a large spongioblastoma was uncovered, I feared that his apprehensions would be fully realised. The soft, infiltrating tumour, so far as possible, was removed partly by dissection and partly by suction, and a thin block sent to the laboratory was put through by a shortened process in three days. It shows a pure protoplasmic astrocytoma which completely alters the prognosis in the case, to the great relief of all concerned. What we must search for, however, is a still more rapid process than this—one which will make it possible to get the histopathological returns while the operation is still in progress.

These, then, are some of the objectives towards which we are striving. I have from time to time put into writing some generalisations about the special field of neurological surgery. The first of these papers, written just 20 years ago, sounds on reperusal very juvenile in its discussion of the ætiology of choked disc; of palliative operations for purposes of decompression; in its chance remark that possibly someone some day might even venture to operate on a pituitary tumour. By slow processes we have come to broaden our horizon, but we neuro-surgeons do not for a moment forget that we are merely standing on the clustered shoulders of those herein unnamed persons who laboriously worked out for the benefit of our generation the development and finer anatomy of the brain, who discoverd the localisation of its functions, untangled the pathways of its impulses, determined the clinical expression of its lesions, bequeathed to us the instruments of precision we depend upon, laid the foundation-stones of modern cranio-cerebral surgery, and much more besides. We would betray their expectations of us had we not managed to cultivate a few flowering plants in the large field of neurology in which they did the spade-work.

There is, therefore, nothing novel in all this that I have laid before you—nothing, I fear, that Andrew Cameron would have felt was a distinct contribution to practical therapeutics. The complicated act of *diagnosing, of localising, and of removing a brain tumour* is based on long-established anatomical and physiological principles, and it is time we paid more attention to a detailed study of the lesions themselves. This will require a more intimate knowledge than we possess of their cellular composition, for which purpose aid must be sought from chemistry and biophysics, all of which merely shows how closely interlocked *with other sciences any research in clinical medicine has come to be. And,* in closing, I would like to quote a statement made by Ranvier in addressing the histologists in regard to his discovery of the clasmatocytes:—

> "Everybody knows [he said] that even objects which are quite apparent escape our observation when we *are not* yet aware of them, whereas we notice them at once after having learned to observe them. That is why it is so difficult to make discoveries, which afterwards seem so simple, one wonders as to the merits of having made them. What more easy to-day than to demonstrate the presence of glycogen in the liver! Yet Claude Bernard, who was undeniably a man of genius, only arrived at this after many years of research and by a series of repeated trials."

DIPHTHERIA IMMUNISATION IN A METROPOLITAN BOROUGH.*

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IN view of the satisfactory results obtained by R. A. O'Brien in the Holborn (Poor-law) schools, arrangements were made in 1922 to render the measure available for the general child population of Holborn. The results obtained are summarised in Tables I., II., and III.

The results of the Schick testing were very much the same as those found in all other urban areas; we have, however, analysed them in connexion with the immunity to diphtheria of various members of the families dealt with. The last column in Table IV. shows the number of exceptions (11·5 per cent.) to the expectation that positive reactions will be manifested only in the younger members.

TABLE IV.

No. of children in family.	No. of families.	Of which the members are—			
		All Schick positive.	All Schick negative.	One or more elders negative, younger positive.	One or more elders positive, younger negative.
2	97	71	6	13	7
2	43	19	4	14	6
4	14	5	—	4	5
5	8	2	—	4	2
6	2	—	—	2	—
7	2	—	—	1	1
—	166	97	10	38	21

In one family of five children, twins (F.) of 2–3 years of age were both positive; of twins of 7–8 years, one (M.) was positive, the other (F.) was negative.

In one family of three children one twin (M.) was negative, the other (F.) was positive, the latter had already been in hospital with diphtheria.

In one family of four, all Schick positive to the first *test, two members were found to be Schick positive* to the second test. The first of these (F. 4) was immunised some months previously to the second one (M. 1), and was further inoculated, being negative to the second test; the second child is not yet retested.

In another family, twins, one male aged 2 years when tested and one female aged 5 years when tested, were both Schick positive.

Routine Procedure.

The routine of the procedure carried out is as follows. The child is Schick tested at the Council's Maternity and Child Welfare Centre, and if susceptible to diphtheria is brought up by the parent at weekly intervals for the next three weeks for immunisation, and then at the end of another three months (formerly we tried for the period six to eight weeks) for re-Schick testing, when, if it happens to be still positive, it receives further inoculation. A modification of the routine occurs if from the Schick test it is seen that the child is particularly susceptible to protein reactions; in this case the 3 c.cm. of toxin antitoxin mixture are given in four or five doses at weekly intervals.

Although Park and Zingher recommend that Schick testing should only be applied to children over 5 years, it would seem inadvisable to dispense with the test as a routine at the present time in Holborn. It is a great satisfaction to nervous parents to think that there will be no inoculation unless susceptibility is proved.

Retesting is unpopular with parents, and the need for it does not help to increase their confidence in immunisation. Of 295 that have been retested 30

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* Opening of discussion at the Annual Congress of the Royal Institute of Public Health, Brighton.

TABLE I.

AGES OF PERSONS SCHICK TESTED, WITH RESULT OF TEST. (HOLBORN MUNICIPAL INFANT WELFARE CENTRE, 1922–23–24.)

Ages.	6 to 12 months.		1 to 2 years.			2 to 3 years.		3 to 4 years.			4 to 5 years.			5 to 6 years.			6 to 7 years.		7 to 8 years.		8 to 9 years.		9 to 10 years.		10 to 11 years.		11 to 12 years.		12 to 13 years.		13 to 14 years.		14 to 15 years.		15 and above years.			—
Total for 3 years, 1922–24 ..	40		101			87		81			57			33			30		21		29		40		24		15		12		19		1		49			— 642
Result of Schick Test	Pos.	Neg.	Pos.	Neg.	Not read.	Pos.	Neg.	Pos.	Neg.	Not read.	Pos.	Neg.	Not read.	Pos.	Neg.	Not read.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Not read.	—
Total for 3 years	35	5	94	5	2	84	3	69	11	1	41	14	2	18	13	2	19	11	12	9	18	11	17	23	14	10	6	9	6	6	6	13	1	0	20	26	3	460 Positive. 172 Negative. 10 Not read.

TABLE II.

AGES OF PERSONS IMMUNISED.

Age.	6 to 12 months.	1 to 2 years.	2 to 3 years.	3 to 4 years.	4 to 5 years.	5 to 6 years.	6 to 7 years.	7 to 8 years.	8 to 9 years.	9 to 10 years.	10 to 11 years.	11 to 12 years.	12 to 13 years.	13 to 14 years.	14 to 15 years.	15 and above years.	—
Total for 3 years	30	77	70	63	31	14	23	11	13	11	11	6	4	1	1	0	— 368

TABLE III.

SCHICK TEST AND DIPHTHERIA IMMUNISATION. (THREE YEARS, 1922–23–24, AND 7 MONTHS, UP TO AUGUST 5TH, 1925.)

Total No. tested.		Result of test.						Immunisation of positives.																									
		Negative.		Positive.		Not read.		Found NEGATIVE to re-Schick test after T.A.T.												Found POSITIVE to re-Schick test after 3 c.cm. T.A.T.				Total re-Schick tested.		Given 3 c.cm. T.A.T. Not retested.		Failed to complete three inoculations.		Inoculations not begun.		Inoculations still in progress.	
								1 c.cm.		2 c.cm.		3 c.cm.		4 c.cm.		5 c.cm.		6 c.cm.		Given further inoculation but not yet retested.		No further inoculation given.											
C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.
718	57	180	31	530	20	8	3	9	0	11	1	241	3	5	0	1	1	2	1	10	0	9	1	289	6	144	0	42	5	35	9	20	0
775		211		550		11		9		12		244		5*		2*		3*		10		10		295		144		47		44		20	

* Refers to 10 persons negative to second re-Schick test after second course of inoculations.

C. = Children; A. = Adults.

were found to be still Schick positive after three inoculations. The facts relating to these are given in Table V.

TABLE V.—*Results of 295 re-Schick Tests up to and including August 5th, 1925.*

Re-Schick tested after an interval of years or fraction of years.	Number retested after this interval.			No. found positive.	Age in years and sex of positives when first tested.	Negative to 2nd re-Schick test and total of T.A.T. given in all.
		M.	F.			
5/52	10	(6	4)	1	13, F.	Neg.; 4 c.cm.
6/52	3	(1	2)	—	—	—
7/52	6	(4	2)	—	—	—
2/12	19	(9	10)	1	9, M.	Neg.; 6 c.cm.
2½/12	10	(4	6)	—	—	—
3/12	31	(13	18)	2	(*a*) 8, F.	Neg.; 4 c.cm.
					(*b*) Ad., F.	
3½/12	7	(3	4)	—	—	—
4/12	18	(11	7)	1	4, F.	*Neg.; 4 c.cm.
4½/12	2	(0	2)	—	—	—
5/12	7	(2	5)	1	2, F.	Neg.; 6 c.cm.
6/12	21	(10	11)	4	(*a*) 1, M.	—
					(*b*) 2, M.	—
					(*c*) 3, M.	—
					(*d*) 4, F.	—
7/12	12	(5	7)	1	9, F.	Neg.; 6 c.cm.
8/12	8	(3	5)	—	—	—
9/12	7	(3	4)	—	—	—
10/12	9	(3	6)	1	4, F.	†Neg.; 5 c.cm.
11/12	3	(1	2)	—	—	—
1	5	(1	4)	1	9/12, F.	Neg.; 4 c.cm.
1–2	73	(37	36)	14	(*a*) 1, F.	—
					(*b*) 2, M.	—
					(*c*) 2, M.	—
					(*d*) 2, M.	—
					(*e*) 2, F.	—
					(*f*) 6, M.	Neg.; 4 c.cm.
					(*g*) 7, F.	—
					(*h*) 8, F.	—
					(*i*) 9, M.	—
					(*j*) 9, F.	—
					(*k*) 11, M.	—
					(*l*) 12, F.	—
					(*m*) 12, F.	—
					Ad., F.	Neg.; 5 c.cm.
2–3	44	(21	23)	3	(*a*) 2, F.	—
					(*b*) 5, F.	—
					(*c*) 12, F.	—
Total ..	295	(137	158)	30	—	—

* Another child in same family (F.), aged 4 years, was negative.

† Three children in this group were members of one family: 2 negatives (M.), aged 2 years, (F.), aged 6 years; 1 positive (F.), aged 4 years.

In addition, one child re-Schick tested 15 months after 1 c.cm. T.A.T., was found positive, and two children retested after 3 c.cm. were on the information given by the mother considered to be slightly positive. Twenty of those positive on re-Schicking have been further inoculated, and ten of them further tested and found negative. Efforts are being made to continue the inoculation of the remaining ten. Of the 295 persons retested, 137 were males and 158 were females. Among the positive were 10 males and 20 females. Neither age nor interval seems to have any influence on the phenomenon. It would seem conceivable that some batches of toxin antitoxin or toxoid antitoxin might prove to be less efficacious than others. An analysis of the results obtained in Holborn would seem to indicate clearly that one batch of toxin antitoxin was less successful than the others; also that the toxoid antitoxin used was as efficacious as the toxin antitoxin. The toxin antitoxin used were all 3 L+ per c.cm. mixtures, the toxoid antitoxin contained toxoid diluted 1–10 with added antitoxin. (Table VI.)

TABLE VI.—*Batches of Toxin Antitoxin and Toxoid Antitoxin Compared.*

Designation of batch of toxin antitoxin mixture or toxoid antitoxin mixture.		No. of persons inoculated and retested.	No. of these persons found positive on retesting.
Toxin antitoxin mixture.	B. 346	58	2
	B. 475	24	3
	B. 654	26	1
	B. 671	61	15
	B. 671A ..	2	1
	B. 672A ..	30	2
	B. 617	34	1
Toxoid antitoxin mixture.	B. 1017	30	4
	B. 1090	14	1
	B. 1038	8	0
	B. 1018	8	0
Total		295	30

That considerable importance attaches to the retesting is shown by the fact that our one case of diphtheria among those treated occurred in a child who was given the routine three injections. The boy suffered from a severe attack of the disease, but recovered without any complications or sequelæ; his recovery was ascribed certainly by his mother to the inoculations of T.A.T. given after Schick testing.

A second case is said to have occurred in a boy (aged 8) also given the routine three injections. Two years later he was diagnosed (for the third time in his life) as suffering from diphtheria; no swab was taken. On admission to the M.A.B. Hospital he was first found to be swab negative, later swab positive, but was diagnosed as a case of diphtheria. The mother fortunately is still convinced that the boy did not suffer from diphtheria.

Reactions.

Our experience is that the reaction after the injection of the toxin antitoxin and toxoid antitoxin is in practically every case negligible. All we have to record is that in one child considerable swelling of the whole of the arm occurred, but the next day, when at the centre, she was running about and helping the other children eat their cakes; the swelling went down without any further result. Another, a boy of 10 years of age, his mother informed me, suffered with vomiting after each of his three inoculations and spent the next day in bed, but he and his mother stuck to it, and he was subsequently proved to have been satisfactorily immunised. In another child a small, hard, slightly tender nodule developed above the external condyle, but the tenderness only remained for a few days.

What of the Future?

Most of the attendances are the result of repeated efforts of persuasion and encouragement. Prejudice against inoculation is widespread; some of the most stubborn opponents of inoculation admit that if T.A.T. could be given in tabloid form or in spoonfuls they would agree to it. They object, in fact, to the introduction of animal products by means of a hypodermic syringe into the human body, but continued propaganda is sure to produce its results.

The aim of everyone who takes up the work must be to get all the children living in the area immunised as soon after they reach the age of 6 months as possible. In Holborn we have not reached this stage yet; the history of vaccination against small-pox suggests we never shall. But a local health authority is justified in considering that it has done all in its power to prevent loss of life and illness from diphtheria if it offers immunisation.

It might be expected that if the immunisation were carried out among the school population in a large town the parents would come to regard the procedure as more ordinary, and be prepared to allow the younger children to be immunised at infant welfare centres. Apparently it cannot be too often repeated that it is immunisation at a very early age that we want carried out; if it is delayed till school age half the deaths will have occurred. In London during three years, 1919–20–21, 52·5 per cent. of the deaths from diphtheria occurred under 5 years of age. Certainly if the immunisation could be completed at one visit the energy spent in looking up those failing to attend could be used in getting new recruits, and the parents would be spared much trouble.

At the present time efforts are being made to produce a substance which can be used to ascertain the susceptibility of the individual and at the same time to give some degree of immunity. Obviously experiments on these lines would seem to be concerned with the use of toxin as opposed to a toxin antitoxin mixture, but the methods used up to the present do not produce a toxin of sufficiently uniform strength to enable it to be used for routine immunisation.

Immunisation of Hospital Nurses.

A few words may perhaps be added on the need for the immunisation of hospital nurses. It would seem to be obvious that fever hospital nurses should be protected against diphtheria. I think it difficult to avoid the conclusion that all hospital nurses nursing in children's wards should be immunised. It must be within the experience of many of us that nurses in children's hospitals and subsequently the children themselves are often attacked.

It may be said that a nurse would have to be immunised against diphtheria, scarlet fever, and typhoid and the paratyphoid fevers; this is nothing. I imagine that many of us during the war were immunised against more diseases than these—those going East were protected against small-pox, typhoid and the paratyphoid fevers, cholera, dysentery, and plague. Who can show that we suffered any harm by taking advantage of the progress of science?

THE EFFICACY OF TRYPARSAMIDE IN THE CURE OF AFRICAN SLEEPING SICKNESS.

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Ever since the introduction, nearly 20 years ago, by Thomas, of atoxyl into the field of the therapeutics of trypanosomiasis, hopes have been alternately fostered and then relinquished in the attempt to cure certain human infections by the two human trypanosomes, *T. gambiense* and *T. rhodesiense*.

Complete and lasting success has accompanied the use of a variety of drugs in curing the hæmic and lymphatic infections which precede by intervals, varying from a few months to a few years, the migration of the trypanosomes from the blood-vessels and their entrenchment in the tissues themselves, especially those of the central nervous system. Up till the trial by Pearce (1920)[1] of tryparsamide, elaborated by the workers of the Rockefeller Institute for Medical Research, no valid claim had been advanced for anything but a temporary improvement in the signs and symptoms concomitant with this nervous involvement when really established, although the slighter degrees of it had been apparently arrested.

Before definitely making the claim for tryparsamide as a cure for such cases, based on our experience of the drug for the last four years, it may be well to review in brief the value and limitations of the main drugs and treatments in vogue up to the present.

Spontaneous Cure.

There exists a good deal of doubt as to whether this does really occur. One would expect from the well-recognised factors of varying virulence of the infecting strain of trypanosome and the differing degrees of natural and acquired immunity in the host that a fortuitous combination might result occasionally in a natural cure. The latest evidence in support of this contention comes from Todd (1924),[2] who reports eight cases found infected in 1911 alive and well in 1920, and one of these (no news of others) in 1924. He allows, however, the explanation of extreme chronicity as admissible. In our own series of 650 cases we have not a single instance of survival in good health among the few patients who have escaped, after diagnosis, any treatment whatever, although we are still watching a few cases who are apparently fit after but one or two injections. If some cases of early infection can result in a spontaneous cure, the consensus of opinion is that all cases (with the possible exception of those cited under the next heading) which have been proved to belong to the second class do eventually succumb to their infection.

Treatment by Atoxyl, with or without Tartar Emetic.

There is plenty of evidence to show that really early cases can remain to all intents and purposes cured after a single administration of one of these drugs—i.e., atoxyl, soamin, arsacetin, tartar emetic. Series of cases treated by one to three injections show varying percentages of cures according to dosage and the stage of disease reached, about which there is often no definite information. Even cases, the examination of whose cerebro-spinal fluid had proclaimed them to be in the second stage, have been apparently cured. Blanchard and Laigret (1924)[3] report five such cases alive and well from 6 to 15 years after treatment by atoxyl and arsenobenzols in doses so meagre and few that, in the light of experience with the vast majority of similar cases, such treatment could be disregarded as the primary therapeutic agency.

Opinion is now in favour of repeated injections of atoxyl—i.e., 0·015·0·02 g. per kilo body-weight, maximum dosage. In a recent epidemic in our own region near Stanleyville about 250 patients have been thus treated in three years, and the percentages of cures and relapses to date are about equal. Treatment was carried out by native boys after diagnosis by the medical man, and consisted in weekly dosage of 1 g. to adults, to a total of 10 to 12 injections. Unfortunately, it was not practicable at the time of diagnosis to determine in all cases by lumbar puncture the exact stage of the disease.

The value of tartar emetic as an adjuvant to this treatment seems not to be very great, for although it is the stand-by of the veterinary surgeon, it is our opinion that its utility in human infections is confined to its use as a substitute for an arsenical should toxic amblyopia develop, or as a temporary trypanosomicidal agent in advanced cases where the onset of severe meningeal reaction is to be feared from immediate adequate dosage with arsenicals. Although tartar emetic alone has been known to cure even a case of infection with *T. rhodesiense*, yet no one would now use it to the exclusion of the arsenicals, and our experience goes to show that if there is any advantage in the combined treatment it is not commensurable with the increased risk and the visits required during the mass treatment of natives during an epidemic.

Treatment by the Arsenobenzols, &c.

The *arsenobenzols* have not been found to give results appreciably better than atoxyl, and their greater cost has prevented trial on a large scale. Now that continental firms are manufacturing "914" of excellent quality and selling it less than one-tenth the price charged by British firms, a further trial of these products might have been advantageous had not there been still better drugs available. The knowledge that they do penetrate the cerebro-spinal fluid suggests that they might have been more efficacious than atoxyl, the penetrability of which is probably less.

Intrathecal Injections of Drugs or Medicated Serum.—This method of attacking the nervous infection was tried by Reichenow in 1914, and retried by Marshall and Vassalo in 1920. Following their advocacy it was tried by many workers, including ourselves, but has now been abandoned as worse than useless.

Bayer "205," or Germanin.—Prolonged sterilisation of the blood and immediate temporary improvement in all patients, which continues in the early cases for many years, has proved the value of this drug. Yet our own series (1924)[4] of 17 cases in the later stages confirms the findings of Van den Branden and Van Hoof (1924)[5] that the value of this drug in nervous infections is less than that of atoxyl. This Dr. F. K. Kleine has admitted to us in correspondence on the subject, and is evident from the further reports received privately of his series treated in the Congo (1922).[6]

To recapitulate, therefore, there are a variety of drugs which are capable of effecting and maintaining sterilisation of the peripheral circulation for varying periods. Sterilisation is effected most quickly by tartar emetic, less so by atoxyl, and least quickly by Bayer "205," but the reverse order holds good for the maintenance of sterilisation when once effected. This brings out the real value of "Bayer" to the sanitarian concerned with the removal of infectivity. None of these drugs can, however, be relied upon to cure a case which has shown definite nervous involvement.

Cure by Tryparsamide.

Cases treated originally by Pearce and later observed by Van den Branden and Van Hoof, and cases by the last two workers alone at the Laboratory of Leopoldville, afford the very satisfactory figures of 100 per cent. cure of early cases, with unaltered cerebro-spinal fluid. We are able to report a similar success in five such cases, noted for from three and a half months to one year after treatment. Their figures for a series of 35 with altered fluid after an average observation of seven months was 45·7 per cent. still normal, but recent conversation with Dr. Van Hoof shows that the majority of these have remained well up till the present—i.e., an average observation period of nearly three years. These cases were not so far advanced and were more vigorously treated than our own series of 40 (1923[7] and 1924).[8] Our latest published figure for non-relapse cases in this series was 40·5 per cent., but by the death of one of these (No. 146, Mbaka, the worst case of the whole series) the figure after two and a half to three and a half years falls to 37·8 per cent. It must be remembered, however, that these were all the worst cases one could find, averaging 630 cells per c.mm. in the cerebro-spinal fluid, and were treated by only one course of tryparsamide. The accompanying photograph speaks for itself.

Effects of tryparsamide in sleeping sickness:—*Left:* Case 73, three and a half years ago tryparsamide and 470 cells per c.mm. in the cerebro-spinal fluid. Apparently cured after 24 g. tryparsamide. *Right:* Case 150, 38 months ago tryparsamide and 760 cells per c.mm. in the cerebro-spinal fluid. Apparently cured by 26 g. tryparsamide.

Unfortunately, there are a number of cases which do not react so favourably to tryparsamide, so in claiming that the drug can cure we cannot claim that it is a cure for all cases. This fact is difficult to explain apart from the factors of varying virulence and different degrees of immunity. Personally, I feel that the latter is the most important factor. Pearce believes that the action of tryparsamide, which is only feebly spirillicide and trypanolytic in vitro, is due largely to its stimulation of natural defences.

That this defensive mechanism is largely dependent on the liver is suggested by work by Sei (1923),[9] who reported that extracts of the liver substance of Bayer "205"-treated guinea-pigs contained a greater concentration of therapeutically active agent in the infections of mice with *T. equiperdum* than those of any other tissue, not excluding the blood. It has also been shown that Bayer "205," though but feebly trypanosomicidal in vitro, becomes at once powerfully so when mixed with liver extract. Mignoli (1924)[10] has shown that the natural trypanosomicidal activity of adult human serum varies with the degree to which the liver cells are functioning. Acute diseases of the liver markedly, and chronic ones in less degree, exert very definite influences. The tolerance of arsenobenzols in syphilis varies also in a similar manner.

Clinical evidence is also forthcoming in support of this view, for all workers agree in the importance of removing hookworm from patients, the deleterious effect of the secondary anæmia produced by ankylostomiasis on the liver being well known. In two cases, complicated by an unrecognised bilharzial infection, we noted bad results during treatment; patients overdosed with atoxyl or tryparsamide often complain of abdominal discomfort and distension; a dirty tongue and highly coloured urine suggest liver trouble. They often put on a lot of flabby flesh, much to their annoyance, also suggestive of defective metabolism. Now that clinical tests for hepatic efficiency suitable for the busy clinician are being evolved, there seems to be a fruitful field for research in order to control treatment in the same way as for syphilis.

Suggestions for Treatment.

Our best control of treatment is the examination of the cerebro-spinal fluid for cells and albumin. This latter is simply effected by precipitation of the albumin in 1 or 2 c.cm. by trichloracetic acid 33 per cent., and comparison of the opacity with standardised bacterial emulsions.

It is convenient in treatment to use the common 10 c.cm. syringe, and as the dose of 4 g. should never be exceeded, a 40 per cent. solution is necessary in order that 4 g. may be given without refilling the syringe. This solution is arrived at accurately by the following simple rule, easily followed by native assistants. *Weigh x g. of tryparsamide and add 2x c.cm. distilled water.* For instance, 10 g. is dissolved in 20 c.cm. water and the resulting solution contracts to 25 c.cm. This is not too strong even for intramuscular injection.

The maximum tolerated dose must be arrived at gradually in advanced cases, but must be maintained whenever possible for at least ten injections, which may be either weekly or fortnightly. Adults will almost certainly relapse, if less than 0·05 g. per kilo body-weight is given, and children can stand almost double this amount—i.e., up to 0·1 g. per kilo, and will indeed tend to relapse without it. Thus a child of 14 weighing about 20 kilos can support as much as 2 g. weekly doses. Substitution of tartar emetic (not Bayer "205") for three weeks or a month, if toxic amblyopia develops, will generally allow resumption of former dosage again. In this connexion we may add that we have been using daily injections of sodium thiosulphate 0·45 to 0·9 g. at the first sign of amblyopia, but have no definite evidence worth recording at present as to its value.

A second short course should be given whenever possible six months after the first, the cessation of which is to be guided by progress and the condition of the cerebro-spinal fluid. It must be remembered, however, that the cerebro-spinal fluid will progress towards the normal limits subsequent to the cessation of treatment, if that has been thorough; and an excess of cells, even up to 50 per c.mm. may have entirely disappeared after three months.

If it is desired to combine the treatment with Bayer "205," we consider the most rational method is to alternate the two drugs for the first two or three weeks, giving one of each (not either) per week, and then continuing with tryparsamide. Continuation of Bayer "205" beyond the third injection is of very little use, expensive, and dangerous.

In conclusion, we affirm that tryparsamide can cure African sleeping sickness, although it does not always do so as at present administered, and that it should be the mainstay of our attack on trypanosomiasis. This principle has been adopted by the Belgian Government, which is responsible for the treatment of 50,000 cases annually.

I wish to express my thanks to the Rockefeller Institute for continued supplies of tryparsamide and to Dr. P. H. Manson-Bahr for much kind information and help.

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Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF PSYCHIATRY
JOINTLY WITH MEDICAL SECTION OF
BRITISH PSYCHOLOGICAL SOCIETY.

THIS joint meeting was held on Oct. 28th, Dr. R. H. COLE, the President of the Section of Psychiatry, being in the chair.

Sir MAURICE CRAIG opened a discussion on the

EARLY TREATMENT OF MENTAL DISORDERS.

He said that the field of mental disease was much wider than that of physical disease, since the mind was a function of the whole organism and mental disturbance might affect any or all of the organs of the body. There were many schools of thought among those who studied the mind; the science had grown up through mysticism, metaphysics, and materialism to determinism and the "new psychology," and now one, now another aspect had been uppermost. The biological, the psychogenetic, and the physiogenetic schools held widely different theories and had each had their period of supremacy. The great danger in which the science stood was that rivalry between the adherents of different theories would cramp their scope and hinder their advance. Beneath each theory lay a fundamental truth, for which the student should search impartially and not allow his devotion to one aspect to hinder him from thoroughly examining the others.

The Importance of the Emotions.

In surveying broadly the psychological side of mental disorder, he showed that the outstanding factor in every one was emotional disturbance. The early training of a child depended for its efficacy on a harmonious balance of feeling, and might be completely interrupted if this balance were disturbed. This hindrance of mental growth would inevitably reflect itself later on his reasoning side. Keenness of perception and response to stimulus were, perhaps, the measure of mental capacity, but the more richly a man were endowed with these qualities the graver were the effects of any disturbance. The physical as well as the psychic reactions were affected; fatigue interfered with the function of the internal glands by permitting toxins to invade the system, and a vicious circle of cause and effect was formed. He would leave psycho-analysis to its particular exponents, and would content himself with suggesting that many of the patients they claimed to have cured would probably have shown as good or better results under some other treatment. On the subject of early treatment generally, he laid stress on the need for carefully watching children for signs of mental instability. Prophylactic measures should be introduced into schools to nip in the bud the effects of overstrain and other bad influences. He strongly deprecated the habit of explaining away early mental symptoms. Students should be trained to examine mental symptoms together with physical, and to allow them equal weight in diagnosis. Surgeons were particularly liable to neglect the emotional factor in a patient, which might nevertheless make all the difference between success and failure in an operation.

The Toxic Factor.

Passing to the physical aspect of mental disorder, he laid particular stress on the importance of toxins, both endogenous and exogenous. One school of thought even held that all mental trouble was due to the presence of toxins. Idiosyncrasy was a leading factor, and he had seen such harmless food as eggs or mushrooms produce acute delirium. He mentioned the work of several authorities on the effect of endocrine disturbances on the autonomic nervous system, and their part in anxiety and depressive states, and cautioned his hearers against prescribing gland treatment without fully understanding what they were doing, but also against neglecting it altogether.

Sleep.

All authorities, he said, agree in theory on the importance of sleep, but do not always allow it the paramount importance it should have as the only certain means of restoring wastage. It was foolish to fear hypnotics, for the risk of producing addiction was negligible. Some physicians could think only in terms of bromide, overdoses of which he had found damaged the lining of the stomach and sometimes produced confusion, though small doses were valuable. In spite of the feeling of many practitioners against the barbitones, he had found dial and medinal consistently useful. They improved the metabolism and induced a natural habit of sleep. Sodium veronal and luminal were both better than bromide. If sleeplessness were relieved early it left no terrors behind it. He concluded with a plea that the public should be instructed to seek advice as soon as mental symptoms showed themselves, and to enter a mental hospital voluntarily. The general prejudice against mental hospitals could be removed in time with proper instruction and increased accommodation for voluntary patients.

The Case for Psycho-analysis.

Dr. W. BROWN agreed absolutely that there was a physical aspect to every mental disorder, and that the body should be thoroughly examined for septic foci and other causes of toxæmia. Caries, tonsillitis, constipation, and subacute appendicitis were frequent sources of infection. The chief damage was done to internal glands, especially the thyroid. Fatigue was an important factor, which should be met by prescribing rest. On the whole, however, he thought that physicians did not tend to neglect the physical aspect of mental disease, but that they frequently paid too little attention to the psychic aspect of physical disease. An important cause of mental illness was failure to adapt at some period of life, and the physical symptoms produced caused further mental reactions, forming another vicious circle. The physician should learn thoroughly both the physical and mental situation before he prescribed for a case, and decide the best treatment for each side. Mental disease was broadly divided into functional and organic disorders; it was an axiom that no functional disturbance could occur without a corresponding change in structure, but a disorder was called functional if these changes righted themselves when it was cured by psychological treatment. The change of structure in an organic disease had to be treated physically; it was irreversible.

Hysteria and Hypnosis.

A very good example of the functional disorder where the change in structure was reversible was hysteria, the symptoms of which were extreme suggestibility, restriction of mental functions, and psychic automatism with the appearance of various phobias and obsessions. It was, like many other morbid mental conditions, due to failure of adaptation, and might, if neglected, develop into a psychosis. It was distinct from psychasthenia and the other psychoneuroses, but until it became chronic its symptoms were very indistinct. Its forms and causes differed and required different methods of treatment. He had found that hypnotic treatment gave splendid results in a great many cases of "war neurosis," where the symptoms were somnambulism, fits, and amnesia. The treatment was based on the fundamental psychological principle of re-association, and consisted in reproducing the somnambulism, fits, or key incidents by hypnotic suggestion, and allowing the subject to remember the process. By this means all symptoms were stopped in a very short time, the repressions that caused them were cleared up, and the mental integrity re-established. The test of success was a progressive diminution in the susceptibility of the patient to hypnotism. This method was, of course, nearly always combined with a detailed psycho-analysis.

Psycho-analysis.

Patients of psychasthenic and many other neuroses could not be hypnotised, and the methods he used were general analysis (an armchair interview where the patient talked of his life, assisted by the practitioner) and psycho-analysis, where he reclined in a semi-conscious condition and expressed the ideas and feelings that arose in his passive mind. The aim of the treatment was to give the patient encouragement, general re-education, and rest. It was generally a matter of months, but at the end the patient had acquired an autognosis and a general philosophy of life that went far to prevent him from failing again. He did not insist that distortion of the sexual tendencies was at the root of all psychic trouble. It was responsible for a great many, but the difficulties of several patients arose from the other two instincts, those of self-preservation and the herd.

Treatment of Severe Mental Cases.

He strongly advocated segregation and isolation, with the chief object of giving the patient rest from the social duties which were often the chief cause of his trouble. Mental hospitals offered the advantages of complete rest and the "atmosphere of healing," and the knowledge that many patients recover under the treatment they receive there, but they had the drawbacks of the society of mentally afflicted people and not enough psychological treatment, especially analysis. Many cases, however, required occupation, and he mentioned a clinic in which patients practised congenial handicrafts, games, and riding. The latter was an exceptionally fine stimulus for lethargic patients. Other items of treatment were milk, massage, and mental exercises. Skill in the choice of method was the chief requirement of the psychiatrist, and was not acquired quickly, but only after long and patient experience.

Discussion.

Dr. Ernest Jones questioned Sir Maurice Craig's statement that there was a school of thought which offered a purely psychic explanation of all mental disorder. Just as all good exponents of the physical causes recognised the psychic aspect, so Freud, Prince, and Janet took physiology and biochemistry fully into account. He agreed with Dr. Brown on the extreme importance of early diagnosis and prognosis, which were commonly overlooked by those who relied on palliatives; these, however, did not dislocate the patient's life like definitely wrong measures. A tentative analysis of two or three weeks was extremely useful in enabling a physician to decide whether a particular long and drastic course was likely to produce good results. These treatments were like surgical operations, some were obligatory, while others could be left to the patient's own decision.

Dr. W. H. B. Stoddart complained of the reluctance of the public to visit practitioners of any treatment with a "psychic" name, although they would trust neurologists. He disliked hypnotism, which he said increased the disorder in neurotics and was impossible to apply to psychotics. Psycho-analysts did not profess to discover sexual perversions but to uncover sexual repressions.

Dr. C. H. Caldicott said that he had often given 5–10 gr. of bromide regularly for as long as a year without the slightest harmful results.

Dr. A. E. Carver pointed out that a large proportion of the cases described as "mental" showed psychic and physical symptoms inextricably mixed, when it was difficult to decide which should have precedence of treatment. He was strongly against treating minor physical symptoms if he could help it, as the treatment held the patient's attention and aggravated his neurosis.

Sex and Internal Secretion.

Dr. H. Corner described the experiments of Steinach in grafting into animals the glands of the opposite sex. His argument was that every individual has the characteristics of both sexes, and if the "hidden sex" were allowed to grow more quickly than the actual it caused very severe conflicts which led in certain people to mental disorder. This was especially frequent in children of mixed race. It was therefore important that the relative likelihood of uneven development in children of international marriages should be established by experiment and predisposed individuals given gland treatment in their early years to restore the balance between the hormones of both sexes, for when the organs of secretion became differentiated no further modification from outside was possible. He went so far as to suggest prenatal gland treatment.

Dr. J. Glover spoke of the application of psycho-analysis to psychoses. It had delayed the degenerative process for some years in dementia præcox and had given good results in the manic-depressive form, a biennial depression having given place in one patient to a periodical neurosis. It had no effect on paranoiacs. Its use was not, however, confined to curing, since an experienced analyst could help and improve neurotics and in graver cases prescribe, if not a treatment, at any rate an environment that would give mental patients the best chance of improvement.

Dr. G. M. Rudolf stated that in a batch of general paralytics treated with malaria inoculation, 60 per cent. of those discharged cured or improved had been taken within 18 months after the first symptoms had appeared, but those in whom the disease had run for over 18 months numbered only 7 per cent. of the successes.

Dr. M. D. Eder said he was disappointed at hearing practically nothing but the virtues of psycho-analysis; he had hoped for a duel between the respective partisans of psychic and physical treatment. He mentioned the malaria treatment of general paralysis. It was undesirable to treat physical symptoms in hysterical and obsessed patients, as these symptoms would disappear with the restoration of mental health. Psycho-analysis had given good results in psychoneuroses, but no psychotherapeutic method had been very successful in treating psychotics. Results in the manic-depressive psychosis had been fair in paranoid cases if treated early. It was worth while taking risks in exploring its possibilities in dementia præcox.

The Blood-Sugar of Adolescent Psychotics.

DR. R. N. CRAIG drew attention to the value in early dementia præcox and exhaustion states of blood-sugar tests as an indication of improvement. The starvation level in exhaustion cases often fell surprisingly low, but in most cases of dementia præcox it remained within normal physiological limits. Præcox cases showed a curve of the low, flat type after the glucose meal. Intensive treatment with thyroid and calcium lactate produced a great improvement in both the mental reactions and the physical condition of patients of both disorders, with a corresponding improvement in the type of their curves. He had produced a state of confusion in two cases of early paranoia by the injection of morphia and hyoscine; this had broken up their systematised delusions, but it was too early yet to say whether the improvement was permanent. He pleaded for wider instruction both of medical students and laymen in the danger signs of nervous and mental disease. In many mental disorders, if the practitioner were summoned in time and fully recognised the symptoms, he could avert what would otherwise be a complete mental breakdown.

The PRESIDENT, in summing up, deprecated any distinction between the physical and the mental factors. The physical illness should be treated on its own merits, whether it were related to the psychic disturbance or not. The mental picture was usually a counterpart of the physical.

SIR MAURICE CRAIG, in his reply, dealt with the points raised by the exponents of psycho-analysis, and dwelt especially on the impossibility of diagnosing a mental case in the early stages, especially by its psychic reactions alone, which were often due to purely toxic causes. It was not even possible to draw a sharp line between psychoneuroses and psychoses, as the milder condition might develop into the graver if not properly treated. We should not be misled by names, but should treat each case on its merits.

DR. BROWN, replying, claimed for psycho-analysis the great merit that it gives a clearer insight into the mind than any other science, and for this reason no psychiatrist could afford to neglect it. It did not necessarily make sex or the narcissistic tendency the basis of every mental reaction. Hypnotism was certainly disastrous if used unskilfully, but both Janet and himself had found it invaluable. Hypnosis and hysteria were allied mental conditions.

SECTION OF COMPARATIVE MEDICINE

A MEETING of this Section was held on Oct. 28th, Prof. F. T. G. HOBDAY, the President, being in the chair.

The PRESIDENT, before calling upon Dr. Andrews for his paper, delivered a short address, in which he passed in review the work which had already been done in the domain of comparative medicine, and spoke of the large field of investigation still awaiting attack. A remarkable observation which needed light was that one species of animal was immune to a disease which was fatal to another. Why, for example, was glanders so fatal to man and the horse while it was impossible to transmit it to the ox? He maintained that collaboration between the human and the veterinary students of disease had been greatly furthered already by the establishment of this Section of Comparative Medicine, and all over Great Britain this lead had been followed, as evidenced in the united meetings in the provinces between members of the British Medical Association and members of the National Veterinary Association. Such association perceptibly helped forward the mobilisation of the forces which were used in the fight against disease.

Advances in Knowledge on Plant Poisoning.

DR. W. H. ANDREWS read a paper entitled Some Recent Advances in our Knowledge of Plant Poisoning. He said some forms of poisoning by plants were important by reason of the serious economic losses involved, but of particular interest was the occurrence of strange effects, or effects produced under unusual and unexpected circumstances. In Britain it was very difficult to obtain statistics on this subject; farms and holdings were usually somewhat small, when compared with those in the Colonies, and hence the total losses sustained by any one farmer were not such as to lead him to report them to headquarters or to require an investigation to be made. In addition, in a number of cases the diagnosis was not certain, and some losses attributed to feeding on certain plants were found not to be due to that cause. But in South Africa, Australia, and the United States losses were much larger, and a larger proportion of the animals there were fed on natural vegetation than was the case in the United Kingdom. A further reason was that some of the countries were subject to severe droughts, causing serious shortages of ordinary foodstuffs. Long, one of the best authorities, agreed as to the difficulty of estimating losses from this cause, but said they were numerous, and that the aggregate financial loss was very heavy.

The present state of knowledge on poisonous plants Dr. Andrews considered very unsatisfactory; many plants were reputed poisonous which were not poisonous at all, while in a number of cases in which poisoning was attributed to a certain plant, it was founded on assumption, which was not borne out by careful investigation. Prof. A. J. Ewart, writing of the poisonous plants of Victoria, said it was common, when faced with a sudden outbreak of disease among animals, to incriminate some plant which grew in abundance in the vicinity. In County Dublin, Craig and Keir found that a certain disease appeared among animals in the spring and autumn, and many features suggested that the cause might be plant poisoning. There seemed reason to suspect a particular plant, a sorrel. Chemical analysis at first appeared to strengthen the suspicion, as it contained an oxalate in considerable amount. But Craig and Keir went a stage further and fed the sorrel to cattle; one bull consumed 260 lb. of it, and at no time did it, or the other cattle to which it had been given, show any ill-effects. Many plants, however, caused bad effects without having been suspected of doing so. Another source of error lay in the changes which occurred in the actual plant material, and but little was known on this. In many cases in which an apparently harmless material had produced illness, there was reason to believe the plant substance had undergone fermentative changes; some cases of illness had followed feeding with new-mown hay, and it had not yet been worked out whether the symptoms were due to an invasion of the hay by parasitic or saprophytic organisms. The latter might not cause any difference to the naked-eye appearance of the plant. A further possibility was the admixture of the plant material with material from some other source. Lathyrism in the human subject was well recognised in some Eastern countries, but evidence in regard to the amount required and the time necessary for the effects to develop had been conflicting. It had now been shown that the pure lathyrous grain did not contain any alkaloid of a harmful nature, and that to a number of kinds of animal it could be fed without harmful effects following. But cropped lathyrus was usually mixed with many weeds, and some of the latter gave rise to seeds which closely resembled lathyrous grains, such as a very common vetch containing a harmful principle. In a number of botanical species were included plants not quite similar morphologically, and probably differing considerably in chemical composition. Plants might vary in toxicity according to the soil in which they were grown, and differences were also observed in connexion with the season and the stage of development of the plant itself. Many plants were eaten only at a particular season of the year—i.e., when other products were very scarce. Dodd found, in Australia, a particular dermatitis in sheep due to skin sensitisation following exposure to the sun's rays, the rash occurring only on those areas of skin which were unpigmented. There had not been much work done on the changes in plants due to the presence of fungi in them. Mitchell, in Natal, worked at a particular condition in cattle associated with nervous symptoms, and he found the illness to be due to ingestion of harmless grasses which were mixed with an ergot-like plant. Lathyrism was found to have a definite incubation period, but little was yet known of the active principles responsible for the production of the condition. High fever was sometimes a symptom of plant poisoning; some animals developed a temperature, from this cause, of 107° or even 109°F. Marsh mallow fed to sheep caused bad symptoms in them, but not in horses and cattle. Chronic plant poisoning, he felt sure, was very frequent, and caused serious losses of stock. In some animals a certain time was needed after the feeding to develop symptoms; in one series the incubation period was 80 days. In domestic animals lathyrism showed a latent period whose length was about 54 days. In some cases the poisoning effects became manifest in a sudden explosive way; it might be that this synchronised with the breaking down of the liver cells in which the poison was harboured until then. When confronted with a disease which seemed like broncho-pneumonia, plant poisoning was not likely to be suspected, and even if suspected it might be difficult of proof. It was not easy to pick out the plant suspected, and when the symptoms developed the animal might have been taken some distance away from it. And there was much yet to learn as to why animals ate poisonous plants; hunger, especially in countries where droughts occurred, and the condition of the soil were among the factors. Animals which had been travelling were apt to be too hungry to exercise caution in the selection of their food.

Need for Biological Investigation.

Dr. Andrews said there was a real necessity for biological investigation in the first place—i.e., careful inquiry as to the effects of plants when fed to animals under their natural conditions, and the chemical and pharmacological investigation should only follow where biological inquiry showed the necessity of it. This would prevent much waste of laboratory effort and ability.

As to methods of prevention, the obvious method was to eradicate the offending plant, but that was a counsel of perfection, and in many instances it was economically if not practically impossible. Moreover, the property which made plants dangerous at certain periods was a valuable one at other times. More exact knowledge would enable advice to be given as to what stock must be kept off particular foods at certain periods. A further matter was that of dilution of foods which were poisonous when taken largely, so that no harm resulted. Symptoms in some instances only ensued after long-continued feeding on the offending plant, and in such cases the animals might be turned loose on such pasture only one or two days a week.

Discussion.

Prof. A. J. CLARK said the question of the delayed action of poisonous plants was a very interesting one to him, and instructive parallels were afforded by *ordinary pharmacological drugs.* One kind of delayed action was that in which a particular drug would only produce a certain amount of action on a tissue for a particular time, and in order to cause a toxic effect it had to be repeated a number of times. Perhaps the best example of that was thyroxin. One dose of this, in any quantity, given to an animal caused no discomfort, but if this quantity were divided and given as several doses poisonous effects would follow. The determining factor in such instances seemed to be the length of time it was acting rather than the size of the dose. Examples were also found in metallic poisons, such as mercury diethyl. A dog was given some of this subcutaneously, and a month later no toxic effects had been observed, but two or three days later the dog became blind, and a week afterwards died of acute mania. Some arsenical poisons caused the same kind of effect, such as atoxyl, which could produce blindness long after it had been taken. He believed that people who worked in munition factories during the war were still dying from the late effects of T.N.T. on the liver cells. Similarly, lead poisoning, by its action on the arteries, might produce a cerebral attack at a remote date. He fully agreed that chemical investigations should be carried out only on those plants which biological inquiries had rendered suspect.

Dr. P. H. MANSON-BAHR said there were a number of mysterious diseases in the tropics which so far had proved inexplicable on a parasitological basis. In India there was a cirrhosis of the liver which was very common, especially among Mohammedans, who did not take alcoholic drinks. Food might supply the explanation, as Dr. Andrews had said that cirrhosis of the liver in cattle could be induced by giving them a particular diet. A similar remark applied to the infantile cirrhosis among suckling infants in India, which occurred especially when children were born with the minimum interval between. In the case of pellagra, the rash appeared on surfaces which were exposed, so that the free areas of skin coincided with the parts of the body covered by the clothing. It seemed to be due, as in the case of the animals mentioned by Dr. Andrews, to the skin in the exposed areas being in a hypersensitive state.

Swine Erysipelas in the Human Subject.

Captain STOWE, in veterinary practice at Redhill, attended to show lesions of swine fever on his thumb and palm which he acquired in carrying out a post-mortem examination on a black pig which died from the disease. During the examination he made a small wound on his thumb, washed his hands in disinfectant at the conclusion, and then applied iodine. On the following evening there was a slight swelling at the wound and some inflammation. He applied lint soaked in 2½ per cent. carbolic and wore a rubber stall, and next morning the lesion had disappeared. Five days later a fresh lesion occurred on another part of the thumb. This continued to spread and fresh sites to occur until painted twice daily with 2 per cent. picric acid. The pig had a very virulent attack of the disease.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FEVER HOSPITALS MEDICAL SERVICE GROUP.

A MEETING of this group was held at the Society's house in London on Oct. 23rd, Dr. F. H. THOMSON, the President, occupying the chair.

In the absence of Dr. E. H. R. HARRIES (medical superintendent, Birmingham City Hospitals) Dr. W. M. MACFARLANE read his paper on the

SERUM TREATMENT OF SCARLET FEVER.

The speaker said that it was necessary to consider to what extent the results of serum treatment were due to (*a*) the serum itself—i.e., non-specific protein therapy; (*b*) specific antibacterial properties; or (*c*) specific antitoxic properties. It was difficult to estimate and especially to present graphically the results of any one form of treatment in scarlet fever, or to compare the results obtained by one means with those obtained by other means. After analysing some 1500 recent scarlet fever case-sheets and charts he could produce practically identical charts of similar clinical types of case which had had (*a*) no serum at all, the treatment being purely symptomatic; (*b*) normal horse serum; (*c*) diphtheria antitoxin, for the sake of its recent horse serum; (*d*) polyvalent antistreptococcal serum; and (*e*) specific scarlet fever antitoxic serum. Clinicians knew, however, that there were some signs and symptoms far too subtle to be amenable to a charting process. The estimate of any form of treatment except in the most general terms of success, partial success, or failure must ever remain one for personal judgment, and would, of course, largely be influenced by the type of clinical material available for its trial. In a disease which varied so greatly in severity and in type in different countries—and even in different parts of the same country—at the same time, and in the same country at different times, it was almost futile to attempt statistical comparison between the results obtained by individual workers employing the same therapy until very large numbers were available for analysis. He proposed briefly to discuss serum treatment in scarlet fever from three standpoints.

Non-specific Protein Therapy.—Quite recently Pontano had stated that he "has found that the serum of convalescents from scarlet fever, the serum of normal individuals, and normal horse serum are equally efficacious when injected intravenously. The mechanism of all three serums appears to be identical as far as can be judged from the effects." Claims had been advanced for the superior value of normal horse serum over antitoxin in diphtheria, but not many would be prepared to accept them. In a number of cases of scarlet fever of definite septic type he had given either normal horse serum or diphtheria antitoxin in doses of not less than 50 c.cm. intramuscularly, and had observed definite improvement, as shown by cessation of rhinorrhœa, diminution of adenitis, and progressive fall in temperature. But there were, of course, many cases of septic scarlet fever in which improvement in the septic process had followed purely symptomatic treatment.

Specific Antibacterial Serum Therapy.—Belief in the importance of the part played by streptococci in scarlet fever was, said Dr. Harries, no new thing. Klein had described a *Streptococcus scarlatinæ* in 1886. The earlier sera, in intent at any rate, had been primarily antibacterial and were produced from polyvalent strains of streptococci. The earliest produced by Marmorek (1895) had been a failure and others of similar type had followed it into limbo. Certain of the later productions of polyvalent antistreptococcal serum had, however, been employed with a measure of success in the strictly septic type of case when directed definitely against the septic manifestations. Claude Ker, in 1920, had held that the view that scarlet fever was primarily a streptococcal infection was one which was "being more and more discredited by modern research." Nobody had done more to investigate modern work in scarlet fever than Ker, and he had fully appreciated the significance of the discovery of the Dicks; of the bacterial sera, however, he had, on the whole, a poor opinion. Ker had later been one of the earliest to show that some of these sera presented either no antitoxic titre at all or so little that they would not produce a Schultz-Charlton reaction, the true nature of which—a toxin-antitoxin phenomenon—was first elucidated by Mair. Dr. Harries's own experience of polyvalent antistreptococcal sera had been fairly extensive. Although he was unable to recall any result approaching the "miraculous," yet he was sure that, given early and in sufficient dosage, the polyvalent antistreptococcal sera had frequently, but by no means always, had a favourable and sometimes a strikingly favourable effect upon the septic process. Given when this was well established or at any stage in inadequate dosage—nothing less than 50 c.cm. to 100 c.cm. intramuscularly was of value—they were practically useless. Such sera had no appreciable effect upon the primary manifestations of toxæmia.

Specific Antitoxic Sera.—In a series of 37 cases of scarlet fever Birkhaug had found that intramuscular injections of 15 to 85 c.cm. of serum from convalescent cases of scarlet fever caused a rapid improvement in the general symptoms, but practical difficulties made this method of treatment one of only exceptional application. Dr. Harries's own experience of convalescent sera given therapeutically was limited to two or three cases, and in these the results were inappreciable, owing (almost certainly) to the dose being too small. Zingher and others had employed citrated whole-blood from convalescents. One of the earliest sera which possessed definite antitoxic properties was Moser's (1902). Although still apparently employed on the continent, Moser's serum had fallen into disrepute, not because it was of no value, but because it produced very severe serum sickness. Dochez's was the type of the new sera obtained from horses immunised with the specific hæmolytic streptococci of the Dicks. More recently sera had been produced in America and in this country by immunising horses either with specific hæmolytic streptococci or with the specific toxin—the latter, of course, producing pure antitoxic sera. The Dicks claimed for scarlet fever antitoxic serum that "if given early in the disease there is a definite fading of the rash in 24 hours and improvement in the toxic symptoms. Antitoxin removes the toxic element and the subsequent course depends upon local infection of the nose and throat. After enough antitoxin has been given to relieve the patient of the necessity for combating toxæmia these local complications should receive careful attention."

Dr. Harries said that his experience and that of his colleagues with antitoxic sera had been entirely gained from about the beginning of this year with sera produced in the Wellcome Physiological Research Laboratories. Until a very much larger number of cases had been treated, and, moreover, a larger proportion of cases of great severity, their experiences could not be recorded as anything more definite than impressions. The type of case treated had varied from the moderately severe to the very severe. The first few cases had been treated with 20 c.cm. to 30 c.cm., and this dose was too small for a case sufficiently bad to merit serum treatment at all. Later cases had a minimum dose of 40 c.cm. intramuscularly. The largest total dose so far given was 70 c.cm. in two portions, and probably more marked and rapid improvement would have been seen in some cases had doses of 100 c.cm. or possibly more been given. In some cases serum had been given when toxæmia was well established; in others it had been intentionally withheld until some particular manifestation occurred in order to judge of the effect, if any, of serum treatment directed to that particular point.

Dr. Harries then summarised his tentative conclusions: (1) Reduction of pyrexia. On the whole pyrexia is reduced more rapidly by serum. With reduction in pyrexia tachycardia is also reduced. (2) Blanching of the rash. This is sometimes strikingly seen in 12 hours after injection, even with so little as 20 c.cm. of serum, but such rapid blanching of the rash only occurs in the earliest rashes—that is to say, in rashes less than 24 hours old. When the rash is more than three days old no appreciable blanching effect is produced, owing no doubt to toxin fixation in the tissues. Coincident with the fading of the exanthem has been the effect upon the enanthem. The engorgement of the fauces has rapidly improved and with this early rhinitis has ceased, this doubtless being due to the lessening of the inflammatory conditions of the fauces. The rash, however, is but an unreliable index of toxæmia. The hypertoxic case has, as a rule, a characteristically poor rash, and in estimates of the result of treatment too much attention need not be paid to what happens to the rash; a plentiful distribution of the toxin into the cutaneous tissues probably acts as a safety-valve. (3) Nervous manifestations. The toxin of scarlet fever is apparently an excitant of nervous tissues in contra-distinction to that of diphtheria, which is a depressant. It is upon the nervous manifestations that some of the most striking results following the injection of scarlet antitoxic serum are seen. Patients with severe delirium have in less than 12 hours become perfectly rational, and have been able to express themselves how much better they felt. (4) Septic complications. There is no rapid improvement in established septic conditions following the administration of antitoxic serum. (5) Late complications. Although the series was small and therefore no statement of any value can be made, there were no late complications in the cases treated with antitoxic sera—i.e., there was no instance of nephritis or carditis. (6) Serum sickness. This occurred in practically every instance and in the case of one batch of serum proved of exceptional severity; indeed, in one or two instances the serum sickness was quite as severe as the original attack of scarlet fever. Concentration of serum will perhaps reduce considerably the incidence of serum sickness.

Dr. Harries stated his belief that good scarlet fever antitoxic sera would do exactly what the Dicks had claimed and no more—that is to say, "remove the toxic element, and by relieving the patient of the necessity for combating toxæmia give him a much better chance to overcome septic manifestations." He discussed the practical difficulties of estimating antitoxic titre arising in the three methods used—namely, blanching of rash, passive immunisation of a Dick positive reactor, and neutralisation of toxin by antitoxin, as shown by performing a Dick test with a mixture upon a known susceptible person and obtaining a negative result. He concluded by referring to the views of R. W. Pryer, who, writing in the October issue of the *American Journal of Public Health*, stresses the importance of the presence or absence of a lytic principle in serum, and states that—

> "a serum (even an ordinary diphtheria antitoxin) which contains a high quantity of this principle will give a positive rash fading or Schultz-Charlton reaction. A non-lytic serum will not. *Streptococcus scarlatinæ* toxin is neutralised by a lytic serum. It is probable that the therapeutic value of a convalescent serum is partially due to this principle. . . . The serum of a horse may be strongly lytic at one bleeding and practically devoid of this property at another time. . . . There is the possibility that the serum of a horse, irrespective of its treatment, if obtained during the period of maximum lytic activity, will differ in its effect on scarlet fever from a serum obtained during the periods in which lytic principle is absent. Therefore it would be well, perhaps, to go cautiously in predicting that any methods of serum production will always give a satisfactory serum for use in the treatment of scarlet fever."

Apart from the above statements about lytic principle, said Dr. Harries, Pryer concluded that the mutation of bacteria is of common occurrence, and that scarlet fever is caused by a group of closely related organisms capable of intermutation by means of varying strength of bacteriophage-like principles. If these findings were borne out by subsequent work, they would go far to explain some of the difficulties and discrepancies encountered in work on the Dick toxin, the Schultz-Charlton phenomenon, and curative sera of any type.

Discussion.

The PRESIDENT said that he had treated 71 hospital cases with antiscarlatinal serum injected into the vastus externus. Of these, 31 were treated on the first day of the rash, 33 on the second day, and the remainder later. The average duration of the rash was shorter in the cases treated on the first day than it was in those treated on the second, and in 13 of the 31 first-day cases the rash disappeared within two days, whereas it did so in only 3 of the 33 cases treated on the second day. Of the 71 cases two were severe attacks of septic scarlet fever, and there were two severe initial attacks; the rapid recovery of the latter was remarkable. On the average the temperature fell somewhat more rapidly and became normal somewhat earlier in serum-treated cases, and complications were somewhat more frequent in cases treated on the second day of the rash than in those treated on the first. In the series of 71 cases 68 per cent. suffered from serum rashes and 25 per cent. from joint pains. There were no deaths. In dealing, as at present, with a mild type of scarlet fever, it was difficult, said the President, to estimate the true value of the serum treatment, but the more rapid fading of the rash with serum treatment seemed to be important.

Dr. DOUGLAS MCCLEAN stated that he had Dick tested nurses and children in the wards at the Hospital for Sick Children, Great Ormond-street, and that serum had been given to those who had positive reactions. The dose had been 5 c.cm. at first, but that had not always produced a Dick negative, and the dose had therefore been increased to 10 c.cm. As regards the protection of the children, the results had not been conclusive.

Dr. G. A. BACK (London Fever Hospital) said that he had treated some 30 cases with serum, but it was difficult to estimate the effects of treatment, particularly in view of the mildness of the scarlet fever prevalent.

Dr. E. W. GOODALL (N.W. Hospital, M.A.B.) also remarked that the difficulty was to find any bad cases; amongst the last 300 cases of scarlet fever admitted to his hospital there had not been a single death. In the few cases that he had treated with serum recovery had certainly been more rapid than he would have expected, but those cases could not be looked upon as severe, and in the ordinary way they would have got well without serum treatment. In the cases referred to the dosage had been 30 to 40 c.cm., and sometimes more, and in only one of them had there been an attack of serum sickness, and that had not been worse than what might occur with injection of antidiphtheria serum. Dr. Goodall suggested that it would be better to use the word "refined" instead of "concentrated," as applied to various sera, as he understood that the process aimed at getting rid of the superfluous proteins.

Dr. R. A. O'BRIEN (Director of the Wellcome Physiological Research Laboratories) said that it was necessary to define what sera were, and to find a method of deciding whether a serum was good or bad. There was practically no laboratory test of any value yet discovered, but hope had not been given up. The American method of testing by obtaining passive immunisation of a Dick positive reactor gave results which were very difficult to interpret. It was very difficult to provide serum which was of undoubted high antitoxic value, and it would be unfortunate if improper claims were made for the serum treatment of scarlet fever; unreadiness to draw conclusions before an adequate number of cases had been treated was to be encouraged. There would be no trouble in getting unlimited supplies of serum once it was known to have a definite antitoxic value. The sera of his firm had passed the American standard. The fact that cases of mild scarlet fever treated with serum had suffered more from the serum pains and rash than from the disease itself was an objection to its use in such cases. The passive immunisation test was undoubtedly the best available, but it must be considered whether or not the exposure of people to test the antitoxic value of serum was legitimate. Dr. O'Brien quoted figures supporting the view that complications were less common in cases treated with serum. With regard to Pryer's paper on the lytic method of testing, he withheld his opinion.

Dr. BACK said that a certain amount of delay was entailed by the use of the Schultz-Charlton test, but the majority of patients would receive their curative dose within 24 hours. The shortest period had been four hours.

Dr. A. E. A. PEARSON (Leeds City Hospital) stated that he had used the serum in a small number of cases and had noticed that the temperature had fallen in from 12 to 24 hours in nearly every instance. He had used 10, 20, and 30 c.cm. doses, but expense could not be overlooked. The cost of the American serum he had procured had been 25s. per 10 c.cm., so that doses of 80 or 90 c.cm. would involve a heavy expenditure. He urged the need for a standardised antitoxin, and expressed the hope that it would be a practical proposition in time.

The PRESIDENT said that at the N.E. Hospital they had been increasing the dosage, and in the last few cases had given usually 60, 80, 100, and even 120 c.cm., but there was no clear evidence that the large dosage produced any better effect than the small ones.

CARDIFF MEDICAL SOCIETY.

THE first meeting of the session of this Society was held on Oct. 13th, when Dr. R. CAMERON delivered his presidential address on *Some Aspects of Gastric Function in Relation to Symptoms.* Taking Ryle's classifications of dyspepsias as a basis, he reviewed the functional and organic disorders, emphasised the similarity of subjective symptoms arising from both, and compared the prevailing views on the motor, secretory, and sensory functions with those which have hitherto been taught. He reviewed the work of Carlson on hunger and appetite and pointed out that the factors producing normal sensations may, when exaggerated, lead to those conscious responses which are recognised as subjective symptoms. Dr. Cameron discussed Hurst's important contributions to this subject, which disproved any sensory response of the mucous gastric membrane to varying stimuli, demonstrated reflex hypertonus in response to local and distal irritation, and established this as a cause of delayed pain. The researches of Bennett and Ryle on fractional gastric analysis were dealt with to show that extreme variations of acidity occur without any gastric symptoms being evident and apparently without any disturbance of metabolism. In a series of mental patients without any gastric symptoms which Dr. Cameron had examined, a number showed achlorhydria or hyperchlorhydria. The conclusion drawn from recent work on gastric function in health and disease was that normal sensations result from tonus and tension of the muscle, and that subjective symptoms are most easily explained on a similar basis.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society held on Oct. 22nd Mr. H. BLACOW YATES read a paper on

Acute Osteomyelitis

based on 38 cases treated in the Sheffield Royal Hospital during the past five years. In 70 per cent. of them there was a history of a recent accident, and the majority presented a focus of staphylococcal infection at the time of admission to hospital. The pathological lesion insisted upon was metaphyseal hæmatoma, the result of trauma, which became infected by staphylococci circulating in the child's blood, though the presence of these staphylococci had produced no previous symptom. In considering the diagnosis remember the rarity of acute articular rheumatism in children under 15 years. Of six cases of acute osteomyelitis having more than one lesion at the time of admission to hospital, two showed infection of three bones and in the remainder two bones were involved. The bones affected were often on opposite sides of the body. Four of these cases recovered, two of which had a positive blood culture. Mr. Yates urged the necessity of opening the medullary cavity when external appearances were normal and discussed the factors contributing to the 18 per cent. mortality.

Mr. R. ST. LEGER BROCKMAN read a paper on

Obstruction of the Small Intestine

without reference to strangulation. He discussed the reasons why kinks were not removed in the intestine, as they are in a garden hose, by the pressure of the contents. The rapidly increasing stimuli caused a state of tetanus or spasm in the musculature of the small intestine, and as this tissue became fatigued another phenomenon of plain muscle appeared, the so-called idio-muscular contraction, which remained localised and showed no tendency to move on. The retraction ring observed in cases of obstructed labour was the best example of this condition. In all cases of obstruction there were two factors at work: the first physical, the second physiological. The increasing content of the bowel and bacterial invasion inaugurated a vicious circle, and often resulted in a partial volvulus of the small intestine. The really important thing to be considered was early diagnosis. Acute spasmodic abdominal pain, vomiting, and shock were the earliest signs and symptoms of acute obstruction. Under these conditions the only safe course to adopt was to assume the presence of obstruction until the opposite was proven. The most valuable means of diagnosis was the stethoscope. The peculiar musical tinkle of air and fluid in wearied intestine was a distinctive sound, never to be forgotten when once recognised. It could be heard at a very early stage through the abdominal wall and could often be elicited by the same manœuvre as that used to obtain a gastric succussion splash. Obstruction of the small gut demanded the surgery of the fingers rather than of the hands, and the operation should be done through as small an incision as possible. To obtain this ideal the most painstaking efforts at locating the site of obstruction were called for. The careful use of the stethoscope, and the position in which the spasm of pain fell off, or what might be called "the march of the pain," were valuable evidence in this search. Surgery in early cases should aim at simply relieving the obstruction; in later cases, where an advanced degree of distension and toxæmia were present, enterostomy should be done. Circumstances alone would decide whether this should be external, or internal into the transverse colon. Mr. Brockman observed that after the actual obstruction had been relieved, the practice of emptying the intestine by means of Moynihan's tube was most useful in some cases of extreme distension. It was essential to remember that the tube should be introduced through healthy intestine below the site of constriction.

In the discussion that followed the papers Prof. A. M. CONNELL, Mr. ERNEST FINCH, Mr. GARRICK WILSON, and Mr. ARCHIBALD CUFF took part.

PATHOLOGICAL SOCIETY OF MANCHESTER.

AT a meeting of this Society held on Oct. 21st, Prof. E. D. TELFORD being in the chair, Dr. C. P. LAPAGE read a paper on

Diathesis in Children.

Diathesis, he said, is not acquired, it is an inherited peculiarity of constitution which cannot be eradicated though it may become quiescent. An acquired condition such as rickets is not diathesis because such a state can be cured and is not a lifelong condition. Diathesis is a state of the human organism in which there is an inherited peculiarity of constitution so that the individual tends to exhibit either certain reactions in response to irritating factors or certain weakness of resistance. It is familial rather than racial or national. Dr. Lapage went on to deal specially with two diatheses, the exudative and the nervous. The exudative diathesis is an important factor in determining the reaction of children to disease and to faulty metabolism. Asthma, eczema, hay fever, and angio-neurotic œdema are the well-known signs, but curd-dyspepsia, milk-intolerance, urticaria, and croup are common in infants of this diathesis and in later childhood. In addition there may be cyclical vomiting, mucous colitis, and other signs very similar to gout in adults. Children of exudative diathesis are of a pale lymphatic type and are restless and irritable. Irritants are concerned in the production of signs of the diathesis; the individual is exudative and may be sensitised. External irritants are: (1) Foreign proteins derived from animals or from plants, food, or bacteria; (2) metabolic faults from animal fats, acids, fruits, wholemeals; (3) climatic factors from bracing seaside places and east winds. Internal irritants are from infections of the respiratory, digestive, or other systems, and also from infected lymphatic glands. In the nervous diathesis the child has a weak spot in the reactions of the nervous system, and as a result of infection or overstrain may show disturbed nervous reactions, tachycardia, irritability, moodiness, various phobias, night terrors, and even fits may occur. Babies with pyloric spasm are of the nervy type, and some babies who find great difficulty in feeding do so because they are nervous. Genuine hysteria may be present in infants.

Reviews and Notices of Books.

THE PATHOLOGY OF TUMOURS.

Second edition. By E. H. KETTLE, M.D., B.S. Lond., Professor of Pathology and Bacteriology, Welsh National School of Medicine, Cardiff. London: H. K. Lewis and Co. 1925. Pp. 285. 12*s.* 6*d.*

THERE are two ways of looking at tumours. They can be regarded as purely adventitious and possibly avoidable formations, as "purposeless" pests, the sole discoverable object of which is to prevent overcrowding of our globe. There is a second and more scientific light in which tumours can be regarded—namely, as variations or anomalies of growth, comparable with other departures from the "normal" standard, to which practically every cell in the body which has not ceased to perform its physiological functions is liable. Viewed in this light the problems of tumour formation are susceptible of study upon general biological lines. A beginning has been made in this direction, but the teaching on the subject lags behind the advances which have been made. Prof. Kettle is one of the few pathologists in this country who are qualified to improve the teaching, and he is to be congratulated upon the way in which he has faced and overcome the difficulties. The second edition of his "Pathology of Tumours" is a model of conciseness and deserves to be ranked with Kaufmann's "Lehrbuch." It has been thoroughly brought up to date, and chapters have been considerably altered, if not rewritten. The student who, after reading it, fails in the higher examinations must not blame this book. The chapter upon the Experimental Study of Cancer is invaluable for everyone who has been unable to keep in touch with the latest developments. If we regret an omission in the book, it is that full references are not given to all the writers quoted in the text.

Possibly because he is writing a text-book intended primarily for students, Prof. Kettle seems to us to under-estimate the variability of tumours, a feature that they share with all living tissues. In the chapter upon the basal-celled carcinomata (in which, by the way, he is not quite just to Krompecher when he suggests that they were so named in the belief that they alone—and not all the cutaneous carcinomata—arise in the basal cells of the epidermis, which alone retain the function of division) he discusses the possible origin of rodent ulcers in hair follicles or sweat glands. But it is a well-established fact that these structures share in the epidermisation of scars. Then why should not a tumour that originates in epidermal cells mimic the minute and really insignificant structural differences that arise during the natural development of the skin and its appendages, regardless of its exact site of origin? Another question which might be asked is this, Are not keratinisation and the production of "colloid" expressions of functional zeal on the part of a tumour, however misguided it be, since they correspond with physiological differentiations? They can hardly be regarded as degenerations. Morphologists may also question the importance the author attaches to the endotheliomata. We agree that the name has been much abused in the past. It could with advantage be discarded and replaced by "angioma," "angiosarcoma," and so forth. Why label a salivary tumour "endo-thelioma" when Prof. Kettle tells us that "it is now pretty well agreed that it is derived from epithelium"? These and similar difficulties would be largely overcome by adopting Albrecht's teaching and frankly admitting that *all* tumours are malformations, and that, although the majority of them are well-defined species, many cannot be separated from hyperplasias and other anomalies of growth.

The book is well got up. The illustrations are good, especially the histological drawings, which we believe are the work of Prof. Kettle's own hand. The present edition is a worthy successor of the first, and will occupy a sure place among books of reference.

UROLOGY.

The Radiological Examination of the Male Urethra. By G. L. S. KOHNSTAM and E. H. P. CAVE. London: Baillière, Tindall and Cox. 1925. Pp. 115. 15*s.*

IN this work the authors give the results of their method of investigating the urethra, which has been used for the last five years, but has not yet found general favour amongst urologists. This has been due partly to the fact that urethroscopy and cystoscopy give such accurate information that other methods are, as a rule, unnecessary, and partly to the difficulty of acquiring a reliable technique and interpreting accurately the urethrograms obtained. This book gives a full description of a satisfactory method of injecting the urethra, and, by supplying a large number of interesting plates, gives the reader an opportunity of learning what facts may be deduced from urethrograms. The opaque fluid employed by the authors is lipiodol, diluted with four volumes of sterile paraffin, and it is injected under a constant pressure recorded by a mercury manometer. Radiograms are then taken under different conditions—between injections, during injections, and with the bladder constricted or relaxed. Full details are given concerning the best positions, both of the patient and of the radiographic apparatus. The second section of the book deals with the interpretation of negatives. The conditions in which the authors consider a radiological examination of the urethra of the greatest use are stricture, prostatic enlargement, and obstruction following prostatectomy. It is interesting to note that as a result of their investigations they have come to the conclusion that the sphincter action after prostatectomy is undertaken not by the compressor urethræ muscle, but by a portion of prostatic urethra that has been left behind.

Although it is unlikely that radiological examinations of the urethra after distension with an opaque fluid will ever take the important place in urology that pyelography has done, it must be admitted after reading this work that the method may be of considerable use in special cases. Thus, in old-standing strictures, in which treatment by excision is under review, a urethrogram will furnish valuable knowledge prior to operation as to the amount of urethra that it will be necessary to excise in order to obtain a satisfactory result. The authors are to be congratulated on their addition to our knowledge of radiography of the urethra and on having presented the results of their investigations in a readable and easily assimilated form. Their book should certainly be found on the shelves of all specialists in genito-urinary troubles.

EMPYEMA.

Some Fundamental Considerations in the Treatment of Empyema Thoracis. By EVARTS A. GRAHAM, A.B., M.D., Member of Empyema Commission, U.S. Army; Professor of Surgery, Washington University School of Medicine. London: Henry Kimpton. 1925. Pp. 110. 10*s.* 6*d.*

Prof. Graham's essay was written in 1920, and the delay before publication has given him a chance to criticise in an addendum articles upon the same subject which have appeared in the meantime.

No attempt has been made to cover the subject of empyema as a whole, and the author founds a therapeutic procedure on general principles. Prof. Graham states that the mortality-rate of streptococcal pneumonia associated with empyema in certain military camps during the influenza pandemic was actually above 70 per cent. By the adoption of the cardinal principles discussed in the essay the mortality was reduced to 4·3 per cent. The essential features of these principles are three: (1) careful avoidance of an open pneumothorax in the acute stage; (2) the prevention of a chronic empyema by the rapid sterilisation and obliteration of the infected cavity; and (3) careful attention to the nutrition of the patient. It is with the first of these principles that the greater bulk of the author's treatise is concerned. His insistence upon its importance is founded on observations of the experimental production of pneumothorax which prove that previous conceptions of its mechanics are incorrect. It is often thought that the two pleural cavities are kept rigidly exclusive by the mediastinum. But the latter opposes only a very slight resistance to pressure unless it is previously diseased and thickened by long-standing inflammation. An open pneumothorax on one side, therefore, leads to compression of *both* lungs. A lung does not necessarily become collapsed and functionless even if the pleural opening is larger than the diameter of the glottis, and a bilateral open pneumothorax is not inevitably fatal as it would be, of course, if collapse of both lungs were to ensue. The maximum opening into a pleural cavity that can be safely undertaken depends upon the relation between the amount of air entering the lungs and the amount which enters the pleural cavity. Any condition which reduces the "vital capacity" or increases the demand for oxygen will diminish the size of the opening compatible with life.

During the pre-critical stage of pneumonia the amount of air entering the lungs is for several reasons diminished. Later, with a relatively higher vital capacity the thorax may be opened with less danger of respiratory embarrassment, as will also be the case when, through past inflammation, the mediastinum is relatively rigid. These conclusions are in accordance with clinical experience. Repeated aspirations should be substituted for operation in the pre-critical stage. If frank pus develops, operation can be done later, and is, if possible, postponed till the condition of the patient is favourable. Some years ago[1] Dr. A. Abrahams described 110 cases of empyema under his care, in 80 of which aspiration alone led to complete resolution.

The book is a little wearying by a tendency to repetition, but it is very convincing, and the conclusions will be attractive to those physicians and surgeons who have more or less empirically adopted the recommendation for which Prof. Graham supplies theoretical reasons.

AUSTRALIAN TOTEMISM.

A Psycho-analytic Study in Anthropology. By GÉZA RÓHEIM, Ph.D. With an introduction by M. D. EDER. London: George Allen and Unwin. 1925. Pp. 487. 35s.

THERE is a bewildering amount of material concerning the totemism of the Australian aborigines, and observers like Spencer and Gillen, who lived among the Arunta tribes of Central Australia, have made detailed records of beliefs and ceremonies which will soon be things of the past; but no theory as to the origin of these complicated systems has been generally accepted. Róheim, following Freud in his work on "Totem and Taboo," studies their psychic structure and claims to trace their evolution from the period of the supposed primitive horde in which the brothers unite to kill the father in order to secure possession of the women of the horde—the primeval Œdipus situation. Granting that this situation exists as an unconscious fantasy that can be revealed by individual psycho-analysis, it still seems a far cry to the postulation of a stage in human development in which it was an actuality. If we grant that, and a good deal more of psycho-analytical theory, we may follow Róheim's ingenious explanations of the extraordinary facts of Australian ethnology. Even then there remains a feeling that his speculation is too facile, as in the picture drawn on p. 389 of the events after the killing of the father, when the horde "would come back to stone the corpse a second time as they had stoned the man when he was alive."

Yet the application of psycho-analytical findings to explain totemism is more than a *tour de force*; it is a test to which these findings may be legitimately subjected, for if they indicate the workings of the primitive level of the mind then these savage customs should come into agreement with them. Such an identity Róheim claims to find throughout, a good example being the nescience of certain tribes concerning the relation between sexual intercourse and procreation. He shows that the knowledge of this relation manifests itself in beliefs and rites which express infantile sex theories already familiar in psycho-analytical work. This example is one out of many, but not all are so easy to understand. In the deductions the writer draws as to the distribution of the proto-Australians and later immigrants, he is in accord with other authorities. A more limited thesis, however, would probably have a better chance of acceptance by ethnologists. The book is a product of a close study of the literature and is provided with extensive references.

THE CONTROL OF THE BREATH.

An Elementary Manual for Singers and Speakers. By GEORGE DODDS, Mus.B. Dunelm, and JAMES DUNLOP LICKLEY, M.D. London: Humphrey Milford, Oxford University Press. 1925. Pp. 65+xii. 6s.

THIS little manual gives, in simple language, a clear and readable description of the structure and mode of action of the respiratory mechanism, and, though much less fully, of the production of tone in the larynx. Little is said of the mechanism by which pitch is varied, and the vexed subject of vocal registers is not mentioned. The last third of the book is devoted to breathing and vocal exercises designed to obtaining control of voice and breath. The authors rightly believe that a knowledge of the mechanisms concerned is useful and not harmful to students of singing and elocution; to such this little book, with its excellent explanatory illustrations, will be helpful.

OLD DERBY PORCELAIN AND ITS ARTISTIC WORKMEN.

By FRANK HURLBUTT. London: T. Werner Laurie, Ltd. 1925. Pp. 312. 18s.

THIS book is admirably printed in brown ink and with wide margins. It appears that the format was selected as an attempt to get off "the Kelmscott track," but it does not seem to require any more justification than its comeliness.

Old Derby porcelain has an interesting history which is well set out, one of the most striking points in it being that, according to the author, the Derby factory was the only early English porcelain factory which, except for a few individual pieces, produced original ceramic statuary, giving regular employment to modellers on the premises. A chapter on figure-makers for reproduction is full of detailed information of the sort that the collector of china should have whatever his favourite brand, and the same may be said for the sections dealing with the painters of the figure and flower subjects, the birds, and the fruits on old Derby porcelain. All these chapters should be read in connexion with the latter part of the book, which consists of 59 plates illustrating the beautiful art and craftsmanship of various painters. One need not be a virtuoso in any way to admire these lovely little pictures, and persons who have never bought a pot or a plate in their lives—to say nothing of the more elaborate pieces—must often have felt curiosity about the painters, while to collectors the precise histories will be valuable and entertaining. As it is in the author's knowledge that many of our profession fall into this category, we do them a service in bringing this volume to their attention.

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[1] THE LANCET, 1920, ii., 513.

Reports and Analytical Records.

BRUSSON'S GLUTEN BREAD.

(Brusson, Jeune and Co., 311, Gray's Inn-road, W.C. 1.)

This preparation is sold in the form of rolls, each contained in a separate wrapper, and weighing about 1 oz. The rolls are extremely light, and consequently bulky in appearance. When analysed the following results were obtained:—

Moisture	12·5 per cent.
Ash	0·6 „
Fat	1·3 „
Protein	36·8 „
Starch and dextrin	42·7 „
Undetermined matter, fibre, &c.	6·1 „
	100·0
Matter soluble in cold water	12·4 per cent.

For purposes of comparison it may be noted that ordinary household bread, with a moisture adjusted to 12·5 per cent., contains 9·7 per cent. of protein and 78 per cent. of starch and dextrin. The Brusson bread is thus much richer in protein and poorer in starch and dextrin.

Formerly an almost complete absence, or at least a very marked reduction, of carbohydrates was considered an essential characteristic of a true "diabetic" food. Whilst a diminution of the carbohydrates in the diet of the diabetic is still deemed necessary, modern practice allows a somewhat more liberal use of carbohydrates than in the past, and under certain conditions some practitioners of recognised authority even permit, for a limited period, foods of high carbohydrate content, such as oatmeal, potatoes, and rice.

CLUBLAND WHITE PORT.

(T. R. Parkington and Co., Ltd., 161, New Bond-street, W.1.)

When analysed this wine gave the following results:—

Present gravity	1·0161
Alcohol per cent. by volume	21
Total extractives	10·5 per cent.
Consisting of—	
Sugar	9·05 „
Total acidity as tartaric acid	0·36 „
Volatile acidity as acetic acid	0·03 „

These analytical figures are characteristic of a good port. The wine itself is of a "full character," well matured, soft to the palate, and with an agreeable bouquet.

(1) CIBALGIN; (2) AGOMENSIN AND SISTOMENSIN; (3) CORAMINE.

(Clayton Aniline Co., Ltd., 68½, Upper Thames-st., E.C. 4.)

(1) Cibalgin presents in combination the analgesic and antipyretic properties of amidopyrin, a small dose of dial having been introduced for its sedative properties. It is, however, primarily intended as a non-narcotic analgesic. The manufacturers state that extensive pharmaceutical and clinical tests have confirmed the value of the compound as rapidly relieving pain without conducing to the formation of habit. The drug is available in the form of tablets and liquid for oral use, while ampoules are supplied for hypodermic injections.

(2) A claim was made recently, which has received support on the continent, that two active principles isolated from bovine corpora lutea may be used for the regulation of menstruation. These active principles or hormones have been termed Agomensin and Sistomensin, the first of which is recommended in cases of delayed menstruation, and the second in conditions accompanied by an over-profuse flow. Agomensin is of value in retarded menstrual flow occurring during an expected period or following a too scanty menstrual flow. Sistomensin appears from clinical results to act as a stabiliser of menstruation in cases of hyper-function, its use, therefore, being indicated in dysmenorrhœa and menorrhagia. With regard to both preparations interesting cases can be quoted from French and German medical literature, and considering the frequently obstinate nature of the symptoms to be relieved, and their prevalence in such varied associations, both drugs might well be given trial under carefully observed medical conditions.

(3) Coramine is the trade name for pyridine-β-carbonic acid diethylamide, which was the subject of an article by Prof. E. Stanton Faust published in The Lancet of June 27th, 1925. This new synthetic chemical possesses a distinctive camphor-like action, and for many years unsuccessful attempts have been made to produce a water-soluble form of camphor having the typical therapeutic properties associated with the drug. Prof. Faust seems to have demonstrated that the action of Coramine is almost identical with that of camphor, and, indeed, superior in its action on the heart. According to him, in small doses it exhibits an effect similar to that of digitalis, while its stimulating effect extends to both the motor and sensory nervous systems. Coramine should be, therefore, indicated in such conditions as heart asthenia following infectious diseases, the appropriate renal affections, poisoning through narcotics, and asphyxia of the new born, and records of such cases and of cases of bronchial asthma and emphysema are reported where its use has been efficacious. The drug is available in the form of liquid for oral use and in ampoules for parenteral administration.

OPOIDINE.

(J. F. Macfarlan and Co., Edinburgh and London.)

Towards the end of 1922 we noticed Opoidine favourably as an example of a mixture of the total alkaloids of opium in soluble form. The drug contains about 50 per cent of morphine, the remaining 50 per cent. consisting of other opium alkaloids, concerning the latter of which there is evidence that they are of value in particular directions. Messrs. J. F. Macfarlan and Co. have now introduced a solution of opoidine in combination with scopolamine in ampoules, and they have received evidence of the value of the combination, one practitioner writing in respect of the production of "twilight sleep," stating that he has obtained in a certain number of cases complete amnesia after the first dose of the combination.

CAPROKOL (HEXYL RESORCINOL B.D.H.).

(The British Drug Houses, Ltd., 16–30, Graham-street, City-road, N. 1.)

Caprokol is a new urinary antiseptic synthetic remedy for oral administration. It was first brought to the attention of the medical profession at the annual meeting of the American Medical Association last year, when Dr. Veader Leonard, of Johns Hopkins University, gave a description of work carried on at his department of bacteriology over a series of years on the alkyl resorcinols. These are claimed to be more powerfully germicidal than any other known class of substances of equally low toxicity. Clinical reports published on the introduction of hexyl resorcinol and others since received indicate that it possesses valuable properties, in that it is chemically stable, non-toxic, and non-irritating to the urinary tract, and administrable by the mouth. The reports submitted to us go to show that Caprokol exhibits a powerful antiseptic action in high dilution in urine of any reaction, while its elimination in the urine has a local antiseptic influence. A short series of cases of urinary tract infections treated with Caprokol is published under Dr. Leonard's authority, and indicates that many obstinate cases hitherto resistant to treatment had lost their symptoms under use of the drug. Reference to the discovery and properties of hexyl resorcinol have already appeared in The Lancet, and we comment this week in an annotation upon the results obtained by Dr. R. B. Henline through the employment of this urinary antiseptic.

Iodosal is the correct name of the "supertonic table salt" supplied by Messrs. Francis Newbery and Son and noticed in this column on Oct. 24th.

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THE LANCET.

LONDON: SATURDAY, NOVEMBER 7, 1925.

STATUTORY DENTAL BENEFIT.

THOSE who have read the evidence submitted to the Royal Commission on the National Health Insurance Act, during the investigation which is now drawing to a close, must have been struck by the unanimity with which all sorts and conditions of witnesses testified to the desirability of making dental treatment a statutory benefit under an amended Act. Long before the evidence given by the various dental societies was reached, representatives of approved societies were paying generous tribute to the good which had resulted from the partial dental treatment at present given as an additional benefit, paid for to a certain limited degree out of the funds released under the first valuation, and were advocating its conversion into a statutory benefit. Many of the witnesses, indeed, were so convinced of the necessity for this that they recommended a partial pooling of their future surplus funds in order that all insured persons might benefit from the treatment. The members of the Commission, also, by their questions showed that they appreciated the desirability of extending the incidence of dental treatment over at least the whole of the present insured population. The case for making dental treatment a statutory benefit is, in fact, proved to the hilt. There remain, however, certain questions concerning which no unanimity exists—for example, the extent to which it is possible or desirable to make statutory dental benefit complete in the near future, and the manner in which such benefit as may be decided upon is to be administered. To give complete dental treatment will require, annually, a large sum of money, and if an increase in the present contribution be excluded as a possible source of supply, as indeed seems necessary in the financial state of the country, the money required can only be got by some rearrangement of the manner in which the funds obtained from the present contribution are spent. It seems evident that some such rearrangement will be made, but there are certain payments in connexion with medical treatment which have a first claim on any such funds, and it is doubtful whether what will be left when these claims are satisfied, even were it devoted entirely to the payment of the cost of dental treatment, would be sufficient. It may be assumed, therefore, that those schemes of complete dental treatment, not only for insured persons but also for their dependants, which were put forward by the dental and certain other witnesses, must be taken as ideals which cannot be realised as a result of the present inquiry, but towards the ultimate realisation of which it may be possible to take a very definite step. It is questionable whether any responsible dental authority, fully acquainted with all the circumstances of the present position, would desire to see complete dental treatment given as a statutory benefit at the present time, and it would seem from a careful reading of their evidence that the dental witnesses rather contemplate—between the realisation of such an ideal and the present chaotic condition of dental treatment as additional benefit—the prudent intermediate stage of a statutory dental benefit partial in its scope and limited in its time of application, which would afford the knowledge, not available at present, on which an effective and complete scheme of national dental treatment might be based.

There was agreement on the part of all the witnesses before the Commission that, for the present at least, payment of the dentist should be for services actually rendered on an agreed scale of fees and not by a capitation fee. One reason for this proposed difference from medical benefit is that it is quite impossible at present to estimate with any approach to exactitude the numbers of insured persons who would take advantage of dental treatment were it offered to them on terms similar to those under which medical benefit is given. Comparatively little can be learned from the experience of dental treatment as additional benefit, for there are many circumstances which tend to restrict applications on the part of insured persons for this treatment at the present time. Only members of certain approved societies fortunate enough to have surplus funds and which have adopted dental benefit are eligible. The formalities necessary in claiming the benefit and the fact that only about 25 per cent. of the dentist's fee is paid by the societies have also tended to keep down the number of persons obtaining the benefit. In one society consisting of women of a class likely to appreciate and to desire dental treatment, where every possible effort was made to bring the treatment under the notice of the members and to induce them to accept it, and where special means were available to assist those who had difficulty in finding a proportion of the fee, the claims all over the society did not exceed 12 per cent. of the membership. No dental witness contemplated a demand approaching 12 per cent. of the number of insured persons, and, indeed, were that proportion of claims to be expected, at the average expense per case which has ruled during the last five years under additional benefit, the cost of dental treatment would in the near future be prohibitive. Instead of making payment for any statutory dental benefit a first charge on the available contributions as in the case of medical benefit and making payment of the dentist by a capitation fee, the trend of the evidence given seems to point to the setting aside of a definite sum of an agreed fraction of a penny from the weekly contribution which, with the appropriate Government grant, would form a central fund or pool from which the cost of a certain definite amount of dental benefit for every insured person claiming it would be defrayed. There were various ways suggested whereby the treatment provided could be limited in accordance with the money available, as, for example, by giving free operative treatment, and, in addition, paying a proportion of the cost of any necessary dentures, the patient being left to find the remainder. Assuming a demand of 6 per cent., it was calculated that this amount of treatment would cost 3*s.* 3*d.* per annum per head of the insured population, and would leave the patient to find approximately one-third of the cost. The actuary of the British Dental Association submitted a modification of this scheme which would reduce the cost to a little below 3*s.*, an amount which would be covered by a payment of 0·58*d.* per member out of the weekly contribution with the corresponding State grant added. This approximates to the ½*d.* per week suggested by the representatives of one of the approved societies and indicates a feasible beginning. The professional evidence shows that practically everything in connexion with this matter of cost of dental treatment can be calculated with a fair degree of accuracy except the possible demand; but that is the crux of the problem, and it can only be satisfactorily solved by experiment on a large scale.

Faced with the problem of how to provide as much of a desired benefit as possible, the Commissioners naturally showed a tendency to explore what appeared to be attractive avenues of economical administration, and the relative merits of "panel" and "clinic" service took up no little time when the dental witnesses attended. Here a number of the dental witnesses showed to some disadvantage. The interests of the dental profession are undoubtedly necessary considerations, but if no more potent arguments against the establishment of whole-time dental clinics can be adduced, it is to be feared that the public interest must prevail. On the other hand, undue emphasis should not be laid on the success of such clinics where they are obviously the most suitable means which can be employed, as, for example, in the dental treatment of elementary school-children or in similar treatment at maternity and child welfare centres. These are special cases which have nothing necessarily in common with the dental treatment of adults as part of an insurance scheme. The feeling of the dental profession is at present opposed to the setting up of whole-time dental clinics. There is no certain knowledge that they would provide more efficient or economical dental treatment for the industrial classes than the 10,000 private practitioners who are able and willing to give it and who have voluntarily organised themselves for the purpose. Clinics cannot be a success unless they are established with the hearty support of the dental profession, and common sense appears to favour a continuance of the panel system in dentistry as in medicine in the immediate future. The methods of control at present applied to medical benefit could be easily duplicated or modified to suit the requirements of dental benefit. On the whole it would seem from a dispassionate review of the evidence given before the Commission that it would be a matter of legitimate surprise and regret should there not emerge in the report of the Commission a strong recommendation for the early institution of a definite measure of dental treatment as a statutory benefit under an amended Act. Without imposing further contributions on the already heavily burdened employer or employee this would soon effect such a reduction of the cost of sickness benefit as to liberate funds for the completion of the scheme.

SUBACUTE INFECTIVE ENDOCARDITIS.

NOT much was heard of subacute infective endocarditis till the latter part of the war and since. It was known as something of a rarity, but its symptoms were not understood and its differentiation from other similar conditions was not clear. Since the war it has become a commonplace and many observers have described and attempted to explain it. This increasing prevalence might be due either to more acute diagnosis or to the fact that very large numbers of men were sifted through more or less efficient filters or to some actual ætiological relation between war conditions and the disease. This last alternative seems to receive most support, and the apparently marked decline in the prevalence of the disorder during the last two years is giving another reason for believing that the war had a large share in causing it. The condition appears to be essentially a chronic bacterial poisoning, and its fatality is due at least as much to this as to the mechanical interference with the circulation produced by the valvular lesion. Its fatality, too, is extraordinarily high; with a few doubtful exceptions every case which has been definitely diagnosed has died within a period between a few months and two or three years. An inevitably fatal issue is extremely rare in parasitic diseases, and its occurrence in subacute infective endocarditis may mean only that diagnosis has not yet advanced beyond the point of being able to recognise the beginning of the end. No form of treatment has proved of any value. Any new information about it is therefore welcome, and there is much of interest in a paper on some of its bacteriological aspects in the current number of the *Journal of Pathology and Bacteriology* by Dr. H. D. WRIGHT, who has worked at it at University College Hospital in conjunction with Sir THOMAS LEWIS and his colleagues in the cardiographic clinic, where the clinical aspects have been thoroughly investigated.

It has puzzled many people that it should be so difficult to isolate organisms from the blood in a condition which is so obviously symptomatically a mild septicæmia, especially as the heart valves are the chief—indeed the only known—focus of the non-hæmolytic streptococci which are always obtained if anything is. The proportion of positive blood cultures has varied widely with different observers. In America it has been 70 per cent. or more, though LIBMAN has noted that they are not so easy to get now as they used to be. In Germany some workers report positive cultures in almost every case, while another group get figures round about 30 per cent., which is similar to the English experience. Dr. WRIGHT addresses himself particularly to the obvious proposition that negative results are due to imperfect technique. He points out that repeated examinations of the same case practically always give the same result, either positive or negative, and that there is no difficulty in isolating streptococci over and over again from a blood in which they occur in very small numbers. He adds to this a variety of experiments on media and methods, and comes definitely to the conclusion that the failure of a reasonably competent worker to isolate the cocci means that they are not there. Turning to the question of how and where the organisms live in the body, he points out that one is here confronted with very serious technical difficulties. Patients dying from a subacute endocarditis may suffer from a terminal invasion by other organisms, and if this does not occur during life a general spread of non-hæmolytic streptococci through the blood occurs so commonly after death that it is impossible with ordinary post-mortem material to get any certain and satisfactory information about the distribution of the causative organisms in the various tissues and organs. The cocci obtained from the blood during life, and to which the patients produce antibodies, are not demonstrably different from those which may be found in the blood post mortem in about a third of random autopsies. And it follows from this that agonal and post-mortem cultures are quite unreliable.

How this obstacle is to be surmounted is not at all clear; till it is we must remain in ignorance of whether the valves are really the main location of the cocci or whether they live somewhere else without producing recognisable anatomical lesions. Histologically, cocci can be readily stained and seen in the valvular lesions in cases where blood cultures have been positive. Where they have been negative cocci are sometimes easily found microscopically, but generally a finely granular material is alone present which might well pass for degenerated organisms or their dead remains, and is so interpreted by Dr. WRIGHT. His careful observations by no means solve the problem of the disease, but they help considerably to define it. Clinically it appears to make little difference whether a case shows septicæmia or not, though a good deal of fever is more often associated with a positive blood culture than not. The cocci seem to live in the recesses of the fibrosing thrombi on the heart valves whence something or somethings emerge which stimulate the production of specific antibodies and kill the patient. MAIR has produced an apparently analogous state in rabbits with pneumococci, and it is perhaps along experimental lines that the solution is to be expected. Meanwhile, it is satisfactory to note a diminution in the prevalence of a disease in which therapy is helpless.

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THE CAMERON PRIZE LECTURES.

THE third of the Cameron Prize Lectures is published in our columns to-day, completing an interesting series dealing with various conditions in relation to brain surgery. The lectures were prefaced on their delivery by a brief statement from the orator, Prof. HARVEY CUSHING, in which he pointed out that every-day symptomatic treatment of patients was, at least in the American medical schools, neglected in the curriculum, the expansion of scientific methods having somewhat crowded the art of medicine to the back of the stage. Prof. CUSHING acknowledged the fascination of modern laboratory procedures for both the teacher and the taught; they lead to diagnosis and indicate treatment along the right lines of progression, but for many of the pathological conditions thus exactly discovered there is as yet no specific remedy, and we shall all agree with him in his suggestion that "more emphasis is laid in our schools on the methods of finding out what is wrong than on what should be done for it when it happens to be found." This was, presumably, the exact frame of mind which Dr. ANDREW ROBERTSON CAMERON, of Richmond, New South Wales, was displaying when he founded the Cameron Prize in 1878 with a bequest of £2000 to the University of Edinburgh for certain specified purposes. We know little beyond what Prof. CUSHING was able to tell us of CAMERON himself. The son of a Tarland farmer, he began his medical studies at Marischal College, Aberdeen, migrating in 1859 to Edinburgh, where for his graduation thesis in 1861 he took the subject of "the corporeal sympathies of certain mental conditions"—a remarkably modern theme in all its relations. He went to Australia to practise his profession and died there some fifteen years later. Prof. CUSHING imagines that, pitch-forked into a new country and unable to fall back upon consultant advice for therapeutic suggestions, he determined that practical therapeutics should be emphasised at Edinburgh so far as an endowed lectureship could bring this about, and the object he had in view was as shrewd a look into the future as was the subject he chose for his graduation thesis. For more than ever the young man who goes out to practise, versed in the lore of modern medical science and perhaps considerably expert in the advanced work of the laboratory, is at a loss when confronted with the sick. The regulations governing the award of the prize were remodelled by the Educational Endowments (Scotland) Commission, with the result that the proceeds of CAMERON's bequest are now awarded annually to a selected person who in the course of the five years immediately preceding has made any highly important addition to practical therapeutics, and the Senatus of the University is entitled to request, as a condition precedent, that the chosen prizeman should deliver a lecture or course of lectures giving an account of his particular contribution to the practical side of medicine. Prof. CUSHING decided to give an account of the recent developments of cerebral surgery in different directions, and dedicated his lectures to a long list of his collaborators, including those successively appointed at the Johns Hopkins Medical School, Baltimore, and the Arthur Tracey Cabot Fellows since 1912 whose function it is to take charge of the Research Laboratory at Harvard. To this group he added his resident assistants both in Baltimore and Boston, making an important category of men who have contributed greatly to the progress of neurology and surgery, and in associating their names with his lectures he insisted modestly that his own position as a Cameron Prizeman was due to a generous stretching of the conditions in his favour, his activities having been mainly in the direction of the teaching from which the notable contributions of his pupils was derived. But no such apologetic words were necessary for, apart from the value of Prof. CUSHING's personal work, his centrifugal influence as a teacher has been and is of supreme importance. The name of CUSHING rightly finds a place in the list of Cameron Prizemen, which includes PASTEUR and LISTER, FERRIER and HORSLEY, DAVID BRUCE, MANSON and ROSS, FINSEN, BIER, EHRLICH, FLEXNER, and many other pioneers of medicine.

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THE HEALTH OF THE NAVY.

FOR 85 years the Admiralty published an uninterrupted series of annual reports on the health of the Navy. The sequence was concluded in 1922 by the belated issue of a report for 1915, and it was then decided to allow the intervening years 1919–1920 to go by the board and to begin a new series of statistics with the report for 1921. The figures for that year have already been summarised in THE LANCET,[1] and in the table on p. 987 of this issue they are compared with those for 1922, which are now available. The result is interesting. It would, of course, be rash to base much argument on the differences between two consecutive years, but for what they are worth the figures are encouraging. In 1922 deaths and accidents diminished in number; fewer men were invalided out of the service, and the daily sick-list was smaller. The total naval establishment fell from about 110,000 in 1921 to a little more than 100,000 in 1922. About half was allotted to the Home Station and a quarter each to the Atlantic Fleet and the fleets abroad. The death-rate was 4·4 per 1000 in the fleets abroad and 2·7 on the Home Station, and the most fatal single disease was tuberculosis, from which there were 30 deaths.

The incidence of tuberculosis for the Atlantic Fleet was 2·2 per 1000, and it is interesting to note that whilst marines at headquarters had a liability of 1·16 per 1000, the figure for those at sea was 1·67; the sick-berth staff had a liability of 8·18 per 1000, which represented an improvement. In general it is remarkable that the amount of tubercle in a population of young strong men, well clothed, well fed, and well housed, should remain the same in spite of every effort. The naval figures for venereal disease are particularly useful for they distinguish first infections from others. In this report they reflect the general diminution in syphilis without corresponding decrease in gonorrhœa. The fact that the numbers of fresh gonococcal infections per 1000 were respectively 60, 85, and 40 in the Atlantic Fleets, the fleets abroad, and amongst the men on the Home Station, suggests that the vaunted prophylactic methods in use in the Navy are not really effective. In the opinion of the medical officers the victims are apt to be intoxicated and too careless to use them. At any rate, these figures are very high. During 1922, 178 men were discharged on account of gonorrhœa, and there seem to be some grounds for the opinion recently expressed by a correspondent in our columns[2] that the civil authorities should take steps to prevent uncured cases returning without restriction to civil life.

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[1] THE LANCET, 1924, i., 1227.
[2] THE LANCET, Sept. 26th, p. 673.

Annotations.

"Ne quid nimis."

THE MEMBERSHIP OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

Last August we drew attention to the fact that the Royal College of Physicians had lowered the age both for the examination for the Membership and for the conferment of the diploma from 25 years to 23. In the recent October examination 7 candidates out of a total of 53 availed themselves of this relaxation. At a Comitia of the College held on Oct. 29th, which is reported in our columns, a number of further changes were made, and as they are all in the direction of increased facilities for candidates, they will come into force at once. One provision is expressly designed to meet the case of medical men who have been engaged in special branches of practice lying outside ordinary clinical medicine. Such candidates, if over 30 years of age, may now submit work that they have published in any branch of medical science or in general literature, and if the Censors' Board decide that it is of sufficient merit they may excuse the candidate part or the whole of the examination. Another concession permits a referred candidate, in the absence of any special prohibition by the Censors' Board, to submit himself for re-examination without waiting for the expiration of six months, as hitherto has been the case. The revised regulations may be obtained on application to the Registrar at the Royal College of Physicians.

DEFECTIVE ILLUMINATION IN RELATION TO EYESIGHT.

A bulletin has been issued by the United States Public Health Service[1] which purports to prove by means of statistics that there is a definite relation between eye disease and the amount of illumination with which the workers are supplied. It was found that the employees at an old post office, the majority of whom were working under an average illumination of 2 to 3-foot candles, had a smaller percentage of normal vision and a greater percentage of certain eye defects than the employees at the new post office, the great majority of whom were working under all or part-time daylight. Hardly anyone would question the bad effect of straining the eyesight with poor illumination in causing fatigue of the eyes. Such fatigue may and does favour the advance of certain diseases of the eye, both superficial and deep, and certain tendencies such as a predisposition to myopia when these are already present. But to maintain that fatigue of the eyes by itself is capable of initiating disease of the eyes on a large scale—the contention of the bulletin to which we have referred—is to maintain something that is inherently improbable and of which no sort of proof is offered. When we examine the details of the statistics on which the argument is based, the fallacy becomes manifest. By far the greater proportion of the "eye diseases and defects" found in the two post offices consisted of errors of refraction and cases of "muscular unbalance." Cases of myopia which might conceivably have been due to defective illumination were hardly as a matter of fact of more frequent occurrence in the badly-lit post office than in the well-lit one. The excess of the cases of defects of the eyes in the former was due, to a small extent to hypermetropia, a condition which may exist without producing any symptoms except a liability of the eyes to be easily fatigued; to conjunctivitis, a condition due to infection, but which is undoubtedly favoured by fatigue of the eyes; but chiefly to muscular unbalance and especially exophoria, which is in no sense a disease and hardly a defect of the eyes, but is a condition which only produces symptoms when the eyes are used for long periods of convergence on near work. The balance excess of cases of defective eyesight in the badly-lit post office was mainly due to "asthenopia," a word which, if it does not mean fatigue of the eyes, means nothing. To sum up, we find no evidence that defective illumination is in itself a cause of permanent injury to the eyesight, except possibly in cases where myopia is either potentially or actually present, and in cases where there is a tendency to inflammation either of the conjunctiva or of the deeper structures of the eye. On the other hand, there is plenty of evidence of what common sense points to—that work for the eyes under defective illumination involves fatigue, and that this may cause permanent injury to "weak" eyes, and in any case is prejudicial to the efficiency of work performed under such conditions. The recommendations as to the lighting of public offices with which the bulletin concludes will be generally endorsed. These recommendations include direction not only for the provision of sufficient illumination but also for the avoidance of glare.

AN AUSTRALIAN HEALTH BULLETIN.

We have recently received a copy of the second health bulletin issued by the Department of Public Health, Victoria, Australia. The bulletin is described as a quarterly journal issued under the direction of the Commission of Public Health for the information of councillors, medical officers of health, and health inspectors. The Commission is presided over by the Minister of Public Health, Dr. S. S. Argyle, and includes three other medical men among its eight members. Besides information about the prevalence of infectious diseases, records of new by-laws and reports, the bulletin contains well-written articles on carbon monoxide poisoning, heliotherapy, goitre, tuberculin testing of cattle, hydatids, plague, maternal mortality, infantile paralysis and cancer, and a "wireless talk" on the care of the children's teeth by Dr. O. Behrend, clinical demonstrator of the Australian College of Dentistry. Recent fatalities in bathrooms in Melbourne have drawn attention to the dangers of carbon monoxide poisoning, and some reference is made to its incidence among garage workers. In the article on goitre a description is given of the scheme which has been inaugurated for the prevention of goitre among school-children in the Bairnsdale district of Gippsland. The method adopted is to give the children a dose of 2 gr. of iodide on each of ten consecutive days twice a year. No charge is apparently made for the bulletin and nothing is said as to the means of distribution, but we should imagine from the popular style of its language that this journal is likely to appeal to a much wider circle than the officials for whom it was originally intended. The issue of such authoritative bulletins by a Government health department would appear to be a very useful method of cultivating the health conscience.

HEXYL RESORCINOL: A URINARY ANTISEPTIC.

An account of the discovery and properties of hexyl resorcinol was given in our columns[1] early this year, and it was then remarked that Veader Leonard's original communication[2] on its merits contained no detailed clinical results. We have now received a paper[3] by Roy B. Henline, of the Department of Urology of the New York Hospital, which describes his results in treating 50 cases of urinary tract infections and offers strong evidence of the value of hexyl resorcinol in practice. The claims that have been made for this drug are considerable. It is said to have all the qualifications necessary to the ideal urinary antiseptic—it is chemically stable, non-toxic, and non-irritant to the urinary tract; it is administered by the mouth and is mainly eliminated by the kidney, and it has an antiseptic action in high dilutions of urine of any reaction. Although there may be slight intestinal irritation or diuresis after the first few doses, these symptoms disappear promptly; in order to minimise gastric disturbance the drug is given in 25 per cent. solution in olive oil enclosed in a suitable gelatin capsule, and is administered immediately after meals. An excess dosage is necessary because the bulk of each dose is eliminated as a conjugate in the urine. The conjugated drug has no bactericidal action, and there is wide variation in different individuals in the amount required before the desired effect is obtained. Some will secrete bactericidal urine one hour after a small quantity has been given; on others large doses have no effect for three or four days. During the treatment, before disinfection is complete, the urine will still be a good culture medium; but after it has become sterile it will kill broth cultures of the organism originally responsible. To get good results the urine must be in contact with the infecting agent, and if the infection has penetrated the mucosa prompt disinfection cannot be expected. Treatment should be continued for at least two weeks after the urine has become sterile, and it is said that even in cases in which complete disinfection is not obtained there is often pronounced symptomatic improvement.

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[1] The Hygienic Conditions of Illumination in Certain Post Offices, especially Relating to Visual Defects and Efficiency. Government Printing Office, Washington, D.C. 20 cents.

[1] The Lancet, 1925, i., 448.

[2] Journal of Urology, 1924, xii., 585.

[3] Ibid., 1925, xiv., No. 2.

All the cases of pyelitis and cystitis in this series reported by Henline were thoroughly investigated before hexyl resorcinol was given. Each was subjected to a rigid physical examination and all possible foci of infection were removed. A complete cystoscopic examination was made in all the cases; cultures from the bladder and each kidney were taken, and the output of urea and phenolsulphonephthalein was estimated. The urine was, of course, carefully examined microscopically and chemically, pyelograms being taken in the sitting and dorsal positions. After all possible complications had been thus eliminated there remained a series of cases of chronic infection in which there was pus and positive bacterial cultures, and it was on this series that the treatment was tried. In the 26 cases of *B. coli* infection studied, the average duration of the disease was 3·67 years. Half of them had some definite urinary complication, such as prostatitis or renal calculus, and nearly all had been under treatment, which had included dilatation of the ureter and kidney, and pelvic lavage with 1 : 1000 neutral acriflavine at intervals of from one to four weeks. The average time of treatment before hexyl resorcinol was started was six months, and after the drug was given the urine of all the patients except two became sterile within 140 days. The average time before this occurred was 63·5 days. In the two failures the infection cleared up in the kidney or the bladder, but not in both, and there was one case of recurrence in a man who had to stop treatment prematurely. Each patient received 0·8 g. of the drug three times daily, and treatment by ureteral dilatations and kidney pelvic lavage with neutral acriflavine, 1 : 1000, at intervals of one to four weeks, was continued in addition. A few of the patients also had operations performed—e.g., nephrectomy—during the period described. In 12 cases of bladder and kidney infections caused by organisms other than *B. coli*, five were caused by staphylococcus, two by *Bacillus lactis aerogenes*, two by *B. proteus*, one by streptococcus, and two by mixed infections. The average duration of the disease from the history was two and a half years, and 75 per cent. had some complication. The average length of treatment by dilatation and lavage before hexyl resorcinol was used was nine months, and after it was administered the urine became sterile in 11 of the 12 cases within 133 days. (In the other case, which was clinically cured, *B. fluorescens* persisted.) On the average it was sterile in 50·7 days; and the average time required for staphylococcal infection was only 18 days. There were no recurrences.

In brief, therefore, in this series of 38 cases 92 per cent. were cured. Of the three failures, one did not return for treatment, one still had a growth of *B. fluorescens*, and one was complicated by a bladder tumour. All these three were clinically cured. In his conclusions Henline lays stress on the necessity for complete examination of the urinary tract before starting treatment, and states that hexyl resorcinol "is apparently superior to all other urinary antiseptics described." The duration of the disease, he says, seems to have no bearing on the length of time needed to effect a cure, provided that the renal parenchyma is undamaged. By thorough disinfection of the urinary tract hexyl resorcinol is an aid in preventing the recurrence of calculi, and in post-operative urological cases it is useful in healing wounds infected by streptococci. The remainder of Henline's series of over 50 cases were instances of gonococcal infection in the male. The number was not large, but no beneficial effects were recorded. We understand that hexyl resorcinol is at present being manufactured in this country by the British Drug Houses, Ltd.

SAFETY IN RADIOLOGICAL WORK.

NOT the least important subject discussed at the recent International Congress of Radiology held in London was the protection of workers exposed to radiation. The Physics Section drew attention to need for uniformity in protective methods throughout the world, and we learn from the organising committee of the Congress that the subject is likely to be discussed again at the next international meeting to be held in Stockholm next year. The British Institute of Radiology does well through its committee to insist on the importance of this matter. Some general basis of protective methods, which can easily be put into practice, is a necessity, not only in X ray and radium work, but also in heliotherapy. The increasing use of these methods makes it the more necessary that careful attention shall be given to securing healthy conditions for the personnel. When high-power carbon arc lamps are installed the ventilation of the premises is of the greatest importance, and the nursing staff must be protected from the glare of the lamps by efficient goggles, otherwise persistent headache and lassitude will soon make their appearance. An X ray and radium protection committee was formed in this country in 1921, and they have issued a number of valuable reports. No doubt the committee will in future include in their reports every form of radiation which is used therapeutically, and we look to them to keep the medical public acquainted with such methods as may be considered advisable. In no way does this diminish the necessity for international coöperation, but it is to be hoped that this country will continue to take a foremost place in devising methods of safety for those engaged in what, in default of such methods, is a dangerous occupation.

CYTOLOGY OF CANCER.

IN a recent issue of THE LANCET[1] attention was drawn to papers by Dr. R. J. Ludford and by Prof. A. Maximow dealing with cellular changes in test-tube cultures of normal tissues. These changes were so similar to those seen in cancer cells that they led Prof. Maximow to suggest the interesting possibility of having induced a cancerous transformation of normal mammary cells by his special conditions of cultivation. We then pointed out that the morphological changes described did not necessarily represent the essential character of malignancy; they might be merely the result of abnormal conditions of growth and nutrition. This criticism finds support in another paper on the General and Experimental Cytology of Cancer by Dr. Ludford,[2] which has just appeared. In this paper the author has reviewed and summarised the vast literature on the cytology of cancer and has supplemented it by original observations. Nothing is more tedious to read than verbal descriptions of morphological appearances. Dr. Ludford has avoided this difficulty by summarising observations and theories in the form of diagrams, either original or else constructed from the authors' figures drawn in a more diagrammatic manner than the originals. "This pictographic method has been adopted," as he states, "as being more precise and more compact than it is possible for merely verbal descriptions to be. It enables the reader to survey a wide field more easily and more rapidly than is possible in any other way." The paper of 40 pages, of which almost every second page is an illustration, has the charm of a picture-book and succeeds in condensing a vast amount of information in the clearest possible manner. Dr. Ludford's general conclusion is that present microscopic methods do not enable us to distinguish between a normal and a cancerous cell. The cancer virus of Gye and Barnard is too small to be seen with the microscope in common use at the present time. The wide range of pathological variations described in the past "are the morphological expression of the reaction of the cells to the peculiar conditions of tumour growth. There is no pathological state restricted to cancer cells alone, so that there exists for the cancer cell no precise morphological diagnostic character of any kind." The paper deserves to be read by every pathologist for its contents and to be imitated in its method of presentation.

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[1] THE LANCET, Oct. 24th, p. 870.

[2] R. J. Ludford: Journal of the Royal Microscopical Society September, 1925, p. 249.

POISONS IN THE HOME.

THE letter from Mr. Frank Briant, M.P., which recently appeared in the daily press, draws attention to a danger which is well known, but of which the magnitude is perhaps seldom realised. "On a shelf in practically every home," Mr. Briant writes, "lies a bottle the contents of which are capable of causing a violent and terrible death to the whole family." This bottle holding spirits of salt or some other domestic poison must, according to law, be a distinctive one; but it is fairly clear, Mr. Briant thinks, that in many cases the law is not adhered to. Harmless substitutes might be found for domestic uses—this is a matter he leaves to chemists. Meanwhile, the public should insist that these poisons be sold only to those who are capable of appreciating their dangers and should take infinite care over the disposal of the bottle on the shelf.

The general suggestions contained in Mr. Briant's letter seem eminently sound; the difficulty lies in their practical application. A tightening of the regulations with regard to the sale of poisons, ensuring that they should only be sold in fluted bottles, may accomplish something, but much would still depend upon the public themselves, and the real crux of the matter lies undoubtedly in the better education of the public in these matters. It is no use rigidly insisting on poisons being sold only in an easily recognisable bottle if the latter is then subsequently used for storing some harmless domestic fluid with the result that familiarity breeds contempt. It is only a public educated and trained to reasonable care in these matters that can be relied upon to be immune from poison casualties. In any case there is a good deal to be said for the suggestion that harmless substitutes might be found for domestic use. Poisons in the home are used chiefly for three purposes—namely, for *cleaning*, for *disinfecting*, and for *exterminating vermin*. Most of the accidents arise from poisons used in the first two categories. The use of crude hydrochloric acid, popularly known as "spirits of salt," naturally finds much favour for removing calcareous deposits, especially in districts with hard water-supply. Vinegar may be used to some extent as a substitute, but in amounts necessary to produce the same effect it is, of course, more costly, and a really satisfactory substitute for "spirits of salt" would be welcomed. Accidents arising from the use of disinfectants and antiseptics are usually due to some preparation of phenol or cresylic acid. Many less dangerous substitutes for these are to be found, foremost amongst them the majority of essential oils, many of which possess extremely high carbolic acid coefficients with relatively small toxicity to human beings. For example, the coefficient of oil of origanum is 26, thyme 15, clove 9, rosemary 6, lavender 5, and sandal-wood 1½. The high coefficient of oils such as origanum and thyme is readily understood in view of their high content of such powerful antiseptics as thymol and carvacrol, but the rather high coefficient of oils such as lavender and sandal-wood is surprising. These essential oils are, of course, more expensive than disinfectants derived from crude carbolic acid, but the cost of saponaceous solutions of the cheaper essential oils should not be prohibitive. Other comparatively innocuous antiseptics are to be found amongst oxidising agents such as hydrogen peroxide, sodium hypochlorite, and the organic chloramine derivatives. A number of proprietary antiseptics of low toxicity based on these substances are available at a reasonable cost. Accidents arising from the use of vermin killers are rare, for exterminators of the specific virus type are not poisonous to human beings.

THE CINEMA IN NEUROLOGY.

THE slow-motion cinematograph has gone far to prove that the sluggishness of man's reflexes cuts him off from a world where time moves leisurely and everything is more beautiful and more graceful than we recognise. Bacteriology has abolished the conception of dirt, and it may be that the cinema, *mirabile dictu*, will convince us that ugliness is a myth. In the meantime its possible applications to medicine have escaped the notice they deserve, and it is pleasant to note the work on bradykinetic analysis by the cinematograph which has been carried on during the past few years by Dr. Frederick Tilney and Dr. S. Philip Goodhart, professor of clinical neurology at Columbia University, New York. Working at the Montefiore Hospital and at the University they have prepared a series of films showing movements in nervous diseases, and on Oct. 23rd Dr. Goodhart gave a demonstration of his work at the Paris centre of the American University Union before a distinguished audience of neurologists. The films are the only ones at present in existence dealing (from the technical aspect) with nervous disease, and they include records and analyses of muscular movements in dystonia musculorum, encephalitis lethargica, chorea, progressive muscular dystrophy, and multiple sclerosis. There are records at the usual speed and at slow motion, and they have proved of value not only for undergraduate teaching, but for case records, verification of diagnosis, and follow-up work. The six reels shown illustrated the special uses of the method—namely, determination of the character of muscular movements; analysis of reflex movements; revelation of movements inappreciable by the naked eye; differentiation between functional or psychic and organic states; record for comparison with necropsy findings, and prognostic indications. It is found that a long, slow, progressive muscular wave appears in spasmodic movements occurring in encephalitis and seemingly in other conditions referable to lesions of the basal ganglia (thalamic and striate regions). Whether this peculiar movement is diagnostic of basal (striate) lesions is not yet certain, but if so, slow-motion analysis should be of special diagnostic value. Seemingly purposeless movements prove, on analysis, really of associative and symbolic character, showing emotive effects and a segmental nature. They express a psychic state, representing approach and retreat, entreaty and a negative feeling of shame. Slow-motion analysis shows the relation of symbolic and emotive movements to motor effects and reveals possible connexions between the corresponding sensory, or thalamic, and motor, or striate, lesions. Hysteria may thus have basal ganglionic relations. In all such conditions there is a suggestion of the effect of constant nervous stimuli in creating minute lesions, too fine for demonstration by present methods, which are at the basis of conditions now considered purely psychic or functional. In recording reflex movements it is found that in some states the patellar *reflex, and possibly other reflexes, have a pendulum-*like character, the limb continuing to oscillate for a number of times after the hammer blow. There is also a remarkable prolongation of the interval elapsing between the hammer blow and the first reflex response. Movements inappreciable to the naked eye exist in dystonia musculorum, and this fact is useful in diagnosis and prognosis since dystonia musculorum is incurable. Certain cases thought to be hysteria or dementia præcox have been found to be really cases of dystonia. Many other movements are well *shown by the films*—for instance, the champing and chewing movements often present in postencephalitic states, and a very interesting case is shown, in which, following grave fright produced by a violent thunderstorm, the patient presented movements initially of escape, or fleeing, and considered of psychic character. *Slow-motion* analysis showed the progressive muscular wave, so strongly suggestive of striate lesion, referred to above.

TYPHOID CARRIERS IN GLASGOW.

DURING Dr. A. K. Chalmers's last year of office as medical officer of health for Glasgow an investigation was carried out among the contacts of enteric fever patients to ascertain to what extent the source of infection might be attributed to carriers. The period covered was from Sept. 1st, 1922, to Sept. 30th, 1923. The investigation revealed that among 374 home-contacts of 102 patients only in eight instances was there bacteriological evidence of a similar infection. Further inquiries showed that four of these contacts were probably "missed" cases of a mild nature. Of the remaining four, three (all women) continue to be definite carriers and remain under supervision, two of them in the city and one in another district. None of them, however, take any part in the preparation of food. The fourth carrier, an ex-Service man, with a history of dyspepsia dating from military service, had large numbers of typhoid bacilli in his excreta. He was treated with autogenous vaccine and his fæces were found to be negative on two occasions a year later, when the dyspeptic symptoms had entirely disappeared. It is suggested that this investigation shows that the carrier is only responsible for the incidence of enteric infections to a very small extent. Three female carriers were admitted to Belvidere Hospital with a view to studying the best methods of curing the condition. No results were obtained by dietetic, antiseptic, and vaccine treatment, and only after excision of the gall-bladder were continuous negative findings obtained in two of the cases. The third case was detained for a much longer period, and finally left hospital of her own accord for her home in the north of Scotland. An example is given of a family infected by a carrier. On Nov. 17th, 1923, a child of 6 was notified as having enteric fever. He was one of a family of Russian Jews, numbering 11 persons, and including a grandmother aged 60. Ultimately the grandmother was found to be a carrier, as the result of a notification of a second child in June, 1924. In July two more children, aged 11 and 15, sickened, and in August the other inmates of the house were inoculated. No further cases have occurred. The family remain under supervision, and the grandmother is still a carrier.

HOSPITALS AND HEALTH CENTRES.

A LEADING article under this heading prefaces a special issue[1] of the *Architects' Journal* on Oct. 28th. The special issue is itself a sequel to a similar issue published by that journal in June of this year, and the two fully illustrated supplements comprise a valuable story of hospital construction. Both are well and profusely illustrated, and the text which accompanies them explains clearly such pertinent matters as the conversion of country mansions into special institutions and the heating, ventilation, cleansing, and flooring of hospitals. A section on modern American hospitals gives a series of typical ground plans and diagrams of new fittings; there are several valuable suggestive notes and plans on the construction of nurses' homes. The leading article rightly suggests that while great central hospitals and special institutions, whose plans and elevations make up a large portion of the special issues, must be built with all the knowledge and skill which architects can provide to render them practical as well as comely, the great need of the immediate future may be the erection of *smaller hospitals*, sometimes as annexes to central institutions situated where further development is impossible, sometimes to meet the needs of growing communities, and sometimes to provide a focus of institutional treatment in rural areas. There is no doubt that this view of what will be required in the future is a sound one. The present shortage of hospital beds in the country has been estimated by the Voluntary Hospitals Commission at 10,000. The hospitals implied require building and will have to be built, not in order to realise either the dream of an architect or the ambition of a community, but for the needs of a public which will have to find a large share of the money.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. C. R. Rickard is placed on the Retd. List with the rank of Surg.-Capt.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Sub-Lt. E. J. Puddy to be Surg. Sub-Lt.

ROYAL ARMY MEDICAL CORPS.

Capt. J. G. Gill relinquishes the temp. rank of Maj. on ceasing to be empld. as Dep. Asst. Dir. of Hygiene and Pathology, N. Ireland District.

A. K. J. Finch to be temp. Lt.

ARMY RESERVE OF OFFICERS.

The undermentioned Colonels (late R.A.M.C.), having attained the age limit of liability to recall, cease to belong to the Res. of Off.: E. W. Bliss, T. H. M. Clarke, R. W. Clements, P. Evans, H. Hewetson, A. W. Hooper, A. E. C. Keble, C. B. Martin, G. A. Moore, F. S. Penny, H. V. Prynne, E. W. Slayter, G. St. C. Thom, H. S. Thurston, and C. W. Profeit.

SUPPLEMENTARY RESERVE OF OFFICERS.

Capt. J. R. S. McDowall, late R.A.M.C., T.A., to be Capt.

Capt. A. R. Balmain, late R.A.M.C., Spec. Res., to be Lt.

TERRITORIAL ARMY.

Maj. W. C. Gunn, from Sanitary Companies, to be Maj.

Capt. D. Mackie to be Maj.

Maj. A. W. Uloth, late R.A.M.C., to be Capt., and relinquishes the rank of Maj.

Sanitary Companies: Capt. A. Davidson to command the 5th (Scottish) Sanitary Company.

DEATHS IN THE SERVICES.

Capt. Thomas Barker Amyand Haggard, who died recently at the age of 50, was a graduate of Cambridge University, and studied medicine at St. Bartholomew's Hospital, where, after taking the Conjoint qualification in 1903, he acted as house surgeon. Later he was appointed house surgeon at the Victoria Hospital for Children, Chelsea, and clinical assistant at the Central London Ophthalmic Hospital. Capt. Haggard, who in 1907 married his cousin, a daughter of the late Sir Rider Haggard, quite recently retired from the Royal Army Medical Corps.

It has been officially announced that separation allowance will be granted to I.M.S. and R.A.M.C. officers when posted to stations such as Razmak, where their families are not allowed to accompany them. Allowances range from Rs.40 a month for lieutenants to Rs.310 for Deputy Directors of Medical Services.

A Fleet Order notifies that the loan of a surgeon commander R.N. is required by the Royal Australian Navy in exchange. The exchange is for two years and the officer must sail at an early date.

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[1] Modern Hospitals: Second Special Issue. The Architects' Journal, 9, Queen Anne's-gate, Westminster. Vol. lxii, No. 1604. 1s.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXLVI.

THE TREATMENT OF BREAST ABSCESS.

While the typical breast abscess of lactation follows infection through a cracked nipple, there are several precursors and variations whose treatment falls under this general heading.

Milk Engorgement.

This is produced by the blocking of a duct or ducts with epithelial débris during lactation or by the sudden termination of breast-feeding. It may simulate breast abscess, and if unrelieved passes into it. The breast becomes swollen, tense, and painful, and the affected ducts present an irregular hardness without the presence of the central area of softening which indicates pus. This condition will be prevented if care is taken of the nipples (see the Treatment of Sore Nipples, The Lancet, 1924, ii., 1299), and suitable measures are used when lactation has to be terminated.

The breast should be supported by a thick pad of cotton-wool with a bandage passing beneath it and over the opposite shoulder. The nipple should be cleansed with pledgets of cotton-wool soaked in boric lotion, and the breast pump employed. Hot fomentations should be avoided, but lotio plumbi may give considerable relief. If the need for breast-feeding has ceased a belladonna plaster should be used, and the following additional steps taken to inhibit further lactation: drastic diminution of fluids, the administration of mist. alba m. and n., and if the breast is not too painful it should be firmly bandaged over layers of cotton-wool after evacuation with the breast pump.

Acute Puerperal Mastitis.

This condition is one in which the inflammation is spread through one or more lobes of the breast, and is the immediate precursor of breast abscess. Practically all cases arise from a crack or abrasion of the nipple. The breast shows all the signs of an acute inflammation and the general constitutional disturbances are very marked, while only the absence of an area of fluctuation or of a central softening distinguishes it from breast abscess proper. Until the latter diagnosis is made it should be treated energetically on the same lines as milk engorgement. The following points should be noted. The abscess should not only be looked for in the area of greatest swelling in the breast substance, but also under the nipple, where one of the dilated ducts may be infected. The possibility of the pus tracking along the deep aspect of the breast must be borne in mind and increased prominence of the breast and pointing at the outer and lower margin watched for. In cases of doubt, if the constitutional symptoms are severe, an exploratory incision may be made. The incision should be planned as indicated in a subsequent paragraph. Even if pus is not found the congestion will be relieved and drainage provided in the pre-suppurative stage. The incision should be lightly packed with gauze soaked in flavine or acriflavine, or better still in an emulsion of equal parts of flavine and liquid paraffin.

Acute Puerperal Breast Abscess.

When this condition is diagnosed from consideration of the foregoing facts, extreme measures must be taken at once. No attempt should be made to treat the breast with fomentations, nor should any small incision be made under local anæsthesia. In order that the whole breast shall not become infected and subsequently fibrosed the affected lobes should be thoroughly opened up under a general anæsthetic.

Abscesses are most frequently found in the following situations: (1) under the areola, (2) deep to the nipple in one of the dilated ducts, (3) in the main secreting portion of the breast, (4) the "shirt button" abscess on the posterior surface.

(1) The subareolar abscess appears close to the nipple as a reddened area in which fluctuation can be readily detected. Usually the rest of the breast is unaffected. An incision should be made starting at the base of the nipple itself and extending radially from it over the centre of the affected area to the outer limit of the zone of induration. The incision should be deepened with the knife until pus is found, though in this area it is usually very superficial. The abscess cavity when completely opened up is mopped out and temporarily packed with gauze. On removing this packing careful inspection will show whether pus is welling up from a more deeply placed abscess.

(2) An abscess in a dilated duct deep to the nipple can be recognised by a markedly prominent and painful nipple surrounded by an inflammatory zone, in which deep œdema is present and possibly fluctuation. There may be a purulent discharge from the nipple. This type of abscess will extend outwards into the parenchyma unless opened. The treatment is the same as that of the subareolar type.

(3) The parenchymatous abscess has already been distinguished from acute puerperal mastitis. The skin over it is red and œdematous and the breast feels irregularly hard. This type of infection is commonest in the lower half of the gland, but a decision must be made as to which lobes are involved and the treatment varied accordingly. In the lower half of the gland an incision should be made commencing just within the areola and extending radially over the lobe in which fluctuation has been detected and ending at the periphery of the breast. The lobe should be fully opened, carrying the incision well into its substance; the finger should be introduced and any loculi in adjacent lobes containing pus sought for and opened. These are sure to communicate with the main abscess cavity in the lobe most affected, but unless the fibrous partitions are broken down satisfactory drainage will not be obtained. Care should be taken that a pocket of pus is not left unopened in the region of the nipple. A half-inch drainage-tube of red rubber, with thin walls and several side openings, should be placed in the incision emerging at the outer end, and the incision lightly packed with gauze soaked in flavine and paraffin emulsion. After 24 hours the wound should be dressed, the tube and packing removed, and the wound repacked. The packing should be changed daily. After two days it is best to discontinue the flavine packing and to substitute eusol or Dakin's solution. The wound should not be swabbed out; any débris or small sloughs are best removed by irrigation with saline or eusol at the time of repacking. This also makes the removal of the packing an easy and painless process. The packing itself should be done systematically, being gently laid in from end to end of the wound in long strips.

In the case of the upper half of the gland a completely radiating incision is not satisfactory. In the first place, it will be objected to by the patient; and secondly, it will not give dependent drainage. An incision 2 or 2½ in. in length should be made over the inner part of the most affected lobe, extending as before radially from the nipple. This should be placed so as to lie somewhat obliquely, so that an incision placed in the most adjacent part of the lower half of the breast may be made to communicate with it. The second incision need not be much more extensive than the first, and may be commenced outside the areola. The intervening bridge of breast tissue should be broken down with the finger, and a drainage-tube inserted from the lower incision. A smaller tube may be placed in the upper one, and both incisions packed as before.

Cases treated in this way will be found to clear up much more rapidly than those in which more conservative measures are employed. Under the eusol treatment the wounds granulate up very rapidly. As soon as the discharge has ceased to be purulent the packing may be safely left in for two days, though a daily dressing is more comfortable. When the granulations reach the surface a dressing of sterile vaseline spread on gauze is best.

(4) The "shirt button" abscess is recognised by marked prominence of the breast with but slight signs of inflammation in the gland itself. An area of fluctuation may be detected at the outer margin of the lower half of the gland. The best incision for opening this type of abscess is a semilunar one on the margin of the gland, and the pus will be found between the breast and the pectoral fascia. When it has been evacuated the finger should be inserted and a search made for the area of gland substance from which it has arisen. It may be possible to open this adequately from the deep surface; if not, a small radially placed incision should be made over the affected lobe and carried through to the posterior part of the breast. Tubes should be inserted in both incisions, but packing will only be of use in the anterior one. The tube on the posterior aspect of the breast should not be removed for four or five days, being taken out when the dressing is done, boiled, and replaced. At the end of that time it may be removed altogether or a smaller one inserted for a few days more.

The possibility of this being a retromammary abscess arising from caries of a rib or from an empyema must be borne in mind. In both cases the breast will be prominent, and one of these conditions should be suspected from the absence of signs in the breast itself. An abscess from caries of a rib is the more common condition, and must be inferred when examination of both the chest and the breast is negative. Both these abscesses will be beneath the pectoral fascia, and they tend to point a little further out towards the axilla.

The subacute mammary abscess must be mentioned in passing as there is often some difficulty in differentiating it from malignant disease. It presents an œdematous indurated condition of the skin, often with retraction of the nipple, which very closely resembles carcinoma of the breast. However, the length of history, the association with recent lactation, and the absence of a lump should help in the diagnosis. Enlarged axillary glands will be present in both conditions.

Galactocele.

This condition is the only form of chronic breast abscess within the scope of this article, and must be mentioned in conclusion. Tuberculous mastitis, gumma, and actinomycosis are pathological rarities. It is a condition of retention of milk in a dilated duct, together with a mild degree of infection. It may be readily recognised as a distinct elevation near the nipple produced by a round or pear-shaped tumour, in which fluctuation may be readily obtained. It is painless, and firm pressure may produce a spurt of milky fluid from the nipple. In long-standing cases caseation of the contents takes place. It should be excised when lactation is over, the usual radiating incision being employed.

J. BASIL HUME, F.R.C.S. Eng.,
Chief Assistant, Surgical Unit, St. Bartholomew's Hospital.

MESSRS. Watson and Sons (Electro-Medical), Ltd., have devoted their Bulletin No. 73 to apparatus producing what is known as artificial sunlight. The description of apparatus is prefaced by some general remarks on the nature, properties and biological significance of the part of the spectrum dealt with. Heliotherapy in medicine has come to stay and there is now a wide choice in the apparatus available. The two chief sources of artificial sunlight are either mercury-vapour lamps supplemented by some source to compensate for the lack of the longer wave-length, or open arc lamps of the carbon or tungsten or tungsten-cored type. There is a wide selection described and illustrated in this bulletin, and purchasers will do well not to forget that the best protective goggles are cheapest in the end and should be purchased against their absorbing power. It is impossible to tell by naked-eye inspection what is a good goggle and the spectrograph is necessary for this purpose.

Special Articles.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 829.)

THE evidence which is summarised below is the final instalment of the report of the proceedings prior to October. The Royal Commission resumed its proceedings recently, and has been hearing further official evidence.

The National Council of Agriculture.

(App. LXXXV.; Q. 21051–21217.)

The National Council of Agriculture for England, represented by Mr. James Donaldson and Mr. Denton Woodhead, is strongly opposed to the pooling of the surpluses of Approved Societies, on the ground that the persons engaged in agriculture and other rural occupations are as a class healthier than most other industrial classes. The witnesses reminded the Commission that agriculturists had objected from the outset to the flat rate of contribution, and they cited statements made on behalf of the Government in 1911 to the effect that Approved Societies would be allowed to use their own funds for their own members.

It was elicited from Mr. Woodhead in the course of examination that one reason why his Society had a good surplus was that, though a rural workers' society, they excluded unhealthy members in the country.

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* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247–8); The Provision of Medical Benefit (Feb. 7th, pp. 301–3; Feb. 14th, pp. 355–6; Feb. 21st, pp. 403–5); Financial Provisions of the Act (Feb. 28th, pp. 454–7); Medical Certification and the Regional Medical Staff (March 7th, pp. 508–9); The Approved Societies and the Money Benefits (March 14th, pp. 561–5; March 21st, pp. 623–4); Evidence of the Hearts of Oak Society (March 28th, pp. 677–9); Evidence of the National Conference of Industrial Assurance Approved Societies and of the Manchester Unity Approved Society (April 4th, pp. 731–3); Evidence of Independent Order of Rechabites, of National Association Friendly Society, and of Miners' Societies (April 11th, pp. 781–6); April 18th, p. 830; Evidence of Mr. Alban Gordon (April 18th, pp. 839–40); Evidence of Joint Committee of Approved Societies, of Stock Exchange and Lloyds' Health Insurance Societies, and of Group of Catholic Approved Societies (April 25th, pp. 889–91); Evidence of the National Insurance Beneficent Society (May 2nd, pp. 943–4); Evidence of the British Medical Association (May 9th, pp. 993–5); Evidence of the British Dental Association and other Dental Organisations (May 16th, pp. 1044–6); Evidence of the Insurance Committees (May 23rd, pp. 1097–8); Evidence of Various Approved Societies (May 30th, pp. 1135–6); Evidence of the British Medical Association (June 6th, pp. 1181–6; June 13th, pp. 1248–50; June 20th, pp. 1315–6); Evidence of other Medical Bodies (June 20th, p. 1316; June 27th, p. 1348); Individual Evidence (June 27th, p. 1348); Medical Services in the Factory, Ministry of Health Inquiry Room, Evidence of National Sailors' and Firemen's Union and of Loyal Order of Ancient Shepherds (July 4th, p. 36); Evidence of Friendly Societies' Medical Alliance, South Wales and Monmouthshire Alliance of Medical Aid Societies, Friendly Societies' Medical Officers' Union, Association of Approved Societies, Standing Committee of Scottish Insured Women, and Society of Medical Officers of Health (July 11th, pp. 86–8); Evidence of the British Hospitals Association, the Sheffield Joint Hospitals Council, and the Middlesex Hospital (July 25th, pp. 181–2); Evidence of Opticians' Associations (August 1st, pp. 234–6); Evidence of Council of British Ophthalmologists, of Ophthalmic Benefit Committee, of Chemists, and of Drug Store Proprietors (August 15th, pp. 348–50); Evidence of Chartered Society of Massage and Medical Gymnastics, of the Ivory Cross, of Scottish Panel Chemists, Practice among Highland Crofters, and of National Farmers' Union of Scotland (August 22nd, pp. 402–3); Evidence of Nursing and other Women's Organisations (Sept. 5th, pp. 519–20); Views of Trade-Unions, Evidence of Approved Societies (Sept. 19th, pp. 618–9); Evidence of Joint Tuberculosis Council, Cambridgeshire Tuberculosis After-Care Association, London County Council on Treatment of Tuberculosis, British Social Hygiene Council, and London Insurance Committee (Oct. 3rd, pp. 722–3); Evidence of Society of Apothecaries of London, East of Scotland Dentists' Panel, Association of Poor-law Unions, Association of Parish Councils of Scotland, and of Mr. W. J. Braithwaite (Oct. 17th, pp. 828–9).

References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1369.

Evidence as to Casual Employees of Councils.

(App. LXXXVIII. and Q. 21317–21394.)

Mr. J. H. Barnby, of the Stepney Borough Council, stated that the Council employed persons on Sundays for the cleansing of the streets. He claimed that, as this employment was purely casual and intermittent, the men should not be subject to deductions for National Health Insurance contributions.

It was suggested to the witness that although this was part-time employment it was to some extent regular, and other types of casual employment were pointed out as having a better claim for freedom from contributions. It was also made clear to him that there was nothing in the Act to prevent the Council paying the whole contribution if, as appeared, they were willing to do so.

Delay in Paying Sickness Benefit.

(App. XCVII. and Q. 22731–22837.)

Miss M. A. Hilbery, who had at one time been a sick visitor for the Prudential Approved Societies, gave evidence in which she suggested that sickness benefit was often withheld from insured persons for long periods, and that this resulted either in return to work before recovery or actual hardship in regard to obtaining food.

National Insurance Audit Department.

(App. CI. and Q. 23209–23289.)

Mr. W. A. Middleton, acting chief auditor, gave an account of the whole machinery of audit of the accounts of Approved Societies. He pointed out that an Interdepartmental Committee reported in 1912 in favour of the employment of a whole-time audit staff, and said that their recommendations had been followed.

The witness said that the auditors undertook a great deal of work not ordinarily falling within the scope of an auditor's duties, but that there was no precedent for the working of such an enormous scheme as that under the National Health Insurance Acts, and a great deal of assistance had to be rendered to the societies.

> Is it a fact that it is the smaller societies that cause you greater trouble in your audit than the larger societies?—There is no shadow of doubt about that. It is a question of part-time officials having these complicated Acts and regulations which are beyond their capacity—not beyond their zeal.

With regard to the falsification of claims for benefit, it was stated by way of illustration that sometimes the dates were altered on medical certificates in order to extend the benefit period, or such certificates were fabricated by copying a signature from a genuine certificate.

> Experience shows that there is a greater temptation to construct false maternity benefit claims because of the comparatively large sums obtainable thereby—many such cases are disclosed by discovery of a second claim purporting to be in a member's name following at too short an interval upon another in the same name, either or neither being genuine.

The cases of fraud or failure in Insurance Committees' accounts have been few in number, and the amounts involved comparatively small.

Chartered Accountants of Scotland.

(App. LXXIX. and Q. 20342–20534.)

The evidence given on behalf of this body by Mr. John Reid was to the effect that the system of auditing by whole-time officials involved long delays and was not in the best interests of the successful working of the system, and that the multitude of duties which the auditors undertook showed a good deal of confusion as between auditing proper and actual supervision or inspection.

It was suggested that the auditing of the accounts of societies, both on the State side and the voluntary side, should be entrusted to outside professional auditors.

Evidence from the Department of Economics, University of Cambridge.

(App. LXXVI. and Q. 19794–19899.)

Mr. Joseph L. Cohen, of the Department of Economics of Cambridge University, criticised the present scheme of benefits as being wholly inadequate, and he advocated an extension of benefits all round. He stated that he could find no definite principle behind the present rates of money benefits, which bore no relation to any significant fact in industrial life. He also stated that—

> Administration of insurance by the Approved Society combines all the faults and none of the virtues of insurance by industry or insurance by the State, or insurance by local authorities. It cannot claim the virtues of being a democratic form of organisation.

Mr. Cohen advocated a system of health insurance administered by the Minister of Health, the benefit being paid through the Post Office and employment exchanges with a State guarantee covering all emergencies in the life of a workman's family.

The Actuarial Basis of the Act.

(App. XCIV. and Q. 22252–22404.)

Mr. Walter Farris, secretary of the Loyal Hearts Friendly Society, questioned the necessity for the whole actuarial basis of the Act. He said:—

> Under the National Health Insurance Act, spread over the whole of the insured persons, there must always be a similar range of ages and liability and the cost of benefits must remain fairly constant and proportionate to the number of insured persons, because the general public is forced to come under the Act at the age of 16 years and at the age of 70 ceases to be entitled to sickness benefits.

The witness suggested that there was no object in accumulating enormous reserve funds for the benefit of a future generation, and he proposed that there should be a system by which Approved Societies should be given credit from year to year for the expected sickness of their members who are actually alive at the commencement of each year, instead of the present system, which credits societies at the commencement of membership with the present value of the expected sickness of the member during the whole of the years that the member is expected to live.

His proposals included provision for continuous sickness benefit, the abolition of the three days waiting period, and exemption from arrears. He estimated that there would be accumulations in about 30 years' time of a gigantic sum of £818,000,000, which would never be wanted. It was suggested to the witness in examination that the figure was much more likely to be £200,000,000.

> I want to know whether that trifling difference would make any change in your point of view with regard to the present system?—Even if I accepted that figure I should still contend that the system that I suggest would be far preferable and there would be greater benefits to the insured person.

Mr. Farris was reminded, with regard to reserves, that there was a process continually going on of eating up existing reserves and replacing them by new ones.

The Government Actuary's Evidence.

(App. LXXXVII. and Q. 21237–21310.)

Mr. Henry, the Deputy Government Actuary, gave evidence with regard to the 1922–23 valuations of Approved Societies. He said that, with the exception of the disablement experience of women—

> the cost of benefits has been much below the provision made for it, 38 per cent. of the surpluses being attributable to this source. It should, however, be pointed out that the cost of disablement benefit in the case of both men and women has been constantly rising during the four years. The relation of the average cost of the period to the corresponding "expectation" is not altogether, therefore, a satisfactory index to present and future conditions in regard to this benefit.

Roughly speaking, the surplus on the last valuation amounted to about three times as much as that in 1918, but the surplus consists to quite a material extent of monies carried forward from the earlier valuation.

Since 1922 the sickness experience has been more unfavourable and there has been a steady downward curve so far as surplus is concerned.

The estimated total surplus of Approved Societies on the results of the 1922–23 valuations, the last of which will be published in 1926, is about £12,000,000, of which, said Mr. Henry, £14,000,000 must be reserved, leaving £28,000,000 disposable, to which has to be added £8,000,000 from the earlier valuation. The total disposable surplus was thus estimated at £36,000,000, or about £7,000,000 a year, to be spent over five years.

THE HEALTH OF THE NAVY IN 1922.

This report[1] gives a satisfactory account of the health of the Navy in 1922. Compared with the preceding year, there were fewer cases of illness or accidents, fewer deaths, fewer invalidings, and fewer men daily on the sick list. The table appended shows the distribution of the casualties.

For some reason the 4300 marines at headquarters are separated off from the 96,500 other men in the Service who are called the Total Force. In 1922, as against 1921, there was a reduction of about 16,000 in the total naval establishment, which falls readily into three great groups—viz., the Atlantic Fleet, the fleets abroad, and the Home Station. The last accounts for about half the establishment and the other two for a quarter each. The men on the Home Station include recruits, men under training or in depôts, and those awaiting discharge. The death-rate was 4·4 per 1000 in the fleets abroad and 2·7 on the Home Station; there were 90 deaths from drowning (54 of them in ships lost), 86 from tuberculosis, 83 from injuries, 25 from pneumonia, 13 from diseases of the intestines (10 from appendicitis), 12 from influenza, and 11 from malignant disease. The invalidings were, in order of magnitude, as follows: For diseases of the eye, 348; diseases of the ear, 200; tubercle, 198; gonorrhoea, 178; organic heart disease, 140; deformities of the limbs, 135; and neurasthenia, 111. Only 24 were invalided for syphilis, but there were three times as many in an average year before the war. A very valuable table on pp. 14–18 shows the number invalided for each disease group in each year of age or service. Invalidings are most frequent between 21 and 23 years of age, and about the fourth or fifth year of service. Deformities of the limbs cause most discharges in the first year of service; eye diseases go on steadily all through; ear diseases have their maximum in the first five years; heart diseases in the first two years and again after men have re-engaged; and tubercle has a maximum in the first five years and again, like organic heart disease, after re-engagement. It would therefore seem to be acquired, in part, in the service period. At the higher ages more men are discharged for tubercle than for venereal disease.

Of the vaccinations on entry only 8 per cent. (136) were primary. In 1921 28 per cent. of the new entries had to be vaccinated for the first time, and it looks almost as though the public were vaccinating itself as it should, but secretly. The Army has ceased to publish these vaccination statistics since the war, and no appeal to its experience can be made for confirmation or contradiction. Diphtheria and enteric fever had only half the incidence of 1921. Influenza was chiefly prevalent on the Home Station and in the Atlantic Fleet, and there were 67 cases in the latter as against 35 in 1921. The percentage case-mortality was 0·48 in the Atlantic Fleet and 0·16 on the Home Station; no one died in the Mediterranean. There were two meningococcus infections, of which one was at Harwich, where there had been no case for two and a half years. The boy had not been on leave for six weeks, and the examination of 456 contacts did not reveal any carrier. The other case, just as mysterious, was in a battleship near Constantinople, and neither was followed by any other case. The percentage mortality of pneumonia was 12 on the Home Station, 10 in the Atlantic Fleet, and 8 in the Mediterranean, which suggests that it is not without good reason that elderly persons are sent to the Riviera in winter. Tubercle caused much the same loss in 1922 as in 1921. Marines at headquarters had a liability, 1·16 per 1000, and for marines in ships it rose to 1·57; this was, however, a great fall from that of 1921 (3·2). The sick-berth staff had a liability of 3·18, which was the lightest they have had for years. The naval figures for venereal diseases are particularly useful, for they distinguish first

HEALTH STATISTICS IN THE GROUPS, ROYAL NAVY, 1922.

Figures for 1921 are in italics, on the left of columns.

Per 1000 men.	Training establishment.		Atlantic Fleet.		Fleets abroad.		Home Station.		Total force.		Marines at headquarters.	
Number in group	*3,637*	2,393	*33,050*	27,200	*26,950*	27,750	*44,700*	41,610	*110,700*	96,500	*5,450*	4,300
Wounded or killed in action ..	—	—	*0·02*	0·03	*0·28*	—	*0·34*	0·02	*0·24*	0·02	*2·2*	1·62
Other injuries	*100*	105	*86·9*	85	*112*	119	*82*	87	*91*	95	*141*	122
Venereal disease	—	—	*107*	93	*179*	161	*81*	80	*113*	104	*62*	57
Other diseases	*1,200*	770	*290*	283	*437*	390	*404*	383	*379*	360	*459*	427
Total cases of disease or injury	*1,300*	876	*483*	460	*728*	668	*569*	550	*583*	559	*653*	608
Invalided	*61*	41	*18*	14	*22*	20·7	*32*	34	*23*	20	*45*	29
Dead	*6*	4·6	*4*	3·6	*4·4*	4·4	*2·9*	2·7	*3·6*	3·4	*1·6*	1·2
Sick daily	*77*	31·3	*18·6*	17·5	*29·9*	26·1	*27*	27	*25*	24	*21*	22
Loss of service—												
Per man in days	*14·7*	11·2	*6·8*	6·4	*10·9*	9·5	*9·9*	10	*9·6*	8·8	*7·9*	8
Venereal disease	—	—	*2·2*	2·1	*4·3*	3·02	*2·7*	2·6	*2·9*	2·6	*1·4*	1·7
Less venereal disease ..	—	—	*4·6*	4·3	*6·6*	6·5	*7·2*	7·4	*6·7*	6·2	*6·5*	6·3
New Cases of Individual Diseases (per 1000 men).												
Enteric fevers	—	—	*0·27*	0·22	*1·6*	0·6	*0·3*	0·18	*0·6*	0·33	*0·2*	0·46
Influenza	—	—	*35*	67	*35*	28	*37*	45	*31*	47	*6·7*	60
Pneumococcal infection (lungs)	*12·3*	3·5	*1·4*	1·5	*1·8*	2·4	*3·7*	3·3	*2·7*	2·6	*4·5*	4·4
Rheumatic fever	*18·4*	9·6	*1·7*	1·7	*2·3*	2·1	*2·6*	2	*2·3*	1·9	*3·8*	3·1
Tuberculosis	—	—	*2·3*	2·2	*2·3*	1·9	*2·4*	2·5	*2·4*	2·3	*3·6*	1·2
Appendicitis	—	—	*3·3*	2·7	*3·7*	2·9	*3·6*	4·6	*3·6*	3·7	—	—
Catarrh	—	—	*63*	43	*63*	73	*78*	70	*68*	63	*140*	76
Tonsillitis	—	—	*24*	23	*35*	31	*38*	32	*33*	29	*23*	23
Chancroid	—	—	*12*	12	*33*	28	*8*	6	*15*	14	*4*	2
Syphilis, first record ..	—	—	*12*	9	*17*	10	*8*	8	*11*	9	*6*	7
Gonorrhoea, acute	—	—	*48*	60	*89*	85	*46*	46	*60*	60	*22*	27
Total fresh cases, venereal ..	—	—	*82*	81	*139*	123	*63*	60	*87*	83	*31*	36
Scabies	*43*	31	*27*	13	*18*	10	*40*	25	*21*	17	*28*	11

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[1] Statistical Report of the Health of the Navy for the year 1922. Published by H.M. Stationery Office, London, 1925. Pp. 170. 6s.

infections, and in 1922 the cases of soft chancre and syphilis have decreased. Gonorrhœa cases were as before, but it is noted that this disease disappeared at Gibraltar when all brothels were closed. Prophylactic measures do not prevent these diseases because, in the opinion of medical officers (pp. 42 and 67), the victims are apt to be intoxicated and too careless to use them. Two cases of encephalitis lethargica occurred, one at Oban and one in China, and there were also two cases of anthrax, each ascribed to a new shaving-brush. Great attention is being paid to dental repair, and a 17 per cent. fall since before the war in diseases of the digestive system may be the result. Malignant disease (16 cases) showed a slight decrease; alcoholism was also less; two cases of mild poisoning were due to men strenuously treating their own colds.

We asked last year for more information about what happens to boys, to the cadets at Dartmouth, and to the younger men under training. If anything, rather less information is given. The tables are again rather inconsistent, in a manner unusual in Government publications, and those on pp. 170 and 91 do not bear comparison. Calculated on the figures of p. 170, pneumonia has greatly decreased, the rate being 3·5 per 1000, as against 12·3; there is no statement about tuberculosis. In the youths' training establishment the phenomenal death-rate of 23·52 per 1000 refers to two deaths only, but the fact that nearly one-third of the youths in the establishment (29) were invalided in five months, whilst only 16 were invalided from the *Ganges* in the whole year, seems to require explanation.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Posting of Food Prices in Paris.

ECONOMICAL buying of foods and other necessaries of life is as pressing a need to the housewife in Paris as it is in other great cities. A considerable difference exists in the prices demanded for identical articles in different parts of the city. The unduly high prices prevailing in quarters largely inhabited by wealthy foreigners are mostly due to carelessness in buying on the part of the householder, who leaves, without scrutiny, the purchase of food, fuel, and the like to servants, who, thus tempted, obtain illegitimate rebates and make unscrupulous bargains with the pettier merchants. Even dishonest bills are thus often presented to the householder, who fails to examine them and so permits the merchant and servant to divide unlawful profits. The prices of bread, milk, meat, eggs, butter, vegetables, sugar, potatoes, and other necessaries must, according to French law, be plainly posted up in view of the buyer. In this way confusion between different grades of the same article may be avoided. Extra charges for packing goods must also be plainly shown. Small merchants failing to observe the regulations mentioned are being continually fined. It would almost appear that the delinquents find it more profitable to pay the fines than to discontinue the bad practices. The vicious circles so produced are nearly always attributable to carelessness and indifference on the part of wealthy foreigners, who thus throw continually increasing hardships upon the citizens. A collateral aspect of the question is constituted by the high wages paid by foreigners to servants, who demand more than the Parisian is able to pay.

Whooping-cough.

Often in towns, and always in villages, the child suffering from whooping-cough is not isolated at home, and no precautions are taken to guard against the complications which may develop in the little patient, or to protect the other children of the family from infection. Whooping-cough is treated with contempt, because it is popularly believed to be a trivial complaint which must take its course and cannot attack adults. Further, it is the custom to send children with whooping-cough off to some friend in the country for a change of air. That is the popular estimation of the gravity of the disease, but Mr. F. Barbary, of Nice, has recently advocated that the Academy of Medicine should officially institute new and rigorous prophylactic measures. The first step would be the compulsory notification of whooping-cough, such notification at present being voluntary. The second step would be to forbid infected children to travel or mix with other children until permission was given by the doctor. The need for such measures might be brought home to the public by notices showing how whooping-cough, contrary to popular belief, can bring serious consequences, both immediate and remote, in its train. Mr. Barbary further considers vaccinotherapy to be a valuable curative and prophylactic agent in this disease.

Paris Milk.

The French Milk League, interested in improving the Paris milk-supply, has just passed a series of resolutions designed to improve the handling of milk all along the way from producer to consumer. The League especially insists on the need of clean milk for infants and young children, and on the desirability of stricter supervision of the entire dairy industry. Certain definite proposals will be presented to the municipal council by the deputy representing the quarter in which lies the Saint Louis Hospital.

Treatment of Cancer of the Rectum.

In a valuable paper on the treatment of cancer of the rectum, delivered at the recent surgical congress, Mr. Schwartz and Mr. Gaudier described the immediate and remote results of the following methods of surgical interference: (1) Abdomino-perineal excision of rectum with permanent abdominal artificial anus; (2) resection, bringing down the upper part of the rectum to form a perineal anus; (3) abdomino-perineal resection, bringing down the upper part of the rectum and preserving the anal sphincters; (4) resection by the abdominal route alone, forming artificial abdominal anus with upper part of rectum, and leaving lower part in situ after closure. The writers have further studied the respective values of surgery and radiation in the light of most recent work. Radiation treatment of cancer of the rectum has indeed made great progress during the last five years, but the results have not been so satisfactory as those obtained in treatment of cancer of the uterine cervix. Where surgery can be employed it is more valuable than radiation, and for the present, these writers hold, every case of cancer which is clearly operable should be left to the surgeon. In cases of inoperable cancer, the best results so far have been achieved by combining surgical intervention with radiation. When this combination is possible—that is, in the absence of metastases, and in patients who are neither cachectic nor too advanced in years—the method adopted should be (1) to make an iliac anus, (2) subject the patient to slow and extensive radiation, and (3) remove the cancerous growth whenever conditions permit.

The Virus of Opilaçao.

Opilaçao is a parasitic disease widely distributed among the poorer classes in Brazil, conveyed to man through the bite of a nocturnally blood-sucking hemipterous insect, the triatoma, or *barbier.* The insect occurs on the walls of dwellings. Prof. Carlos Chagas, director of the Brazilian Public Health Service, to whom we owe most of our knowledge of the disease, delivered on Oct. 23rd, at the Paris Pasteur Institute, an interesting lecture upon it, accompanied by projections. The pathogenic agent which lives in the intestine of the insect host and is highly virulent has been shown at the Cruz Institute to be a flagellate trypanosome, and it has been named *Trypanosoma cruzi.* It may infect dogs, rabbits, other laboratory animals, man, and the armadillo, the latter, indeed, serving as a reservoir of the virus. The symptoms which depend upon the organs invaded include fever, thyroid enlargement, degeneration of muscular fibres, cerebral reactions, and other effects. In dogs the signs are mainly paralytic. Like the treponema, the trypanosome may be transmitted from mother to embryo.

Congress on Stomatology.

This congress, which met from Oct. 19th to 24th, devoted much of its time to pyorrhœa. Dental bridges, vaccination, radiography, the ultra-violet rays, masseteric anæsthesia, anæsthesia of the inferior maxillary nerve trunk, and prosthesis were other subjects of interest discussed.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Resignation of Prof. F. Chvostek.

Dr. Franz Chvostek, the head of the Third Medical Clinic of Vienna, and professor of internal medicine, has tendered his resignation to the Ministry of Education, an action which has caused surprise and dismay to his numerous friends and patients. It is the more surprising as Dr. Chvostek previously resigned this office several years ago, but at the earnest request of the Ministry he withdrew his resignation and continued his work under more favourable personal conditions. Once again all efforts are being made to induce him to remain in office, and the Senate of the University has added its plea to that of the Educational Board. The third clinic, of which Prof. Chvostek was the chief organiser, has been a source of most useful scientific research ever since the work was started some 20 years ago. It may be added that the third clinic, which is still situated in the old General Hospital of Vienna, is very much handicapped by the limited space available for it in the ancient building.

Changes in the University Teaching Staff.

The well-known orthopædic surgeon Prof. Adolf Lorenz definitely resigned his professorship last spring, and Prof. Hans Spitzy has been appointed to the directorship of the University Orthopedic Ambulatorium, as it is officially termed. As successor of Lorenz, Prof. Spitzy is at present at the head of the famous orthopædic hospital in the fifth district of Vienna—the biggest of its kind in Central Europe—where he has built up a model institution for the cure, after-care, and re-education of war-crippled soldiers, that compares favourably with any other such institution in the world. The tradition of the Lorenz clinic—which is well known to American doctors—will be continued by Docent Dr. Julius Hass, the first assistant of Lorenz. He has been appointed director to an orthopædic ward and will take over this office shortly.

Closure of the Third Obstetric Clinic.

It is understood that the third obstetric clinic (Prof. Ludwig Piskacek) will be closed shortly, and with it the oldest teaching institute for midwifery in Austria, an event which means a marked diminution of the teaching facilities of Vienna. The third clinic was never intended for instruction of students, but many doctors obtained there very good post-graduate instruction, and had a chance of serving a term or two as house surgeons in the institute, thus obtaining excellent opportunities for obstetric practice. In future midwifery will be taught in the remaining two gynæcological clinics, where also the regular clinical lectures and courses for students are given.

Meteorological Conditions and Human Health.

In a lecture delivered before the Medical Society Prof. Julius Bartel discussed the influence of climatic—or rather meteorological—conditions upon the mortality statistics, giving extensive statistics and figures. Prof. Bartel's conclusions are worth consideration. He emphasises the inadequacy of our present knowledge of the climatic factors, which is obtained from post-mortem examination only, but even this is sufficient to prove that these factors have a very considerable influence on the daily mortality curve. Consideration of the constitution of the individual also shows us that the incidence of death is due not only to nature of the illness, its ætiology, and the constitution of the patient, but also to a fourth factor—namely, atmospheric conditions, such as barometric pressure, temperature, humidity, and winds. Analysis of individual cases, and control by autopsy, enable us to discern certain rules, but further research from the point of view of the clinician is very much needed. At present we can say that arteriosclerosis and tuberculosis respond to climatic changes, and the status lymphaticus usually reacts to barometric variations. It is also well known that suicides are much more frequent between April and July than in the autumn or winter. Perhaps mental conditions react differently at various periods of the year and under different weather conditions. Greater difficulty is encountered in considering the effect of climatic variations upon the "healthy" or the "apparently healthy" organism. Health and disease are only stages, very nearly related, and the susceptibility to weather factors makes itself manifest not only in the individual, but also in the masses, in the political, and social reactions of mankind.

Modern Treatment of Lupus.

At a recent meeting of the Vienna Medical Collegium Prof. Richard Volk read a paper on the treatment of lupus. He commenced with a survey of the older methods used before the advent of electrotherapy. The surgical excision of the diseased parts, immediately followed by grafting (Lang's method) was, he said, fit only for a small percentage of cases. Scraping, cauterisation, thermocautery were no longer advocated, though galvanocautery might still be applied with good results in lupus of the mucous membranes. High-frequency currents might be used for solitary nodules in the skin. The exhibition of the various tuberculins, emulsions of bacilli, had not given the satisfaction it promised at first. Chemotherapy (copper, krysolgan, salvarsan) given alone had also failed; only erythematode lupus seemed to respond favourably to krysolgan. Pyrogallol and resorcin were merely adjuvants in phototherapy as now employed for the hypertrophic and ulcerous forms of lupus. X ray treatment gave very good results, and the application might be repeated several times, a medium dosage being given. When the hypertrophic form had been transformed into a "plane" or "flat" stage, Finsen light or mercury-vapour lamps are used. Finsen laid great stress on the use of the pressure lens. Prof. Volk, however, preferred to work without the pressure lens and got better results. This method is also much more rapid and economic. General irradiation of the whole body by artificial or natural sunlight was a most useful help; of course, it was necessary to attack any coexisting tuberculous affection, such as glandular, mucous, or osseous manifestations of the disease, as well as pulmonary tuberculosis. Constant supervision and control of the patients for many years was of paramount importance to avoid relapses. The application of radium or of Ponndorf's vaccines was also useful, especially in localisations on the mucous membranes, but only in selected cases, and one must be on the look-out for possible untoward results, such as telangiectasis or hyperkeratosis.

Reorganisation of the Dental Classes of the Medical Faculty.

The new University term opened recently, and a serious shortcoming in our medical instruction has been removed by the new regulations pertaining to dental teaching of doctors. Having obtained the degree of M.D., the applicant desiring to practise dentistry will have to spend four semesters (half years) at the institute of dentistry of Vienna. The curriculum comprises theoretical and practica instruction, and consists of classes on conservative, surgical, and prosthetic dentistry, including orthodontic and technical work in the practical laboratory. After the four semesters every student has to pass oral, written, and practical examinations. Hitherto our dental surgeons went, as a rule, to Germany to get their up-to-date experience in dentistry.

MEDICINE AND THE LAW.

Limitations of Actions against Public Officers.

PARLIAMENT has wisely recognised the fact that public servants cannot discharge their duties satisfactorily unless reasonably relieved from personal liability. In England and Wales the Public Health Act of 1875 protects local authorities, their members, and officers in this respect. The Public Authorities Protection Act of 1893 usefully enacts that no action is to be commenced against anyone for anything done in pursuance of an Act of Parliament or in intended execution of a public duty unless the proceedings are commenced within six months. The Public Health (Scotland) Act of 1897 goes further. It fixes a time limit of two months as the period after which no proceedings shall be begun against persons performing duties under the Act. The value of this protection is illustrated by a recent Edinburgh case (Gorrie *v.* Smith), where a doctor was sued in the Court of Session in connexion with the death of a patient treated at a venereal diseases centre in Glasgow. The claim arose in the following way. The claimant's wife, nursing a baby 3 weeks old, found the child apparently suffering from cold in the eyes. Dr. Elizabeth Chalmers Smith, in charge of the local child welfare clinic, prescribed an ointment and at the same time advised the mother to visit the dispensary at Black-street, Glasgow, which is an approved centre for the treatment of venereal disease. Dr. Smith had provisionally diagnosed the case as one of syphilis and she naturally wished the mother's blood to be tested. She did not inform the patient of her opinion, but gave her a sealed letter addressed to Dr. Elizabeth Helen Smith, the doctor in medical charge at Black-street. On August 6th last year the mother attended at Black-street with her baby. The provisional diagnosis was confirmed. The mother was questioned and examined, and, as a result, she was informed that her child was suffering from "poison in its blood." It was suggested that an injection should be administered which would benefit the child; it was added that an injection would act as a tonic to the mother herself. The doctor also proposed to take a sample of the mother's blood for test purposes. The mother assented to the treatment and a first injection was administered. A week later she again attended at Black-street with her child and received a second injection. She was informed that the test showed nothing. Soon after she returned home she became ill; she was removed to the infirmary and died a few days later on August 17th.

Lord Murray dismissed the action with costs. His decision was based upon the primary point that death had occurred in August and legal proceedings had not been begun until the following January, many weeks after the two months statutory time limit under the Public Health (Scotland) Act had expired. On behalf of the husband, who claimed £2000 reparation against Dr. Elizabeth Helen Smith for the loss of his wife, an interesting argument had been put forward in the endeavour to circumvent the statutory limitation which otherwise manifestly barred his claim. First, it was contended, the dead woman had not herself been a patient at all. Secondly, as she was never made aware of the diagnosis, she could not be regarded as a voluntary patient for the purpose of venereal disease treatment under the Public Health Act, so as to bring the doctor within the protection which that Act confers. Lord Murray could not accept this view. It was clear, he said, both on the admitted facts and on the documents that mother and child were alike patients. It was a case of derivative treatment and the position of the mother and the child could not be severed. He refused to hold that one and the same proceeding on the part of a medical practitioner, when plainly intended as a performance of a statutory duty, could be within or without the protection of the Act according to the precise state of knowledge of the patient as to the particular character of the disease diagnosed.

The sympathy naturally felt towards the husband in this particular case need not obscure the conclusion that such measure of protection as the Scottish Public Health Act affords was never more essential to the medical practitioner than in relation to the difficult and delicate duties performed at centres for the treatment of venereal disease. In some respects it is unsatisfactory that the medical facts of the case were not fully examined in court owing to the claim being dismissed on the preliminary ground of the statutory protection. For the claimant it was stated that both he and his first child had always been healthy and free from disease and that blood tests of himself and his two children, taken since the wife's death, had all shown negative results. The learned judge was careful to point out that there was no evidence before him as to the precise cause of death. He expressly refrained from giving any opinion or making any finding on this head. The facts were not before him. It is only fair to Dr. Smith to point out that the case ending as it did upon the preliminary objection in law, not only was there no finding that she was in any way at fault, but no opportunity arose for her to make any answer to the allegations upon which this unsuccessful claim was founded.

ST. THOMAS'S HOSPITAL WAR MEMORIAL.

THE Duke of York on Nov. 2nd laid the foundation-stone of the College House Extension and Students' Memorial which is being built in connexion with St. Thomas's Hospital and Medical School. The building will be on the opposite side of Lambeth Palace-road to the hospital and will contain club rooms for students and 72 bedrooms; 12 of these will be reserved for members of the resident staff of the hospital, and the remainder will be let to junior students and others. The cost of the scheme, including the purchase of the site, will be £58,000, towards which the Medical School is raising a fund of £10,000. Sir Arthur Stanley, in welcoming the Duke of York, traced the interest in the hospital which had been taken by the Royal House from the days when Edward VI. restored it to the rights and privileges, and some of the property, which his father had taken away. Queen Victoria had laid the foundation-stone of the new buildings in 1868. Sir George Makins said that in the war 1481 of those connected with the hospital had joined up, including 214 members of the nursing staff, and of the whole number 81 had died. It was felt that no form of monument would bring the memory of those who gave their lives more constantly before the future members of the school than the provision of quarters which would be their home whilst they were working in school and hospital. The provision of this hostel was also an indication of the gradual conversion of the University of London, of which the school was a constituent college, from a purely teaching and examining body to a complete university with residential accommodation for its students. The Duke of York laid the foundation-stone with the same level as was used by Queen Victoria. The religious part of the ceremony was conducted by the Bishop of Southwark and the Hospitaller, and a guard of honour was furnished by the medical unit of the University of London O.T.C.

THE LATE MR. HERBERT H. FOLKER, O.B.E.—Mr. Folker, who died on Oct. 20th in his sixty-second year after a long and painful illness, was a well-known North Staffordshire surgeon. The son of a medical man, he was educated at the Newcastle High School and at Epsom College, studied medicine at Charing Cross Hospital, and qualified in 1889 with the M.R.C.S. Eng. and the L.R.C.P. Lond. Returning to Staffordshire, he commenced practice at Shelton, and later succeeded his father as certifying surgeon under the Factory Act for the Hanley district. Mr. Folker, who took a prominent part in the movement for the compulsory notification of ophthalmia neonatorum, was appointed hon. assistant ophthalmic surgeon to the North Staffordshire Infirmary in 1892, ophthalmic surgeon in 1894, and hon. consulting surgeon in 1911. On the outbreak of war he joined the R.A.M.C. and did good service in various districts of Yorkshire, Derbyshire, and Nottinghamshire. He leaves a widow and a married daughter.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

The following are some of the health statistics of six counties for the year 1924 :—

Name of county.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Somerset	308,300	19·3	12·3	0·89	1·40	2·3	30	54	3·7
Derbyshire. ..	607,600	20·7	11·0	0·78	0·98	2·3	34	70	3·9
Lincolnshire, parts of Lindsey	259,900	19·7	11·8	0·98	1·36	2·1	29	60	3·0
Hertfordshire ..	344,200	16·0	10·4	0·77	1·48	1·9	29	51	3·3
East Sussex ..	258,600	14·0	11·8	0·87	1·74	1·9	29	48	3·3
Cumberland ..	221,010	20·3	13·0	0·59	1·23	2·5	32	72	5·2

Somerset.

Dr. W. G. Savage reports an increase in the deaths from influenza and the diseases of the respiratory system; the 208 deaths from influenza represent an increase of 202 over those of 1923. A table of the deaths at various age-groups during the last nine years shows that the deaths over the age of 65, which in 1911 formed 45·8 per cent. of the total, accounted for 53·0 per cent. in 1924. Twenty-five cases of ophthalmia neonatorum were notified, and there were 91 cases of encephalitis lethargica with 15 deaths, as compared with 8 cases and 3 deaths in the previous year. A special report on the mental impairment of affected school-children has been made to the Board of Education. No propaganda work with regard to venereal diseases was carried out during the year, and Dr. Savage considers that it is very difficult to arouse interest in this subject treated by itself and that it is best dealt with in courses of instruction on social hygiene along with other health matters. As regards tuberculosis he reports as unsatisfactory the fact that of 550 new cases of pulmonary tuberculosis 38 per cent. were detected in the early stage of the disease, 39 per cent. in the second stage, and 22 per cent. in the third stage and practically incurable. The percentage of contacts who attended the dispensary for examination was about 20, the figure for 1923 being 26. About 82 per cent. of the contacts of pulmonary cases showed suspicious or definite signs of tuberculosis. The new sanatorium at Quantock Lodge was not available for patients till June, 1925, and some of the buildings were used to house a holiday camp for 40 girls and 40 boys suffering from general debility and malnutrition. There were 973 new houses, compared with 948 in the previous year. In spite of urgent need, however, only 81 houses were built in Bridgwater, and in agricultural areas there has been little building. Dr. Savage refers to the subletting of parlour houses, and cites the example of the council houses in Weston-super-Mare. Of 118 houses, completed in 1922, 73 are occupied by one family, 44 by two families, and one by three families. In three instances the rent and rates were 15s. 9d. per week and the sub-tenants paid 9s., 7s., and 10s.

At Weston-super-Mare, Clevedon, and Minehead there are public slaughter-houses only, but in the rest of the county there are 350 private slaughter-houses. The new meat regulations require slaughtering to be done at fixed times or after due notice. The value of these regulations, says Dr. Savage, will largely depend upon the experience and knowledge of the sanitary inspectors, only a few of whom hold a meat certificate and some of whom have had no training in meat inspection at all. To make the new regulations of practical value facilities must be available for these men to have revision courses in meat inspection. The majority of the county's 5290 registered milk producers are taking a much greater interest in clean milk production. The control in rural districts is very unequal. In some districts the officials give only perfunctory supervision, while in other districts, such as Axbridge and Langport, much attention is being given to the work, and considerable improvements in equipment and methods are being secured. During the year there have been 82 milk demonstrations at various farms, and in the milk competition of 1924–25 30 of the competitors in the fourth series of tests attained the standard of Certified Milk, 22 that of Grade A, and only 14 failed to reach Grade A. The graded milk movement does not make much headway. At the end of 1924 there was one producer of Certified Milk, one of Grade A (tuberculin tested), and two of Grade A.

More antenatal work is being done. Cards are supplied to the midwives for recording the results of visits paid before birth. Examinations of urine, &c., are made for midwives, free of cost, in the county laboratory. Further steps have been taken to distribute leaflets to expectant mothers and the facilities for granting milk to them have been extended. Tables are given showing that over 90 per cent. of the babies 3 to 4 months old are entirely breast-fed in the rural districts and about 60 per cent. in the urban districts. The percentage of 1924 births attended by trained midwives was 50·8 and by "bona-fide" midwives 3·7. The remainder were attended by medical men, with the exception of a small proportion attended by uncertified women. The trained midwives sent for medical aid in 23 per cent. of their cases, the "bona-fides" in 12 per cent.

Derbyshire.

Dr. W. M. Ash presents the report for 1924, but only took up his duties as county medical officer on June 1st, 1925. There has been an increased prevalence of small-pox of a mild type. There were 1123 notifications, with one death in the Chesterfield district. The council has still no facilities in the county for the institutional treatment of surgical tuberculosis, but preparations are being made to provide 50 beds at Bretby Hall for the treatment of early cases of bone and joint tuberculosis in children. Of 320 deaths from tuberculosis notified by the local registrars to the county medical officers of health 120 were not notified under the public health regulations before death, 51 were only notified within four weeks before death, and 44 during the second month before death. At the end of 1924 there were 127 shelters lent out to tuberculous cases; inspection showed that 111 were being used in a satisfactory manner and the others were not being used. The tuberculosis officer, Dr. A. N. Robertson, reports a great need for a 20 to 30-bed pavilion for advanced female cases. Most of the new "cures" are tried at the sanatoriums, but hitherto with unsatisfactory results. Dr. Robertson considers that artificial pneumothorax "is most required in an advancing toxic case of recent onset, which has not responded to three months absolute rest in bed and where the disease is mainly unilateral and the lung is breaking down, causing high fever and rapid pulse." Chronic unilateral cases of long duration with shrunken chest do not urgently require such treatment, and the adhesions frequent in such cases prevent it being successfully carried out. Dr. Robertson's experience of the after-history of large numbers of such cases is that they often do quite well without this special treatment. Five new cases were started on the treatment during the year and it was continued in four old cases. "One can positively say that by its use in picked cases a dying man can be changed in a short time into a comparatively healthy, happy individual." Dr. Robertson does not approve of beds being used for the education of advanced cases, and advocates that the education process be carried out at the home. The beds are urgently needed for early cases and the high mortality among the advanced cases after discharge gives a bad impression of the curative power of the sanatorium. After an average of ten notifications of encephalitis lethargica during the last three years there was an increase in 1924 to 84 notifications with 23 deaths. Out of 32 cases among school-children 7 died, 1 left the county, 8 showed no sequelæ, 9 showed slight or severe mental changes, 1 some physical deterioration, and 6 the Parkinsonian syndrome.

Lincolnshire (parts of Lindsey).

Dr. R. Ashleigh Glegg points out defects in the tuberculosis scheme. Many advanced cases are allowed to remain at home, partly cured cases return to insanitary homes, and there is great lack of an orthopædic scheme to prevent children being crippled by tuberculosis of bones and joints. He recommends the establishment of a central hospital with a specially trained staff and X ray department, to be fed by out-patient clinics conducted in the various districts by the hospital staff.

Dr. Annie T. Brunyate makes many recommendations for the improvement of the maternity and child welfare scheme, which are all endorsed by Dr. Glegg. More maternity homes are needed. The usefulness of the antenatal clinic at Scunthorpe will be much increased by the opening of a new six-bed home there. An antenatal clinic was opened at Gainsborough in October and one will shortly be opened at Cleethorpes. The staff of health visitors needs to be increased in order to cope with the work, and the alternative is suggested of providing them with motor-bicycles instead of push bicycles. Dr. Brunyate points out that a health visitor at the end of an exhausting day of travelling by push-bicycle cannot have the same interest in the mother nor exert the same power of persuasion as at the beginning of the day. This is so evident to the nurses that several of them have managed to run motor-cycles or light cars to their own pecuniary loss, but to the great benefit of their work. Courses of post-graduate lectures for midwives were given during the winter at Lincoln, Cleethorpes, and Scunthorpe.

Hertfordshire.

Dr. H. Hyslop Thomson states that the maternity and child welfare scheme includes both official and voluntary effort. There are 13 county council centres, 13 voluntary centres, and 9 voluntary weighing centres. Maternity beds are provided at Hertford, Hitchin, Hemel Hempstead, and Watford. There is a convalescent home at St. Leonards, and there are orthopædic, massage, and dental clinics. There is much need for additional dental clinics at Hertford and Bishop Stortford. Commenting on the increased number of deaths of infants during the first weeks of life, Dr. Thomson stresses the need for antenatal work. The births in the county numbered 5496 and only 258 expectant mothers attended the council centres. In 1923 the number was 200. Special efforts have been made to search out the mental defectives in the county, through the medium of Poor-law authorities, school attendance officers, medical practitioners, and nurses. Parents sometimes withhold information owing to the fear of their children being removed to a special school or institution. This difficulty would in time be met by the provision of an institution to which parents had easy access. The absence of adequate accommodation in certified institutions, more especially for low-grade and complicated cases, is sometimes seriously felt. A certified institution is needed which would provide accommodation for three types of case of both sexes—namely, employable, unemployable, and hospital cases. Such an institution should be so constructed as to allow for future expansion and should provide facilities for the training and employment of defectives in various occupations.

East Sussex.

Dr. Alex. G. R. Foulerton reports that the scheme for coördinating the county council's health nursing work with the general nursing, by close coöperation with the East Sussex Nursing Federation, continues to work very satisfactorily. Infant visiting under the county scheme is carried out by the nurses of the District Nurses Association, and there are only eight parishes, with a total population of about 5000, which are without the services of a district nurse. Good progress has been made with the assistance of the East Sussex Voluntary Association for the Blind in providing for the more pressing needs of the necessitous blind in the county. The recently made register of the last named includes 260 persons. In addition the county education committee provide education in special schools for blind children under 16 and secondary or technical education for certain blind persons over the age of 16 who are likely to benefit thereby.

Cumberland.

Dr. F. H. Morison reports that although the infant mortality of the county has decreased to 72, it remains in five of the urban districts at over 100. Cockermouth had an infantile mortality of 131 in 1924 and 132 in 1923. Dr. A. H. Towers, in his account of the work of the clinics at Cleator Moor and Millom, comments strongly on the ill-health of some of the mothers. He says that in these districts the poorest and most ill-nourished infants are those which are being breast-fed, and the full effect of continued unemployment, poor feeding, and housing is there seen. " The average mother is quite unfit to feed an infant by the breast ; it is quite a common occurrence for mothers to arrive at the clinic markedly dyspnœic and cyanosed, with tachycardia and general cardiac irregularity, and anæmia is found to be intense." Under such conditions, he says, the infant is deriving no good from breast feeding, while the damage to the mother's health is profound. On weaning the improvement in the infant is obvious, but the mother living under these conditions only recovers slowly. At Cockermouth there is no infant clinic, but there are clinics at two other districts which have infant mortalities of 100 each—namely, Egremont and Arlecdon-cum-Frizington. 186 cases of small-pox were notified in the county during 1924 with no deaths. The Englethwaite Industrial Colony for consumptives is to be closed at an early date and its conversion into an institution for delicate children is under consideration. The average number of beds occupied at the colony during the year was 33, and there has been less demand for the beds on the part of ex-Service men with pensions. The net cost of the colony during the year, after allowing for payments for ex-Service men, receipts from the market garden, poultry farm, clog making, and joinery and all other credits was about £4000.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 24TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 07; scarlet fever, 2602; diphtheria, 1240; enteric fever, 65; pneumonia, 965; puerperal fever, 43; cerebro-spinal fever, 5; acute poliomyelitis, 11; acute encephalitis, 4; encephalitis lethargica, 42; dysentery, 8; ophthalmia neonatorum, 115. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 4 deaths from enteric fever, 25 from measles, 11 from scarlet fever, 15 from whooping-cough, 38 from diphtheria, and 11 from influenza, the last named being a slight decrease from the previous week. In London itself there were 10 deaths from diphtheria, 1 from whooping-cough, 8 from influenza, and 31 deaths of infants under 2 years of age from diarrhœa and enteritis.

SCHOOL MEDICAL SERVICE.

THE following is a summary of the reports of school medical officers:—

Name of district.	No. on roll	Av. elem. school attendance.	No of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.*
Cambridgeshire C.C. ..	9,807	8,093	2,927	5,079	11·6
Gloucestershire C.C. ..	11,022	—†	11,305	6,295	37·8
Durham C.C.	—†	125,183	39,336	18,112	24·9
Northumberland C.C. ..	—†	—†	13,937	11,735	20·09
Lindsey C.C.	39,018	—†	11,551	6,651	15·95

* Excluding dental defects and uncleanliness. † Not given. C.C. = County Council.

Cambridgeshire.

Dr. F. Robinson gives interesting figures showing the gradual decrease in malnutrition from 19·4 per cent. in 1914 to 4·1 in 1920, and the rise again to 11·8 per cent. in 1921. The nutritional standard of the school-children apparently varied directly with the wages and state of employment. Cod-liver oil is supplied to all ill-nourished children, but only a few of the worst cases of malnutrition are sent to the residential open-air schools run by neighbouring authorities. The standard of cleanliness is apparently satisfactory, though no cleansing surveys are carried out by the district nurses who act as school nurses. The teeth of all children from 5 to 14 years were inspected and only 30·2 per cent. were found to require treatment, and of these 65·1 per cent. actually received it. The necessity for adopting some scheme for orthopædic treatment is stressed, as is also the need for appointing a physical training instructor. No special classes or schools are run for abnormal children, but it is hoped to start some classes for backward children in the near future. Strong comment is made on the unhygienic state of many of the non-provided schools.

Gloucestershire.

In addition to "cleansing surveys," much home treatment is given in the outlying districts by the district nurses who carry out the school duties, and Dr. J. Middleton Martin points out there has been a 60 per cent. reduction of pediculous heads since the inception of the school service in 1908. In the same time defects of the nose and throat have been reduced by 30 per cent., largely owing to the increased attention given in early life. A beginning has been made in the orthopædic treatment of physically defective children. One of the surgeons from the Cheltenham General Hospital visits neighbouring schools and it is hoped that further provision will shortly be made. A few schools make their own arrangements for feeding necessitous children but no official provision is made, and Dr. Martin rightly deplores the absence of any open-air schools in the county. 60 per cent. of the children examined (6 to 9 years inclusive) required dental attention and of these 70 per cent. obtained treatment. No special provision is made for physically or mentally defective children.

Durham.

Dr. Sydney Havelock, the deputy school medical officer, in the absence of the school medical officer, Dr. T. Eustace Hill, presents a well-written and interesting report. He rightly states that one dental officer can only touch the fringe of the dental work in a county like Durham, and urges the necessity for open-air school provision and for the adoption of an efficient orthopædic scheme, &c. Arrangements are now being made for a definitely organised scheme for operative nose and throat treatment. Interesting features are the short extracts of reports from the assistant school medical officers on the actual conditions found at the examinations; these are essentially of more value than the mere recording of statistical data. Dr. Lance Stanton-Cook calls for the earliest possible treatment of squint, and makes a strong plea for the employment of an oculist in the child welfare scheme. Dr. H. G. Donald definitely associates the prevalence of threadworms with defective personal and general hygiene. To see toddler children and pet dogs engaged in a necessary part of their toilet in the street, where later will be the mud-pies, is to solve the mystery of the method of conveyance of the eggs of the oxyuris. Dr. Lillie Johnson finds that healthy girls who take regular exercise suffer no disability during the menstrual periods. Institutional care is found for most of the blind, deaf, and epileptic children, while the council provides a residential school for mentally defective children.

Northumberland.

Apart from a few remarks on nutrition, Dr. W. F. J. Whitley confines his report mainly to the statistical returns required by the Board of Education. It is thought that since only one whole-time and one part-time dentist are employed, the medical inspectors could keep the dentists fully employed in treatment and do away with the necessity for dental inspections. The assistant school medical officers referred for treatment 2203 children with four or more carious teeth, but only 1414 children received treatment, apart from 600 re-treated during the year. The value of the statistical dental return must be negligible in comparison to the waste of the dentist's time. The numbers of exceptional children in the county appear very small; for instance, there are only 138 feeble-minded and 114 crippled children. No special provision is made by the council for such children. Dr. O'Connell O'Sullivan concludes that the malnutrition existing in the children is due to defect in the quality rather than the quantity of food; and Dr. W. L. M. Gabriel has drawn up an interesting table showing the relation of weight to height at various ages, and compares the results with similar data from Newcastle, from the Anthropometric Report of 1883, and from Detroit, U.S.A.

Parts of Lindsey (Lincoln).

Dr. Ashleigh Glegg stresses the value of coördination between the various branches of the public health activities. It is an advantage for medical officers and nurses to meet parents in more than one capacity, but we do not like the idea of associating the nurses with the work of the attendance officers. Commenting on the dirt and dust brought into the schools, Dr. Glegg suggests the children should change into slippers at school. This is an ideal not easily attained. Favourable comment is made on a dust-allaying preparation, to which a trial has been given. Interesting account is given of the working of the open-air schools, and "the newest schools now in course of construction . . . can, if desired, be thrown open entirely to the fresh air." There are no institutions for the blind, deaf, mentally or physically defective children in the area, but for the great majority of the blind and deaf outside accommodation has been found. The difficulty of providing special schools in rural areas is recognised, but a step in the right direction would be the establishment of special classes at the bigger centres. The adoption of an orthopædic scheme is now being considered. An inquiry into the alleged decadence of the rural child showed that in Lindsey the country child compares favourably with the town child.

ROYAL SOCIETY OF ARTS.—A conference will be held at John-street, Adelphi, W.C., on Monday, Nov. 9th, from 5 to 7 P.M., Sir Francis Champneys in the chair, when the subject for discussion will be How the Midwife can Help in the Reduction of Maternal and Infantile Mortality. The principal speakers include Dr. John S. Fairbairn, Miss E. M. Doubleday, Lieut.-Colonel Fremantle, and Sir John Robertson.

Correspondence.

"Audi alteram partem."

UNIVERSITY COLLEGE, LONDON: A CENTENARY APPEAL.

To the Editor of THE LANCET.

SIR,—May we ask the hospitality of your columns for an appeal issued under the patronage of H.R.H. Prince Arthur of Connaught, and the vice-patronage of the Chancellor of the University of London, the Earl of Rosebery, for £500,000 to enable University College, London, upon the completion of the first hundred years of its work, to start unhampered upon its second century?

The foundation-stone of University College was laid in 1827, after two years of preparatory work following upon the famous letter of Thomas Campbell to the *Times* of Feb. 9th, 1825, in which the foundation of a University of London was first proposed. The object of the new University was to give education without regard to class or creed, and more particularly in a large number of new subjects, which did not at that period form part of the ordinary University curriculum. In the words of an early report: "It was for a class of sciences, the knowledge of which is not profitable to the possessor in a pecuniary point of view, but which exact a great influence on the well-being of society, that such an institution was required."

If this work is to continue, on the scale which the present century demands, a sum of at least £500,000 is urgently necessary. Of this total £225,000 is needed for the endowment of teaching; other urgent needs are the provision of a great hall, the reconstruction and endowment of the libraries, and the completion of the engineering equipment. The laboratory teaching of engineering is one of many subjects in which University College has done pioneer work.

University College was the first of that group of new universities which have now spread, not only through England, but to all parts of the Empire. But, owing to its position as the oldest and largest College of the University of London it must always possess peculiarly heavy obligations and responsibilities. We appeal with confidence to all citizens of London and of the Empire to help it to discharge those obligations in a manner worthy of the Empire in the capital of which it is stationed.

Donations, large or small, can be sent to Sir Robert Kindersley, G.B.E., hon. treasurer of the Centenary Appeal Fund, at University College, London, from whom the complete appeal document can be obtained.

We are, Sir, yours faithfully,
CHELMSFORD,
Chairman, University College, London.
E. A. GARDNER,
Vice-Chancellor, University of London.
MESTON,
Chairman, Appeal Committee.
R. M. KINDERSLEY,
Treasurer, Appeal Committee.
W. SETON,
Hon. Secretary, Appeal Committee.
Gower-street, London, W.C. 1, Oct. 28th, 1925.

X RAYING OF TEETH.

To the Editor of THE LANCET.

SIR,—When a physician of reputation and position writes in criticism of any method of investigation, such a communication naturally commands respect. Sir Gould May criticises the common and routine examination of the teeth by means of X rays, and draws, in my opinion, certain unfair adverse conclusions.

Now if, as he says or implies, it is so easy a matter for a dental surgeon to give a definite opinion on the condition of the teeth, or that part of the tooth which is invisible, why are so increasingly large numbers of dental surgeons going to the expense and trouble of equipping themselves with X ray apparatus? I had been of the opinion that X ray examination was advisable in certain broad classes of case. First, cases referred by the dental surgeon himself, in order to demonstrate with precision the exact condition of a root and its socket; secondly, cases referred by a surgeon, preliminary to any operation of magnitude, in order to eliminate any possible latent source of infection.

In a very large number of such cases, contrary to Sir Gould May's suggestion, the radiologist is able to report favourably. I had looked upon the above as evidence of extreme care on the part of the surgeon, and Sir Gould May's criticism, if correct, is disconcerting. Nevertheless, for my part, I should prefer to be operated upon by a surgeon who errs on the side of extreme caution.

I am, Sir, yours faithfully,
STANLEY MELVILLE.
Chandos-street, Cavendish-square, W., Nov. 2nd, 1925.

To the Editor of THE LANCET.

SIR,—The question raised by Sir Gould May in your last issue is one that, as indeed his letter indicates, concerns not only the general physician and surgeon, but also the specialists in almost every branch of medicine and surgery. An unbiased observer of our profession and its ever-changing doctrines will note that, whenever a new "craze" arises there are always those who support it and those who condemn it as new-fangled nonsense. The former are often to blame for lack of judgment and critical powers, the latter for not taking the trouble to understand the point at issue.

I suppose there is no subject in medicine on which more nonsense has been written and said as on what is commonly known as "the theory of focal infection"! To begin with, it has always been a mystery to me why it should be called a theory. A patient, let us say, has a mass of tuberculous glands in the neck, or a tuberculous focus in one lung; he then develops tuberculide skin lesions, or renal tuberculosis, or spinal caries. It is hardly theoretical to attribute these secondary complications to infection, via the blood stream, from the primary focus. Yet if one is dealing with a patient who is obviously suffering from a non-tuberculous chronic infection, and one tries to locate the main closed foci, from which invasion of the blood stream with toxins or bacteria may be taking place, one is condemned as a victim of "the theory of focal infection"! I cannot personally see any difference between X raying the teeth or the maxillary antra, and having the urine examined for bacilluria, or the Wassermann reaction performed. To my cost, I have in the past accepted the opinion of dental surgeons, whom I did not know, that "the teeth are all right." In one such case I wasted two years of a patient's life for this reason; she had the most extensive apical infection of the teeth with invasion of bone, and I have never seen a more dramatic change in a person's appearance than occurred after removal of the teeth and scraping away the diseased bone. Unfortunately in patients with chronic streptococcal infection it is not, as a rule, a question of locating one or more accessible septic foci, for such cases often have a diffuse infection of the nasopharyngeal and intestinal mucous membranes, to say nothing of closed foci in lymphatic glands. Unless everything possible is done *after* the removal of obvious accessible foci to raise the patient's resistance to his infection by means of an out-of-door existence, heliotherapy, autogenous vaccine treatment, and a suitable diet, disappointment is bound to result in the majority of cases, and such after-treatment is often impracticable. It is the actual infecting organism and the patient's resistance to it that are the important factors, and they are often entirely neglected even by those who admit the importance of focal sepsis. Sir Gould May's contention that continental medical men do not attribute the same importance to focal infection from the teeth as we do is, in part, true, although the most exhaustive treatises on the effects of pyorrhœa are by French authors. But if we are to be accused of being crazy on this subject, the French can with equal justification be accused of being crazy on hereditary syphilis and tuberculosis.

In conclusion, I would say that the last three reports I have received from dental radiologists stated that there was no evidence of infection of the teeth; and that, even if there is obvious dental sepsis, I do not advise extraction unless I consider the patient's condition warrants it, for artificial teeth can never be an effective substitute for the real article.

I am, Sir, yours faithfully,
H. W. BARBER.

Devonshire-place, W., Nov. 2nd, 1925.

To the Editor of THE LANCET.

SIR,—It would be interesting to know on what experience Sir Gould May bases his remark that "everyone whose apparently sound teeth are X rayed is said to have diseased ones." Simple inspection of a tooth does not reveal the presence of a root abscess, and many sufferers from maladies, undiagnosed by eminent specialists, are relieved when X rays expose a septic focus and an offending molar is removed. Sir Gould May's informant on the continental attitude to this question is in error, for in the Zentral Röntgen Institut in Vienna there is a special section devoted to the study of teeth alone, with results which well satisfy the Viennese doctor. Taking the line of argument adopted by Sir Gould May, it would be just as competent for the radiologist to urge the physician to give up percussing the chest and to relegate his stethoscope to the dustbin. The argument in his case would be even stronger, for physical signs in diseases of the lungs reveal very superficial infiltration, leaving it for the radiologist to discover the more deep-seated mischief. It is not in this way that progress in medicine is made.

I am, Sir, yours faithfully,
PETER KERLEY, M.B., Ch.B. (N.U.I.),
D.M.R. & E. Camb.,
Zeugnis der Universität (Vienna).

Richmond, Surrey, Nov. 1st, 1925.

STANDARDISATION OF BACTERIAL VACCINES.

To the Editor of THE LANCET.

SIR,—I am doubtless not alone in welcoming Major Brown's method of making the standardisation of vaccines a more certain procedure as outlined in his letter in your issue of Oct. 31st. Admittedly, the ordinary opacity method such as Gordon's is a rough and ready procedure, but I am sure it does compare quite favourably with any counting method. Apart from cholera vibrios, the opacity is the thing we want, if we cannot have weight, for it is the amount of bacterial substance that matters. Counting methods can take no stock of autolysed organisms, and the standardisation of the streptococcal vaccine by counting methods seems to me to be futile, for in a well-shaken vaccine some of the chains break up into diplo-, triplo-cocci, into chains of all kinds of length, and some cocci autolyse so that one is quite at sea to know what constitutes a single streptococcus. Wherefore in this case an opacity method is probably the more correct, but it may be questioned whether any known method of standardising streptococcal vaccines is satisfactory. The same applies to staphylococcal vaccines, but perhaps not quite so forcibly.

Too much importance should *not* be attached to *any* vaccine count, for no two patients have the same toleration and no two vaccines have the same toxicity. That fine adjustment which makes for success in vaccine therapy is born of long experience and is a comparatively rare quality, but I am equally sure that some practitioners have an uncanny flair both for choosing the right case for vaccine therapy and for giving the optimum dosage. It will also be noted that for curative specific therapy stock vaccines are of very limited value, since in a mixed vaccine the correct dose of the requisite organism is masked by dilution with other unnecessary organisms, and their inelastic composition is rarely likely to be compatible with any given case.

We owe a great debt to Major Brown for his work in correlating weight and opacity standards.

I am, Sir, yours faithfully,
A. GEOFFREY SHERA, M.D. Cantab.

Welbeck-street, W., Nov. 1st, 1925.

Obituary.

GEORGE HAYNES FOSBROKE, M.R.C.S. ENG., D.P.H.

THE death is announced of Dr. G. H. Fosbroke, medical officer of health for Worcestershire, at Bidford-on-Avon, Warwickshire, after nearly a year's illness.

George Fosbroke was born in 1850 at Bidford-on-Avon, where his family have been known for more than 500 years. He was educated at St. Michael's College, Tenbury, and Swansea Grammar School, and entered Westminster Hospital in 1867. Having become an L.S.A. in 1871 he acted as assistant surgeon to the National Society during the Franco-Prussian War, and for his services was given the war medal by the French Government. He took his M.R.C.S. diploma in 1872, and for two years occupied the posts of resident obstetric physician and resident house physician at Westminster Hospital. In 1873 he returned to his own county as whole-time medical officer of health to the Stratford-on-Avon Combination of Sanitary Authorities, which included Poor-law unions in Worcestershire, and thus became one of a very small number of whole-time officers for groups of sanitary districts. In 1875 he sat for the first examination at Cambridge for the Diploma in Public Health, and in 1881 became President of the Birmingham and Midland Association of Medical Officers of Health. The Worcestershire County Council was one of the first to appoint a county medical officer of health; the decision to do so was not reached without considerable opposition, and meetings of protest were held in a great number of places in the county. The county council was fortunate enough to appoint Dr. Fosbroke as county medical officer in 1890 and with his assistance became one of the most progressive authorities in promoting public health measures. Dr. Fosbroke acted as adviser to the Gloucestershire County Council from 1900–02, and was the representative of the Local Government Board on the London Sanitary Inspectors' Examination Board, and examiner for the Royal Sanitary Institute. In 1902 he was largely instrumental in founding the Knightwick Sanatorium for tuberculosis which, starting with 16 beds, became in 1916 the King Edward VII. County Memorial with 80 beds. Though not a profuse writer, he contributed several articles to professional journals, and his routine reports to the county council contained matter of more than ephemeral interest.

Dr. Fosbroke's quiet and unassuming manner of overcoming difficulties and prejudices bore fruit in much valuable work for his county. His friendly relations with his colleagues in general practice in days when friction was common was shown by his election as president of the Worcestershire and Herefordshire branch of the B.M.A. in 1891. As a man few were more welcome in any sphere of life. He was a keen sportsman, and until prevented by an accident was well known to followers of three Midland packs of foxhounds as a hard rider. In 1887 he married Miss Mary Thorpe Lane, of Dorsington Manor, Gloucestershire, but he has left no children.

NINA HENRIETTA BEATH, M.B., CH.B. EDIN.

THE death of Miss Nina Beath in London on Oct. 27th follows rapidly on her return from her work for the Presbyterian Church of England at the Women's Hospital, Swatow, China. She had been unwell for some months, but only gave up her arduous duties at the hospital at the beginning of June and reached London on Oct. 3rd. The daughter of the late Lieut.-Colonel John Henry Beath, C.B., R.A.M.C., she was born at Stirling in 1872, and after taking her degrees at Edinburgh in 1902 she went out to Swatow two years later. Her death deprives the English Presbyterian Missions in China of their leading woman member. In addition to her hospital duties she trained many Chinese students of medicine, employing for the purpose their own language, of which she was a master. She was also as active as her medical duties would allow her to be in the evangelistic work of the missions, and often preached to large gatherings of women and children.

Medical News.

UNIVERSITY OF LONDON: *University College Hospital.*—Four lectures on the History of Medicine, illustrated by lantern slides, will be delivered at University College Hospital Medical School by Dr. Charles Singer on Thursdays at 4.15 P.M., from Nov. 12th to Dec. 3rd. The subjects will be the History of Influenza, Diphtheria, Enteric Fever, and Small-pox, and the lectures will be open to all medical students of the University of London.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An ordinary quarterly Comitia of the College was held on Oct. 29th, the President, Sir Humphry Rolleston, occupying the chair. The following candidates having passed the necessary examinations were admitted as Members of the College:—

Drs. William F. Addey, Harold G. Anderson, Tridib Nath Bandgopadhyay, Ambuj Nath Bose, Reginald T. Brain, Oscar Brenner, Frederick J. H. Campbell, Weldon D. Champneys, Samuel H. Cookson, Gerard J. Crawford, Thomas H. Crozier, Cyril L. Elgood, Rowland B. Fawkes, Louis Forman, William I. Gerrard, Paul C. Gibson, Francis H. K. Green, Geoffrey Hadfield, Frederick W. Hamilton, Richard A. Hickling, Ronald E. Lane, Edward B. Marsh, James Maxwell, Alan A. Moncrieff, Benjamin B. Morgan, Milroy A. Paul, Wilfred P. H. Sheldon, John F. Smith, Norman W. Snell, Frederick H. W. Tozer, Francis C. O. Valentine, Richard H. Wade, George F. Walker, and Adam White.

Licences to practise physic were granted to 211 candidates (including 36 women) who had passed the necessary examinations. The following are the names and medical schools of the successful candidates:—

A. R. Adderley, St. Thomas's; R. D. Aiyar, Madras and London; V. M. Albuquerque, King's Coll.; C. R. Alderson, Univ. Coll.; R. B. Alston and R. C. Amies, St. Thomas's; Leah Appell, Charing Cross; H. K. Ashworth, Manchester; A. A. Atkins, London; D. G. Balakirsky, Liege and Middlesex; C. V. N. Baldry, Sydney and St. George's; W. A. Ball, King's Coll.; K. Bandaly, Univ. Coll.; J. V. Bannehr, St. Bart.'s; T. F. Barlow, London; J. M. Bassett, Edinburgh; J. R. Beal, Manchester; A. D. Bellilios, St. Thomas's; H. S. Bell, Liverpool; W. T. E. Blackmore, Cardiff and London; Kathleen Blake, King's Coll.; V. H. Brink, Oxford and London; J. M. Brodrick, Liverpool; G. P. Brooks and W. Buckley, London; Margaret A. L. Buckner, Univ. Coll.; Olive K. Burnett, Royal Free; Isabella M. G. Butler, Univ. Coll.; J. P. Carpenter, Birmingham; Fanny L. Cattle, Univ. Coll.; R. T. Chadwick, Cambridge and St. Bart.'s; W. S. Chapman, Univ. Coll.; Dorothy A. Chown, Royal Free and St. Mary's; L. M. Clark and C. D. Cogswell, King's Coll.; R. Collins, Leeds; A. N. Coomarasamy, Madras and London; P. F. S. Court, Guy's; Anne A. Craig, Royal Free; P. E. J. Cutting, St. Bart.'s; A. J. Daly, London; A. C. Dalzell, King's Coll.; S. W. Davies, Cardiff; G. Dietrich, St. Bart.'s; J. Dockray, Cambridge and St. Bart.'s; W. H. Dowell, Guy's; Muriel E. Drew, Bristol; J. J. F. Dunn, Calcutta and St. Mary's; Dorothy Durance, Royal Free; J. Y. Eccles, St. Thomas's; N. L. Edwards, Manchester; A. Elliott, Guy's; Norah A. M. Empson, King's Coll.; Brenda H. English, Royal Free; I. A. Evans, Cardiff and Manchester; O. F. Farndon and R. R. Fells, St. Bart.'s; S. J. Firth, Manchester; P. H. Flockton, St. Bart.'s; A. C. Gairdner, Oxford and London; S. E. Gawthrop, Cambridge and Durham; H. Geary, Manchester and Guy's; J. F. E. Gillam, St. Thomas's; B. M. C. Gilsenan, St. Bart.'s; G. N. Golden, London; J. G. Goodman, Guy's; M. Gottfried, St. Mary's; E. P. Gough, Cambridge and St. Bart.'s; Phyllis M. Grainger, Birmingham; H. W. Greenwood, Middlesex; Margaret H. Greg, Royal Free and Manchester; G. J. Gregerson, Adelaide and London; J. C. P. Grey, Cambridge and St. Thomas's; H. R. Griffin, Middlesex; Sarah P. M. Griffiths, Cardiff and Westminster; T. A. Griffiths, Liverpool; W. S. Grove, Cambridge and Guy's; L. J. Haydon, Cambridge and St. George's; A. B. Hewlett, King's Coll.; J. D. Hindley-Smith, Cambridge and St. George's; J. C. Hogg, Cambridge and St. Bart.'s; D. P. Holmes, Westminster; L. Holmes, St. Bart.'s; T. K. Homer and J. P. Huins, Birmingham; Ruth T. Hurnard, Royal Free; D. S. Jackson, Madras and St. Mary's; I. A. Jackson, Cambridge and Guy's; Isabel E. S. James, King's Coll; R. Jones, Cardiff and Charing Cross; Adele A. Kahan, Charing Cross; M. E. Lampard, Cambridge and King's Coll.; I. Landon, St. Bart.'s; D. M. Lang, Guy's; C. G. Le Couilliard, Middlesex; A. H. Levers, Cardiff and Westminster; H. M. Levy, Middlesex; S. Levy-Simpson, Cambridge and London; R. Lewthwaite, Middlesex; D. W. E. Lloyd, Guy's; Mary C. Luff and Joan L. Lush, Univ. Coll.; J. D. S. McGeoch, Birmingham; B. W. S. Mackenzie, Cambridge and Univ. Coll.; W. K. McKinstry, Cambridge and St. Bart.'s; S. B. Malik, Punjab and Charing Cross; Margaret C. Malone, King's Coll.; C. Marian, Univ. Coll.; R. Marnham, Cambridge and St. George's; R. G. Mathews, Oxford and Univ. Coll.; R. C. May, Guy's; K. V. Mead, St. Thomas's; J. A. A. Mekelburg, Cape and Guy's; Clara Mendelssohn, Westminster; R. D. Milford, Cambridge and St. George's; Mary A. Monro, Royal Free; D. G. Morgan, Cardiff; Gertrude M. E. Morgan, Cambridge and St. Mary's; W. S. Morgan, Cardiff and St. Bart.'s; G. C. Morris, St. Mary's; Una F. M. Morton, Univ. Coll.; W. Murphy, Leeds; R. G. Nethery and F. M. Newnham, Guy's; H. A. Nicholls, St. Bart.'s; G. A. H. Norman, Westminster; D. W. C. Northfield, Guy's; H. E. Nourse, Cambridge and Middlesex; Eileen A. Nugent, Royal Free; T. C. Oakley, Birmingham; M. Odess, St. Mary's; D. Oliver, St. George's; C. J. S. O'Malley, St. Thomas's; A. Orliansky, Geneva and Middlesex; Sharada G. Pandit, Bombay; C. F. Parry, Cardiff and Guy's; F. B. Parsons, Cambridge and St. Bart.'s; G. Paterson, St. Thomas's; H. L. Peake, Guy's; L. V. Pearson, Cambridge and St. Bart.'s; B. Perchman, Charing Cross; J. D. L. Perera, Ceylon and London; D. Plum, St. Thomas's; C. G. E. Plumstead, Cambridge and St. Georges; F. H. Pratt, Guy's; J. D. Procter, Cambridge and Univ. Coll.; W. E. H. Quennell, St. Bart.'s; R. L. Quilliam, King's Coll.; R. J. Rankin, Cardiff and St. Bart.'s; J. D. Rear, Guy's; L. D. Richards, Charing Cross; K. E. R. Robertson, Calcutta and St. Mary's; P. H. Rossier, Lausanne and Zurich; C. J. Rozario, Calcutta and St. Thomas's; E. J. Rubra, Westminster; N. .L Russell, St. George's; I. J. Sachs, Middlesex; K. G. Salmon, Cambridge and St. Bart.'s; J. N. Sankey, Birmingham; Ethel M. Sargant, Cambridge and St. Mary's; A. G. Schroeder, Adelaide and London; C. R. Selous Jones, Cambridge and St. Thomas's; E. M. Shackel, Cambridge and St. Thomas's; J. W. Shackle, Cambridge and Guy's; Sara C. A. Sharpe, Royal Free and St. Mary's; J. Silverstone, Westminster; T. St.J. H. Silvester, Guy's; H. Simmonds, St. Bart.'s; G. Simon, Cambridge and St. Bart.'s; E. M. Smith, Univ. Coll.; K. S. Smith, Middlesex; R. E. Smith and E. Sorabjee, Guy's; J. Spencer, St. Bart.'s; A. L. Stephen and I. H. K. Stevens, Univ. Coll.; Gertrude H. C. Stinson, Royal Free; Mary Stirk, Manchester, R. G. Strouts, London; D. R. Sworn and C. C. Taffs, St. Thomas's; G. K. Taylor, Cambridge and St. George's; S. P. Taylor, Bristol; Elizabeth L. Taylor-Jones, Royal Free; G. A. J. Teasdale, Middlesex; E. J. S. Topham, Cambridge and St. Bart.'s; Mary C. Tugman, St. Mary's; A. B. W. Van Zyl, Amsterdam and Middlesex; W. A. Vickers, Liverpool; D. Vidofski, London; J. Viljoen, Cape and Manchester; R. J. Vince, Cambridge and London; D. C. Virmani, Lahore and Charing Cross; I. N. Vitenson, London; Florence M. Wallen, Cardiff; W. F. Waudby-Smith, St. Bart.'s; J. K. G. Way, Guy's; R. Wear, Durham; Elizabeth M. Weideman, St. Mary's; P. Weiner, King's Coll.; A. S. Wesson, Univ. Coll.; Joyce E. M. White, Royal Free and London; J. D. V. Wijeyaratne, Ceylon and King's Coll.; D. P. Williams, Middlesex and Cardiff; T. I. Williams, Guy's; H. L. Wilson, St. Bart.'s; H. F. Wilson, London; F. G. Winterton, Cambridge and St. Bart.'s; J. T. Woodhead, Cambridge and St. George's; A. T. Worthington, Cambridge and St. Bart.'s; and E. W. C. Woutersz, Calcutta and St. Mary's.

Dr. J. A. Nixon, of Bristol, was elected an Examiner in Medicine, to serve until July, 1927, in the place of Dr. J. W. Russell, of Birmingham, deceased.—A report was received from the President of the College who had attended the International Prison Congress as delegate.—The alterations in the by-laws relating to the examinations for the Membership were read a second time and passed. These include a provision designed to meet the case of medical men who have been engaged in special branches of practice lying outside the direct course of clinical medicine. Those over 30 will now be permitted to submit work they have published in any branch of medical science or in general literature, and if the Censors' Board decide that it is of sufficient merit they may excuse the candidate part or the whole of the examination. Another concession permits a referred candidate, in the absence of any special prohibition by the Censors' Board, to submit himself for re-examination without waiting for the expiration of six months, as has hitherto been the case. [A reference to these changes appears in our editorial columns.]—A letter from Dr. Daniel O'Connell Finigan asking that the Membership which he resigned in 1912 may be restored to him, was read a second time. The application was granted.—A report was received from the Committee of Management.—Dr. R. A. Young was re-elected a member of the Committee of Management.—The President announced the award of the Streatfeild Scholarship to Norman Leslie Capener, F.R.C.S., whose subject of research was "The Comparative Anatomy and Function of the Prostate Gland," and the award of the Jenks Scholarship for 1925 to Oliver Ive, of Guy's Hospital Medical School and formerly of Epsom College.—The award, by the University of Edinburgh, of the Murchison Scholarship for 1925 to Miss Sidney Elizabeth Crockery was also announced.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held during last month the following candidates passed in the subjects indicated:—

Surgery.—R. F. Ashkenny, London Hosp.; A. O. Dreosti, St. George's Hosp.; C. L. Froehlich, Guy's Hosp.; E. J. Newman, London Hosp.; M. Pettigrew, Sheffield; M. V. Roberts, London Hosp.; G. L. Rowan, St. Thomas's Hosp.; P. B Skeels, Guy's Hosp.; J. Tarshish, Liverpool; M. E. G. Wilkinson, Bristol; and H. J. F. Wood, Guy's Hosp.

Medicine.—M. Bannounah, Guy's Hosp.; A. O. Dreosti, St. George's Hosp.; A. M. El Mishad, Guy's Hosp.; A. L. Evans, Cambridge and London Hosp; C. L. Froehlich, Guy's Hosp.; T. H. Harrison, Sheffield; M. Hook, Boston, U.S.A.; N. H. Ibrahim, Durham; F. G. Martin, Charing Cross Hosp.; P. B. P. Mellows, St. Bart.'s Hosp.; E. J. Newman, London Hosp.; E. H. Rampling, St. Thomas's Hosp.; F. Reynolds, Manchester; L. A. Rostant, St. Thomas's Hosp.; G. H. Shanley, Durham; and J. Tarshish, Liverpool.

Forensic Medicine.—A. F. Brigimen, Edinburgh; V. O. Crowley, Sydney and St. George's Hosp.; A. O. Dreosti, St. George's Hosp.; A. L. Evans, Cambridge and London Hosp.; W. O. H. Evans, Bristol; N. H. Ibrahim, Durham; F. G. Martin and K. G. B. McMahon, Charing Cross Hosp.; F. Reynolds, Manchester; G. H. Shanley, Durham; M. E. G. Wilkinson, Bristol; F. Winelake, Bern; and H. J. F. Wood, Guy's Hosp.

Midwifery.—J. H. Clapp, London Hosp.; T. K. Clifford, Manchester; S. W. Cuff, St. Bart.'s Hosp.; A. O. Dreosti, St. George's Hosp.; M. Hook, Boston, U.S.A.; E. P. Hyde, Manchester; E. J. Jones, Middlesex Hosp.; P. H. L. Moore, Sydney and St. George's Hosp.; T. C. Pain, Guy's Hosp.; F. Reynolds and J. B. Scurr, Manchester; and H. J. F. Wood, Guy's Hosp.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: J. H. Clapp, S. W. Cuff, A. O. Dreosti, A. L. Evans, T. H. Harrison, E. P. Hyde, N. H. Ibrahim, E. J. Newman, F. Reynolds, M. V. Roberts, G. H. Shanley, P. B. Skeels, M. E. G. Wilkinson, F. Winelake, and H. J. F. Wood.

HUNTERIAN SOCIETY.—A meeting will be held at the Cutlers' Hall, Warwick-lane, London, E.C., on Nov. 9th, at 8.15 P.M., at which there will be a discussion on the Relation of Spiritual Healing to Modern Medicine. Amongst those who have promised to take part are the Bishop of Kensington, Rev. Canon Douglas, Rev. Mr. Anson, Dr. F. G. Crookshank, Dr. Edwin Ash, and Dr. M. P. Leahy. Fellows are reminded that they may bring non-medical guests to this meeting.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The forty-third meeting of the Commission was held at the Home Office, Whitehall, on Oct. 29th, Sir Arthur Worley, and later Lord Lawrence of Kingsgate in the chair. Evidence was given by Mr. A. B. Maclachlan and Mr. H. W. S. Francis, assistant secretaries, Ministry of Health, as to the public provision of health services outside the insurance scheme and the relations of these to the medical benefit arrangements. Thereafter further evidence on the general provisions of the insurance scheme was given by Sir Walter Kinnear, Mr. L. G. Brock, Dr. Smith Whitaker, of the Ministry of Health, and by Sir James Leishman and Mr. G. Wight, of the Scottish Board of Health. The Commission announce that Volume III. of the Minutes of Evidence (twenty-fourth to thirty-fourth days) and Part III. of the Statements of Evidence (Appendices XL. to LXXVI.) are now on sale in final form at H.M. Stationery Office, price 10*s.* and 10*s.* 6*d.* respectively, postage extra.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Dr. F. J. Poynton will lecture on Monday, Nov. 9th, at 5.30 P.M., in the Lecture Hall of the Medical Society of London, 11, Chandos-street, W. His subject will be Some Points in the Diagnosis of Tuberculosis in the Child, and all members of the medical profession will be welcome.—There is now in progress a course on Gynæcology at the Chelsea Hospital for Women, and on Venereal Diseases at the London Lock Hospital. The former will continue until Nov. 20th and the latter until the end of the month.—Dr. Porter Phillips and Dr. Thomas Beaton began a series of eight lecture-demonstrations on Psychological Medicine at the Bethlem Royal Hospital on Nov. 3rd, for which the fee is £1 1*s.*—At the Victoria Park Hospital a two weeks' course has been arranged from Nov. 9th to the 21st. Clinical instruction and lecture-demonstrations on the Various Diseases of the Chest will be given.—From Nov. 23rd to Dec. 12th the Royal Waterloo Hospital will hold a course in Medicine, Surgery, and Gynæcology.—For the convenience of the general practitioner, the London Temperance Hospital will give a late afternoon course (4.30 to 6 o'clock) in General Subjects from Nov. 23rd to Dec. 4th.—A course dealing with the Diagnosis and Treatment of Nervous Diseases will take place at the West End Hospital (73, Welbeck-street) from Nov. 23rd to Dec. 12th. —Copies of each syllabus, and also the general course programme, may be obtained from the Secretary to the Fellowship at 1, Wimpole-street, London, W. 1.

PHARMACEUTICAL SOCIETY.—A meeting will be held in the lecture theatre of the society's house on Tuesday, Nov. 10th, at 8 P.M., at which Lieut.-Colonel Sir David Prain, formerly director of Royal Botanic Gardens, Kew, will lecture on Some Useful Plants of India. Medical friends of members and student-associates will be cordially welcomed.

ST. THOMAS'S HOSPITAL MASSAGE DEPARTMENT.—A series of lecture-demonstrations are being given in this department on Tuesday afternoons at 4.30 P.M. by Dr. James Mennell. On Nov. 10th and 17th the subjects will be: Forced Movement—"Bone-setting" Manipulations—"Osteopathic" Manipulation.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting will be held at the Miller General Hospital, Greenwich, London, S.E., on Friday, Nov. 13th, at 8.45 P.M. The President, Dr. Arthur Davies, will occupy the chair, and a lecture will be given by Dr. W. Gilliatt on Eclampsia.

ABERDEEN UNIVERSITY CLUB, LONDON.—The bi-annual dinner is to be held at the Criterion Restaurant, Piccadilly, on Thursday, Nov. 19th, at 7.30 P.M., when Prof. H. M. Macdonald will take the chair. The guest of the evening will be Sir Humphry Rolleston, and Dr. W. A. Milligan, 11, Upper Brook-street, W. 1, will be glad to hear from any graduates (past or present) wishing to attend the dinner or join the club.

ROYAL DENTAL HOSPITAL OF LONDON, SCHOOL OF DENTAL SURGERY.—The annual dinner of the staff and past and present students of the hospital will be held at 6.30 for 7 P.M. on Saturday, Nov. 21st, at the Trocadero Restaurant, Piccadilly, London, Mr. W. H. Dolamore in the chair. On the afternoon of the same day the medical committee will be "At Home" from 2 to 5 o'clock to all past and present students of the hospital, when the various departments of the hospital and school will be open, and specimens and cases of interest shown by the members of the staff and lecturers. Medical practitioners are invited to be present.

ST. THOMAS'S HOSPITAL DINNER.—About 100 old students of St. Thomas's Hospital attended the annual dinner held at the Hotel Victoria on Oct. 30th. Mr. Samuel Osborn was chairman, and amongst those present were Sir Arthur Stanley (treasurer), Sir Cuthbert Wallace (Dean of the medical school and senior surgeon), Dr. C. R. Box, Lord Riddell, Lieut.-General Sir William Leishman, Air Vice-Marshal D. Munro, Sir George Makins, Sir Richard Havelock Charles, Sir Hector Mackenzie, and Sir Harold Downer. After dinner the Chairman proposed the health of the "Hospital and Medical School" in a speech full of interesting reminiscence. It was 57 years, he said, since he joined the hospital, and he believed that with the exception of General W. B. Slaughter he was the oldest old student that remained; he was certainly the first house physician in the new buildings and the last accoucheur at Surrey Gardens. Sir Arthur Stanley said that it was the duty of those who, like Mr. Osborn, had a store of information about the past to put it on record for the future. Small facts, like small articles of furniture, were only too easily lost. The life of hospital treasurers, he said, was increasingly difficult. In the old days a man coming into hospital with a bad foot was treated for a bad foot; but now he had his stomach X rayed and probably his teeth were removed. All this made for expense. Sir Arthur Stanley ended by referring to the new club and hostel which are being put up as a war memorial. Sir Cuthbert Wallace stated that there were 434 students at the school and hospital during the year; to provide for the education of these cost £30,000 a year, and but for the Government's grant of over £10,000 there would be a heavy deficit, no matter what economy was used. After speaking of those old students who had died during the year, Sir Cuthbert Wallace mentioned the distinctions that had been gained and athletic successes. The O.T.C. had won the cup given for the most efficient medical unit. Sir George Makins, speaking of the war memorial, thought it was very appropriate, and paid a tribute to the treasurer, the governors, and staff for the work which had made the memorial possible. In proposing the health of the Chairman, Sir George Makins said that Mr. Osborn had been one of the first anæsthetists to the hospital. In those days it was a much more serious thing to be an anæsthetist and the anxiety involved was enormously increased by the anxiety of the surgeon. Mr. Osborn had educated the British public up to knowing a certain amount of first-aid and to being able to help themselves, and not the British public only, since it was doubtful if any book except the Bible had been translated into as many languages as Mr. Osborn's. He had also won distinction as a medical practitioner in several wars and was a great traveller. After the Chairman had suitably replied there was an opportunity for informal conversation.

BRITISH SERBIAN UNITS BRANCH OF THE BRITISH LEGION.—This branch is holding its annual dinner at Anderton's Hotel, Fleet-street, on Thursday, Dec. 10th, and all who worked for the Serbians, and their friends, are invited. The chairman will be Sir James Purves-Stewart, and tickets, price 7*s.* 6*d.* each, may be obtained from the hon. secretary, Oxford House, Junction-road, London, N. 19.

INTERNATIONAL SOCIETY OF MEDICAL HYDROLOGY.—A special meeting of this society to discuss the treatment of rheumatism in industry is to be held—jointly with the Section of Balneology and Climatology of the Royal Society of Medicine—on Friday, Nov. 27th, at 10 A.M., in the Barnes Hall, Royal Society of Medicine, 1, Wimpole-street, London, W. The President, Dr. Gustave Monod (France), will occupy the chair, and the following are expected to take part in the discussion: Sir George Newman, Dr. Van Breemen (Director of the Institute for Physical Treatment, Amsterdam), Dr. Frank Kornmann (Switzerland), Dr. Kahlmeter (consultant to the Direction des Pensions de Retraite, Stockholm), Dr. Louis Blanc (France), Dr. Schmidt (Czecho-Slovakia), Dr. R. G. Llewellyn, Dr. Otto May, Dr. Matthew Ray, Dr. Kerr Pringle, Dr. C. W. Buckley, and Dr. Fortescue Fox. Members proposing to attend are asked to reply as soon as possible to Dr. E. P. Poulton, 36, Devonshire-place, London, W. 1.

NATIONAL COUNCIL FOR MENTAL HYGIENE.—A meeting of the Council was held on Nov. 2nd at the House of the Royal Society of Medicine at which Sir Courtauld Thomson took the chair. Lord Birkenhead said that the object of the Council was to educate public opinion so that it should get away from the idea of incarceration and should regard institutions for mental diseases as hospitals. Sir Maurice Craig spoke of the difficulty of inducing the public to subscribe funds for the prevention of disease. "The British public," he said, "will do anything to try to cure disease, but will do nothing to prevent it." In dealing with insanity large sums were spent in housing patients who would never have got into their sad condition if early treatment had been available. A more enlightened attitude towards mental disorder was essential and the Council was trying to collect and disseminate evidence. Dr. W. A. Potts said that magistrates seemed to imagine that they could diagnose mental defect, though they would never borrow a stethoscope to try to diagnose heart trouble. He pleaded for fuller education of the medical profession on mental disease. Lord Southborough said that there were practically no facilities for early treatment so far as the vast majority of the population was concerned.

LIVERPOOL MEDICAL INSTITUTION.—At a meeting held on Oct. 29th, Mr. R. Craig Dun, the President, being in the chair, Mr. John T. Morrison read a short paper on the Surgery of the Lung. He outlined the difficulties met with in experimental work and the controversy between Graham and Duval as to the physics of the chest with a wide open pneumothorax. He then described his own experiences in performing partial and complete pneumectomies in rabbits, using ordinary open ether anæsthesia. When the whole lung was removed the animals always died, apparently as the result of the trauma to the pulmonary root, since death could always be prevented by section or blockage of the vagus in the neck. No case of sepsis had occurred although the lung pedicle was merely crushed and tied with 10-day catgut. The difference between the sterile bronchi in rabbits and the infected bronchi in man in disease was pointed out and some of the methods referred to by which the risk of sepsis from this source could be minimised. Mr. Morrison then described the gross and histological changes that occurred after total pneumectomy, alluding to the altered contour of the chest, the hypertrophy of the heart, and the twofold changes in the lung; in some emphysema, in others mainly an intense congestion. After a review of the outstanding achievements in pulmonary surgery Mr. Morrison appealed for more frequent recourse to exploratory thoracotomy, a simple and more effective operation than exploratory laparotomy. Such exploration would disclose cases amenable to surgical treatment and, more important still, lead to a knowledge of the pathology of the living chest, analogous to that which had revolutionised the treatment of alimentary diseases.

Sir William Collins has been appointed Vice-Lieutenant of the County of London.

THE meetings of the Royal Commission on Lunacy and Mental Disorder are to be resumed on Nov. 10th, at 10.30 A.M., at 1, Whitehall-gardens, S.W.

Mr. W. H. Cruickshank has been appointed Professor of Physiology in the Prince of Wales Medical College, Patna, India.

Councillor Dr. W. James Susman has been elected as Mayor for the borough of Henley-on-Thames for the ensuing year.

PIONEERS IN TROPICAL MEDICINE.—Dr. Andrew Balfour's presidential address to the Royal Society of Tropical Medicine and Hygiene will appear, fully illustrated, in the next issue of the Transactions of the society.

SHEFFIELD MEDICAL DINNER.—The annual dinner will be held in the Royal Victoria Hotel at 7.30 P.M. on Thursday, Nov. 12th. Applications for tickets (12*s.* 6*d.*) should be made to the hon. secretary, Dr. J. Eric Stacey, 2, Durham-road, Sheffield.

CHILD-STUDY SOCIETY.—A lecture on the Development of Speech in the Normal Child will be delivered on Nov. 12th, at 6 P.M., by Mr. Macleod Yearsley, at 90, Buckingham Palace-road, London, S.W., Dr. James Kerr presiding.

THE MINISTER OF HEALTH AT HALIFAX.—Mr. Neville Chamberlain visited Halifax on Oct. 26th, and after inspecting several institutions devoted to women's welfare, opened a workshop for the blind at the Hostel of the Halifax Society for the Blind. The workshop, like the hostel, has been built under a £10,000 legacy from the late Mr. J. W. Horsfall. Mr. Chamberlain said that blindness was mostly due not to accident, but to causes which in a perfect state of society should not occur. Referring to smoke in Halifax, he said that he hoped to introduce a new Smoke Abatement Bill in Parliament in the coming year. It did not do to rely exclusively on the central authority for the control of smoke, and his object was to promote partnership between local and central authorities for this matter.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, Nov. 9th.

WAR: at 5 P.M.

Paper:

Wing-Commander E. C. Clements, R.A.F.: Visual Problems and their Relation to Flying and Industrial Fatigue from the Service Standpoint.

Tuesday, Nov. 10th.

THERAPEUTICS AND PHARMACOLOGY: at 5 P.M.

Discussion on

The Influence of the Ovary on Parturition.

Other Speakers:

Mr. F. M. A. Marshall, Dr. Langdon Brown, Dr. Wilfred Shaw.

OBSTETRICS AND GYNÆCOLOGY:

Members of this Section are particularly invited to attend above Meeting.

PSYCHIATRY: at 8.30 P.M.

Presidential Address:

Dr. R. H. Cole: The Progress of Psychiatry.

Wednesday, Nov. 11th.

SURGERY: SUBSECTION OF PROCTOLOGY: at 5.30 P.M.

Presidential Address:

Mr. G. Grey Turner: The Relationship of Proctology to Greater Medicine.

A discussion will follow.

There will be a demonstration of pathological specimens.

Thursday, Nov. 12th.

TROPICAL DISEASES AND PARASITOLOGY: at 5.30 P.M.

Presidential Address:

Sir William T. Prout: Medical Conditions in Tropical Countries.

Paper:

Dr. Aldo Castellani: Typhoid and Paratyphoid-like Fevers caused by Organisms which Differ from *B. typhosus* and *B. paratyphosus* A, B, C.

Specimens:

Dr. Arthur Powell: Specimen of the Spirochæte of Rat-bite Fever from Bombay (*Treponema morsus muris*).

Dr. S. Roodhouse Gloyne: Specimen of *Tænia cœnurus serialis*.

MEDICINE:

Members of this Section are cordially invited.

NEUROLOGY: at 8.30 P.M.

Joint Paper:

Dr. Wilfred Harris and Dr. W. D. Newcomb: On a Case of Glioma of the Pons, with Special Reference to its Bearings on the Physiology of the Fifth Cranial Nerve.

Friday, Nov. 13th.

CLINICAL: at 5.30 P.M. (Cases at 5 P.M.)
Cases and Specimens:
Dr. J. H. Sheldon: Multiple Myelomatosis.
Dr. Bernard Myers: Amyotonia Congenita.
Dr. B. T. Parsons-Smith: *Intrapericardial Aneurysm of Aorta.*
Mr. J. D. Briberg: (1) Axillary Tumour; (2) Case for Diagnosis.
Dr. J. F. Halls Dally: Hyperpiesia and Demonstration of a New Mercurial Blood Pressure *Instrument.*
Dr. L. S. T. Burrell: Bronchiectasis and Cerebellar Abscess.
Dr. F. E. Saxby Willis: Specimen showing *Primary* Carcinoma of Left Bronchus.
Dr. E. Stolkind: (1) *Case of Hypopituitarism.* (2) Case of Polycythæmia Vera treated by X rays. (3) Description of Case of Fatal Medinal Poisoning.

OPHTHALMOLOGY } at 8.30 P.M. (*Cases at 8 P.M.*)
SURGERY }
Joint Discussion on
Plastic Operations on the Face in the Region of the Eye.
The following have promised to take part:—
Mr. H. S. Souttar, Mr. G. H. Pooley, Mr. Ellmer, Mr. Percival Cole, Mr. Ormond, Mr. Shaw, Mr. *Edmunds,* Mr. M. W. B. Oliver.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Nov. 9th.—8.30 P.M., Discussion on Obscure *Pyrexia in Childhood,* to be introduced by Dr. Robert Hutchison, followed by Dr. Wilfred Pearson, *Prof. F. S. Langmead,* and others.

HARVEIAN SOCIETY OF LONDON.
THURSDAY, Nov. 12th.—8.30 P.M. (at the Paddington Town *Hall, Paddington Green, W.*), *Dr. J. D. Rolleston:* The Differential Diagnosis of Scarlet Fever and Diphtheria, and the Modern Methods of Treatment and *Prophylaxis, followed* by a discussion.

THE BIOCHEMICAL SOCIETY.
MONDAY, Nov. 9th.—5 P.M. *(at King's College, W.C.).* Communications: J. A. Hewitt and H. G. Reeves: Tautomerism of Glyceric Aldehyde; J. A. Hewitt and H. G. Reeves: Constitution of Glyceric Aldehyde; C. Lovatt Evans: Lactic Acid *Formation* in Plain Muscle; Elizabeth S. Semmens: The Hydrolysis of *Starch* in the Guard Cells of the Stomata of a Monocotyledon; J. Gordon, J. W. McLeod, and B. *Wheatley: The Importance* for the Bacteriologist of Differentiating between the Amino-Acids which *Favour* and those which Inhibit Bacterial Growth; J. R. Marrack and G. D. Thacker: The *Influence of Ionic* Strength on the Equilibrium of Calcium-ion in Bicarbonate Solutions.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.
TUESDAY, Nov. 10th.—5 P.M., Dr. A. Shadwell: Medicine in Ancient Egypt, Assyria, and Palestine. (First FitzPatrick Lecture.)
THURSDAY.—5 P.M., Last FitzPatrick Lecture.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.
WEDNESDAY, Nov. 11th.—5 P.M., Mr. James Sherren: Gastro-jejunostomy.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Nov. 9th, to SATURDAY, Nov. 14th.—*Fellowship* of Medicine Lecture, Medical Society, 11, Chandos-street, W. Mon., 5.30 P.M., Dr. P. John Poynton: Some Points in the Diagnosis of Tuberculosis in the Child.—BETHLEM ROYAL HOSPITAL, Lambeth, S.E. Tues., 11 A.M., Dr. Porter Phillips: The Diagnosis and Symptomatology of Mental Diseases. Sat., 11 A.M., Dr. Thomas Beaton: Psycho-neuroses.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Post-graduate course in Gynæcology, lectures, and demonstrations daily. Pathology and operations.—LONDON LOCK HOSPITAL, Dean-street. Comprehensive course. Instruction in the Out-patient Department and Lectures.—CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS, Victoria Park, E. Post-graduate course in Diseases of the Heart and Lungs. Lectures, clinical demonstrations, and laboratory demonstrations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
THURSDAY, Nov. 12th.—3 P.M., Demonstration: Dr. J. Browning Alexander: Blood Pressure Investigations. 4.30 P.M., Lecture: Mr. J. Howell Evans: A Plea for Less Mutilating Operations in Carcinoma.
Daily: Clinics and Demonstrations in the Wards and various Out-patient Departments, Operations, &c.

UNIVERSITY COLLEGE, London.
WEDNESDAY, Nov. 11th.—5.30 P.M., Prof. G. Elliot Smith and Dr. John Beattie: The Evolution of Man. (First of six Public *Lectures.*)

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.
TUESDAY, Nov. 10th.—5 P.M., Dr. H. MacCormac: Diseases due to Animal Parasites.
THURSDAY.—5 P.M., Dr. A. C. Roxburgh: Urticaria.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, ST. ANDREWS.
TUESDAY, Nov. 10th.—4 P.M., Dr. A. Hynd: The Estimation of Blood-Sugar.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone-road, N.W.
THURSDAY, Nov. 12th.—5 P.M., Mr. T. Stevens: Meddlesome Midwifery.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.
POST-GRADUATE COURSE: OCTOBER-NOVEMBER, 1925.
CLINICAL LECTURES AND DEMONSTRATIONS.
MONDAY, Nov. 9th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Tremor and Incoördination: Dr. Risien Russell.
TUESDAY, Nov. 10th.—2 P.M., Out-patient Clinic: Dr. Walshe. 3.30 P.M., Peripheral Neuritis: Dr. Grainger Stewart.
THURSDAY, *Nov. 12th.*—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Hemiplegia: Dr. Walshe.
FRIDAY, Nov. 13th.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Electro-therapy in Lesions of Peripheral Nerves: Dr. Bailey.
The fee for the Course, including Pathology Lectures, is *£5 5s. For those who hold* Perpetual Tickets the fee is £3 3s.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.
THURSDAY, Nov. 12th.—12 noon, Subacute Inflammation: Dr. J. G. Greenfield.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.
MONDAY, Nov. 9th.—12 noon, Reflex Action as a Whole: Dr. J. L. Birley.
Dr. H. J. Macbride is giving a COURSE of EIGHT CLINICAL DEMONSTRATIONS, chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM in the *Wards at 10 A.M.* on Tuesdays and Fridays. The fee for this Course is £2 2s.
Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and *Friday mornings* at 9 A.M., or at such other times as may be announced.
Any part of the Course may be taken *separately. Special* arrangements will be made *for those unable* to take the whole Course.
Fees should be paid to the *Secretary* of the Hospital at the Office on *entering for* the Course.
J. G. GREENFIELD, Dean of Medical School.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Nov. 10th.—4.15 P.M., Mr. J. *Morley: Shoulder* Tip Pain.
FRIDAY.—4.15 P.M., Prof. *J. S. B. Stopford:* The Sympathetic Nervous System.

ANCOATS HOSPITAL POST-GRADUATE LECTURES.
THURSDAY, Nov. 12th.—4.15 *P.M., Mr. H. Platt:* The Treatment of Common Fractures, with Practical Demonstrations.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Nov. 11th.—4 P.M., Dr. Hastings Gilford: The Prevention of Cancer and Allied Neoplasms.

PEOPLE'S LEAGUE OF HEALTH, Fyvie Hall, Regent-street Polytechnic.
FRIDAY, Nov. 13th.—6 P.M., Prof. Leonard Hill: Prevention of Tuberculosis.

Appointments.

POLLARD, J. M. W., *M.D. Lond.,* has been appointed Senior Medical Officer, West African Medical Staff, Assistant Director of the Medical Service in Nigeria, in succession to Dr. B. Moiser, retired.

WALKER, E. W. AINLEY, M.D., B.Ch., D.Sc. Oxf., *Lecturer in* Pathology in the University of Oxford for a further period of five years.

WATT, ALEXANDER WILSON, M.B., Ch.B. Glasg., Junior Assistant Medical Officer at the Carlisle *Mental* Hospital.

Certifying Surgeons under the Factory and Workshop Acts: MCCOULL, R., L.R.C.P., & S. Edin., L.R.F.P.S. Glasg. (Wylam District of the County of Northumberland); SYMONS, A. D., M.D., B.Ch. Bristol (Shrewsbury).

Vacancies.

For further information refer to the advertisement columns.

Bath, Royal Mineral Water Hospital.—Res. M.O. At rate of £120.

Belgrave Hospital for Children, Clapham-road, S.W.—Hon. Radiologist.

Birmingham City Hospitals for Infectious Diseases.—Sen. Asst. M.O. £400.

Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £100.

Crewkerne, Somerset Hospital.—Res. Med. Supt. £800.

Cardiff, Welsh National School of Medicine.—Lecturer in Pathology and Bacteriology. £750.

Chesterfield and North Derbyshire Royal Hospital.—Res. Surg. O. £300. Fifth H.S. At rate of £100.

East Ham Education Committee County Borough.—Aural Surgeon. £3 3s. per session.

Elizabeth Garrett Anderson Hospital, Euston-road.—H.P., Obstet. Asst., and Two H.S.'s. Each at rate of £50. Also Clin. Assts.

Glasgow, Lightburn Joint Hospital, Shettleston.—Res. Phys.-Supt. £350.
Lancaster, Borough of.—Asst. M.O.H. and Asst. Sch. M.O. £500.
Leamington Spa, Warneford General Hospital.—Res. H.P. At rate of £150.
Leyton Urban District Council.—Deputy M.O.H., &c. £600.
London Hospital, Mile End, E.—Asst. P. to Skin Dept. Also Hon. Dent. Surg.
London Lock Hospital, 91, Dean-street, W.—Clinical Assistantships.
Manchester, Barnes Convalescent Hospital, Cheadle.—Res. M.O. £250.
Norwich, City and County of.—M.O.H. £1100.
Oxford, Radcliffe Infirmary and County Hospital.—H.P., H.S., Cas. H.S. and Obstet. H.P. All at rate of £120.
Preston County Borough.—Asst. M.O. for Maternity and Child Welfare. £600.
Prince of Wales's General Hospital, Tottenham, N.—Hon. Anæsthetist.
Rhondda Urban District Council.—Asst. M.O. £600.
Royal College of Physicians, Pall Mall East.—Milroy Lecturer.
Royal Free Hospital, Gray's Inn-road, W.C.—Obstet. H.S., Gynæcological H.S. Also H.S.'s and Asst. Cas. O.
Royal Northern Hospital, Holloway, N.—H.S. At rate of £70. Case O.'s. At rate of £90.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Non. Res. Cas. O. £150. Also H.S. and H.P. Each at rate of £100.
St. Helen's County Borough.—Asst. M.O.H. £600.
Salford Education Committee.—Asst. Sch. M.O. £600.
Scottish Board of Health.—M.O. £500.
Staffordshire General Infirmary, Stafford.—H.P. At rate of £150.
Sudan Medical Service.—Three M.O.'s. £E720.

Births, Marriages, and Deaths.

BIRTHS.

HABGOOD.—On Oct. 24th, at Wolverton House, Old Wolverton, Bucks, the wife of Arthur Henry Habgood, D.S.O., M.B., of a daughter.

PARKINSON.—On Oct. 30th, at 1, Devonshire-place, W., the wife of John Parkinson, M.D., of a daughter.

PULVERTAFT.—On Oct. 25th, at "Cranleigh," Egham, the wife of R. J. V. Pulvertaft, M.B., of a daughter.

SPENCE.—On Oct. 23rd, the wife of Dr. D. Benham Spence, of Clarendon-road, Watford, of a son.

MARRIAGES.

WELLS—MASON.—On Oct. 31st, at St. Mary's, Northleigh, Dr. Arthur Quinton Wells, to Rhona Margaret Alice, second daughter of James Francis Mason and Lady Evelyn Mason, Eynsham Hall.

DEATHS.

BEATH.—On Oct. 27th, in St. Columba's Hospital, London, Nina Henrietta Beath, M.B., Ch.B. Edin., for 20 years missionary of the Presbyterian Church of England in Swatow, China.

DAVIDSON.—On Oct. 28th, at Charmouth, Harold Davidson, M.R.C.S., L.R.C.P., of Teddington.

FOSBROKE.—On Oct. 27th, at Bidford-on-Avon, Warwickshire, George Haynes Fosbroke, M.R.C.S. Eng., D.P.H. Camb., County Medical Officer for Worcestershire.

PARDINGTON.—On Nov. 1st, at Tunbridge Wells, George Lucas Pardington, M.D., M.R.C.P. Lond., M.R.C.S. Eng.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, ST. ANDREWS.—Sir Leslie Mackenzie on Oct. 27th read a paper on the Modern Outlook in Preventive Medicine. He said that the essential basis of all preventive medicine must be the work of the general practitioner, who comes in contact with the raw material. It was the ideal of the public services to give every assistance to the practitioner, and the only obstacle was the tendency of the official mind to be dehumanised and for the public services to become isolated instead of coöperative. Commenting on the remarkable expansion of the public preventive services in recent years, especially in the direction of supervision of expectant mothers and of child welfare treatment, he emphasised the part which must be played by the general practitioner in this development. Such institutions as the James Mackenzie Institute would be a liaison between the practitioner and the authorities. Practice under the Insurance Act was the principal field for this work, and the records obtained from the panel practitioners were very valuable. They were often crude or inaccurate, but taken in mass they gave a clear indication of the ailments responsible for loss of working time and therefore of the morbidity, as distinguished from the mortality, of the community.

Notes, Comments, and Abstracts.

CHILLED AND FROZEN MEAT.[*]

BY W. J. HOWARTH, C.B.E., M.D., D.P.H.,

MEDICAL OFFICER OF HEALTH FOR THE CITY OF LONDON.

[Dr. Howarth began by paying a tribute to the efforts of the daily press to ensure the supply of pure food to people in all ranks of society. Multiple shops and restaurants with their central store and chemists and supervisors were able to ensure that the articles meet statutory requirements, and he claimed that they had diminished the sale of sophisticated foodstuffs. Going on to deal with the conditions under which food is imported, he mentioned the vast quantities of meat brought into the country in various forms. Safeguards had gradually been introduced to ensure the observance of certain essential requirements—namely: 1. That both home and imported products are in all respects sound and fit for human consumption. 2. That home products are prepared and manufactured in a satisfactory manner. 3. That products which at one time were considered satisfactory have not deteriorated and become unsound and unfit. 4. That the substitution of less desirable substances for those being purchased does not take place. 5. That the addition *of objectionable material shall be prevented*—e.g., preservatives. 6. That as far as may be possible products shall be composed of materials definitely stated. 7. That in those prepared foods in which certain unavoidable, but at the same time objectionable, contaminations may gain access in the course of manufacture, such contaminations shall be present in minimal and harmless amounts. Dr. Howarth then turned to the subject of refrigeration and substitution, and continued to the following effect:—]

Methods of Refrigeration.

Most of the imported meat arrives in the cold state. It is carried in chambers, the interior of which is chilled by cold, and this chilling may be produced in several ways. The most convenient method is that in which the cold-producing pipes are filled with brine and some portion of the pipes is submerged outside the room in a solution of cold brine. The brine enclosed in the pipes is chilled and made to circulate through the pipes, which are arranged in suitable ratios around the cold room. Goods deposited in cold store should be in a clean, satisfactory condition. Putrefaction is masked by freezing and only fresh material should be admitted, otherwise mustiness will result. Frozen goods which are removed from store for sale and thawed should not be readmitted. Definite responsibility should devolve upon someone to safeguard the public against stores being used to get rid of products which are in an unsatisfactory condition. A register should be kept of the products deposited. The chief requirements of the sanitary authority would be met by registration of stores, the compulsory keeping of a register of materials admitted and released, and free admission of the authority's officers to the different compartments and passages.

The chilling of meat does not retard objectionable changes sufficiently to ensure satisfactory carriage if the journey extends over a period longer than three or four weeks, and for this reason all Australian meat has to be frozen. Argentine meat is chilled, and as such meat on arrival has already almost reached the limits of exposure without deterioration it cannot be kept long after reaching this country; it has to be marketed, sold, and consigned reasonably quickly. To allow of chilled meat being conveyed over longer journeys several methods have been tried, but none of them can be considered to be of any help. Meat, being a putrescible material, may undergo change if there should be a serious breakdown in the refrigerating machinery, and since when it is frozen solid it cannot be examined satisfactorily for possible putrefactive changes, certain signs have to be looked for which indicate that the changes have occurred. Examination of the covers may be of some assistance. The white cloths in which the quarters are wrapped are put on when the carcasses are frozen hard and at that temperature they are dry. If a temperature below freezing-point is maintained during the voyage the cloths will remain dry, they will be non-adherent, and they will not be extensively stained with blood or serum. If, on the contrary, there has been some thawing of the carcasses it is obvious that moisture will be deposited on the surface of the meat, the cloths will adhere thereto, and on refreezing they will be frozen firmly to the carcass. If, therefore, when a large number of carcasses are examined, the cloths are clean and do not stick to the surface and do not show long lines of moisture or blood, it is permissible to assume that the meat is in fair condition. If there is any serious doubt an incision through the calico cloth over the convexity formed by the ribs in the forequarters, and over the hollow of the pelvis in the hindquarters, is advisable. If the changes have been pronounced mould growths may be found in these areas.

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[*] Being an abstract of part of a Chadwick Lecture on the Control of the Food Supply delivered at the Royal Sanitary Institute on Oct. 30th, 1925.

Recognition of Imported Meat.

As regards substitution there is but little difficulty in recognising even small joints of frozen meat; it often, however, requires a highly experienced man to decide with certainty that certain smaller cuts are chilled and not home-killed. Home-killed carcasses, as a rule, are clean, bright, and tidy in appearance, and carefully dressed. The stifle-joint is often cut across to allow of the escape of synovial fluid, and the fat in the pelvis is often skewered to make it hang in the form of loops. In some districts the carcass is divided into two parts by chopping through the vertebræ for their whole length; in others the spinal column is sawn down as far as the dorsal vertebræ, the remainder being chopped through. The cold and set home-killed carcass is dry and somewhat greasy. On section it will be observed that there is not a large amount of moisture in the tissues, the meat being moist but not wet. The fat is usually yellowish-white in colour, tolerably firm to the touch, and free from suspicion of wetness. The side of a home-killed carcass is generally divided into hind and forequarters between the twelfth and thirteenth ribs, thus leaving one dorsal vertebra on the hindquarter. In imported meat the quarters have never the same well finished appearance as in home-killed; the spinal column is always sawn down through the whole length, and three ribs are left connected with the hindquarter. These ribs are frequently cut off and sold separately under the name of "wing ribs."

The appearance of a joint of chilled meat may be very little different from that of home-killed on the one hand, or from frozen on the other, according to the care which has been displayed in chilling, in transporting, and on the maintenance of a suitable temperature. At temperatures below 32° F. the meat will assume the characters of frozen meat. The fat of chilled meat often acquires a pinkish hue due to the exuding meat juices, but it may be unchanged except for some roughening of the surface and edges. The outside of the meat is of a dull slate colour where the muscular bundles are exposed. On section the meat shows some excess of moisture which is most apparent on pressure.

Frozen meat is readily recognised by its unfinished appearance; the fat is dead white in colour after defrosting; the carcass in the frozen state is rigid, and the finish in varying degree rough and ragged, owing to the carcasses being packed one on top of another in transportation. Unless previously thawed the outside will be found to be covered with moisture which has condensed from the atmosphere, and on section the muscular tissue is uniformly light in colour and has thus a washed-out appearance. It is moister than either home-killed or chilled meat, the amount of moisture depending partly on the care displayed in thawing. The exposed surfaces of the sawn bones are white in frozen meat; in chilled meat obtained from young animals of good quality they retain the rose-tinted appearance usually seen in freshly killed animals.

THE MEDICAL HAND IN MODERN INDUSTRY.

Dr. Peter Howie delivered a presidential address on this subject at a meeting of the Aberdeen Medico-Chirurgical Society held on Oct. 30th. He pointed out that, contrary to usual belief, recognition of unhealthy conditions of work and trade is no new thing. Hippocrates and Galen drew attention to the dangers of such occupations as mining, pottery-working, lead-smelting, and textile-working; Pliny informed us that in Roman times polishers wore respirators to prevent the inhalation of red lead dust. In 1557 Georgius Agricola, in a book "De Re Metallica," showed that dust in mining operations may produce asthma and even lead to conditions we now recognise as consumption. In 1700 Ramazzini, of Padua, published a book, "De Morbis Artificum Diatriba," dealing with diseases produced by labour and by certain occupations and professions. The removal of unhealthy conditions of trade is, however, another matter, and may more truly be claimed as a modern development. No preventive measures began to arise till the latter part of the eighteenth century, and no very satisfactory results followed till well into the nineteenth.

After describing the horrible conditions of child labour prevalent at the end of the eighteenth century, Dr. Howie referred to the Board of Health of Manchester formed after an inquiry led by Dr. Percival in 1784, which may be regarded as the root from which all subsequent legislation dealing with the health side of industrial activity has sprung. In 1802 Sir Robert Peel introduced a Bill, which subsequently became law, entitled "Health and Morals of Apprentices Act." During the next 40 years much legislation followed, almost always in the teeth of strong opposition. In 1819 the age of children employed was limited to 9 years, with a 12-hour day for all under 16. In 1825 work on Saturday was limited to 9 hours. In 1832 the first work on the subject by a British medical writer, Dr. Turner Thackrah, of Leeds, was published on "Diseases of Workmen." In 1833 a Royal Commission was appointed to consider the subject, and soon afterwards an Act was passed whereby, among other things, State-paid factory inspectors were first appointed; certificates had to be granted by physicians and surgeons who had to declare the individual 'to be of the ordinary strength and appearance of a child of 9 years." Here we had the origin of the certifying factory surgeons, though these were first officially appointed in 1844. During the latter half of the nineteenth century legislation was prolific, and more and more attention was paid to trades and occupations involving dangerous conditions. A Shop Hours Act in 1886 first brought that class of work under control. In a Factory Act of 1891 a specially important point emerged for the first time in that the employment of any woman within four weeks after childbirth was prohibited in any factory. In 1901 another important Act made it compulsory for every practitioner to notify not only the medical officer of health of the local authority but also the Home Secretary of the occurrence of any case of anthrax, and lead, phosphorus, mercurial or arsenical poisoning of industrial origin. The various Acts dealing with Workmen's Compensation are also of great importance, especially those of 1906 and 1918.

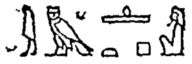
After this historical survey, Dr. Howie went on to consider under three main heads the results achieved and the main lines along which medical science is influencing working conditions and guiding legislative efforts. Considering first industrial activity in relation to the general health of the worker, he pointed out that this is essentially the question of industrial fatigue. The problem is being studied and attacked in many ways, and it is now realised that output can best be attained by health. Many tests are being applied in the endeavour to measure the degree and incidence of this industrial fatigue, and interesting results are being brought to light through this new industrial physiology. For example, observation is proving that rhythm is of the utmost value in work, both in preventing and delaying fatigue and in increasing output; rhythm relieves monotony and aids production. Scientific study of occupational movements is proving of the utmost value by showing where unnecessary movements may be eliminated and output therefore greatly increased. Workers and their machines, benches, or seats are being adapted to each other with excellent results. In many works regular rest periods are introduced, thus lessening monotony and bringing into play a degree of rhythm which seems to be useful in the prevention or delay of fatigue. Other factors are ventilation, temperature, humidity of atmosphere, and lighting, and these are all being studied and the results applied for the benefit of the worker.

After indicating briefly the importance of the different types of industrial disease coming under the cognisance of the Home Office, and those entitling to compensation, Dr. Howie considered the chief methods by which medical knowledge influences industrial conditions. He referred to official control by means of Parliamentary legislation and regulation by the Home Office, carried out through the instrumentality of the factory and mines inspectorate composed of men and women of high technical skill, with a medical inspectorate which is constantly studying conditions of labour and new aspects of disease conditions which might seem to be due to labour or the circumstances under which it is carried out, with the aid of many of the physiological and other laboratories in the country where industrial problems are sent to be solved. In addition, there is a numerous body of certifying surgeons throughout the country, undertaking the routine examinations, often assisting in special investigations, and possessing many powers for safeguarding young workers. There is, finally, the industrial welfare movement, which, beginning in small ways before the war, attained great importance during the war and reached such important dimensions that the Factory Acts now take cognisance of welfare work, and in many cases lay down certain minimum requirements. In large institutions this work is under specially trained and appointed supervisors, for whose training and qualifications the Home Office lays down certain regulations. After describing their duties, Dr Howie referred to the Industrial Health Education Council, a body whose purpose is to "educate industrial workers on the diseases and sicknesses to which they are liable, with the view to investigating and preventing the same." This body, he said, will prove to be of much service in cases where it is not possible to have welfare schemes and supervisors. The method of work is by means of lectures to bodies of workers themselves, organised by their unions and similar organisations.

I-EM-HETEP.

To the Editor of THE LANCET.

SIR,—The interesting annotation concerning this deity in your issue of Oct. 17th will give much pleasure to those of your readers who enjoy the enthralling history of ancient Egypt. The presentation by Sir Stewart Abram of a permanent jewel bearing on its face the image of I-Em-Hetep to be the badge of office of the President of the Reading Pathological Society leads me to mention that at the foundation of the Nosocomia Lodge of Freemasons in 1909, a Masonic home so to speak for hospital officers, the founders perpetuated the name of this medicine god on the Past-Master's jewel. This jewel was designed by Mr. Chichele Nourse, F.R.C.S. Edin., the second Master of the Lodge, who in his design had engraved upon one side of the square the hieroglyphics signifying I-Em-Hetep, "He who cometh in Peace," amongst his other titles being those of "Master of Secrets" and "Scribe of Numbers."



With this history I am sure the Reading Pathological Society will allow the founders of the Nosocomia Lodge to share in the honour of having been the first in this country to recognise the claim of I-Em-Hetep to be regarded as the Egyptian Deity of Medicine.

I am, Sir, yours faithfully,
RICHARD KERSHAW.

Central London Throat, Nose and Ear Hospital,
Oct. 20th, 1925.

⁂ Most fascinating and instructive reading with special reference to I-Em-Hetep (or Hotep) will be found in the Harveian Oration delivered in 1904 by Dr. Richard Caton, entitled The Medicine and Medicine God of the Egyptians (THE LANCET, 1904, i., 1769). We reproduced (1906, i., 855) two photographs of a statuette of this deity from the collection of Signor G. Dattari, of Cairo.—ED. L.

PITCAN PATENT BELTS.

WE have received from Messrs. Carew, Ltd., 47, Lower Belgrave-street, S.W., samples of abdominal belts, intended to reduce undue bulk, support the figure, and correct the results of ptosis, while they may also be used as aids in cases of hernia and conditions resulting from undue strain. The belts, which are well ventilated, are made of a strong durable material and are fitted to the body by means of laces and straps. The firm works, we are informed, only under the orders of medical men and our readers may find the address useful.

SNAKE POISONS.

Dr. A. do Amaral, of the Serum-therapeutic Institute, Sao Paulo, Brazil, has brought out a little book entitled "A General Consideration of Snake Poisoning and Observations on Neotropical Pit-vipers." (Harvard University Press. London: Humphrey Milford. 1925. Pp. 64. 16 plates. 10*s.* 6*d.*) The first part gives a general account of snake poisons, their action and remedies; it is brief and without any bibliography, and does not add much to previous accounts, such as Prof. C. J. Martin's article in Allbutt's "System of Medicine." This is followed by five papers on the diagnosis and variation of snakes of the genus *Bothrops*, useful, no doubt, to specialists, and beautifully illustrated with coloured and plain figures of the dorsal markings. Apart from their morphological interest these plates might be studied with advantage by those in search of new colour designs.

A CENTURY OF MARINE HISTORY.

THE evolution of the sailing ship and the steam ship is of interest to medical men because the "sea voyage" is a well-recognised and often effective method of treatment. For this reason we call the attention of our readers to a well-printed and well-illustrated book[1] of some 80 pages which has been privately published in commemoration of the centenary of the Aberdeen S.S. Line. The compilation of the book has been entrusted to the well-known writer Mr. L. Cope Cornford, who in telling the story of the progressive development of the Aberdeen Line incidentally indicates how the proud position of British shipping to-day can be traced to the foresight, courage, and industry of men like George Thompson, founder of the Aberdonian venture in 1825. Among the fine illustrations of the company's vessels are the *Childe Harold*, 116 tons, one of the earliest of the fleet, and the s.s. *Sophocles*, 12,361 tons, one of the latest, with greatly improved passenger accommodation, and the contrast between the brig and the modern liner tells better than words the progress made in 100 years. The present fleet now sail regularly to and from London, Portsmouth, Teneriffe, Cape Town, Melbourne, Sydney, and Brisbane. The same steamship line also issue a small illustrated brochure in which the story is told more briefly.

CONISHEAD PRIORY HYDRO.

Conishead Priory was founded during the reign of Henry II., and is situated two miles from Ulverston, by the shores of Morecambe Bay. It was dismantled by Henry VIII., and as a residence it passed through the hands of many famous families, notably the Braddyls, before being acquired as a hydro in 1878. The fine buildings, the beauty of the site and its proximity to the Lake District, combine to make the hydro attractive, and the directors have now newly furnished and decorated it throughout. There is an 18-hole golf course at Ulverston and hard and grass tennis courts in the grounds; dancing is provided for, and it is intended that the place shall be an ideally comfortable winter residence. The hydropathic department was reopened on Oct. 1st, under the direction of Mr. John Wishart, M.D., D.Sc., and contains electrical and other equipment. Sea-water is pumped up daily from Morecambe Bay for bathing purposes, and a new Conishead Priory health course will be given during any four weeks of the winter season at a minimum cost of 20 guineas, exclusive of medical fees.

THE LATE MAJOR-GENERAL SIR HARRY THOMPSON.

To the Editor of THE LANCET.

SIR,—A wish has been expressed by relatives of the late Major-General Sir Harry Thompson, K.C.M.G., C.B., D.S.O., late R.A.M.C., that his services should be commemorated. They will contribute to that end. Knowing that, in addition, there are many of his friends (civil and military) who desire to join in some material tribute to his memory, I venture to ask your kindly aid in publishing this appeal for funds to this purpose. The decision as to the most suitable form for the memorial to take should, it is considered, be left in the hands of the Harry Thompson Memorial Committee, who will be guided by the sum collected and the wishes expressed by the subscribers. Subscriptions should be sent to Messrs. Glyn, Mills and Co. (Holt's Branch), 3, Whitehall-place, S.W., the treasurers of the fund, or to the undersigned. All contributions will be acknowledged.

I am, Sir, yours faithfully,
S. G. GUISE-MOORES,
Major-General.

Osborne House, East Cowes, Isle of Wight, Nov. 1st, 1925.

UMBILICAL HERNIA.

To the Editor of THE LANCET.

SIR,—I am in my eightieth year and have long suffered from an umbilical hernia, of about the size of an ordinary walnut on protrusion. I have consulted many of my London medical friends about it and they have all taken a great deal of trouble, recommending belts of various descriptions. The belts all get out of position after a little time unless they have perineal bands, which are an abomination. For several years now I have been in the habit of applying a cotton-wool pad covered with indiarubber over the hernia after first reducing it. The pad is kept in position with one inch wide strips of "ZO" adhesive plaster, made by Johnson and Johnson, New Brunswick, N.J., U.S.A., and I have found that this never irritates the skin and only wants changing once a fortnight, although I have a warm bath every morning. I enclose my card, and am, Sir,

Yours faithfully,
M.R.C.S.

Oct. 28th, 1925.

THE WINDOW WITHOUT A VIEW.

To the Editor of THE LANCET.

SIR,—Recently I paid a visit at a charming house which had been built but a few years. Opening the gate leading from the road, a tasteful garden met the eye; and a path, paved with crazy stones, led to the old-fashioned door. The external architectural features were pleasing. Little turrets, circular windows, overhanging eaves, and tiled roofs all combined to form a pleasant picture. I was shown into a prettily furnished drawing-room, and later conducted by the lady of the house into a large study with a wonderful fireplace, and into other rooms well designed. Everything seemed just right. But no! There was something wrong. We sat down and our hostess said she would like my opinion of the roses in the garden just outside. I could not see any roses. I could not see any garden. The fleecy clouds floating in the blue sky were visible, but that was all. You ask "Why?" Because the windows were set so high. One had to stand up to see out. I was told the bedrooms and nursery had the same fault, and a platform had to be built for the children so that their heads could be above the window level. The value of plenty of light and air has never been recognised so clearly as at the present time. It is hoped that architects, besides making provision for an abundance of these, will give us a view. We don't want to live in a glorified prison.

I am, Sir, yours faithfully,
MEDICUS.

Nov. 2nd, 1925.

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[1] The Sea Carriers, 1825–1925: The Aberdeen Line. By L. Cope Cornford, with a preface by Viscount Burnham. Published by George Thompson, Ltd., 7, Billiter-square, London, E.C.

An Address

ON THE

SPECIFIC CHARACTER OF MALIGNANT NEOPLASIA,

WITH SPECIAL REFERENCE TO THE CONTROL OF CANCER FROM THIS STANDPOINT.

Delivered before the Academy of Medicine, Toronto, on Nov. 10th, 1925,

BY W. BLAIR BELL, B.S., M.D. LOND.,

PROFESSOR OF GYNÆCOLOGY AND OBSTETRICS IN THE UNIVERSITY OF LIVERPOOL; GYNÆCOLOGICAL AND OBSTETRICAL SURGEON, ROYAL INFIRMARY, LIVERPOOL; HON. DIRECTOR, LIVERPOOL CANCER RESEARCH; HON. FELLOW, AMERICAN COLLEGE OF SURGEONS; HON. FELLOW, AMERICAN GYNÆCOLOGICAL SOCIETY; HON. PRESIDENT, GLASGOW OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

IN the whole range of medical science there is nothing of greater interest and importance than the control of malignant disease. Even so, and in spite of the fact that I have expended much thought and energy for 17 years in attacking this question, I find it necessary to summon all my courage to deal in words with a problem so difficult, so engrossing, so momentous, and, I may add, once so contentious. Those of us who enter the arena in the fight against cancer must do so unfettered, having purified our minds of all preconceptions and prejudices. At the same time we must avoid attaching undue significance to every little detail that comes to light as the result of our own work or of that of others; the winnowing of the chaff from the grain must be relentless and thorough.

Now, in regard to the problem of malignant disease, unfortunately there has been a tendency to consider each fresh and important observation as "the solution of the central problem," instead of merely as a step in that direction. For instance, supposing that an absolutely specific causal factor, effective at will, were to be demonstrated, it by no means follows that the cancer problem would be settled. I need not refer to the numerous instances in medicine of such failures; they are well known, and it is interesting to reflect that in many of them the position, unlike that of cancer, has been, or has appeared to be, comparatively simple.

THE CANCER PROBLEM STATED.

The problem of cancer can only be the complete understanding and control of that divergence from the normal, both from preventive and curative points of view. This, indeed, is the "central problem," whether scientifically or practically considered; this, and not every fresh quest after the so-called cause or causes of cancer.

The solution of every large problem—as of those of Euclid—is dependent on the correct application, step by step, of a number of related demonstrata that lead to the final proof. We have long been in possession of a sufficient number of isolated facts from which to elucidate the final solution, if only they had been properly sorted and placed in their true perspective—that is, if we had known how they should look when placed. This is the history of every scientific achievement. The whole question of malignant neoplasia is so complex, and the appreciation of the possible mechanisms concerned requires such a wide range of knowledge, that it is not difficult to understand how it comes about that most investigators have been content to stumble along after one issue, whereas Pasteur, if he had attacked the problem, would have tried to visualise first the complete picture; he would have formed a substantial working hypothesis.

If clear thinking were ever needed it is surely essential to the solution of this problem; yet, as the result of the limitations mentioned, the most important aspect—namely, the *specific process*, as I call it—has been neglected in the hunt for a specific cause, or for specific causal factors acting in conjunction. Still it is the result rather than the cause, as I hope to show, that is important, for undoubtedly malignant neoplasia is a specific process, but that is not to say that because a process is specific the cause must also be. Those who ascribe specific processes to specific factors are on hazardous ground, for there is plenty of evidence that specific processes of a similar character to that we are discussing—such as the development of an ovum—may be induced by many inciting factors. Indeed, it might as well be argued that because warmth may be a condition necessary for such a change it is the specific agent, whereas it may simply be a condition of environment.

Those of us who are sceptical in regard to the idea that a single specific causal agent, or a combination of two specific causal agents or factors, is inevitably responsible for malignant neoplasia, are fortified by much positive evidence that such factors are numerous. Nevertheless, we are always ready to accept, as we have done in the past, evidence of a newly discovered agent, which is capable of establishing one or more of the conditions necessary for the development of malignant disease.

If it be granted, as it is by a majority of investigators, that the inciting factors of malignant growth are many, it is reasonable to avoid, as we ourselves have done, that aspect of the subject, leaving to others the compilation of an encyclopædia of causes, and possibly the discovery of a factor common to all, in order to concentrate our energies on the consideration of the *nature of cancer*, which appears to be a specific process in itself, and of far more importance than the character of the exciting stimuli.

THE NATURE OF CANCER.

To the biologist growth is a process which is fundamentally similar, whatever its direction, character, or result may be. Theoretically, growth should be continuous and immortal. Practically, it may be persistent or discontinuous, and it is inevitably mortal, in the ordinary sense of the word. Malignant neoplasia differs not at all from differentiated growth in these respects. It is impossible, therefore, to regard neoplasia of a malignant character without taking into account innocent neoplasia and normal growth.

Normal somatic and differentiated growth of the individual is due to intrinsic stimuli acting under the influence of many conditions of environment, both relative—that is, relative so far as one cell influences another which may be adjacent: for example, the formation of the ectodermic structures of the teeth and eyes in relation to the underlying mesoderm—and general, in that the whole metabolism of the body is correlated and adjusted by adaptation to the surroundings, and is perpetuated by heredity.

The development of an innocent neoplasm is similarly situated; and it is impossible to separate a benign growth from simple hyperplasia which arises in normal, healthy cells as the result of increased normal intrinsic stimuli or adventitious, extrinsic stimulation acting on *healthy* cells—that is, cells that are in function fundamentally normal.

In malignant neoplasia the same factors are at work, but the *condition* of the cells on which they act is different, and the difference appears, from the evidence at our disposal, to be that the cells in which the abnormal development occurs are *not healthy*.

If we consider for a moment the statements I have just made it becomes obvious that they are too general in regard to malignant neoplasia. The view that innocent neoplasia arises from healthy cells is clear enough; but simply to say that the cells from which malignant neoplasms originate are unhealthy is too vague without amplification. By unhealthiness of a cell I mean, then, that for some reason it is not functioning normally. Now, the functions of a cell are twofold: in the first place it has functions in respect of its own individual metabolism; and, secondly, it possesses properties and activities in relation to the body as a whole, of which it is a unit.

What, then, happens to and in a cell driving it to adopt an unnatural, malignant, course of life? A healthy cell does not do this, a dead cell cannot. There is, however, an intermediate state. The cell functions are impaired. Whatever causal factor, whether metabolic or extrinsic, can permanently impair the cell, without killing it, may be regarded as a predisposing cause or "exciting factor" of malignant developments. When a cell is damaged by X rays it either recovers, develops abnormally, or dies. When it develops abnormally we may regard it as a process which implies a struggle for existence.

To understand the nature of this process—the struggle to survive—we must go back to the beginnings of growth in the individual, study them, coördinate our observations with the known facts of normality and abnormality, and find if there is anywhere a clue to the divergence from the normal that may be regarded as, what I may perhaps call, normal malignancy.

It will be remembered that in the mammalian ovum, long before the formation of the embryo begins, the collection of cells, into which the fertilised ovum has developed, receives its nourishment from the saline fluid with which it is surrounded; but that this is soon insufficient for the needs of the mass, undergoing rapid division, a phenomenon not unallied to the struggle for existence. Some further and better supply of food is required, otherwise the ovum will die. In ordinary circumstances the blastocyst attaches itself wherever it may be at the moment necessity urges, and draws its nutriment from the maternal tissues.

In the human subject this process may be fraught with dangers of various kinds, *not the least of which* is the absence of the inhibitory factor which prevents the invasion of the trophoblastic cells exceeding the normal limit, and developing into an abnormally malignant process.

If I may do so, without wearying you, I will quote a statement already published in special and, therefore, not readily accessible journals, for it expresses briefly and completely our views of the nature of *malignant neoplasia*:—

> "Malignant neoplasia in the human subject, as I see it, is a biological atavism. There is a time in the development of the ovum when somatic cell-correlation and differentiation can hardly be said to exist, except potentially. At that early stage the trophoblast, of which the ovum is largely composed, is engaged in a struggle for existence; unless it can eat its way into the maternal tissues, the whole ovum will perish. The zygote possesses, therefore, the power of developing into cells of two types, the undifferentiated nutritive cells and the differentiated somatic cells.
>
> "Normally, when satisfactory attachment has been obtained, and the maternal blood-vessels have been eroded with dispersion of the circulating blood of the mother among the advancing columns of trophoblastic cells, the area in which the fœtus is to develop grows rapidly, and pari passu the activities of the trophoblast, so far as plastic and invasive properties are concerned, are gradually arrested. Thus it appears that, when the elusive factor in somatic cell-correlation becomes operative and ensures normal and differentiated development in the fœtus, the growth of undifferentiated, 'malignant,' epithelium of the chorion is stayed. It is the nature of this controlling factor that we are endeavouring to determine.
>
> "Should the fœtus die and the supply of somatic 'correlating secretion' cease at a critical time in the period of control, the chorionic epithelium, suddenly relieved of the inhibitory action of this substance, may develop into that most unrestrained and malignant manifestation known as chorion epithelioma.
>
> "The chorion, as I have indicated, has a nutritive function, and to the epithelium is assigned the task of seeking and finding nourishment not only for its own metabolism, but *also* for the correlated and differentiated somatic cells of the embryo, which in turn send a hormone, we may presume, to restrain chorionic activity once a large enough source of food-supply has been tapped.
>
> "In view of the method of implantation of the ovum in the human subject, and of the origin of chorion epithelioma, it seems reasonable to suppose that cells of somatic tissues, formerly normal, may through senility, injury, infection, and the other inciting and predisposing factors of cancer, slowly lose their power of obtaining or utilising nutriment, and, as the process of starvation is a slow one, adjust themselves to the altered and altering conditions by reverting an earlier undifferentiated chorionic, nutriment-seeking ty
>
> "It is probable that every cell in the body has th potentiality of atavistic reversion to the nourishmen providing proclivities normally possessed in a special degr by the chorionic epithelium. Once started on the *pervert* course, there is no reason why the growth of dedifferentiate somatic cells should be arrested, for like those of choric epithelioma, they are free of differentiated, somatic control."

This is a definite hypothesis founded on the fac of development as they are known to us. It impossible to go back further in our search fc phenomena, associated with growth, that have bearing on malignant developments.

We have endeavoured to bring fresh light to bea from various aspects of the problem, and we hav *tried to discover* the physiological cause or cause leading to the arrest of the active functions of th chorionic cells, once they have fulfilled their purpos It seems likely, of course, that the factors governin the differentiation of the somatic tissues of the embry control the activity of the chorionic epitheliun There is, indeed, much evidence in support of thi view, such as the invariable absence of a live embry in association with chorion epithelioma. Yet a lon series of experiments which I conducted, many year ago it is true, failed to confirm or to refute this view I am inclined to blame the conditions or the conduc of our work for the negative result.

It will not be out of place to emphasise here a fe facts of clinical and pathological importance tha have a bearing on, and, indeed, lend support to th hypothesis I have endeavoured to develop, before pass on to a consideration of the experimental an clinical confirmation that we have been able to secure.

It will be remembered that I have referred to th fundamental similarity of all growth processes, pointing out that the earliest ancestral cells—the tropho*blastic*—are of sheer necessity malignant in characte and that the most malignant type of growth of whic we have cognizance is due to the uncontrolled, riotou behaviour of these cells. On the other hand, ther are innocent tumours arising in the differentiate tissues of the body, apparently as the result o increased stimulation of normal healthy cells; ir other words, hyperplasia occurs.

Then there are certain growths which appear to lie between the innocent and malignant; for example papillary tumours of the ovary. How can we fi *these into our scheme, which might on casual* inspection appear to demand such a clear-cut line of demarcation between innocent and malignant neoplasia tha the two could not exist in the same tumour? Ther is, as I have stated, a most essential difference betwee innocent and malignant neoplasia, apart from th inherent similarity of all growth processes; but thi does not exclude the possibility of a malignan development in an innocent neoplasm, as may occ in the hitherto normal, differentiated tissues of th body.

It seems highly probable that, when such a chang takes place, the cells of the tumour, previously innocent have outgrown their blood-supply, or have suffere some other form of metabolic disturbance, with th result that, if necrosis does not occur, they may tak on a malignant form of life. This change fro innocency to malignancy is most commonly seen i growths of a "cellular type," as we describe them whether epithelial or mesial in structure.

In passing, it is interesting to note that, just as al primary tumours, innocent and malignant, conform more or less closely to the kind of tissue from which they arise, so the structure of a malignant neoplasm developing in an innocent neoplasm resembles the tissue type of the latter; and it is this conformity that sometimes creates the difficulty of deciding whether a tumour is innocent or malignant.

In this connexion it may be said that the more nearly the structure of a malignant growth approaches that of the somatic tissue in *which* it is developed,

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[1] Bell, W. Blair: Public Health, 1924, xxxvii., 217; Jour. Obstet. and Gynæcol. Brit. Emp., 1925, xxxii., 1.

so much the less virulent is it. Those neoplasms that bear in their texture an appearance resembling that seen in an early phase of the normal development of the tissue in which they arise are most malignant. It is, indeed, axiomatic that the nearer to the trophoblastic phase the character of the neoplastic cell, the nearer will a growth approach in malignancy the intense degree exhibited by the unrestrained chorionic epithelium.

If the statements I have made are correct and the conclusions based upon them are sound, we are justified in regarding the malignant change as a process that is quite specific in character. It is hardly likely that, if the working hypothesis I have enunciated above had been a crude guess, instead of the result of the consideration and correlation of known facts, the substantiation of our views would have followed in such generous measure as has been the case. To this I shall now refer.

CONFIRMATION OF THE HYPOTHESIS.

It is always advisable in seeking confirmation of any biological conception to approach the issue from as many directions as possible. This was foreseen when money was provided by a few generous laymen in Liverpool for the purpose of verifying or refuting my views; and as a result a staff of distinguished men, the heads of departments in the University, were invited to coöperate in the prosecution of this important inquiry under my direction. The harmony that has existed and the very intimate interchange of ideas, have, I venture to think, led not only to the output of most valuable original work but have also gone far to place the hypothesis enunciated beyond direct criticism. A considerable amount of work still remains to be completed and developed, provided the means are forthcoming to keep this organisation in being.

The scope of our research work has involved studies in physical chemistry, under the control of Prof. W. C. McC. Lewis; in biochemistry, which is, after all, chiefly physical chemistry, under the joint supervision of Prof. Lewis and Dr. R. Coope; in pharmacology and toxicology, under Dr. W. J. Dilling; in pathology, by Prof. Ernest Glynn; in animal experimentation, by Dr. H. E. Annett; and in the treatment of cancer in the human subject by a group of physicians and surgeons.

In three years about 50 private interim reports have been circulated by members of the staff to their colleagues, and some of these deal with several subjects. So far only four papers have been published, but a number are ready or being prepared for the scientific press. In many instances the lines of inquiry overlap or are dependent one on the other. Much of the work is of a highly technical character, and cannot be suitably described in a few general terms. I am unable, therefore, to do more at this time than touch upon some of the results obtained that supply direct confirmation of our hypothesis.

PHYSICAL AND BIOLOGICAL CHEMISTRY.

n an earlier paper I stated that it appeared bable that lead—a metal to which I shall have to r at some length directly—has an affinity[2] for the phatides and other lipins; and that these stances are probably present in malignant growths larger quantities than in normal somatic tissues. a communication of Gye and Cramer,[3] based, it true, on insufficient material and, therefore, on newhat inconclusive evidence, the general statement had been made that the more rapidly growing at or mouse tumour the greater the phosphatide content. No comparison with normal or other tissues was made by these workers. Their statement was based on the examination of one slowly growing transplantable mouse tumour and one that was rapidly growing, and of one rat sarcoma of rapid growth. It was almost a matter of luck that this conclusion turned out to be correct; but it might easily not have been so, for the variations that occur in similar normal and malignant tissues are considerable, and only by averaging a large number of estimations can a true conclusion be reached. Alone, however, even this finding is not of any great value; it is the relative character of the phosphatide content of tissues that gives such estimations their great importance.

Prof. Lewis and his associates[4] concentrated their efforts in the first place on an experimental examination of the functions of phosphatides and cholesterol in relation to the permeability of the cell membrane. Stated briefly, it was found that whereas a high lecithin content favours an oil-dispersed-in-water variety of emulsion, cholesterol favours a water-dispersed-in-oil type. When, as in cell membranes, these are present together and in the conditions believed to exist—namely, that lecithin and cholesterol are dissolved in different phases, that is, cholesterol in oil and lecithin in water—then a high lecithin-phosphatide ratio would indicate a high degree of permeability of the cell membrane.

This conclusion reached, it became a matter of importance to determine the water, the phosphatide and cholesterol content of normal human tissues, and of innocent and malignant neoplasms of the same tissues, and, also, in view of the general hypothesis to make similar analyses of chorionic villi.

This laborious task has been accomplished, some 80 specimens being examined. The very striking results obtained are summarised in the following table:—

Human tissues examined.	Water.	Phosphatides.	Phosphatide-cholesterol ratio.
Normal tissues (ovary, body of uterus, cervix) ..	77·5	2 80	2·8
Innocent neoplasms (ovary, uterus) ..	80 3	2·04	3·4
Malignant neoplasms (ovary, body of uterus, cervix) ..	81·6	4·4	3·6
Chorionic villi ..	89·9	6 84	4·7

In regard to these figures it should be stated that in a general way it is impossible to separate cancerous cells in malignant neoplasms from the supporting and surrounding normal tissues. If cancerous cells are mixed with normal tissues in the proportion of, say, 50 to 50—a figure that would undoubtedly favour the normal tissues—the values for malignant tumours would approach more nearly those for chorionic villi, which also contain a core of connective tissue that may have reduced the value of the figures standing to their credit. In short, chorionic epithelium and malignant cells in all probability have values in regard to the phosphatide content and phosphatide-cholesterol ratio not less than three times that of normal tissues and innocent neoplasms, and also a much higher water content.

Now, as we have seen, permeability of the cell membrane is associated with a high phosphatide value and a high phosphatide-cholesterol ratio. Further, a high water content is actual evidence of permeability, and permeability is favourable to rapid growth. These are the essential features of malignant neoplasia, and they are most noticeable in connexion with chorionic villi, which in the early stages of development are entirely, or chiefly, composed of chorionic epithelium.

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[2] "Although I have suggested that the rôle played by lead the phenomenon of arrested growth depends on a direct mical reaction between lead-ion and phosphatides, we must t overlook the possibility that lead may act in other ways; r example, by the inhibition of enzyme action in relation to with. The distinction between these effects, however, may t be so great as appears at first sight, since such a function ossible as, for instance, that of an oxygen carrier, might directly affect enzyme action."—THE LANCET, 1924, i., 267.

[3] Barratt (Gye), W. E., and Cramer, W.: Proc. Roy. Soc., B., nd., 1913, lxxxvii., 239.

[4] Corran, [illegible] and Lewis, W. [illegible] Bi[illegible] Jour., 1924, xviii., 17[illegible]

Here, then, is unassailable confirmatory evidence of the views already expounded.

Inhibition of Normal Growth.

We have conducted investigations on several lines to test the effect of various substances on cell growth.

Vegetable Growth.—J. Patterson and the present writer[5] have observed in the case of hyacinths that, if the bulbs be immersed in solutions of lead, a graded effect in the growth of the roots can be obtained, according to the strength of the solution; and with solutions so strong as 1·0 per cent. the subsequent growth of the plant is almost entirely inhibited. It is, too, of remarkable interest that, if the bulbs used for experiment be dried and kept in the ordinary way until the following year, and then be placed in ordinary *tap-water, they repeat exactly the phenomenon of* arrested growth seen the previous year when they developed in lead-poisoned water.

A chemical examination of dried bulbs that have developed in lead solutions reveals the presence of lead. It is obvious, therefore, that the lead has become bound up with or has affected some body of importance to the normal growth process, whether of the cell membrane or the cell itself, and that even a year later limited growth alone is possible. It has been stated by various observers that seeds are rich in phosphatides, and there is little doubt that the same high proportion should obtain in bulbs, but we ourselves have not made estimations.

This work was carried a stage further by the investigation of the effects of other metals on the development of hyacinths. The ions of copper, zinc, and calcium were tested, and were found to produce certain effects on growth; but these were not really comparable with the effects of lead. Zinc and calcium appeared to be very toxic in the stronger solutions —that is, solutions containing from 0·001 to 1·0 per cent. of the metallic salt. Root growth was practically absent, and in only one case did flowering occur. In weaker solutions the root growth and flowering were unaffected. The same results were obtained with calcium salts. Copper, however, was extremely toxic, and in strengths of copper as low as 0·000 001 per cent., growth of the plant was entirely prevented. It appears likely, therefore, that zinc and copper are directly poisonous, and have no true graded effect in various solutions; they appear either to kill or not to interfere with growth at all. Calcium probably acts by reducing permeability of the cell membranes.

Dr. W. J. Dilling has conducted experiments of a similar character in regard to the germination of seeds (mustard and cress) and obtained somewhat similar results.

Animal Growth.—Dr. Dilling and his fellow-workers have conducted an important series of investigations on the development of frogs' eggs, on the subsequent growth of the tadpole, and on the growth of fish, when placed in water containing the salts of certain metals. He summarises the experiments on frogs' spawn and *tadpoles as follows*:—

1. *Beryllium.*—Non-toxic.
2. *Zinc.*—Does not arrest the development of frog spawn, but is either lethal to or delays the growth of tadpoles.
3. *Thallium.*—Does not arrest development, but is fatal to tadpoles.
4. *Copper.*—Does not arrest development, but further growth is checked at or about birth. Slows subsequent growth of the tadpole or is fatal to it.
5. *Thorium.*—Development arrest, but to a less degree than lead. No arrest of growth of the tadpole.
6. *Lead.*—In solutions of N/10,000 and stronger, lead completely arrests the development of eggs and checks the growth of the tadpole.

In connexion with the action of lead it may be stated, therefore, that in its effect it is much more definite and comprehensive in its selective specific effect on all growth than is the case with any other metal; indeed, it is the only *metal that arrests* development of the ovum, and stunts growth subsequently.

In connexion with the action of lead on the tadpole, I cannot refrain from quoting an interesting statement from a report of Dr. Dilling:—

> "The second point of interest noted was that arrest of development almost invariably resulted when the egg was at the reniform stage, which corresponds with the late gastrula stage of the embryo, and it was also observed that, if the embryo passed this stage, it generally progressed to hatching, even if it then succumbed. At the late gastrula stage, when these embryos died, the hypoblast is being formed at the expense of the yolk cells which later form a heaped-up mass on the ventral wall of the archenteron to be finally absorbed a day or two after hatching, by which time the mouth has opened. In view of the suggestion of Blair Bell (THE LANCET, 1924, i., 207) that lead arrests growth by a chemical reaction between the lead ion and such a phosphatide as lecithin, the fact that the yolk cells are rich in lecithin must be borne in mind. It may be that lead by combining with the lecithin in the yolk cells arrests by its toxicity further development of the hypoblast, and that this leads to death of the embryo. Presumably, on this theory the embryo would be most vulnerable if the lead reached it before the yolk cells were finally covered by epiblast, that is, just before the stage at which the embryo becomes ovoid or reniform. If, however, the lead does not reach the embryo until the yolk cells and yolk-containing hypoblastic cells are completely protected by the epidermal layer of epiblast, it is reasonable to expect, if Blair Bell's theory that the lecithin is the medium through which lead arrests growth, that the embryo would probably survive and develop to the tadpole stage, and this is, in fact, what has been observed. Then at the tadpole stage, when it comes into direct contact with the poisonous solution, it may succumb by absorption of lead through the external gills or mouth. At present, these must remain as suggestions to account for the observed facts; further work may confirm or disprove them."

The observations on the growth of plaice in lead-poisoned water gave similar results; the growth and vitality of the young fish were reduced, and the effect *persisted after removal of the plaice to a normal* medium. Finally, it is well known that children poisoned with lead are stunted in their growth.

We have, then, a large series of observations on normal growth, all pointing to the important—I think specific—action of lead on the growth processes.

Effect of Lead and Other Metals on the Chorion Epithelium.

Dr. Hendry, Dr. Annett, and the present writer have published a paper[6] on this subject, giving the results of our experimental inquiry. It has, of course, long been known that in lead-workers abortion is extremely common. The cause for this has been attributed to hæmorrhages in the uterus. I suspected and found many years ago that the action of lead was due to a specific effect on the chorion epithelium, but owing to the war the work was stopped, and my results were not published.

In our recent experimental investigations we demonstrated that, in rabbits, lead alone of all the metals tested—namely, lead, thorium, thallium, and copper—has a specific action on the chorionic epithelium: coagulation necrosis is produced in the cells, and, as a result, abortion takes place. *If abortion* occur after the other metals it is due to hæmorrhages in the uterus.

If we recall for a moment the table concerning the water and phosphatide content of normal malignant and chorionic tissues we will realise the importance of the investigation I have just mentioned and its bearing on our hypothesis and the problem resulting from it.

Action of Lead on Malignant Growths.

We have now reached the final issue. If my hypothesis concerning the fundamental *similarity of* all growth processes in animals is correct, and if we find a substance that will arrest or be lethal to all, and also shows an increasing degree *of toxicity* towards growing tissues in direct proportion *to their* rapidity of growth *and malignancy—that is, to the* water, phosphatide content, and phosphatide-cholesterol ratio—then surely we have arrived almost at the end of our endeavour.

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[5] Ho their power of OB.ANCES [illegible]
he process of starvation is a slow one, adjust them

[6] Bell, W. Blair, Hendry, R. A., and Annett, H. E.: Jour. Obstet. and Gynæcol. Brit. Emp., 1925, xxxii., 1.

Will our work stand the final test: Does lead arrest malignant disease in man? Here, indeed, is the crux of the central problem. I can assure you that in this respect also we have the fullest confirmation of all I have said. By "fullest" I do not mean that we can cure every case of malignant disease. We cannot; that, unfortunately, will never be possible, as all those who deal with the disease must know. In the cure we may sometimes kill. I have in mind two cases, the first that of a young man with diffuse sarcoma of the stomach, as proved by laparotomy and histological section. The treatment by intravenous injections of lead caused total liquefaction of the stomach, and he died with acute peritoneal symptoms. At the post-mortem examination Prof. Glynn could find no stomach, simply a mush of dead tissue. The second case was that of a woman with a large, rapidly-growing post-cricoid carcinoma. After treatment the entire growth became œdematous and she was suffocated. At the post-mortem examination it was found that the entire tumour had undergone acute necrosis.

Some would say, What further evidence than that is required? If it is, we have it in the fifty or so patients who are believed well, out of about 200, mostly hopeless, cases treated. We have not selected our patients in any way. We have treated practically all who have been sent to us. Many have died within a few weeks of their arrival, before treatment had been hardly more than just begun.

I know you will want to hear very much about our successes. In the next month or so these will be published in THE LANCET. However, I may perhaps risk wearying you and mention two, for we have been fortunate enough to make for them yesterday and to-day days of thanksgiving.

On Nov. 9th, 1920—five years ago yesterday—a woman was admitted to my maternity ward at the Royal Infirmary, Liverpool, for her confinement, which took place a few days later. She was suffering with an extensive, ulcerated carcinoma of the left breast with glands in the axilla. Operation had been considered useless six months previously by two of my surgical colleagues. The growth had been accelerated during pregnancy, as is usual in these circumstances.

I was looking for just such a hopeless case. A section was prepared from a piece of tissue adjacent to the ulcerated area, and intravenous injections of lead were given. Not only is the patient well to-day, five years and one day later, but also she has had two more babies in the interval, both of whom she has suckled at the breast that was affected.

For sentimental reasons of a different character I may tell you about another patient who is now 38 years of age.

This lady was sent to me over a year ago. She had submitted to an exploratory operation at the hands of another surgeon. He found the abdomen full of malignant growth, which he correctly diagnosed as sarcoma, and promptly closed his incision. When she came to Liverpool, thin and ill, I reopened the abdomen to obtain a piece of growth for section, for this had not been done at the former operation. I, too, found the entire abdomen involved. Intestines were mixed up in the growth, and the whole outlook seemed most serious. In ordinary circumstances she had a few weeks to live, for sections showed the growth to be a most rapidly growing spindle-cell sarcoma. Treatment with lead injections has led to a considerable decrease in the size of the tumour, while the patient has herself increased in weight by 21 lb., and is now in robust health and without a symptom. She has been married to-day—November 10th.

CONCLUSION.

I have undertaken to present to you some of the confirmatory evidence obtained by a band of fellow-workers, that the hypothesis expounded is not only correct in its essential particulars, but also from every possible angle, including that of the ultimate test, it appears to be—may I say—proven.

I set out to show you that malignant neoplasia is a specific growth process in that it is a reversion on the part of the starving cell to the nutriment-seeking proclivities of its ancestral type, the chorionic epithelium.

A comparison between the chemical constitution of different tissues in regard to the factors concerned in growth processes demonstrates clearly not only that malignant tumours are richer in this respect than the corresponding normal structures and innocent neoplasms of the same parts, but also that the physiologically malignant chorionic villi show even higher values than pathologically cancerous tissues. The chorionic epithelium is super-malignant.

In the search for a substance that will arrest or have a specific lethal action on cells which possess the chemical constitution associated with malignancy we have found only lead. This metal is specifically active in regard to the chorionic epithelium, to the cells of cancerous growth, to normal embryonic growth, and to mature cells rich in phosphatides.

Some day we hope that a substance, less toxic to the organs of the patient that are rich in phosphatides, and even more effective than lead in arresting and destroying cancerous tissues, will be found. If that should ever happen, and it is not unlikely, we shall have still further confirmation of our belief that causes are as nothing in comparison with the importance of the realisation that malignant neoplasia is a specific process of the nature, and subject to the control I have described.

Bradshaw Lecture

ON

GASTRO-JEJUNOSTOMY.

Delivered at the Royal College of Surgeons of England on Nov. 11th, 1925,

BY JAMES SHERREN, C.B.E., F.R.C.S. ENG.,
VICE-PRESIDENT OF THE COLLEGE; SURGEON TO THE LONDON HOSPITAL.

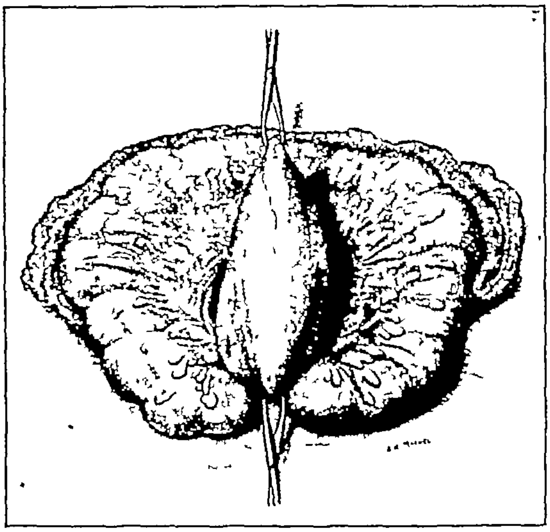
I MUST apologise for having selected an operation as my subject. I did so because of a firm belief that gastro-jejunostomy has had a more profound influence on abdominal surgery, and has done as much, if not more, for the good of the human race than any surgical procedure. On the other hand, carried out in unsuitable cases, or in suitable cases in an incorrect manner, it has, I regret to say, done as much, if not more harm, not only to the patient but to surgery in general than any operation. In suitable cases and correctly applied it has altered the whole outlook of countless chronic dyspeptics, and saved numerous valued lives for long service to the community. In addition to its widespread influence on abdominal surgery, the light it sheds on the ætiology of ulcerative lesions of the stomach and duodenum and on the cause of their symptoms was also a factor which convinced me, and I hope will convince you, that its study is eminently suitable for a Bradshaw lecture.

The present time seems opportune to review the matter, as from many sides we hear of its failure to cure conditions that are found curable by its aid in the hands of other surgeons. We have large and complicated procedures devised to supplant it, procedures that carry with them a mortality greater than that of the operation under discussion, and I venture to say that the death-rate of these would at least approximate to that of gastro-jejunostomy and to all its unsuccessful cases if they were considered as fatalities. Not even the most ardent advocate of these new operations would claim that every survivor was cured.

I should like first to draw your attention to a few points of historical interest. It was first carried out on Sept. 28th, 1881, in Vienna, by Anton Wölfler,[1] while assistant in Billroth's clinic. The patient was a male of 38, Michael Gold, surely a name to be remembered in the annals of surgery. He was suffering from pyloric carcinoma. Convalescence was uneventful and he was reported well four weeks later. The second case was done by Billroth himself on

Oct. 2nd, the patient being a man of 45. Bilious vomiting supervened the following day and continued until death on the tenth day. A post-mortem examination showed spur formation. Thus, the distressing post-operative symptom of regurgitant vomiting appeared early in its history. The course of abdominal surgery might have been different had this been the first case operated on. A surgeon must be thoroughly convinced of the soundness of his conception and its potentialities who would attempt it a second time in the face of such a result. The first successful gastro-jejunostomy in this country was carried out by Barker[2] for carcinoma of the pylorus on Jan. 5th, 1886. A day previously Morse,[3] assistant surgeon to the Norfolk and Norwich Hospital, had done a similar operation and both surgeons sutured the jejunum to the stomach before opening them. It was first performed in this country at the London Hospital by Reeves [4] on May 9th, 1885, on a woman of 40, with carcinoma of the pylorus. It is difficult from the brief account to follow exactly what was done, but it was a two-stage operation. I have been unable to obtain any information other than the short note published, and a careful search of the hospital records and operation books has not enabled me to trace the patient.

FIG. 1.



Showing the posterior surface of the stomach brought through the mesocolon and held vertically from the greater to lesser curvature, ready for the application of the clamp.

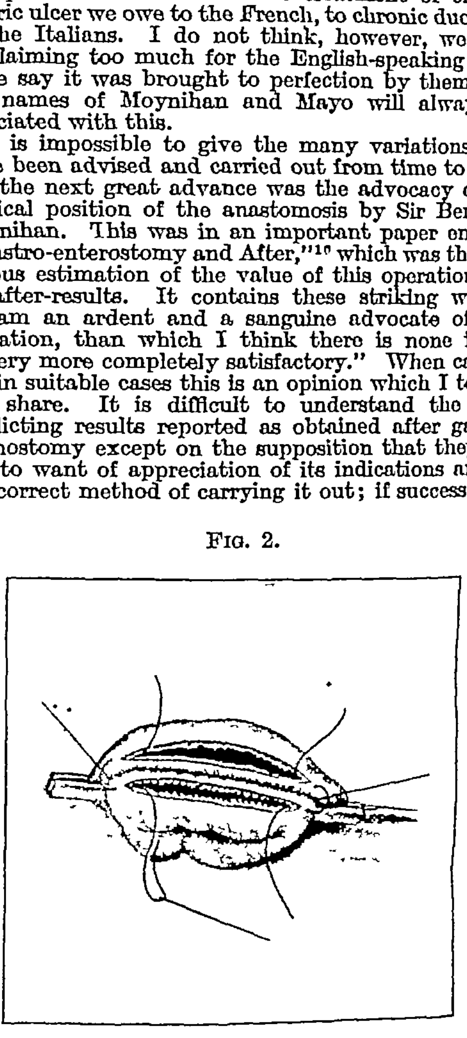
Carried out first for the relief of symptoms in irremovable carcinoma of the pylorus, it has been used in the treatment of most abdominal ills and, in cases that have come under my own observation, has been done or advised for the vomiting of pregnancy, disease of the spine and spinal cord, of the kidneys, and even of the middle ear and brain. It was not until 11 years after its introduction that Doyen[5] employed it in the treatment of chronic gastric ulcer. This is recorded in a most instructive paper. He was led to undertake the operation on the supposition that pyloric spasm played a large part in producing symptoms. The first patient was operated on in 1892 for the round type of chronic gastric ulcer, and was quite well at the time of his report three years later; during this interval he had operated on 14 other patients suffering from chronic gastric ulcer without pyloric stenosis. He was rapidly followed by others, and on March 22nd, 1893, it was first employed by Codivilla[6] in the treatment of chronic duodenal ulcer. This was in a male of 40 who was quite well five years later, and it was not until after this, to be exact on May 5th, 1898, that the second case was operated on by this surgeon. Surely an example of surgical patience we should all take to heart. If every operation were tested for a few years before being generally employed many procedures would be justly unknown to any but their inventors.

The first gastro-jejunostomy was anterior with a long loop, the jejunum being sutured to the stomach along a horizontal line with its proximal portion towards the pylorus (retro-peristaltic). In 1885 von Hacker [7] introduced the posterior operation, leaving a loop 20 cm. from the duodeno-jejunal flexure. It was 15 years later that Petersen [8] further improved it by shortening the loop and adopting the iso-peristaltic position of the jejunum introduced by Rockwitz [9] in 1887.

We thus see the international character of surgical work. This operation was conceived in Vienna and its first modifications came from the continent of Europe. Its extension to the treatment of chronic gastric ulcer we owe to the French, to chronic duodenal to the Italians. I do not think, however, we shall be claiming too much for the English-speaking races if we say it was brought to perfection by them, and the names of Moynihan and Mayo will always be associated with this.

It is impossible to give the many variations that have been advised and carried out from time to time, but the next great advance was the advocacy of the vertical position of the anastomosis by Sir Berkeley Moynihan. This was in an important paper entitled "Gastro-enterostomy and After,"[10] which was the first serious estimation of the value of this operation and its after-results. It contains these striking words: "I am an ardent and a sanguine advocate of this operation, than which I think there is none in all surgery more completely satisfactory." When carried out in suitable cases this is an opinion which I to-day still share. It is difficult to understand the very conflicting results reported as obtained after gastro-jejunostomy except on the supposition that they are due to want of appreciation of its indications and of the correct method of carrying it out; if success is to be obtained meticulous care is necessary at each stage. On the one hand, we have a paper written with the title "Gastro-jejunostomy as a Disease"[11]; on the other, we find from the statistics published from the Mayo Clinic[12] that they have a cure rate of 94 per cent. in duodenal ulcer after treatment by gastro-jejunostomy and of at least 85 per cent. after the same operation for the treatment of chronic gastric ulcer. No surgeon who knows the work of this institution, and most of us have been welcomed there, can doubt the accuracy of these figures.

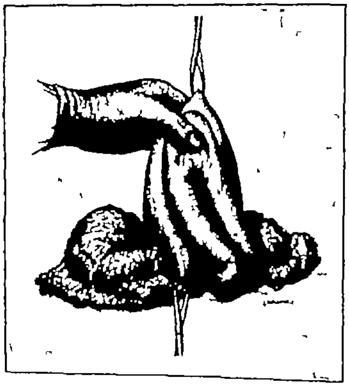
FIG. 2.



To illustrate the first insertion of the through-and-through sutures.

I should first like to describe the operations I carry out at the present time. The one which has given uniform success in my hands is the posterior retrocolic with vertical opening. The jejunum is taken at the duodeno-jejunal flexure and brought to the stomach so as to lie easily without tension on the one hand or looping on the other; the exact part therefore of the jejunum which is anastomosed to the stomach depends on the size and position of that organ. An opening is made in the transverse mesocolon immediately above the flexure, sufficiently large that its edges can be easily sutured to the stomach after the anastomosis has been made without causing deformity to it or the jejunum. The stomach just to the right of the cardiac orifice is clamped vertically from the greater to the lesser curvature (Fig. 1) If the operation is being carried out for a chronic gastric ulcer the anastomosis must be to its cardiac side; making it elsewhere is useless and the cause of many failures. This is even now not recognised universally, and sufficient stress has not been laid on this elementary fact. However the curative results are brought about, good cannot be anticipated when the opening is made to the pyloric side of the ulcer.

FIG. 3.

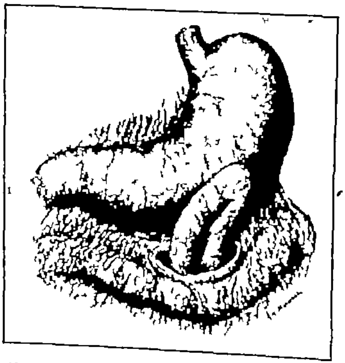


Showing the posterior surface of the stomach exposed and brought out through the gastro-colic omentum, the jejunum being brought to it in front of the colon.

The jejunum is brought to the stomach without a clamp and fixed to it at either end by stay sutures placed so as to secure its opening being exactly at the antimesenteric border and thereby avoid any rotation of the gut on its longitudinal axis. I find this much simpler to accomplish if no clamp is placed on the jejunum. Further, as I have stated before, it is possible that pressure of the clamp may in some instances be one of the causes of jejunal ulceration. No rule can be laid down with regard to the size of the anastomosis; it should extend when possible from the greater to the lesser curvature. This, of course, cannot be done if there is great dilatation; here, while falling short of the lesser, it should reach to the greater curvature. The viscera are then opened and the stitch through all their coats inserted. It is most important to get absolute apposition of mucous membrane so that I do not remove any that is redundant, and pay particular attention to the ends of the incision, uniting these first (Fig. 2). Nowadays the rare cases of gastro-jejunal ulcer are usually found at either end of the anastomosis, I believe due to failure of primary union of mucous membrane here, and it is for this reason that great care is necessary at these points. Before inserting the anterior layer of sutures I loosen the clamp and look for bleeding points Finally the edges of the opening in the mesocolon are carefully united to the stomach at least half an inch away from the line of anastomosis. Where the mesocolon is very fatty, and the fact that the great omentum is in similar condition makes the posterior operation advisable, I carry this out as the first stage, so as to be certain that the oozing edges shall be well removed from the suture line and so avoid puckering or obstruction from adhesions later. Special care is necessary in dealing with these edges; all oozing should be stopped and the points I have stressed adhered to to avoid the possibility of late post-operative vomiting.

It may, however, be impossible or unwise to perform this retrocolic posterior operation on account of changes in the mesocolon, or adhesions of jejunum to its under surface. If the mesocolon is loaded with fat, or if it is shrunken and adherent to the posterior abdominal wall, operation through an opening in it may lead to severe late regurgitant vomiting. I am also very much averse for the same reason, when a considerable length of the jejunum is united to the under surface of the mesocolon, to separate it, as these adhesions may re-form and cause obstruction. I also think it is unwise to attempt the retrocolic operation if an opening of sufficient size cannot be obtained without dividing one of the vascular arcades. For several years I have carried out an antecolic posterior operation with a short loop in this type of case. The posterior surface of the stomach is exposed by an opening in the gastrocolic omentum, and the jejunum, brought in front of the colon at the splenic flexure, is united vertically to it (Fig. 3). In my hands this has given excellent results. When the posterior surface of the stomach is adherent and partial gastrectomy is unwise or not indicated, I do the anterior no-loop operation that I first performed in 1901 and published in 1907,[13] bringing the jejunum to the anterior surface of the stomach through the transverse mesocolon and gastro-colic omentum (Fig. 4). The opening is finally sutured around the anastomosis in the way I have described in dealing with the normal posterior operation. I have used Lukens' special catgut, No. 0, for suturing gastro-intestinal anastomoses for many years with uniform success.

FIG. 4.



Illustrating anterior no-loop gastro-jejunostomy, the jejunum being brought to the anterior surface of the stomach through the mesocolon and gastro-colic omentum.

I believe that many of the recorded bad results of this operation are due to the way in which it is performed. It is not enough to unite the jejunum to the stomach anywhere, the spot must be chosen as I have indicated, and the opening must be of sufficient size. I should like to illustrate published examples of methods of anastomosis which I do not think are best calculated to bring about the healing of ulcers and reduce gastric acidity. The first[14] is given as an illustration of normal gastro-jejunostomy (Fig. 5); you will see that the opening is horizontal, and that a considerable loop is left. The second is from a paper, unfavourably criticising this operation in the treatment of ulcer of the lesser curvature (Fig. 6). I agree that the type of operation here figured [5] is not the one most likely to lead to cure of the ulcer; it is horizontal and does not reach the greater curvature. To ensure healing the opening should be in the direction shown in Fig. 7.

Indications for Gastro-jejunostomy.

What are the indications for this operation? It is still necessary to state that it should only be carried out for the treatment of a lesion that can be seen, not on account of symptoms, however definite they may appear to be. In the first place, it is the operation that should be performed when surgical treatment has been decided upon in a case of chronic duodenal ulcer. It is rarely that any other procedure is necessary. The operation of gastro-duodenostomy has failed, in my hands, to bring about a satisfactory post-operative reduction of acidity and is more often followed by secondary ulceration. In my opinion duodenectomy has nothing to recommend it.

I should like to give examples comparing the pre- and post-operative fractional meals of patients with chronic duodenal ulcer, recently treated by gastro-jejunostomy and by gastro-duodenostomy. Figs. 8 and 9 are from a male patient operated on by me for chronic duodenal ulcer, after having had symptoms for ten years. With such a result one can certainly say that further trouble is extremely unlikely. Figs. 10 and 11 are from a female patient, operated on after 15 years history. There was a scarred ulcer constricting the first part of the duodenum, which was mobile and dilated. For this reason gastro-duodenostomy was feasible and was carried out with a wide opening. In spite of regurgitation, as shown by the presence of bile and a rapid emptying demonstrated by a barium meal, the chart shows great post-operative acidity. I shall be surprised if this patient does not develop further symptoms.

Gastro-jejunostomy is my operation of choice in chronic gastric ulcer when the ulcer is "free," without suspicion of malignancy, and the anastomosis can be made to its cardiac side. The statements in the paper to which I have just referred [14] are opposed to my experience of the results when the operation is carried out on the lines I have described. The following sentence occurs in it: "I have records of patients who got no benefit from it, and when the abdomen was opened after several years the ulcer still persisted." I also have records of this description, but they apply only to those patients in whom the operation was incorrectly performed, or for whom this treatment was unsuitable.

The following is an example:—

L. O., a male, aged 45, was admitted to the London Hospital under my care in December, 1924. He had had gastro-jejunostomy performed at another hospital nine years previously and had not been relieved in spite of the fact that his test-meal revealed an absence of free HCl and a total acidity of 16. Barium meal showed some delay in emptying, most of the meal being present at the end of an hour. At operation I found a large ulcer "free" on the lesser curvature. The gastro-jejunostomy was small, posterior, and near the pylorus, with no trace of secondary ulceration. After excising it I did my usual operation to the cardiac side of the ulcer. He did well, but died of another cause nearly three months later and I was fortunate in being able to obtain an account of the post-mortem. The gastric ulcer had absolutely healed and the anastomosis was perfect.

This is a very striking instance showing that it is useless to carry out the anastomosis to the pyloric side of the ulcer and illustrates a point I shall deal with later, that the post-operative gastric acidity has no bearing on the healing of the original ulcer. This patient obtained no relief after a gastro-jejunostomy performed to the pyloric side of the ulcer, even though it had brought about achlorhydria, but secured *immediate relief and cure of the ulcer* when it was done to its cardiac side.

Gastro-jejunostomy should never be advised in acute ulcers with hæmatemesis; it has no influence on this condition. In simple organic stricture of the pylorus, whether due to the cicatrisation of a duodenal ulcer or to any of the more unusual causes, it is the operation of choice. In hour-glass stomach in which the causative ulceration has healed it is of the greatest service, and if pyloric obstruction is present as well may necessitate a double operation. The results of double gastro-jejunostomy are excellent. The first, done 15 years ago, is, and has remained quite well, and all others have been equally satisfactory. That it is not often called for the following figures will show. I have operated on 135 cases of hour-glass stomach due to simple ulceration and in only seven has it been necessary. In the majority a penetrating adherent chronic gastric ulcer was present, indicating the need for partial gastrectomy. It is valuable in carcinoma which is irremovable and causes pyloric obstruction, but not otherwise.

Result of the Operation.

The mode of action and the result of the operation are closely related. The symptoms in chronic gastric and duodenal ulcer are due to spasm or irregular muscular action of the pylorus and pyloric portion of the stomach in duodenal ulcer, and of the body of the stomach in gastric ulcer and to the increased tension produced thereby. Who that has seen the progress of a case after gastro-jejunostomy for ulcer in those perhaps somewhat unusual instances where the pain is so severe as to necessitate the use of opium, and has noted the immediate post-operative relief obtained, will doubt this, and that the relief is due to the mechanical and not to the physiological or, as I prefer to call it, chemical effect of the operation. All who have watched on the screen the marked spasm in chronic gastric ulcer, and in addition their regular peristalsis in chronic duodenal ulcer, will realise that this is a factor which prevents healing. This spasm results in the meal passing at first chiefly by the new opening even in those cases, and they are in the majority, in which no organic stenosis is present. The effect of the operation is to cause more rapid emptying of the stomach and immediately to relieve gastric tension. Its action on the ulcer itself, therefore, is mechanical—that is, it gives the ulcer rest. I have yet to see failure of healing in suitable cases, and I have published many at various times in which I have had an opportunity of examining the stomach and duodenum post mortem or at second operation at long periods after the primary procedure. If healing were due solely to an alteration in the chemistry of the stomach chronic gastric ulcers would heal, even though the anastomosis were placed on their pyloric side and duodenal ulcers would not heal unless there was satisfactory change in gastric acidity. I have *had to reoperate on several cases*, the primary operation having been carried out by others, one of which I have just quoted, in which in spite of achlorhydria the lesser curvature ulcer was unhealed, *the anastomosis being made to its pyloric side*, and Ryle,[17] in his Goulstonian lectures, has published an *example*. It is my experience that chronic duodenal ulcers heal as the result of gastro-jejunostomy, even in those cases in which it does not bring about any profound change in gastric acidity. The operation brings about healing of the ulcer, whether gastric or duodenal, when carried out on correct indications.

On the other hand, from the patient's point of view, the permanent relief of symptoms, it is essential that gastric acidity be markedly diminished even to the abolition of free HCl to prevent fresh ulceration either in the jejunum or at the anastomosis should any infective focus be overlooked, or the mucous membrane fail to heal by first intention. But every patient in whom operation fails to reduce acidity does not develop further symptoms; it is only when

FIG. 5.

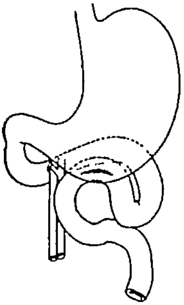


FIG. 6.

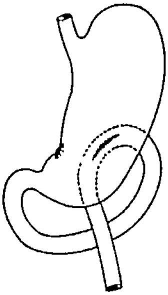


FIG. 7.

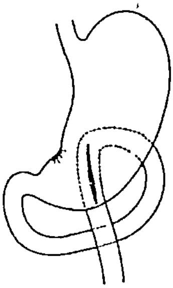


FIG. 12

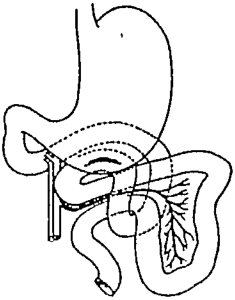


FIG. 8.

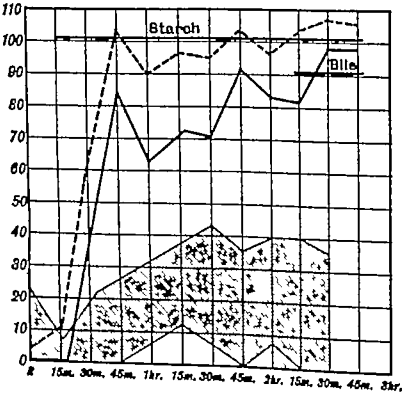


FIG. 9.

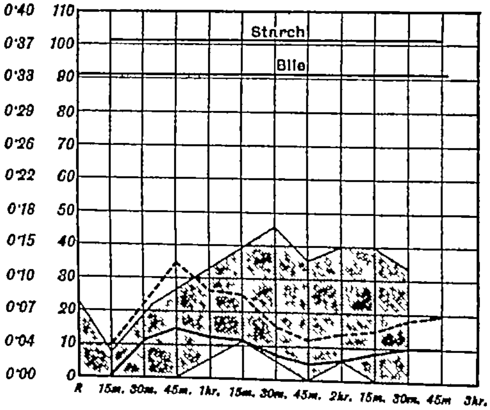


FIG. 10.

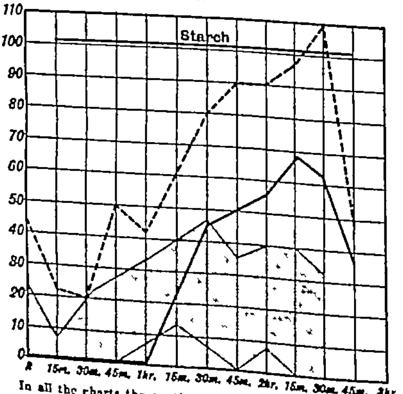
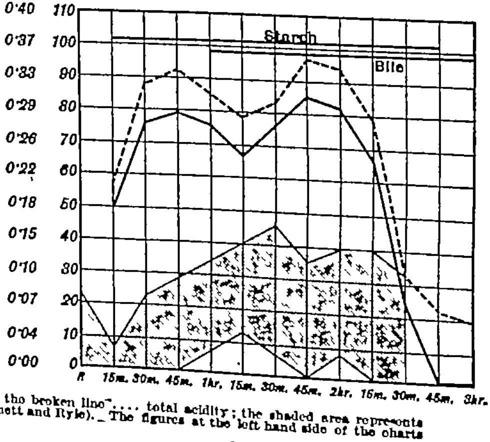


FIG. 11.



In all the charts the continuous line —— indicates free HCl; the broken line - - - - total acidity; the shaded area represents the limits of *free HCl* in 80 per cent. of healthy males (Bennett and Ryle). The figures at the left hand side of the charts indicate N/10 NaOH (per cent. HCl).

some other cause is present such as I have just mentioned.

Failure to reduce gastric acidity has no bearing whatever on the healing of the original ulcer; the operation is "mechanical" so far as this is concerned, "chemical" in its prevention of further disease. I am convinced that post-operative acidity is the predisposing cause of post-operative ulceration and that its great reduction is to a certain extent within our control; a large opening far removed from the pylorus brings about a greater lowering than a similar or smaller one close to the pylorus. I gave my reasons for this belief in my Hunterian lecture.[18] Recently Walton[19] has advocated a similar position for the anastomosis.

What are the causes of the post-operative lowering of acidity which almost invariably takes place after gastro-jejunostomy carried out for the treatment of chronic gastric ulcer, usually to as large a degree as after partial gastrectomy, and fails in some cases of chronic duodenal ulcer? I am certain that reflux of duodenal contents into the stomach is the principal factor. It has been satisfactorily proved that the pancreatic juice is the neutralising agent. In most cases of chronic gastric ulcer the anastomosis must from the necessities of the case be made well to the cardiac end of the stomach. But there is another factor besides that of the position of the stoma. The operation may be carried out on exactly similar lines in two patients of the same age and sex on the same day for the same condition with similar pre-operative meals. In one the post-operative meal reveals an absence of free HCl and a total acidity of 20, in the other one of 0·1 and 50. I shall have much more to say on this subject later, but I am convinced that it is in some way bound up with the use of the pylorus. It is possible that the production of secretin in the duodenum activating the pancreatic secretion may play a part, but I am inclined to the opinion that for the most efficient reduction neutralisation via the pylorus as well as the stoma is required. In support of the view that want of sufficient neutralisation is the cause of post-operative hyperacidity I will quote Bolton's[20] words on the subject:—

> "The essential cause of hyperacidity of the gastric contents is a deficiency in the neutralising process which regulates the acidity of the contents." And again, "The important point to note is that the condition hyperchlorhydria is the result of neuromuscular irritability of the stomach in which the pylorus plays chief part."

In the section dealing with gastric acidity following gastro-enterostomy, he writes as follows:—

> "Following gastro-enterostomy the secretion of gastric juice remains unchanged, any alteration in the acidity curves being due to neutralisation by regurgitation of intestinal contents through the stoma."

H. J. Paterson,[21] who has been an ardent supporter of gastro-jejunostomy and whose writings on the subject are classical, holds the reduction of acidity to be due partly to regurgitation through the stoma and partly to a diminution in the total chlorides secreted, and considers the action of the operation physiological, the result of this reduction of acidity, which he rightly deems necessary for the certain cure of the patient. But the ulcer heals after the operation correctly performed no matter what the gastric acidity, so that from the point of view of healing of the original lesion its action is not physiological.

Although failure to reduce post-operative acidity has no bearing on the healing of the original ulcer, it is of the utmost importance in the future welfare of the patient. I have on several occasions drawn attention to this, the last time in these words when speaking of secondary ulceration:—

> "If the operation permanently abolishes free HCl in the gastric juice, chronic ulceration does not occur. I drew attention to this in my Hunterian lecture, and, for reasons there given, consider it an important cause. I think there is no doubt that a large opening removed from the pylorus produces the greatest lowering of gastric acidity, and interference with the pylorus by exclusion or the presence of adhesions is an important factor in keeping up the post-operative acidity."[22]

I have revised the figures there given up to the end of June, 1925. Out of 195 personal cases of chronic gastric ulcer treated by gastro-jejunostomy in whom pre- and post-operative test-meals were given, in not less than 157 free HCl was abolished and total acidity markedly reduced, in all to below 30. In 26 it was greatly diminished, and in only 12 was it not reduced below normal. Of the duodenal ulcers, similarly brought up to date, 340 in number, in 206 there was absence of free HCl in the post-operative test-meal with a low total acidity, in 79 there was a satisfactory reduction, and in 55 there was little or no reduction. I wish to repeat again what I consider of the utmost importance—no case of secondary ulceration arose among those in whom the post-operative acidity was greatly reduced, and that the patients in whom further symptoms developed were from the group in which there was little or no reduction. It has been my experience that in many of the cases in which there is insufficient lowering of gastric acidity there is interference with the free action of the pylorus, and in these X ray examination shows that the barium meal is leaving chiefly or only by the stoma.

I am convinced that pyloric occlusion at the time of operation is a fertile cause of failure to reduce gastric acidity. Much has been written on this subject which it is difficult to reconcile. Donald Hunter[23] states that it had no effect on post-operative acidity, but on looking at Table VIII. I found these figures: 19 cases without pyloric occlusion, free HCl abolished in 10, remained high in 5, became higher in 4; 21 cases with pyloric occlusion, in only 8 was free HCl abolished, it remained high in 8, and became higher in 5. This is surely evidence that it affects unfavourably the post-operative reduction of gastric acidity. Apperley[24] studied 27 cases by post-operative fractional test-meals and was convinced that pyloric occlusion had no effect on gastric acidity, but that failure in reduction was due to a faulty stoma. I have already mentioned that a failure in satisfactory reduction may be due to the anastomosis being made near the pylorus; a small inefficient stoma will also be a cause, but neither is the sole explanation. In the majority of my own cases there has been no difference in the size or position of the new opening, and in very few did I have to make a note that for some reason the opening had to be smaller than I like and its position unusual. Investigation by X ray after a barium meal in those in whom there was little or no reduction showed that the stomach emptied as rapidly by the stoma as is usual after gastro-jejunostomy. I could discover no difference in this respect between those in whom free HCl was abolished and those with a high post-operative acidity.

Guy[25] examined by the fractional method 26 cases after gastro-jejunostomy. They were distributed as follows: gastric ulcer, 3; pyloric ulcer, 9; duodenal ulcer, 14. He argues that the reduction in gastric acidity is more marked in gastric ulcer because the pre-operative acidity is less and applies the same to pyloric ulcer, a misleading term that I should like to see abolished. Speaking of duodenal ulcer he states:—

> "Since duodenal ulcers are accompanied by such marked hypersecretion, a much smaller reduction in acidity after gastro-enterostomy is to be expected. It has been found invariably that a considerable degree of acidity exists after operation, and a study of the acid curves shows that a reduction to about half of the pre-operative acidity is the maximum that has been obtained. That is, the gastric secretion is now brought within the limits of normal acidity."

This is totally opposed to my experience of the condition. The figures I have quoted entirely disproved this, at least for my own cases. He traverses the view that pyloric exclusion has any bearing on the post-operative result in these words:—

> "The view expressed by Sherren that duodenal exclusion is the cause of post-operative hyperacidity is not borne out, as it has been demonstrated that a high acid level after operation is but the natural result of an excessive pre-operative hypersecretion and is not affected by variations in operative procedure apart from the provision of a stoma,"

but does not give the evidence upon which he bases the statement. Bonar,[26] in a study of gastric function before and after gastro-jejunostomy, also used the fractional method. In 14 cases of chronic gastric ulcer there was an absence of free HCl in 80 per cent., and in the remaining 20 per cent. a marked hypochlorhydria. In 83 cases of duodenal ulcer the fractional meal before operation showed a high acidity in an hour—that is, at the time corresponding with the Ewald meal. After operation he states that marked hyperchlorhydria was still present and *that it was marked in three-quarters to one hour—that is, at the corresponding* interval to that before operation. This again is not my experience. My results certainly do not bear out his statement that, "In the case of ulcers with high acidities gastro-jejunostomy does not cause to any extent a reduction of the acidity." I have notes of a considerable number of cases examined by the fractional method, though small when compared with those done by the single examination, the results at the hour both before and after operation correspond fairly well with those obtained by the single meal. I am still of the opinion that for diagnostic purposes the single test-meal before and after operation gives all the information necessary; certainly in hospital work it has given me results which correspond more closely to the clinical and operative findings than the fractional. Thus in the case illustrated by Fig. 10, in the fractional meal it will be seen that at the end of an hour there was no free HCl and a total acidity of 43, whereas the Ewald meal that I had given; as this was so unconvincing, showed free HCl 0·23 and total acidity 72, a test-meal corresponding with the condition found at operation. In a long experience of Ewald test-meals in chronic duodenal ulcer I have never had a result of this sort, but have had similar very puzzling discrepancies with the fractional meal. I have abandoned examination by this method except in an endeavour to throw light on exceptionally difficult cases. My medical colleague, Dr. Robert Hutchison, agrees that the "old 'single' or Ewald test-meal is to be preferred to the more modern 'fractional' type."[illegible] The investigations were all done in the London Hospital clinical laboratory under the supervision of Dr. P. N. Panton, without whose help these conclusions would have been impossible.

Ryle,[illegible] in his admirable Goulstonian lectures, deals in the third with gastro-jejunostomy and its sequelæ. Speaking of the post-operative reduction of gastric acidity he says that a case with deficient or low motility is more likely to respond to gastro-jejunostomy than one with increased motility; or in terms of the test-meal, a case with a steadily climbing curve is more likely to give a good result than one with a high abrupt peak of acidity and rapid evacuation. In my experience there is certainly no direct connexion between the time of emptying before and after gastro-jejunostomy and the acidity. He quotes me as saying we have yet to learn what is the cause of the failure to reduce post-operative acidity, but did not give my views on the subject that it is due to insufficient use of the pylorus and that for the most effective lowering of acidity it is essential that the pylorus be used as well as the new opening.

The results of the operation when done for chronic duodenal ulcer and picked cases of chronic gastric ulcer have been excellent. Failure to cure the patient occurs, apart from gross mechanical causes of which I shall speak later, or from overlooking lesions of other abdominal organs, only in that group in which there is insufficient reduction of post-operative acidity. Realisation of this is essential and improvement in our results will only come when our work is checked by this knowledge. Devine[illegible] states that "65–70 per cent. of gastro-jejunostomies for all types of duodenal ulcer were successful. This seems to depend chiefly on the ability of the operation to diminish greatly or abolish acidity." He adds, "Gastro-jejunostomy must therefore remain the basis of average gastric surgery," and considers that it should be, but is not, an ideal procedure. He mentions that the unsuccessful gastro-jejunostomies fell into a group in which there was an increase or little modification of acidity after operation, and that this was due to failure of alkaline regurgitation.

Success with this operation will depend on the care with which it is carried out along the lines I have suggested. Those of us who have obtained good results have been criticised. Pannett,[illegible] for example, speaking of those who claim 90 per cent. successes, says there is "obviously some radical difference in the manner of evaluation." I should rather say in the exact manner in which the operation is carried out. In a further paper[illegible] he gives the names of those with cure rates in the region of 90 per cent. Speaking of my own figures I have followed these cases up from the very first and have counted as "quite well" only those patients who have been perfectly well throughout; if they have any digestive complaints they may be included among those improved, but not among the 90 per cent. All patients are seen at 3, 6, and 12 months after operation and heard from yearly till after the third year. I shall give an example later. I have again brought the earlier cases up to date and confirm what I have said before, that the longer the cases are traced the better the result, and most of those who had minor troubles in the first year lost them later and had completely forgotten eight or ten years after that they had occurred. I can speak for the thoroughness of the follow-through method of my colleague Mr. Walton,[illegible] who has recently described it. The Mayo Clinic needs no defence from me. The results published in the paper from which my figures are taken[illegible] are better than those of four years previously, owing, I believe, to increased skill in carrying out the operation due to following up all the patients carefully and improving technique; several of the patients then not well are now well. Balfour's[illegible] figures in chronic duodenal ulcer are an eloquent testimony, 88 per cent. quite well among 1000 patients. Metraux[illegible] in the study of cases in Roux's clinic found that in 90 per cent. of the cases of chronic gastric or duodenal ulcer treated by gastro-jejunostomy alone a good result was obtained. Peck[illegible] wrote that simple gastro-jejunostomy properly performed is curative and adequate in the great majority of chronic duodenal ulcers, and that from 80 to 90 per cent. are completely relieved of their symptoms and remain well as they are followed from year to year. We cannot dismiss these figures as due to insufficient care in estimating results as Pannett has done, but rather look to the nature of the operation that others are doing and see if this will not account for their less satisfactory results. If the figures I have quoted from various writers of the failure to reduce gastric acidity after gastro-jejunostomy for duodenal ulcer are an index there is certainly a reason for its failure in many cases.

To sum up, gastro-jejunostomy carried out on modern lines will bring about the healing of all uncomplicated cases of simple chronic gastric and duodenal ulcer. Cases in which the floor of the ulcer is formed by pancreas or liver, or in which there is any suspicion that it is malignant, must be treated by partial gastrectomy. Cure of the patient—that is, complete and permanent abolition of symptoms—will be brought about in at least 90 per cent. of the cases, among the eight or nine not cured seven will be minor complaints, and not more than 2 per cent. secondary ulceration. When such a result can be brought about at a risk of less than 1 per cent. it is obvious that this operation has a permanent place in surgery. I have found no difference in the cure rate of those with organic pyloric obstruction, chronic duodenal ulcer without obstruction, or free lesser curve ulcers. I have obtained equally good results when I have been compelled to use my anterior operation. The first case was in December, 1904, and in this instance I was able to prove that the ulcer was healed at post-mortem 18 months later after accidental death. I have traced a woman operated on in January, 1908, now 74 years of age, without abdominal trouble. A male patient of 39 with a very indurated lesser curve ulcer operated on in July, 1918, remains quite well. I first carried it out in the treatment of chronic duodenal ulcer in a male of 48 on Nov. 11th, 1908. He had an indurated ulcer involving both surfaces of the duodenum; he is now, and has remained throughout the 17 years, quite well.

COMPLICATIONS.

We now come to the principal complications. They may be divided into: (1) Failure to produce healing of the original ulcer or its recurrence; (2) secondary ulceration; (3) intestinal obstruction including regurgitant vomiting; (4) late development of carcinoma.

Failure to Secure Healing or Recurrence.

(1) As I have many times stated I have never found a duodenal or gastric ulcer unhealed at a second operation or post-mortem when an efficient gastro-jejunostomy had been carried out in a suitable case, and my experience now extends to over 100. To prevent anyone thinking this is evading the issue I will state if the ulcer was free and the anastomosis carried out on the lines I have laid down. Where there has been chronic perforation with erosion of the pancreas or liver, a small part of the ulcer sometimes remained unhealed. They are cases in which I recognise that gastro-jejunostomy is not the ideal procedure, but even in many of these it has promoted healing. I was astonished recently on going over my old operation notes to find in how many, in which I had recorded that partial gastrectomy was the ideal operation but could not justifiably be done, the patient had remained absolutely free from all symptoms when traced for as long as 10 to 20 years.

The first case of this nature I operated on in which this note appears was a little over 20 years ago—a man of 33 with a seven years' history, which included two attacks of hæmatemesis. At the operation on Oct. 4th, 1905, I found a large saddle-shaped ulcer of the lesser curvature adherent to the pancreas and carried out posterior gastro-jejunostomy to its cardiac side. I traced him in the way in which I keep in touch with all the patients; I saw him three and six months after operation and heard in 1907, 1908, 1910, 1911, 1913, 1914, 1916, 1919, 1922, and saw him two months ago. He has never had any digestive complaint.

I cannot conceive of a better testimony to the value of the operation.

I have on several occasions found a chronic gastric ulcer unhealed at a second operation in cases in which the gastro-jejunostomy was done to its pyloric side; even if excision is added to this procedure and the gastro-jejunostomy done to the pyloric side of the excision wound, fresh ulceration is usual in the scar. Recurrence of the ulcer or failure in healing may occur in cases in which the gastro-jejunostomy opening has closed or become much contracted as the result of secondary ulceration. In the oft-quoted case recorded by Corner[17] of the fatal perforation of a chronic duodenal ulcer in a patient upon whom Sir Berkeley Moynihan had performed a posterior gastro-jejunostomy three years previously there was contraction of the opening. Corner stated: "There was no jejunal ulcer present; indeed, the gastro-enterostomy opening was very contracted." It is my experience that gastro-jejunostomy openings do not contract to any extent except as the result of marginal ulceration, and as, from the history, the patient had not been really free from symptoms this was undoubtedly the case. I would remark that the original operation was done in the early days in which marginal ulceration due to unsuitable sutures was by no means unusual. I can give a recent example which illustrates the two points, failure of healing or recurrence of the ulcer and closure of the gastro-jejunostomy opening.

A man at the age of 42 was operated on in 1915 by a surgeon, since retired, for a chronic duodenal ulcer with a history of 20 years' standing. Silk was used for the anastomosis. He remained quite well for 12 months and then began to get pain, which differed from that before operation by being in the lower abdomen. The attacks of pain were at first infrequent, but the intervals became shorter and the attacks longer, and when I saw him in February, 1925, he had had severe abdominal pain, which would wake him at night and for two or three years this had been in the upper abdomen. He was a thin man with an obviously dilated stomach. X ray examination showed that it still contained much of the barium meal at the end of seven hours and that little, if any, had passed by the stoma. At operation I found a large anterior duodenal ulcer. The gastro-jejunostomy opening was so small that it certainly measured no more than ¼ inch in diameter. My note says: "I have never seen an opening so contracted, it would have been possible to say that it had completely closed." I carried out posterior gastro-jejunostomy and he lost his symptoms at once.

In speaking of the development of fresh ulceration I have operated for chronic gastric ulcer ten years after gastro-jejunostomy for chronic duodenal ulcer and am able to show the specimen which is now in our museum.

In February, 1913, I operated *on a woman of 43, who for* 16 years had been having periods of pain after food with one attack of profuse hæmatemesis and melæna a year after the onset of symptoms. Her test-meal was 0·25 and 100. I found a large ulcer on the anterior surface of the first part of duodenum and did a gastro-jejunostomy nearer to the pylorus than I do now, and removed her appendix. Unfortunately no post-operative test-meal was given; at that time I did not have it carried out as a routine. She remained well for two years and then got an attack for which she kept her bed two weeks, a similar one in 1919, and again in 1923. Her barium meal report was: Penetrating ulcer lesser curvature towards cardiac end. Stoma normal. Duodenum functioning normally. Test-meal 0·10 and 35. At operation on June 8th, 1923, I found the duodenal ulcer healed and the gastro-jejunostomy opening perfect. Well to its cardiac side was an ulcer the size of a shilling, which had perforated and was adherent to the pancreas. I did a partial gastrectomy and she remains quite well. On examining the specimen the stoma was as large as the day I made it ten years previously.

In this case the ulcer was either overlooked by me at the first operation or formed later on the cardiac side of the anastomosis. It illustrates once again the uselessness of a stoma to the pyloric side of an ulcer.

Secondary Ulceration.

(2) Secondary ulcers are those which develop in the region of the anastomosis either true jejunal or gastro-jejunal. I still believe, in spite of Walton's[18] experience, that these are separate conditions, although we cannot differentiate them by their symptoms or their causation. Both are due to the action of gastric juice on tissue whose vitality is lowered. This may be from hæmorrhage, infection, or by the failure of union of mucous membrane exposing the underlying tissue. They occur in those cases and those only in which operation fails efficiently to reduce gastric acidity. I should like to repeat again that I have never known the development of secondary ulceration in any patient in whom operation has abolished or very greatly reduced the amount of free HCl in the gastric contents as noted in an Ewald meal. I should again like to emphasise its rarity in women and after operation for gastric ulcer; this I attribute to the infrequency of duodenal ulcer in this sex and after chronic gastric ulcer to the greater proportion of cases in which free acid is abolished and the total acidity is much lowered. In the unusual instances of chronic gastric ulcer with high acidity in which gastro-jejunostomy fails to reduce it there is a liability similar to that in chronic duodenal ulcer. The following is an example and illustrates several important points.

On July 10th, 1917, I operated on a male, aged 40, with the following history. He had five *attacks of indigestion,* pain late after food, not relieved by it but by occasional *vomiting.* In his last attack the pain waked him at night. In an attack a year previously he had been in hospital with hæmatemesis; test-meal 0·2 and 78. My own notes are as follows: Gall-bladder normal. Two very indurated ulcers on the lesser curvature, close to the pylorus. There were no *outlying nodules and nothing* definitely to suggest malignant disease, but had his condition been better I should have done partial gastrectomy. The jejunum was adherent to the under surface of the transverse mesocolon. I made my anastomosis nearer the pylorus than usual and found a considerable loop of adherent gut had been left between it and the duodeno-jejunal flexure. Appendix not removed. His post-operative test-meal—0·12 and 50—was unsatisfactory. I saw him on Sept. 3rd, 1917, and Nov. 4th, 1917, and heard on August 8th, 1918, and Dec. 30th, 1922, that he was in perfect health He then began to get attacks of pain two hours after food, relieved by vomiting recurring every four to six months. He was admitted to St. Mary's Hospital, and I am indebted to Prof. Pannett for these notes: X ray examination showed delay in the pyloric antrum, but the stoma functioning. Unfortunately no test-meal was given. At operation a gastro-jejunal ulcer was found at the left lower margin of the stoma. The gastric ulcers had completely healed.

This is one of the last cases in which thread was used for the outer layer, and I had to resort to it owing to a shortage of Luken gut. The ulcer was in the usual situation for a gastro-jejunal—that is, at one of the extremities—and I attribute it to working out of the knot of the suture leaving an ulcer which could not heal on account of the high gastric acidity. It is extremely uncommon for symptoms to recur after a lapse of over two years, even after the use of silk or thread for the outer layer of sutures and this is only the second case I have seen. It is an apparent exception to the "rule" that patients free from symptoms for two years do not develop secondary ulceration, but it is obvious that this could not apply to ulcer directly due to unabsorbable suture material in the outer layer as it may take years to work its way out, and if this occurs in a patient with normal or increased gastric acidity the formation of a chronic ulcer is probable.

There are thus, I believe, two factors. One is the failure to reduce gastric acidity. If this remains high then an area of lowered resistance, the result of undiscovered infection in the mouth or abdomen, or of hæmorrhage from puncture of a vessel during suture or bruising from the use of a clamp, may bring about ulceration in the jejunum. If, either from faulty suturing or unabsorbable material being used, the mucous membrane of the anastomosis does not heal by first intention, or, if healed, a suture or its knot works its way out, then gastro-jejunal ulcer may occur. The last true jejunal ulcer upon which I operated was last December. The history is so characteristic of the condition that I must quote it.

In November, 1920, I operated on a male of 43 for duodenal ulcer with a typical history extending over ten years. His barium meal showed the ulcer and his test-meal was 0·23 and 90. At operation: Gall-bladder normal, large ulcer anterior surface first part. Posterior gastro-jejunostomy carried out without difficulty and a fibrotic appendix was removed. His post-operative meal was 0·2 and 81. He remained well for five months only and then began to get pain late after food in the epigastrium and left iliac fossa. I took him in for treatment a year after operation with relief for a time; his test-meal was then 0·18 and 62. The attacks became worse, so that I operated last December; his test-meal was 0·19 and 62. The duodenal ulcer had healed; there was a chronic ulcer in the jejunum immediately distal to the anastomosis adherent to the colon. I excised it, closed the opening in the stomach and jejunum, and carried out pyloroplasty, with the result that his post-operative meal 14 days later was 0 and 33 and the stomach was empty in 25 minutes. He remains well.

The case I quoted last year[illegible] as an example of jejunal ulcer after gastro-jejunostomy was treated by partial gastrectomy on June 21st, 1921. He remained well for nearly two years and then began to get pain two hours after food. I admitted him again on Dec. 20th, 1923, and found that his gastric acidity was 0·09 and 40. He lost his symptoms while in bed, but ten months later developed diarrhœa and fæcal vomiting, and at operation on Nov. 21st, 1924, I found a jejuno-colic fistula. In this instance I had been unable to restore the lumen of the jejunum so as to carry out the usual partial gastrectomy, as I endeavour to do in cases of this type, and had to do a T-shaped anastomosis of jejunum to jejunum below the gastro-jejunal one, and this accounts for the recurrence.

The condition of secondary ulceration in my own practice is getting rarer with each series of cases. With regard to malignancy supervening on a gastro-jejunal ulcer, I have yet no definite case, but I still consider it a remote possibility.

To sum up, secondary ulcer is the result of failure of the gastro-jejunostomy to lower gastric acidity. But this post-operative excess of acid is not in itself enough, as we see that the ulcer for which the operation was performed heals. There must be some lowering of resistance, either a gap in the mucous membrane from faulty suturing, removal of too much mucous membrane, working out of unabsorbable suture, hæmorrhage, or infection. Their incidence can be lessened even if the condition cannot be completely abolished by careful dealing with all infection and scrupulous attention to all the details of the operation.

There is to my mind no doubt of the necessity for avoiding pyloric exclusion. A case published by Frankau[illegible] shows its effect experimentally. I am much indebted to him for further notes on the case which enabled me to trace the patient to his original surgeon and obtained fuller details.

In 1911 a man of 20 was operated on for duodenal ulcer. His test-meal was 0·2 and 70, but no post-operative meal was given. Symptoms recurred in nine months, and he was admitted to St. George's Hospital after several severe attacks of hæmatemesis and melæna. His test-meal then was 0·26 and 82. At operation an unusual condition was found, in that there was still a chronic duodenal ulcer present, but there were no signs of ulcer at the anastomosis or in the jejunum. The pylorus was clamped and divided. He remained well for 14 months, and then had abdominal pain, diarrhœa, and vomiting. He was reoperated upon and a jejuno-colic fistula was discovered.

The unfavourable result with pyloric exclusion is borne out by the experience of others. Haberer's[illegible] figures are instructive; among 203 cases of gastro-jejunostomy there were three cases of jejunal ulcer, but in 71 cases in which pyloric exclusion was added in the treatment of duodenal ulcer no less than 14 developed jejunal ulcers. Kummell[illegible] had previously pointed out its frequency under these circumstances. Finsterer,[illegible] who is now an ardent advocate of wide partial gastrectomy in the treatment of duodenal ulcer, writes that Haberer had 25 per cent. secondary ulcers with pyloric exclusion and posterior gastro-jejunostomy. Norman Dott[illegible] demonstrated experimentally that chronic peptic jejunal ulcer is the constant sequel of gastro-jejunostomy with pyloric exclusion in dogs. Von der Hütter[illegible] found in his experiments on dogs that jejunal ulcer did not develop in those cases in which the pylorus was patent, but that it was produced when pyloric exclusion by von Eiselsberg's method was carried out. Gussio,[illegible] from a study of cases of jejunal ulcer, came to the conclusion that its development is favoured by impermeability of the pylorus. Enderlen, Freudenberg, and von Redwitz,[illegible] as the result of experimental investigations on dogs, came to the conclusion that pyloric exclusion should be abandoned.

As we know that jejunal ulcers only arise in those cases in which there is failure to reduce post-operative acidity it seems to me obvious that interference with the pylorus is one of the causes of this. In 1921[illegible] I stated that most of my cases of jejunal ulcer occurred in those patients operated on between 1911 and 1913, when I carried out pyloric exclusion, and my observations since then on cases in which from any cause there was interference with the free function of the pylorus confirms this as there was a failure of post-operative reduction.

Ryle[illegible] states, "There is a greater liability to gastro-jejunal ulcers in young adults and in cases with a short dyspeptic history." As this was not my experience I have put it to the test so far as possible. I took all the cases of secondary ulcer, whether jejunal or anastomotic, that I have operated on, 44 in number; the youngest was 25 at the time of the original operation, the oldest 55, and the average age was 41·7. I then took the same number of consecutive cases of chronic duodenal ulcer, operated on over two years ago; the youngest was 17, the oldest 62, average age 40·4. I then took duration of symptoms before operation in the cases that developed secondary ulcer; the average was ten years, in the consecutive cases the average was 9·5. The number of cases is small, but there is an astonishing correspondence in the two series sufficient, I think, to controvert Ryle's statement. Such varying estimates have been given of the frequency of secondary ulceration that it is difficult to discuss. In a recent paper Lewisohn [50] states that in a series of 68 cases re-examined 4–9 years after gastro-jejunostomy, 34 per cent. suffered from gastro-jejunal ulceration. As in a following paragraph he states, "Gastro-enterostomy does not reduce the hyperacidity even after many years," we seem to have the reason for this high percentage. My experience coincides with that of the Mayo Clinic that it is met with in less than 2 per cent. of the cases. Although in large series done in the one clinic the percentage is between 1 and 2 per cent., I still believe that even this can be lowered and should not like to think, as suggested by Walton,[51] "that the failure of the acid to fall in these gastro-jejunal ulcer cases may be due to an anatomical variation, the acid-producing cells in a certain number of duodenal ulcer cases (about 2 per cent.) being more widely distributed over the gastric surface and thus being less affected by the gastro-enterostomy." To me this is tantamount to saying we can do no more.

It must be remembered that excision of the ulcer with pyloroplasty or even doudenectomy does not protect the patient from secondary ulceration, and I suspect that its frequency is greater after both these, as pyloroplasty does not usually bring about so great a reduction of gastric acidity, and duodenectomy, like resection of gastric ulcer, will probably be given up on account of recurrence. Mann and Kawamura [52] found that after complete duodenectomy in dogs jejunal ulcer developed in two cases out of ten leading to perforation at 515 days after operation in one, and in the other it was found post mortem 383 days after.

None of the arguments from the secondary ulcer standpoint that have been brought against gastro-jejunostomy seem to me to be valid. It is the most serious drawback, but it is one that we are getting to understand as we realise that what is necessary is not merely a mechanical opening, but control of acidity. In many of the cases of failure to cure the patient other lesions in the abdomen have been overlooked, and I have had to remove the gall-bladder and appendix in these patients on many occasions after the failure of gastro-jejunostomy to cure all their abdominal ills. This should, of course, always be done if practicable at the time of the original operation and as part of the treatment in removing all possible sources of infection.

Intestinal Obstruction and Regurgitant Vomiting.

(3) The bugbear of the early operations, that of regurgitant vomiting, has almost disappeared. It is always due to obstruction. The gross variety which began immediately and continued till death or second operation has disappeared in modern practice. If it occurs now it is from the seventh to the tenth day, the obstruction being the result of the contraction of adhesions, due in most instances, I think, to organisation of blood-clot, causing change in and around the opening in the transverse mesocolon and is always mechanical. It needs one's ingenuity to circumvent the fat or contracted mesocolon and care to control all points of oozing, but I mentioned this in the earlier part of my lecture. But even this is now uncommon, and if it occurs usually yields readily to lavage. The minor cases of occasional bilious vomiting are the result of slight obstruction from rotation of the jejunum.

There are rare and late causes of intestinal obstruction that have been published from time to time, the commonest being that in which the jejunum passes from right to left behind the gastro-jejunostomy, the first published by Barker [53] in 1904 occurred two years after the operation. It is well seen in the drawings of the last case published [54] (Fig. 12) and in another by Bryan.[55] They all seem similar in that practically the whole of the small intestine passes through. It is a complication unlikely to occur after the posterior vertical operation; in both the anastomosis was horizontal. Herniæ through the opening in the transverse mesocolon occurred until this was obliterated by suture. This was recognised as early as 1902 by Moynihan. Retrograde intussusception has been recorded. The late Hamilton Drummond [56] published a case of retrograde intussusception following gastro-jejunostomy and was able to collect and review 13 others. These, however, are all extremely rare conditions and do not detract from the value of the operation.

Late Development of Carcinoma.

(4) We now turn to the possibility of the development of carcinoma in the scar of an ulcer at a time remote from the gastro-jejunostomy. Were this a frequent occurrence it would, of course, be a strong argument for carrying out partial gastrectomy in every case of chronic gastric ulcer. I would say at once that I have never met with this complication following gastro-jejunostomy for a duodenal ulcer, but in one further patient to the one quoted in my Hunterian lecture carcinoma of the stomach developed.

This was a man of 35 upon whom I operated in July, 1916, after a two years' typical history of duodenal ulcer. At operation he had a large ulcer of the anterior surface of the first part of the duodenum. The stomach was normal. He remained well for over three years and served in France. At the end of 1920 he began to lose his appetite and suffered from pain and vomiting. He died in February, 1921, and post-mortem revealed scirrhous carcinoma of the pyloric canal with the thickest and densest part of the carcinoma on the lesser curvature about 2 cm. from pylorus. The duodenal ulcer had healed.

When I reviewed the question in my Hunterian lecture in 1920 I had had three cases in which I had carried out gastro-jejunostomy for chronic gastric ulcer, which died at seven, five, and four years after operation with abdominal malignant disease. All were of the type I now treat by partial gastrectomy. In none was there a post-mortem examination. Since that date no case has occurred, so that I must conclude it is a very rare sequence and one that should not influence us in the treatment of the small free ulcer on the lesser curvature which heals so readily after gastro-jejunostomy.

We must be careful in accepting the presence of a malignant mass in the abdomen after a gastro-jejunostomy as evidence of carcinoma of the stomach or duodenum, or the presence of secondary deposits elsewhere.

I have recently reoperated upon a female patient whose duodenal ulcer I treated by gastro-jejunostomy nearly three years previously. I found carcinoma of the body of the pancreas with secondaries in the liver and spleen. The duodenal ulcer had healed and the anastomosis was perfect. Another unusual case was a male patient of 37, who died of carcinoma of lung one year after gastro-jejunostomy for chronic duodenal ulcer. We were able to obtain a post-mortem and found a thin scar in the duodenum and a perfect gastro-jejunostomy opening. A somewhat similar case was a male of 44, upon whom I carried out partial gastrectomy for a very indurated lesser curve ulcer and a chronic duodenal ulcer. Microscopic examination showed both to be simple. He was readmitted 18 months later with discomfort. He was found to be suffering from carcinoma of his left lung. All three might have been considered as starting in the stomach but for the result of operation in the first, the post-mortem in the second, and the microscopic examination in the third.

I have recently operated upon a case of chronic duodenal ulcer with secondary deposits in the liver from a primary focus in the lung. The case is worth quoting briefly:—

R. M., a male aged 52, was admitted under my care in June, 1925, with a history of almost continuous discomfort after food for nine weeks with vomiting and loss of weight. He was wasted and a definite mass could be felt in the right hypochondrium. His test-meal was 0·28 and 92 and the barium meal showed deformity of duodenal cap. On July 7th I operated, found that the mass I had felt was the liver with a deposit of growth to which the duodenum was adherent. There were several small nodules; I removed one for examination and then found on separating the duodenum that there was a chronic ulcer with a small perforation. I excised it and carried out posterior gastro-jejunostomy. He lost his symptoms and left hospital four weeks later. Microscopic examination of the duodenal ulcer revealed no evidence of malignancy. The deposit from the liver was carcinoma, and it was suggested that the primary was in the lung. I then had the chest X rayed. The report said: "Dense shadow in left hilum. Neoplasm almost certainly."

I have quoted these cases to show that no reliance can be placed on records of carcinoma developing on ulcer after gastro-jejunostomy unless demonstrated at second operation or *post-mortem*. Moynihan,[47] however, has recorded operating for carcinoma of the stomach 13 years after gastro-jejunostomy for a simple chronic ulcer, the malignant growth being found at its site. This must be a very uncommon occurrence. I can see no reason why carcinoma should develop in a thin scar such as results when a chronic ulcer heals as the result of gastro-jejunostomy, and should look on this solitary case rather as a coincidence. My experience is that carcinoma develops in such a small proportion—certainly less than half of 1 per cent.—of cases treated by gastro-jejunostomy alone that we should not let it influence us, and I am sure I am right in saying that were every case of chronic ulcer to be treated on suspicion as malignant the rise in the immediate death-rate would be far greater than the number of those who might after a lapse of years succumb to carcinoma.

I think it is too often forgotten by physician and patient, and possibly by the surgeon, that gastro-jejunostomy cannot give a new digestive apparatus, but that it can and does, if properly carried out, lead to the healing of the ulcer, prevents its recurrence, and in only a small percentage of cases is it followed by secondary ulceration. But these patients may suffer as other dyspeptics without organic lesions from discomfort after food, and considering this, 90 per cent. of cures without any digestive disturbances is remarkable.

In conclusion, I should like to say as my mature opinion that gastro-jejunostomy is still the most satisfactory treatment for duodenal ulcer and all cases of free gastric ulcer, that its results equal, if they do not excel, those of any other major surgical operation.

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EXPERIMENTAL AND CLINICAL INVESTIGATION OF MERCUROCHROME.

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THE following account of an investigation of mercurochrome may be of some interest. The preparation is an antiseptic acting powerfully in weak dilution even in the presence of albumins; it penetrates deeply and, although it contains 24 per cent. of mercury, it is feebly toxic. By several local surgeons, particularly Mr. F. Walters, this substance was found to give excellent results in some cases, but in others, apparently identical, its action was disappointing. It was this variability which suggested the investigation. Mercurochrome is stated to be disodium-dibrom-oxy-mercury-fluorescein. It is freely soluble in water, but in distilled water, which has a faint acidity, it is rapidly broken down, especially when exposed to light. In normal saline which is feebly alkaline it is much more stable and appears to keep indefinitely in the dark. A solution in this solvent six months old was recently tested and no alteration was noted. Four samples have been examined, one from the stock of the Bristol Royal Infirmary, and three others obtained by Mr. A. Taylor, the dispenser. For brevity it may be said that no differences in toxicity or antiseptic activity could be determined.

Action of Mercurochrome on Organisms under Varying Conditions.

Its antiseptic power was determined in the following way. Carefully measured amounts, by pipette, of a 1 per cent. solution in normal saline were added to 50 c.cm. of a standard broth; after mixing 5 c.cm. were measured into sterile tubes, giving ten tubes of a constant dilution. To these tubes were added varying amounts of acid, alkali, emulsion of micro-organism, and normal saline. These additions were made with standard Dreyer pipettes. The series was incubated overnight and notes made of increased turbidity, indicating growth in the conditions present, the next day; then subculture of a fixed amount was made to determine survival.

The action of four different samples in solutions aged up to four weeks, dilutions from 1 in 1000 to 1 in 500,000, was tested against nine strains of *B. coli*, one of *S. aureus*, one *B. pyocyaneus*, and three streptococci. The following acids were tested: phosphoric, sulphuric, hydrochloric, nitric, formic, acetic, and lactic; as, however, no appreciable differences were found between them they require no further discussion. On the alkaline side sodium hydroxide was used.(1)

As the full tabulation of these tests would require considerable space, verbal condensation must be substituted.

Effect on S. aureus.—Dilution 1 in 50,000: growth occurred in acidities from neutrality to pH 6·8–6·5. Survival occurred in this dilution to acidity pH 6·0. Dilution 1 in 100,000: growth to pH 6·0; survival to pH 5·0. Dilution 1 in 200,000: growth to pH 5·6; survival to pH 4·7.

It is seen from the above that the actual acidity of the solution is of more importance than the concentration of the antiseptic. At acidities near to the neutral point the antiseptic is so little powerful that the organism can grow in its presence; a relatively

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slight acidity first inhibits growth and another slight increase causes death.

Effect on B. coli.—Great variability was found. The most resistant strain tested behaved as follows. In a dilution of 1 in 10,000 growth occurred at pH between 7·9 to 5·6. Survival occurred between pH 8·7 to 4·8. The variability of the nine strains is shown by the different acidities at which survival occurred; the dilution was 1 in 30,000. Three strains survived in acidities down to pH 6·8; two strains to pH 6·6; two strains to pH 6·0; one strain to pH 4·6; one strain did not survive at neutrality. One of the strains tested was obtained from a patient who had been treated with mercurochrome for some time; this strain was one of the least resistant found; habituation had not reduced toxicity.

Effect on B. pyocyaneus.—At dilution of 1 in 10,000 no survival was found. At 1 in 20,000 survival was found to pH 6·8. At 1 in 30,000 survival to pH 6·5. At 1 in 50,000 survival to pH 6·0.

Effect on S. equinus.—Dilution 1 in 30,000, survival to pH 6·7; dilution 1 in 50,000, survival to pH 6·0; dilution 1 in 100,000, survival to pH 5·2.

Effect on S. ignavus.—Dilution 1 in 30,000, survival to pH 6·8; dilution 1 in 50,000, survival to pH 6·5; dilution 1 in 100,000, survival to pH 6·0.

Another factor which probably leads to variability in the results obtained with this antiseptic was found when experiments were made to determine whether an increase of the infection would lead to alterations in the results. The amount of infection used in all the above experiments was three drops of an emulsion of a standard opacity. Series of tubes containing equal amounts of a constant dilution of mercurochrome at the same acidity were prepared. To these increasing amounts of the emulsion of living organisms were added and the dilution was kept constant by the addition of saline. The result was of interest; in a dilution of 1 in 2000 there was no survival until nine drops of emulsion had been added; if more than nine drops were added survival constantly occurred. In a dilution of 1 in 2500 at the same acidity and using the same emulsion, it was found that only six drops were needed to ensure survival.

The explanation of this diminution of the antiseptic power of mercurochrome in the presence of a more massive infection is not quite clear. It is known that in a given strain of an organism there are units of different vitality, some weakly, others vigorous; by increasing the number of units the chance of there being one of these vigorous ones would be more likely. If this were the explanation the results would not be so constant, every now and then a vigorous unit would be found in the lesser dilutions. The explanation appears to be the protective action of the increased density, caused by increased amount of bacterial protein added. It was found that with a constant dilution of the antiseptic and a constant acidity the antiseptic action of this substance diminished with increased density of the solvent, especially when the increase of density was due to protein.[1] Thus the solution in distilled water was more toxic than that in normal saline, and that in normal saline greater than that in the standard broth. In normal saline mercurochrome, 1 in 10,000 at pH 6·4, a strain of *B. coli* survived for one hour only; in the standard broth the same strain survived overnight.

Comparison of Mercurochrome and Corrosive Sublimate.

The antiseptic properties of $HgCl_2$ were tested in the same way, and it was found that increasing acidity augmented its power. Weight for weight it was found that $HgCl_2$ was more powerful; thus, in a dilution of 1 in 100,000 in nutrient broth, killing power was increased as the acidity increased, but in this dilution and medium mercurochrome was devoid of killing power on *B. coli*. If a comparison be made relative to the mercury-content, however, it is seen that mercurochrome is the more powerful; in mercury-content 1 in 100,000 $HgCl_2$ corresponds to 1 in 32,000 mercurochrome, which dilution has been shown to be strongly antiseptic at relatively low acidities. Mercurochrome has the advantage that it is not precipitated by albumins, and it will be shown that it is considerably less toxic.

Penetrating Power of Mercurochrome.

The rapidity of penetration of mercurochrome has already been proved.[2] The following experiment emphasises the depth of penetration.

A rabbit of about 2 kilos was anæsthetised with ether and after emptying the bladder a 0·5 solution of mercurochrome was injected under the feeblest pressure possible. The catheter was then clipped and the bladder kept full for one hour, after which the animal was allowed to recover from the anæsthetic. Next day it was killed with chloroform. It was found that the bladder was deeply stained throughout, that the peritoneum round the bladder was deeply stained, and a less deep staining tracked upwards along the attachment of the mesentery. The pelves of the kidneys were distinctly stained, although the pressure of the injection had been far too low to force the ureteric valve.

This explains the finding that intra-ureteric injection is not necessary in pyelitis.

Toxicity for Animals.

The toxicity for animals was found to be less than had been reported; 10 mg. per kilo has been given as a lethal dose.[3] Either the difference is due to the solvent used—i.e., normal saline, with better keeping power—or the rabbits in this country are more tolerant. Altogether 24 rabbits were used, and about 130 injections intravenously or intraperitoneally were made. Old and new solutions of the four samples were used, and no differences could be determined between fresh solutions and those up to three weeks old.

In 1 to 2 per cent. solution there appeared to be no signs of toxicity below a dosage of 5 mg. per kilo. When this amount was exceeded diarrhœa appeared and increased with the dose. At 25 mg. per kilo deaths began; at 35 mg. per kilo rather more than 50 per cent. of the animals died, and the survivors were very ill; 50 mg. per kilo was fatal in about one minute. Excretion appears to be mainly through the colon and the kidneys, and is slow; a rabbit which received 7 mg. per kilo daily for four days was very ill, but recovered. Two female rabbits received 175 and 180 mg. each, spread over ten weeks; they both recovered and between them produced four normal litters, one during the course of the injections.

When death occurs rapidly after a large dose it appears to be due to heart failure; the heart is found to be dilated and is in diastole. In the animals dying after several doses the main changes found were a catarrhal colitis and a varying degree of nephritis. The latter did not appear to be proportional to the amount of mercurochrome injected. The nephritis was mainly tubular and desquamative; but in deaths after large doses, hæmorrhages into the glomeruli and interstitial tissue were found. Pronounced fatty degeneration and calcification, the special features of mercurial nephritis, were not noted.

Mercurochrome as a General Antiseptic.

An attempt was made to determine whether mercurochrome had any value as a general antiseptic. From the in vitro experiments recorded above it appeared unlikely that such would be found. At the acidity of the blood its antiseptic activity was found to be so slight that at the concentrations possible in the living animals such an action appeared to be improbable. Rabbits were inoculated intravenously with virulent strains of *B. aertrycke* and *B. coli*; half were kept as controls, the other half received sublethal doses of mercurochrome intravenously at varying intervals after the inoculation. The result was always the same, the animals which received the mercurochrome died before the controls.

Mercurochrome has frequently been injected intravenously in man, mostly for pyelitis, in which the results are fair. In pyelitis it cannot be termed a general antiseptic; here it is concentrated in the urine during excretion and, if the concentration and the acidity are adequate, a well-marked local antiseptic action will occur.

Therapeutic Uses of Mercurochrome.

Mercurochrome has been used in many ways and in various conditions; there is a fairly large literature, mainly in the American medical press. It is hoped that the findings noted above will give improved results. Whatever condition requires its application it is advised that purulent discharges be removed by lavage and that the solution be rendered feebly acid, preferably by means of acetic acid; the latter should be added drop by drop until the first degree of turbidity appears; this reduces the pH to about 6·2.

Its chief use appears to be in infections of the urinary tract; here it is considerably superior to the usual methods of treatment. Subjective symptoms disappear rapidly, but laboratory cure is more slow. The relief which frequently follows a single injection is striking. The method which I have adopted is the following:—

The bladder is emptied, preferably by catheter, and if there is much pus a preliminary wash with normal saline is given. Then 1 to 3 oz. of mercurochrome is introduced and retained for about one hour, after this time it is voided. An injection is given once or twice weekly, depending on the severity of the case. Occasionally some suprapubic pain is noted; in such a case the mercurochrome can be removed at once, and subsequent injections *should* be given more diluted. After two weeks to a month the injections may be replaced by sufficient alkali by the mouth to render the urine alkaline. During the time the mercurochrome is being used the urine is kept as strongly acid as possible by means of sodium acid phosphate.

Even in pyelitis the same method is employed; intra-ureteric injection is not necessary. I have been using this method for out-patients, as well as for cases requiring bed.

In four cases of ulcerative colitis lavage with 6 to 8 oz. of a 0·8 per cent. solution gave good results in three; the fourth case appeared to have perforated before his admission to hospital. In one of these cases there was much irritability, and a solution in mucilage of tragacanth was more easily retained. As a superficial application it has been instilled or used as a wet dressing and covered with jaconet; it is very soothing and its penetrating property produces good results. Its injection around septic processes has given some brilliant results; an account is being prepared.[4] I have only used it in this manner around deep whitlows after incision; pain was eased and healing appeared to take place more rapidly than in cases not so treated. It may be found of use in pleural empyema and suppurative peritonitis; in one case of pneumococcal peritonitis I advised its injection, but the patient died. When injected the total amount must not exceed 5 mg. per kilo.

Summary.

1. Mercurochrome is a powerful antiseptic of low toxicity, rapid and deep penetrability, and causes little irritation. It does not precipitate albumins. If protected from light it is stable for long periods in normal saline solution.

2. Its antiseptic properties are augmented by acidity; they are diminished by increased density of solvent and are likely to be less apparent in heavy infections. Various strains of an organism show differences in susceptibility.

3. At acidities near to normality its antiseptic properties are relatively feeble and it is unlikely to be of value in general infections.

I am indebted to Prof. I. Walker Hall for much advice and laboratory facilities. The expenses of this research have been met by a grant from the Colston Research Fund.

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NOVASUROL: A NEW DIURETIC.

BY A. R. GILCHRIST, M.B., CH.B. EDIN.

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CERTAIN advanced forms of cardiac failure frequently prove refractory to all therapeutic measures, and this is notably the case when digitalis, dieting, and the common diuretics have no effect in removing the œdema. Therefore, any drug which could be relied upon to invoke a profuse diuresis, relieving the overburdened ventricle, would be *assured* of a permanent place in therapeutics.

Novasurol was originally introduced by the Bayer Company as an organic compound of mercury for the treatment of syphilis, its composition being sodium-oxymercuric-*ortho*-chlorphenol oxylacetate with dimethyl malonylurea. Later its diuretic properties were noted by Saxl and Heilig.[1] The drug is put up in sterile ampoules and is administered in doses of 1–2 c.cm. by intramuscular or intravenous injection, *each c.cm.* containing 0·1 g. of the drug. As a test of its capabilities we have employed the drug in several cases of advanced cardiac failure where the response to digitalis, the diuretics in common use, and the usual therapeutic measures was unsatisfactory—*in fact*, where the patient's clinical state was virtually at a standstill. As a means of comparing its effects the drug has also been administered to certain other cases. Records of ventricular rate, 24 hours' volume of urine, weight, and vital *capacity* (V.C.) have been kept throughout treatment —the fluid intake was kept approximately constant. The dose employed was generally 1 c.cm. injected into some œdema-free area, either the buttock or back. Subcutaneous injection must be avoided, *as* the drug acts as an intense local irritant.

Clinical Records.

A few clinical examples of its use and effects may be recorded:—

CASE 1.—Mrs. J. A., aged 43, was an in-patient from Feb. 15th to April 23rd, 1924. She was admitted in an advanced stage of failure, which responded well to digitalis and the usual measures. The diagnosis was mitral stenosis with auricular fibrillation. Quinidine restored the *normal* rhythm which *persisted* until she was readmitted on May 21st, 1925, with failure more advanced than before, and accompanied by a secondary anæmia. Digitalis slowed the heart without benefit to her general condition, the œdema increased, and the urine output fell to 900 c.cm. Diuretin and pot. acetate were employed without effect. *Novasurol* was then tried with excellent results. It was necessary to employ the drug on seven occasions, and on the days following its use her urine amounted to 1800, 3300, 3000, 1800, 3300, 2400, and 3900 c.cm. She lost 17½ lb. in weight. This was accompanied by marked clinical improvement, and *she* was discharged in good health on August 8th, 1925. This case is shown graphically (see figure).

CASE 2.—J. P., aged 25, suffered from mitral and aortic regurgitation with auricular fibrillation. There was much ascites present, ventricular rate 120, V.C. 55 per cent., and urinary output *measured* 1000 c.cm. Digitalis produced some improvement (V.C.=75 per cent.), but a certain amount of ascites persisted. He now received four injections of novasurol at intervals after massive doses of digitalis. His urine measured 2280, 3800, 4080, and 1200 c.cm. The V.C. now rose to 97 per cent. *Having* lost 17 lb. in weight, he was discharged on April 9th, 1925. He was readmitted with similar symptoms on the 28th, and novasurol was repeated without previous digitalisation. Urine output increased from 750 c.cm. to 2400 and 3300 following two doses, and the heart rate fell from 120 to 66 in 24 hours. The œdema *and* ascites disappeared. Digitalis was *now* employed and his condition improved steadily. On discharge his V.C. was 80·4 per cent., weight lost=14½ lb., and heart rate=80.

CASE 3.—A. S., aged 20, suffering from advanced failure due to mitral and aortic disease with auricular fibrillation. Digitalis and diuretin were employed with some benefit, but the œdema and ascites persisted. Novasurol was now employed. The first three doses had little effect, but the fourth, given when fully digitalised, raised his urine output from 960 to 4050 c.cm. on the following day. Steady improvement now set in, his V.C. rising from 32·5 per cent. to 65·5. He lost 54 lb. in weight and was discharged on April 26th, 1925. He was readmitted on July 31st with similar symptoms. The same lines of treatment were carried out, and novasurol provoked diuresis of 2300, 2880, 2320, 1800, 2280, and 2760 c.cm., whereas digitalis alone was relatively ineffective. He was discharged on Oct. 14th, having lost 41 lb. in weight, and with a V.C. of 61·4 per cent.

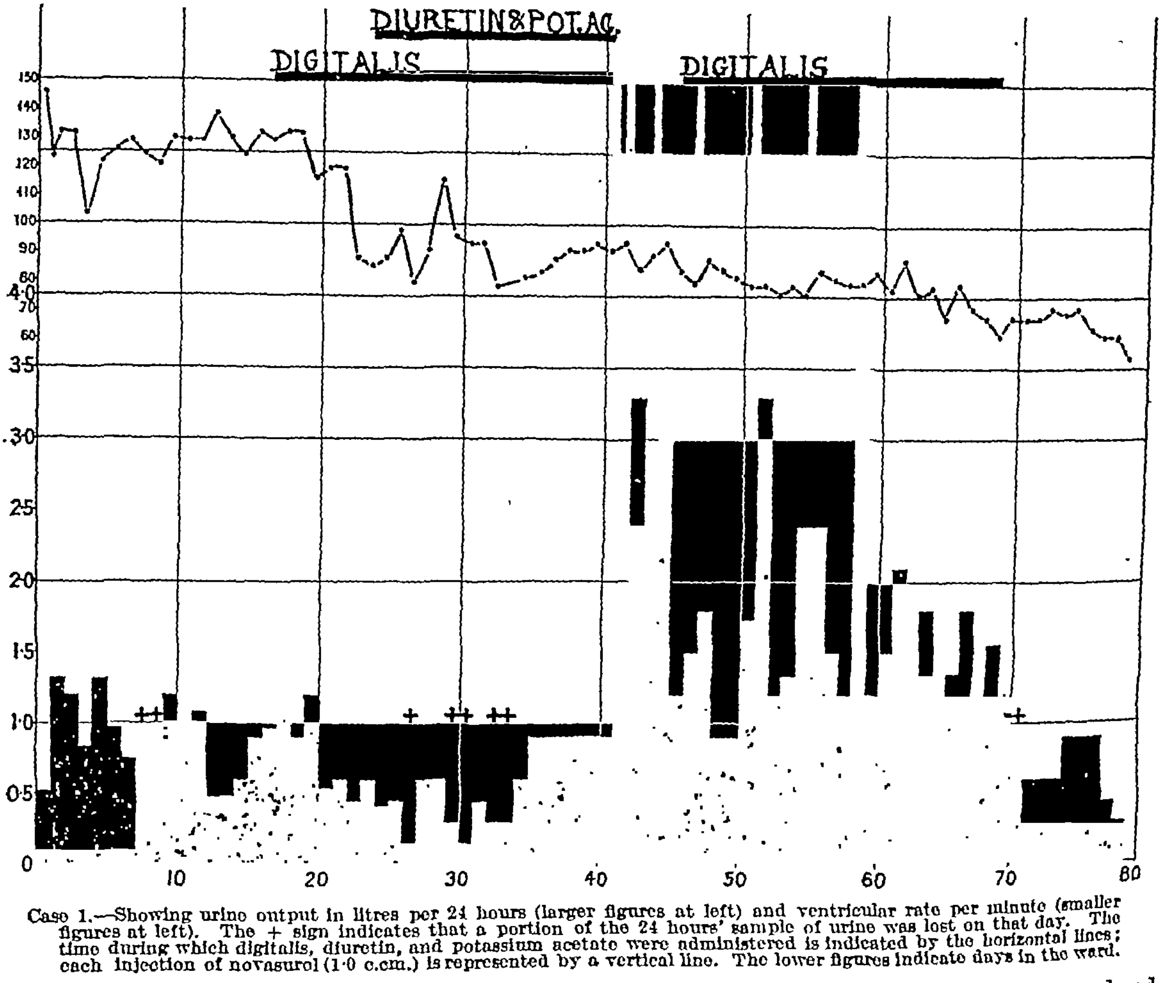
Case 4.—Mrs. E. N., aged 50, was a patient from Jan. 9th, 1925, until her death on April 24th. She suffered from advanced cardiac failure, secondary to chronic bronchitis and emphysema of 10 years' duration. There was great œdema extending from the feet to the back, and much ascites. Her urine averaged 600 c.cm. for the first ten days in bed. Heart was regular (V.C. = 28·4 per cent.). Digitalis, diuretin, urea, repeated doses of calomel, theocin, and caffeine were all tried without benefit. Novasurol had little or no effect.

Case 5.—Mrs. M. A., aged 52, gave a history of five attacks of rheumatic fever. The heart rate was 150, regular, and a diagnosis of mitral and tricuspid incompetence was made. There was ascites, and generalised œdema was present, which reached enormous proportions in the legs. Urine output average = 600–900 c.cm., and V.C. was 28 per cent. A massive dose of digitalis slowed the heart, but did not relieve her condition, and urine remained as before. Novasurol induced a diuresis of 2100 c.cm., but improvement was not maintained, and further repeated injections with and without simultaneous administration of digitalis were ineffective. Diuretin, theocin, repeated doses of calomel, Guy's pill, &c., were without avail, and she died on July 14th, 1925.

Commentary.

Of the five cases now reported two failed to respond satisfactorily to the drug. In one, Case 4, diuresis was not produced, and in the other, Case 5, although temporary improvement set in after its use, this was not maintained. Those that responded suffered from auricular fibrillation. In Case 4 the myocardial failure was secondary to long-standing pulmonary trouble, and it is unlikely that any drug could overcome the mechanical causes of the cardiac failure here present. Drugs can only alleviate cardiac failure in so far as the myocardium is able to avail itself of the help offered. In Case 5 the failure to respond to the preliminary diuresis induced by novasurol must be attributed to the fact that the heart muscle was so damaged that its activity bore no relationship to the bodily needs. In both these cases the ventricle was completely exhausted. Further experience will teach how to select those cases which will be able to benefit by the use of the drug, but it is noteworthy that in both unsuccessful cases the vital capacity was reduced to less than 30 per cent. (calculated on West's standards).[3] Peabody's researches[3] have shown the value of vital capacity in following the course of *cardiac disease and as a guide to treatment.* Both cases also suffered from intense venous engorgement, and in Case 5 the venous blood pressure (Young's method[4]) reached 28 *cm. of* blood, the normal value being about 10–14 cm. by this method. In Case 1 the results were dramatic; here digitalis and diuretin were of no value, and improvement set in as soon as diuresis lessened the ventricular burden. Cases 2 and 3 also demonstrate conclusively the drug's value, and, as would be expected, the diuresis produced is greater when the patient is fully digitalised. *It bears a* resemblance to Guy's pill in this respect. The urine output also depends upon the amount of tissue fluids present on which the drug may act.

Novasurol, therefore, appears to be a most suitable adjuvant to digitalis therapy, and is apparently more reliable and more potent than any *other* diuretic at



Case 1.—Showing urine output in litres per 24 hours (larger figures at left) and ventricular rate per minute (smaller figures at left). The + sign indicates that a portion of the 24 hours' sample of urine was lost on that day. The time during which digitalis, diuretin, and potassium acetate were administered is indicated by the horizontal lines; each injection of novasurol (1·0 c.cm.) is represented by a vertical line. The lower figures indicate days in the ward.

present in use. Pisani[5] has recorded five cases in which the drug was effective when other remedies, such as theocin, digitalis, and strophanthin, had failed. Oerting[6] had five successful cases out of a total of ten, and in Crawford and McIntosh's series[7] two of eight cases were unsuccessful. Most authorities agree that owing to the presence of mercury in the drug renal disease is a contra-indication to its use. Keith, Barrier, and Whelan[8] have, however, recently reported 12 cases of nephritis successfully treated with ammonium chloride and novasurol. This appears to open up an increased field of usefulness for the drug.

Conclusions.

1. Novasurol is a diuretic of great value in cardiac failure. It appears to be of greater potency and certainty than any of the other diuretics in common use.

2. When employed with digitalis each enhances the other's action.

3. It is suggested that cases which do not respond to the drug have a very low vital capacity, and it is unlikely that any diuretin would be helpful to such hearts.

My thanks are due to Prof. Murray Lyon for placing these cases at my disposal, and for his helpful criticism and advice in connexion with this work.

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Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

A MEETING of this Section was held on Nov. 4th, Sir LENTHAL CHEATLE, the President, in the chair.

Dr. J. H. SEQUEIRA opened a discussion on

PRE-CANCEROUS STATES.

He said that the skin aspects of these states deserved more attention than had hitherto been given to them. A pre-cancerous state was hard to define; there were all degrees of susceptibility. Some skin conditions very frequently became cancerous, others but occasionally. The time factor might be the determining one. At any rate, it could be said that there were certain conditions which were potential cancers. For convenience he divided these into congenital and acquired. All conditions of hyperkeratosis, pigmentation, and warty formation were peculiarly liable to malignant change. He illustrated his points by a series of photographs. Xeroderma pigmentosa was a congenital anomaly running in families, a kind of juvenile senility of the skin wherein young children showed all the changes associated with prolonged exposure and might even have definite carcinomata. Occasionally the same condition was seen in the adult. Unna had described a "seaman's skin-cancer" which was the result of any exposure, on sea or on land. The new growths, whether squamous-celled (epithelioma) or basal-celled (rodent ulcer), rarely developed wide malignancy unless they were in the region of the angle of the mouth. To be compared with these conditions was the well-known X ray cancer appearing on the very thin, atrophic, vulnerable, pigmented, and warty skin resulting from repeated short applications or, rarely, from one bad burn. Since the introduction of X ray treatment for lupus the percentage of carcinomata appearing on old lupus sites (formerly 2 per cent.) had greatly increased. Tar and creosote cancers were similar conditions which followed the burning off of the small warts that the workers developed in handling the irritants. The arsenical treatment of psoriasis exposed patients to small doses of the drug over many years and the skin took on an appearance very like congenital keratosis, with a characteristic "raindrop" appearance of the pigmentation. Other forms of chronic irritation that he had found resulting in cancer were the prolonged wearing of a cheap wedding ring and the constant use of a hot poker by a baker. He showed photographs of a case of multiple rodent ulcers on the forearm. The patches had been diagnosed as psoriasis, but histologically they showed a transitional condition of pre-cancerous dermatosis, some of the cells being squamous and some basal. He asked whether surgeons now attached any importance to "dyskeratosis."

The PRESIDENT divided his cases into two classes: the desquamative hyperplasia, which was desquamative only; and the dysgenetic epithelial hyperplasia, which led to tumour formation. Normal epithelial overgrowth, as in the covering of a wound, might be called "genetic epithelial hyperplasia." By "carcinoma" he understood a dysgenetic epithelial hyperplasia associated with invasion of surrounding connective tissue and metastasis. Clearly, such a condition must at first be limited to normal boundaries, and therefore there must be such a thing as a "pre-cancerous state." His definition did not admit the presence of carcinoma unless there were invasion and metastasis; to this there were, of course, a few exceptions, such as rodent ulcer, and there could no doubt be a condition of malignancy or potential malignancy without metastasis. The changes occurring in the breast were, in sequence, a dysgenetic epithelial hyperplasia (sometimes called "chronic mastitis") with a lymphocytosis beneath the skin, warts, papillomata, and then a tremendous hyperplasia of very malignant-looking cells. All these changes were within the limits of the normal, but transplantation of those cells under the skin of another part of the same animal resulted in their growth and malignant metastasis, but transplantation of tar-warts only resulted in atrophy of the transplant or the formation of non-malignant cysts. He thought that these warts were not in themselves malignant, but certainly a source of danger. The lining of the papillomata,. however, could certainly become malignant. It was impossible to say in any given case whether or not malignancy was likely to supervene.

Mr. W. SAMPSON HANDLEY said that the essential factor in the pre-cancerous condition was the connective tissue change. Epithelium could not nourish itself properly from the body-fluids; it depended on the connective tissues for nutrition; it might be described as an obligate parasite on connective tissue. It could not grow by itself, but would grow if connective tissue were added to it. Carcinoma began with long-standing inflammatory changes in connective tissue; 20 or 30 years might elapse between the lupus, or the tar irritation and the cancer resulting, which was preceded by a collection of lymphocytes and plasma cells beneath the epithelium. He showed photographs illustrating the permeation of lymphatics and proliferation of the epithelium; a lymphangitis was always present in cancer, lupus, and syphilis. If the ducts were blocked there would be auto-intoxication; possibly this might bear some relation to the "third factor" of Dr. W. E. Gye. In the diagnosis of early breast cancer a valuable sign was deviation of the nipple. If there was deviation in a supposed case of chronic mastitis it should arouse the gravest suspicion.

Mr. ZACHARY COPE regarded pre-cancerous states as essentially a medical condition. He reviewed the examples encountered in the alimentary tract. In the mouth there were three conditions: (1) Leucoplakia; this should be removed if it did not disappear under medical treatment. (2) Papilloma of the tongue, which should always be excised. (3) Dental ulcer; this was always a potential cancer, and should be treated as such if it did not subside rapidly under medical treatment. No pre-cancerous condition could be distinguished in the œsophagus. In the stomach the relationship of gastric carcinoma to gastric ulcer had received much attention with very varying results. Figures had ranged from 75 to 5 per cent., and now there seemed little evidence that a simple ulcer ever ended in carcinoma. Valuable statistics could be obtained if surgeons would investigate the after-histories of perforated ulcers on which they had operated. In the small intestine carcinomata were rare; the papillomata were to be regarded as pre-cancerous, as they were also in the urinary tract. In the large bowel multiple papillomata were certainly pre-cancerous, but there seemed no connexion between cancer and such forms of ulceration as typhoid, except that any form of toxæmia might predispose.

Dr. E. SHAW had no doubt of the existence of a pre-cancerous state. The two main conditions to be considered under the term were chronic inflammations and simple new growths. In chronic inflammation of the breast the changes were many and varied; the epithelium of the acini underwent various alterations of form and arrangement, and might proliferate and project into the cystic acini, but were always surrounded and attached to a thin fibrous basement membrane in simple conditions; if there were clumps of epithelial cells lying loosely in the cavities carcinoma had set in. In his opinion a breast affected with chronic inflammation was in a pre-cancerous state, as also were many skin and mucous papillomata showing invasion of the deeper tissues by superficial cells. In the cervix evidence of development of carcinoma on chronic inflammation was provided by the transition from squamous to columnar and the appearance of definitely malignant groups of squamous cells deep in the muscle. Leukoplakia provided another example. He pleaded for a more intensive study of the morbid anatomy of cancer.

Dr. R. M. LIVINGSTONE described attempts to find some difference between true pre-cancerous conditions and similar appearances that were not pre-cancerous. A chemical contrast between acute and chronic inflammation had been determined. The reaction of the tissues in chronic inflammations was invariably acid, while in acute inflammations it was alkaline. Pyogenic micro-organisms at work produced acid which was oxidised by the action of the tissues in acute conditions. It might be that this acid secretion rendered tissues more vulnerable to cancer. Dr. Gye's work bore out this hypothesis. The chemical conditions of the medium which Dr. Gye had found favourable to growth corresponded with the conditions which occur in chronically inflamed tissues. In the alimentary canal fermentation and putrefaction produced similar substances to the putrefiable sugars used by Dr. Gye for culture.

Mr. J. E. ADAMS described a case of chronic mastitis for which the breast had been removed five years previously; the patient recently returned with cancer in the other breast. Chronic mastitis had been regarded as a pre-cancerous condition, but he and Mr. Halliwell had followed up 135 cases of chronic mastitis where the breast had been removed, and in only four or five cases had cancer developed. It was very hard to find any clinical connexion between the pre-cancerous conditions and carcinoma. Obviously any condition that upset the cellular balance might be regarded as pre-cancerous.

Mr. LOCKHART-MUMMERY said that the commonest precursor of cancer in the large bowel was the simple adenoma, which constituted 80 to 90 per cent. of all the growths met with there. It was possible, however, that other growths might result in carcinoma. It was possible to have two or three carcinomata in the same intestine at the same time, not necessarily as a result of grafting. He had known two cases of carcinoma supervening on diverticulitis, but both were peculiar in that they had perforated.

Mr. D. C. L. FITZWILLIAMS said that the process of cancer formation in the breast was that for some unknown reason the epithelium became active; when it had transgressed the normal limits of proliferation it might be called pre-cancerous. If it disappeared altogether the result was a cyst and no cancer; if it remained the condition was suspicious. If the ducts were dilated the cancerous cells would escape into the tissues. If a wart appeared it would become carcinomatous in about 12 months. When the basement membrane had been penetrated cancer appeared. The undoubted influence of long chronic irritations seemed to indicate that direct bacterial action was not the cause of cancer. There had been practically no advance made in this subject since Boerhaave first suggested that cancer was the result of chronic irritation.

Dr. E. HAYDON asked whether tuberculosis disposed to cancer, quoting cases from his practice in Devonshire, where there seemed to be a special hereditary disposition to cancer, as cases were very frequent.

Dr. CARNEGIE DICKSON said that the pathologist was faced with the most difficult task of setting the margin of malignancy. Many simple tumours could become malignant. In 90 per cent. of cases of chronic hypertrophic endometritis, for instance, the epithelial cells were passing the basement membrane, but not all of them were definitely malignant. He thought frozen sections in the operating theatre were liable to mislead, as a tumour might vary so much in appearance in different parts. It was easy to think there was malignancy when it was not present; metastasis was not necessary for the diagnosis. He regarded myeloma as malignant, although it was often classed among the simple tumours; it certainly had local malignancy. He also regarded rodent ulcer as malignant.

The PRESIDENT, in replying, said that Mr. Fitzwilliams went much too far in saying that cancer was not due to bacteria. Recent experiments had shown that mice could be rendered immune by injection of the ultra-microscopic virus.

Dr. W. NEWCOMB demonstrated illustrative slides, with particular reference to gastric ulcer and carcinoma. A proof of the previous existence of an ulcer was the fusion of the muscularis mucosæ with the triated muscle of the stomach wall.

HUNTERIAN SOCIETY.

A MEETING of this Society was held on Nov. 9th, Dr. F. H. HUMPHRIS, the President, in the chair, when the Bishop of KENSINGTON opened a discussion on the

Relation of Spiritual Healing to Modern Medicine.

To many people, said Dr. Maud, spiritual healing suggested necromancy and magic—something not quite canny—especially if the practitioner held the office of, for example, a bishop. The term spiritual healing was hard to define. It had become so confused and meant something different to everyone who used it. It would, however, be hard to give a clearer definition than that put forward by the Lambeth conference. They found that healing was divided into three avenues: the material, which included surgery, the use of drugs and diet, &c.; the psychic, which included analysis, suggestion, and hypnotism; and the devotional, which included prayer, the Sacraments, and reliance on God. Spiritual healing could not be confined to the devotional avenue. All healing was spiritual, and the only unspiritual healing was that which is performed without God. From this point of view he considered the work of the Hunterian Society as emphatically spiritual. Anyone who put his soul into touch with God was by that act alone exercising spiritual power. Unfortunately many people had tended to interpret the term "spiritual healing" as a method directly opposed to physical medicine. It was as unscientific to exclude the physical side as to exclude the mental, for man is composed of body, mind, and spirit. The proper use of faith healing was to use a man's belief in God to reinforce the powers of his body and mind and make him every whit whole. Healing was not simply the removal of physical ailments nor even of faults of character, but the harmonising of a man's whole personality; this was the real health and this was what was meant by holiness. It was disastrous to regard a man as healthy because he had a sound body; to omit the spirit was to omit the decisive factor. The object of the Church was to bring about coöperation between all the means whereby a man could achieve holiness. Methods could not be kept in water-tight compartments. Many people thought that spiritual healing was a matter of faith or suggestion, a department entirely by itself. It was the Church's duty to use all the methods and means given to us and to spiritualise what might so easily become materialised. Much harm was done by the popular feeling that to send for a man's spiritual adviser was an immediate preliminary to sending for the undertaker, and for this reason doctors often deprecated the advent of the parson. It was true that the office for the Visitation of the Sick dated back many hundreds of years and reflected the mind of that period—to a large extent still the mind of to-day—that all illness was the will of God and should be accepted meekly. This attitude contrasted strongly with that of the doctor, whose job was to fight disease to a finish and conquer it. The Church's business was the same, and ought always to have been so. The attitude of Christ was that any form of ill was essentially contrary to the will of God. God's will was health: "I am come that they might have life . . . more abundantly." It was because the Church had not upheld the Christian doctrine in this respect that it had put itself out of court. There was at the present time every reason to hope that the misconceptions which had separated the two professions could be cleared away, and that the help which the Church ought to be able to give in this matter was just what the medical profession would welcome. If we could change people's minds, external things would soon change too. The process was not one of auto-suggestion, depending on one limited personality, but a linking-up with the mind of God. Prayer for the sick was not simply petition. It was getting up to the mind of God and letting the minds of the congregation reflect the thought of the mind of God for the sufferer.

Dr. F. G. CROOKSHANK said there seemed to be an urgent need for definition of terms, but that the patron of the Hunterian Society had said that of all things definitions were most to be condemned. We all knew what we meant by the relation between spiritual healing and modern medicine, but we seldom knew what other people meant by it. We needed to think about it, but unfortunately again the great Hunter had exclaimed, "Don't think; try!" The medical profession had been trying hard for many years not to think, with a very fair measure of success. In a way they were right; thinking might lead to a loss of that self-confidence which was so essential a factor in gaining the confidence of others. The general attitude of the medical profession to spiritual healing was something like: "Oh, well, it's all a matter of suggestion, if it's true at all, and any case that was cured by anybody but a doctor must either have been a functional disease or else it wasn't cured, one or the other. Of course, a functional case isn't worth bothering about unless it's rich, and then you consider what operation you might do, or else give it some bromide. As for all this curing by prayer, it ought to be stopped, and it will be when we get a decent authority at the Ministry of Health who will do what the B.M.A. tells him to." Which attitude was very satisfactory to those who held it, but if we wanted to advance the matter we must be very careful not to mistake words for ideas and interpretations for facts. What we took for observed facts were too commonly interpretations. Medical prejudices were never more dangerous than when they dwelt in the minds of doctors who said they had no prejudices. So long as doctors derived their working principles from the dreary agnosticism of the last century, which said that although the physical could and did determine the psychical, the psychical could never affect the physical, so long must there be an unbridgeable gulf between them and the theologians. So long as we believed that mind is a function of matter, so long should we deny that spiritual treatment could affect the physical condition and maintain that spiritual cures were either fancy cures of real disease or real cures of fancied disease. But the psycho-analysts had shown that states of mind must be held responsible for many organic conditions, and it was not good enough to dismiss spiritual healing as phantasy, suggestion, or emotion. Some thought this disposed of the problem, but actually it only made it more difficult. The Huxley-Spencer metaphysics had resulted in a neglect of functional disease by the medical profession; it was a curious thing that this should have been remedied and liaison made possible by the psycho-analytic school, so hated by the theologians. What was hindering reconciliation was that the theologians did not adopt any clear metaphysical creed. It would be helpful if the Protestant churches would define what they postulated as the relation between mind and matter. For his part Dr. Crookshank recognised the truth of the old French physician, "Le médecin fait ce qu'il peut, mais le Dieu seul connaît l'humanité." There was no reason why the cure of organic disease, however defined, should not follow prayer and spiritual healing, however defined. There was need to clear away the bogy of distinction between functional and organic disease and between physical and psychical therapeutics. Objectively they were indistinguishable. In the most functional disorders of all there was room for organic changes not yet visible to us. Organic disease might be defined as what we say we can cure and functional disease as what the quacks cure and we wish we could. The surgeons said that the physician's nasty drugs acted by suggestion; why should not the physician say that the surgeon's sanguinary operations acted in the same way? Prejudice and verbal lumber should be set aside to make clear what really does happen. The medical profession had no right to regard the business of healing as their prerogative; their function was to rationalise the business of healing for the benefit of the community. All creatures had the power of reparation, from an amœba to an archbishop, and we called that power the *vis medicatrix naturæ*. A belief in miracles was essential to the doctor's art. The miracle of healing represented the manifestation in ourselves and for others of that power possessed by all creatures for themselves. Why should not some people possess this power in an excessive degree and be able to bring it into consciousness? Were there not human beings who possessed power to heal others in a way that could not be rationalised? The power was exceptional, of course, and comparable with the musical genius of an untaught child. Why did the dog and cat seek a special grass when they were unwell? Cases of spiritual healing might be divided into two groups. In the first there was direct relationship with an objective personality, enriched with more or less ritual and appeal. Successes obtained were unsubstantial unless there was a simplicity of character and strength of personality behind the ritual. The instrument was usually one who had undergone the mystic experience, which was more common than was believed by those who had not had it. Healing was only obtained when the natural powers were released, whether this were in the Harley-street consulting-room or the revival tent. Quite essential was a certain sense of need and helplessness and dependency on a higher power. Dictation of treatment was a bar to conversion or cure. In the second group were those healed by such means as prayer, shrines, waters, &c.; these were mostly functional cases. Spiritual healing was a function of the religious experience in one form or another; there was no justification for holding it to be the monopoly of one creed or one form of practice. It was a curious and interesting fact that although neuroses were very common among Jews, yet faith-healing made no appeal to them, and even the Jewish exponents of psycho-analysis based their theories on purely material grounds. On the other hand, the standard of health was nowhere so high as among the Quakers, who were mystics, and the Plymouth Brethren, who believed profoundly in spiritual healing. The scope of psychotherapy was co-terminous with the whole range of disease, though never to the exclusion of physical remedies. Spiritual methods could be used to mobilise or release that innate capacity of reparation possessed by all, but so often restrained by mental rigidity. Dr. Crookshank was astonished that the theologians did not realise more the strength of their position.

The Rev. Harold Anson said that it was important for the clergy and doctors to define spiritual healing; it meant the healing of the whole man, body, soul, and spirit, by all those methods which are according to the will of God or sound logic. In the future it would be quite impossible to heal people in departments. He had been trying for many years to act on this doctrine, and his clerical friends seemed to regard him, until recently, as a dangerous lunatic and the doctors as a criminal. In a neighbourhood full of misery resulting from tuberculosis, venereal disease, and alcohol it was highly unsatisfactory to build a big hospital where the symptoms of these conditions were cured and the patients sent back to the same surroundings and the same misunderstandings. The scientific way of healing was to remedy the unsatisfactory spiritual condition which had produced these diseases—the community's ignorance of what life really is. There was a type of spiritual healing which really tried to get at the underlying wrong thought. Even organic cases could be cleared up by inquiring into and treating home difficulties and distresses.

Canon Douglas said that he had had no experience of supersession of natural law. Spiritual healing was coöperation with God to remove an evil. He pointed out that prayer was a concentration on need rather than an uttered petition; it was only valid if backed by the whole human purpose. It was not autosuggestion nor reliance on some outside power. Spiritual healing was the result of man's efforts with God's coöperation. He had known a case of instantaneous healing in his own experience, but did not regard these events as important; the work of the parson was to get people to concentrate their minds.

Dr. M. Leahy said that he saw no reason for any conflict between the clergy and the doctors. The ills to be healed were of three kinds—bodily, mental, and spiritual—and all three could act and react on each other. Modern medicine was concerned with body and mind; it had nothing to do with eternal salvation, but doctors were nevertheless often asked for advice by patients racked by spiritual doubts. These cases were best left to the spiritual adviser unless their doubts were producing mental disorder. Cases of religious mania and melancholia were better in the hands of doctors. There were two lines of treatment, surgical and medical, and the latter was again divisible into physical and mental. Spiritual healing certainly could not cure gross surgical injuries, acute conditions, or infections by bacteria. The spiritual healer cured by appealing to the mind of the patient, by asking the patient to put his trust in God; why should not the mind be given the credit for the cure? Belief in God and the hereafter was undoubtedly good for man, but an appeal in such terms did not always cure. The cure, when it occurred, was mental; why insist on spiritual intervention? Belief was a mental attitude. He illustrated the mental cure by three cases, one of organic nerve lesion, one of functional paralysis, and one of spiritual doubt. The Primate had set up a permanent committee of six psychotherapists and six clergymen to be advisers to the Church about all such questions as spiritual healing, healing missions, moral obsessions, &c., and there was every reason to hope that an extraordinarily useful phase of coöperation lay before us, particularly in asylums, prisons, and infirmaries. Dr. Leahy had been astonished to find how few asylum chaplains or their medical officers considered that helping the patients was part of their work.

Dr. Edwin Ash said that his considerable experience of psycho-therapeutic measures and his observation of spiritual methods had led him to the conclusion that there must be a focusing point of the influences at work, a centre of action of all these healing measures, and that point was the neurone. The weak point in modern psychotherapy was its forgetfulness of the neurone. There must be some point of fusion or reaction between mind and matter. It was the neurone; the nerve cell was like a condenser tuned to respond to the influences of mind. In spiritual healing we had a way of activating the neurone, by some means not yet understood, through the subconscious mind. If it would react to activities at the periphery surely it must be expected to respond to the higher psychic processes. Spiritual healing should not be concerned with medical matters, such as diet, hygiene, or manipulation. Certain kinds of approach, such as prayer, led to a general improvement in the patient's health rather than to specific healing. The cures would be found eventually to be wrought by natural law on natural mechanisms. Ignorant talk of spiritual healing tended to show its relation to medicine in a false light.

Mr. Mortimer Woolf said that the ideas of spiritual healing and coöperation had grave dangers; it was a form of atavism to the days when patients looked, and were encouraged to look, to hopelessly ineffective methods for salvation. He asked whether these views were going to influence the public to think that their diseases could be cured by spiritual means and to avoid the practical necessities of modern medicine. If the clergy wanted to coöperate with the doctors they ought to have the same knowledge of fundamental biological processes that the latter won by long years of probation and study.

Dr. Langdon Brown, in proposing a vote of thanks to the Bishop, said that the day of neglect of functional disease was now gone; the modern doctor knew that when a patient said he was ill when he was not ill he must really be very ill indeed. There was much misery abroad in the world just now, but it was due to a severe attack of growing pains. The hope of the human race lay in the third stage of growth—not physical nor mental, but psychological evolution.

ASSURANCE MEDICAL SOCIETY.

A meeting of this society was held on Nov. 4th at the house of the Medical Society of London, Chandos-street, W., when Dr. G. G. Howitt presided, and Dr. S. Vere Pearson read a paper on the

End-Results of Artificial Pneumothorax.

The method, he said, was by no means a "cure all" for pulmonary tuberculosis, but it was none the less a great advance in treatment. Patients should be given a chance first to recover under ordinary sanatorium régime, and the cases he would quote were only those which had been given that chance and had failed to respond. All of them had been in the third stage of the disease and had had tubercle bacilli in the sputum. Of 67 patients treated with complete artificial pneumothorax at Mundesley Sanatorium between 1910 and 1922, 26 were now well and working, 35 were dead, several were untraceable, and two were ill with pulmonary tuberculosis. Nine further cases had had their treatment started elsewhere, and four of these were well and the others dead. Of 17 cases of partial pneumothorax eight were now dead and four were well. The average length of life of the 48 patients who had died was 2½ years.

Fourteen cases in which pneumothorax was proposed, but was found to be impossible owing to adhesions, might reasonably be compared with the ones treated. Of these 14, 64 per cent. were dead, whereas only 51 per cent. of 77 complete artificial pneumothorax cases had died. Similar encouraging results, obtained with a larger number of patients, could be found in Dr. J. Graveson's recent work, "The Surgical Treatment of Pulmonary Tuberculosis," and considering all things it was satisfactory that 32 per cent. of pneumothorax patients from Vejlefjord were still able to work 2 to 12 years after discharge, and that 30 per cent. of those from Mundesley were still able to work 3 to 16 years after starting treatment. Such figures compared favourably with those for general treatment. It would hardly be too much to say that in any case of moderately advanced pulmonary tuberculosis which was fairly unilateral the prognosis was best if artificial pneumothorax was undertaken and proved feasible. Re-establishment of full working capacity could hardly be expected during the first few years; rapid complete recovery was most likely to occur in young patients with sound contra-lateral lungs. The pneumothorax ought to be maintained for at least three years—and often as much as five—and the refills had to be done, on the average, every six weeks; but this did not, as was often imagined, mean invalidism for the patient. The average period for refills in his own patients who had made good recoveries was four years and four months.

Discussion.

Dr. L. S. T. BURRELL said that the treatment was too new for any well-defined conclusions to be drawn. From the assurance point of view any case that had had active pulmonary tuberculosis was a bad case, but probably those in which artificial pneumothorax had been done were the most hopeful. Considerable study of post-mortem findings had convinced him that the lung on the side treated tended to heal, whatever might be the fate of the other. Whilst he was far from suggesting that the treatment was contra-indicated in bilateral phthisis, he thought it hardly fair to condemn a unilateral procedure because it did not cure both sides, and it seemed reasonable to judge its therapeutic success or failure from its effects on cases in which, as far as could be ascertained, only one lung was diseased. In 1922 he had published results of a series of 48 such cases in which T.B. had been present in the sputum, and two or three months' ordinary treatment in bed had failed. Of these 43 he had described 27 as "arrested," and now, three or four years later, he had found that 21 could still be called arrested and only two had died.

Dr. BATTY SHAW said that the experience of the two previous speakers made their opinions very important. Unfortunately, the insurance companies demanded exact figures; they wanted to know what were the mortality statistics of patients with an artificial pneumothorax compared with those of healthy people of the same age. Till such statistics could be collected a case of pulmonary tuberculosis would have to be regarded as such regardless of whether it had a pneumothorax or not.

Dr. F. G. CHANDLER said that if a proposer for life assurance had had artificial pneumothorax treatment which had been completed and the lung had expanded again, the assessment of the risk would be the same as in any case of arrested tuberculosis and would depend on the extent of the disease, the general condition of the subject, the ability to undertake full work, the functional efficiency of the lungs, the environment, the intelligence, the length of time since the apparent complete arrest and since tubercle bacilli were last found, the presence or absence of physical signs, the family history, and the complete absence of any suspicious symptoms. Whether the arrest had come about by natural means or by artificial pneumothorax made no difference from the life assurance point of view. If the proposer was still undergoing the treatment, the loading must necessarily be heavy, with later reconsideration, for however well the individual might be there were risks. It was well known that men might do manual work or women bear children, but it was necessary to remember the risk of pleurisy which may possibly interfere with the treatment, the risk that when the lung is allowed to re-expand the disease may awaken into a renewed activity, the risk that the treatment may be abandoned, and the remote risk of a spontaneous pneumothorax. It was interesting to note that nothing had been said of artificial pneumothorax as an immediate measure as soon as the diagnosis of pulmonary tuberculosis was made, and he strongly believed that the early case should always be given a chance of responding to ordinary treatment.

Mr. F. SHERIFF said that pneumothorax provided a new problem in medico-actuarial practice. The question was: Could a life office offer better terms in the cases treated? Unless the life could be considered an average one it would be unwise to accept such a case, except possibly after the lapse of several years if the general condition and other factors were perfectly satisfactory. Probably the best solution was to impose a decreasing debt extending over a period of 10 or 15 years according to circumstances.

Dr. BASIL PRICE said that in weighing up the end-results it was desirable to differentiate between those patients in whom the measure was attempted with the idea of arresting the disease and those in whom it was hoped merely to prolong life. In patients of the latter group there were, however, some remarkable recoveries. He illustrated the difference in prognosis in the two types of case by referring to a series of results obtained by Dr. Alexander Snowden. Of 27 cases in which artificial pneumothorax was done to prolong life only ten remained alive after two years, but of eight in which it was done in the hope of arresting the disease all but one survived over the same period.

The CHAIRMAN said that the information collected was a useful beginning. It was important to know the facts about the treatment because more and more cases would be coming up for assurance.

Dr. VERE PEARSON, replying, said that Dr. Burrell's statistics suggested that the majority of those patients who survived three or four years after having an artificial pneumothorax would still be alive after another three or four years. The percentage of cases in which pneumothorax had to be abandoned on account of complications was very small indeed.

AN ORTHOPÆDIC HOSPITAL SCHOOL.—A conference of representatives of local authorities and other organisations concerned has been held at Nottingham to consider the desirability of providing an orthopædic hospital school for the counties of Nottingham, Leicester, and Lincoln. The Duke of Portland has offered a site of 15 or 20 acres, between Nottingham and Mansfield, and the conference has appointed a committee to inquire into the cost of erecting such a school and the extent of the support likely to be given.

MR. W. B. COSENS AND THE DORSET COUNTY HOSPITAL.—Mr. W. B. Cosens, who has been honorary surgeon to the Dorset County Hospital since 1895, has resigned that post owing to stress of work; but so intimately has he been connected with the progress of the hospital that it is proposed to mark his services by asking him to retain six beds, together with the rights and privileges of a member of the honorary staff. The opening of an operation room by Sir Frederick Treves in 1903 was a result in large measure of the energy of Mr. Cosens, as also was the provision of children's cots, the installation of X ray apparatus, and the improvement of the hospital in many ways. The committee recently acknowledged with gratitude the sum of £1000 which had been raised by Mr. Cosens for a new electric lift. In the closing years of the last century the average number of operations performed during the year at the hospital was less than 40, whilst now the average is 400.

Reviews and Notices of Books.

TUMOURS OF THE SPINAL CORD.

By CHARLES A. ELSBERG, M.D., Professor of Neurological Surgery, Columbia University. London: H. K. Lewis and Co. 1925. With 354 illustrations. Pp. 421. £2 10*s.*

THIS is a model monograph. Written by a neurological surgeon of experience, and based on the study of 100 spinal tumour cases personally investigated and treated, it redounds to the credit of all who have contributed to the end-result—a handsomely printed and lavishly illustrated volume conveying information of that practical character which alone can serve. Spinal tumours are not rare; most are amenable to operative interference, and the clinical results not infrequently are brilliant. To attain such desirable results diagnostic acumen of a high class is requisite, for the compression syndrome of the spinal cord follows a variety of pathological processes not all of which lend themselves to successful treatment at the hands of the surgeon. The author describes at some length the diagnostic features of spinal tumours considered generally, and also from the local or regional point of view; distinctions are drawn between intra- and extra-medullary growths, and, finally, differential diagnosis from other conditions of spinal column, membranes, and cord is examined. The reader might suppose from all this that diagnosis has been so simplified as to have reached the stage of "certain," but this is in reality not so. What will impress the student, however, is the evidence furnished by Prof. Elsberg that for accurate diagnosis the radiologist and clinical pathologist have an indispensable contribution to make.

Prof. Elsberg does not appear to utilise the scapulohumeral and carpo-metacarpal reflexes in cervical cases, though their localising value is considerable; nor does he seemingly refer to the bulbo-cavernosus reflex, of similar usefulness in cauda equina and conus cases. There are but scanty allusions to clinical disturbances in the sexual mechanisms in the latter type of case, and none, as far as we have seen, to modifications in body temperature in cervical tumours. Deviation of the umbilicus is another localising sign, of great significance when it occurs, that does not appear to have been remarked or used. But if some differential minutiæ are ignored the general rules of the diagnostic game are fully coded and illustrated. The pathological and surgical sides of the question are particularly well treated, as is to be expected. We congratulate Prof. Elsberg on his mastery of his subject and on his splendid clinical results.

SURGERY.

Selected Papers. By F. T. PAUL, D.Sc., Ch.M., F.R.C.S., Consulting Surgeon, Liverpool Royal Infirmary. London: Baillière, Tindall and Cox. 1925. Pp. 202. 15*s.*

THIS is a reprint of a number of contributions to surgery made by Mr. Paul and is published by the surgeons to Liverpool Royal Infirmary to commemorate his seventy-fifth birthday and the fiftieth year of his membership of the Liverpool Medical Institution. Paul's name will ever be associated with the surgery of the large bowel, and it is interesting to read here the position of this branch of surgery just 30 years ago and the problems which confronted surgeons of those days. With great courage Mr. Paul describes how of seven patients in whom colectomy was tried, four died, and how, as a result of this experience, he was led to devise the operation which goes under his name, and which was followed by most happy results. The first use of a glass tube in acute obstruction of the large bowel was described in 1801. The author also did experimental work on gastroenterostomy and intestinal suture. In 1802 "the operation of gastro-enterostomy was a prolonged process of careful suturing and was extremely fatal. The bone plate method has changed all this." Yet even after this the aperture nearly always closed down in a very short time, and the symptoms of obstructed pylorus returned. Paul devised an experimental method using bone rings, which was more successful. On page 232 he makes an interesting comparison between enlargement of the prostate and involution mastitis, and in another chapter brings forward evidence in support of the view that chronic mastitis leads to carcinoma *mammæ*. Both these matters still remain undecided and obscure to this day.

It was a happy thought to publish this collection of papers. We have read the book with great pleasure.

Die Chirurgie. Edited by Prof. Dr. M. KIRSCHNER and Prof. Dr. O. NORDMANN. Berlin: Urban and Schwarzenberg. 1925. Vol. III. Pp. 228. M.12.

THIS volume contains accounts of the surgery of the liver and gall-bladder, written by Prof. Heller, of Leipzig, and the surgery of the pancreas, by Prof. Riese, of Berlin. It may be said at once that the high standard set by the two former volumes has been maintained. Both writers treat their subjects systematically and fully. There is a very good account of the anatomy of the gall-ducts with its variations, and, what is very commendable, a section on the physiology and the so-called pathological physiology of the liver. As was to be expected, the section on gall-stones occupies a large number of pages, and in whatever part of the subject the reader is interested, he is sure to find an adequate account. Cholecystectomy from neck to fundus and fundus to neck are both described, and guidance is given as to which method to select, and there are helpful recommendations on when to explore the common duct and when this step can be dispensed with. A warning is issued concerning closure of the abdomen after cholecystectomy. Heller holds that careful selection of cases must be made to avoid trouble after closure without drainage. The account of pancreatic surgery is as good as that of the surgery of the liver, though naturally it possesses a lesser appeal. The book is well printed, and the illustrations are produced with that excellence we are accustomed to find in German publications.

A TEXT-BOOK OF OPERATIVE ORTHOPEDICS.

By A. STEINDLER, M.D., F.A.C.S., Professor of Orthopedic Surgery, State University of Iowa. London and New York: D. Appleton and Company. 1925. With 83 plates. Pp. 403+xv. 30*s.*

DR. Steindler tells us in his preface that he considers that the manipulative and conservative treatment still has and should have "a hold upon the majority of orthopedic conditions," and it is obvious that under the term "Operative Orthopedics" he includes only such proceedings as necessitate the use of the knife, excluding subcutaneous methods. He has, we think, successfully carried out what he himself describes as the very difficult task of selecting the methods which are the most valuable. He may have been a little premature in including sympathetic ramisection and a little behind the times in retaining the almost abandoned proceedings recommended originally by Vanghetti for the kinematisation of amputation stumps. A somewhat remarkable omission is that of the operative treatment of fractures by such methods as those of Lane and Hey Groves. Subcutaneous tenotomy is dismissed by the author with only a brief description of the operation on the tendo Achilles, although he says that the method is still extensively used. We demur strongly to his statement that in "the early—pre-antiseptic—era even the subcutaneous tenotomies constituted a formidable operation which was often followed by suppuration and other accidents." It would be interesting to learn on what evidence this statement is made, and what was the nature of the "other accidents." We should have thought that it is notorious that the Stromeyerian method owed its wide acceptance to the fact that suppuration scarcely ever follows operations performed according to its principles.

This book will be instructive to surgeons who wish for the first time to perform any of the operations described in it, or who may require to refresh their memory as to details. It will also help them to judge of the prospects of improvement or functional cure which the various proceedings offer. There is a chapter on the Principles of After-Treatment which might well have been longer, for in orthopædic surgery it is a commonplace that at the end of the operation the treatment has, in many cases, only just begun. The book is well printed and the reproductions of drawings and photographs are clear, except a few of the latter which might well be replaced by diagrammatic drawings. There is a copious bibliography with an index of authors and an index of subjects. In the former Sir D'Arcy Power appears under the letter D as "D'Arcy Powers" and Mr. Hey Groves under H as "Hey-Groves."

SEX AND BIOLOGY.

The Sexual Life in its Biological Significance. By J. RUTGERS, M.D. Translated by NORMAN HAIRE, Ch.M., M.B. Dresden: R. A. Giesecke. In six parts. 8s. each.

THE author of this work, which comprises six parts in all, was an early advocate of birth control in Holland and believes that problems concerning conduct and happiness should be the concern of all and not limited to savants. In this he is in accord with those modern tendencies which would replace sexual ignorance by knowledge. Part 1 treats of the anatomy of the sex organs, but is discursive and unnecessarily complicated; it is not easy to see what benefit is derived by drawing an analogy between the gonads and pathological tumours or inflammatory products, nor to follow the assumption that the substances secreted by a gland are its waste products, and hence the testes and ovaries are not glands. Quite contrary to medical teaching in this country is the statement that vaginal injections are especially important after menstruation, even in young girls. In Part 2, which deals with physiology, the statement is amplified by the warning that if this practice is neglected "everything goes wrong at the first attempts at connexion." In fact, the sound information and advice that the author offers is marred by frequent observations that are not within ordinary experience. In the section on self-control, for example, we read that "if we remain seated too long at a time the abdomen is doubled up, especially if we lean forward; fatal symptoms of congestion and venous stasis may even occur." The context suggests that these results happen in the seminal vesicles. Dr. Rutgers will find wide agreement here regarding the need for sexual enlightenment, but we fear that the result upon the layman of reading this work would not be to bring sexual information into line with other knowledge, but to make of it something further apart. The translation is well done and presents no trace of German idiom.

A MEMOIR OF BUTLER.

Henry Montague Butler, Master of Trinity College, Cambridge, 1886–1918. A Memoir by his Son, J. R. M. BUTLER. London: Longmans, Green and Co. 1925. Pp. 305. 12s. 6d.

ANY son who sets out to write a memoir of his father must necessarily start at a disadvantage, for it is almost impossible that he should escape bias. Mr. J. R. M. Butler has, however, overcome the difficulty, and though the love and reverence which he felt for his father are obvious throughout the book, yet as a whole the memoir is "true and indifferent." Butler's life is set out mainly from his own letters, sermons, addresses and the like, and from the estimates and opinions of his contemporaries. The account of Butler's career at Harrow (reviewed in THE LANCET, 1920, ii., 1148) was written about five years ago by Mr. Edward Graham, but as an Oxford man Mr. Graham felt that he would be at a disadvantage in writing an account of the Head of a Cambridge College, and the task devolved upon Mr. Butler.

When Henry Montague Butler was called to preside over Harrow School he was only 26. After spending 30 years at Harrow he became Dean of Gloucester, but after 15 months Lord Salisbury offered him the Mastership of Trinity, a post not without justice considered as the highest distinction in the academic world. He accepted, not without many misgivings as to his fitness, for he was beginning his Mastership at a difficult time in the history of the College. A new régime had commenced under the statutes of 1882, only four years before Butler was instituted in December, 1886; he was Master by a Crown nomination and not by that of the Society, many of whom would have preferred a layman, and he followed two such exceptional Masters as Whewell and Thompson. How he overcame all these difficulties, how faithful and honoured a servant he was of the great Society over which he presided, may be found in the records collected by his son. He had one faculty which is a predominant help to anyone who is called to rule: he always tried to see the best side of a man. Apart from his magisterial office he was, says Mr. Butler, "a great humanist; he was not a great savant." Instances of his finished scholarship are scattered through the book, and range from the beautiful "Frater, ave atque vale" (dedicated to the surviving brothers of the son, Gordon Butler, who died at Kantara in 1916) to the delightful odes upon the two dogs, Carlo and Jet, with their Horatian memories, and the amusing English verses written to help novices concerning Greek particles.

THE HARROW SCHOOL REGISTER.

1845–1925. Second Series. Edited by J. H. STAGDON. In two volumes. Vol. I., 1845–1885; Vol. II., 1885–1925. London: Longmans, Green and Co. 15s. per vol.

COINCIDENTLY with the biography of the great Harrovian reviewed above there appears a new edition of the Harrow School Register. The last issue, which appeared in 1910, was already unwieldy, and it has been found convenient to divide the book into two volumes. The new edition is naturally swollen by the records of the Great War. They show not only much distinguished service but a toll of over 600 lives. Dr. H. Saunders, Dr. F. Bennett, Dr. D. V. Cow, Dr. W. E. R. Wood, and Dr. A. R. Chavasse are amongst those who have died since the last edition, and in last year alone Harrow lost two of her most distinguished medical sons in John Hammond Morgan, C.V.O., and Sir G. A. Critchett, K.C.V.O. There are rather more than 50 medical practitioners in the Register.

THE HOUSE OF HEALTH.

By Sir JOHN ROBERTSON, C.M.G., O.B.E., M.D., B.Sc. Medical Officer of Health, Birmingham. London: Faber and Gwyer, The Scientific Press. 1925. Pp. 192. 2s. 6d.

THIS little book represents one of the latest additions to the series of "Modern Health Books," the aim of which is to place the facts of the chief problems of public health within the reach of the citizen of average intelligence. Sir John Robertson has obviously approached his task with pleasure, and has carried it out with skill. He is quite convinced that a house is something more than a mere assembling of bricks and mortar and so he has laid considerable stress on environment. Tracing the types of dwelling from the snow huts of the Laplander and the sampan of the Chinese to the garden suburb houses of the present day, he shows that it is largely education which has led to the demand for better houses. After discussing the very important question of the site, the atmospheric surroundings, and the water-supply, he goes on to deal with town-planning and the construction of the individual house. He shows as much familiarity with domestic needs and problems as with matters of material and building work, and even the difficult question of finance is cleverly tackled. He deals in some detail with the structural arrangements, internal and external, of a house for an artisan's family of average size, and everything, including cupboards, the bath, the oven, and a place for the pram, receives due consideration. This is a thoroughly fascinating little book, which should be read by all those interested in housing and its problems, and these closely touch most members of the community.

JOURNALS.

The Journal of Physiology. Edited by J. N. Langley, Sc.D., L.L.D., F.R.S. Vol. LX., No. 4. September, 1925.—The Coagulation of Blood Plasma when Divested of Corpuscles, by J. W. Pickering and H. G. Reeves. The experiments aimed at determining (1) the rôle in blood coagulation of the formed elements of the blood; (2) the capacity of plasma to clot in the absence of all corpuscles; and (3) the nature of the precipitate obtained by the prolonged cooling of plasma in an ice-chest (i.e., the thrombozyme of Nolf). The authors summarise earlier conclusions and describe their own work on the arterial blood of etherised domestic fowls. They found that pure plasma collected in paraffined tubes and centrifugalised in the cold contained all the material essential for clotting and conclude that blood coagulation can occur without the intervention of either thrombocytes or tissue juices. A slight increase of hydrion concentration tended to catalyse the clotting of bird's plasma, and lowering the surface tension of the plasma increased its tendency to clot, but did not provoke immediate coagulation. The precipitate obtained by cooling pure bird's blood to 0° C had the chemical reactions of the "thrombozyme" of Nolf. It contained phosphorus and accelerated clotting, but did not appear to be an enzyme, since it was not destroyed by heating to 100–120° C. The plasma coagulated after the removal of this precipitate.—Length of Muscle and the Heat and Tension Developed in an Isometric Contraction, by A. V. Hill. Results are described of experiments (1) on the relation between length and heat production, using the double sartorius of the frog and the biceps cruris of the tortoise suspended in a special myothermic chamber; (2) on the relation between length and the ratio of tension developed to heat produced; and (3) on the mechanical efficiency of the muscle regarded as an elastic body. Amongst conclusions on the relation of heat production to length of muscle is that in resting unloaded muscle the same effects are found for all temperatures and for all durations of stimulus. A mechanism is suggested of the Fenn effect (i.e., more energy is liberated by a muscle when it does external work).—Analysis of the Heat Production During a Contraction in which Work is Performed, by W. Hartree. The sartorius of a frog was stimulated for 0·1 second at 0° C., and Fenn's result was confirmed that when a muscle shortens, doing work, and provided that the weight lifted does not bear on the muscle during relaxation, the energy liberated in the form of heat is constant—that is, it is the same as the heat liberated in an isometric contraction, and independent of the load. In such a contraction, therefore, the muscle supplies extra energy equal to the work done. Analysis of the heat production showed that, apart from the liberation of this extra energy as work, there is a considerable increase in the heat liberated during the earlier phases of contraction. This extra heat is compensated by a deficit during relaxation.—On the Mechanism of Insulin, Part I.: The Action of Insulin and of the Salts of Guanidine on the Permeability of the Mammalian Erythrocyte, by J. Secker. Evidence—quantitative, chemical, and microscopic—from experiments on the oxalated blood of sheep, ox, calf, and cat is given in support of the view that the mechanism of insulin is to increase the permeability of the cell membrane. Guanidine increases permeability in the presence of calcium.—The Reduced Sensitivity to Insulin of Rats and Mice Fed on a Carbohydrate-free, Excess-fat Diet, by H. W. Brainbridge. Rats and mice fed on a diet containing protein, salts, and vitamins, from which carbohydrate was omitted, developed a high degree of resistance to insulin. Apparently an increased amount of carbohydrate and complete absence of fat makes the animals still more sensitive to insulin than they would be on a complete diet, but this is not definitely proved. The variations in the sensitivity are not due to deficiencies in vitamin A.—The Combination of CO_2 in the Blood of the Bull Frog (*Rana Catesbiana*), by H. Wastl and A. Seliskar. The blood at 15° C. is less well buffered than that of mammals. The reaction is probably of the same order as in mammals, though it may be slightly more alkaline.—The Spread of Activity in the Tenuissimus Muscle of the Cat and in other Complex Muscles, by E. D. Adrian. The tenuissimus is over 10 cm. long and a few millimeters wide, and is composed of parallel fibres with no intersections and innervated by a twig from the sciatic nerve. The parallel fibres, each about 2 cm. long, are held together by endomysium, and a stimulus to the curarised muscle produces a contraction found to be limited to 1·5 cm. on either side of the stimulated point. Other results of experiments are given.—Effect of the Circulation on the Electrical Resistance of the Skin, by F. Aveling and R. J. S. McDowall. Chloralosed cats were used, as chloralose make sthe vasomotor system of animals appreciably more sensitive than ether. Intravenous injection of adrenalin (1/50 mg.) brought a marked fall in the resistance of the skin of the limbs and the pads of the feet. The fall corresponded with the rise of the blood pressure on injecting the drug, and the return of the skin resistance to its previous height synchronised with the return of the blood pressure. The authors show that in the cat a fall of electrical resistance of the skin is associated with the constriction of vessels and that a rise is associated with a dilatation.—A Method for the Perfusion of the Kidney with De-oxygenated Blood of Known Oxygen Tension, by E. W. H. Cruickshank and D. Orahovats. The method is also applicable to other organs of the body, while the rest of the body is supplied with blood having a normal oxygen content.—The Innervation of Smooth Muscle, Part II.: Frequency of Nerve Impulses Entering and Leaving the Superior Cervical Ganglion, by Harry O. Veach and Jayme R. Pereira. The experiments were made on cats, anæsthetised by urethane and chloroform. The movements of the nictitating membrane were recorded after the pre- and post-ganglionic nerves were isolated. It was found that the frequency of discharge from the cells of the superior cervical sympathetic ganglion of the cat is directly proportional to the frequency of reception from the pre-ganglionic fibres. It is probable that the propagated disturbances in passing through the ganglion are not altered decidedly in frequency.—On Cellular Changes in Intestinal Fat Absorption, by W. Cramer and R. J. Ludford. Experiments described suggest that in the synthesis of fat in the cells of the intestinal epithelium during fat absorption the Golgi apparatus is the cell structure mainly concerned.—A contribution to the journal on the Composition of Alveolar Air at Extreme Heights, by T. Howard Somervell, is referred to in our editorial columns.

New Nurses' Hostel at King's Lynn.—Some years ago the Queen suggested a number of alterations and improvements at the West Norfolk and Lynn Hospital, and she recently opened the Queen Mary Hostel for Nurses, which practically completes the programme. The hostel, which has cost £8500, contains accommodation for 24 nurses.

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[See also pp. 12 & 19.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 14, 1925.

PRE-CANCEROUS STATES.

The practical prevention of cancer consists at present in the recognition of the pre-cancerous states to which the Section of Surgery of the Royal Society of Medicine devoted their discussion on Nov. 4th. Of recognisable conditions we can roughly distinguish three categories. In the first place the decennial supplements indicate clearly that some occupations have a much higher mortality than others without there being any obvious local condition to account for the association. Any boy who gave intelligent study to the occupational statistics of the Registrar-General would see that he would have much less chance of dying of cancer if he was a clergyman or an agricultural labourer than if he was a barman or a general industrial labourer; he might or might not act accordingly. In the second place, there are certain chains of events—Prof. Blair Bell calls attention to their number (see p. 1003)—which have been identified as often culminating in cancer—smoking clay pipes, being splashed with hot paraffins in the shale-distilling industry, persistent irritation by X rays, and a great variety of other circumstances which all fall under the head of long continued irritation and among which those associated with the products of burnt coal seem to stand out pre-eminently. And thirdly, we have anatomical abnormalities which are recognised as precursors of frankly malignant tumours, such as melanotic warts, chronic mastitis, and indolent ulcers. How much cancer can be prevented by attention to these occupational, ætiological, and pathological indications—categories which with fuller knowledge will no doubt be merged into one—depends on how far people are prepared to go in taking preventive measures. Removal of the breasts, uterus, and rectum in early life would be extravagant. More people are probably prepared to refrain from the alcohol trade and clay pipes, to be circumcised, and to take various other precautionary measures not more troublesome. But average men and women will not likely do much more than attend to the general cleanliness and hygiene of their skin and alimentary canal, keep clear of modes of life of known danger, and consult a medical man more freely for comparatively trivial symptoms and appearances.

But these pre-cancerous states have an interest and importance for the understanding of cancer as well as for preventive medicine, and in spite of the study which has been given to them there is still much to be found out. The question has been propounded whether a cell becomes malignant because it gets anatomically out of place or whether it gets anatomically out of place because it is malignant. Such a dilemma comes easily to the mind in the contemplation of the distortion of the epithelium at the edge of an old ulcer, where certainly the normal arrangement of epidermis and dermis is not maintained, and in which occasionally a virulent epithelioma may arise. It is established that normal epithelium experimentally displaced in a somewhat similar way does not become malignant. But this is not really conclusive that misplacement is secondary rather than primary. Recent studies have brought out emphatically the length of time which may elapse between cause and effect in cancer; men and mice both need to have their skin irritated for about a quarter of their lives before there is much prospect of its becoming cancerous, and even if conditions are so arranged that a single application of hot tar is effective a long time elapses between trauma and tumour. It may well be that experimental displacements fail to imitate the extraordinary deliberation with which the preliminary changes are achieved. The fact that misplacements may be found commonly by the histologists where clinical experience shows cancer to be a rare sequel is also not a final proof that the primary change is in the cell which then by acquired vice inserts itself and its progeny where it ought not to be. Such an argument assumes that we know that a cancer always progresses to an obvious and unmistakable dénouement once it has begun. As a matter of fact, there is very little real evidence that this is so. No natural "cause" of cancer is effective in 100 per cent. of cases; most of the causes which have been identified actually produce cancer only in a small minority of all the persons who appear to be exposed about equally thereto. From which it is not unreasonable to suppose that the body possesses means of protecting itself and that it often brings them into play successfully at the very outset of the change.

The question of the cause of cancer has generally been put in the form, "Why do some people have cancer?" The alternative, "Why does not everybody have cancer?" is not quite the same thing, for it suggests a point of view which looks to the resistance of the body as well as to the injury which is inflicted on it. This aspect of the matter deserves more attention than it has had. An obvious tumour might well be the resultant of the normal consequences of a long life and the capacity of the tissues to keep one another in order. The experimentalist, working intensively in a favourable field, can break down the resistance of almost every mouse by tarring it enough; Miss M. Slye's inbred race of mice cannot resist the trivial traumata of their ordinary lives and nearly all of them die of cancer. Such is a possible way of looking at the facts and it has been followed by those who, in their study of pre-cancerous states, have looked at the connective tissue rather than the epithelium. With the powerful weapon of analysis furnished by Dr. W. E. Gye it should not be long before such speculations can be replaced by conclusions.

A GREAT PHYSIOLOGIST.

THE roots of medicine that reach down into the rather barren strata of the past give support to the tree; but the sap comes from the small rootlets which have recently been put out into unexplored soil. The new arborescence of medical science is a direct result of fresh root expansion, in which physiology is a vital trunk. The work of those "growing points" who first branched off into new ground has given rise to such a mass of offshoots that it is difficult to believe that so many dichotomies have occurred in one or two lifetimes. The tentative rootlet of yesterday becomes a trunk to-day; on ceasing active work it passes into the supporting rather than the nutritive structure of the tree.

The career of the late Prof. J. N. LANGLEY illustrates the importance of a single life in so recent a science as physiology. The beginning of the modern biological school at Cambridge was, practically speaking, the appointment of MICHAEL FOSTER in 1871 as prælector of physiology at Trinity College. LANGLEY was one of FOSTER's first pupils, was inspired by him to take up scientific work, and in 1903 succeeded him in the University chair of physiology.[1] His most important contributions to knowledge were concerned with the movements of granules in the cells of secreting glands, the detailed elucidation of the architecture and function of the autonomic system, the theoretical significance of the action of adrenalin, and the physiology of nerve endings. His work on the salivary glands, stomach, and pancreas has so completely established itself that even in the most recent editions of the current elementary text-books the migration of zymogen granules towards the lumen of the alveoli is illustrated by the figures which LANGLEY drew nearly half a century ago. The study of these granules brought him by a natural transition to the study of the nerves responsible for glandular activity. His mind, intensely critical of scientific generalisations, resented the then current theory of the action of antagonistic nerves. He held the view that, diverse as were the apparent actions of the chorda tympani and the sympathetic on the salivary glands, there was but one form of secretory nerve, the alleged antagonism being in his opinion due to the stimulation of vasomotor nerves simultaneously with those of secretion. This work on the sympathetic and the chorda tympani, and especially on the action of drugs on them, opened up the whole question of the minute anatomy of the sympathetic system, just as the study of antagonist nerves in the heart had brought GASKELL into the same field. At this distance of time it is not very easy to distinguish the precise contribution of each. Perhaps it may be said that GASKELL laid down the broad lines of function, and LANGLEY laid down the broad lines of structure. The rami, grey and white; the number of fibres in each; where they originated and ended; what were their detailed functions—all these were matters of the most scrupulous research in the hands of LANGLEY and his pupils. They were worked at chiefly by the nicotine and degeneration methods.

LANGLEY's work on the autonomic system was probably his greatest contribution. Had it not been done by him, it may even be doubted whether it would yet have been done at all—at any rate, so well. His later researches were less individual in conception. Other minds reasoned as truly about receptive substances; other hands might have demonstrated the detailed action of adrenalin; but in the minute geography of each fibre of the sympathetic system LANGLEY's school was supreme. His genius for technique was exactly suited to the problem. The *Journal of Physiology* (a recent issue of which is reviewed in another column) is a lasting monument to the literary side of his work. For more than 25 years he was in practice its editor, and never was a periodical edited with more personal care. Whole articles, even those whose subject matter could have interested him little, were re-cast and sometimes almost re-written; and though this may have been irksome to the authors it produced a journal unsurpassed in quality in the literature of physiology. But LANGLEY's work is not to be judged alone by its tangible expression. To his pupils its highest embodiment is the ideal of accuracy which he handed on to them—accuracy in expression, technique, criticism, and generalisation. They would agree in believing that the greatest tribute they can pay to their teacher is to hand on that high ideal of accuracy to a future generation of physiologists.

Annotations.

"Ne quid nimis."

THE TOLL OF CHRONIC NASAL FOCAL SEPSIS.

IN his Semon Lecture at the University of London on Nov. 5th Dr. Patrick Watson-Williams spoke of the necessity of the specialist "thinking imperially" of the influence of local diseases in other domains,—of remembering "overseas" sub-infections. The influence of sepsis in the mouth, teeth, and tonsils is, he considers, already appreciated, and is even allowed to obscure the factor of sinus sepsis, although there is little doubt that septic tonsils and adenoids are often only sub-infections from primary foci in a nasal sinus. There are two ways in which such a focus can affect the remainder of the body. The infective organisms may be inhaled or swallowed, or the toxins (sometimes even the organisms themselves) may be absorbed into lymphatic or blood circulation. Before passing on to the second group Dr. Watson-Williams mentioned the frequency of sinusitis in children. It is still necessary to determine how great a percentage of cases of so-called pulmonary tuberculosis in which no tubercle bacilli are found are in reality due to sub-infective pulmonary sepsis. The wasting of chronic sinus sepsis with bronchial sub-infection, nocturnal rise of temperature, night sweats, expectoration, and febrile reaction to exercise, affords a clinical picture hardly distinguishable from true pulmonary tuberculosis and often enhanced by a chronic septic laryngitis. Dr. Watson-Williams regards the extraordinarily high percentage of patients with chronic sinus infections who have undergone appendicectomy or have suffered from gastric or duodenal ulcer as most striking and suggestive, and lays great stress on the rôle of the carrier without obvious signs or symptoms, whose constant throat or nose infection is a menace to those around him. In his lecture he quoted instances of families in which a parent had such an infection, and he attributed the subsequent nasal troubles and large amount of appendicitis amongst the children to this cause. Migraine, supra-orbital and occipital headache are frequently due to nasal sinusitis, and intense neuralgic pain of the fifth nerve, of the tic-douloureux type, may be due to a toxæmic neuritis from para-nasal sepsis. The effects of sinus infection in orbital conditions, in rheumatism, and in neurasthenia are well known. Dr. Watson-Williams rightly regards sepsis as of great importance in nervous and mental disorder, and remarks that in the young delinquent it is very frequently responsible for the acts attributed to Satan. In the past too much has been laid at the door of obstruction caused by adenoids, whereas nowadays it is realised that the degree of sepsis and not of hypertrophy is chiefly important. The relationship of the lymphatics of the pituitary membrane crossing the cribriform plate to the peri-meningeal lymph spaces may partly explain the affinity between nasal sepsis and mind and character; but whatever the extent to which this affinity is particular rather than general, it is very real, and there have been many very striking cases in which melancholia, neurasthenia, and mania had been cured by nasal treatment. Though it may be difficult at present, and perhaps dangerous, to differentiate between those cases in which crime is determined by infections and those in which it is a result of innate moral obliquity, it is necessary, Dr. Watson-Williams holds, to consider how far sepsis should be ranged with other toxic causes of mental and moral degeneration, such as alcohol, morphia, cocaine, or syphilis; thus it may be possible to prevent many social and legal transgressions. Infection may be difficult to detect, and it is a serious error to gauge its intensity by the local inflammatory reaction and outpouring of pus, whose relative absence may even show increased liability to systemic poisoning. The active and real coöperation of the aural, laryngeal, and dental surgeon and the physician is needed; but the amount of slight mental disturbance with alteration in character and power of concentration found in domestic life, and the graver manifestations to be seen in prisons, hospitals, and asylums, make a great deal of trouble worth while. "We have learnt," says Dr. Watson-Williams, "to recover radium from rubbish. Can we afford to maintain in these human dust-heaps numbers of men, women, and children who, if adequately treated, might become useful and happy workers?"

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[1] An illustrated account of the Department of Physiology at Cambridge University by Prof. Langley himself appears as the first article in "Methods and Problems of Education" (Third Series), just issued by the Rockefeller Foundation (61, Broadway, New York).

RESEARCH ON MERCURY DERIVATIVES.

AMONG the routine remedies for leprosy mercury has long been employed. Within the last 30 years its use has been revived and hypodermic injections of various salts have at one time and another been recommended. The introduction of mercurochrome and its value in septicæmia have stimulated renewed interest in mercury as a germicidal agent, and results have now been published[1] of its experimental use in leprosy. A routine dosage of 2·5 mg. per kilo of body-weight was most easily tolerated, a standard 1 per cent. solution of mercurochrome 220 in distilled water being used. In larger doses stomatitis and salivation were produced. The authors consider that the treatment should be given once weekly. Forty-four lepers treated in this manner have now been under observation for at least a year. In 20 of these the disease was of the active advanced type; 16 had moderately advanced lesions; in six there was active leprosy of comparatively short duration; whilst in two the disease showed no signs of activity. The results obtained do not warrant any undue optimism, but it is claimed that a very definite improvement became apparent in some of the secondary lesions; ulcerating areas healed up, while trophic ulcers responded less readily. In a few instances the recurrence of febrile reactions was no longer noted, and after the first injections the majority of patients claimed to experience a distinct improvement in their general health. In leprosy complicated, as is commonly the case, by pulmonary tuberculosis, no improvement in either disease appears to take place. In surgical practice mercurochrome is still on its trial. It has been found by Bristol surgeons to give excellent results in some cases while proving disappointing in others, and the discrepancy suggested Dr. A. T. Todd's combined experimental and clinical investigation which appears on another page of this issue. In general terms he found mercurochrome to be a powerful antiseptic of rapid action, low toxicity, good penetrating power, and little tendency to irritate. It has the further advantage of not precipitating albumen and of being stable in saline solution for long periods if protected from light. Dr. Todd found the antiseptic properties of the drug to be greatly augmented by acidity, its potency near the neutral point being feeble. For this reason he is inclined to doubt the value of mercurochrome in general infections.

A report[2] on the bactericidal action of some other mercury compounds has been published by a number of workers at the Wellcome Research Laboratories and the Wellcome Research Bureau. They considered that valuable information might be obtained by starting with a comparatively simple substance, mercurating it and a suitable selection of its derivatives, and determining the bactericidal action of the resulting mercury compounds. They selected benzaldehyde as a starting-point and have done much useful work along the lines they laid down, using *B. coli* cultures for the experiments. To discover the reactions of the drugs in differing conditions aqueous solutions, serum solutions, and fatty acid derivatives were used. The serum and oil vehicles reduced the bactericidal activity considerably except in the case of the chaulmoogric acid salt of a mercury benzaldehyde derivative where the activity was doubled, owing presumably to the inherent bactericidal properties of the acid.

BASAL METABOLISM AND THE THYROID GLAND.

THE estimation of the basal metabolic rate is a modern clinical method that has rapidly established its value. It provides a mathematical expression of a definite biological phenomenon, the energy requirement of the organism under various conditions. It has greatly helped to elucidate our knowledge of the metabolic processes in disease and is a valuable guide to treatment. In particular it affords the most accurate means of determining the activity of the thyroid and in diseases associated with under- or over-activity of this gland it finds its greatest usefulness. Dr. F. S. Hansman, who is now director of the biochemical department of the Royal Prince Alfred Hospital, Sydney, has recorded in the *Medical Journal of Australia* (August 22nd) the results of examining 190 patients with thyroid disease whilst he was working at St. Thomas's Hospital, London. In a review of the present knowledge of basal metabolism he states that the basal metabolic rate gives a useful idea of the economy of the individual's body as a working machine. The female basal metabolic rate is normally about 7 per cent. lower than that of the male, and experiment has suggested that the female is the more efficient machine. There is general agreement, he says, that the increase during pregnancy represents the sum of the metabolism of mother and child, and that there is no variation in the mother, and the majority of investigators have found no change during menstruation, though it may perhaps occur in some women. The thyrotoxic patient is a most inefficient machine and requires nearly twice as many calories to perform the same amount of work as a normal person, and accordingly large diets and rest are needed in patients with exophthalmic goitre. Dr. Hansman quotes the work of Boothby and others at the Mayo Clinic, who found that on a diet averaging 5245 calories over 17 days there were 600 calories a day unaccounted for, after making the most liberal allowances for all energy outputs. The nitrogen metabolism was normal and protein food exerted its ordinary specific dynamic action. The increase in metabolism may reach 100 per cent. above the normal; 15 per cent. to 25 per cent. above normal may be considered mild and above 50 per cent. severe. He considers that the basal metabolic rate will not give a true idea of how ill the patient is, as the nervous phenomena and the degree of thyroid stimulation by no means run parallel. On the other hand, the basal metabolic rate may give the differential diagnosis between hyper- and hypo-thyroidism. H. S. Plummer and W. M. Boothby[1] have shown that administration of iodine removes all the clinical symptoms of exophthalmic goitre, though the metabolic rate remains high. The theory formulated to account for these facts is as follows: Some chemical appears in the body that is capable of over-stimulating the thyroid; the resulting excess of thyroxin leads to increased metabolism which may reach a high figure without causing the patient any symptoms of distress. These cases Plummer calls "compensated hypertrophies." In the next stage compensation fails because the available iodine is insufficient and the thyroxin produced is therefore imperfect and causes nervous symptoms. The administration of iodine to such cases restores them to the compensated group and the symptoms disappear. Adenomata of the thyroid affect the production of thyroxin in different ways. The tumour may itself produce the hormone or may stimulate the gland to increased production. In other cases the adenoma seems to depress the thyroid activity, while in about 35 per cent. it has no effect. The basal metabolic rate may help the surgeon to determine whether, and how extensively, he shall remove the growth. Removal usually brings the metabolic rate back to normal if there has been aberration due to its presence. Too liberal removal of gland substance with the tumour causes hypothyroidism. Regular estimation of the basal metabolic rate after operation would often enable the doctor to give thyroid medication before serious symptoms of hypothyroidism appeared. The diagnosis of hypothyroidism may be almost impossible from symptoms alone, and many cases of indeterminate "unfitness" would be cleared up by a basal metabolic rate investigation, which would also be a valuable guide to dosage. It is also an unbiased proof of the value of treatment. Valuable statistics could be obtained if all the patients in a hospital were to have routine estimations of metabolism and the various lines of treatment were compared. The interaction of thyroid and pituitary make basal metabolic rate estimations of value in hypophyseal conditions. In acromegaly the rate may be increased or decreased, and when it has become subnormal organotherapy may be very useful. In long-standing cases of Fröhlich's syndrome the rate may be much lowered. Clinicians know that large quantities of pituitary are tolerated if they can be combined with thyroid, and the thyroid itself stimulates pituitary function, but a watch must be kept on the metabolism if the thyroid is to be given without danger of harm.

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[1] The Administration of Mercurial Preparations in Leprosy. Preliminary Report I. Mercurochrome Soluble 220. By Oswald E. Denney, Ralph Hopkins, Jerald D. Wooley, and Boyd G. Harentine (in absentia), Harold K. Marshall. Public Health Reports, vol. xl., No. 35, pp. 1795–1806.

[2] Bactericidal Action of Some Organic Compounds of Mercury. By T. H. Henry, T. M. Sharp, and H. C. Brown. Biochemical Journal, vol. xix., No. 3.

RESPIRATORY PHYSIOLOGY ON EVEREST.

A CONTRIBUTION by Mr. Howard Somervell to the September number of the *Journal of Physiology* describes the results of alveolar air analysis during the 1924 attempt to climb Mount Everest. Alveolar air was collected in football bladders from several members of the party at three different heights above sea level, and the samples were taken down to the base camps and analysed. The altitudes were 14,300 ft., 16,500 ft., and 23,000 ft., and the most remarkable feature of the results was the low respiratory quotient at 23,000 ft., which was due to the small value of CO_2 in the alveolar air. At a great height breathing is so rapid (almost 50 respirations to the minute) that the CO_2 is washed quickly out of the alveoli. It appears that at 23,000 ft. the $(CO_2 \div O_2)$ percentage is smaller by some 3 per cent. than at 14,000 ft. During actual motion upwards the pulse-rate was 160–180 per minute, and sometimes even more. The pulse was regular in rhythm and of good volume, but all who went above 27,000 ft. were found to have dilated hearts which took from one to three weeks to recover. During climbing the respiration-rate was about 50–55 per minute, and when a height of nearly 28,000 ft. was reached 7–10 complete breaths were needed for every single step forward and upward. Breathing quickly and deeply at a great height is very easy owing to the low density of the air. In 1924 none of the party was affected mentally by the altitude, as in 1922; minds were clear and tempers and resolution fairly good even at 28,000 ft.; but the simplest tasks—cooking a meal, fetching snow for melting, or taking a photograph—were found very irksome. At the highest camp (26,700 ft.) appetite was profoundly affected, and it was with difficulty that meat was eaten at all. Chocolate and biscuit were managed as a duty, and only pemmican soup and coffee were taken with any real relish, for in the high dry air liquids were the first need. The three weeks acclimatisation and the extra height seem not to have altered the colour index of the blood and the blood pressure appeared to be unaffected.

LEFT-HANDEDNESS AND LEFT-EYEDNESS.

IN his "new interpretation" of left-handedness Mr. Parson sets out on an adventure which has attracted so many investigators previously that his book of 180 pages[1] contains 40 pages of bibliography, which is still incomplete. Briefly stated, his theory is that "eyedness" precedes "handedness." The "master eye" of the popular imagination determines which shall be the dominant hand, and as most people are, for some still unknown reason, right-eyed, right-handedness follows, since on account of our physical configuration we can thus aim more naturally and effectively by bringing the object, the hand, and the macula of that eye into line. The argument is attractive, and by means of a simple apparatus called a manuscope the author was able to support it in examining 608 right-eyed children, only 4 of whom proved to be left-handed. The non-agreement with the formula in one of these exceptions he attributes to a defective right eye. It was found, however, in another case, that it was the left eye that was weak. Still, the relationship at the time of examination seems to be established. It was when of 257 left-eyed children only 32 "confessed" to being left-handed, that the investigation became more complicated. This leaves 225 left-eyed dextrals to be accounted for. "Having found," Mr. Parson writes, "that of the hundreds of children examined, virtually all the right-eyed are at the same time right-handed, we are justified in believing that the natively left-eyed, irrespective of their present manual preference, were originally left-handed." But are we really justified? As there were 257 left-eyed children in a total of 877 examined, it follows that, barring accidents, 29·3 per cent. of the whole must be *natively* left-handed. Bardeleben, in 1914, attacking the problem, apparently on Mendelian principles, had come to the conclusion that the number of left-handers who changed to right-handedness was 26 per cent. of all children. This number corresponds closely with the 225 left-eyed dextrals, who were 25·7 per cent. of the total number of children examined, and so far Mr. Parson's argument finds striking support. But can we be sure that no converted left-handers should be numbered among the right-eyed dextrals? The author's attitude towards his four right-eyed sinistrals (who, he says, *claim* to be left-handed) scarcely suggests that converted left-handers amongst the right-eyed would be welcomed, if found, by the investigator. Lacking information on this, however, we can go no further. To return to the 257 left-eyed subjects, we find that Mr. Parson states that only 32 "confessed" to being left-handed. A moderate proportion of the others certainly admitted one or two left-handed activities, but nothing is said as to left-handed tendencies in a majority of the cases. According to Mr. Parson the odd activities referred to "give a hint as to what more detailed investigation of each case might have developed, had time and circumstances permitted." But the validity of his theory depends entirely upon the result of such a detailed investigation. It is suggested that training in infancy and early childhood has altered the habit of using the preferred left hand. There is no doubt that such an influence is almost invariably exercised, but, as we have pointed out, it is possible that of the 608 right-eyed dextral children many would have used the left hand apart from the same parental influence. Is it even certain that a single left-handed activity is an unfailing sign of a thwarted complete sinistrality? The author goes on to say, "the original bias may in some cases be so slight that in infancy a change might take place without the conscious exertion of any special corrective effort on the part of parents." Here two separate problems are involved: The cause for the original bias, and the origin of the elders' disapproval of a bias to the left side. The former may or may not have a physical basis, but the latter undoubtedly introduces a psychological factor. Why is the child of tender age coerced or coaxed, consciously or unconsciously, into the preferential use of the right hand? What enables it to cling tenaciously to one or more left-handed activities, when for all else it becomes right-handed? Is "eyedness" in any way responsible for the survival of any particular form of activity? It is obviously useless to ask the individual why he developed the habit of using the left hand in the first instance. He started too early for him to remember anything about it. The technique of psycho-analysis, however, may throw some light on the question. Mr. Parson's book certainly carries the problem of left-handedness to a higher plane of inquiry than do many of the previous works on the subject.

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[1] Iowa State Medical Society Journal, 1924.

[1] Left-handedness: A New Interpretation. By Beaufort Sims Parson. New York: The Macmillan Company.

ADOLPHE SMITH.

THE death of Mr. Adolphe Smith at Fulham on Nov. 9th removes the picturesque figure of an octogenarian who had met life at many points. Of bilingual parentage, Mr. Smith was equally at home on either side of the Channel. He wrote an admirable guide to Hyères as a health resort, he was intimate with the small but influential community at Monaco, he was publicly thanked by the French Government for personal bravery in the streets of Paris at the time of the Commune. His deep interest in the international labour movement took him to every continental centre where standards of work were under discussion, and few can have known more of the actual conditions of life of the people of many countries. It was this background of knowledge and sympathetic outlook which gave special value to Mr. Smith's work as Special Commissioner of THE LANCET for 40 years. These commissions were set in motion to inquire into various defects associated with social machinery, understood in its broadest sense, at a time when no official body existed for the purpose. Mr. Smith's reports included one on the spread of disease by means of laundrying, in which he found that table napkins from St. James's-street Club were being dried in a Peckham garret over the bed of a small-pox patient, and another on the contamination of uniforms at the Army Clothing Depôt. This report led to immediate reform. He reported on cholera centres in Europe at the danger-point of 1892-94, preparing maps and statistics which helped the progress of epidemiology; for at that time, while the State could legally spend money on investigating the few cases of cholera occurring in this country, there was no official provision for making inquiry on the continent. He reported on the sanitation of a number of continental and American cities, and his revealing survey of the Chicago stockyards was used by Mr. Upton Sinclair in his famous book, "The Jungle." Mr. Smith's investigation into the way of life of East-end tailors having resulted in the setting up of a special commission of inquiry by the House of Lords, he visited 160 sweating dens in the provinces, of which the final outcome was five large blue-books and the initiation of many changes for the better. Articles on the free feeding of school children which he wrote for us were used as evidence in the House of Commons debates which ended in a measure for provision of meals.

In all these ways Adolphe Smith's work was of lasting value to the community, but outstanding for medicine were his reports on the conditions of contract practice 30 years ago. A general movement against the medical man being dragged into contract practice as if it was a profit-making business came to a head at Cork, where the local profession formed a benefit club to be managed entirely by themselves. Mr. Smith went to Cork and set out in a brief letter to THE LANCET the stages of the dispute between medical men and the clubs, the importation of outside medical help, the way in which first the hospitals and then the druggists were drawn into the battle against the demand that bankers, large tradesmen, and well-salaried clerks should be admitted to the medical clubs upon the same terms as poorer clerks, artisans, and labourers, with a miserable yearly fee to cover attendance upon every member of the subscriber's family. From Cork Mr. Smith went on to Portsmouth, where he examined the dockyard benefit societies which admitted infants and juveniles as well as adults at the uniform rate of ¼d. per head per week; from there, to the medical aid companies at Eastbourne, and so on, over the rural and mining areas, with a divergence to Brussels and a final visit to France, where he discovered no harm being done to the dignity and interests of the medical profession by sick insurance companies. In one of these letters he summed up the position of the club medical officer as the wage-slave of a commercial concern, no longer the guardian of public health, but the promoter of a private business. These articles were issued later as a pamphlet entitled "The Battle of the Clubs," which was widely quoted when the proposals for a National Health Insurance Act first came before Parliament. It is remarkable now to recall with what approval Mr. Smith carried out his difficult task. In person he retained throughout life a certain disarming simplicity of demeanour, and his writing gave the impression of one who observed with candour and who set out his observations without prejudice. Among the host of nameless contributors to our columns none can have had wider influence on broad social conditions than Adolphe Smith.

THE PAINTER AND HIS OCCUPATIONAL RISKS.

ATTENTION has often been directed to the occupation of painting mainly on account of risk of lead poisoning. In this and in other countries committees of inquiry have deliberated and reported. Then came the adoption at Geneva of a recommendation that lead paints should be prohibited internationally for use inside houses. Action to give force to this recommendation has not yet been followed in the different countries concerned. The contention has been advanced that some, at any rate, of the symptoms among painters attributed to lead are, in fact, due to inhaling the fumes of turpentine and other volatile solvents used in paints. There are grounds for accepting that these fumes do cause trouble, but the risk from lead poisoning is hardly thereby minimised. Now further trouble is ascribed to these same solvents by Dr. J. A. Turner, Ohio, U.S.A., whose interest was aroused by the occurrence of skin affections among painters under his care. The trouble consisted in an irritating vesicular eczema on the back of the hands and forearms, which, however, quickly reacted to treatment. He proceeded[1] to most liberal allowances for all energy outputs. The nitrogen metabolism was normal and protein food exerted its ordinary specific dynamic action. The increase in metabolism may reach 100 per cent. above the normal; 15 per cent. to 25 per cent. above normal may be considered mild and above 50 per cent. severe. He considers that the basal metabolic rate will not give a true idea of how ill the patient is, as the nervous phenomena and the degree of thyroid stimulation by no means run parallel. On the other hand, the basal metabolic rate may give the differential diagnosis between hyper- and hypo-thyroidism. H. S. Plummer and W. M. Boothby[1] have shown that administration of iodine removes all the clinical symptoms of exophthalmic goitre, though the metabolic rate remains high. The theory formulated to account for these facts is as follows: Some chemical appears in the body that is capable of over-stimulating the thyroid; the resulting excess of thyroxin leads to increased metabolism which may reach a high figure without causing the patient any symptoms of distress. These cases Plummer calls "compensated hypertrophies." In the next stage compensation fails because the available iodine is insufficient and the thyroxin produced is therefore imperfect and causes nervous symptoms. The administration of iodine to such cases restores them to the compensated group and the symptoms disappear. Adenomata of the thyroid affect the production of thyroxin in different ways. The tumour may itself produce the hormone or may stimulate the gland to increased production. In other cases the adenoma seems to depress the thyroid activity, while in about 35 per cent. it has no effect. The basal metabolic rate may help the surgeon to determine whether, and how extensively, he shall remove the growth. Removal usually brings the metabolic rate back to normal if there has been aberration due to its presence. Too liberal removal of gland substance with the tumour causes hypothyroidism. Regular estimation of the basal metabolic rate after operation would often enable the doctor to give thyroid medication before serious symptoms of hypothyroidism appeared. The diagnosis of hypothyroidism may be almost impossible from symptoms alone, and many cases of indeterminate "unfitness" would be cleared up by a basal metabolic rate investigation, which would also be a valuable guide to dosage. It is also an unbiased proof of the value of treatment. Valuable statistics could be obtained if all the patients in a hospital were to have routine estimations of metabolism and the various lines of treatment were compared. The interaction of thyroid and pituitary make basal metabolic rate estimations of value in hypophyseal conditions. In acromegaly the rate may be increased or decreased, and when it has become subnormal organotherapy may be very useful. In long-standing cases of Fröhlich's syndrome the rate may be much lowered. Clinicians know that large quantities of pituitary are tolerated if they can be combined with thyroid, and the thyroid itself stimulates pituitary function, but a watch must be kept on the metabolism if the thyroid is to be given without danger of harm.

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[1] Acute Dermatitis Among Painters, by J. A. Turner, Journal of Industrial Hygiene, 1925, vol. vii., pp. 293-298.

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[1] Left-handedness: A New Interpretation. By Beaufort Sims Parson. New York: The Macmillan Company.

ADOLPHE SMITH.

THE death of Mr. Adolphe Smith at Fulham on Nov. 9th removes the picturesque figure of an octogenarian who had met life at many points. Of bilingual parentage, Mr. Smith was equally at home on either side of the Channel. He wrote an admirable guide to Hyères as a health resort, he was intimate with the small but influential community at Monaco, he was publicly thanked by the French Government for personal bravery in the streets of Paris at the time of the Commune. His deep interest in the international labour movement took him to every continental centre where standards of work were under discussion, and few can have known more of the actual conditions of life of the people of many countries. It was this background of knowledge and sympathetic outlook which gave special value to Mr. Smith's work as Special Commissioner of THE LANCET for 40 years. These commissions were set in motion to inquire into various defects associated with social machinery, understood in its broadest sense, at a time when no official body existed for the purpose. Mr. Smith's reports included one on the spread of disease by means of laundrying, in which he found that table napkins from St. James's-street Club were being dried in a Peckham garret over the bed of a small-pox patient, and another on the contamination of uniforms at the Army Clothing Depôt. This report led to immediate reform. He reported on cholera centres in Europe at the danger-point of 1892–94, preparing maps and statistics which helped the progress of epidemiology; for at that time, while the State could legally spend money on investigating the few cases of cholera occurring in this country, there was no official provision for making inquiry on the continent. He reported on the sanitation of a number of continental and American cities, and his revealing survey of the Chicago stockyards was used by Mr. Upton Sinclair in his famous book, "The Jungle." Mr. Smith's investigation into the way of life of East-end tailors having resulted in the setting up of a special commission of inquiry by the House of Lords, he visited 150 sweating dens in the provinces, of which the final outcome was five large blue-books and the initiation of many changes for the better. Articles on the free feeding of school children which he wrote for us were used as evidence in the House of Commons debates which ended in a measure for provision of meals.

In all these ways Adolphe Smith's work was of lasting value to the community, but outstanding for medicine were his reports on the conditions of contract practice 30 years ago. A general movement against the medical man being dragged into contract practice as if it was a profit-making business came to a head at Cork, where the local profession formed a benefit club to be managed entirely by themselves. Mr. Smith went to Cork and set out in a brief letter to THE LANCET the stages of the dispute between medical men and the clubs, the importation of outside medical help, the way in which first the hospitals and then the druggists were drawn into the battle against the demand that bankers, large tradesmen, and well-salaried clerks should be admitted to the medical clubs upon the same terms as poorer clerks, artisans, and labourers, with a miserable yearly fee to cover attendance upon every member of the subscriber's family. From Cork Mr. Smith went on to Portsmouth, where he examined the dockyard benefit societies which admitted infants and juveniles as well as adults at the uniform rate of ½d. per head per week; from there, to the medical aid companies at Eastbourne, and so on, over the rural and mining areas, with a divergence to Brussels and a final visit to France, where he discovered no harm being done to the dignity and interests of the medical profession by sick insurance companies. In one of these letters he summed up the position of the club medical officer as the wage-slave of a commercial concern, no longer the guardian of public health, but the promoter of a private business. These articles were issued later as a pamphlet entitled "The Battle of the Clubs," which was widely quoted when the proposals for a National Health Insurance Act first came before Parliament. It is remarkable now to recall with what approval Mr. Smith carried out his difficult task. In person he retained throughout life a certain disarming simplicity of demeanour, and his writing gave the impression of one who observed with candour and who set out his observations without prejudice. Among the host of nameless contributors to our columns none can have had wider influence on broad social conditions than Adolphe Smith.

THE PAINTER AND HIS OCCUPATIONAL RISKS.

ATTENTION has often been directed to the occupation of painting mainly on account of risk of lead poisoning. In this and in other countries committees of inquiry have deliberated and reported. Then came the adoption at Geneva of a recommendation that lead paints should be prohibited internationally for use inside houses. Action to give force to this recommendation has not yet been followed in the different countries concerned. The contention has been advanced that some, at any rate, of the symptoms among painters attributed to lead are, in fact, due to inhaling the fumes of turpentine and other volatile solvents used in paints. There are grounds for accepting that these fumes do cause trouble, but the risk from lead poisoning is hardly thereby minimised. Now further trouble is ascribed to these same solvents by Dr. J. A. Turner, Ohio, U.S.A., whose interest was aroused by the occurrence of skin affections among painters under his care. The trouble consisted in an irritating vesicular eczema on the back of the hands and forearms, which, however, quickly reacted to treatment. He proceeded[1] to investigate the various paint substances and solvents used—namely: turpentine; naphtha; white paint composed of zinc oxide, white lead and solvents; iron filler, a mixture of carbon black, petroleum and turpentine; thinner, consisting of turpentine and naphtha in equal parts; and sealer, composed of drop black with petroleum. Guinea-pigs were used; the skin over an area was shaved, and the materials were applied for varying periods. He found that all the substances used had a depilatory effect, which, however, was soon recovered from when the application ceased. But he found, in addition, that the paint solvents can cause dermatitis, and that turpentine, thinner, and naphtha are the chief delinquents. Hence he considered that painters should be warned against using paint solvents for removing paint, grease, and oils from their hands, and be encouraged to wash in soap and water, and afterwards to rinse the skin thoroughly with clear warm water.

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[1] Acute Dermatitis Among Painters, by J. A. Turner, Journal of Industrial Hygiene, 1925, vol. vii., pp. 292–298.

THE SEVENTIETH BIRTHDAY OF A REVIEW.

A NEWSPAPER, like a country, school, or family, is mainly an abstraction of the mind. Analyse it and you will find nothing more than an office with the founder's portrait, a mortal editor, a material printing-press, a row of bound volumes, and a copy of the current issue. These, it is clear, are none of them the newspaper itself. They are only appendages to an abstract personality expressed by a name—a name which symbolises every thought or action ever associated with itself. Like children, newspapers are easily conceived, born with labour, and casually given names; it is only then that the real struggle begins. They have a very high infantile mortality; they need to be kept warm until their circulation is established; they have to be nursed through the disorders of childhood; they must be educated; and they must find a job. To live to a ripe age is in itself something of a triumph, and to have lived worthily deserves unstinted congratulation. Such thoughts are appropriate to the seventieth birthday of the *Saturday Review*, for its age is an index of the service that has been given to it and through it and inspires faith that in the future it will have as real a place in the community as it has had in the past. In a pleasing article on seventieth birthdays Mr. Gerald Gould tells the immortal story of the Frenchman who fell out of a balloon and was heard to murmur to himself in mid-air: " Pourvu que ça continue ! " In an even more optimistic spirit we congratulate our contemporary.

THE next session of the General Council of Medical Education and Registration will commence at 2 P.M. on Tuesday, Nov. 24th, when the President, Sir Donald MacAlister, will take the chair and give an address. The Council will continue to sit from day to day until the termination of their business.

THE Proprietors much regret the delay in delivery of last week's issue of THE LANCET.

DONATIONS AND BEQUESTS.—Nearly £2400 have been raised by a bazaar in aid of the Ashton and Hurst Sick Nursing Association.—Mr. D. C. Edwards, for 50 years clerk to the board of guardians, has given £1000 to the Llanelly Hospital.—Miss Elizabeth Ann Vaughan, of Royston, Herts, besides other bequests, left £1000 to St. Dunstan's Hostel.—Mr. and Mrs. Lye, of Rochdale, have given a donation of £1000 to the Royal Albert Institution, Preston.—A legacy of £20,000 was made to University College, Southampton, by Mr. George Moore, of Lordswood, Southampton, once a member of the College council.—Mr. William Fletcher Rogers, Wallasey, Cheshire, besides other bequests, gave £500 each to the Chester Royal Infirmary, the Wallasey Cottage Hospital, the Victoria Central Hospital, Wallasey, the Star and Garter Hospital for Disabled Soldiers, Richmond, Surrey, and the Wolverhampton Royal Orphanage: and £250 each to Dr. Barnardo's Homes and the Agnes Weston Homes for Sailors, Portsmouth. After other bequests he left the residue of his estate for deserving charities in the City of Chester or the County of Cheshire as his two sisters may decide.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXLVII.—THE TREATMENT OF OBESITY.

THE modern treatment of obesity is based on the subdivision of this condition into two main types, in which the exogenous and endogenous factors respectively play the chief rôle. In the exogenous, the ordinary form, there is an excess of food intake over energy expenditure in an otherwise healthy person, while in the endogenous there is a tendency to accumulate fat independently of these causes. There is usually in the latter condition an alteration of function of one or more of the ductless glands. Naturally, cases occur which must be regarded as transitional forms between the two; these types will be considered under a separate heading.

Exogenous Obesity.

Diet and exercise are the two most important points to attend to in the treatment of this form of obesity. It is possible to reduce weight by diet alone, but exercise is of great value in maintaining the tone of the muscles. It also facilitates the loss of weight by increasing the total metabolism.

Diet.—The bulk of the fat of the tissues is derived from carbohydrate, the remainder from fat. It is usual to cut down the fats to a minimum and allow a certain amount of carbohydrate in the form of vegetables. Bulk can thus be obtained in this way and the appetite satisfied. A low fluid intake is not necessary or desirable, except, perhaps, in cases with cardiac complications. Obesity can be reduced safely on a great variety of diets, so long as sufficient protein and carbohydrate are given to prevent loss of body protein. Of a number of schemes advocated from time to time, the dietetic régimes of Banting, Œrtel, Ebstein, and Von Noorden are probably the best known. In these diets the proportion of protein is increased, while the carbohydrates and fats are reduced to various extents; for details reference must be made to the original monographs. A satisfactory diet should contain a considerable amount of protein in the form of lean meat and fish, a moderate amount of carbohydrate in the form of vegetables, and little fat. Of fish, salmon, herrings, and sardines, containing more than 10 per cent. fat, should be avoided. Poultry, with the exception of duck (30 per cent. fat), may be allowed. Vegetables containing more than 10 per cent. carbohydrate should be used sparingly; the chief of these are the following: Potatoes, 16–20 per cent.; green peas, 13; broad beans, 14; broccoli, 10; onions, 10; parsnips, 18; artichokes, 17. Sugar is better cut down to a minimum and breadstuffs limited to one or two slices a day. All forms of bread contain a large proportion of carbohydrate, varying from 45–65 per cent., and the percentage in toast may be as high as 60. It should thus be condemned. Bread is a difficult article of diet to replace; the quantity must, however, be strictly limited or a patent bread made with casein (prepared for diabetics) may be substituted. Fresh fruit may be allowed in moderation. Bananas, cherries, grapes. and greengages contain more than 10 per cent. carbohydrate and should be restricted. As to cooking, the ideal form is grilling; boiling or roasting may also be employed, but frying should be avoided.

It should rarely be necessary to calculate the caloric value of the food intake. It is important that the body-weight should be controlled by weekly measurements. In most cases it is best to arrange the diet so that the weight is reduced gradually by 1 to 2 lb. a week. This prolongs the period of dieting and accustoms the patient to a small amount of food; he is less likely to overeat again.

Exercise.—The second essential in treating this form of obesity is exercise. Muscular exercise increases the metabolism more than any other factor, and the loss of weight is accelerated. Moderate exercise has been found to increase the metabolism three times, severe exercise as much as nine times its normal rate. Obese patients cannot, of course, take severe exercise without throwing an undue strain upon the heart and circulation, but active exercise can generally be arranged on a graduated scale. When the degree of obesity prevents active exercise the chief substitutes employed are massage, active and passive movement, and faradisation. Massage strengthens the muscles and facilitates the taking of active exercise, but its direct effect on metabolism is slight. Faradisation in the form of the Bergonié system has lately been used considerably; by this means the principal muscles are made to contract rhythmically and in regular order against a load. Most cases of exogenous obesity respond to diet and exercise; the use of thyroid extract is seldom necessary or advisable. Recently, attempts have been made—it is claimed with success—to treat certain of these cases by a combination of subcaloric diet and thyroid extract, but it is probable that these patients really belong to the endogenous group. They are chiefly of the type developing after childbirth and associated with menstrual disorders. The administration of thyroid extract is controlled by repeated estimations of the basal metabolic rate, which is maintained at a level of about +10 per cent. The uncontrolled employment of thyroid extract in obesity is to be condemned.

Endogenous Obesity.

In this form of obesity fat is deposited *independently* of food intake and energy expenditure; diet and exercise are no more than useful adjuvants to treatment by gland extracts. In endogenous obesity there is a defect of metabolism due to deficient function of certain of the ductless glands, notably the thyroid, the pituitary, and the genital glands. When their function is defective, the ability to metabolise food, and particularly carbohydrate, is subnormal. There may also be a type of endogenous obesity due to excessive secretion of insulin, and the frequency with which obese patients develop diabetes suggests that this supply may ultimately become exhausted; but this condition is not yet definitely recognised.

Differentiation between cases of the exogenous and endogenous groups is not always easy. Onset at or about puberty, or in women after childbirth or at the menopause, and associated disturbances of growth, menstruation, and other conditions suggest a ductless gland disturbance. In other patients endogenous obesity is inherited and appears shortly after birth or about the time of the second dentition. Certain metabolic investigations enable a distinction to be made between these two groups. In the endogenous form the basal metabolism and the tolerance for sugar are usually both abnormal. These tests can be made without difficulty at the bedside. The former is chiefly of value in cases of suspected thyroid deficiency, while the latter can be used to unmask a defective mechanism for dealing with sugar in endogenous cases.

Obesity of Thyroid Origin.

Obesity of thyroid origin must be suspected when a rapidly developing obesity occurs with slight symptoms of hypothyroidism, puffiness of the feet, apathy, diminution of memory, and subjective feelings of cold. The basal metabolism is usually subnormal and should be investigated. Thyroid extract acts as a specific and can be employed as a functional test. The tolerance for these extracts is remarkably high. Withdrawal of food, on the other hand, is tolerated badly. Cure by thyroid extract is rapid and complete. A reliable desiccated extract of the gland should be used and given in gradually increasing doses, starting with gr. ½ once a day and working up to a point at which the patient loses 1 to 2 lb. a week. This rate of loss should be maintained, though as the tolerance increases it may be necessary to increase the dose still further. These patients may require as much as gr. 15 of the desiccated extract a day. The dosage can be more accurately regulated by repeated estimations of the basal metabolism, an attempt being made to maintain it at a level of about +10 per cent. Marked acceleration of the pulse or glycosuria indicates the temporary withdrawal of the extract, or diminution of the dose.

Obesity of Pituitary Origin.

The fat distribution is characteristic, being especially marked around the girdles. The degree of obesity may be excessive and is most commonly found in children and adolescents. It is usually accompanied by disturbances of growth and genital function. When the condition is due to a pituitary tumour little can be expected from treatment by gland extracts, but in other cases there appears to be only a disturbance of function. In these patients the basal metabolism is low—probably due to a secondary thyroid factor—and the carbohydrate tolerance abnormal. The literature contains numerous statements that in such cases pituitary extracts are of value when given by the mouth, the obesity being remarkably relieved in some patients. Thyroid extract is usually said to be of value, though the results are not so uniformly satisfactory as in cases of the true thyroid type. From our experience at St. Thomas's Hospital we have come to the conclusion that pituitary extracts, whole gland, anterior lobe, or posterior lobe are not effective in reducing the obesity of these patients when given by the mouth. They have, however, a definite effect on their carbohydrate metabolism, and when given with thyroid extract greatly enhance the effect of the latter. We conclude that the best results can be obtained by treatment with gradually increasing doses of thyroid extract and whole gland pituitary extract, starting with gr. ½ of each and working up to a point at which the patient loses 1 to 2 lb. a week. Some cases may require as much as gr. 15 of each extract a day. More accurate regulation of the dosage can be obtained by repeated estimations of the sugar tolerance. Reliable desiccated preparations should be used.

Obesity of Genital Origin.

The tendency to obesity, observable in both sexes after castration, is generally attributed to the loss of the secretion of the genital glands. That treatment by extracts of these glands has not up to the present proved effective may be due to lack of effective preparations. The same may be said of the treatment of eunuchoid obesity. It is possible that genital grafts may ultimately prove to be the solution of these problems. Some of these patients can undoubtedly be helped by dietetic measures, others by thyroid extract. As their basal metabolism is sometimes low and carbohydrate mechanism usually defective, the latter is probably the best method of treatment at present available.

Transition Forms.

A number of cases of obesity develop at times when the function of the ductless glands is known to be disturbed; for instance, in women after childbirth or at the menopause, or after some infectious illness. They are not usually regarded as cases of endogenous obesity, but due rather to the sedentary habits and overfeeding of convalescence. In other persons, under exactly similar circumstances, obesity does not result, so that presumably there must be some additional factor. The mechanism of these persons for dealing with sugar corresponds to that of the endogenous type, the curves being nearly always abnormal. Again, treatment by diet and exercise is frequently ineffective in reducing their obesity, while good results can be obtained from treatment with thyroid and whole gland pituitary extracts. It would appear advisable to take all these points into consideration when dealing with any individual case of obesity.

H. GARDINER-HILL,
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Special Articles.

CANCER STATISTICS.

By J. E. Rush, M.D.,
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It must be apparent that vital statistics, their collection and interpretation presupposes a dual type of training. Biometrics (of which vital statistics is a part) is simply mathematics applied to a biological problem. The mathematics involved is far the simpler consideration, for in order to have the deductions of any value whatsoever, the student must have a clear-cut conception of all the underlying biological factors which influence the collection of the data with which he is working. Obviously, one is not entitled to use a precision measure indicating that the result is correct to 1 part in 100, if in the collection of one single factor there is a probable error of 10 per cent.

Mathematics applied to a Biological Problem.

The handling of figures as applied to vital statistics is relatively easy from a mathematical standpoint, while from the medical standpoint it is fraught with extreme difficulty. To add, to multiply, or divide, to figure rates per 100,000 is nothing but simple arithmetic. To know the limitations of differential diagnosis, the difficulties in the interpretation of physical signs and laboratory data, to have made out death certificates where you could not be absolutely sure, even of the primary cause of death, are all necessary experiences before one is at liberty to interpret vital statistics. Here, perhaps more than anywhere else, does the maxim "Figures don't lie," &c., find its best application.

How does this apply to cancer? There is a group of statisticians that contend that the incidence of cancer is actually increasing; others say that the increase is only apparent and not real, that it is due to better diagnosis, to better reporting of the causes of death, &c. It is certainly important for us to know the truth because science is dependent upon truths, and, furthermore, such knowledge may influence our methods of attack on the problem.

In order to arrive at a basis for the comparison above indicated, it is obviously best to select census years which are sufficiently separated to show any changes (if, indeed, such changes exist) so that we are not forced to draw conclusions from slight differences in data, from which deductions of the kind to be made are not warranted, simply because the slight differences shown are not significant in view of the precision of the biological data subjected to analysis. For many reasons it is thought that a recent ten-year period could best serve our purpose, and for this reason the years 1910 and 1920 have been selected. The intervening census years have been examined in order to be sure that the years selected were representative and that no particular factor, not usually operating, was met in the two years cited.

In the interpretation of vital statistics based on mortality rather than morbidity many seem to feel that there is a great element of precision which allows the manipulation of such data in a purely mathematical manner, and that deductions stated with great mathematical accuracy are warranted. Whatever may obtain elsewhere, this certainly is not true in cancer. It is not necessary to point out to the physician that neither tumour nor cachexia nor both occurring in the same individual are pathognomonic of cancer. One or both of these conditions are frequently met in the anæmias, in arterio-sclerosis and the like, and until we have a different attitude on the part of the public toward post-mortem examinations, these great factors will always influence our vital statistics, even our mortality reports. We must, too, be very careful of false correlation. Only recently it has been stated that the cancer curve has paralleled the increased use of machinery; but to prove that these bear a cause and effect relationship to each other is quite another matter.

Analysis of Reported Increase.

From 1910 to 1920 there is a reported rate increase in the incidence of cancer from 76·2 to 83·4 per 100,000, or over 9 per cent. (1) What are the important differences in the U.S. registration area of 1910 and 1920? (2) What factors or appliances have entered the field of medicine to help in making a better diagnosis of cancer? (3) To what extent has the saving of lives in the lower age-groups increased cancer as one of the causes of death in the upper age-groups?

Let us analyse the statistics of these three years before we answer (see table).

The precision of the data is not such as to warrant us in using the number of significant figures shown in the column entitled "Per cent. of total deaths." The mathematics have been extended in order to make more apparent the differences (should any such exist).

The rate per 100,000 has increased from 1910 to 1920. In 1917 and 1918 much comment was provoked by the apparent arresting of the upward trend of the cancer curve and many explanations were advanced to account for it, such as: 1. The educational programme intended to reach the public with the message that early cancer is curable has begun to bear fruit. Subsequent statistics have proved the incorrectness of this theory. 2. Another most interesting theory was that the war-time diet of the country had influenced the cancer-rate. Diet (on the calorie basis) is terribly over-emphasised as a factor in public health problems, and again we must recall that there was really no very great national change in our modes of living (including diet) during the war. While not attempting to answer the question raised by the statistics of 1917 and 1918, we must remember that the flower of the medical profession was abroad or in camps on this side; that, to take their places many graduates who had never before practised medicine and many retired physicians were pressed into service to meet the public needs. I have no doubt that this accounted for the difference in our vital statistics. 3. That the influenza pandemic took its greatest toll in the age-groups in which cancer is not particularly met is, I believe, an established fact. Many have claimed that the decrease of deaths due to

Cancer (including Sarcoma and Hypernephroma).

—	1910.			1915.			1920.		
	Total deaths.	Per cent. of total.	Rate per 100,000.	Total deaths.	Per cent. of total.	Rate per 100,000.	Total deaths.	Per cent. of total.	Rate per 100,000.
Buccal cavity	1,576	3·8	2·9	2,183	3·9	3·2	2,679	3·7	3·1
Stomach and liver. ..	16,475	40·1	30·6	21,221	38·9	31·5	27,489	37·7	31·4
Peritoneum, intestines, and rectum	5,258	12·8	9·8	7,332	13·4	10·9	9,792	13·4	11·2
Female genital organs..	6,147	15·0	11·4	8,120	14·9	12·1	10,797	14·8	12·3
Breast	3,730	9·1	6·9	5,163	9·5	7·7	6,665	9·1	7·6
Skin	1,459	3·6	2·7	1,955	3·6	2·9	2,367	3·2	2·7
Not specified	6,394	15·6	11·9	8,670	15·9	12·9	13,142	18·0	15·0
Total	41,039	100·00	76·2	54,584	100·00	81·2	72,931	100·0	85·4

'owered infant mortality, the reduction in typhoid fever, tuberculosis, and the like gives an increased incidence in those diseases of the upper age-groups, of which cancer is one. When we recall that effective work of this kind has only been in operation for 10 or 15 years, it is difficult to imagine that the child hygiene and typhoid fever (a disease usually of adolescence) prevention programmes would have yet brought great numbers of individuals into the age-groups where cancer takes it greatest toll.

Perhaps there is some reason to consider tuberculosis alone—this disease has caused (and is causing) so great a mortality—too, we must recall here that the effective work in preventing tuberculosis has apparently decreased the mortality from this dread disease nearly 50 per cent. This is a factor worthy of some consideration, but it may be stated here that the average (and it is very dangerous to deal with averages) age of death as computed from the 1920 mortality statistics is about 35 for tuberculosis, while the same for cancer is over 55 years.

Let us examine the tables above given for cancer mortality in the years 1910, 1915, and 1920. We note that there has been a great increase in the total deaths from cancer and also in the deaths from cancer in the various locations of the body. Undoubtedly most, if not all, of this increase is due to the addition of Minnesota, Montana, and Utah (1910), Kentucky and Missouri (1911), Virginia (1913), Kansas (1911), North Carolina and South Carolina (1916), Tennessee (1917), Illinois, Louisiana, and Oregon (1918), Delaware, Florida, and Wisconsin (1919), and Nebraska (1920), to the registration area of the U.S. as it existed in 1910. The group recorded as "not specified" amounts to from 15 to 18 per cent., unfortunately. This must be interpreted as representing a probable error in the statistics of cancer as reported by location of nearly this magnitude.

There is no one who would claim that our ability to diagnose cancer of the buccal cavity, breast, or skin (which caused the death of the patient) was much better in 1920 than in 1910, but it might be thought that the development of the X ray (particularly if it had been more widely used) might have shown an increased incidence in cancer of the stomach, peritoneum, intestines, &c. No such increase is apparent from an examination of the distribution of cancer in various anatomical locations in 1910, 1915, and 1920. Besides the increase in the total deaths from cancer in the various years shown, there is also quite a definite increase in the rate per 100,000. However, quite a percentage of this increase is found under the head of "not specified," which is, without question, the least reliable of any of the figures above given.

Conclusions.

Some of the statements made above are further strengthened by a report entitled "Mortality from Cancer," &c., prepared in 1914 by the U.S. Bureau of Census, which is a special study of the incidence of the disease. This is the most careful statistical study of cancer in the U.S. which has ever been made. The following facts are gleaned from the report cited. About 2000 death certificates from an estimated 50,000 deaths from cancer were examined, and it was found that in only 2 per cent. of the cases was the diagnosis confirmed by autopsy and in only another 9 per cent. had an operation confirmed the clinical diagnosis.

On the basis of the returns for 1913 it was assumed that about 8500 deaths would be reported as due to cancer of buccal cavity, skin, and breast, "all so situated that no mistake would be probable in diagnosis, and that these, therefore, could be classified as of reasonably certain malignancy." This would mean that in 14,000 cases the diagnosis was "reasonably certain," leaving 30,000 cases in which it was proposed to write to physicians for additional information. About 35,000 letters were sent to physicians and replies received in about 80 per cent. of the cases, with the result that the Bureau was able to compile 30,555 deaths, or 58·3 per cent. of the total appeared under the caption of "Diagnosis reasonably certain," 27·5 per cent. under "Diagnosis uncertain," and 14·2 per cent. under "Diagnosis unknown." With this lack of accurate and definite information in the best cancer study that has ever been undertaken in the United States, are we justified in assuming that a recorded increased change in the death-rate from 76·2 per 100,000 in 1910 to 83·4 in 1920 is indicative of an increased incidence in cancer? With a definite admitted lack of precision of 14·2 per cent. and a possible error of 41·7 per cent. in the collection of the statistics, are we justified in attaching any importance to a change in the end-result of the magnitude of less than 10 per cent.?

Obviously we have not statistics of sufficient accuracy at hand to be certain that cancer is increasing, and the burden of the proof that it is must rest with those who claim that such is the case.

MATERNAL MORTALITY.

6395

A CONFERENCE arranged by the Post-Certificate School was held at the house of the Royal Society of Arts on Nov. 9th to discuss

How the Midwife can Help to Reduce Maternal and Infantile Mortality.

Dr. J. S. Fairbairn, who opened the discussion, emphasised the importance of making the services of the doctor and of the midwife complementary and not rival. In his opinion the normal labour should be conducted throughout by the midwife; the practitioner should supervise the pregnancy, give antenatal care and instruction, and be ready to deal with any abnormality beyond the scope of the midwife's training. The Scottish Board of Health had remarked in a recent report that the doctor was too expensive and highly trained an instrument to use for normal labour. If this was to become the rule it was most important to get the best possible people into the midwifery service. There were not nearly enough fully trained nurses practising midwifery, and it was essential in the interests of public health to devise some means whereby the best class would be attracted. He thought that the practice of midwifery should be made a stepping-stone to public health appointments and the conditions of the midwife made less burdensome. This was the day of team work, and team work between midwives and general practitioners would add greatly to the public health services of both.

Miss Doubleday drew attention to two outstanding statistical facts; that since the passing of the Midwives Act there had been practically no change either in the maternal mortality-rate or in the infant mortality during the first month after birth. She pointed out that 50 per cent. of the births in this country are attended solely by midwives. The reduction of these mortality figures was largely a problem of housing, and she questioned whether the provision of more hospital accommodation were the best solution for normal cases. The routine of the well-equipped hospital did not help the woman when she returned to her own conditions. The midwife in attendance at the home could educate her and show her how to make the best use of those conditions. A very important factor in this education was the father, who was entirely neglected under the hospital system. Educational authorities had been inclined in the past to leave the father in the dark and had not attempted to teach him that his help was really needed. The midwife's work was essentially to advise and supervise. She should insist on her patient going to the doctor at the third and eighth months, and see her at regular intervals throughout the pregnancy and test her urine. Prematurity was one of the main factors in the high mortality-rate. Moreover, there were many minor ailments such as constipation, varicose veins, fatigue, lax abdominal walls, &c., on which helpful advice could be given, nd many parturition troubles could be avoided if very mother were protected from over-fatigue in the irst stage of labour. In the puerperium the "handy woman" was a potential danger; she had no idea f the elements of asepsis nor of how to treat any difficulty that arose. It was no use to expect a reducion in the maternal or infantile mortality until killed nursing of the puerperium could be provided. Often the infant was taken off the breast during these early days for want of sensible advice. To sum up, the contribution of the midwife to the problem was: Observation and education during pregnancy, mmediate recognition of any abnormality during abour, and skilled nursing during the puerperium.

The Problems in Rural Areas.

Dr. F. E. Fremantle spoke of the problem in rural areas. The days of the uneducated midwife, he said, were now over, yet some of the least educated midwives had got the best results by the exercise of homely common-sense. He warned the audience not to apply town ideas to country districts. Life in a village was simpler in many ways, and it was necessary to consider the community as a whole. There the doctor reigned supreme, and rightly so, deputing as much responsibility as he possibly could. The essentials of public health lay in the individual. The individual woman had it very largely in her own hands to prevent the disasters of her confinements. While the doctor might be the commanding officer in the campaign for the new life, the sergeant-major was undoubtedly the mother. Therefore, the first essential was to educate mothers, and at no time were they so receptive as during and especially just after their first pregnancy. Moreover, the girls should be taught from schooldays what their maternal function meant and the outlines of its hygiene treatment. To make rural midwifery attractive to suitable women the only satisfactory scheme would be to combine the services of district nursing, including tuberculosis nursing and care of the blind, with midwifery, school nursing, and health visiting. There was a definite future to offer to such women provided the public saw to it that the terms of service were adequate. Permanent quarters ought to be maintained for the nurse in the village. It was just as essential for the village to have a nurse as a parson, and as in the past it had been a public duty to endow the living of the parson so in modern times might the home, if not the salary, of the village nurse be endowed.

The Urban Problem.

Sir John Robertson contributed a paper dealing with large centres, which was read by the chairman. He pointed out how different the situation was in towns, where the midwife could get help in a few minutes and could attend lectures and other forms of instruction; where she could earn more in her more compact practice and pick her patients. He doubted, however, whether the position were really better, although undoubtedly easier and more attractive. There was much value in being thrown back on one's own resources. He urged the recognition of strict etiquette between doctors and midwives. The midwives were fighting the question of unqualified practitioners and ought to be supported by law, but unfortunately a great proportion of their work was done by doctors assisted by "handy women." The midwives ought to be able to send their patients into homes where they could attend them; at present a patient sent into a home was lost to the midwife.

Miss Liddiard, matron of the School of Mothercraft, said that the best educated woman was not doing midwifery because the remuneration was not safe. Country dwellers were often difficult to teach; often the midwife was the only person who could give real education. She believed confinement in the home to be the right thing. Labour was a natural process; why should it be made unnatural by taking the woman away from her husband and family? Moreover, the woman confined in hospital returned without having learned how to manage her baby in home conditions.

Miss Rosalind Paget said that the maternal mortality in 1924 was 1·5 per 1000 in rural areas and under properly-trained and supervised midwives. The women died; we did not know why they died, and that was what we had to find out. There should be post-mortem examinations on every fatal puerperal case. Often the post-mortem findings were clear enough, but were quite different from the diagnosis reached before death. The midwife could help by educating public opinion on the importance of autopsies. The examinations should be performed by competent obstetricians, preferably an official for the district. She also urged a uniform system of birth notification with a space to show clearly who it was that actually delivered the child.

Miss Olive Haydon said that the nursing of the puerperium had been neglected in the enthusiasm for ante-natal care. There were still registered midwives who were incapable of taking pulse or temperature. The mortality-rate could be reduced by careful adherence to the rules of the Central Midwives Board. Post-certificate education should be compulsory, and a longer period of training would help to raise the standard of teaching. More preventive measures should be taught.

Dr. Eustace Hill said that coöperation between the doctor and the midwife was difficult to achieve. Until recently only 19 per cent. of the cases in his district were attended by midwives, but the figure was now increased to over 35 per cent. One of the difficulties in the midwives' service was the opposition of the general practitioner. In one mining district where the public health authority had tried to establish a midwife the doctors had said frankly that they would do their best to starve her out. The two chief causes of maternal mortality were ignorance and the indiscriminate use of forceps. The general practitioner must be educated and also the individual patient on the importance of ante-natal care and the hygiene of labour and the puerperium. Another difficulty in the way of the midwife was that the fee for a doctor called in by a midwife was collected partly or wholly from the patient and might total three guineas, whereas for one guinea the doctor could be retained without a midwife. The patient should not be responsible for fees due to a doctor called in by the midwife. The number of a midwife's cases should be limited; midwives who delivered 300 patients in a year obviously did not do their work properly.

Miss Elsie Hall, speaking as a practising midwife in a poor area of London, said that the midwife had a unique opportunity to encourage husbands to come for an educational talk when she was first booked. She urged that boys and girls should be taught physiology in their schooldays.

Dr. Annie McCall urged the importance of post-mortem examinations. The mortality was high in the general practitioner's work, but much lower in hospitals and in the work of midwives. Doctors had often been sent for too early by midwives because midwives were not taught to do their internal examinations properly. This meant early and unnecessary forceps. She urged the necessity of allowing midwives to give sedative drugs to ensure an easy first stage. She had never seen any harm result from the use of chloral.

Dr. Harold Scurfield said that there was much talk about ante-natal work, but as a matter of fact very little was going on in the country at present. Women would not yet go for ante-natal advice, and must be educated by midwives on its necessity. But the doctor to whom they were sent must not be just any doctor, but a skilled obstetrician, and panels of obstetricians should be compiled. In America the experiment had been tried of putting all the midwifery of a district into the hands of the midwives, backed up by obstetricians. The mortality-rate fell at once. In Australia, where more confinements were conducted by midwives than in any other country, there were fewest maternal deaths. Most of the high maternal mortality was due to meddlesome midwifery.

Dr. R. E. McKenzie said that in Woolwich there was very good coöperation between midwives and the public health authorities. The midwives sent their cases to the ante-natal centres for advice. The trouble about ante-natal work was that there were no fees for it. Midwives had told her that the L.C.C.'s plan of paying the fee of a doctor called in by a midwife had made matters worse, because before that rule the doctor would come and do what was needed for a very small fee, but now the authority fixed a fee and extracted a part of it from the patient, who never knew what she would have to pay.

Sir Francis Champneys agreed that home was the best place for a normal labour. The woman's home ought to be one that she could be confined in, and that was the ideal to work for. To deny sedatives was inhuman. Opium was an excellent drug and appeared to act as a stimulant or as a sedative, according to the needs of the patient.

PARIS.

(From our own Correspondent.)

Public Health and Political Stability.

The overthrow of ministries has its bearing on public health achievement. Here in France technical instruction in public health and popular hygiene is unquestionably good, but its general application throughout the country is poor, as is indeed frankly admitted. Ministerial changes may lie at the root of this failure. Any national accomplishment in public health depends upon the insistent promotion of a definite programme. In England and America the public health programme is only slightly affected by political change. In France the centralised governmental organisation has been unable to continue work along any programme on account of frequent reshuffling in the politico-social system. Leadership in the French public health services has been changed six times during the period 1914–1925. The longest time during which any chief has enjoyed office has been one year and a half; one remained but five months. Anyone familiar with the prolonged period necessary for raising the public health standard of a community will appreciate the effect on a really good public health programme of such frequent political change. As things are these programmes have a hard enough time at the hands of interested politicians.

Small-pox in France.

Vague reports of virulent outbreaks of small-pox in this country seem to have made British visitors thoughtful about choosing their autumn tour, and the British Embassy in Paris is said to have inquired in what departments of France tourists may travel freely without risks of infection. In reply it has been stated semi-officially that measures against small-pox are perhaps more effective in France than in any country. Free vaccination is practised in all the hospitals. Vaccination is compulsory in early childhood, among school children, in the army and navy, in hospitals and asylums, and a provision exists for making vaccination and revaccination obligatory in face of epidemic risk. Prompt application of isolation and vaccination has been found to control such recent outbreaks as that of 20 cases occurring at Toulouse, and that of 23 cases in the Hérault département. Four-fifths of the cases occurred in women who had not been revaccinated since childhood, and the mortality was 33 per cent.

The Bergonié Foundation.

The friends of the late Prof. Bergonié are collecting a memorial fund to be used in establishing a laboratory for electrical and radiological research and experiment. If the funds collected suffice, allowances for specially qualified investigators will be provided, in order that studies of this kind may be encouraged. It is also intended to supply modest pensions for workers disabled by work in electricity, or involving radium and X rays. Those desiring to contribute to this fund should communicate with the Fondation Bergonié, 5 rue Saint Philippe du Roule, Paris.

Awards in Medicine by the Académie des Sciences.

Notable awards in the medical and other sciences were made by the Académie des Sciences of the Institut de France, at its meetings of Oct. 26th and Nov. 3rd. Among the more important were the following: 5000 francs to Gaston Ramon, for work on anatoxins, especially the diphtheric anatoxin; 2500 francs each to Eugene Wollmann, for work on proteolysis and the defence ferments of Abderhalden; to Maurice Javillier (biological chemistry), to Léon Bérard and Charles Dunet, of Lyons (thyroid cancer), and to the group consisting of Sergent, Donatien, Parrot, Lestoquard, Plantureux and Rougebief (the bovine piroplasmoses of Algeria). Awards of 2000, 1500, 1000 francs and less were made to Mercier, Savigny, Rosenthal, Métalnikov, and others for their contributions to anatomy, zoology, blood transfusion, intracellular and protozoan activity.

Reduction of Infant Mortality.

Infant feeding centres are increasing in France. Their work includes supervision of artificially fed infants, together with regular examinations and effective utilisation of wet nurses. In 1922 and 1923 the movement was initiated by private agencies operating at six points outside Paris. Results were so satisfactory that the Assistance Publique has instituted centres at Montluçon, Moulins, Nevers, Toucy, and La Châtre; these care for a total of 280 infants. A private centre at Mainville has also been transferred to the Assistance Publique. For the private centres, a mortality of 19·7 per cent. in 1924 was lowered to 12·7 per cent. in 1925. For the official centres at Paris over the same period the diminution was from 12·3 per cent. to 11·3 per cent. A buffet providing sterile milk for infants, recently established in the railway station at Limoges, has proved so useful that similar buffets will be instituted at Nantes, Tours, St. Pierre-des-Corps, Montluçon, Périgueux, Vierzon, and Les Aubrais. These milk buffets are operated by the railway company of the Paris-Orléans region.

The Parents' Association of the Deaf-Mutes Institution in Paris has presented a vigorous protest against its projected removal to some provincial site. The protest will be considered by the Paris Municipal Council.

A new clinic for mental and neurological hygiene, sponsored especially by Profs. Claude and Nobécourt, and mainly devoted to children and adolescents, has just been established in the rue Vaugirard, not far from the Montparnasse railway station. The clinic provides examination, treatment, hospitalisation, and other aid which may be necessary, and will also be utilised for the instruction of medical students.

At a recent meeting of the Academy, Prof. Achard, on the completion of his five years' period as general secretary of the Académie de Médecine, was unanimously re-elected for another term of five years.

UNITED STATES OF AMERICA.

(From an Occasional Correspondent.)

The Council of Physical Therapy.

At the recent Atlantic City meeting of the American Medical Association the trustees of the Association were empowered to set up a council to investigate and report on the merits of non-medicinal apparatus and contrivances offered for sale to physicians or hospitals. No time was lost, and a council, constituted on the lines of the Council of Pharmacy and Chemistry, has just met at Chicago. This council consists of two physicists, two physiologists, two pathologists, and four clinicians, whose names carry weight both at home and abroad. The council which, as yet, has simply discussed the scope of its work, intends not only to investigate physical apparatus, but to inquire into-methods of massage, manipulation, hydrotherapy, and remedial exercises, and in the first instance a statement will be prepared of the present status of the various physical therapeutic methods now in use. American practitioners are hopeful of obtaining, through the advice of the council, value for their money.

Diphtheria Prevention.

Until recently the prophylactic use of diphtheria toxin-antitoxin has been almost limited to children of school age. These are naturally the most accessible to the health authorities and can be treated economically by routine methods. Parents in the U.S.A. are accustomed to having vaccination enforced at the school age and an additional measure of prevention comes naturally at this time. In New York City, where the largest numbers of school-children have been treated, there has been a definite fall in the mortality from diphtheria, and though it is hard to say how much this fall is directly due to the use of toxin-antitoxin, the authorities claim that the practice has saved the lives of 700 children since 1914. Considering, however, that more than half the deaths from diphtheria occur before school age is reached and that early diagnosis is most difficult in the pre-school years, it has seemed scarcely adequate to protect only the school-children. Where clinics are held regularly for pre-school children an obvious opportunity exists. Baltimore has had such clinics for several years and has lately taken advantage of them to make toxin-antitoxin immunisation available. As the result of publicity, no doubt, it has now been found necessary to open 12 new stations, and the attendance at these has been most gratifying, from 50 to 100 babies being reported as a weekly average from several of the new stations. At Syracuse, N.Y., where the Milbank Foundation is financing a health demonstration, special clinics are being held for the same purpose, and several pamphlets have been published for popular enlightenment. Copies of them can be obtained from the Syracuse Department of Health, 314, East Fayette-street, Syracuse, N.Y.

Increasing Virulence of Small-pox.

For cities in the United States and Canada in 1924 and 1923 the fatality-rates of small-pox were 1·5 per cent. and less than 1 per cent. respectively; but in the first six months of this year the figure has risen to 3·5 per cent. The fatality-rate for States and provinces (including the rural areas) has reached 2·1 per cent., which is three times that for 1923. The highest rate was in Camden, New Jersey, which reports 97 cases with 44 deaths. The statistical bulletin of the Metropolitan Life Insurance Co., in reporting these figures, predicts that " only thoroughgoing vaccination will protect the American and Canadian populations from an epidemic of deadly small-pox which, under present conditions of indifference to vaccination, bids fair to rival the most destructive small-pox epidemics in public history."

A Scheme of Neurological Convalescence.

The Public Health Committee of the New York Academy of Medicine has been considering the care of various types of convalescent patient. The subcommittee concerned with nervous cases point out that very few neurological cases run a clear-cut course ending in cure, and that the line of demarcation between the subacute and chronic is ill-defined. It is therefore impossible to confine any scheme strictly to convalescence and their proposals include all neurological cases save the really acute. The plan they put forward suggests that there should be four types of home. The first is the general convalescent home as it already exists, in which might be received cases such as peripheral neuritis, mild poliomyelitis, and surgical operations on the brain and cord. A variant of this would be a home more especially adapted to the neurological patient where a resident physician and nurses with some special training would deal with a small number of organic neurological cases and a few functional ones, included with a larger number of ordinary medical and surgical patients. The second type of house would be a new organisation specially run for neurological convalescents, such as choreas, early amyotrophies, neuritis and post-encephalitic cases, residual vascular cases, mild endocrinopathies, and early but already treated neurosyphilitics. A minority of general medical cases would be included in the home in order to improve the morale. Emphasis would be laid on recreations, games, and occupational therapy with a minimum of medicine. The third large type is the neurological convalescent farm, to which is attached a staff of specially trained nurses under a resident physician. This would accommodate exclusively functional cases, and emphasis would be laid on practical occupation, household, gardening, and farm work. Separate establishments should be reserved for behaviour children, including post-encephalitics. The fourth type is the hospital for chronic cases, working in conjunction with the convalescent system. The majority of the patients would require only custodial care, but a few would be admitted for medical study and diagnosis in order to improve the atmosphere of the institution. Stress would be laid on medicinal treatment and physiotherapy and recreations should be supplemented by occupation therapy. The only place for the epileptic would be in a special neurological convalescent home or a chronic hospital reserved for this type of case. The report of the subcommittee concludes with the statement that 5000 prospective patients per annum would probably benefit by the coördination in New York of convalescent homes on the lines indicated.

Obituary.

FREDERICK ST. GEORGE MIVART,

M.D. LOUVAIN, F.R.C.S. EDIN.

Dr. F. St. George Mivart, formerly medical officer of the Ministry of Health, died suddenly at his London residence on Nov. 5th at the age of 70. A son of Dr. St. George Mivart, F.R.S., who was a zoologist of more than European reputation, he was educated at Beaumont and the Catholic College of Higher Studies, Kensington. He received his medical training at St. Mary's Hospital, London, and at the Royal Infirmary, Edinburgh, qualifying in 1881 as M.R.C.S. Eng. and L.R.C.P. Edin. Three years later he was admitted to the Fellowship of the Royal College of Surgeons of Edinburgh, and after study in Paris, Vienna, and Louvain he gained, in 1889, the M.D. Louvain. After holding in London the successive posts of house surgeon to the Male Lock Hospital and surgeon to the City Dispensary and Western General Dispensary, he was appointed as medical officer to the Local Government Board, and subsequently to the Ministry of Health.

A colleague in the Ministry of Health sends the following appreciation: " Yet another gap has been made in the already small number who remain of the medical inspectors appointed to the Local Government Board in the last decade of the nineteenth century. Mivart joined the staff when he was about 42, and brought to the work a fine and matured intellect, ripened by experience at home and abroad, and among the great men whose colleague he became Mivart soon made his own distinctive impression. He was not a 'specialist,' as was Parsons, on the then somewhat unsettled isolation hospital question or as Power on epidemiology, or as Copeman in scientific research, but no one was more fit to maintain the dignity of the Government Office to which he belonged than Mivart; none knew better than he how to 'admonish' the neglectful official, not by bludgeoning, but in the manner of expert fencer. Mivart ever expressed his accurate observations and thoughtful deductions in careful and felicitous English, and many articles from his pen were printed in the series of reports by medical officers of the Local Government Board on public health subjects. The matter of several of Mivart's reports was so striking as to be given wide publicity in the lay press. To the end of his life Mivart kept up a practical interest in public health work, for, since his retirement some six years ago, he had been a councillor of the Royal Borough of Kensington and a Poor-law guardian. Quite recently he spoke of revisiting with myself the scene of one of his early labours, in order to find out for himself what progress had been made in impounding as a public water-supply certain plentiful springs to which his attention had been drawn years before. Like many another project this was never fulfilled. After passing more than the Psalmist's span of life, he has gone to his rest while still in harness, leaving children, a grandchild, and a great-grandchild to mourn his loss with his widow."

He married, in 1877, Marie Sofie, daughter of Mr. D. Maurigny, of Nice, France, and to her we express our sympathy.

WILLIAM EDWARD NICHOLLS DUNN,
M.B. LOND., M.R.C.S. ENG.

Dr. Nicholls Dunn, who died at Mentone on Oct. 9th after a long illness, was born at Usk, Monmouthshire, in 1871. He was educated at Monmouth Grammar School where he excelled at both cricket and football. He went to St. Bartholomew's Hospital in 1889, took his medical qualification in 1895, and then held resident appointments at the Metropolitan and Queen Charlotte's Lying-in Hospitals, serving also as house physician and resident anæsthetist at St. Bartholomew's. During the South African War he served as civil surgeon to H.M. Hospital Ship *Nubia*, and at the end of the war, owing to indifferent health, he began to winter in Egypt, where he became well known, first as medical officer in Messrs. Thos. Cook and Son's Nile Service and later as resident in Luxor. Here he did good work amongst the visitors and gave much time to the Luxor Hospital for Natives. Shortly after the Great War broke out Dunn volunteered and entered the R.A.M.C., in which he worked devotedly from 1915–19 at Netley Hospital and the Horton Hospital at Epsom. It was this work and the worry and anxiety attached to it, his friends think, that was responsible for the lighting up of the chest trouble which had threatened him for nearly 30 years. He again wintered in Egypt, 1920–22, but was never the same man as before.

"Bill Dunn," writes one of his friends, "was always a favourite with his fellow students and resident officers, but it was in Luxor that I learned to know him well. He was a first-rate practitioner and good anæsthetist. He had his ideals, was a staunch, kind friend, and a very faithful colleague. He was very jealous of the good name of the profession and very plain-spoken about anything he considered unworthy or not altogether straight and upright. In spite of the ill-health which dogged his footsteps, he made a name at Luxor amongst his patients, both British and American. With the natives of Egypt he was a favourite. In whatever sphere he worked he would have made his mark. His numerous friends will much regret his loss."

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 31ST, 1925.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 98 (including 11 new cases at Sheffield, 16 at Sutton-in-Ashfield, Notts, and 25 at Blagdon, Durham); scarlet fever, 2588; diphtheria, 1177; enteric fever, 87; pneumonia, 1100; puerperal fever, 41; cerebro-spinal fever, 7; acute poliomyelitis, 13; acute polio-encephalitis, 1; encephalitis lethargica, 52; dysentery, 1; ophthalmia neonatorum, 110. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 5 deaths from enteric fever, 80 from measles, 8 from scarlet fever, 12 from whooping-cough, 31 from diphtheria, and 51 from influenza. In London itself there were 7 deaths from diphtheria, 13 from influenza, and 21 deaths of infants under two years of age from diarrhœa and enteritis.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

O. W. Keates to *Cambrian*.

Surg. Lt. (R.N.V.R.) L. P. Spero has been entered as Surg. Lt. and has been appointed to the R.N. Hospital, Haslar, for course.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. B. A. Craig retires on ret. pay.

Capt. J. E. Measham retires, receiving a gratuity.

R. J. G. Hyde to be temp. Lt.

TERRITORIAL ARMY.

Maj. W. H. Broad, having attained the age limit, is retd. and retains his rank with permission to wear the prescribed uniform.

Capt. F. B. Julian resigns his commn. and retains his rank.

Lt. W. R. S. Watkins to be Capt.

Lt. V. S. Mitcheson (late R.A., T.A.) to be Lt.

General List (Supernumerary): Capt. F. Hauxwell to be Maj.

Capt. F. C. Chandler, R.A.M.C., to be Divisional Adjutant, 51st (Highland) Divisional T.A., vice Capt. T. L. Fraser, R.A.M.C., who vacates that appt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Lt.-Col. (Bt.-Col.) G. C. E. Simpson, from Active List, to be Lt.-Col. (Bt.-Col.).

TERRITORIAL DECORATION.

The King has conferred the Territorial Decoration upon the undermentioned officers: Lt.-Cols. C. H. S. Redmond and E. B. Bird, and Majs. C. Corfield, W. J. Harrison, and A. F. Lee.

INDIAN MEDICAL SERVICE.

The King has approved the retirement of Lt.-Col. F. S. C. Thompson.

The King has also approved the relinquishment of their temporary commissions by Capts. Nur Ahmed Quraishi and Chuni Lal Khanna.

Maj. J. W. Jones has been appointed Civil Surgeon, Maymyo. Dr. F. Reynolds officiates as Civil Surgeon, Ruby Mines District. Lt.-Col. J. E. Clements has been appointed Inspector-General of Prisons, United Provinces, vice Lt.-Col. J. M. Woolley, retired. Lt.-Col. M. R. C. MacWatters, civil surgeon, Meerut, has been appointed to the civil medical charge of the Saharanpur District, vice Maj. A. Seddon, reverted to military duty. Lt.-Col. Herbert Halliday, late civil surgeon, Murree, has been appointed to act as Civil Surgeon, Simla (West), vice Lt.-Col. W. W. Jeudwine. Capt. S. N. Hayes has been posted to Dalhousie as Civil Surgeon in relief of Capt. G. E. L. Simons. Lt.-Col. W. J. Powell, Inspector-General of Prisons, Central Provinces, has been appointed Civil Surgeon, Pachmarhi. Col. P. Dee, hon. surg. to the King, the senior I.M.S. colonel on the active list, has retired and has been succeeded by Col. A. Fenton, late civil surgeon at Mandalay. Capt. S. C. Contractor has been appointed to the Jail Department, Madras. Lt.-Col. F. P. Warwick has been reposted as Civil Surgeon, Amraoti, on return from leave. Maj. G. H. Mahony has been appointed Civil Surgeon and Superintendent of the Jail at Saugor. Lt.-Col. C. A. Sprawson has resumed his appointment as Principal of King George's Medical College, Lucknow. Maj. A. Seddon, civil surgeon, Saharanpur, has reverted to military employment.

DEATHS IN THE SERVICES.

Surg.-General Howard James McChleary Todd, C.B., R.N., hon. surgeon to the King, who died suddenly at Gosport, Hants, on Nov. 6th, was born on Sept. 20th, 1855. He was the son of Mr. M. G. Todd, of Hove, and was educated at Dr. Seaver's School at Brighton, and at St. Thomas's Hospital where he was a prizeman. He entered the Naval Medical Service in 1879 and was in medical charge with the Niger Expedition in 1879. For his services during the yellow fever epidemic at Jamaica in 1886–89 he received the thanks of the Admiralty, and in 1891 he was thanked by the Foreign Office for his services as acting Consular surgeon at Mapanda's Kraal. Surg.-General Todd married in 1893 Florence Agnes, daughter of Mr. E. Haynes, of Thimbleby, Yorks, by whom he had one son and two daughters.

LIVERPOOL'S ACID RAIN.—During the last year 615 tons of organic matter—nitrates, bitumen, calcium salts, sulphates, and chlorides—came down with the rain on each square mile of Liverpool's most densely populated districts. The bronze of the Queen Victoria *monument* at the end of Lord-street has been so acted on by the sulphuric acid in the rain-water that the copper sulphate formed has sunk to a distance of 4 inches in the Portland stone on which the monument stands.

Medical News.

UNIVERSITY OF OXFORD: *Hospital Scholarships.*—Entrance scholarships and exhibitions have recently been awarded to the undermentioned members of the Oxford Medical School at the hospitals named:—Guy's Hospital: O. A. Beadle, New Coll.; L. T. Ride, New Coll. King's College Hospital: C. F. J. Cropper, University; A. W. Cubitt, Wadham; W. G. Rees, Jesus. St. George's Hospital: H. E. Mansell, Pembroke. St. Mary's Hospital: D. H. Brinton, New Coll.; W. Hurst Brown, Queen's. Westminster Hospital: W. R. Greene, Pembroke; A. T. Leslie Spinks, Oriel; M. G. Pearson, Keble; H. G. Wells, Magdalen.

CHELSEA CLINICAL SOCIETY.—A meeting of this Society will be held in the Board Room of St. George's Hospital on Nov. 17th, at 8.30 P.M., when insulin treatment will be discussed by the following speakers, among others: Drs. E. P. Poulton, George Graham, P. J. Cammidge, and F. G. Crookshank.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.—The next quarterly meeting of the Association will take place at 2.30 P.M. on Tuesday, Nov. 17th, at 11, Chandos-street, Cavendish-square, London, W. 1, under the presidency of Sir Frederick Mott. Dr. J. Carswell will open a discussion on Insanity and Crime: Some Suggestions arising out of the Atkin Report.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The forty-fourth meeting of the Commission was held at the Home Office, Whitehall, on Nov. 5th and 6th, Lord Lawrence of Kingsgate and later Sir Arthur Worley in the chair. Evidence was given by Sir William Glyn-Jones as to the powers and duties of insurance committees and the limited field of work open to them under the conditions of the insurance scheme as it has now developed. Thereafter the Commission sat in private to review the evidence which has been received since it began its work and to consider the questions arising therefrom.

ROYAL SOCIETY.—Among the honours conferred this year by the Royal Society are a royal medal to Prof. W. H. Perkins, F.R.S., for work on the constitution of the alkaloids; the Davy Medal to Sir James Irvine, F.R.S., for his work on the constitution of the sugars; the Hughes Medal to Mr. F. E. Smith, F.R.S., for his determination of fundamental electrical units and for researches in technical electricity. Prof. A. Einstein, foreign member R.S., has been awarded the Copley Medal for his theory of relativity and his contributions to the quantum theory. The following have been recommended by the President and Council for election to the Council at the anniversary meeting on Nov. 30th:—President: Sir Ernest Rutherford. Treasurer: Sir David Prain. Secretaries: Mr. J. H. Jeans and Dr. H. H. Dale. Foreign Secretary: Sir Richard Glazebrook. Other Members of Council: Prof. J. H. Ashworth, Prof. L. Bairstow, Prof. F. O. Bower, Prof. S. Chapman, Sir Dugald Clerk, Prof. F. G. Donnan, Prof. E. J. Garwood, Prof. J. P. Hill, Prof. J. B. Leathes, Prof. J. C. G. Ledingham, Sir Thomas Lewis, Prof. F. A. Lindemann, Sir Robert Robertson, Sir Charles Sherrington, Dr. G. C. Simpson, and Mr. W. C. D. Whetham.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Monday, Nov. 16th, at 5.30 P.M. Sir Henry Gauvain will lecture for the Fellowship of Medicine on Light Treatment of Surgical Tuberculosis in the Lecture Hall of the Medical Society of London, 11, Chandos-street. This lecture is open to all members of the medical profession. The West End Hospital for Nervous Diseases will hold a three weeks' course from Nov. 23rd, dealing with the diagnosis and treatment of nervous diseases. The lecture-demonstrations will be given at 5 P.M. in the Out-patient Department, 73, Welbeck-street, W. 1. From Nov. 23rd to Dec. 12th the Royal Waterloo Hospital will hold a course in medicine, surgery, and gynæcology, covering all departments pertaining to diseases of women and children. For the convenience of the general practitioner whose available time is limited, the London Temperance Hospital has arranged a late afternoon course (4.30 to 6 o'clock) in general medicine, surgery, and the specialties, from Nov. 23rd to Dec. 4th. There will be a special course at the Infants Hospital from Nov. 30th to Dec. 13th. In December there will be the following special courses: Dermatology, Dec. 7th to 10th, at the Blackfriars Skin Hospital, and a similar afternoon course (1.30 to 6.30) at the Hampstead General Hospital from Dec. 7th to 19th. A copy of each syllabus and the Fellowship general course programme will be forwarded on application to the Secretary of the Fellowship of Medicine, 1, Wimpole-street, London, W. 1.

THE death is announced from Habana of Dr. Juan Guiteras, pathologist and hygienist, at the age of 74 years. His study of yellow fever in Cuba is well known.

TUBERCULOSIS SOCIETY.—A meeting of this society will be held at 1, Upper Montague-street, Russell-square, London, on Friday, Nov. 20th, at 8 P.M., when Dr. A. Sandison will read a paper on Swiss Sanatoria from the English Standpoint.

ROYAL STATISTICAL SOCIETY.—The first meeting of the session will be held on Tuesday, Nov. 17th, at 5.15 P.M., at the Royal Society of Arts, John-street, W.C. 2, when Mr. G. Udny Yule, F.R.S., will read his presidential address: "Why do we Sometimes get Nonsense-correlations before Time Series? A Study in Sampling and the Nature of Time Series."

THE Glasgow University Club, London, will dine at the Trocadero Restaurant, Piccadilly, on the evening of Friday, Dec. 4th, when Sir Henry Craik, M.P., will preside. Any Glasgow University men who, though not members of the Club, would like to attend should communicate with the Hon. Secretaries, 1, Harley-place, London, N.W. 1.

TEMPORARY HOME OF THE FOUNDLING HOSPITAL.—The governors of the Foundling Hospital have purchased the Royal St. Anne's Schools at Redhill as a home for the institution pending the acquisition of a new property and the erection upon it of the necessary buildings.

MODEL ABATTOIR SOCIETY.—The fourth annual Benjamin Ward Richardson Memorial Lecture will be delivered on Friday, Nov. 20th, at 5.30 P.M., in the Lecture Hall of the Royal Society of Medicine, 1, Wimpole-street, W. 1, by Dr. William J. Howarth, medical officer of health, City of London, on the Slaughtering of Animals for Human Consumption. The lecturer will deal with methods practised, desirability of centralisation in relation to meat hygiene, and the avoidance of cruelty. Admission is free, without tickets.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the annual meeting of the Royal Faculty held on Nov. 3rd the following officers were elected for the years 1925 and 1926:—President: Mr. R. M. Buchanan; Visitor: Dr. G. H. Edington; Treasurer: Mr. J. H. MacDonald; Hon. Librarian: Dr. E. H. L. Oliphant; and Dr. James A. Adams, Dr. A. Freeland Fergus, Dr. J. M. Munro Kerr, Mr. Thomas Kay, Mr. Archibald Young, Dr. John Henderson, Dr. H. L. G. Leask, Mr. R. Barclay Ness, Dr. W. G. Dun, and Mr. J. Forbes Webster were appointed councillors.

GLASGOW VICTORIA INFIRMARY.—Towards the £100,000 required for the extensions that are being made, £57,000 has been subscribed, but by fewer than 200 persons, and an intensive appeal for the balance is now being made. The extensions include new operating theatres and a new nurses' home. The infirmary, which was founded 35 years ago with 84 beds and cots, now has 260, and treats ten times the number of patients whom it succoured in 1890.

TORBAY HOSPITAL.—Last week the freedom of the borough of Torquay was conferred upon Mrs. Francis Rowcroft in recognition of her gift of £100,000 for the erection of the new Torbay Hospital. She and her sister, Mrs. Wills, have between them given £123,000 for this purpose. These ladies are the grand-daughters of the late Sir Edward Payson Wills, Bart., of the firm of W. D. and H. O. Wills.

OVERCROWDED MENTAL HOSPITALS.—At the last meeting of the Staffordshire Mental Hospitals Board it was reported that the three mental hospitals in the county are all overcrowded. At Burntwood there are 140, at Cheddleton 60, and at Stafford between 30 and 40 patients in excess of the authorised numbers. It was complained that the boards of guardians were sending many mild cases which might well be treated in their own institutions.

THE LATE DR. G. L. PARDINGTON.—George Lucas Pardington, M.D. Durh., M.R.C.P., who died on Nov. 1st, was one of the oldest medical practitioners in Tunbridge Wells. A Gloucestershire man, he studied medicine at St. Bartholomew's Hospital, qualifying in 1878 and taking the M.B. Durh. two years later. In 1903 he was admitted to the Membership of the Royal College of Physicians. After a short stay in London he settled at Tunbridge Wells, where he had an extensive general practice, which as time went on became more of a consultant character; he was for many years on the honorary staff of the Tunbridge Wells General Hospital. Dr. Pardington was specially interested in climatic problems, of which he had made some little study at home and abroad; he was a member of the Council of the Balneological Section of the Royal Society of Medicine. His contributions to the medical press covered a wide field of clinical problems.

PADDINGTON HOSPITALS.—The four hospitals in the borough of Paddington are burdened by debts amounting to about £50,000, and a determined attempt is being made to place them in a more stable position. St. Mary's spends £60,000 a year and its assured income is only one-third of that sum. The Children's Hospital admits nearly 900 patients a year to its wards. The venerable London Lock Hospital, the pioneer in the treatment of venereal disease, is hampered by insufficient income and an increasing debt, and the Paddington Tuberculosis Dispensary, which claims to have been the first of its kind in England, also needs help.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee 71 cases were considered and £658 voted to 54 applicants. The following is a summary of some of the new cases relieved:—

L.R.C.P. Edin., 1888, aged 73. Met with a motor-bicycle accident while acting as assistant to a doctor and broke both legs and his right clavicle. A doctor at the hospital approached the Fund with a view to getting him away to a convalescent home. An emergency grant of £10 was sent to be used for the applicant's benefit; a further £6 was voted.

M.R.C.S. Eng., 1869, aged 80, who practised in Berkshire and retired. Married and has two children. Investments have failed and applicant, wife, and youngest daughter, aged 47, are now living on money received by the sale of household goods. This case has been investigated through the Guild and the report states that they live in a dingy old house which *has a mortgage* on it for £730. The interest on this and rates amount to £52 per annum. The eldest daughter, aged 51, is a widow and she is maintained by her son, so cannot render any assistance to her father and mother. An emergency grant of £5 was sent and the Committee voted £40 in 12 monthly instalments.

Widow, aged 68, of M.R.C.P.I., 1880, who practised for 20 years in Wales and died in 1898. Applicant is a trained nurse and has supported herself since her husband's death. She has just had an *operation for cataract* and is asking for assistance as she has no means and is not yet old enough for the Old Age Pension. £5 was sent as an emergency grant, and a further £5 was voted.

L.S.A., 1884, aged 62, who prior to the war was a ship's surgeon. Served during the war, 1914 to 1923, when he was demobilised from the R.A.M.C., Ireland. Since has made a small income by taking locums. In February last was ill and unable to get further employment, and owing to events in Ireland came to the end of his resources. His wife left him in 1922. November, 1924, Officers' Association gave £5 to enable him to take a post and again in September, 1925, a further £5 was given to his sister for his benefit. As the applicant was very ill he was admitted to King's College Hospital, and when better the Fund was approached with a view to getting him away to a convalescent home. The Fund gave £2 12*s.* 6*d.* for this object.

M.D. Brux. and L.R.C.P. Edin., 1897, aged 57. Unable to get locums has applied to the Fund for assistance. During the last 12 months has received £105 from locums and has had, unfortunately, to apply to the guardians to live, who made an allowance for applicant and wife of 30*s.* a week from Sept. 11th. The rent of one room is 12*s.* 6*d.* a week. Our local secretary sends us a satisfactory report. On his recommendation £5 was sent at once.

Widow, aged 56, of L.R.C.P. Lond. who practised in London and died in July. The late doctor gave up his practice during the war and was unable to take it up again. They had resident patients who were looked after and nursed by the applicant. From paying guests £137 was received during the last 12 months. The rent and rates amount to £90 per annum. The applicant is anxious to get rid of the responsibility of the house and will give it up at the end of this year. She is thoroughly domesticated and a good nurse, and hopes to get a post as housekeeper in a private family. Voted £15 in two instalments.

Widow, aged 85, of M.R.C.S. Eng., 1860, who practised in Lincolnshire and London and died in 1894. She is allowed to live with her daughter who is a housekeeper who earns £50 per annum. The applicant has the Old Age Pension and an allowance of £8 from her eldest son. Three other married sons unable to help. The applicant pays 5*s.* a week towards her board. Voted £30 in 12 monthly instalments.

Widow, aged 53, of M.D. Aberd., 1879, and died in August, who practised until incapacitated by paralysis. The three pensions died with him. Applicant now left without means and the only money in the home is paid by two daughters for their board and lodging at the rate of £1 a week each. Rent and rates are £42 per annum. Applicant's late husband was a pensioner of the Fund. Voted £10 in two instalments.

Widow, aged 63, of M.D. Glasg. who *practised* in Scotland and *died* in March, 1922. The long illness of the doctor crippled their resources, and since his death the applicant has tried to live on the income made by letting apartments in the summer. This summer she has only made £40. The cottage occupied is her own and she has to pay rates £17 per annum. A report from the Guild local secretary says it is a case deserving of financial help from the Fund. Voted £18 in 12 monthly instalments.

Widow, aged 58, of M.B. Edin. who was a medical superintendent at a hospital and died suddenly in August. A grant is asked to tide over the next few months while all business matters are being settled. Her probable income will contribute £35 towards her board. The *applicant* has had the house done up in order to let and has now succeeded in letting two rooms which will bring in £42 per annum. Rent and rates amount to £17 per annum. Applicant has no children. Voted £10.

Subscriptions may be sent to the honorary treasurer, Sir Charters Symonds, at 11, Chandos-street, Cavendish-square, W. 1.

THE LATE DR. R. R. JONES.—The death occurred at Bangor on Oct. 26th of Dr. Rees Rowland Jones in his sixty-ninth year. The son of a Cardiganshire farmer, he was educated at Durham University and the London Hospital, and became M.R.C.S. Eng. in 1880. He held house surgeon appointments at Newcastle and Bangor and settled in the latter town where he gained a large practice. He was an honorary medical officer and radiologist to the Carnarvonshire and Anglesey Infirmary and medical officer for the Bangor section of the Bangor and Beaumaris Union. Dr. Jones took a keen interest in local and national affairs and was deputy mayor of Bangor; ill-health prevented his accepting the office of mayor. He was twice married, and leaves nine children.

SOCIETY OF MEMBERS OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the annual meeting to be held at the College next Thursday, Nov. 19th, at 8 P.M., Dr. L. Haden Guest will move:

"That this thirty-seventh annual meeting of Fellows and Members again affirms the desirability of admitting Members to direct representation upon the Council of the College, which, as now constituted, only represents those Members who also hold the Fellowship. It does so in order that *the constitution* of the Council of the Royal College of Surgeons of England shall be in keeping with modern ideas of true representation, and more in conformity with the present-day requirements of *its* Members and Fellows.

"Further, that as the Royal College of Surgeons of England is composed of 19,147 persons, of whom no less than 17,361 are Members, the majority engaged in general practice, this annual meeting respectfully requests the Council (now about to apply to H.M. Privy Council for a supplementary Charter) to avail themselves of this special opportunity to insert a provision therein for some representation of Members, as such, upon the Council of the College, and so restore a *right* they enjoyed prior to the Charter of 1843."

The resolution will be supported by Dr. J. O'Donovan, Mr. M. J. Smyth, F.R.C.S., and Mr. F. Lawson Dodd, L.D.S.

LADY HARDINGE MEDICAL COLLEGE.—The Government of India has decided to raise its grant to the Lady Hardinge Medical College at Delhi from Rs.200,000 to Rs.310,000. It has also made a grant, for the current year only, of Rs.98,000 for equipment, and the stage of acute financial stringency through which the College has passed is thus satisfactorily ended. The increased grant will enable the College authorities to bring the whole of the attached hospital into use for the first time.

ST. BARTHOLOMEW'S HOSPITAL, ROCHESTER.—It has been decided to spend £80,000 in enlarging this hospital. Founded in 1078 and reconstituted in 1859, St. Bartholomew's claims to be the oldest foundation in the country. It is at present a hospital of 105 beds, but a further 50 beds are to be provided. The Dean of Rochester, the Governor, emphasises the pressure *caused by the* increase in the number of street accidents, and there are now more than 11,000 patients annually.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY, Burlington House, Piccadilly, W.

THURSDAY, Nov. 19th, 4.30 P.M.—*The following Papers will be Read:* J. W. Pickering and R. J. Gladstone: The Development of Blood Plasma. Part I. The Genesis of Coagulable Material in Embryo Chicks (communicated by Prof. W. D. Halliburton). D. J. Scourfield: On a New Type of Crustacean from the Old Red Sandstone (Rhynie Chert Bed, Aberdeenshire), Lepidocaris Rhyniensis (communicated by Dr. W. T. Calman). J. R. Norman: The Development of the Chondrocranium of the Eel (*Anguilla vulgaris*) with Observations *on the* Comparative Morphology and Development of the Chondrocranium in Bony Fishes (communicated by Prof. E. W. MacBride). J. Needham and Dorothy Needham: The Hydrogen-Ion Concentration and Oxidation-reduction Potential of the Cell-Interior before and after Fertilisation; a Micro-Injection Study of Marine Eggs (communicated by Sir Frederick Hopkins). R. R. Armstrong: Studies on the Nature of the Immunity Reaction (communicated by Sir Frederick Andrewes) R. J. Ludford: The Cytology of Tar Tumours (communicated by Dr. J. A. Murray). Eric Ponder: The Inhibitory Effect of Blood Serum *on Hæmolysis* (communicated by Sir E. Sharpey Schafer). L. Brull and F. Eichholz: The Effects of Calcium and Potassium Ions on Urine Secretion as studied in the whole Animal (communicated by Prof. E. H. Starling). L. Brull and F. Eichholz: The Secretion of Inorganic Phosphate by the Kidney (communicated by Prof. E. H. Starling). F. Eichholz, R. Robison, and L. Brull: Hydrolysis of Phosphoric Esters by the Kidney *in vivo* (communicated by Prof. E. H. *Starling*).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, Nov. 16th.

THE DAVID LLOYD ROBERTS LECTURE: at 5.30 P.M. This Lecture will be delivered by Sir Arthur Keith, on Man's Structural Defects.

Tuesday, Nov. 17th.

GENERAL MEETING OF FELLOWS: at 5.30 P.M.

PATHOLOGY: at 8.30 P.M.

Papers:

Mrs. M. M. Barratt: The Susceptibility of Rats and Mice to Diphtheroid Infections.

Miss D. B. Steabben: Further Experiments on the Action of Colloidal Substances.

Dr. C. Dukes: Early Stages in Cancer of the Rectum.

Wednesday, Nov. 18th.

HISTORY OF MEDICINE: In view of the date and time of the Thomas Vicary Lecture, the November Meeting of this Section is cancelled.

Thursday, Nov. 19th.

DERMATOLOGY: at 5 P.M. (Cases at 4 P.M.)

Cases will be shown.

Annual Dinner of the Society.

Hotel Victoria: 7.30 for 8 P.M.

Friday, Nov. 20th.

ELECTRO-THERAPEUTICS: at 8.30 P.M.

Cinematographic Demonstration:

Dr. L. D. Bailey: Recovery of Function after Nerve Anastomosis.

Demonstration of the

De Forrest Talking Films, with reference to their scope and possibilities in Medical Education. Introductory remarks by Dr. C. B. Heald.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

THURSDAY, Nov. 19th.—8.15 P.M. (at the London School of Hygiene and Tropical Medicine, Endsleigh-gardens, Euston-road), Laboratory Meeting, at which, among others, the following will give demonstrations: Col. A. Alcock, Drs. Andrew Balfour, H. A. Baylis, Major K. K. Chatterji, Drs. Aldo Castellani, J. T. Duncan, Th. Jeckes, Prof. R. T. Leiper, Drs. H. B. Newham, H. H. Scott, Lieut.-Colonel H. Marrian Perry, Drs. N. A. Dyce Sharp, J. Gordon Thomson, and C. M. Wenyon.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, *Pall Mall East, S.W.*

MONDAY, Nov. 16th.—5.30 P.M. (at the Royal Society of Medicine, 1, Wimpole-street, W.), Sir Arthur Keith: Man's Structural Defects (Lloyd Roberts Lecture).

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

WEDNESDAY, Nov. 18th.—5 P.M., Prof. William Wright: The Mediæval Conception of the Anatomy and Physiology of the Central Nervous System (Thomas Vicary Lecture).

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Nov. 16th, to SATURDAY, Nov. 21st.—Fellowship of Medicine Lecture, Medical Society, 11, Chandos-street, W. Mon., 5.30, Sir Henry Gauvain: Light Treatment of Surgical Tuberculosis.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Post-graduate Course in Gynæcology. Lectures and Demonstrations daily. Operations and Pathology.—LONDON LOCK HOSPITAL, Dean-street, W. Comprehensive Course, Instruction in the Out-patient Department and Lectures.—CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS, Victoria Park, E. Special Course in Diseases of the Heart and Lungs. Lectures, Clinical Demonstrations, and Laboratory Demonstrations.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Daily Demonstrations in the Out-patient Department. Bi-weekly Lectures Tuesday and Thursday at 5.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

THURSDAY, Nov. 19th.—3 P.M., Mr. E. Miles Atkinson: Hearing Tests. 4.30 P.M., Dr. J. Metcalfe: The X Ray Examination of Pelvic Conditions.

Daily: In-patient and Out-patient Clinics in General and Special Departments, Operations, &c.

THE LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Nov. 17th.—5 P.M., Dr. A. Whitfield: Diseases due to Fungi (1).

THURSDAY.—5 P.M., Dr. R. F. Fagan: Pathological Demonstration.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Nov. 20th.—3 P.M., Mr. Watkyn-Thomas: An Intra-Cranial Case.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone-road, N.W.

THURSDAY, Nov. 19th.—5 P.M., Mr. Trevor B. Davies: Clinical Aspects of Abortion.

CHADWICK PUBLIC LECTURES.

WEDNESDAY, Nov. 18th.—5.15 P.M. (in the Barnes Hall of the Royal Society of Medicine, 1, Wimpole-street), Sir Wilfred Beveridge: Insects in Relation to Public Health.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.

POST-GRADUATE COURSE: OCTOBER–NOVEMBER, 1925.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, Nov. 16th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Papillœdema: Mr. Williamson Noble.

TUESDAY, Nov. 17th.—2 P.M., Out-patient Clinic: Dr. Walshe. 3.30 P.M., Neurosyphilis: Dr. Hinds Howell.

THURSDAY, Nov. 19th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Method of Investigating the Eighth Nerve: Mr. Just.

FRIDAY, Nov. 20th.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Poliomyelitis: Dr. Collier.

The fee for the Course, including Pathology Lectures, is £5 5*s.* For those who hold Perpetual Tickets the fee is £3 3*s.*

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.

Thursday, Nov. 19th.—12 noon, Syphilis of Nervous System: Dr. J. G. Greenfield.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

Monday, Nov. 16th.—12 noon, The Cerebral Hemispheres: Dr. J. L. Birley.

Dr. H. J. Macbride is giving a COURSE OF EIGHT CLINICAL DEMONSTRATIONS, CHIEFLY ON METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays. The fee for this Course is £2 2*s.*

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.

Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.

J. G. GREENFIELD, Dean of Medical School.

MANCHESTER ROYAL INFIRMARY, POST-GRADUATE COURSE.

TUESDAY, Nov. 17th.—4.15 P.M., Lloyd Roberts Lecture at St. Mary's Hospital. Dr. T. Watts Eden: What We Can Do for the Unborn Child.

FRIDAY.—4.15 P.M., Prof. J. S. B. Stopford: The Sympathetic Nervous System.

ST. MARY'S HOSPITALS, Manchester.

TUESDAY, Nov. 17th (at the Whitworth-street West branch), Dr. T. Watts Eden: What We Can Do for the Unborn Child (Lloyd Roberts Lecture).

ANCOATS HOSPITAL POST-GRADUATE LECTURES.

THURSDAY, Nov. 19th.—4.15 P.M., Mr. H. Platt: The Treatment of Common Fractures, with Practical Demonstrations.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, ST. ANDREWS.

TUESDAY, Nov. 17th.—4 P.M., Prof. Herring: The Use of Insulin.

SATURDAY.—12 noon, Prof. Murray Lyon and Assistants: Demonstration in the Royal Infirmary, Edinburgh.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Nov. 18th.—4 P.M., Dr. C. W. Saleeby: The Rôle of Clothing in the Prevention and Arrest of Disease.

Appointments.

ANDERSON, W. W., M.B., Ch.B. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Acts for Whitchurch.

GRAY, J. S. M'LEAN, Assistant Tuberculosis Officer and Assistant Medical Officer of Health for Renfrew.

TIBBLES, S. G., L.R.C.P., L.R.C.S. Edin., L.R.F.P.S. Glasg., Honorary Oculist to the Actors' Association and the Actors' Benevolent Fund.

Vacancies.

For further information refer to the advertisement columns.

Acton Hospital, Gunnersbury-lane, Acton, W.—Res. M.O. £150.

Altrincham General Hospital, Cheshire.—H.S. £125.

Belgrave Hospital for Children, Clapham-road, S.W.—Hon. Radiologist.

Birkenhead Borough Hospital.—Jun. H.S. £100.

Birmingham General Hospital.—Asst. P.

Bournemouth, Royal Victoria and West Hants Hospital.—Hon. S., Hon. Asst. M.O., Hon. Anæsth., Hon. Dermatologist, and Hon. Dent. S.'s.

Brighton, New Hospital for Women and Children.—Hon. Clin. Asst.

Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £100.

Cambridge, Mental Hospital.—Med. Supt. £800.

Cardiff, Welsh National School of Medicine.—Lecturer in Pathology and Bacteriology. £750.

City of London Maternity Hospital, City-road, E.C.—Res. M.O. At rate of £100.

Douglas, Isle of Man, Noble's Hospital.—Res. H.S. £175.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Asst. P. £50.

Elizabeth Garrett Anderson Hospital, Euston-road.—H.P., Obstet. Asst., and Two H.S.'s. Each at rate of £50. Also Clin. Assts.

Evelina Hospital for Children, Southwark, S.E.—H.S. At rate of £120.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S. and H.P. Each at rate of £50.

Hove Hospital, Sackville-road.—Res. M.O. £175.

Inverness Northern Infirmary.—Jun. Med. Resident. £100.

Iraq Health Department.—Two M.O.'s. Rs.1200.

Lancashire County Council.—County Analyst. £800.

Lancaster, Borough of.—Asst. M.O.H. and Asst. Sch. M.O. £600.

Liverpool and District Heart Hospital.—Hon. P. and Asst. Hon. P.

London Hospital, Mile End, E.—Hon. Dent. Surg.

London Lock Hospital, 91, Dean-street, W.—Clinical Assistantships.

London Royal Free Hospital, School of Medicine for Women, 8, Hunter-street, W.C.—Sen. Second and Third Assts. for Obstetrical and Gynæcological Unit. £350 to £500.

Longton Hospital, Stoke-on-Trent.—H.S. £150.

Maidstone, Kent County Mental Hospital.—Asst. M.O. £300.

Maidstone, Kent County Ophthalmic Hospital.—H.S. £300.

Margate, Royal Sea Bathing Hospital.—H.S. At rate of £200.

Metropolitan Hospital, Kingsland-road, E.—Pathologist.

Miller General Hospital for South-East London, Greenwich-road, S.E.—Res. Cas. O. £150.

Northamptonshire County Council.—M.O.H. and Sch. M.O. £1100.

Norwich, City and County of.—M.O.H. £1100.

Plymouth Royal Eye Infirmary.—Hon. S.

Preston County Borough.—Asst. M.O. for Maternity and Child Welfare. £600.

Prince of Wales's General Hospital, Tottenham, N.—Clin. Assts., Hon. Anæsthetist.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Asst. Res. M.O. At rate of £80.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—H.P. At rate of £100.

Rhondda Urban District Council.—Asst. M.O. £600.

Royal College of Surgeons of England.—Examiners.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Non. Res. Cas. O. £150. Also H.S. and H.P. Each at rate of £100.

St. Bride's, Pembrokeshire, Kensington Hospital.—Asst. Res. M.O. £200.

St. Helen's County Borough.—Asst. M.O.H. £600.

Sheffield, Jessop Hospital for Women.—Asst. H.S. At rate of £100.

Singapore, College of Medicine.—Prof. of Biochemistry and Prof. of Biology. Each $850–$1000.

University of London.—Associate Examiners.

West London Hospital, Hammersmith-road, W.—H.P., H.S., Aural H.S., and Res. Cas. O. Each at rate of £100.

Willesden General Hospital, Harlesden-road, N.W.—Hon. P.

The Chief Inspector of Factories, Home Office, London, S.W., announces vacancies for Certifying Factory Surgeons at Teddington, Middlesex; Rhyl, Flintshire; Croston, Lancs; and Renfrew.

Births, Marriages, and Deaths.

BIRTHS.

BIRKETT.—On Nov. 3rd, at a nursing home, the wife of G. E. Birkett, M.C., M.R.C.S., High-street, Manchester, S.E., of a daughter.

HOLMES.—On Nov. 6th, at Denbigh, N. Wales, the wife of E. A. Holmes, M.R.C.S., of a daughter.

MARRIAGES.

BENSON—FULTON.—On Nov. 5th, at St. Paul's, Knightsbridge, Dr. Eric John Benson to Beryl Helen, youngest daughter of the late Lieut.-Colonel Carro Fulton, the Durham Light Infantry, and of Mrs. Fulton, late of Guernsey.

SHEARD—VARLEY.—Nov. 3rd, 1925, at Brook-street United Methodist Church, Lancaster, Arthur Sheard, M.D., 13, Hanover-square, Leeds, elder son of Mr. and Mrs. Joe Sheard, 36, Sunny Bank, Longwood, Huddersfield, to Alice Gertrude, eldest daughter of Mr. and Mrs. Arthur Varley, 36, Dallas-road, Lancaster.

DEATHS.

CRADDOCK.—On Nov. 4th, at "Somerdale," Greenway-lane, Bath, Samuel Craddock, M.R.C.S., aged 91.

DAVIDSON.—On Oct. 28th, at Charmouth, Dorsetshire, Harold Davidson, M.R.C.S., L.R.C.P., of Teddington, aged 64 years.

LASLETT.—On Nov. 2nd, Maurice Howard Laslett, L.R.C.P., M.R.C.S., late Captain, R.A.M.C., of Duncan-road, Gillingham, Kent.

LAY.—On Nov. 6th, at Peasenhall, Suffolk, Charles Edward Lay, M.D. Edin., L.R.C.P., M.R.C.S.

NEWTON.—On Nov. 9th, at Deene House, Kettering, Lancelot Newton, M.R.C.S., L.S.A., of Alconbury Hill, Huntingdon, aged 79.

ST. GEORGE MIVART.—On Nov. 5th, very suddenly, F. St. George Mivart, M.D., aged 70.

TODD.—On Nov. 6th, suddenly, Surg.-General Howard J. M. Todd, C.B., K.H.S., J.P., of Anglesey House, Alverstoke, aged 70.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

CONTROL OF THE FOOD-SUPPLY.

A SECOND lecture on the Control of the Food-Supply was delivered on Nov. 6th by Dr. W. J. Howarth (medical officer of health for the City of London) at the Royal Sanitary Institute, when several interesting judgments were expressed on contentious points. Dr. Howarth ranged himself on the side of those who believe that raw milk is far better than milk treated in any way by heat; he thought that dairymen who sterilise milk spoil it. All milk which has been pasteurised should be declared as such; the regulations should be varied, and it should be made an offence to treat milk without declaration. At present there is no guarantee that milk which is pasteurised quasi-secretly is not submitted to more than one treatment. Dr. Howarth held that persons had no right to engage in the milk trade unless they had the knowledge necessary to prevent their business being a danger to the public health and unless they possessed the capital necessary for its conduct on hygienic lines. The advertising caption "London's safest milk" contained a cynical suggestion; London's worst milk should make the producing cow blush. The effect of the teaching of the agricultural colleges on clean milk ought to make itself felt on the next generation of farmers.

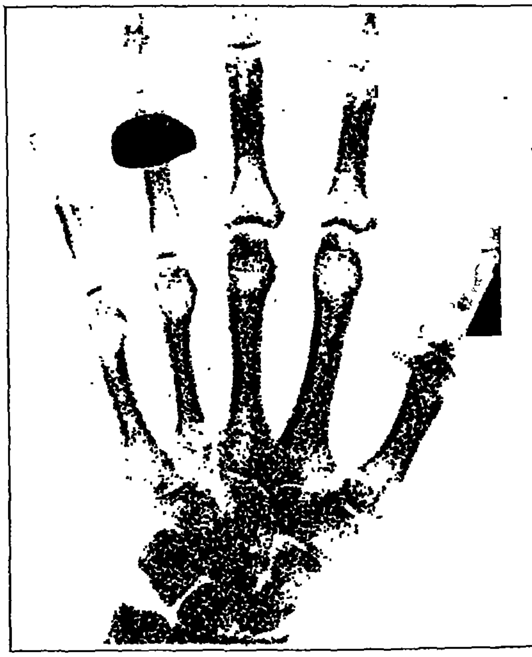
Dr. Howarth regarded the definition of cream in the Preservatives Order as "that portion of milk rich in milk fat which has been separated by skimming or otherwise" as far too indefinite. Samples of cream containing 20, 30, and 50 per cent. of fat were shown; none of them could be distinguished by the naked eye from another. On the contrary a sample of 33 per cent. homogenised cream had a richer appearance than the 50 per cent. cream, so that the public can easily be deceived and often pay the same price for articles of very different food value. A food standard of cream should be laid down by legislation. Discussing cowsheds, Dr. Howarth thought the standard in this country deplorably low, and he deplored the position reached about the legal standard of milk; case law had forced us to accept milk from the cow as a legal test of non-sophistication. If a cow gave wretchedly poor milk below the low legal standard it should be eliminated from the herd. When a farmer could send to his customer the first part of the milk drawn, which is notoriously poor in cream, and retain the second portion rich in cream for his own calves, surely we had reached the limit of statutory toleration. Some of the analyst's results which were, in a way, too satisfactory as regards fat content—fat percentages of 4, 5, or 6, or even over, being found—might be explained by the jolting of the milk churns during the long railway journey, which caused the cream to rise to the top of the milk on its arrival; it was found impossible to mix the milk so as to make the contents of the churn uniform. Milk which had been frozen presented a difficulty; the part containing the cream and the fat was the last to freeze; thawing must be gradual and the time given to subsequent mixing generous. The audience were shown two Dutch (hard) cheeses, of which the one made of skimmed milk had the better flavour, though the other was made of full cream milk. The housewife would probably buy the less nutritive. Legislation enabling the consumer to purchase according to food value was required.

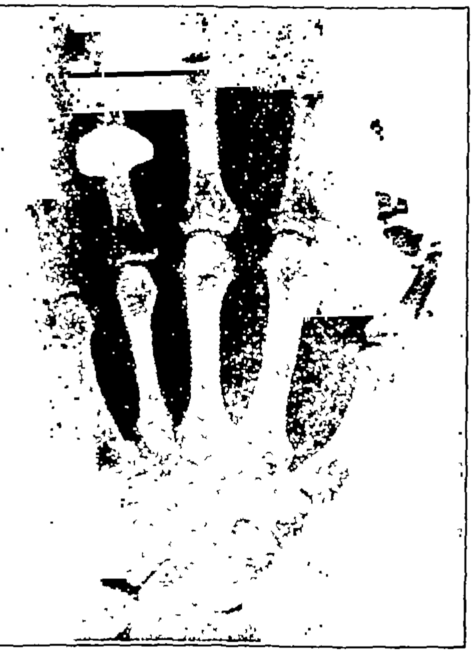
The position as regards eggs was explained; no means existed for ascertaining the age of an egg within very wide limits, and legislation was contemplated which would necessitate the stamping of eggs with the name of the country of origin. Dr. Howarth thought it unreasonable to require that parcels of food containing damaged portions should be thrown away, and instanced a consignment of coffee containing unsound berries which after removal of the unsatisfactory portion had been found quite wholesome. In reply to a question he expressed the view that in spite of the results of animal experiments putrefying meat should be condemned partly on æsthetic grounds and partly because of the possible existence of more than one infection.

TELEPHONING RADIOGRAMS.

ON April 15th, 1925, a radiogram showing the bones of the hand was telephoned from New York to Chicago in seven minutes, and it is stated that details were not lost in transmission. We reproduce below a radiogram said to have been telephotographed and the facsimile which was received at the other end, and although there is a very definite loss of clearness, the facsimile is nevertheless remarkably accurate, and compares favourably with some reproductions of sound over the same instrument.

It is said that in sleep it is impossible to feel surprise, and the stream of modern invention is having a slightly hypnotic effect on the public. This particular invention, however, is supposed to be startling in its usefulness and especially to the medical profession. "Medical consultation between doctors on X ray plates transmitted by radio or telegraph is a realisation that should find a most useful place in these progressive times," says Dr. J. M. Steiner, radiologist to the Roosevelt Hospital, New York. "The quick transmission obtained by this method should afford untold satisfaction to both the consultant dock [sic] and the anxious family. In New York hospitals they frequently have patients who are either injured or taken ill while travelling. These patients, being in strange hands, naturally desire their home physician in consultation. If explicit information could be quickly transmitted to the home physician much needless travel could be avoided, saving the home physician or family a trip to New York. Many times physicians in other cities, desiring an opinion from a New York consultant, could materially shorten a tedious delay if X ray plates were quickly transmitted by telegraph to New York consultants, who in turn could render an opinion within an hour or two where otherwise several days to a week or more might be involved. Written descriptions or word pictures even of such simple conditions as fractures are often misleading, whereas the actual conditions shown graphically in X ray plates are more convincing."


The radiogram transmitted.


The facsimile received.

If the reproduction which the specialist is to receive were as good as the original his advice would obviously be valuable, but it is a little difficult to think of a situation in which the specialist could see more in a clouded copy than the practitioner could see in the original radiogram. The practitioner has the additional advantage of seeing the patient himself. The finer shades of structure are diminished in the photograph we have seen, and it is chiefly in the interpretation of these finer shades that the expert scores. Admittedly such a photograph might be better than "written descriptions or word pictures," and it might possibly be useful if a radiologist were present who was not also a doctor; but if the invention is to encourage the local doctor to rely on the opinion of someone who has not seen the case it should stimulate the supporters of the back-to-the-bedside movement to further activity. A story is told of a lady who received a severe fracture of the knee during a recent tornado in the Middle West and had to be taken to New York because the medical men available were not X ray specialists and could not treat her; but if the story induces reflection, it is not necessarily on the value of telephotography.

BRITISH MOSQUITOES AND THEIR BITES.

During recent years, and particularly since 1917, when the return of many malarious soldiers from the East gave rise to locally contracted cases of malaria in several parts of England, increased attention has been given to the annoyance and ill-health that may be caused by mosquitoes in this country. The menace of malaria ceased when sufferers from the disease no longer arrived in large numbers from abroad, but interest in the harmful activities of the mosquito in England has not abated. Cases of septicæmia following their bites are occasionally reported, and in some areas the insects are so disturbing as to discourage visitors from returning. To meet the demand for information the British Museum (Natural History) has issued a booklet on "British Mosquitoes and their Control," by F. W. Edwards, of the Department of Entomology, and Lieut.-Colonel S. P. James, M.D., of the Ministry of Health. In reference to the difficulties of control it is stated that there are 26 different species of mosquito which occur in England, and most of them have different habits of life. Some do not bite human beings; some bite mainly in houses, others in the open air; some are troublesome in spring, others in autumn; and there are differences in breeding seasons and habitat. The writers consider that it is important in any locality where anti-mosquito work is begun to make a study of the prevalent species. Measures appropriate against the adult insects and larvæ are described, and a short account of means of protection against bites. The ideal substance for the latter purpose has yet to be found, but the following preparations are suitable for general use: (1) A 50 per cent. alcoholic solution of thymol or of oil of cloves in lanolin. (2) Oil of cassia, 1 part; brown oil of camphor, 2 parts; lanolin, 4 parts. (3) Citronella oil, 1½ parts; kerosene, 1 part; coconut oil, 2 parts; to which is added carbolic acid, 1 per cent. It is useful to wear two pairs of thin stockings or socks since few mosquitoes will bite through two layers of material, however thin. An application of an alkali such as weak ammonia or washing soda will generally reduce the irritating swelling that follows a bite, and thus prevent infective scratching; in serious cases iodine in glycerine should be applied to the bite and the surrounding skin twice a day. This interesting short account of the British mosquitoes can be obtained from the Natural History Museum, Cromwell-road, S.W. 7; the price is only 6*d*.

MANCHESTER NURSES' LONG HOURS.

Manchester had a "Duty Week" from Oct. 25th to 31st, when, according to posters displayed in prominent situations in the city, everyone was invited to be "on duty" in an effort to help the fund for the establishment of a new nurses' home for the Royal Infirmary. At a luncheon on Oct. 22nd Lord Derby and other speakers appealed particularly to the representatives of trades and associations for much-needed assistance. The new building alone will cost £90,000 and will consist of 270 bedrooms, sitting-rooms, and recreation-rooms. Manchester, it was pointed out, was at the moment at the bottom of large cities with regard to the hours its nurses have to work. The night staff works 73 hours a week and the day staff 63 hours. These are the bare facts and it was for them to endeavour to remedy them. For the real efficiency of the nurses more leisure was required, and in order to arrive at this by bringing the working hours down to 58 it was necessary to add 172 nurses and domestic workers to the staff of the Royal Infirmary. The Chairman of the Infirmary Board said many nurses broke down in health every year and 60 per cent. left the hospital before they had finished their first year of training. Already £36,000 had been given towards the scheme and £5000 of that was raised by the nurses themselves.

An Address

ON THE NATURE OF

MAN'S STRUCTURAL IMPERFECTIONS.

Being the Lloyd Roberts Lecture given to the Royal Society of Medicine on Nov. 16th, 1925,

BY SIR ARTHUR KEITH, F.R.S.,
CONSERVATOR OF THE MUSEUM OF THE ROYAL COLLEGE OF SURGEONS; ENGLAND.

BETWEEN the activities of Archdeacon Paley and those of Elie Metchnikoff lies the greater part of the nineteenth century. At the beginning of that century we find the Archdeacon extolling the perfections of the human body, just as Celsus had done 16 centuries before him.[1] By the close of the nineteenth century the alert and fearless brain of Elie Metchnikoff had discovered, or believed it had discovered, that the human body was blemished by many imperfections. The evangelist of this new and startling doctrine approached the study of man's body by an untrodden pathway, one made possible by the advancing science of his day. On his arrival at the Institut Pasteur in 1888, being then 43 years of age, he set himself to investigate the means by which the human body combats and keeps at bay the swarming hosts of micro-organisms which find a natural habitat in its internal passages and recesses. He saw man's body as a battlefield—the scene of a perpetual warfare—and as his investigation proceeded the conviction grew on him that the chances of the body's success were imperilled by a heritage of structures which had become out of date and useless.

In the Wild lecture, given before the Literary and Philosophical Society of Manchester on April 22nd, 1901, he declared that man "was being killed by his intestinal flora," and that his great bowel had not only become useless, but was a positive and continual menace to the rest of his body. He believed that the stomach itself, and also part of the small intestine, could be dispensed with. Early in 1903 appeared "Études sur la Nature Humaine,"[2] in which Metchnikoff greatly extended the list of man's structural imperfections.

Between the times of Paley and of Metchnikoff lie three great discoveries, and we must take note of them if we are to understand how it was possible for the one to praise the perfection of man's structure at the beginning of the nineteenth century and the other to condemn its imperfections at the end. There was first the discovery that man's body was an aggregate or society of living microscopical units; it was Metchnikoff's fortune to approach the study of man's highly complex body through the simpler societies represented by the bodies of the lower invertebrates; it was thus he came by his discovery that certain units of such societies retain their freedom, thus permitting them to serve as scavengers or phagocytes. In the second place there was Darwin's discovery; Metchnikoff was a convinced evolutionist. He therefore presumed that the alimentary outfit which served in an anthropoid phase of human evolution must be ill-adapted to deal with the dietary of civilised man. There was in the third place Pasteur's discovery, and so far as Metchnikoff's outlook was concerned this was the most potent of the three. It was under the influence of Pasteur's discoveries that Metchnikoff came to think that the destiny of man lay in the issue of the everlasting contest which went on between the living tissues of his body and the invading hosts of micro-organisms which threatened them. It is noteworthy that of the three men—Darwin, Pasteur, and Metchnikoff—who revolutionised in the nineteenth century our conception of man's body, and of the struggles to which it is subjected, not one of them was a professed anatomist; the anatomist stood too near to the subject of his study to see it in its true perspective.

Twenty-two years have come and gone since Metchnikoff's studies on "La Nature Humaine"[3] first appeared, and I propose in this lecture to ascertain how far his doctrines of man's structural imperfections and functional disharmonies has stood the test of time. His thesis presumed that Darwin's theory of man's origin was true; that presumption has been supported by every discovery of the present century, and such evidence as we now have justifies us in believing that the rate of man's evolution has been more rapid than has hitherto been supposed.[4]

THE INFLUENCE OF CIVILISATION.

We realise to-day, more precisely than was possible when Metchnikoff wrote, that the most critical chapter in man's long history opened with the discovery of agriculture, a discovery of but yesterday if we reckon time on a geological scale. Agriculture revolutionised the conditions of human life; it made modern civilisation possible. We have reason to believe that this revolution in the condition of man's life was initiated either in Mesopotamia, Egypt, or adjacent lands, not more than 8000 years ago. It is certainly not more than 5000 years ago since agriculture began to be practised in Western Europe. The vast majority of the people of these islands, probably 90 per cent. of them, are the descendants of men and women who, 200 generations ago, were dependent on the natural but precarious harvest which is provided by shore, river, forest, and moorland. City life is a new experiment for Europeans; most of us who live in London, if we could go back 20 generations, would find an ancestry which was living on the soil and of the soil. And now the poorest of us can add to our dietary produce brought from the ends of the earth. The alimentary system which was evolved to meet the needs of our primitive ancestors has now to accommodate itself to a modern dietary.

Beyond a doubt civilisation is submitting the human body to a vast and critical experiment. It is not only the alimentary system which is being subjected to new conditions; the bony and muscular framework of our bodies are being subjected to novel stresses. Of the present manhood of Britain, half earns its bread by muscular labour; the other half lives sedentary lives. Our forefathers when they arrived in Western Europe were hunters; their bodies were unaccustomed to either manual labour or an indoor life; under the stress of civilisation the hunter's body has to serve modern needs. It says much for the adaptability of the human body that it stands these stresses so well as it does. Dr. J. D. Comrie,[5] on examining 10,000 recruits for the army, found that 303 of them suffered from hernia and 113 from flat-foot. Such breakdowns in the supporting system of the body do not occur with this frequency among hunting peoples. Civilisation has laid bare some of the weak points in the human body, but the conditions which have provoked them are not of Nature's ordaining, but of man's choosing.

If modern civilisation is making new demands on our bones, muscles, and nerve controls it is otherwise with another important system of our bodies. As our manner of living increases in comfort the calls on our heat-regulating mechanism become fewer in number and less urgent in character. Our primitive forefathers lived in the open; their bodies, unhoused and scantily clad, were exposed to sun, rain, wind, and storm. Such a mode of life throws an increasing burden on the machinery which regulates body temperature—on skin, on respiratory mucous membrane, and on that elaborate system of reflexes which control the rate of internal combustion. Modern civilisation, so far as temperature is concerned, tends to make the human body a hothouse plant.

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[1] See Evolution of Anatomy, by Dr. Charles Singer (1925), p. 50.

[2] An English translation, edited by Dr. P. Chalmers Mitchell, was published in 1904 under the title The Nature of Man (Heinemann).

[3] In 1907 Metchnikoff published a further work, of which an English translation appeared in the same year, edited by Dr. P. Chalmers Mitchell, under the title The Prolongation of Life. In this Metchnikoff replied to his critics and produced more evidence in support of his thesis. Sir W. Arbuthnot Lane formed the opinion that the great intestine was a useless and dangerous structure independently of Metchnikoff; so also did Prof. Barclay Smith (see an article on the Nature of the Cæcum and Appendix by the present lecturer in Brit. Med. Jour., 1912, ii., 1509).

[4] See Concerning the Rate of Man's Evolution, Nature (special supplement), August 18th, 1923.

[5] THE LANCET, 1910, ii., 959.

FAILURES OF ADAPTATION.

Metchnikoff perceived that civilisation had plunged man's body into a new environment, and that the rate of its progress had far outstripped the power of adaptional response which had carried man so far beyond the anthropoid stage. A belief grew within him—almost a grudge—that Nature was letting man down. He brought against the evolutionary powers which preside over the destiny of man both sins of omission and sins of commission. We shall deal with a sample of each. The first complaint on his list of omissions is that we have not shed from our skins the last remnants of an anthropoid pelage; hair on the body, he held, was useless and a source of disease. Whether or not a completely hairless body is desirable we may leave as a moot point; a hairless breed of dogs has been produced, and, no doubt, a hairless race of man could be evolved. In this matter the Caucasian has been outstripped by the Negro and by the Mongol, the most hairless of races. It is more to the point to inquire how man has come by a comparatively hairless skin, and in the solution of this problem we have been making some advance. A hairless condition became possible with the evolution of the higher vertebrates; a fœtus in the womb draws its heat from the mother's body; it has no need of a hairy covering until the period of birth arrives. There is in the Museum of the Royal College of Surgeons of England a chimpanzee fœtus in the eighth month of development; the hair of its head and body has reached a stage identical with that of a newly born child. A stage of development which is evanescent in the fœtal anthropoid has become permanent in us. We have come by a new character through the inheritance of one evolved in fœtal life. Many of our structural features have come to us in this way.[6] The base of the human skull is greatly flexed. In the fœtal stage of all mammals the basicranial axis is bent, but in man only has this character been carried into adult years. Fœtal inheritance becomes more and more possible for man because civilisation tends to make man's world into a protective womb.

As an instance of a sin of commission, the introduction of a new and useless structure to the human body, Metchnikoff cites the case of the hymen. It is scarcely true to describe, as he does, the hymen as a new structure; it is present at a certain stage in the embryonic life of every higher mammal; it is only in the human species that it persists and forms a definite and substantial structure in the fully formed body. The hymen provides another example of the human body coming by a new character by retaining and modifying a structure which made its first appearance during embryonic or fœtal life. When we seek to explain its use, we must enter the purlieus of psychology, for round man's sense of sex has grown up a strange hinterland in his subconscious mind. Metchnikoff described the hymen as "an unpleasant impediment," but love, as the world has long recognised, thrives on impediments. The human prepuce, although not a new structure was, in Metchnikoff's opinion, a useless and dangerous one; circumcision in one generation does not diminish the completeness of its development in the next. In this the prepuce resembles the hymen. Indeed, Metchnikoff said of the latter structure that the only purpose it had ever served was "the overthrow of the dogma of the inheritance of acquired characters."

THE LARGE INTESTINE.

The examples of the failure of man's body to adapt itself to present requirements which I have cited above are of little more than academic interest, but when Metchnikoff applied his analytical genius to the problems of man's alimentary system he carried us into the realms where thought becomes the guide to action. "It would be no longer rash to say (so he wrote in 1903) that not only the rudimentary appendix and the cæcum, but the whole of the human large intestine is superfluous, and that their removal would be attended with happy results." Since Metchnikoff penned this sentence the operation of complete colectomy has been performed on many thousands of men and women, but I do not think that even the surgeons who have performed this operation most frequently and most successfully would maintain that a man or woman who has been rendered colonless enjoys that moderate share of health which falls to the average intact individual. If a finger becomes permanently fixed in an awkward position the hand is improved by the amputation of the offending digit, but the relief thus gained does not restore the hand to its original capacity. The relief afforded by colectomy is of the same kind; the results of that operation in no wise bear out Metchnikoff's doctrine that the colon has become a superfluous organ in man's body. On the other hand, we have only to consult the pages of the medical press, to listen to tales which reach our ears daily, to note the ever-growing demand for patent purgatives, to be convinced that there is, as Metchnikoff maintained, a grave disharmony between the functional capacities of our great intestine and the dietary which modern civilisation has compelled us to adopt. The way out of our difficulties is not to call the colon a useless organ, a "sewage pipe," a "cesspool," but to discover its original purpose and ascertain how far we can modify our mode of living to suit its inherited capacity. What that capacity is we have yet to discover, for we have no complete or exact knowledge of the uses of the great intestine in any animal whatsoever. So far as the human organ is concerned surgery has stepped far in advance of physiology.[7]

Since Metchnikoff first promulgated his belief that the appendix, cæcum, and colon had become superfluous organs in man's body our knowledge concerning the evolution of these structures and of certain conditions which regulate their action has increased. That increase of knowledge rehabilitates the ancient belief that Nature in her evolutionary mood exercises not only a surprising ingenuity but also the strictest economy. The ferments and catalysts elaborated by plants for their own use were made to serve in the animal body as vitamins. How necessary such substances are for the proper working of the great bowel has been shown by the recent researches of McCarrison[8] and of Cramer.[9] It was for the purposes of economy that the great bowel came into existence. In fishes, the earliest vertebrate forms known to us in the living state, potent digestive juices have to be produced at the expense of body tissues; with the evolution of land-living, air-breathing forms much of this expenditure was saved by the utilisation of bacterial digestion. The great bowel was added to the original intestine for this purpose, the oldest part of this annex being the cæcum and appendix. The great bowel, as we know it in fishes, is a mere diverticulum from the hinder end of the gut; it takes no part in the digestion of food. Its epithelium forms a glandular structure which has all the appearance of an organ designed for the supply of an internal secretion.[10] That secretion, whatever it may prove to be, is carried to the liver by the inferior mesenteric vein. In the mucous membrane of the human great bowel there is set embedded in a stratum of reticular tissue—of reticulo-endothelium—some 15 millions of minute test-tube glands—the glands of Lieberkühn. No one who has noted the structure and setting of these glands and the finer changes which their cells undergo in the course of action, can believe that their sole function is to supply a lubricating fluid for the intestine; they have all the appearance of also supplying an internal secretion, and the evolutionary history of the colon favours such an inference.[11] The reticular stratum of the colon, which Dr. Scott Williamson[12] regards as the most important constituent of its mucous membrane, and in this I agree with him, represents a spleen of considerable size. Indeed, just as the liver and pancreas represent extrusions of highly specialised parts of the intestinal epithelium, the spleen represents a specialisation of the reticulo-endothelium of the alimentary canal; indeed, in Cyclostomes[13] the spleen is still intra-intestinal. Nor must we forget how closely the great intestine is linked to the central nervous system—both by afferent and efferent pathways. When we take all these considerations into account, we must conclude that the great bowel of man is not a useless or superfluous organ, but one which we, in our ignorance, are maltreating.

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[6] Prof. Louis Bolk: The Part Played by the Endocrine Glands in the Evolution of Man, THE LANCET, 1921, ii., 588. See also Keith: The Evolution of Human Races in the Light of the Hormone Theory, Johns Hopkins Hospital Bulletin, 1922, xxxiii., 195.

[7] The reader will find a summary of the anatomical evidence relating to the nature of the appendix, cæcum, and great bowel by the lecturer in Brit. Med. Jour., 1912, ii., 1590.

[8] Lieut.-Colonel R. McCarrison: Faulty Food in Relationship to Gastro-Intestinal Disorders, THE LANCET, 1922, i., 207. Other references to Colonel McCarrison's researches will be found in this paper.

[9] Dr. W. Cramer: THE LANCET, 1921, ii., 1202; 1924, i., 636.

THE APPENDIX.

Darwin regarded the appendix as one of man's vestigial structures, and Metchnikoff accepted this verdict without demur, although there were then anatomists, particularly Prof. R. J. Berry,[14] who refused to regard the appendix as a useless structure. Every child is born with a fully and well-developed appendix, which varies in length round a mean of 35 mm. Ribbert's investigations[15] showed that amongst the Swiss the appendix has reached its maximum length, 97 mm., by the twentieth year; thereafter the average length falls slowly, so that by the sixtieth year it has become reduced to 85 mm. Prof. Berry[16] found in the population of Edinburgh that the appendix did not attain its full length, 89 mm., until the fortieth year, falling to 88 mm. by the sixtieth year. Dr. Garcia and Dr. Salloza[17] measured the length of the appendix amongst Phillipinos—a people living chiefly on a vegetarian dietary. By the twentieth year the appendix of this people had attained a length of 81 mm.; its maximum length, 96 mm., was not reached until the fiftieth year, while the average length fell to 82 mm. by the seventieth year. An organ which increases in length until the twentieth year, or even until the fiftieth, does not merit the name vestigial. The size of the appendix at birth in the various forms of anthropoid apes we do not know, but in adult gorillas, chimpanzees, and orangs the appendix usually attains a length of 150 or 160 mm.—nearly double the length of the human appendix. In the most primitive form of anthropoid known to us, the gibbon, the appendix is most variable in length. In six animals which I dissected fresh from the jungle, all of them adult, the appendix varied in length from 75 mm. to 175 mm. In two of the animals the cæcal contents were laden with numerous fruit stones as large as those of a cherry; the appendix in these two cases held a row of fruit stones, showing that it shared in the digestive work of the cæcum. There is no evidence to lead us to believe that anthropoid apes suffer from appendicitis in their natural habitat; they become subject to this disease when kept in confinement. Of 61 chimpanzees dying in captivity, ten of them suffered from appendicitis.[18] The evidence, such as it is, leads us to believe that when the appendix breaks down under the conditions of modern civilisation it does so not because it is "vestigial," but because of its inability to withstand the conditions to which it is being exposed.

To express the real nature of the structural and functional imperfections seen in the human appendix it is convenient to use a term coined by the late Sir William Gowers. He noted that in some families certain structures, such as the hair on the crown of the head, was apt to be shed as the result of a premature atrophy of the scalp. To such instances of premature senility on the part of any organ or structure he applied the term abiotrophy.[19] In this sense the appendix is an abiotrophic structure, one which is apt to suffer from a disordered life-history; in a large proportion of Europeans it becomes atrophic or senile when other parts of the body are in full vigour. On the evidence collected by anatomists and pathologists it is permissible to infer that if we could follow the life-histories of 1000 modern Europeans from birth to their seventieth year the following would be the fate of their appendices. By the end of the tenth year the lumen of this structure would be partially or completely obliterated in 40 of them; by the twentieth year the same fate would have overtaken 70 more; by the thirtieth year 60 others would have been added to the list; by the fortieth year 80 further cases of obliteration would have occurred; by the sixtieth year there would be 110 additional cases. Of the 1000 people who reached the age of 70, only 500 of them would retain their appendix in an unblemished functional state; in the other 500 the appendix would have undergone a premature atrophy at succeeding stages in the journey through life. In this the appendix keeps company with all structures which are of a lymphoidal nature. The tonsils, the thymus, lymphatic glands, and Peyer's patches have similar life-histories, but no one would describe them as vestiges or rudiments. There is much in the name we apply to structures; when we name them "vestigial," "congenital," or "useless" we shut the door on all further inquiry. As Paley declared a century ago, our list of "useless" structures decreases as our stock of knowledge increases.

THE EYE.

The eye, which is man's chief organ of sense has, under the stress of civilisation, become the subject of a wrong growth or abiotrophy. If we take 1000 men or women over the age of 25 we shall find that about 150 of them suffer from a degree of myopia which prevents them from seeing distant objects clearly. And yet in all of them, just as was the case of the appendix, the eye was normal at birth; the incidence of the disorder is somewhat similar to that of the appendix; it appears during the period in which the eye is undergoing growth—a process of the most complex kind[20]; in a few, myopic changes appear by the fifth year, the highest rate of incidence taking place as puberty is reached and passed. We cannot believe that among our hunting ancestors, for whom distant sight was so vital, every seventh man was myopic.

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[10] Dr. Doris R. Crofts: Proc. Zool. Soc., 1925, Part I., pp. 101–170.

[11] I have not mentioned the excretory function of the colon. This has been investigated by Dr. Owen T. Williams, Brit. Med. Jour., 1912, ii., 1281.

[12] Brit. Jour. Surg., 1914, ii., 300.

[13] J. Mawas: C. R. Acad. de Science, 1922, clxxiv., pp. 889–1041.

[14] Anat. Anz., 1895, x., 761; Jour. Anat. and Physiol., 1906, xl., 247.

[15] Prof. Ribbert: Virchow's Archives, 1893, cxxxii., 66.

[16] Prof. R. J. Berry: Anat. Anz., 1895, x.

[17] Garcia and Salloza: Philippine Jour. of Science, 1921, xviii., 707. See also Fawcett and Blackford, Jour. Anat. and Physiol., 1900, xxxiv., 71, and Sir Rutherford Macphail, Ibid., 917, ii., 306.

[18] Weinberg: Bull de la Soc. de Path., 1908, i., 550.

[19] Subsequently the reader will see that I use this term in a somewhat wider sense—one which includes irregular as well as reduced growth.

[20] I have dealt with the incidence and nature of myopia in Brit. Jour. of Physiological Optics, 1925, i., 309

Myopia we must regard as a structural disharmony occasioned by the conditions which civilisation has entailed on us. Short-sight, as Dr. John Kirk has stated,[21] is certainly a disorder of growth, and the essential problem is to discover not why 15 per cent. of our population suffers from it, but why it does not occur in the remaining 85 per cent. Children may be fed on the same food and undergo the same school tasks, yet only in certain individuals does the eyeball undergo abnormal elongation. They only are affected by modern conditions, the others are not.

Perhaps no structure in the human body illustrates abiotrophic changes so well as the lens of the eye. By the age of 45 the elasticity of the lens has become so reduced in most of us that we have to seek the aid of spectacles. Some time ago Mr. Ernest Clarke[22] examined the eyes of 1200 people of all ages, and charted in graphic form the condition of the lens. From that chart we can see that some individuals at the age of 45 retain the elasticity of lens which is normal at 35 years of age, while others have reached a stage usually found in men and women of 60. It is with the lens of the eye, as with the appendix, abiotrophy sets in prematurely in some; in others the change is delayed.

THE TERM OF LIFE NATURAL TO MAN.

The consideration of the functional failure of the lens of the eye brings us to a problem which fascinated Metchnikoff. What is the term of life which is natural to man? Metchnikoff inclined to place it at 100 years—that if we escaped accident and disease the inherent vitality of our tissues was sufficient to make a centenarian of everyone—yet at the age of 45 the lens of the normal man is already old; it has reached the term of its full utility. We have no reason to suppose that civilisation has shortened or is shortening its period of usefulness. The indication it affords supports the belief that nature has worked out the evolution of the human family on a mean life tenure of 45 years; she has hitherto run the human army on a short-service system. Unfortunately we have no vital statistics of our nearest allies, the anthropoid apes. Micky, a chimpanzee which died lately in the Zoological Gardens, lived there for 26 years, and was three or four years of age when he arrived. Thirty years ago I made an intensive study on the age changes of the teeth and skulls of the great anthropoid apes, and came to the conclusion that very few of them reached the fifth decade of life. All the elastic tissue and cartilage of the body keep the lens company in their rate of ageing; they lose their resiliency by the middle of the fifth decade. The age of 45 sees the end of the term of childbearing which is normal for women. When we consult the rates of mortality which now prevail we find that a sudden rise sets in during the fifth decade, and this rise assumes a steeper and steeper gradient with every subsequent decade. All of these facts seem to show that 45 was the span allotted to man when he was the blind slave of Nature. Civilisation now permits many men and women to live the span of two such lives, but whether it would be an advantage for civilisation that all should live to be centenarians, as Metchnikoff believed, is a moot point. We must take civilisation in the round; if it has searched out the weak points in our inherited organisation it has also added incalculably to the span and comfort of life.

THE TEETH AND JAWS.

All the structural imperfections of man's body which have been discussed up to this point are of a kind which perish in the grave. We have no means of telling whether or not our remote ancestors suffered from appendicitis or were the victims of myopia Fortunately, from this point of view there are certain of the durable parts of man's body which manifest abiotrophic changes—the teeth and jaws. During the last 20 years I have had an opportunity of examining the facial parts of over 300 individuals who lived in England more than a thousand years ago, some of them as much as eight or ten thousand years ago. Seven years ago I made an elaborate comparison between 50 of these ancient skulls, 25 of which were adjudged to be those of men and 25 of women, with equal numbers of individuals who had lived in England within the last two centuries.[23] In only three of the 50 ancient skulls did the upper and lower teeth fail to meet in an edge to edge bite; in all of the 50 modern skulls the bite was of the overlapping or scissors type. Our teeth are in an abiotrophic state; the failure of the wisdom teeth or third molars to form, or to erupt if they are formed, is but one symptom of this abiotrophic change: it affects crown, cusp, and root development. In the 50 ancient skulls, instead of 100 upper wisdom teeth, there were only 82, 13 being absent from non-development and 5 from non-eruption. In the 50 modern skulls instead of 100 upper wisdom teeth, there were only 59; 30 of these were absent from non-development, 11 from non-eruption. Such evidence shows that although abiotrophic changes had overtaken the dental system of the Western European as early as the Neolithic period, yet these changes have been accelerated during the more recent centuries. Dental abscesses were nearly as common in the ancient skulls as in the modern; carious teeth, on the other hand, were three times more frequent in modern skulls than in the ancient. The researches of the Mellanbys[24] have proved that the quality of enamel and of dentine, particularly of secondary dentine, has a relation to the vitamin content of a dietary. Equally important for the proper formation of teeth, as McCollum and his colleagues[25] have demonstrated, is the presence in food of a due proportion of certain mineral salts. Nevertheless, although a school of children are exposed equally to unfavourable conditions, it is only in a certain number that dental defects will occur; in this respect the dental system behaves as do all structures which are liable to abiotrophic changes.

In not one of the 50 ancient skulls was the palate contracted, whereas in the 50 modern skulls there were 13 in which this condition was present to a recognisable degree—in more than half of them to a marked extent. No matter which stratum of our population we make observations on, we shall find that every fourth or fifth child or adult we examine possesses a palate which, compared with the older type, may be described as both deformed in shape and reduced in size. I have never seen this defect and irregularity of palatal growth except in skulls from cemeteries of the eighteenth and nineteenth centuries. It may be thought that this irregular growth with reduction in the size of palate, and the defects in the formation of the jaws and face which usually accompany them, are merely the results of the soft and highly prepared kinds of food we eat; with such a dietary the teeth, jaws, and chewing muscles are deprived of the work which fell to them in more primitive times. That this is not the true explanation is proved by this fact. When children are fed, clothed, and exercised exactly alike all are not affected; only some of them develop irregularities of the palate and jaws. There is a special susceptibility to these imperfections in certain races and in certain families.

Amongst modern British people are to be seen various facial characters, particularly in the orbits, in the cheek bones, and in the bony supports of the nose, which are never to be noted in the facial framework of people who lived in Britain during the pre-Norman period. When a continental cartoonist seeks to represent John Bull he always emphasises these new facial characteristics. Such changes in the form of the facial bones, like contraction of the palate, which they usually accompany, are not the result of a nasal obstruction such as might be caused by enlarged adenoids or tonsils; the cause lies deeper. The incidence of irregularities in the growth of the face follow the same laws as hold for all abiotrophic structures such as the appendix, the sclerotic coat of the eye, the thymus, and the tonsil. Further research will likely prove that the disorders of growth which overtake all of these structures are linked to a disturbed action of lymphocytes and of all the constituent elements of the lymphoid tissues. Dr. W. Cramer has become convinced that lymphocytes are actively concerned in assimilation of food and in the nutrition of tissues, and that the nature of the dietary does directly affect their activities. It seems to me very probable that a fuller knowledge of the life-histories of lymphocytes, particularly of the office they perform in growing tissues, will go far to explain the disharmonies which civilisation is producing in the bodies of some of us. But the problem of explaining why some members of our community are highly susceptible to these new conditions, while others are less so, and why the majority remain unaffected, will still remain.

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[21] Brit. Med. Jour., 1921, ii., 8.

[22] Nature, 1916, xcvii., 554.

[23] The details of this comparison were published in Five Lectures issued by the Dental Board of the United Kingdom, 1924.

[24] Dr. E. Mellanby: Brit. Med. Jour., 1912, i., 831; Dr. May Mellanby, Ibid., 1924, ii., 354.

[25] Johns Hopkins Hospital Bulletin, 1922, xxxiii., 202.

CONCLUSION.

I have touched only the fringe of a great subject; I have left undiscussed the numerous imperfections and disharmonies which civilisation has made manifest in structures concerned in the maintenance of posture,[24] and in those which are concerned with the circulation of blood and with the duties of respiration. I have said enough, I believe, to convince you that Metchnikoff was right when he declared that civilisation had launched man on a great experiment. From this experiment there is no turning back. We cannot return to the conditions of human life which prevailed in this country 6000 years ago; there are more people in one of the lesser back streets of London than could find an existence in the whole length and breadth of the Thames valley if we returned to the manner of living of our distant ancestors. We cannot go back; we must go on. Seeing how differently we are now circumstanced in every relationship of life—in food, in drink, in shelter, in warmth, in occupation, and in amusement—the wonder is, not that structural imperfections and functional disharmonies should develop in a proportion of our numbers, but that so many of us should escape harm altogether and enjoy good health. It says much for the adaptational reaction which is inherent to the human body that it withstands the artificial conditions of modern civilisation as well as it does.

How are our bodies to be protected against these ills with which civilisation threatens them? Metchnikoff, a declared and open rebel against Nature, hoped that science might discover some short cut for man's escape, some way of speeding up the evolutionary machinery of his body, and so making it perfectly fitted for the life which ever-advancing civilisation is forcing on mankind. I also believe that science will find a means of escape, but not by Metchnikoff's way. The solution of our problem is a fuller knowledge of the use and working of those parts of our bodies which are most apt to give way under our modern ways of living—the use of such structures as the great bowel. And when we have replaced our ignorance by real knowledge we shall then be in a position, not to adapt our bodily structures to our mode of living, but our mode of living to our bodily structures. This seems to me the best way out.

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[24] I have discussed the Imperfections of Man's Postural Structures in Brit. Med. Jour., 1923, i., 451, 493, 545, 587, 642, 680.

An Address

ON THE PROPHYLAXIS OF THE COMMON COLD AND FEBRILE CATARRHS.

Delivered before the Medical Officers of Schools Association on Nov. 6th, 1925,

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IN this paper I use the terms "common cold" and "febrile catarrhs" to indicate all those affections of the respiratory passages ranging from the common cold or coryza, on the one hand, to the diseases known variously as febricula, "flu," P.U.O., "chill," and "influenza" on the other hand, which, however much they differ in their manifestations, have this in common, that they are all infections, and all *begin* in the upper respiratory passages, causing malaise, often pyrexia, and a set-back in the normal healthy progress of adolescence. I intend, also, to deal with the prevention of these diseases *in schools*, especially the boarding schools, in which infection is so much more likely to spread, because the pupils feed, work, and sleep in common dining-halls, studies, class-rooms, and dormitories. Moreover, it is in these schools that great difficulty is experienced in finding adequate sanatorium accommodation for the patients, who so often require skilled nursing and attention in large numbers at the same time. I shall also use the term "influenza" loosely to cover all those febrile manifestations to which I have already alluded.

The appearance of these diseases in epidemic form is a matter of very great importance to schools for two main reasons: 1. Because, even though they run a normal uncomplicated course, they interfere with the work of the individual, whilst if complications arise they may jeopardise his future health and even his life. 2. Because they disorganise the whole life of the school, and are most expensive both as regards time and money. The work of a school medical officer would be reduced by one-half at least if such epidemics could be eliminated.

It would appear logical to begin by a description of the various forms of the disease as met with by medical officers of schools, and the different types which it assumes in different epidemics—e.g., the catarrhal, the anginoid, the intestinal type, and so forth. But I take it that all of us know it, with all its protean manifestations, and that we are agreed that the phenomena of this disease are due to micro-organisms, and that they are acutely infectious. The question as to the particular organisms concerned has not been finally settled, but we know that when cultures are made from the sputum or mucus of affected patients a variety of organisms are usually isolated which, if not the prime or deciding cause, are, at any rate, aiders and abettors or accomplices of the arch-offender, who or whatever he may be. Their entry into the body is by the upper respiratory passages. As to predisposing causes we can say little. It is well known that the vigorous and healthy are attacked almost as readily as those who have a less healthy constitution, though deformities of the nasal septum and turbinate bones, and the presence of unhealthy adenoid and tonsillar tissues no doubt weigh to some extent in the balance.

PREDISPOSING CAUSES.

What we know about predisposing causes is very little, and the prevention of the disease depends largely on the degree of immunity in any community for the time being. I do not mean to say that it counts for nothing if a child sits in a draught, or goes about in wet clothes or imperfectly clad, for these conditions temporarily depress vitality, but in the majority of our patients we cannot, as a rule, lay much stress on any of those conditions as a contributing cause.

Some blame the inclemency of the weather, and lay stress on seasonal incidence; others point out a certain periodicity in the waves of visitation; but whilst there may be some ground for both of these suggestions, the probability is that we can say little more than that the bodies of mankind have been discovered to be a first-rate culture medium by certain bacteria, which go on increasing in numbers and in virulence until the soil is temporarily exhausted or otherwise made untenable for their activities.

No doubt climate and season are a small factor in their environment which influence the outbreak and decline of epidemics, but it is more likely that the bacteria are themselves the victims of their own activity, and require either fresh feeding-ground or a rotation of bacterial crops before they can thrive again in the same host.

ATTEMPTS AT LOCAL ANTISEPSIS.

Attempts have been made to make the human soil untenable by disinfecting the upper respiratory passages by means of sprays, gargles, nasal douches, &c. But there are two considerations which, to my mind, make it most improbable that these measures can be of any avail.

1. The disinfectants used, if strong enough to kill the germs, will damage the epithelium with which our throats and nostrils are provided to deal with infection.

2. Even if strong enough, their contact with the micro-organisms is so short (for they are soon washed away or diluted) that the protection is likely to last for a question of minutes only. In this connexion I have noticed that where there is much nasal catarrh, constitutional symptoms do not develop so often or so severely. For by the catarrh Nature fixes and localises the disease to the naso-pharynx and "deals with it," so to speak, *in situ*. A common history to obtain at the outset of an attack of influenza is that the patient has recently had an ordinary cold for some time without feeling ill, but when the catarrh ceased constitutional symptoms with malaise and pyrexia first appeared. A remedy for colds much in use at one time was the "carbolic smoke-ball." Its virtue, no doubt, consisted, not in the antiseptic power of the carbolic acid, but in the fact that it produced an aseptic irritation of the nasal mucosa and caused an excess of mucus to be formed which dealt with the invading infection there and then.

With the same object in view, some medical officers have tried to educate their pupils to breathe habitually and entirely through their noses by teaching them a kind of "nasal drill." This expedient is difficult to carry out effectively and has not met with signal success: it has psychical rather than physical results.

Again, it has been suggested that all pupils should have their throats and nasal passages disinfected periodically by passing through a chamber in which a saturated spray of some vaporised disinfectant is circulated. I think this measure also is open to the criticism that the effect is too temporary and superficial to be efficacious.

PRINCIPLES OF PROPHYLAXIS.

The prophylaxis of these diseases then resolves itself into the following rules: 1. Keep out of infection's way. 2. Raise the immunity of the body. Let us deal with these separately.

1. *Avoidance of Infection.*—How can school-children keep out of infection's way? This is a large and far-reaching question. The infection is usually brought into schools at the beginning of a term by boys or girls who have left home with a cold or cough which seemed too trivial to detain them, or who during the last week of the holidays have gone through a concentrated tour of amusements at kinemas, theatres, dances, &c., and return to school somewhat tired and out of sorts, with the diseases under question incubating in their systems.

The way to tackle this source of infection is to "educate" the parents, or rather take them into our confidence, and point out the folly of indulgence of this kind. I have found it of no avail to send out a printed form, such as: "You are requested not to send your boy back to school with a heavy cold." To be of any use, a special communication must be sent periodically, written in reasonable terms, with explanations, and an appeal for coöperation on the part of the parents. Moreover, in schools situated in or near a town there is a constant risk of the infection being introduced by day-boys or boarders who must needs enter shops, hotels, and other town buildings to replenish their wardrobes, meet their parents, or go to theatrical or musical entertainments. This is to a certain extent avoided by stringent rules as to bounds and hours, and by providing the school with a food-shop of its own; but, inasmuch as the strength of a chain is that of its weakest link, all such efforts at surveillance and restrictions must almost inevitably break down, as it is enough that one pupil introduce the infection for the whole school to be exposed to its attack.

But if we ask for preliminary care on the part of parents we, too, must leave no stone unturned to avoid infection when the pupils assemble at the beginning of each term. Precautions should be taken by school authorities to ensure that all school premises are in as suitable condition as possible for pupils who have come from comfortable home-quarters to the severer rigour of the school establishments. In addition to the thorough routine cleaning and ventilation of school premises, all class-rooms and other meeting places should be warmed by the lighting of fires a few days before the pupils return, and the school routine should be entered upon gradually, not plunging at once into early hours, but gradually training the pupils to adapt themselves to their change of environment. No doubt, colds and febrile catarrhs spread much more quickly amongst boys and girls when living in their school community because they are packed into close quarters both by day and night.

It is, in my experience, chiefly in the big dormitory and small study where two or more boys live and work together that infection most easily spreads. Stated in other terms this means that they are overcrowded, and no doubt in a sense they are so, but it would be neither possible nor desirable to house boys at school as young men live at the universities—i.e., each with his own sitting-room and bedroom quite apart from that of his neighbours. Such an arrangement would materially alter the value of our boarding-schools in which close contact and publicity of life are important social and moral factors. I am quite sure that, even in dormitories where ample space (according to the accepted doctrines) is allowed, infection is carried directly from boy to boy.

There are only two remedies for these difficulties:—

(*a*) To rebuild or rearrange existing accommodation so that there are far fewer boys in each dormitory, after the plan adopted in some fever hospitals, where separate infections are nursed in the same ward without obvious ill-effects. But so long as boys are boys the theory would utterly break down in practice. There is all the difference in the world between sick patients in bed in a ward under supervision and healthy children in a dormitory with little or modified restraint. But this does not mean that we should not be strict as to the spacing of beds and ventilation in dormitories. On the contrary, the *minimum* space provided should at least be in accordance with the usually accepted rules, and great care should be taken that the ventilation is as good as possible.

(*b*) To make the best use of what space is available in studies and dormitories. Here, I think, a great deal could be done if more attention were paid to tidiness both of place and person. In my opinion, pupils should be paraded every morning to see that they begin the day, at any rate, tidy in appearance and apparel, and their quarters should likewise be inspected daily by a specially selected master or officer to see that they are kept clean and well ventilated. This is especially necessary where boys live and sleep in the same room, and every attempt should be made to keep such rooms free from unnecessary furniture, draperies, and other dust-collecting materials. The condition of class-rooms and other meeting places likewise requires special attention to see that they are kept clean, warm, well ventilated, and adequately lighted.

In the holidays following an epidemic, special care should be taken to begin cleaning and decorating operations *early*. I do not think that the burning of sulphur or formalin, as usually employed, has any germicidal action whatsoever, and I regard it as an unnecessary performance in which far too much trust is placed by the public and ourselves.

My impression is that girls' schools suffer less from influenzoid epidemics than boys' schools of the same grade. If this is so, I have little doubt that it is due to the greater care spent upon tidiness and general supervision of living quarters rather than to their being less closely packed. I feel sure that 100 tidy pupils will occupy the same space as 80 untidy pupils without a corresponding increase in the incidence of febrile complaints. There are many other small but important considerations which I must pass over, such as the kind and amount of food, the laundry arrangements, the hours of sleep, &c., which bear indirectly on our subject.

But there is one small detail to which insufficient attention is usually given in schools, and that is the provision of adequate foot-gear. I cannot explain why cold and damp feet should predispose to catarrhal conditions any more than coldness and dampness of any other part of the body, except that it is more often overlooked. One of the inconveniences of adolescence is a tendency to poor circulation in the extremities, and this can to a certain extent be overcome by seeing that pupils are well shod and that their boots and shoes are kept in good repair.

2. *Raising the Immunity.*—There are some individuals who seem to have a high natural immunity to infections of all kinds; some children, even before puberty, will pass through epidemics of different kinds unscathed, and it is possible that, with puberty, most people acquire a still greater degree of natural immunity. A second class, possessing less natural immunity, suffer from occasional attacks of influenza, but acquire after each attack an immunity which lasts them for a considerable length of time. There remain, however, a large number of persons of school age who acquire only a very short-lived immunity after an attack of influenza, and succumb whenever the so-called "wave" passes over their neighbourhood.

In a school of 600 boys I have known 200 to be on the sick list at one time, and a total of over 300 cases in a term, which implies the loss of about 4000 school days in a term of 12 weeks.

PROPHYLACTIC VACCINATION.

It seems to me that the longer the epidemic lasts the greater is the virulence of the infection and the more serious the nature of the complications. Consequently, it behoves us as medical officers to leave no stone unturned, at whatever cost or trouble, to stamp out or mitigate the disease and its sequelæ, and I would like to direct attention to the question of raising the immunity of the community by prophylactic vaccination.

There has so far been no combined attempt on the part of medical officers of schools to tackle a given epidemic systematically by methods and on lines on which they have previously arrived at agreement. At present the question is in a state of chaos, and I do not think that we could arrive at any certain conclusions if we had before us to-day all such evidence as can be collected, because of its fragmentary and uncoördinated nature.

There is on the one hand: 1. The evidence of individual patients who think they have or have not benefited by a "course" of prophylactic vaccines, and who swear by or belittle this form of vaccination according to the result they imagine it has produced in themselves. 2. There is the evidence of medical men who have dealt with communities such as a detachment of troops, schools, and other societies, whose evidence, if we were able to collect it, would in some cases be enthusiastic, in others lukewarm, but in no case convincing, because the methods have not been carried out on a large enough scale and with sufficient control material.

What is wanted is a combined test-effort on the part of medical officers of schools to tackle the problem thoroughly by agreeing as to the method of preparation and details of administering a vaccine at a time chosen by the doctors calculated to immunise pupils against a likely, or one may say, almost certain outbreak of influenzoid epidemic at a given season—e.g., the coming Lent term.

It may be argued that as the organism responsible for influenza is not certainly identified, this form of prophylactic vaccination is unscientific, but we do certainly know that certain accessory organisms play a not unimportant part both in the disease as we know it and in its complications. Indeed, there may possibly be no one particular responsible germ, but the disease may be due to the combined activity of several organisms, some of which we know—for instance, the virulent form of streptococcus so frequently isolated from otorrhœa following influenza. If, then, we can raise the immunity of the body against one or more such organisms we are immunising in part or in whole against the complex disease.

Stock Vaccine.—There has lately appeared in print a report of an experiment tried in September, 1919, in a boarding-house of a large public school, where each child received five injections in the course of the year of the anticatarrh vaccine made in the inoculation department of St. Mary's Hospital. The report says: "The results were so encouraging that the procedure has been continued regularly, and the record for the past four years shows that not one girl who had been duly inoculated missed a single day at school owing to colds or influenza, whereas of those girls who were not inoculated a considerable number were confined to bed with colds and influenza, and two contracted pneumonia." In this house the number of girls averaged 40, and they mixed freely with other uninoculated pupils in their class-rooms.

The vaccine here used is composed of *Micrococcus catarrhalis*, *Bacillus pneumoniæ*, pneumococcus, *Bacillus septus*, *Bacillus influenzæ*, and streptococcus in certain definite proportions, and is, no doubt, constantly reinforced at headquarters by fresh cultures taken from well-marked cases of the disease. The recorded results are excellent, but I would suggest that it would be still better if those schools which determined to join in one big concerted experiment should send to a prearranged laboratory or pathologist cultures from the naso-pharynx and throat and specimens of sputum by a given date, in order to have a vaccine of local origin made for them, leaving it to the discretion of the pathologist to incorporate such and as many strains as his experience led him to think necessary.

Such a vaccine would combine the advantages of being easily procurable and of being made from local material. This concerted experiment would have two sources of control: 1. Those schools which, for some reason, did not adopt the plan. 2. Those individuals in any school whose parents preferred not to have their children inoculated. The best time for administering the vaccine would be during the Christmas holidays immediately preceding the Lent term, and again during the last three weeks of the summer holidays so as to precede the two school winter terms in which influenza is usually most prevalent.

I feel that we have before us a great opportunity for testing the efficacy of vaccine prophylactic treatment in the case of a disease which has become a national danger and expense, and that the time has come to give it a careful trial. I often feel and say that the value of my work as medical officer of a big public school can only be judged when the boys whom I have steered through adolescence reach the fourth and fifth decade of their life. The proof of this pudding is not in the eating but in the digesting. The success of education at our schools cannot be judged by lists of scholastic distinctions so much as by the mentality and usefulness of their pupils when they attain middle age. The same, I take it, is true in medical matters, and we medical officers of schools hold in our hands the invisible keys which could open many secrets of the future health of our patients.

SENSIBILITY OF THE HEART: A HUMAN EXPERIMENT.

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With Notes by

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THE opportunity for a comparatively prolonged manipulation of the human heart in a fully conscious patient has occurred probably with sufficient infrequency to justify placing on record this case. As nearly five years have now elapsed since the date of the operation it is possible to add that the health of the patient is excellent and fully warranted the risk that was taken in exposing him to an experimental procedure. At the time of the operation his condition was one of extreme gravity and apparently hopeless. For obvious reasons, that will be explained later, a general anæsthetic could not be administered. The use of an appropriately planned regional analgesia for making a flap from the wall of the thorax was not an entire innovation, but there was no precedent to guide us as to the sensitiveness of the visceral pericardium and heart to such stimuli that the tearing down of adhesions, squeezing, and ordinary tactile pressure might evoke. Operations upon the heart had been done long previously to the discovery of general anæsthetics, and an excellent résumé of the history of cardiac surgery from early days is given by Ballance in his book "The Surgery of the Heart." But, as a rule, these operations were for severe wounds from which the patients were barely conscious and were hurried procedures that were necessitated by such emergencies. Dobson,[1] in April, 1924, successfully sutured a wound in the heart under "local anæsthesia." Another type of operation was for suppuration within the pericardium when simple incisions were made to establish drainage. In this particular case an exploratory pericardiotomy was carried out with a purely regional and local analgesia in the hope of discovering a lesion that could be benefited by surgical treatment upon a patient who was so normally conscious that he has forgotten none of the details of his experiences throughout the operation at the present day. The lesion found was a fibroplastic pericarditis binding tightly the whole of the heart muscle to the parietal pericardium with small lacunar spaces containing serous fluid intervening at intervals. The length of time taken to free the whole of the heart from its attachment to the pericardium was from 10 to 12 minutes, and the whole operation occupied about 35 minutes. At no stage of the operation did any stimulus that was applied produce any sensation that the patient was able to record in consciousness, and throughout most of the proceedings he chatted with his nurse. Neither is this the sequence of amnesia, as he can relate fully all the ordinary details of the operation that he observed at the present day. Lennander (Upsala) and A. E. Barker (London) showed 25 years ago by operations upon the conscious human subject with local infiltration of the abdominal wall only that the alimentary tract deriving its nerve-supply from the vagus and sympathetic nervous systems was totally insensitive to all forms of stimuli except traction. The visceral layer of the pericardium and the heart in the human being deriving their nerve-supply from the same sources are shown by this operation to possess the same immunity to the stimuli applied in this case. It was further noted during the whole time when the heart was being manipulated that its beat was entirely unaffected in any way that could be recognised by the hand of the surgeon, an observation naturally of great relief to the operator. There was no subsequent reaction when the operation had been completed; actually the patient had 12 hours natural sleep immediately afterwards and the pulse-rate fell within the same period from 148 to 130 beats per minute. Such knowledge may extend conceivably the sphere of utility of cardiac surgery.

The pathological condition that was revealed at the operation fully explained the absence of any pathognomonic clinical signs for detecting its presence, as well as a reason for the cardiac shadow, examined beforehand on two occasions by X rays, showing little or no variation from the normal. The parietal pericardium, which was fully a quarter of an inch thick, clamped the heart like the case of an oncometer, and thus rendered the occurrence of enlargement or displacement impossible. This condition has been found not infrequently in the post-mortem room in cases of acute pulmonary disease as a lesion, the presence of which had not been detected beforehand. It is possible that the lives of some of those patients might have been saved by the procedure adopted in this case, which enabled a systematic and painless investigation of the pericardial contents to be carried out without the added risk of a general anæsthetic to a patient already desperately ill.

The purely medical aspects and clinical difficulties of this case were under the supervision of Sir William Willcox. I must express my thanks to him, to Dr. E. F. Furber, and to Dr. G. P. Selby (the father of the patient) for their unwearying skill and assistance in helping towards a successful termination; and not least to Dr. F. Rood for an induction of analgesia that by its perfection gave courage and confidence throughout an anxious procedure.

Details of Case.

C. P. S., aged 21 years, an officer in the R.F.C., was sent to me on Dec. 2nd, 1920, suffering from an intractable neuralgia of the median and ulnar nerves and an axial causalgia of the phantom limb of a high amputation of the left arm. He had been shot down when flying behind the German lines, and in addition to many injuries a virulent spreading sepsis of a compound fracture in the region of the left elbow-joint ultimately necessitated amputation. Ten days later a violent secondary hæmorrhage had been arrested by an urgent application of a mass ligature to the bleeding-point as he was lying in bed almost dead. (It is pleasing to put on record that he received every possible attention at the hands of the German medical service, and when the surgeon in charge of the hospital learned that the patient's father was a medical man he took the trouble to write a full technical account of the progress of the case on the back of each letter that the patient was permitted to write home.) The symptoms suggested that the median and ulnar nerves had been included in this ligature as well as the blood-vessels. But the causalgia was by far the more formidable sequela, and during its agonising spasms clonic convulsions of the shoulder girdle muscles occurred as well as pink macular areas of vaso-dilatation over the same region.

At the first operation on Dec. 15th, 1920, the median and ulnar nerves and the brachial vessels were found to end in a cone-shaped termination distal to which the nerves expanded into large fibro-neuromatous masses. These were resected and the *ends of the nerves infolded. The sheaths of the* vessels were then cleaned high up as far as the second part of the axillary artery (Leriche's operation). The region traversed in order to identify all these structures was a dense oozing fibrous mass, and the patient was exposed to the influence of open ether for nearly two hours. His temperature rose within 24 hours of the operation to 101° F., and a few days later Sir William Willcox and Dr. Furber diagnosed an extensive pneumonia of the right lung. By Dec. 23rd, 1920, a large pleural effusion had developed and two pints of a blood-stained serous fluid were drawn off by aspiration. Cultures from the fluid produced a pure growth of a hæmolytic streptococcus. A few days later an intercostal incision was made under local analgesia and Carrel-Dakin tubes inserted into what was by then an empyema cavity.

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[1] Dobson: Brit. Med. Jour., 1924.

On Jan. 2nd, 1921, patient complained of præcordial pain, and after examination Sir William Willcox diagnosed the presence of acute pericarditis. By Jan. 5th the pain had disappeared, but the patient remained acutely ill with a temperature of 103·4° F. and pulse-rate 132. On the 9th a rib was resected on the right side, again under local analgesia, as the drainage through the intercostal incision was not proving satisfactory. An abundant purulent discharge ensued from the empyema, which was still being treated by the Carrel-Dakin method, and an improvement in the general condition of the patient was maintained until Jan. 15th. From this date, however, in spite of a marked improvement in the condition of the empyema, the general condition of the patient became steadily worse. The temperature seldom fell below 102°, and the pulse-rate climbed up from an average 120–130 to an average 130–144. On Jan. 23rd the pulse-rate reached 148; the condition of the patient was then very grave, and after a consultation with Sir William Willcox, Dr. J. F. Poynton, Dr. Furber, and the patient's father a decision was arrived at to explore the pericardial cavity by operation, since the condition of the empyema was not sufficient to explain the critical condition of the patient.

Operation (9 P.M., Jan. 23rd, 1921).—After a preliminary injection of novocaine by Dr. F. Rood (for details of the procedure see note by Dr. Rood), a U-shaped incision was made over the left side of the chest so as to expose the sternal ends of the third, fourth, and fifth costal cartilages. These were cut through obliquely close to the sternum and a chrondroplastic flap was then turned outwards using the costochondral articulations as hinges. The edges of the pleural sacs were easily identified and painlessly brushed aside with gauze. The pericardial sac was then steadied by transfixion with a sharp hook and an incision ¼ inch long was made cautiously through its thickened substance. At a depth of rather more than ¼ inch a small cavity was opened, from which about 2 drachms of turbid fluid escaped. The floor of the cavity was formed by the heart muscle and its other boundaries by recent fibrous adhesions. These were broken down carefully by the finger all round and similar small cavities opened beyond them. As the pathological condition within the pericardial sac was now obvious, the original incision in the parietal pericardium was extended upwards and downwards for about 5 inches to give access to the whole of the heart. By means of blunt instruments and fingers introduced into the sac the whole of the heart muscle was freed eventually from its attachment to the pericardium. The most difficult part was the upper portion of the posterior surface, which could be reached only after the apex, anterior surface, and lateral borders of the heart had been liberated. To effect the final step, the heart was grasped between the thumb in front and the middle and index-fingers behind. With the hand thus steadied the fingers behind were forced slowly up to the apex of the pericardial sac and with sweeping movements completed the destruction of the last of the adhesions. At no time did any detectable change in rate or quality of the heart-beat occur suggestive of resentment of *these manœuvres, and the patient, as before, continued* to remain quite unaware of any unpleasant proceeding. The condition of the patient was so excellent and his repeated reassurances that he felt nothing enabled the rest of the operation, involving the replacement of the chondro-plastic flap, to be conducted in a routine and orderly manner. A small piece of the fifth chondral cartilage was removed (he heard the noise made by cutting through this) to enable a drainage-tube to be placed in the pericardial sac, and the remaining cartilages were stitched back to their sternal attachments by chromic catgut. At one stage of the operation the patient said that he thought that something warm was trickling over his chest, but otherwise he experienced no sensations that gave him any knowledge of anything being done to him. He chatted frequently with the nurse standing by him, and has a clear recollection at the present day of the whole incident.

After-course.—Cultures from the pericardial fluid proved to be sterile, but a free discharge of it occurred for several days and the tube was only finally removed a fortnight after the operation. His general condition improved immediately and progressively after the operation, but *a tedious convalescence was* interrupted by a pulmonary infarct on Feb. 3rd, and by a premature closing of the empyema wound on Feb. 28th, which necessitated a temporary reopening. He became finally non-febrile on March 1st, and from that time onwards his pulse-rate only rose at intervals to 90. On May 7th, 1921, he was able to travel a distance of 40 miles by motor car to the country, with a pulse-rate that varied from 72 to 80. During the ensuing years he has led an active athletic life—e.g., running with harriers, swimming, sailing his own boat, playing tennis, and punting a heavily laden punt a distance of six miles or more without fatigue. Incidentally, in the midst of all these infections, the operation wound on his stump healed by first intention and he has remained free from both neuralgia and causalgia.

Note by Dr. F. Rood.

About 5 oz. of a 2 per cent. solution of novocaine were used to produce analgesia in this case—20 ♏ of adrenalin were added to the novocaine solution in order to localise it to the site of injection and thus to prolong its action. As the operation involved exploration of the pericardium, it was, of course, necessary to produce an analgesia of the whole thickness of the chest wall and over a sufficiently wide area to allow not only for the line of incision, but also for retraction and other manipulations associated with the operation.

Thus it was necessary to render insensitive first the skin and subcutaneous tissues, then the deeper layer—the ribs, costal cartilages, and parietal pleura; finally, the *parietal* pericardium. It was naturally not possible to inject the nerves supplying the *visceral* pericardium and the heart, so that the manipulation of these tissues *was the* only part of the operation which could not be definitely provided for in the analgesia. This part of the operation was somewhat experimental, as we did not know previously to what extent the conscious patient would tolerate operative procedure in the interior of the pericardium.

As the skin and subcutaneous tissues over the præcordium are supplied in the upper part by the third and fourth descending branches of the cervical plexus as well as by the terminal branches of the intercostal nerves and also by the lateral cutaneous branches of these same nerves, a wide infiltration with a very fine hypodermic needle was carried out over an area of the chest wall extending from the junction of the manubrium and body of the sternum above to the ensiform cartilage below, and reaching laterally for about 3 inches on either side of the sternum. Then injecting through this insensitive area with a longer and stouter needle, the novocaine solution was introduced beneath each separate rib and costal cartilage. As this second layer of injection blocked the trunks of the intercostal nerves it produced a complete anæsthesia at the ribs and costal cartilages, the intercostal muscles, the parietal pleura, and the parietal pericardium.

This tedious infiltration method was employed rather than a pure regional anæsthesia of each intercostal nerve beneath the ribs, as the latter would have involved a series of painful punctures which, in view of the patient's condition, was not considered advisable. The patient stood the operation very well. There was no alteration in his general condition at any time and he did not resent in the least gentle intrapericardial exploration.

Note by Sir WILLIAM WILLCOX.

The usual signs of an extensive pneumonia of the lower lobe of the right lung were present on Dec. 17th, 1920, the temperature ranged from 105° to 103° F., and rusty sputum of the usual pneumonia character was freely expectorated. On Dec. 23rd, 1920, 11 A.M., the temperature still remained high, and after careful examination and consultation with Dr. E. P. Furber, whose care and attendance on the case were constant and unremitting, it became evident that fluid was present in the right pleural cavity. 10 c.cm. of slightly turbid fluid were withdrawn with an aspirating needle, and on examination by Dr. John Matthews streptococci of hæmolytic type was found to be present. On Dec. 23rd two pints of blood-stained serous fluid were aspirated by Mr. Waugh, and treatment of the right pleural cavity by Carrel-Dakin tubes was instituted. On Dec. 28th, 1920, pain occurred over the præcordial region and definite pericardial friction was detected. The temperature remained high and a well-marked pericardial rub continued audible over the præcordial region. There were still well-marked signs of fluid in the right pleural cavity, the discharge from which was of a thick purulent nature, but the præcordial pain disappeared on Jan. 5th.

On Jan. 9th, 1921, a portion of rib was resected by Mr. Waugh and a large drainage-tube inserted into the right pleural cavity. In spite of the adequate drainage of the empyema cavity the temperature remained high and a rapid pulse-rate and dyspnœa persisted with the condition of the patient growing steadily worse. It appeared clear, on clinical grounds, that the urgent symptoms could not be explained by the condition of the right pleural cavity, there being no physical signs of any collection of pus.

On Jan. 22nd, 1921, a careful X ray examination of the chest showed the right pleural cavity to be well drained and some slight increase in the cardiac shadow. The condition of the patient was so extremely grave, and it was obvious that unless surgical measures were invoked for the treatment of the pericardial condition a fatal termination would certainly follow speedily.

When on the morning of Jan. 23rd, 1921, the condition showed no improvement a final consultation was held, and Dr. F. J. Poynton very kindly saw the patient with us and reviewed the whole situation. It was unanimously agreed that operation on the pericardium for relief of the acute fibrino-plastic pericarditis held out the only possible hope of recovery. The operation was performed on that day and its details have been most accurately described by Mr. Waugh. It was my privilege to be present and observe the whole procedure. Before the operation the pulse-rate was 148, the temperature 104°, and the condition of the patient could only be described as desperate. The skill with which the local anæsthesia was carried out by Dr. Rood completely obviated the slightest pain or shock from the operation. The operation was performed with the utmost skill and rapidity, the heart being exposed and freed from its strangulating fibrino-plastic adhesions, turbid fluid escaping from the pericardial cavity, which was freely drained.

A most interesting feature of the case was that while the right pleural cavity was heavily infected with hæmolytic streptococci, and had obviously given rise to the pericarditis, yet the turbid pericardial fluid was completely sterile. This is a perfect illustration of the manner in which a septic focus caused by a definite bacterial infection may give rise to a very marked inflammatory reaction in another part of the body, the latter showing a complete absence of living bacteria.

In this case it appears probable that streptococci had been conveyed to the pericardium from the right-sided empyema, and that they had been completely destroyed by the bactericidal action of the pericardial fluid, their products, however, giving rise to the active inflammation—i.e., fibrino-plastic pericarditis. The occurrence of arthritis and very many other pathological inflammatory lesions of a sterile nature resulting from a distant focus of active bacterial infection can be accounted for on similar grounds.

The operative procedure employed in this case appears to open up a new field for the treatment of pericardial disease. The exposure of the præcordium and the opening of the pericardium are attended with little or no shock under the technique employed, and the freeing of the heart from pericardial adhesions, if newly formed, as in this case, is within the realms of practical surgery.

OBSERVATIONS UPON THE INFLUENCE OF A GLYCERINE EMULSION OF TESTES AND ADRENALS

ON TUBERCULOUS AND SENILE PATIENTS.

BY V. KORENCHEVSKY, M.D.

(*From the Lister Institute of Preventive Medicine.*)

Historical.

1. *Adrenals.*—Several authors have a strong opinion that the functional capacity of the adrenals is important in infectious diseases, increasing or decreasing the resistance of the organism to disease (Poncet and R. Lerische (1912), M. Lucien and Parisot (1913), Biedl (1916), Cramer (1919), Lewis (1921–23), Scott (1924), and others). The action of bacterial toxins upon the adrenals seems to vary according to the degree of their toxicity and the period of time during which the animal organism is subjected to their influence. Tscheboksaroff (1911) found that during the first 10–15 hours after the injection of diphtheria toxin the amount of adrenalin in the blood is increased and in 24–27 hours following the end of this period is again normal; 2–4 days after the injection the secretion of adrenalin has decreased or ceased. Experimental data, corroborated by anatomical investigations of the adrenals of patients who died of infectious diseases, showed morphological changes in these glands varying from hyperæmia and hypertrophy to degeneration and atrophy, according to the time and strength of action of the toxins (Langois and Charrin (1896), Bogomoletz (1905), Goldzieher (1910), Lucksh (1910), Sorgo and Haletin (1916), Cramer (1919) and others). The suprarenals were investigated and found to be affected in tuberculosis (Bernard and Bigart (1906), Sezary (1908), Boinet (1909), Poncet and Leriche (1912), Parisot and Lucien (1913), Alou (1922), Wiesner (1923) and others). According to these investigations the suprarenals react by hypertrophy in cases of feeble or slowly developing infection, and by sclerosis and atrophy in cases of severe tuberculosis. In many cases tubercle bacilli could not be detected in the affected adrenals, therefore these changes can only be explained by the influence of the poisons of the bacilli. True nodular tuberculosis of the suprarenals has also been described on several occasions. According to Poncet and Leriche, Lucien and Parisot, and others, the clinical symptoms which may be ascribed to suprarenal disturbances in tuberculosis (apart from true Addison's disease) are the following: vasomotor disturbances, low blood pressure, palpitation of the heart, inclination to collapse, pigmentation of the skin, easy and pronounced sun-burning, muscular weakness,

and general asthenia, increased sensibility to cold, and psychic depression.

The above facts show that the changes in the adrenals indicate their deficiency in severe or chronic infectious diseases and intoxications. Their hypertrophy and increased secretion in cases of feeble or temporary infection or intoxication suggest their antitoxic function. This is shown more clearly by the experiments of Lewis (1921–22) and Scott (1921). Rats are among those animals which survive the removal of both adrenals. Lewis has found that double adrenalectomy increases the sensitiveness of rats to codeine, papaverin curare, cobra venom, veratrin, digitoxin, adrenalin diphtheria toxin, and especial morphine. For instance, the minimal fatal dose of morphine for operated animals was 400–500 times less than that for the controls. This decreased resistance in rats appeared immediately after the operation, but after some time it diminishes gradually and completely disappears. A mixture in vitro, or a previous injection of a watery extract of suprarenals, has not given protection against poisoning. Scott (1924) found that the resistance of rats to intoxication by dead streptococci or staphylococci was greatly decreased after double adrenalectomy. For instance, a dose could be obtained that was invariably fatal to adrenalectomised rats (before hypertrophy of the accessory glands), but never killed control rats. Scott thinks that this decreased resistance is dependent upon a functional insufficiency of the adrenal cortex. Oppenheim (1901) and Stewart and Rogoff (1922) could not obtain the same results in cats and guinea-pigs. Webb, Gilbert, Hartwell, and Ryder (1920) could not find in the changes produced after inoculation with tubercle bacilli a definite *difference between* adrenalectomised and control guinea-pigs, the only difference noted being a slightly earlier enlargement of inguinal glands in the operated animals. Attempts were made to utilise this antitoxic influence of the adrenals in the treatment of tuberculosis. Renon (1912), Sergent, Lereboullet, Lucien and Parisot (1913) draw attention to the satisfactory results obtained in tuberculosis by adrenal opotherapy.

2. *Sexual Glands.*—There is no doubt that the sexual glands have an internally secreting function. After removal of the sexual glands in both men and animals a change is noticed in the external appearance and the psychology, and in the striking involution of the sexual organs and of many secondary features of sex (provided castration is performed at an early age). These facts alone are sufficient to place the testes and ovaries in the group of endocrine glands. Steinach's experiments (1912) on the cross-grafting of ovaries and testes in animals of the opposite sex, also his experiments (1920) with the ligature of the vas, and the experiments of Voronoff (1923, 1924) and Thorek (1924) with testicular grafts supply evidence of the fact that the sexual glands produce an internal secretion. Steinach's experiments on rats, Sand's (1921) on dogs, and Voronoff's on goats and rams suggest that a ligature of the vas or a transplantation of the testes from a young animal may increase for a limited time some general and sexual force in old animals.

Brown-Séquard (1889) was the first to perform (on himself) dynamometer measurements of muscular strength after testicular injections. These raised his strength from 34 to 41 kg.—i.e., Brown-Séquard at the age of 72 years had regained the force which he had at the age of 26. Copriati (1892) confirmed the above results, using Mosso's ergograph. Very elaborate and exact observations by Zoth (1896) and Pregl (1896) showed that subcutaneous injections of a testicular extract combined with muscular exercise increase the muscular strength by about 50 per cent. as measured by the ergograph. Loewy (1910) found that after injections of spermin the increased oxygen consumption, which is a sign of muscular fatigue, decreases in a marked way. From all these experiments it may be concluded that the sexual glands have a stimulating influence upon the general strength of the animal, and especially upon the sexual organs and their function. On the basis of these experiments several authors (K. Sand (1922), Benjamin (1922), Schmidt (1922), K. Walker and J. Lumsden Cook (1924) and others) in recent years have employed Steinach's operation on human subjects. Many senile patients were among those treated. The conclusion which may be drawn from all these observations is stated by Walker and Lumsden Cook as follows:—

> "At the present there is insufficient material on which to base a decision as to the value of vasoligature as a means of treatment in man. The results of operation appear to have been capricious, although numerous cases are reported in which benefits accrued."

The observations of Voronoff (1920), Stanley (1922), Thorek (1924), Nixon (1924), and Walker (1924) have shown some beneficial effects after the transplantation of the testes of animals or men into patients suffering from senility or other diseases with signs of eunuchoidism. Usually this improvement, when in senile patients, was shown by an increase in appetite and in mental and muscular strength and the disappearance of constipation.

The rôle of the sexual glands in infectious diseases and in intoxications has been very little investigated. Vincenzo and Marcozzi (quoted by Poncet and Leriche), working on animals, obtained a sclerosis of the testicles in experimental tuberculosis and in poisoning with tuberculin. Ancel and Bouin (1905), on the basis of their experiments, conclude that hypertrophy of the interstitial gland of the testicle is seen in the first stages of infection and of intoxication (tuberculosis toxin included). In cases of very acute or chronic and severe infections (tuberculosis) or intoxications, the interstitial testicular glands tend to atrophy. Davis (1922) found the testicles degenerated in various infectious diseases in man. Hansemann (1895) noticed a marked increase in the number of interstitial cells in many cachectic conditions, and quite regularly in chronic tuberculosis, cancer, and syphilis. Poncet and Leriche draw attention to the degeneration of the sexual glands in human tuberculosis. They think that tuberculosis results in a slow castration produced by the tuberculosis toxin. Poncet and Leriche, Hollos (1914), Pierry (1910), Costa (1905) and others have often seen symptoms in tuberculosis denoting disturbances in the internal secretion of the reproductive glands. Sexual maturity either develops too early or there is a state of infantilism with a hypoplasia of the reproductive organs. The specific habitus (long thin limbs with undeveloped muscles) of a consumptive is, according to Poncet and Leriche, due to disturbances in the function of the interstitial glands. Disturbances in menstruation are also a frequent symptom of tuberculosis.

Cristofaletti and Thaler (quoted by Warnekros) tried to discover the rôle of the sexual glands in the resistance of the animal to tuberculosis by experiments with castration. But they did not find any marked difference in the time the castrated and normal guinea-pigs survived when infected with tuberculosis. Neither did the post-mortem examination give sufficient evidence that castration had any influence upon the development of tuberculosis. Warnekros, however, objects strongly to these experiments because they are performed on unsuitable animals, guinea-pigs being too highly sensitive to tuberculosis and surviving too short a time. At present, opinion is not agreed upon the effect of total hysterectomy with castration on tuberculosis in pregnancy. The aim of this operation is to lower the metabolism and produce fattening.

Henkal (quoted by Warnekros) noticed the beneficial effect of castration (total hysterectomy) in eight pregnant women suffering from tuberculosis. Warnekros (1912) also published his own observations on the effect of total hysterectomy on tuberculosis in *pregnancy. Out of 34 cases* 7 died during the first and beginning of the second year after the operation. Improvements were noticed in all the other patients; they felt stronger, increased in weight (sometimes only temporarily), and the local symptoms in the lungs disappeared or greatly diminished. Warnekros found an improvement in all the symptoms, diagnosed by auscultation, percussion, and X ray. However, the results of the operations by Henkal and Warnekros might be better explained by the interruption of pregnancy, because it is very improbable that normal secretion of the stimulating gland is of any use and even harmful in an infection. Moreover, a histological examination of the sexual glands in chronic tuberculosis reveals frequent degenerative and atrophic processes in them; hypertrophy of the interstitial gland was found only in the early stages of tuberculosis or in mild forms of the disease. Therefore, it is possible to consider the more frequent lowered activity of the sexual glands in tuberculosis, which, Poncet and Leriche say, finally "castrates" the patient by means of tubercle toxins. In spite of this "toxic castration" consumption is not cured or even ameliorated. In the time of Brown-Séquard an attempt was made to treat consumptive patients with "testicular liquid," and some satisfactory results were obtained. The general well-being and strength as well as the local symptoms of the patients showed varying degrees of improvement (Victorov (1891), Maximovich (1891), Henocque (1892), Ouspensky (1896)).

Technique Employed in Present Investigation.

When all the above-mentioned facts were considered it seemed promising to administer preparations of sexual glands + adrenals to tuberculous patients with symptoms of deficiency of internal secretion of sexual or adrenal glands to enable them to overcome this disease. It is obvious that all the operative methods used to provide the patient with the necessary internal secretions of the sexual glands have many limitations. Therefore, it is most desirable to discover a suitable and effective preparation for oral or subcutaneous administration. Since the first observations of Brown-Séquard (1889) on himself, many kinds of testicular and ovarian preparations have been used for the treatment of patients. For general practice, firms of to-day offer a variety of such preparations for oral as well as for subcutaneous administration.

But the results obtained with these are contradictory, and differ much from those described by Brown-Séquard (see Biedl). For subcutaneous injection. the founder of organotherapy used freshly prepared extracts of testes in water and glycerine solutions. These extracts contain an excess of destroyed cell products which produce an unfavourable local and generalised reaction in the patient. Therefore, commercial firms stopped preparing them and replaced them by harmless, but at the same time much less active or sometimes even inactive preparations. Most of them are prepared either by desiccation of the gland tissue (for oral administration), or by precipitation of the proteins and sterilisation of a watery extract of the gland (for subcutaneous injection). Although some improvements in patients after using these preparations are described (Biedl), it is impossible to avoid the objection that the procedure necessary for desiccation, precipitation of proteins, and sterilisation of glandular preparations may destroy or weaken the active principles of the sexual glands. I therefore decided to try a glycerine emulsion for oral administration prepared from perfectly fresh glands. A possible objection to this is that the active principle of glands could be destroyed by the autolysis, which could take place in a glycerine solution. This I tried to avoid by preparing the emulsions very often and by keeping them cold. The method of preparation was as follows.

Testes and adrenals from cattle were used. The glands were brought straight to the laboratory immediately after the animal was killed. They were ground in a "Latapie broyeur" (large model) and emulsified in glycerine in the proportion of 1 part of gland to 2½ parts of glycerine. One part of ground tissue contained 1/8–1/10 adrenals and 7/8–9/10 testes. For therapeutic treatment ½–2 teaspoonfuls were given once or twice daily according to the reaction of the patient.

I have tried this extract on myself for several weeks and have not noticed any harmful effects. In the following text the glycerine emulsion of testes and adrenals will be called "A.T. Emulsion." At first my aim was to administer the A.T. emulsion only to those patients who suffered from tuberculosis with symptoms of deficiency chiefly of sexual glands. But it was difficult to find a sufficient number of suitable cases in hospitals because marked changes in the external appearance can only be seen in those in which deficiency started at an early age. I therefore decided to try the effect of A.T. emulsion also on patients without obvious signs of sexual deficiency.

The above-mentioned treatment of the patients was kindly carried out and the results obtained checked by Dr. M. Paterson, medical superintendent of Colindale Hospital, with the assistance of Dr. M. H. Logg, on 50 patients in Colindale Hospital; by Dr. F. B. Hobbs and Dr. A. I. McLaughlin on 11 patients in the City of London Hospital; by Dr. J. Watt, medical superintendent of the King George V. Sanatorium on three patients; by Dr. M. McDonald on one patient in the Tuberculosis Dispensary of Greenwich; and by Dr. R. C. Wingfield, medical superintendent of the Brompton Hospital Sanatorium at Frimley, on five patients. The treatment of the senile patients was kindly undertaken by Dr. J. A. Lumsden Cook at St. Mary Abbots Hospital.

I was permitted to choose the most suitable patients, to suggest the dosage of the emulsion, and during my visits to the hospitals to follow the results obtained. My sincere thanks are due to my colleagues for their accurate and elaborate observations and for permission to use extracts from their reports for the following short summary.

Observations on Tuberculous Patients.

Colindale Hospital.—50 patients, 17 of whom have some features of deficiency of sexual glands. Out of 12 patients with *medium advanced* disease two were between 18 and 21 years old and ten between 27 and 45. The treatment with emulsion lasted 20–35 days for five patients, 41–60 days for three patients, and 80–112 days for four patients. The dose of A.T. emulsion was 1–2 drachms daily.

The condition of the patients at the end of the treatment was as follows. Improvement in four patients, stationary condition of disease in four patients, and another four patients became worse, three of whom died. In a *definitely advanced* stage of tuberculosis were 19 patients: five were 18–25 years old, ten were 26–40, and four were 41–61. The treatment with the same dose of A.T. emulsion lasted: 20–40 days for six patients, 41–65 days for two patients, and 80–145 days for 11 patients. At the end of the treatment their condition was as follows. Six patients improved, six remained stationary, and seven became worse, three of whom died. In a *very advanced stage* of tuberculosis were 19 patients. Five were between 17 and 25, 11 between 26 and 40, and three between 41 and 44 years old. The treatment (the same dose) lasted: 4–14 days for seven patients, 21–40 days for four patients, 41–60 days for four patients, and 61–110 days for four patients. Their condition at the end of the treatment was as follows. One patient improved, three remained stationary, and 15 became worse, ten of whom died. Seven patients, from whom no conclusions can be drawn, must be excluded, because they were only under treatment for 4–14 days; six of them died during this time.

It is impossible to conclude that there are any constant or definite beneficial effects of A.T. emulsion on tuberculous patients from the observations made in Colindale Hospital. The improvement in nearly all cases could be explained by the sanatorium régime. The improvement found in some cases which could be associated with administration of the extract was of a temporary character. In some patients ingestion of the emulsion produced headaches or sickness.

City of London Hospital.—Eleven patients were treated, detailed records of eight of whom are available. They were between the ages of 17 and 26. Treatment of four patients lasted 17–29 days and of the other four 40–70 days. Four patients were in a medium advanced stage of the disease, three definitely advanced, and one very advanced. At the end of the treatment the condition of disease had improved in four patients, remained stationary in three, and became worse in one, who died.

Of the four who showed improvement one is definitely attributable to the emulsion. Therefore, as this case is typical, I will quote Dr. McLaughlin's original report. "Patient was admitted on Sept. 3rd, 1923, and he had signs of considerable tuberculous disease with cavitation of the upper lobe of the left lung, also his right upper lobe was affected. There was considerable activity, his pulse-rate varying from 101–130, the temperature from 101–97·6°, and his sputum 1 oz. in 24 hours; tubercle bacilli were found in the sputum; his weight on admission was 7 st. 8 lb. 10 oz. He exhibited the typical signs characteristic of imperfect testicular development, and he shaved once a week. During the first three weeks of his stay his condition had not varied much and he increased 2 lb. in weight. During the next three weeks his temperature remained on a lower level and his pulse-rate continued to be rapid and he lost 1½ lb. in weight. Seven weeks after his admission he was put on the A.T. emulsion and his weight immediately started to increase; in a fortnight he had gained 5 lb., and he experienced a remarkable feeling of well-being, and in two months he gained 6 lb. and was obliged to shave three times a week. His pulse-rate was considerably slower and varied from 85–95. After two months the A.T. emulsion was stopped and although the patient felt well in three weeks he had lost 4 lb. He has now been transferred to a sanatorium under the Essex County Council." No signs of any negative influence of the emulsion were observed in the City of London Hospital.

King George V. Sanatorium and Greenwich Tuberculosis Dispensary.—These patients have some features of eunuchoidism—long thin limbs, small penis and testes, slow hair growth, high voice, and in two decreased sexual desire. The pulmonary tuberculosis was in a medium advanced stage in three cases and extensive in one case. The age of three patients varied between 17 and 22 years and the fourth patient was 40. In one case the treatment lasted 75 days, and in the other three patients for 125–150 days. The dosage of the emulsion was as mentioned above. At the end of the treatment two showed moderate improvement, one temporary improvement, and one, with extensive tuberculosis, remained stationary. In these cases the improvement could not be ascribed to the emulsion treatment only, but to the sanatorium régime as well. But there were definite changes in the sexual features of three patients due to the influence of the A.T. emulsion. The hair of all three patients began to grow more quickly, one patient's high voice broke, the small and soft testes of another became harder, and sexual desire was increased in two patients. No signs of any negative influence of the emulsion were observed.

Brompton Hospital Sanatorium at Frimley.—Five patients were put on A.T. emulsion, but in three cases the treatment was discontinued after a few days. In one patient it seemed to increase the attacks of pain due to intestinal ulceration, in another nervousness was apparently increased, and the third patient complained of indigestion. The two remaining patients, one with extensive, the other with slight tuberculosis, were treated for four weeks. Subjectively the patients expressed the opinion that they felt better and more energetic, but there were no signs of objective changes in the disease. The disease spread rapidly to the other lung in one patient in spite of the fact that he felt better.

Results in Tuberculous Patients.

From the results obtained from all the abovementioned hospitals the conclusions are: 1. The ingestion of a glycerine emulsion of testes and adrenals did not improve pulmonary tuberculosis in a definite and constant way. 2. In those patients, whose improvement was probably and in one case (quoted above from Dr. McLaughlin's report) was certainly due to the emulsion, the change was only temporary. 3. By this treatment in some cases of eunuchoidism symptoms of a deficiency of the internal secretion of the sexual glands were slightly improved.

Observations on Senile Patients.

Fourteen patients were put on the A.T. emulsion treatment. Their ages varied from 64 to 94. There was also one aged 45 who showed signs of precocious senility. The duration of the treatment was 3–5 months. The emulsion was given once or twice, one half to two teaspoonfuls daily. Six patients died from different accidental diseases or from senility during the period of observation. The patients were thoroughly examined several times before, during, and after treatment by Dr. Lumsden Cook. Psychological and dynamometer muscular tests were performed before and at the end of the treatment on the six treated patients as well as on the 10 controls by Dr. C. M. Davey and Dr. T. Gourland, under the kind direction of Prof. C. E. Spearman. I wish to express my sincere gratitude to my colleagues for their kindness in undertaking this elaborate work and for permission to make extracts from their reports for this communication.

With the kind permission of Dr. Lumsden Cook I followed the results obtained on the above-mentioned patients during the whole time they were under observation.

General observation of the patients treated with A.T. emulsion did not reveal any considerable change in their condition.

Two types of *psychological tests* were used, those testing (1) general intelligence, and (2) memory and memory association. As most of the patients could neither read nor write, the first type consisted of classification tests, analogies, sequence, completion, and Binet's memory-drawing test. The memory tests were pictorial and consisted of a series of pairs of well-known objects. After the patient had been shown the first half of the series he was asked to give the names of any he could remember. He was then shown one picture of the pair and asked to name its companion. The second half of the series was then given in the same way, and finally the patient was asked to name as many objects as he could of the whole series. A second series of different pictures was given two months later (at the end of the treatment).

The results obtained in the tests of *general intelligence* of 10 control seniles:—

Total number of questions when tested—

First time.			Two months later.		
Right.	Wrong.	Omitted.	Right.	Wrong.	Omitted.
164 ..	95 ..	21	177 ..	85 ..	38

From these results it can be seen that the correlation between the two sets of tests is to be relied on and that the second has not proved to be easier than the first. If, then, there should be any appreciable difference in the results of these tests when applied to other seniles before and after treatment it may be legitimately concluded that this difference was not due to the inefficiency of the test as a measure, but to an improvement or decline in the general intelligence of the patients treated.

The results obtained with six patients treated with A.T. emulsion were as follows:—

Total number of questions—

Before treatment.			After treatment.		
Right.	Wrong.	Omitted.	Right.	Wrong.	Omitted.
80 ..	73 ..	37	95 ..	61 ..	34

Comparing these results with those of the control seniles it may be concluded that the seniles after the treatment with emulsion have shown a slight general improvement.

Memory Tests.—In the control group of patients total number of questions right for:—

During first test.		Two months later.	
Memory.	Association.	Memory.	Association.
125	27	103	17

In the patients treated with A.T. emulsion:—

During first test.		Two months after treatment.	
Memory.	Association.	Memory.	Association.
80	20	111	28

The memory tests show the same results as the intelligence tests—namely, the control seniles appear to be going slightly downhill (especially those who are very aged) and the treated seniles after treatment have shown a decided improvement.

Dynamometer Muscular Tests.—A Cheron and Verdin dynamograph was used for the tests and the following figures are those indicated on its scale during the pressure on the knob of the apparatus by the patient's hand. The following table gives the average results for each hand of six seniles before and after treatment with A.T. emulsion:—

No.	First test.		Second test.	
	Right hand.	Left hand.	Right hand.	Left hand.
1	37·2	35·0	42·0	45·2
2	30·9	20·4	32·0	25·4
3	30·0	24·0	24·5	24·0
4	22·2	22·4	25·0	26·0
5	12·2	8·4	13·2	9·0
6	31·8	31·4	31·2	29·2

In this test patient No. 1 has shown a definite improvement, Nos. 2 and 4 slight improvement, Nos. 5 and 6 practically no change; the right hand of No. 3 has lost some force.

Results in Senile Patients.

It is possible to conclude from all the observations made on senile patients that: 1. The ingestion of a glycerine emulsion of testes and adrenals has only produced a slight improvement in their general intelligence and memory and in some patients in their muscular strength. 2. Comparing the results obtained in senile patients under the above treatment with those obtained by Brown-Séquard's subcutaneous injections, by Steinach's vasectomy, and by transplantation of testes, it is clear that the method—i.e., by the mouth, but not the idea of the special organotherapy—is of no great value.

General Conclusion.

Observations made on 70 tuberculous patients and 14 seniles indicate practically no efficiency in the method of oral administration of preparations of testes and adrenals.

The grant of the Medical Research Council and the hospitality of the laboratories of the Lister Institute have enabled me to carry out this work and to them my thanks are due. I wish also to express my sincere gratitude to Prof. C. J. Martin for his continuous support of this investigation.

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MYOMECTOMY AS THE TREATMENT OF ELECTION FOR UTERINE FIBROIDS.*

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THREE years ago I read a paper before this Section [1] in which I described the results of a consecutive series of 100 myomectomies, and as the outcome of that experience urged a more extensive adoption of the operation so as to include in its scope many of the cases of fibroids commonly dealt with by hysterectomy. Since that publication, and in consonance with it, I have continued the practice of the operation on an increasingly wide scale, so that in three years I have accomplished a further series of 120, the results of which I now report with the object of showing that the main thesis of my previous paper—namely, that in a large proportion of cases of fibroids the uterus can and should be conserved, is sound. So much, indeed, have my views of three years ago strengthened that in my present title I describe myomectomy as the treatment of election for uterine fibroids. I do not mean to imply by that that myomectomy should ever entirely supersede hysterectomy, for no matter how expert we may become at the former operation, and in spite of results far surpassing those obtained up to now, there will always be a certain number of cases in which removal of the uterus is indicated because, apart from the fibroids, it itself is diseased. What I am endeavouring to convey is that conservation of the uterus should be the ideal to be aimed at by the surgeon whenever the organ, apart from the tumours, is reasonably healthy, as it is in the major proportion of the cases. For the compassing of this end two things are necessary, the surgeon must make himself expert in the operation, and the patient must be sent to him before she is so bloodless that it is imperative to stop the periods altogether.

Objections to Myomectomy.

The objections that have been raised against this extension of the scope of the operation are mainly these: (1) that it is often a more dangerous procedure than hysterectomy; (2) that there is considerable likelihood of more fibroids developing; (3) that where menorrhagia is the outstanding symptom it may persist in spite of the removal of the tumours; and (4) that the conserved organ is so damaged that it is functionally useless.

I hope to convince you that none of these objections can be maintained. My new series of 120 operations represents an average of 40 myomectomies performed yearly, so that the patients have not been cautiously selected. I have, in fact, performed the operation in every case in which I felt that conservation of the uterus would be a boon to the woman, irrespective of the number or the position of the fibroids in the uterus.

Number of Tumours Removed.

No of fibroids removed at each operation.	No. of operations.		No. of fibroids removed at each operation.	No. of operations.	
	New series.	Old series.		New series.	Old series.
1	47	*(49)*	15	4	*(1)*
2	9	*(10)*	17	1	*(1)*
3	12	*(10)*	19	1	—
4	8	*(5)*	21	1	*(1)*
5	8	*(6)*	22	1	—
6	6	*(2)*	24	1	—
7	4	*(2)*	25	1	—
8	1	*(4)*	26	1	—
9	2	*(1)*	30	—	*(1)*
10	4	*(2)*	52	1	—
11	1	*(1)*	80	1	—
12	4	—			
14	1	*(4)*		120	100

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* Read before the Section of Obstetrics and Gynæcology of the Royal Society of Medicine on Nov. 5th, 1925.

[1] THE LANCET, 1922, ii., 745; Jour. of Obstet. and Gynæcol., 1922, xxix., No. 4.

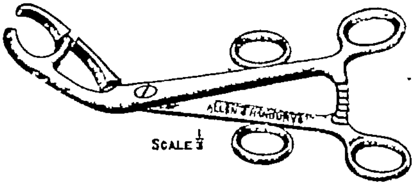
In the above table I have set out the number of tumours removed at each operation. The figures in brackets are the corresponding figures from my old series.

The myomectomy, therefore, was "single" in 47 cases and "multiple" in 73 cases of the new series, and the greatest number of tumours removed from the uterus at one operation was 80.

Technique.

The successful removal of so large a number has been rendered possible by the use of the clamp invented by me (Fig. 1).[1] It acts as a tourniquet applied to the lower uterine segment and controls both uterine arteries at once, so that when the ovarian vessels are temporarily compressed by a ring forceps on either ovario-pelvic ligament the circulation through the uterus is entirely stopped, and the operation becomes bloodless. This is an immense gain, for it not only renders many myomectomies possible which previously were impossible, but in all these operations it permits the surgeon to proceed with the enucleation and subsequent reconstruction of the uterus unhampered and unhurried by the constant oozing of blood which was the chief difficulty previously. The clamp is applied from the front through the lower end of the abdominal wound, and *it is important to put it in so that both round ligaments are included in its grasp*, for otherwise it may slip down the cervix below the point where the uterine arteries enter the uterus. As the enucleation is proceeded with and the uterus shrinks it may need tightening up a notch or two, or even readjusting, and in cases where the supravaginal cervix contains a fibroid this must be enucleated before the clamp is applied. It should not be taken off until the uterus is completely sutured. On its removal the organ temporarily flushes up just as a limb does after a tourniquet is removed and some oozing may start from the suture holes. This usually stops as the flush subsides, but any point that persistently bleeds must be underrun with a mattress suture.

FIG. 1.



As regards the general technique of the operation I have little to add to what I previously described. I continue to remove all the tumours if possible through a single anterior incision in the uterus, and afterwards in many cases either ventrofix the uterine incision, or shorten the round ligaments, or bring a flap of the loose peritoneum covering the lower uterine segment up to the top of the anterior surface of the uterus, like Pestalozza's operation for retroversion. The object of all these manœuvres is to prevent intestine adhering to the sutured uterus. The various devices which I described and illustrated[2] for getting access to fibroids in the back wall of the uterus and for closing the enucleation cavities have all continued to prove of value. The "hood" operation for large posterior fibroids has been most satisfactory, and a good many of the present series have been carried out that way. I also frequently employ the "transcavity" route for posterior tumours. Opening the uterine cavity has not been followed by any ill-results and I do it in most of the operations to prevent small submucous tumours being overlooked. In the closure of the major enucleation cavities and in reconstructing the uterus I employ silk for the main mattress sutures because I believe it to be the safest. Too rapid absorption of catgut leads to opening up of the cavity it closes and bleeding occurs into the space. This is dangerous, for the hæmatoma may become infected. For sutures of lesser importance I use catgut.

Objections to the Extended Operation.

Dealing now with the various objections that have been raised against the extended operation:—

Risk as Compared with Hysterectomy.—There were three deaths in this series of 120 operations. Two of the deaths were due to that baffling condition, paretic obstruction of the intestine. Both these patients were elderly women, and the object of conserving the uterus was the same in each case—viz. to ventrofix it and make it act as an artificial ligament to hold up a prolapsed vaginal vault. Neither myomectomy was "large," either in the sense of its difficulty or of a large number of tumours removed. One of the patients had the abdomen reopened before death, and a post-mortem examination was made on the other. In neither case was there found any obvious cause for the intestinal paresis and distension. The disaster may happen after hysterectomy or any other abdominal operation, and in the present instances cannot be attributed to the fact that myomectomy preceded it any more than another operation. The third death was due to pulmonary embolism, which occurred in the third week of what, up to then, had been a perfect convalescence. In my earlier series of 100 operations I had two deaths, one due to post-operative hæmorrhage discovered too late, and one due to peritonitis, secondary to post-operative oozing from the uterine wound. Both these deaths were directly dependent on the myomectomy as such.

There were thus five deaths in 220 operations—an operative mortality of 2·00 per cent. Though series of 100 or more consecutive hysterectomies for fibroids without a death have been recorded a good many times, yet the general mortality of this operation is not so low as these happy runs of luck would suggest. Taking hospital practice all round the mortality of hysterectomies for fibroids, when carried out by surgeons expert in that operation, is probably about the same as I have quoted for myomectomy. Myomectomy at present requires on the average a higher degree of skill than hysterectomy, but as practised on a wholesale scale it is a newer operation, and like all operative innovations presents difficulties which the experience accruing from increasingly widespread adoption will circumvent or do away with. Thirty years ago every hysterectomy bristled with difficulties; nowadays only a very small proportion of these operations extend a trained gynæcological surgeon. Convalescence after myomectomy is usually smooth, but on the average, as compared with hysterectomy, there is more pyrexia in the first week, due probably to absorption from the enucleation cavities. I have not had any trouble from the silk sutures in the uterus.

Recurrence of Fibroids.—Turning to the second objection that new fibroids are likely to develop in the conserved uterus, I have no hesitation in calling it an unsubstantial bogy, provided the operation is performed so that every tumour down to the smallest seedling is removed. Two of my earliest cases exhibited nodules the size of marbles some years after their operation, but they were performed at a time when I was not thorough in searching for and removing every seedling. I am unaware of any others. This freedom from recurrence has indeed surprised me, and led me to recast my opinion on the age of genesis of these tumours. I believe now that the seedling is, as a rule, formed much earlier in life than has been hitherto believed, probably in the 'twenties, and that the formative agent, whatever it is, is not operative continuously but ceases to act after a period.

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[1] Described in Jour. of Obstet. and Gynæcol., 1923, xxx., No. 3.

[2] Jour. of Obstet. and Gynæcol., 1922, xxix., No. 4.

Persistence of Menorrhagia.—The third objection that menorrhagia may persist in spite of the removal of the tumours is equally untenable. I have never yet had to operate on any of my patients for continuance or reappearance of excessive bleeding. Where the uterus is greatly hypertrophied from clothing a large fibroid or mass of fibroids it is necessary to cut it down to a manageable size before returning it to the abdomen, for though involution occurs after myomectomy, as after parturition, it is unsafe to trust too much to that. The uterus when sutured should, however, be a little bigger than normal, otherwise, when involution is complete, it will be abnormally small. In such a case the first period or two after the operation will be freer than normal, but decreasingly so as involution proceeds, until the normal is attained.

Function of the Conserved Uterus.—The fourth objection that the uterus from which a number of fibroids has been removed is functionally useless is also fantastic. To my knowledge, a number of my patients have subsequently conceived. Natural delivery is possible even after many tumours have been removed. In my previous paper on the subject I recorded such a delivery after I had enucleated 21, and quite recently Fletcher Shaw published a similar case from whom he had previously enucleated 23.[4] There is probably no tissue in the whole body that heals so perfectly as uterine muscle. I have examined many of my patients a year or more after the operation, and used to be surprised how healthy the uterus felt, but I am getting accustomed to that. Several times I have had the opportunity of inspecting the conserved organ through an abdominal incision, and its appearance confirmed the impression of normality given by previous bimanual examination. Lastly, on two occasions I have tested the tubes by inflation some years subsequent to myomectomy and in both patients they were patent. From one of these women I had removed 17 fibroids. Menstruation a year from the operation has invariably become natural in periodicity and amount, and in those cases in which the fibroids were accompanied by dysmenorrhœa their removal was followed by immediate disappearance of the pain. There is a well-marked class of case in which quite small fibroids in the uterus give rise to very severe monthly pain without other symptoms, and in such the results of myomectomy are most gratifying.

The Uterus in Relation to Ovarian Activity.

There remains to speak of a further function of the uterus—namely, its influence in maintaining ovarian activity, a function which, being lost as the result of removing the organ, is followed by climacteric symptoms due to ovarian atrophy some years earlier than would have happened if the uterus had not been removed. This function is preserved by myomectomy.

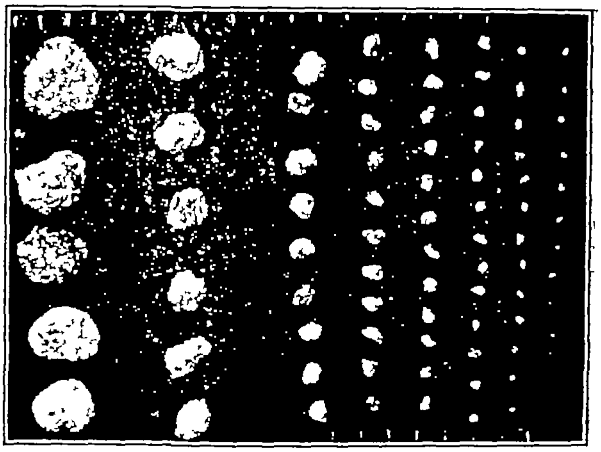
The idea then that the conserved organ will probably be an incubus to its possessor on account of hæmorrhage, discharge, or pain may be dismissed as an example of that unsafe habit of theorising without founding the theory on practical experience which more or less besets all of us.

Clinical Illustrations.

Let me finally record some of the achievements which myomectomy makes possible.

The largest number of fibroids that I have as yet enucleated at a single operation is 80. This patient was an unmarried woman aged 35. She was engaged to be married and was sent to me with the express purpose of having her uterus saved if it was possible. The abdominal tumour was the size of an eight months' pregnancy and was so symmetrical that I thought it probably was composed of a very large solitary fibroid, with perhaps one or two smaller ones. On opening the abdomen it proved to be the great congeries of tumours shown in the photograph (Fig. 2), which were impartially distributed in the front, back, and side walls of the uterus. I was able to enucleate all these with a very small loss of blood, thanks to the myomectomy clamp I have described, and I reconstructed the uterus so that there is no obvious reason why when she marries she should not conceive.

FIG. 2.



Eighty fibroids enucleated from a uterus at a single operation. Each division of the scale represents an inch.

A year ago I had a very remarkable case of an unmarried girl of 24 with a huge mass of fibroids.[5] I enucleated these to the number of 52, and a week or two since she came up at my request to be examined. The uterus felt absolutely normal, and her periods, which ceased entirely for three months after the operation, are now regular in onset and natural in duration and quantity.

Another unmarried girl of 22 was sent to me with an abdominal tumour the size of a seven months' pregnancy. It turned out to be a solitary submucous fibroid of the posterior wall which, when enucleated, weighed 5 lb. It had undergone nævoid degeneration and was excessively vascular. This was a case which some years ago I should certainly have treated by hysterectomy to the girl's lasting disadvantage and hurt. Instead I performed a "hood" operation and sent her back to her parents well and whole.

Quite recently I operated on a married woman, aged 38, six months pregnant for the first time, on account of a large mass of fibroids, one of which had undergone acute necrosis. It was necessary to begin the operation by removing the pregnancy through the uterine incision because the situation of the fibroids was such that preservation of the child was impossible. I then proceeded to enucleate the tumours to the number of 22 and, though I have removed a much larger number, these were so awkwardly placed (three of them were embedded in the posterior wall of the supravaginal cervix) that I must admit I was daunted. However, I persisted, and in the end left her with an excellent organ in which the vast chances are she will conceive again. This was a case where a child was very greatly desired both by the wife and husband.

In regard to the preservation of pregnancy complicated by fibroids which have to be operated on, it is usually possible to achieve this when the tumour is solitary or, when multiple, not present in large numbers. Seven tumours is the most I have yet been able to enucleate without disturbing a coexistent pregnancy. Where, however, a large number are present, as in this case, the pregnancy must be treated as an additional tumour and "enucleated" too.

I could give many more examples of the beneficent possibilities of the operation, but I think what I have said sufficiently justifies the title of this paper, and I hope to see the time when every surgeon called upon to operate for this condition will enter upon his task with that conception in the forefront of his mind.

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[4] Jour. of Obstet. and Gynæcol., 1925, xxxii., No. 3.

[5] Jour. of Obstet. and Gynæcol., 1925, xxxii., No. 1.

A NOTE ON
MARGOSA OIL IN THE TREATMENT OF CANCER.

BY K. K. CHATTERJI, F.R.C.S. IREL.,
MAJOR, I.T.F. MEDICAL CORPS; SURGEON, MEDICAL COLLEGE HOSPITAL, CALCUTTA.

Margosa oil, obtained from the seeds of the nim or margosa tree, has in its composition saturated and unsaturated fatty acids. I commenced my investigations on the oil early in 1917 and later, in collaboration with Prof. R. N. Sen, of the University of Calcutta, the insoluble fatty acids were separated from the oil, and the nature of margosic acid—i.e., the mixed insoluble fatty acids of the margosa oil—was elucidated. On isolating the unsaturated fatty acids the neutralisation value was found to be 185·80 and the iodine value 105·28. The solid acid separated had the neutralisation value 198·12 and iodine value 12, which showed that unsaturated fatty acids were still present in very small quantities. This acid was found to be stearic acid with minute traces of unsaturated acids. The unsaturated fatty acids appeared to consist of oleic acid ($C_{18}H_{34}O_2$) and an acid belonging to the linolic acid series which Prof. Sen declared to be the characteristic fatty acid of margosa oil. $C_{22}H_{40}O_3$ has been suggested for its formula. This acid has been called margosic acid, and it is not known to have been obtained from any other oil.

It has a yellowish colour, is liquid at ordinary temperature, and possesses no optical activity. The sodium and potassium salts are soluble in water; its lead and barium salts are soluble in ether and benzene. It forms about 23 per cent. of the total fatty acids present in margosa oil. At my suggestion Prof. Sen has prepared several salts as well as ethyl ester, allyl ester, and, recently, benzyl ester from the mixed fatty acids.

The evolution of margosate therapy and the sequence of events which narrowed down the field of research and finally centred it in cancer may be interesting from the point of view of cancer research.

In the "Ayurvedas" the cleansing and healing properties of the nim for ulcers are extolled. While testing the antiparasitic and antiprotozoal action of sodium margosate, it was found that in dilute solutions it killed paramœcia, prowazekia, microfilaria, &c. The action of ethyl ester margosic was more potent. Using sodium and potassium margosate therapeutically, it was observed that effects were marked in the granulomatous stages of syphilis (late secondary and tertiary stages), for tuberculous glands and ulcers, in leprosy, and in some varieties of diseases of the skin. As the effect of margosate treatment was rather striking in clearing up the granulomatous conditions, its use was extended to tropical granulomata.

Sodium Margosate, Potassium Margosate, and Ethyl Ester Margosic.

At first I used two of the more soluble salts of margosic acid, sodium and potassium margosates; 2 to 3 gr. (4 per cent. solution) were given. Intramuscular injections caused some local irritation, and intravenous injections caused obstruction in the veins after a few doses.

Ethyl ester margosic is a clear reddish fluid with a fruity aromatic odour and a high boiling-point. It is insoluble in water, but soluble in ether, alcohol, and chloroform. I soon gave up sodium and potassium margosate and brought ethyl ester margosic into use, as I found it superior even to the potassium salt. Ethyl ester does not cause local irritation or irritation to the veins and has no hæmolytic properties. Its margosic content is higher than the salts, and much more so per volume compared to the 4 per cent. solution of the salts that could be used. Being in loose chemical combination it is hydrolysed more readily. Its antiparasitic and bactericidal properties are definitely higher. It seems to influence fat metabolism remarkably, as can be observed from the results obtained from its use in some conditions due to filarial infection.

On testing the blood of many of these patients it was found that there was a variable deficiency in calcium salts in some granulomatous cases, but this deficiency was markedly constant in cancer patients; as a matter of fact, a definite calcium deficiency caused some suspicions of malignancy in cases of granulomatous growths. It is known that the potassium content of the blood of cancerous individuals is above normal, and while calcium has an inhibitive influence on the growth of cancer, potassium acts favourably. In view of these, I gave up the use of potassium margosate and introduced ethyl ester margosic. I gave calcium and parathyroid extract to some of my patients, and I have an idea that improvement was more marked in them.

Ethyl Esters.

Ethyl esters of various oils were prepared, such as cod-liver oil, olive oil, "til" oil, chaulmoogra oil, &c., and a comparative study was made. The ethyl ester of pure margosic acid seemed to have the greatest efficacy; the other oil which approached it in other respects was olive oil. Esters of animal fats and oils were not as effective.

Copper Margosate.

My experiments show that E.E. Cu-margosate has a strong inhibitive effect on the growth of fungi, protozoa, cocci, and other organisms, and that when used therapeutically in the form of local or intravenous injections it induces fibrosis and encourages epitheliation of granulating surfaces. Copper is carried to the tissues with the fatty acid elements; and there is some evidence that copper, like calcium, is attracted to the tissues in which rapid cell division is in progress. The fat and copper in the E.E. Cu-margosate is transported to the tissues, and much is attracted by the rapidly multiplying cells of cancer. Copper gives rise to the formation of fibrous tissue, thus causing barriers and obstructions to the growth of cancer. If the infective origin of cancer is to be taken into account we know that copper has strong antiprotozoal and antibacterial properties, and healthy granulation tissue, fibrosis, and epitheliation follow the elimination of the infective element. In some cases treatment with E.E. Cu-margosate has cleared up the growth and removed all evidences of malignancy. In others this treatment has been supplemented by irradiation by X rays, and in almost all instances it has expedited the process. In my opinion, which I must admit is not based on a very large experience, radiotherapy is indicated for the improvement of local and general metabolism and in order to stimulate lymphocyte activity and fibrosis. The idea of producing caustic or destructive effects on the cells to any great extent by X rays has not appealed to me. In Case 3, epidermoid carcinoma of the leg near the ankle with greatly enlarged femoral and inguinal lymph glands, this combined treatment of the ulcer in the leg and one or two exposures of the glands practically led to their absorption. When the remains of these glands were removed and examined no signs of malignancy were found. This suggests the production of immunising substances, and a heavy dose of exposure like an overdose of vaccine is hardly desirable in a case of cancer. The work of destruction and disposal of the cells could reasonably be trusted to copper and margosate treatment aided by the more desirable therapeutic action of X rays. The action of copper with margosic ester has been shortly described. Minute particles of copper are deposited throughout the neoplastic tissue. It may reasonably be presumed that irradiation of such growths has dual therapeutic effects. The direct action of the X rays accentuates the histological changes produced by copper and the fatty acids, and the rays impinging on the minute particles of copper give it radio-activity and produce a number of small secondary rays in the tissues; the therapeutic effect of the rays is continued and the tissues are kept for a longer period under the influence of these rays than they would be by other methods of irradiation. Ulcers and tumours have been treated by copper ionisation and then irradiated, but it was thought that, as ionised copper is mostly deposited on the surface, they would act as filters. In this case, on the other hand, the particles of copper being dispersed deeper in the tissues, the primary rays impinging on them would be reflected from them as secondary rays and be absorbed by the tissues. The ideal rays would, therefore, be those obtained from a source giving rays which would have the abovementioned therapeutic properties without producing lethal effects on the tissues.

Clinical Histories.

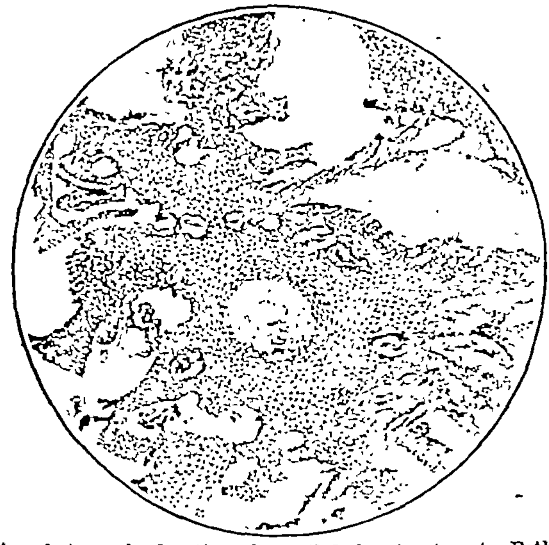
I give here summarised reports of three cases of cancer treated.

CASE 1.—Hindu, male, 26 years. Admitted under my charge in the Campbell Hospital in March, 1922, and transferred to the Medical College Hospital in August, 1923, for a fungating ulcer with foul discharge, and unhealthy granulations involving the anus and perianal area, the whole of the perineum, and the scrotum laterally and in front. The inguinal glands were hard and enlarged. There was much pain, defæcation being particularly painful. The patient had lost weight and was cachectic. Wassermann reaction was negative. A provisional diagnosis of anorectal granuloma tropicum was made.

Treatment.—A piece was excised from the growing margin and sent for pathological examination, and treatment commenced. Fifty-eight injections of E.E. Cu-margosate were given locally and intravenously and intramuscularly. During treatment the following changes were noticed: the general appearance of the granulations was healthier, discharge, discomfort, and pain were reduced, defæcation was easier, evidence of cicatrisation and epitheliation.

First pathological report (before commencing treatment)—"squamous epithelioma" (Fig. 1). As much improvement was noticed with the above treatment it was persisted in, particularly as the end-result of operation was not very bright. Second pathological report after 25 injections: "Epithelioma showing dense leucocytic infiltration between epithelial spaces." Third pathological report after 46 injections: "Under the epithelium a mass of granulation tissue extends deep into the corium. There is no evidence of malignancy" (Fig. 2). By this time processes of cicatrisation and epitheliation had extended from the periphery across the growth towards the anus. After 58 injections the ulcer had completely healed. The surface was covered with cicatricial tissue and epithelium; pigmentation of this surface was in progress. This patient was not treated by radiations.

FIG. 1.

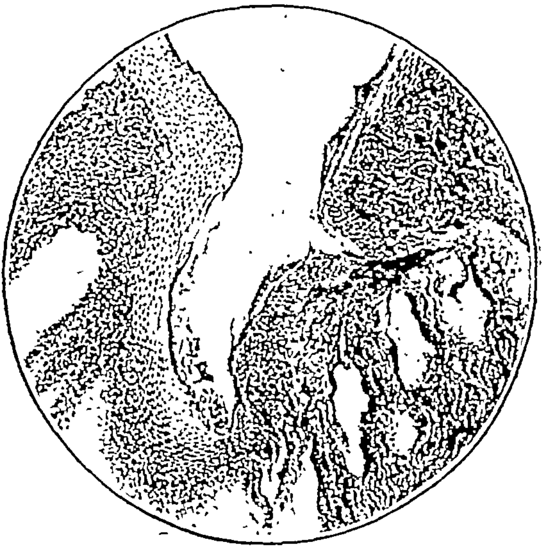


Microphotograph of section of growth before treatment. Pathological report: "Squamous epithelioma."

CASE 2.—Hindu, male, 10 years. Admitted under my charge in the Campbell Hospital in June, 1922, and transferred to my wards in the Medical College Hospital in August, 1923, for a large fungating tumour with a foul discharge in the right parotid region. He was very anæmic, with hæmoglobin content of blood 40 per cent., general condition bad, and a low blood pressure. The tumour was 10 inches in circumference and extended to the angle of the jaw below and displacing the ear backwards (Fig. 3, A). The patient did not consent to operation and it was not pressed because of his bad health.

Treatment.—A piece was removed from the margin of the growth for pathological examination. From June, 1922, till August, 1923, he was put on calcium chloride occasionally, and doses of parathyroid extract. E.E. margosic and E.E. Cu-margosate injections were given locally into the growth and intragluteally. He also had 24 radiations by X rays. As a result his general condition much improved, and the hæmoglobin value of his blood rose to 80 per cent.

FIG. 2.



Microphotograph of section of tissue after completion of treatment. Pathological report: "Under the epithelium a mass of granulation tissue extends deep into the corium. There is no evidence of malignancy."

The tumour became much smaller and cleaner, there being only a slight serous discharge; cicatrisation and epitheliation were encroaching from the periphery towards the centre of the surface. An attempt was now made to excise the growth with only partial success as it was firmly fixed to the jaw and adjoining structures. The excised portion was sent for pathological examination and the report awaited before deciding on further operation. As this was rather satisfactory, and the raw surface rapidly became covered with epithelium, any idea of further operation was abandoned. The patient continued to improve, no signs of recurrence in May, 1925 (Fig. 3, B).

First pathological report before treatment was commenced: "Mixed parotid tumour (malignant)." Second pathological report: "A mixed tumour of the parotid consisting of two main elements, (1) a dense hyaline fibrous tissue, (2) a typical carcinomatous element the cells of which appeared to be altered epithelial cells in masses, with numerous small lumen-like spaces containing mucus; a duct origin is suggested. Tumour does not feel to be highly malignant."

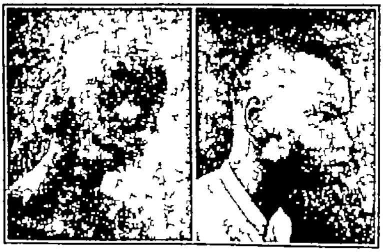
CASE 3.—Mohammedan, male, 55 years. Admitted September, 1923. He was referred to me as a bad case of cancer of the leg, necessitating amputation. The patient, however, wished first to try my method of treatment, and agreed that if no improvement was noticed after two weeks his leg should be amputated. He had a foul fungating ulcer on the mesial aspect of the left leg above the ankle firmly fixed to the lower end of tibia; its diameter was about 4 inches. The femoral and inguinal glands on the left side were enlarged and hard. There was not much emaciation, and the patient was not particularly anæmic. Wassermann reaction negative.

Treatment.—A piece of the growth was sent for pathological examination and treatment was commenced. He had altogether 17 injections of E.E. Cu-margosate and had 16 exposures to X ray mostly of the growth, the glands being exposed only on a few occasions. The ulcer healed up completely. The cicatrix was rather firm and extended for a good extent round the leg. The femoral and inguinal glands were much reduced in size. The remains of the glands were excised and sent for pathological examination. The patient is still under observation; there were no evidences of recurrence up till May, 1925.

Pathological examination of the growth before treatment: "Epidermoid cancer The lymphatic glands after treatment showed no signs of malignancy

These three cases have been reported as they were still under observation in my ward when I left Calcutta in May of this year There were no signs of recurrence In the third case I apprehended some trouble from the disturbance of venous circulation by extensive cicatrisation which almost encircled the leg

Fig 3



A B

A Before, and B after treatment.

In some cases I have occasionally scraped and cauterised with thermocautery or electric cautery exuberant and unhealthy granulations. In Case 2 it will be seen that an inoperable growth was rendered operable by this treatment with a satisfactory result In all cases cicatrisation commenced at the periphery of the ulcer and extended towards the centre, closely followed by epitheliation Pigmentation appears later at the margins and spreads over the whole surface.

Clinical and Laboratory Notes.

SUDDEN DISAPPEARANCE OF EXTREME ŒDEMA IN CHRONIC NEPHRITIS

By A. J Scott Pinchin, M D Lond,
PHYSICIAN, HAMPSTEAD GENERAL HOSPITAL.

The following case, as an example of the effect of an acute infection on chronic disease, is of some interest, and appears to be worthy of record.

I T, female, aged 24, was admitted to the Hampstead General Hospital, July 1st, 1924, with extreme œdema

History—She had diphtheria at 8 years of age and ever since her ankles have swollen after prolonged standing, but she had considered herself well till March 1924, at which time the swelling became persistent and steadily got worse until admission. On admission she had a pale, puffy face and severe œdema extending to above the iliac crests. There was no cardiac hypertrophy, though the second sound over the aortic area was increased Blood pressure 180/85 Marked diminution in urinary output, much albumin, and granular and epithelial casts. Blood-urea, 40 Concentration test, 2·5–1·0 2·1 Wassermann negative. Urea and other diuretics salt free diet, baths &c failed to have any effect on her œdema. Tapping of the legs produced only a slight reduction, and the skin was so sensitive that drainage was always accompanied by an eczematous condition of the legs.

As no improvement occurred, my colleague, Mr Gordon Bryan, decapsulated both kidneys on August 20th. The result was disappointing, and she was transferred back to medical ward on Sept 14th with no improvement On Oct. 20th the condition was much worse, much ascites and extensive hydrothorax. The legs were punctured again and she was kept in the upright position, with the result that the chest was clear by Nov 11th, the ascites less, but much œdema of the legs and trunk. Thereafter massive doses of urea puncture hot air, &c were used in turn.

April 21st, 1925: She had now been nearly ten months in a water logged condition and her œdema was about the same as on admission. On the evening of this date her temperature suddenly rose to 101·0° F, and she became extremely ill; there was a red inflamed patch on the right leg but no other signs. By the following morning she had a diffuse erysipelatous condition extending over both legs and most of the trunk. Her fever lasted three days, during which she took no food and was in extremis. Eight days later she was again normal, the urinary output had gradually increased to 90 ounces a day, and the œdema had practically gone Blood urea, 16 Urine: trace of albumin, one or two granular casts, no blood On June 4th no albumin was present and she was fit for convalescent home She was seen two months later on her return from Torquay She was feeling almost normal; there was no trace of œdema; the urine contained a heavy trace of albumin but no casts

Personally, I am at a loss for an explanation of this rapid change, it was certainly allied with the acute disease; whether a cryptic streptococcal infection keeping up the kidney condition was wiped out in the sudden onslaught, or the acute fever opened up lymphatic channels and so broke a vicious circle, or whether to a shock reaction in which one sees so many curious results in so varied a collection of diseases, is a subject for interesting speculation

My thanks are due to Dr H W Perkins for the pathological investigations

FAT NECROSIS OF THE BREAST

By Cecil Rowntree, F R C S Eng,
SURGEON TO THE CANCER HOSPITAL.

Fat necrosis of the breast would appear to have been comparatively unknown to British surgeons until Geoffrey Keynes drew attention to the condition at the Section of Surgery of the Royal Society of Medicine,[1] and subsequently published[2] a full description of his case, illustrated by excellent microphotographs, which clearly show the histological features of the disease The obvious importance of the condition in connexion with the differential diagnosis of cancer of the breast leads me to report the following case

In October, 1922, I saw an unmarried woman of 31 with extremely fat pendulous breasts, who stated that some months previously she had fallen down and struck the left breast on the ground No bruise or other evidence of injury was apparent immediately, but two small lumps made their appearance some time afterwards.

Examination revealed two hard nodules the size of hazel nuts, one in each lower quadrant of the left breast They were situated quite superficially and were definitely adherent to the skin, which was slightly puckered over each of the nodules There was no retraction of the nipple, no discharge from it, and the axillary glands were not enlarged

A provisional diagnosis of carcinoma or tuberculosis was made and the nodules were removed for inspection. The tissue proved to be unlike anything I was familiar with, but my suspicion of carcinoma was so insistent that I proceeded to amputate the breast, and sent the specimens to be examined microscopically The report was as follows ' Cannot make final diagnosis; the tissue is mainly adipose tissue infiltrated with small round cells and a few multi nucleated giant cells. No tubercle bacilli found "

I was chagrined to find that I had probably amputated the breast unnecessarily, but I was particularly disturbed because the sign upon which I have always so greatly depended as almost pathognomonic of cancer—adhesion to the skin—appeared to have let me down, but I recognised that this sign might also occur in tuberculosis, and in spite of the inconclusive pathological report I labelled the case in my notes as "probable tuberculosis" and kept it in my mind for future reference

The original American paper on Fat Necrosis[3] escaped my notice, but as soon as I saw Keynes's paper I realised that he had furnished me with the explanation of my puzzling case and I sent him my slides, which he kindly examined, and informed me that the histological features were similar to those he had described

The elucidation of this case naturally led me to search for others of a similar nature, and I have investigated a large number of old notes and sections, but I can find no further examples of fat necrosis in my own experience, nor have any yet been traced in the pathological department of the Cancer Hospital. Mr. Raymond Johnson also, in his Bradshaw lecture on Cancer of the Breast, states that he has had no personal experience of the condition. It is clear, therefore, that fat necrosis of the breast is a very rare disease, but it is none the less important, for it is evident that the condition is almost certain to be confused with carcinoma and treated accordingly—a doubly unfortunate event if, as in my case, the patient happens to be a young woman, and having regard to the traumatic origin of the disease one would expect it to be just as likely to occur in the early as in the later age-periods.

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[1] Brit. Med. Jour Jan 17th 1925, p 116
[2] British Journal of Surgery April 1925
[3] Lee and Adair Annals of Surgery, August, 1920

It is interesting to speculate upon the progress of events in cases of fat necrosis that are not submitted to operation. All the cases hitherto recorded are based upon microscopic examination of tumours, either definitely diagnosed or strongly suspected to be malignant, and we get no help from them in this particular. Does the mass gradually quiet down and undergo resolution? The fact that the lesion involves the fat overlying or infiltrating the breast and not the mammary tissue itself—a point emphasised by Keynes and clearly shown in my own case—suggests that the damaged tissue may undergo absorption and leave little or no trace.

But to me the chief interest of the condition is the implication of the skin recorded in nearly every case, for this is the one sign above all others upon which reliance may be placed in the diagnosis of malignant disease of the breast. It is, of course, nearly always present in the more advanced cases, but it is frequently present in a very slight degree in quite early cases where the carcinoma is so small that diagnosis would be impossible in the absence of this sign, and I had come to regard it as an almost certain indication of malignancy. A shade of doubt will now be introduced when considering the differential diagnosis of breast tumours which involve the skin, for the possibility of fat necrosis will have to be remembered.

A CASE OF RECURRENT HAIR-BALL OF STOMACH.

BY RUFUS HARRIS, M.R.C.S. ENG.,
LATE ASSISTANT SURGEON TO THE GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION, GLOUCESTER.

THE following case is of unusual interest, sufficiently so, I think, to merit publication.

Miss B., aged 35, presented the following history. In 1911 she was operated upon at St. Mary's Hospital, London, for the removal of a hair-ball from her stomach. In April, 1920, she was operated upon by Mr. W. Washbourn, of Gloucester, for a similar condition, and again in June, 1922. When I saw her in October, 1923, she complained of pain and a swelling in her abdomen and loss of appetite of three months' duration.

On examination, a large solid tumour was visible and palpable in the upper part of the abdomen. In view of her past medical history another hair-ball was suspected.

Operation Nov. 11th, 1923, Gastrotomy.—Upon opening the stomach, which was much enlarged, it was found to be entirely occupied by a mass of hair. This extended through the pylorus into the duodenum, and when removed was found to weigh 2¼ lb. and measured 20 in. in length. The girth at the largest circumference in the stomach portion was 15 in. Recovery was uneventful and, after giving a solemn undertaking to refrain from the habit of hair-eating, she was discharged as cured. In November of last year the patient once more turned up complaining of a return of her former troubles, and I again removed a large hair-ball. Up to the present I think she remains quite well.

I may add that, apart from her hair-eating habits, this woman is quite normal mentally, being well educated and a very fair musician. She seems to have suffered no permanent ill-effects from her repeated operations since her abdominal wall is firm, and, when her stomach is not full of hair, her digestion is unimpaired.

Exeter.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF OPHTHALMOLOGY AND SURGERY.

Plastic Operations on the Face in the Region of the Eye.

A COMBINED meeting of these Sections was held on Nov. 13th, Sir ARNOLD LAWSON, the President of the Section of Ophthalmology, occupying the chair.

Mr. H. S. SOUTTAR opened the debate from the standpoint of the general surgeon. He said ophthalmic surgeons must have a greater experience of plastic operations around the eye than he had, but one or two methods used by general surgeons in this region might be of interest to ophthalmologists. Many years ago Dr. J. H. Sequeira, in charge of the skin clinic at London Hospital, began to send the speaker cases of hairy mole on the face, a very common condition. When he first had them to deal with he did not realise what the essential difficulty in treating them was—namely, their proximity to the eye. With one exception, all the cases of the kind he had had to treat occurred in children, and he had treated them all by the arm-flap method. For most plastic surgery in which a large flap was needed, the large tubular flap method, as developed by Gillies, was the most potent; but Mr. Souttar still considered that for children the arm-flap method had great advantages—i.e., using the arm as the pedicle for the flap, the arm being extended over the head. He showed slides of a series of cases by means of the epidiascope. In one of them, an extensive mole, a surgeon had attempted to replace part of the mole by a Thiersch graft, a kind of graft quite unsuitable for these cases. These moles could only be adequately replaced by whole-skin grafts, and for a child these were best taken from the shoulder. In one such case, the photograph of which he showed, two flaps were used, the second from the forehead. Here also some ectropion remained at the angle of the eye, and he left, as was his custom in such cases, a small piece of mole there, excising it some time later and putting in a Thiersch graft. In a case of very obtrusive red nævus he succeeded in establishing a normal colour by diathermy puncture.

Mr. A. W. ORMOND introduced the subject from the standpoint of the ophthalmic surgeon. The major part of the work in these cases consisted of repairing or replacing either one or both eyelids, correcting irregularities of lids after cicatricial contractions which had led to exposure of the globe, entropion, ectropion, epiphora, or deformities of the lid margins, and making or deepening a socket to permit the wearing of a glass eye. The means mostly consisted of modifications of flaps and grafts. With regard to flaps, these usually consisted of the whole thickness of the skin, and were either pedunculated or non-pedunculated, while the pedicle might consist of flat skin, tubular skin, soft tissue, or a square base of skin. Grafts, consisting of epithelial layers only, might be small multiple islands of epithelium placed on a granulating surface, or large areas obtained by Thiersch's method and applied directly on to a raw surface or stretched over a mould. In the case of pedunculated flaps, the pedicle could consist of skin applied with its raw surface to the underlying tissues, and it was employed to support the nutrition of the flap by connecting it with its original bed. Or the skin could be raised and rolled round on itself to form a tube, and in that event the flap could be obtained from a site a considerable distance away from the face.

General Principles in Cutting Flaps.

When flaps were taken from the skin in the immediate neighbourhood of the wound, Jacobovici laid down the following requirements: (1) The pedicle of the flap should be near the site at which the loss of substance had occurred. (2) The long axis of the pedicle should correspond to the long axis of the flap in its new situation. (3) The long axis of the flap should not be too curved, for the elasticity of the skin would cause the detached flap to take the direction desired. Dieffenbach's and Burow's methods of repairing the lids by the shifting of healthy skin in the neighbourhood of the injury had only a limited applicability, and as the contraction might be considerable, the methods might fail. The bed for the reception of the graft should be moist but free from oozing blood, and the graft should fit its bed accurately. There should be immobility and lack of interference for several days. If a whole flap lived and joined up rapidly, the contraction ensuing was not of great degree; it was greater if the edges of the flap suffered. A flap fitting a raw surface with a subjacent bone or cartilage basis would not be found to contract to the same extent as when the bed consisted entirely of soft tissue.

Mr. Ormond said the methods of dealing with a contracted socket were still unsatisfactory. The chief reason was that the substitution of the destroyed conjunctiva was very difficult. Grafts of mucous membrane from mouth or foreskin were with difficulty rendered aseptic, and owing to the degree of their contraction such grafts did not achieve much. He also considered epithelial inlays disappointing when used to enlarge a contracted socket. It would perhaps be well to begin by inserting a cartilage, or paraffin, or a filigree ball into the socket. The implantation of an artificial globe could be carried out as described by Webster Fox. During the war the speaker used cartilage as a substitute for a glass globe, but he regarded paraffin balls as superior. In cutting a Thiersch graft he preferred a large flat knife with a blade an inch deep, the knife and skin being kept moist with sterilised normal saline irrigations. With regard to the wound to be grafted, all granulations should be completely removed, preferably with scissors, perfect hæmostasis being obtained by pressure. The wound could be washed when necessary with sterilised normal saline and kept immobile, covered with thin dry gauze dressing and cotton-wool, and left without interference for a week. At the end of that time the dressing should be removed by soaking it for the time necessary to float off the wool and the gauze, possibly as long as an hour.

In ordinary peace conditions the individuality of the patient should be taken into consideration in deciding on the procedure—i.e., his position in life, financial standing, and his occupation. In some cases the prospect of a long treatment and the repetition of operations with the inactivity had a bad effect on the mentality. Where there were no special circumstances limiting the choice of procedure, the method employed should be that which most nearly approached the normal

Mr. T. P. KILNER showed a number of slides illustrating results secured at the hospital at Sidcup in cases of the kind under discussion. These included some very severe examples of symblepharon, in which Thiersch grafts were used successfully, both on the globe and on the inner aspect of the adherent eyelid. A further procedure carried out was that for replacing lost eyebrows. In dealing with a considerable number of cases of bad burns of the face, some of them by explosions of petrol, it was found that the eyebrows possessed three definite functions: shading the eye from the sun; acting as collectors of sweat—officers who had lost their eyebrows complained that when playing tennis the perspiration poured into their eyes; and the third function was protection of the eyes from the wind. Eyebrows might be made by whole-thickness grafts from hair-bearing skin, the area being carefully selected beforehand to see that the hairs were growing in the direction required in the brow.

Mr. G. H. POOLEY (Sheffield) said that, following the surgical removal of tumours, plastic operations could be carried out immediately if the base was satisfactory and the patient's condition warranted it. In the case of accidental wounds which were fairly clean, grafting could be carried out as soon as the wound became clean and quiet. But in the case of burns caused by molten metal, by chemical or by electrical means, grafting must be deferred until the contraction of the scar ceased. And where the deficiency of tissue was due to septic conditions, causing extensive sloughing, he considered that no attempt to graft should be made for at least 12 months after all sepsis had apparently ceased. When operating for any but recent injuries the skin should be incised about a quarter of an inch from the palpebral opening, parallel to the margin of the eyelid affected. It was most satisfactory, he found, to use a large flap with a wide pedicle, large enough to more than fill the space. For a badly contracted socket a modified long temporal skin flap could be used. The complication which he found caused perhaps the most trouble was that which following a burn produced an extensive adhesion of the eyelid to the eye, especially when a large part of the cornea was involved. For this, he divided a gross adhesion of the lower lid to the lower two-thirds of the cornea, and cut through the tissue which obliterated the lower fornix of the conjunctiva, cutting freely to each side, and continuing the incision below to three-quarters of an inch below the original bottom of the fornix. He then sutured a layer of rubber sheeting into the wound to keep the two raw edges apart. He left it in situ for months, until epithelium had grown over the raw surfaces. The result of this procedure had been most satisfactory.

Mr. J. J. SHAW (Edinburgh) showed a number of slides of cases on the screen, and described the operation he had carried out in each instance.

Mr. M. W. B. OLIVER adopted a similar method, and laid stress on the importance of not making the grafted lids bulky. A temporal flap should always include the superficial temporal artery. In order to carry out an epithelial inlay properly it was necessary to remove the whole of the conjunctiva and all the orbital tissue; his custom was to remove everything down to the periosteum. Moreover, the mould must be covered with one single skin-graft.

Mr. A. EDMUNDS gave his experiences with rodent ulcers of an extensive nature by means of grafts, his method of choice being to excise the growth and replace it by a sliding flap. He likewise showed a number of photographs of cases in stages.

Mr. T. HARRISON BUTLER said that in cutting Thiersch grafts it was an advantage to coat the razor with paroleine or sterilised olive oil.

Cases were shown before the discussion by Mr. MALCOLM HEPBURN, Mr. OLIVER, and Mr. F. A. WILLIAMSON-NOBLE.

MEDICAL SOCIETY OF LONDON.

AT a meeting of this Society, held on Nov. 9th, Sir HOLBURT WARING, the President, occupying the chair, a discussion on

OBSCURE PYREXIA IN CHILDHOOD

was opened by Dr. ROBERT HUTCHISON. Cases of fever in childhood without physical signs were, he said, met with in practice in three forms. The first were those with an acute fever which had lasted for more than a week without being accompanied by obvious physical signs; the second were those cases which had recurring bouts of fever; and the third had very prolonged fever but slight in degree.

Acute Fever without Signs.

In cases in the first of these classes influenza was apt to be the diagnosis arrived at, but in uncomplicated influenza the fever did not last more than a week, while if complications did exist, physical signs would be present also. An enteric infection should always be thought of, perhaps especially one of the paratyphoids, and this was not by any means excluded by the absence of all the classical signs and symptoms of paratyphoid infection. A diagnosis could be made in the early days by means of a blood culture, and, after the tenth day, by the agglutination test. Confirmation was afforded by the presence of leucopenia. A pulse-rate which was low in proportion to the temperature was always suggestive. Many cases in this same group were due to a pneumonia beginning deep down in the lung, or which affected only the apex, signs of which were either absent or had been overlooked. Also a high respiration-rate with "inverted rhythm" was suggestive, and light percussion would often, in such cases, elicit dullness. *B. coli* pyelitis in babies might produce an acute and sustained pyrexia, with but little to direct attention to the cause. The urine might seem clear, but a centrifugalised catheter specimen would disclose the organism; and the therapeutic test—disappearance of the fever when the urine had been rendered alkaline—would confirm the diagnosis. A very rare cause of obscure pyrexia in childhood was the condition known as medical septicæmia, but it might sometimes be found to follow an acute throat infection whose symptoms had been slight, perhaps had been quite overlooked. Rashes, joint pains, and other indications of a septic process might occur, and usually a blood culture would show the presence of streptococci.

A condition which should always be thought of in young children was acute otitis media. There might be but slight earache to direct attention to that organ, and inspection of the drum in young infants was often difficult. The problem might only be solved by the sudden appearance of a discharge from the ear. Dr. Hutchison was somewhat sceptical of teething being, in itself, a cause of continued obscure pyrexia, but admitted that occasionally cases were met with in which no other reason could be assigned. He quoted one or two such. Constipation might sometimes bring about even high and continued pyrexia, for it disappeared at once after a large enema. One child, 5 years of age, had, when seen, been running a temperature of 103° F. for eight days. The surroundings were insanitary, and at first it seemed likely to be enteric. But an enormous greenish offensive stool was evacuated, and thereafter the temperature became and remained normal.

Coming now to rarer causes of pyrexia, Dr. Hutchison mentioned first acute leukæmia. Especially if of the myeloid variety, this might reveal itself by fever for some days before enlargement of the spleen or glands. or the presence of anæmia were definitely perceptible. The possibility of acute miliary tuberculosis existing for some time, without definite evidence in the lungs or elsewhere, must always be present in the clinician's mind. A rapid respiration and pulse, and the presence of cyanosis, must be regarded as suspicious signs, and examination of the fundus oculi might reveal tubercles.

Recurrent Fever.

In the second group the child, usually beyond the age of infancy, had bouts of fever which lasted, at the most, for a few days, good health apparently prevailing between. Many of these cases were of alimentary origin, the so-called "food fever" of Eustace Smith, or the "hyperpyremia" of Francis Hare. These children, in many instances, had chronic intestinal indigestion or mucous disease, and the recurrence of the fever in them could be prevented by cutting down the diet, especially in the matter of milk, and by the administration of aperients and cholagogues. In another group of recurrent fevers the cause would be found to be a chronic septic infection of the tonsil. In these there would usually be a history at some time of acute tonsillitis, and the glands at the angle of the jaw would be found to be enlarged. Excision of the tonsils in these cases caused the attacks to cease. In children of about this age, too, chronic *Bacillus coli* infection of the kidneys, with periodic exacerbations, was an occasional cause of recurrent pyrexia, and could easily be overlooked. Examination of the urine during an attack would reveal the presence of the organism along with some pus. A focus of deep-seated tuberculosis, such as in the mediastinal glands, might also cause recurrent pyrexia. Methods of determining its presence needed consideration.

Prolonged Slight Fever.

In the third group the fever had lasted some weeks, even months, but was slight, perhaps not more than half or one degree in the evening. In some this was due to a chronic focus of sepsis, and the focus was very likely to be in the tonsils. Others were associated with chronic mucous colitis, which could be recognised by the presence of mucus and membranes in the stools. Latent rheumatism had sometimes been suggested as a cause of slight continued pyrexia, but the speaker considered that this was a rare event without other evidences of rheumatic infection, such as muscle and joint pains or chronic endocarditis. In this class of case, too, tuberculosis must be present to the mind, though that disease is not a frequent cause of this type of fever. Its exclusion from the possibilities was often a matter of difficulty. Teething could cause the same form of slight fever, and cases were adduced in which the fever ceased when a molar had been erupted. A further possibility which had been enlisted in this type of case was instability of the thermo-taxic mechanism, but the speaker's experience was that true neuro-mimetic fever did not occur in childhood. He suggested that the discussion might very usefully take the form of considering the means of excluding tuberculosis in cases of obscure pyrexia occurring in childhood.

Discussion.

Dr. Wilfred Pearson said in some of the cases which had ended in an aural discharge the temperature had been of the septicæmic type, and the ear symptoms had been very slight. It was often an advantage to do a blood count, when a leucopenia and polymorphonuclear leucocytosis would sometimes be found. Deficient fluid might be a cause of fever, or the ingestion of sodium chloride might produce it. In dealing with cases of persistent slight temperature, the trouble often was in knowing what was the normal temperature to the particular child. His experience had been that up to the age of 10 years 99° F. must be regarded as normal in the morning, and in the evening 99·5°. In some slight temperature variations it was difficult to exclude a skin eruption, constipation, or slight catarrh. Sometimes a slightly high temperature was found to be a family characteristic. He agreed as to the importance of diagnosing between tuberculosis and mucous disease, but the differentiation had to be made mainly on clinical grounds. He had found much help from the fact that children with mucous disease wasted intermittently, while in tuberculosis the loss of weight was progressive and regular. It was also important to make a number of examinations of stools. It must always be remembered that tonsils which looked harmless might yet harbour a septic focus and keep up the temperature.

Prof. F. Langmead agreed as to the frequency with which cases of *B. coli* infection were missed, largely because examination of the urine in a small child seemed so often to be regarded as of little importance, and specimens were not collected without difficulty. He had seen a lancing of the gums bring down temperature at once. One puzzling case was that of a child who was running a temperature of 104°, and eventually the administration of ergot brought away a dead round worm, and no fever occurred after that. The presence of intense cyanosis in a child should lead to strong suspicion that the temperature was caused by acute general miliary tuberculosis. Also there must be considered cases of "cyclical vomiting" without cyclical vomiting. He had watched some of these cases through and found that at about puberty they suffered from migraine. He referred to protein idiopathy as a cause of temperature in Dr. Hutchison's fourth group. In cases of long-continued bouts of fever it was important not to neglect the psychological background; some children exhibited fever following excitement, pain, or even excessive exercise. Tuberculosis might be the explanation of the fever in any of the groups Dr. Hutchison submitted, and he commented on the great discrepancy which existed between clinically diagnosed and undiagnosed (until autopsy) tubercle, a very important matter in such a serious disease. It was, however, on the whole, a disease which was well resisted by children.

Dr. **Walter Broadbent** spoke of the importance of the proximity of manholes as a cause of obscure pyrexia, and gave several examples bearing out his contention. He also showed that teething was a fairly frequent cause of pyrexia, which was stopped as soon as the gums were lanced. Sometimes tuberculosis following measles was a cause of temperature persisting, for a later sequel had been tuberculous meningitis. He also believed rheumatism to be a cause of intermittent pyrexia. He now treated his cases of rheumatic fever by placing them on the balcony in the open air.

Mr. **E. D. Davis** said that with regard to the tonsil, sometimes this was salient and obtrusive, but a deeply buried tonsil might be equally large. In an ear case the child was more obviously ill and looked ill. Examination of the child's ear with a Siegel's speculum obviated some of the disadvantages mentioned by Dr. Hutchison, and the comparative absence of pain in the ear was for the reason that there was not much tension at the site, and the child's drum would burst without much provocation. In children, otitis media sometimes developed very rapidly—within a few hours.

Mr. **Cecil Rowntree** said that the finding of calcified mesenteric glands indicated that those glands had at some time probably caused an obscure pyrexia, probably they were the kind of cases which had become infected in infancy with tuberculous milk, for infection from that cause frequently took place in the glands at the ileo-colic angle. Probably the trouble caused in early life was too slight to lead to a diagnosis. The X rays could be of use in the early stage of tuberculosis of mesenteric glands, as they showed a flocculent appearance; later the glands could be seen to be calcareous.

Dr. **G. E. Ward** gave an account of a striking case of pyrexia due to a round worm, the temperature at once subsiding when the worm was evacuated.

Dr. **A. Castellani** called attention to the group of parenteric fevers, with a behaviour like enteric. In Ceylon and India it was common to see children with fever whose stools were filled with acarus eggs. He referred also to ankylostomiasis fever, some cases of which exist, he said, in this country.

Dr. **F. G. Chandler** spoke chiefly on skiagraphic signs of tuberculosis in children, and exhibited skiagrams to illustrate his points.

Dr. **G. W. Goodhart** spoke on colon bacillus pyelitis as a cause of pyrexia, and questioned the opener as to the signs which were thought to establish the diagnosis. He would not himself lay stress on any of the organisms he might find in a child's urine.

Corrigenda.—In the Bradshaw lecture (The Lancet, Nov. 14th, p. 1010, col. 2, line 40) the phrase "their regular peristalsis" should read "the irregular peristalsis."

The word diuretin in the penultimate sentence of Dr. A. R. Gilchrist's article in the same issue on "Novasurol: a New Diuretic," should read *diuretic*.

GLASGOW ROYAL MEDICO-CHIRURGICAL SOCIETY.

A meeting of this Society was held on Oct. 23rd, Prof. **Archibald Young**, the President, in the chair, when a discussion took place on

Optic Neuritis and its Significance.

The President, introducing the discussion, referred to the varying applications of the term optic neuritis, and suggested a number of questions on which he hoped the discussion might throw some light. He urged the importance of the early recognition of the presence of optic neuritis while the chances of saving vision were still reasonably good.

Dr. **H. Wright Thomson** opened the discussion by reviewing briefly the terms in common use in connexion with inflammation or congestion of the optic nerve—e.g., retrobulbar optic neuritis, optic neuritis, papillitis, papilloedema or choked disc, neuro-retinitis, and optic pseudo-neuritis. He differentiated optic neuritis as seen by the ophthalmoscope in the light of recent pathology into two classes: (1) A true neuritis—i.e., an inflammation of the nerve head—to which the name papillitis was given. (2) Papilloedema, where the changes were due to oedema and histological evidence of inflammation was absent or so slight as to be negligible. Considering next the mechanism producing papilloedema, he quoted Sir John Herbert Parsons's views that the predominant factor was increased intracranial pressure, and referred to the three common theories as to its production. (*a*) Impediment to the return of lymph along the intravaginal space of the nerve. (*b*) Impediment to the venous return. (*c*) Arterial anaemia, leading to altered conditions of osmosis at the nerve head. While a true typical neuro-retinitis was easily distinguishable from a true papilloedema, there were many cases in which it was impossible to say whether the ophthalmoscopic picture was papilloedema or neuro-retinitis. Finally, Dr. Thomson referred to the extraordinary variation in the appearance of different persons' normal discs, and uttered a warning against the diagnosis of inflammation or oedema in the absence of any definite swelling or haemorrhages, especially if both fundi showed the same picture.

Dr. **A. J. Ballantyne**, in discussing the part played by papilloedema in the diagnosis, prognosis, and treatment of medical and surgical cases, referred to some interesting figures obtained from the records of routine eye examination in (*a*) a general hospital, and (*b*) an eye hospital. In 1100 cases examined, without selection, in the wards of the general hospital, papilloedema was found in 5 per cent.; intracranial tumour, renal disease, and tuberculous meningitis providing the vast majority of examples. Among 6000 cases seen at the Eye Hospital only 0·5 per cent. showed papilloedema, and the majority belonged to two classes, renal neuro-retinitis and acute retrobulbar neuritis. In private practice papilloedema of any form or degree apart from albuminuric neuro-retinitis was extremely rare. In the Eye Hospital cases not a single example of choked disc or of intracranial tumour was found in over 6000 cases. Papilloedema occurred most frequently as part of a neuro-retinitis either frankly renal or arterio-sclerotic in type. Acute retrobulbar neuritis was surprisingly common, differing, however, from the classical description in that the cases presented a notable degree of papilloedema indistinguishable, in some cases, from that due to early cerebral tumour or from that of renal neuro-retinitis. Referring to the question of trauma as a cause of optic neuritis, the speaker quoted two cases in which papilloedema occurred, along with other evidence of injury to the base of the brain. This was attributed in the [illegible] case to oedema of the brain following the [illegible] in the other case to cavernous sinus th[illegible]nally, discussing papilloedema as [illegible]ment, Dr. Ballantyne considered t[illegible] or no localising value in intracranial tumours, nor even was it a guide as to the side of the brain involved, and he concluded by making a plea for greater concentration on the simpler problem of decompression for the preservation of sight, rather than on the time-consuming though doubtless higher aim of the accurate localisation and removal of the tumour.

The following also spoke: Prof. T. K. MONRO, Prof. W. K. HUNTER, Dr. BROWNLOW RIDDELL, Mr. DONALD DUFF, and Dr. T. S. BARRIE.

The PRESIDENT then described briefly a method of supporting the bulging brain in extensive decompressive trephining, and showed a number of illustrative coloured drawings.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, ST. ANDREWS.

AT a meeting of the Institute on Nov. 3rd Prof. LORRAIN SMITH read a paper on the Pathology of Focal Infection, illustrated by numerous lantern slides. The lecturer demonstrated the spread of infection from focus to focus in many infective conditions, including tubercle, and showed clearly that certain organisms could circulate in the blood without giving rise to noticeable symptoms, until they formed a focus in the tissues. These foci were found in connexion with lymph nodes which were exceedingly numerous in all tissues. On the settlement of an organism the local resistance might be sufficient to destroy it, but if the focus became established it acted as a centre of distribution from which other foci were formed. The main source of destruction of organisms was, however, undoubtedly the blood. The explanation commonly given of the formation of foci was the arrest of active material by mechanical obstruction in lymphatics or capillaries, but similar focal lesions resulted from the presence of soluble toxins in the blood. An investigation into the focal mechanism which was responsible for such results should advance greatly our knowledge of the liability to disease. The lecturer also drew attention to facts, established by Rosenow, suggesting that in some instances infective organisms might acquire a property by which they showed a selective preference for certain sites. Typhoid bacilli showed a noteworthy preference for the gall-bladder, for example, while metastatic infection in bronchiectasis showed a predilection for the central nervous system. The problem of general immunity had been widely investigated, but the question of local immunity and the focal mechanism upon which it was dependent had not been worked out. The paper gave rise to an interesting discussion.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on Nov. 11th at the University of Bristol, when Dr. H. H. CARLETON read a paper on

Some Pulmonary Problems,

with a special reference to radiography. He emphasised three points in technique if the maximum value was to be obtained from skiagraphy: (1) rapid exposure, about half a second; (2) the film must be sufficiently large to include the whole chest; (3) a standard position for the target. In interpretation of skiagraphs, he said, it must be remembered that normal lungs differed widely in the amount of fibrous tissue they showed. Well-marked striation might be compatible with perfect health. Clinical fibrosis required dense shadows, falling-in and rigidity of chest, and shortness of breath. In silicosis the fibrous tissue often occurred in plaques. Peripheral stippling in intercostal spaces was seen alike in bronchopneumonia, tuberculosis, and silicosis. The differential diagnosis could not be made with certainty on radiographic appearances alone.

The mobility of the trachea led to visible deviation of the tracheal shadow in chronic cases. Such deviation was an index of chronicity, and therefore a measure of the powers of resistance on the part of the patient. Further deviation of the trachea and mediastinum was a guide as to the results of intrathoracic pressure in cases of pneumothorax, and, if noted, excessive pressures could be avoided. Fluid in the chest, when gas was also present (hydrothorax), presented a clean-cut mobile straight line, characteristic in appearance and widely different from the fine line seen in simple pleural effusion. It was impossible by skiagraphy alone to distinguish between the presence of serous effusions and pus in the chest. Glands in the chest did not necessarily indicate active disease; they more usually indicated good resistance. When stippling occurred in the intercostal spaces beyond the field of the intrapulmonary glands it was an indication that the glands had failed in their efforts to resist the advancing tide of infection. Cavities should never be diagnosed on X ray appearances alone without confirmatory clinical signs. Radiography showed that pulmonary tuberculosis was by no means so frequently an apical disease, even in its early stages, as was commonly supposed.

The speaker demonstrated the value of radiography in relation to treatment by artificial pneumothorax, both in the choice of cases and as a guide during the progress of induction of an artificial pneumothorax. He spoke of the possible dangers of infection of the pleura from the breaking down of adhesions, a misfortune which had occurred to him in a case of unilateral bronchiectasis. The lecturer expressed his thanks to Dr. F. J. A. Mayes and Dr. F. G. Bergin for their assistance in providing his series of skiagraphs.

Discussion.

Dr. BERGIN said that while agreeing that peribronchial infiltrations were usually not indications of tuberculosis, they were often indicative of early pathological changes. He did not agree that, if the upper level of fluid in a chest appeared as a line, gas was present.

Dr. MAYES maintained that an X ray diagnosis of tubercle could often be made before clinical signs enabled this to be done. He attached importance to diminution of diaphragmatic excursion; this meant a gross lesion of the lung. He emphasised the importance to be given to shadows in the outer third of the chest area; in the medial third shadows were not uncommon. The more dense and definite a shadow, the less active the condition causing it.

Dr. F. H. EDGEWORTH related a case in which good health was interrupted by a sudden hæmoptysis. No physical signs appeared, except loss of diaphragmatic movement, shown by X rays. Three weeks later an apical friction was found. Sanatorium treatment was successful.

Dr. J. O. SYMES thought that "skiagraphy showed too much rather than too little." He had never seen a case with no symptoms or physical signs in which the skiagram helped a diagnosis of phthisis. He was interested to learn of the tracheal deviation as a new and helpful sign, and asked whether there was any means of diagnosing adhesions by the X rays.

Mr. C. F. WALTERS related a case in which a definite upper level of fluid was seen. No empyema was found, but at operation a lung abscess was discovered.

Dr. J. A. NIXON said that screening was important. He agreed that striæ did not necessarily indicate tubercle, and that "cavities" diagnosed by skiagraphy often did not exist at autopsy. But a similar mistake was not unknown when physical signs were relied on.

Dr. CAREY COOMBS thought that a linear upper border of fluid did appear when no physical signs indicated gas, and suggested that we might have to reconstruct our ideas on intrathoracic physics; this promised an interesting research. The great value of X rays lay in their help in showing the position and extent of lesions.

Reply.

Dr. CARLETON, in reply, said he thought there was one sign of a cavity which was reliable—a semicircular area of which the straight side was influenced by gravity, and which could be made circular by coughing up the contents. In regard to the line above fluid, he meant a clear-cut definite line, about which there was no mistake—this was pathognomonic of gas. When screening a chest the eyes should be fully accommodated to darkness; minimal illumination was useful in bringing out slight differences in transparence. Defective movement of the diaphragm was a sign of pleurisy, not of tubercle. He was satisfied that artificial pneumothorax was the best method of arresting hæmoptysis.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.

AT the first meeting of the session Mr. H. BELL TAWSE, the President, took the chair, and Sir STCLAIR THOMSON gave an address on Difficulties in Deglutition and Some Diseases of the Œsophagus. After strongly condemning the use of bougies, coin-catchers, and probangs, Sir StClair Thomson illustrated, by a series of lantern slides, the development of the endoscope from the time of Bozzini to the present day, and showed how the advent of electricity, cocaine, the telephone, the motor-car, and the X rays had made it possible for a patient having a foreign body in the upper air or food passages to be brought from a distance, diagnosed, and effectually treated within a few hours of the accident. Other slides showed congenital occlusion of the œsophagus, pharyngeal and œsophageal pouches, achalasia of the cardiac orifice, and malignant disease. The lecturer pointed out the futility of gastrostomy in congenital occlusion and the advisability of operating on pouches before the patient was too wasted. He asked philosophers to explain the thickening of the walls in achalasia; recommended early gastrostomy in malignant stricture; and, touching upon the difficulties and dangers of œsophagoscopy, drew special attention to the thinness of the œsophageal walls, and emphasised the need for the expert in these cases. He wound up his address by strenuously advocating the routine examination of the larynx and œsophagus in all cases of hoarseness or dysphagia of three weeks' duration.

ULSTER MEDICAL SOCIETY.

AT a meeting of this Society, held on Oct. 29th, Mr. JAMES A. CRAIG delivered his presidential address on the Retina in Constitutional Disease. After drawing attention to the close relationship between ophthalmology and general medicine, he spoke of the advantages of the eye as an organ in which to study the circulation and its abnormal conditions, and described Bailliart's method of estimating the tension of the retinal arteries. Having illustrated the ophthalmoscopic appearances in hyperpiesis and sclerosis, he laid emphasis on the part which sclerosis of the small vessels, such as those of the retina, plays in the production of general hypertension. An ophthalmoscopic examination afforded an index of the condition of the small arteries throughout the body. He pointed out how often sclerosis of the retinal vessels was discovered by the oculist in patients who considered themselves in perfect health, and discussed what should be done. Referring to the question how far the condition of the retinal vessels was a guide to that of the cerebral, Mr. Craig quoted the work of Foster Moore and Adams, and mentioned the parallel which exists between amaurosis fugax and retinal thrombosis, on the one hand, and temporary aphasia or paresis and cerebral thrombosis on the other. He then gave an analysis of 50 consecutive cases in which retinal hæmorrhages were discovered during a routine examination in patients complaining of eye symptoms. In referring to the unduly large percentage of these in which no information on the result of a general examination of the patient could be obtained, he appealed for a closer coöperation between the practitioner and the oculist. In a review of the subject of renal retinitis, attention was drawn to the resemblance which exists between the symptoms of eclampsia and those of acute lead poisoning. It was suggested that the constriction of the retinal vessels and blanching of the fundus characteristic of the latter might be found to some extent in patients suffering from eclampsia during the attack, although in this condition it was generally held that no changes occur in the fundus. The address concluded with a review of the evidence of the existence of diabetic retinitis as a distinct entity, and suggested a coördinated investigation by the oculist, physician, and biochemist, in order to add to the knowledge of the essential nature of the fundus changes associated with glycosuria.

FRENCH NATIONAL LEAGUE AGAINST VENEREAL DISEASE.

CONFERENCE ON CONGENITAL SYPHILIS.

THE conference on congenital syphilis organised by the League was held in Paris from Oct. 5th to 7th with Prof. Jeanselme in the chair, when the three days were devoted to discussion on (1) latent congenital syphilis, (2) the treatment of congenital syphilis in the suckling and the young child, and (3) the preventive treatment of congenital syphilis.[1]

Latent Congenital Syphilis.

Mr. Leredde opened with the assertion that alongside well-established cases of congenital syphilis with well-marked symptoms and signs and positive serum reactions, there exist much more frequent forms where the diagnosis is by presumption. Such presumption is permissible if there exist any congenital malformation or maldevelopment whatsoever, or any chronic malady in an infant the cause of which cannot be ascertained, any history in any relatives of any disease which may possibly be caused by syphilitic infection, any familial affection whatsoever, and certain varying changes in the blood and cerebro-spinal fluid. To the signs of congenital syphilis in young children described by Marfan, the speaker added cases of enteritis in the absence of any dietetic errors, eczema and prurigo in infants, and recurrent bronchitis in young children. Among the late symptoms due to latent congenital syphilis Mr. Leredde would include certain neuroses and neurasthenic states, epilepsy, mental deficiency, Parkinson's syndrome, incontinence of urine, "pure" mitral stenosis, emphysema, bronchitis, asthma, dyspepsia, chronic appendicitis, Graves's disease, and diabetes. He also stressed the close relationship between congenital syphilis and tuberculous infections.

MM. Lesné and Boutelier also brought forward a long list of disorders caused by latent congenital syphilis, and among others not mentioned by the previous speaker were Paget's disease, chorea, myopathies, and aerophagy.

Mr. Devraigne referred to Prof. Marfan's figures, which went to show that at the Hôpital des Enfants-Assistés 16 per cent. of infants had certain congenital syphilis, and if the probable cases be included this percentage is nearly doubled. He dealt with certain results of syphilitic infection on the fœtus and fœtal structures during pregnancy, and largely followed Marfan in his list of disorders in infancy due to syphilitic infection. He discussed the Wassermann reaction in congenital syphilis, pointing out that in the early months a positive reaction may be masked by, it has been suggested, the presence of excess of bile pigments in the blood.

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[1] A full report of the discussion appears in the Presse Médicale, Nos. 82, 83, and 84, 1925.

Mr. Carle (Lyons) dealt with many of the masked forms of congenital syphilis, and among previously unmentioned diseases quoted infantile paralysis, disseminated sclerosis, mongolism, and many dermatoses. He emphasised the difficulty of diagnosis and said that he considered the result of antisyphilitic treatment the best criterion of the nature of doubtful signs and symptoms.

In the discussion which followed, Mr. Lesné uttered a note of warning lest any affection of childhood of unknown origin be called "masked" congenital syphilis, and dealt with certain diseases which are rarely caused by this but are more frequently due to other infections.

Treatment of the Newly Born.

Mr. Marcel Pinard dealt with the treatment of congenital syphilis after the birth of the child. He referred to the administration of mercury by the skin, by the mouth, and by the rectum, mentioning also the use by the mouth of stovarsol and treparsol. Intravenous medication, particularly the use of arsenical compounds, was thoroughly dealt with. He considered the intravenous route the most effective: it is less painful than the subcutaneous or intramuscular, the drug is rapidly absorbed and quickly arrests the syphilitic process. He thought that the use of too small doses might actually do harm.

Mr. H. Lemaire also considered the intravenous injection of novarsenobenzol the method of choice, and stated that accidents were very exceptional. He employs the drug dissolved in 4·7 per cent. glucose solution, and follows Marfan's dosage of 0·5 cg. per kilogramme of body-weight for a first dose, followed by 1 cg. for two doses, and then 1·5 cg. for the next five doses, all per kilogramme. The drug is given at weekly intervals for eight weeks. He referred to the use of bismuth by intramuscular injection, and considered that therapeutically mercury comes last on the list of these three drugs. The duration of treatment was generally about four years, although with novarsenobenzol this period might be somewhat reduced.

In the discussion which followed, Mr. Van der Valk, of Amsterdam, gave an interesting account of his treatment of 41 cases of congenital syphilis. He used calomel by the mouth and neosalvarsan by intramuscular injection over a period of three years. All symptoms disappeared, the infants put on weight in a regular manner, but with one exception the Wassermann reaction remained positive.

Preventive Treatment.

Mr. Milian divided his treatment into that given before marriage, after marriage, during pregnancy, and after pregnancy. He referred to the social questions involved, the question of the forbidding of marriage to infected individuals, and the examination of suspected persons. After marriage he emphasised that the best prophylaxis of congenital syphilis was the treatment of the woman before conception, and if pregnancy occurred, energetic treatment along accepted lines must be adopted at once. Even if the wife appears healthy and gives no indication of infection by a syphilitic husband, she should nevertheless be treated during pregnancy.

Subsequent speakers dealt with the question of professional secrecy where one parent is infected unknown to the other, to the fact that in a pregnant woman, undoubtedly infected with syphilis, the Wassermann reaction may be negative, and to the importance of widespread education on the whole question of venereal disease.

Reviews and Notices of Books.

NEUROLOGICAL FRAGMENTS.

By J. HUGHLINGS JACKSON, M.D., F.R.S., F.R.C.P. With Biographical Memoir by JAMES TAYLOR, M.D., F.R.C.P., and including the "Recollections" of the late Sir Jonathan Hutchinson and the late Dr. Charles Mercier. London: Humphrey Milford, Oxford University Press. 1925. Pp. 227. 12*s.* 6*d.*

To a younger generation of neurologists to whom Hughlings Jackson can only be a name, mentioned though it be with respect and affection by their seniors, this volume of reprinted Neurological Fragments will serve to indicate some of the grounds on which he is justly regarded as the pioneer of scientific neurology in England. The Fragments have been familiar to all those who learned from Jackson, and it is amazing how on a re-reading they still inform. They contain little that stands in need of modification. When a Victorian play is staged again to-day the critics are fond of pointing out how it "dates"; there is practically nothing in the Fragments that "dates," if by that is signified their containing points of view from which neurology has moved away. On the contrary, the principles they enunciate are in need of still further application.

It is pleasant, too, to have herein collected Dr. James Taylor's Memoir and Sir Jonathan Hutchinson's and Dr. Charles Mercier's Recollections. The hero-worshipper can never hear too much of his hero. Reading these intimate reminiscences, he will see again in his mind's eye the figure, and hear the soft accents, of the man who found English neurology insecure and shaky, and left it an edifice of marble.

OPHTHALMIC PLASTIC SURGERY.

Newer Methods of Ophthalmic Plastic Surgery. By EDMUND B. SPAETH, M.D., F.A.C.S., Chief, Eye Clinic, Walter Reed U.S. Army General Hospital, Washington. Philadelphia: P. Blakiston's Son and Co. 1925. With 168 illustrations. Pp. 258.

THIS volume embodies a good deal of experience in the treatment of facial deformities involving the eyelids, which were so painfully common in the war hospitals of recent years and are not unknown in civil life. This book was planned, we are told, to serve the general ophthalmologist in his everyday practice. It is, however, the reverse of elementary. The ordinary text-book methods of dealing with entropion, ectropion, ptosis, &c., are not given, only bare mention of them being made. The bulk of the text is devoted to those newer methods of plastic surgery to which so great an impetus was given by the war. Esser's and Gillies's methods of applying skin grafts, hair-bearing grafts for the restoration of lid margins, cartilage grafts for the restoration of the orbital floor, fascia lata and mucous membrane grafts, various forms of pedicle grafts for contracted sockets and for the reconstruction of either lid, these are samples of the subjects with which this book deals. The illustrations are copious and clear, but the text not always sufficiently explicit. Many of these procedures are difficult to perform and almost impossible fully to understand solely from explanations read in a book. The prudent surgeon, however, will not confine himself to a study of books as a preparation for this sort of work. In conjunction with practical experience this volume is calculated to be of great assistance to him.

A matter of some importance is that the author is decidedly opposed to the employment of paraffin injections in ophthalmic plastic surgery. The use of different substances to provide a movable stump after enucleation is discussed. The method preferred is employment of a glass ball in Tenon's capsule with careful suturing of the muscles. Dr. Spaeth has had but two failures in a series of 28 cases. He adds, however, a piece of information which will be new to many and ought to be known: "The life of a glass Mules's sphere in the orbit is between 20 and 25 years before the glass becomes eroded and breaks down." The work is completed by an appendix consisting of a classified bibliography in which the references which the author has selected as being most useful are given under various headings.

DISEASES OF THE HEART.

Fourth edition. By Sir JAMES MACKENZIE, F.R.S., M.D., F.R.C.P., Director, St. Andrews Institute for Clinical Research; Consulting Physician to the London Hospital; Consulting Physician to the King in Scotland. London: Humphrey Milford, Oxford University Press. 1925. Pp. 406. 30s.

Sir James Mackenzie completed the fourth edition of his well-known text-book on diseases of the heart shortly before his death. The previous edition appeared in 1913, and in the intervening years the book has been reprinted with only a few minor alterations in the text. Largely as the result of the work of himself and his colleagues at the St. Andrews Institute for Clinical Research, the author felt that the time had now come to reconsider the whole conception of heart disease, and decided to incorporate his present view in a new edition of his previous work. In his later years Sir James Mackenzie had become firmly convinced that research in medicine, and especially in cardiology, had been diverted from the line most likely to lead to real progress, and was pursuing by-paths which resulted in the accumulation of a mass of facts that tended to confuse rather than to elucidate the central issue—namely, the mechanism of production of heart failure. He set himself, therefore, to seek out the fundamental conditions underlying ill-health and to formulate certain general laws based on these findings. He clearly states that the views put forward are not to be regarded as final, but merely as working hypotheses which will serve as a guide for future research.

In the opening chapters he discusses at length the mode of production of symptoms, and enunciates his theories of the principle of the reflex arc and the law of fluctuation in living tissues. The present edition, therefore, while retaining the essential features of its predecessor, notably the carefully considered opinions culled from the author's wide clinical experience as well as the illuminating account of his own epoch-making researches on the cardiac irregularities, contains much new matter of a more philosophical nature. The appearance of this new edition is a fitting monument to the remarkable energy which enabled its author to find time to carry out his scientific observations whilst engaged in a busy general practice, and even during his long illness to persist to the very end in his endeavour to advance medical knowledge.

SPIROMETRY.

Vital Capacity of the Lungs. By J. A. MYERS, M.S., Ph.D., M.D., Assistant Professor of Preventive Medicine and Public Health, Medical and Graduate Schools, University of Minnesota. With an introduction by S. MARX WHITE, B.S., M.D., F.A.C.P. London: Baillière, Tindall and Cox; Baltimore: The Williams and Watkins Company. 1925. Pp. 140. 16s. 6d.

THE author of this monograph on vital capacity claims to be on his guard against too enthusiastic an attitude to this subject, and yet he says: "The time is at hand when all persons should know their actual vital lung capacities, just as they should know their actual heights and weights," and goes on to suggest the instalment of spirometers in public places, very much like the familiar weighing machines. Apart from this lapse the book does succeed in giving a good and balanced account of vital capacity in its historical relations and in connexion with health and efficiency, and of its variations in disease. The name of Dreyer is associated with vital capacity in regard to physical standards and a good account of his work is given. Here it seems that there is a definite field for vital capacity estimations, but its use in diseases of the respiratory and cardiac systems seems to be very limited. It is rather surprising to find the statement that "probably the only help we receive from it is in differentiating pneumonia from certain other acute diseases" in a book whose preface claims that the vital capacity test is regarded by most clinicians as a "valuable aid in diagnosis, prognosis, and the guidance of treatment of certain diseases of the heart and lungs." The former statement appears to be nearer the truth. An extensive bibliography and numerous tables will prove useful to those interested in this subject, but even allowing for the large number of tables the price seems excessive.

THE WAR HORSE.

Official History of the War: Veterinary Services. Edited by Maj.-Gen. Sir LAYTON J. BLENKINSOP, K.C.B., D.S.O., M.R.C.V.S., Colonel-Commandant, Royal Army Veterinary Corps; and Lieut.-Col. J. W. RAINEY, C.B.E., M.R.C.V.S. London: H.M. Stationery Office. 1925. Pp. 782. £1 1s.

EACH special department of the army has been allowed to publish officially its own account of the work done during the war; that of the Royal Army Veterinary Corps has now been issued. Veterinary science has advanced to such an extent during the past few years, and now has so many specialised branches, that it was necessary to entrust the compilation of the work to those who had specially studied the individual divisions, and the editorial work, owing to limited space, must have been difficult. It has been done so well that this volume will remain a useful work of reference and as a monument to the wonderful work of the Royal Army Veterinary Corps. The varieties of animals and the varied conditions under which they had to be kept and fed gave those in authority in the R.A.V.C. an infinite number of opportunities for exercising their ingenuity, and when it is considered that more than 75 per cent. of officers and men engaged in the veterinary care and treatment of the animals were civilians newly apprenticed to military methods, the results obtained were little short of marvellous. The book begins with a chapter on the preparations for war and mobilisation, and goes on to describe what was done on each of the numerous fronts for the welfare of the animals. No part of the world where the British forces were engaged is omitted, and the book shows clearly the difficulties which were overcome in the management of the healthy and sick horses in the extremes of heat and cold. All who served in the war, especially those who had animals under their charge, will find this book exceptionally interesting and valuable.

ROYAL DENTAL HOSPITAL OF LONDON.

Annual Report for 1924. Edited by A. T. PITTS, D.S.O., L.R.C.P., M.R.C.S., L.D.S. London: John Bale, Sons and Danielsson, Ltd. Pp. 154. 7s. 6d.

THE Royal Dental Hospital's annual reports were originally issued under the joint editorship of Sir Frank Colyer and Mr. F. Coleman in 1910, but lapsed during the war and were only revived last year. No hospital or school news is now included, and the reports are in book form and contain original articles and case records only. In the present volume Mr. J. G. Turner gives a description of the minute anatomy of the roots of teeth. He regards the apical segment of the tooth and the dentinal canaliculi as the danger areas in root canal treatment, and rightly condemns so-called immediate root-filling after extirpating the tooth pulp. A certain time is required for the separation of living from dead tissues, and infected tissue is pent up if the root canal is immediately occluded.

Mr. Turner also describes two odontomes, one of which, a suppurating epithelial odontome (multilocular cystic disease of the jaw), was removed intact by the intra-oral route, showing that even large tumours may often be removed in this way and a disfiguring external scar avoided. Mr. W. H. Dolamore gives notes of three patients admitted to a general hospital for persistent hæmorrhage from the gums. In one of these patients, a hæmophilic boy, the *hæmorrhage was arrested by means of protagulin*; in the other two the bleeding occurred from the gums around the teeth, and the teeth involved were removed and the liberated gum margins approximated with suture with satisfactory results. Mr. E. F. Ackery and Mr. A. T. Pitts record six cases of acute stomatitis occurring in patients suffering from blood diseases, all of whom died. Their serious condition was recognised on their attendance at the dental hospital, and in every case they were recommended for admission to a general hospital. Mr. H. Stobie contributes a lucid and thoughtful paper on the diagnosis and treatment of some of the common tumours of the jaws. He lays stress on the value of radiology as an aid in determining the surgical technique to employ, and we are glad to see that the time-honoured text-book sign of eggshell crackling in connexion with the diagnosis of dental cysts has been omitted and resiliency (a more exact and expressive term) substituted. The use of a metal probe or, better still, fuse wire (as suggested by Mr. E. D. Davis) for passing into a cavity prior to an X ray examination might have been mentioned. If the latter be used it coils up within the cavity and serves to delineate its size and extent. We cannot agree that the swelling of cysts of the mandible is always limited to the outer alveolar plate, and the statement that "glandular enlargement and fixation" are early signs of an epithelioma needs qualification. Mr. Pitts writes on post-normal occlusion, a type of mal-occlusion that is receiving a great deal of attention from orthodontists at the present time. This condition appears to be more common than formerly, and it is difficult to say whether this is due to rapid evolutionary changes which are taking place, to failure in the past to recognise the condition, or to its confusion with superior protrusion. Mr. Pitts also discusses the pathology of the central myeloid sarcoma, the myeloid epulis, and the fibrous epulis, and questions whether the last is related to the other two tumours. Mr. D. M. Shaw discusses the value of "anatomical articulation," and endeavours to show that extensive contact of the teeth in all positions of occlusion does not exist in the normal dentition nor after marked attrition has taken place, and that it is not desirable that it should exist. His experiments show that different types of articulators elicit varying results of the mandibular excursions, and he considers that more care should be taken in observing the actual movements of the jaw, so that their effect can be reproduced in constructing artificial dentures.

The reports are a valuable and attractive contribution to oral and dental surgery.

CLINICAL BIOCHEMISTRY.

By IVAN MAXWELL, M.D., M.Sc., Lecturer in Physiology and Biochemistry, University of Melbourne. Melbourne: W. Ramsay. 1925. Pp. 124. 12*s.* 6*d.*

THIS volume is the companion to Osborne and Young's "Practical Biochemistry," of which the second edition was reviewed in THE LANCET of Sept. 20th, 1924. It is intended to publish a third member of this series, and the author points out that any omissions will be included therein. Osborne and Young's small book undoubtedly started a new era in practical text-books of biochemistry, and it is to be hoped that the companion volumes will maintain this high standard. The present issue deals with the clinical aspect of practical biochemistry; like the first part, it is interleaved. Unfortunately, Dr. Maxwell's book does not show the careful preparation of the companion volume. The copy sent for review has many misprints which have been corrected in ink. We trust that all the copies have been so corrected, since some of the mistakes might lead to serious errors. The usual subjects are dealt with—renal efficiency, glycosuria, gastric analysis, and the tests of functional capacity of the various organs The descriptions are rather sketchy in parts; the author is perhaps ill-advised in including a chapter *on the enumeration of red blood corpuscles, &c.*, at the expense of the more purely chemical analysis of the blood. Clinical hæmatology is not a biochemical subject, and the space allotted could well have been used to describe methods of air analysis and respiration, a branch not even mentioned in the book. The method of determining the blood-urea is described, but the non-protein nitrogen of the blood is not even mentioned. In the method chosen for the estimation of urinary diastase no account is taken of hydrogen-ion concentration. Insulin is simply mentioned by name, and no account of the various clinical biochemical tests associated with insulin therapy is given. On the other hand, the book has certain excellent qualities. The general arrangement is very good, and the descriptions are all quite clear. Undoubtedly the best chapter is that upon hepatic efficiency; here an admirable account of recent work is given, and in particular of the Van den Bergh reaction. If in the third volume of this series are included exact details of quantitative analysis, the whole should prove of great value. Dr. Maxwell's contribution is in itself a useful addition to biochemical literature.

LA PRATIQUE CHIRURGICALE ILLUSTRÉE.

By VICTOR PAUCHET. Vol. VII. Paris: Gaston Doin. 1925. Pp. 250. Fr.30.

THE English translations of the six earlier volumes of this work have been reviewed in our columns. This one is compiled on the same lines. The non-operative treatment of fractures of the upper extremity forms an interesting section and is well worth perusal, though some of the apparatus used appears a little heavy. The removal of cancer of the thyroid is depicted by a series of drawings made from a difficult and extensive case. A considerable part of the book is concerned with gastric surgery. Most interesting is the account of carcinoma of the stomach. The author prefers a one-stage excision, but says that sometimes he is forced to a two-stage operation. There is some discrepancy in the statements on this question; on one page the two-stage operation is said to have many advantages, whilst on another all patients operated upon in this manner are said to be dead within a year. The author still employs the Murphy button in some gastric operations. An ingenious technique for staphylorrhaphy is described by Victor Veau. Virenque brings forward a procedure for the removal of facial wrinkles not likely to become popular in this country. The illustrations are unusually clear and suggest a marvellous agility in the surgeon who performed the operations from which they were drawn.

OPERATIVE CYSTOSCOPY.

By E. CANNY RYALL, F.R.C.S., Founder of, and Senior Surgeon to, All Saints' Hospital for Genito-urinary Diseases. London: Henry Kimpton. 1925. 70*s.*

THIS is a superb atlas of operating cystoscopy comprising 115 plates, nearly every one of which has six coloured cystoscopic views. Every conceivable phase of intravesical or urethral manipulation is described. The author must have had an immense experience to have obtained views of so many different conditions. and they have been portrayed by Mr. Thornton Shiells with a faithfulness to nature unsurpassed by any cystoscopic atlas emanating from abroad. Mr. Ryall has extended operative methods through the cystoscope to what must surely be near the limit and has modified most of the usual instruments to render his methods more easy of execution. A unique feature is that the descriptions appear in German and French as well as English. There is an all too short account of methods at the beginning of the book, which renders the reader eager for more information as to what are the end-results of intravesical operations and in what percentage of cases such treatment is suitable. The author must have made a great number of observations and have case-histories at his disposal bearing on these questions. We hope he may in the future be induced to commit them to paper.

THE MAYO CLINIC.

Collected Papers of the Mayo Clinic and the Mayo Foundation. Edited by Mrs. M. H. MELLISH. Vol. XVI. 1924 (published May, 1925). London and Philadelphia: W. B. Saunders Company, Ltd. Illustrated. Pp. 1331. 60*s.*

THE Mayo Clinic and the Mayo Foundation have, in this sixteenth issue of their annual volume, maintained their usual standard of interest. The book is a bulky one and contains 222 papers or abstracts of papers from the pens of 160 contributors, many of whom have achieved world-wide reputations. As is inevitable, some of the contributions are of ephemeral interest and a few were frankly not worth reprinting, but, taken as a whole, the volume gives an excellent view of the march of surgery during 1924. In general, the papers are brief, so that the collection of articles on a subject such as gastric and duodenal ulcer forms an interesting symposium within a reasonable space. Another group of papers of particular interest is that concerning the physiology and diseases of the gall-bladder. The systematic recording of cases has evidently been brought to a fine art by the Mayo Clinic, and the results of this are to be seen in several articles such as that on diverticulitis of the colon, in which are summed up observations on this condition made during the last 17 years. A large number of addresses of a more general nature appear under the names of the founders of the Clinic. The 11 pages occupied by W. T. Mayo's lecture on the Physiology and Pathology of the Blood in Relation to Surgery are packed with learning and wisdom, and demonstrate that the work of the Clinic is not likely to be marred by any narrowness of outlook. The volume appears to have been very well edited, and rare errors, such as a reference to "hydro-arthritis or glutton's joints," on p. 601, give no annoyance.

JOURNALS.

BRITISH JOURNAL OF OPHTHALMOLOGY. September–October, 1925.—To the September issue H. M. Traquair contributes a paper on Acute Retrobulbar Neuritis affecting the Optic Chiasma and Tract. This is a little-known condition. Attention was first drawn to it in 1912 by Roenne who tabulated ten cases, five of them personally observed. In the present paper the author gives notes of four new cases, one of them already published by himself in a series of papers in the first volume of the *British Journal of Ophthalmology* (1917) under the title Bitemporal Hemianopia, and at that time believed by him to be caused by abscess of the antrum. He now regards this particular case as one of a class which Roenne describes as "inflammatory or degenerative conditions which have their starting-point in the chiasma or tract, and form a group of certainly existing but little known primary lesions in this part of the visual path." He suggests that if exhaustive analysis of the field defects in cases of retrobulbar neuritis were more commonly practised cases of this type would be more frequently found than they are at present. As in retrobulbar neuritis of the usual type, the prognosis as regards recovery of sight appears to be excellent, but should be guarded in respect of later development of nervous disease.—D. J. Wood gives an account of two cases of non-traumatic cysts of the anterior chamber and R. E. Wright a cyst of the iris. These two notes describe a condition which is decidedly rare and the pathology of which is not completely understood. This number contains a condensed report of the proceedings of the convention of English-speaking Ophthalmological Societies held in London in July.——The October number opens with a biography of Sir William Bowman by R. R. James. The value of a paper by Miss Ida Mann on the Development of the Human Iris, which occupies the chief part of the issue, is much enhanced by copious and clear figures. Among other papers is one by H. Hartridge on Helmholtz's Theory of Accommodation. This should be read in connexion with an abstract by C. Goulden (in the same number) of E. F. Fincham's paper, the Changes in the Form of the Crystalline Lens in Accommodation.[1] By means of careful measurements taken with the help of the corneal microscope and slit-lamp Fincham finds that the general truth of the theory of Helmholtz is confirmed. The increase in the curvature of the lens surface, however, does not in all cases correspond to the increase in accommodation. The factor accounting for these variations Fincham finds in the combination of the elastic nature and the varying thickness of the lens capsule. H. Hartridge, in his paper, supports Fincham's views upholding the theory of Helmholtz in opposition to that of Tscherning.

INTERNATIONAL MALARIA CONGRESS.

THE First International Malaria Congress was held in Rome in the Exhibition Palace from Oct. 3rd to 6th. The various delegates, some representing governments or societies, were welcomed by Senator Ettore Marchiafava, the President, accompanied by various members of the executive.

Signor H. E. Benito Mussolini, Prime Minister of Italy, who officially opened the Congress, stated that the Italian Government had a great interest in this gathering in Rome. He referred to the epoch-making researches, which had led to our full knowledge of malaria, as a striking example of international coöperation, but admitted that the practical problems of prevention remained.

Senator Marchiafava, in his address to the Assembly, showed how the old Latin views on malaria approached and harmonised with modern concepts.

Biology of Malaria Parasites.

Prof. Marchoux (Pasteur Institute, Paris), who brought the greetings of France and her doctors, read a paper at the first meeting of the Congress on Unity or Plurality of the Parasites, dealing in turn with the arguments provided by the two schools of thought. The former, led by Laveran, had been impressed with the differences found in the parasites seen in the blood of Europeans infected in the tropics, containing small rings and crescents when abroad, but when they relapsed at home, showing only the large amœboid forms such as were regularly found in the blood of autochthones. The pluralists, including most malariologists, based their views largely on experimental observations, and interpreted the above findings in a different manner. In the mosquito the zygotes were different, the time of evolution varied, and if fed on carriers of one form, the same type was invariably transmitted to healthy subjects; similarly, injection of infected blood, now repeated thousands of times, followed the same rule. Culture in vitro had so far revealed specificity.

In the discussion which followed Prof. P. Muhlens (Hamburg) said that his own inoculation work, in general paralysis, confirmed an immutability in the transmission of all types, whatever the period of the year, and even in Germany in winter 70 transmissions of benign tertian had been made without change.

Prof. Swellengrebel (Amsterdam) referred to experiments he had conducted in Sumatra with *A. sinensis* and *A. ludlowi*, demonstrating a difficulty which might arise in cases of mixed infection and might lead to the erroneous view that a transformation of type had occurred.

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[1] Trans. Optical Society, 1924–25, vol. xxvi., No. 5.

Malaria Therapy in Psychiatry.

Prof. Auguste Marie (Paris) read a paper on this subject, in which he dealt with the thermic and visceral reactions, the precautions to be taken as to choice of case and the necessary blood controls when using malaria, and referred to the use of quinine and stovarsal—the former seeming to produce destruction of young asexual forms in the blood, whereas the latter rapidly affected the adult schizonts and the gametes. The results published in many countries, he said, showed that many thousands of cases had been treated and followed up, and whilst general paralysis of the insane was not cured by this form of therapy, it was proved that stabilisation took place with such persistent remissions that readaptation to family life and to social responsibilities were possible.

Colonel S. P. James (Great Britain) said that in England it had been found by experience that the relatives of patients objected to the direct inoculation of blood from paralytics, knowing that such were syphilitic, and that they feared what were called "neurotropic strains" of the virus. Also, by the use of the blood method the risk of injecting two kinds of parasites at the same time could never be completely eliminated. For these reasons it had been decided to inoculate only by means of mosquitoes; stocks of infected anopheles were kept for the purpose and distributed to those who needed them. The results by the natural method had been carefully observed in over 100 cases and were held to be better than when the blood method was employed.

Prof. M. Ghiron (Rome) read a communication on certain points of interest revealed during inoculations of general paralytics with malaria. Several months after the injection of subtertian he had reinjected some cases with benign tertian and found that a marked resistance had developed; not only was the hæmoclasis absent, as compared with controls which had not previously received subtertian, but there was no febrile reaction.

Anopheles and Malaria.

Dr. Massimo Sella gave a report on a new method for mosquito control in Italy by the acclimatisation of the larvi-phagous fish *Gambusia holbrooki grd.* He said that *complete* control of mosquito breeding could be obtained, even in drainage canals, provided there was thorough removal of surface vegetation; also, that great saving had been effected as petroleum was no longer required in some regions. Dr. Sella developed the theme of more intensive cultivation and distribution, and the need of special organisations, legal and financial support in this new method.

Dr. Etienne Sergent advocated all practical means of controlling malaria, from flight from the danger to disciplined control of those living in infected zones. He valued prophylactic quinine to keep people at their employment; he placed more stress on treatment and cure by quinine as a direct measure, and on all indirect measures based on propaganda work, first and chiefly amongst the children, and constant illumination of public opinion.

Colonel James said that the Malaria Commission of the League of Nations Health Committee had recommended: (1) the treatment of all cases as the first problem; (2) that it was not wise to use quinine as a prophylactic; (3) the killing of adult anopheles in houses; (4) that antilarval measures must have a very secondary place.

Larvicides.

Dr. M. A. Barber (U.S. Public Health Service) reviewed his work on Paris Green as a Larvicide. This arsenical poison was now widely used through the United States, and had been successfully employed in Palestine and Italy. It might be used through the entire season without harmful effects, had not been shown to affect animals or fish, and was employed diluted with 100 parts of dust as a suitable vehicle for wind conveyance over marshy areas covered with dense vegetation. Being almost insoluble in water, the light particles were held up on the surface-tension layer, and remained long enough to poison all surface-feeding larvæ.

Dr. L. W. Hackett (Rockefeller Foundation, Italy) issued a warning as to the varying qualities of Paris or Schweinfürth green on the market; some, he said, were merely aniline products. The U.S. Government had introduced a legal standard that Paris green must contain 50 per cent. of arsenious oxide.

The Alkaloids of Cinchona and Malarial Therapy.

Dr. A. Kaufmann (Switzerland), in a paper on the Synthesis of Cinchona Alkaloids, said that research was now so far advanced that the coöperation of the pharmacologist and clinician was needed by the chemist to test the pharmacodynamics of every product.

Colonel James and Dr. H. H. Dale, F.R.S., made a communication on the Relative Therapeutic Efficacy of Quinine, Quinidine and Cinchonine in Malaria. New tests had been made, using pure products, to determine the immediate therapeutic effect—i.e., the time required for complete disappearance of parasites from the blood. Results so far obtained showed that the curative effects of the three alkaloids was the same for all forms of malaria; in small doses cinchonine was slightly less effective than the others; there was no difference in toxicity save that quinidine had a more marked depressant action on the heart muscle.

Resolution.

An important communication was read by Dr. Fernando Perez, Argentine Minister in Italy, who proposed that in order to complete and consolidate the work of the Congress a permanent International Malaria Institute should be created in Rome with the scientific and financial help of all nations.

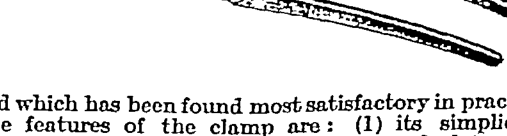
The President replied that the Italian Government viewed with favour the creation of such an organisation; it had great sympathy with the project, and was ready to give its moral and material support to this new institution.

The proposition was greeted with acclamation, and was subsequently adopted by the Council of the Congress, who formally expressed the desire that the Italian Government should make itself the mouthpiece of this wish to the Governments concerned in order to enable the project to be realised.

New Inventions.

INTESTINAL CLAMP.

IN performing resection of the intestine, it is advisable to have a powerful clamp to crush the bowel before it is divided. The illustration shows a clamp which I have been using for the past 12 years, and which has been found most satisfactory in practice. The features of the clamp are: (1) its simplicity, (2) its power, (3) the area of bowel crushed is sufficiently wide to allow of the application of two ligatures between which the bowel is divided with a cautery. The clamp has been made for me by Messrs. Down Bros., Ltd., who have carried out my suggestion in their customary efficient manner.



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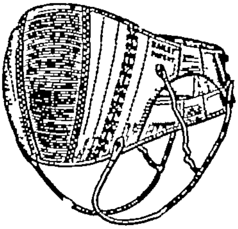

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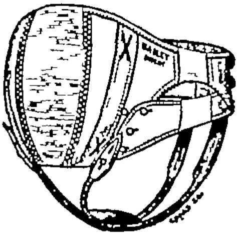

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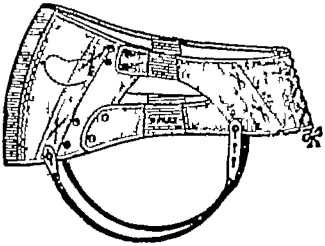

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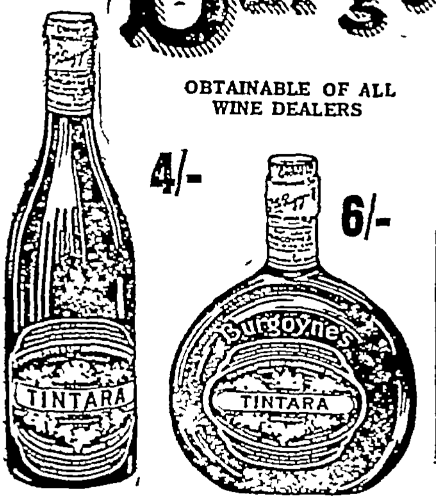

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THE LANCET.

LONDON: SATURDAY, NOVEMBER 21, 1925.

THE SCHOOL MEDICAL SERVICE.

THE compulsory Education Acts have had two great effects. They have provided for every child a certain amount of learning at the price of reduced parental responsibility and freedom, and they have placed that child partially in the care of the State at a critical stage of physical development. The educational authorities aim at increasing the mental equipment of the pupils; the School Medical Service tries to increase their health and remove any causes of disease which may arise in the course of schooling. Whilst education may or may not be invariably beneficial, a betterment of children's health is wholly desirable. There is but one danger in a little physical betterment, and that is that it may be regarded as sufficient. At a small sacrifice of individualism there has been forged against disease a weapon whose power is incalculable, and there must be no resting on past achievements until that weapon is given full play. Sir GEORGE NEWMAN'S report to the Board of Education on the Health of the School Child,[1] shows a proper appreciation of the admirable work that has been done in the past and *reflects* the still more proper discontent which animates the School Medical Service to-day. It contains lessons which must be learnt by the public at large and by public authorities in particular. The magnitude of the work is shown by the fact that in 1924 the average number of children attending schools under Local Education Authorities exceeded five million. The requirements of the regulations were fully met by the 1884 part-time or whole-time medical officers employed, and 2,420,000 children were medically inspected—that is to say, 48·6 per cent. of those who attended school during the year were examined. Of these about 700,000 were seen on account of some special illness or defect; of the remaining 1,660,000 who came up for routine examination, 19·8 per cent. were found to be suffering from some more or less serious physical defect which needed treatment then and there. In addition a considerable group, amounting to some 108,000 children, were found to suffer from physical or mental defects such as blindness, deafness, epilepsy, feeble-mindedness, tuberculosis, and crippling. For these children there were 544 special schools and sanatoriums accommodating over 43,000.

It has sometimes been objected that the routine work of inspection and compiling statistics is a waste of time. Sir GEORGE NEWMAN points out, however, that the routine work involved in the medical *inspection of all* children, healthy or sick; at certain prescribed stages of their school life is one of the fundamental principles of the whole enterprise. Nothing but chaos and waste, he believes, would ensue if this inquest of the nation's children were drifted through, in haphazard fashion, without record or report. The report before us is sufficient evidence of its own usefulness. Nor, to our readers at least, will any criticism of the time and labour and expense devoted to research need an answer, though Sir GEORGE NEWMAN supplies cogent ones. An example of the kind of research being carried on is the special investigation into the health of the rural child which was made in the spring of this year. This revealed much that needs reform in the incidentals of rural education and *many regrettable results of poverty* amongst the children of labourers and those in casual employment. Although it was found that there is no widespread decadence, and that on the whole there is probably improvement, it is clear that the remarkable progress in physical well-being which has taken place in the towns is not shared equally in the rural districts, and there is a substantial degree of impairment amongst rural children, especially at the ages of 6 to 12 years. On the whole, the country children are still ahead of the town children, but in some areas they are falling behind. Sir GEORGE NEWMAN'S general conclusion is that although every year there appears to be the same tide of disease, the same burden of defect *requiring* treatment, there is undoubtedly a great and almost universal improvement in the *degree* of disease among children of school age. The death-rate at these ages is declining, and the gross forms of disease are steadily disappearing. "Medical care," it is stated, "has brought about an immense improvement in the discovery and practical treatment of the defective child, and thus has mended the particular child and stopped the evil effects of disease. But concurrently there has been little or no change in the causes and origin of disease in school-children . . . The young child comes to school already diseased. In 1924 38 per cent. of the entrants in London were found to *require medical treatment* . . . This clearly is home-produced and not school-produced. But, further, there is evidence that the physique of a number of children degenerates *while they are at school*." In a recent summary of school medical work[2] we drew attention to the deplorable hygienic conditions to be found in some schools. Lack of facilities for washing, inadequate lavatory equipment, and general uncleanliness were condemned as prejudicial to health and stultifying of that instruction in personal hygiene which should be an essential part of school medical education. We drew attention to the fact that in many schools children remained all day in the wet clothes and boots in which they arrived, and to the meagre floor space allotted to schools by regulations unchanged since 1870. It is satisfactory to find most of these abuses the subject of earnest recommendation to local authorities, though it is regrettable that such recommendation should still be needed.

There is an increasing desire on the part of parents to take advantage of treatment offered; but there remains a considerable leakage between the number of children requiring treatment and those who actually got it. More, it is suggested, might be done by many authorities to follow up, to make treatment available, and to prescribe the duties of their medical staff in such a way as to make it possible for them to concentrate on the untreated child. In many areas the personnel of the School Medical Service is too small to conduct anything more than the barest routine. The number of dentists is wholly insufficient. Of 1,766,000 children inspected by them in 1924, 67 per cent. were found in need of immediate treatment; but only 55 per cent. of these received it. It is stated that to establish a complete dental service for all school-children the number of dentists employed would require, at the lowest estimate, to be trebled.

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[1] The Health of the School Child. Annual Report of the Chief Medical Officer to the Board of Education for the Year 1924. London: H.M. Stationery Office. 1925. 1s. 9d.

[2] THE LANCET, 1924, i., 44.

The whole trend of medicine to-day is towards treating the underlying causes of disease rather than the symptoms. Certain established causes such as focal sepsis act early and are susceptible to rational treatment in infancy and childhood. From the barest commercial point of view, then, it ought to be possible to devote more than £1,220,000 a year to the work of the School Medical Service.

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CONGENITAL SYPHILIS.

PERHAPS one of the things which most attracts the notice of a British visitor to the children's hospitals of Paris is the frequency with which the diagnosis of congenital syphilis is made on what appear to be insufficient grounds. The recent conference on congenital syphilis in Paris, of which we give an account elsewhere in this issue (p. 1071), also brings out this striking difference between the points of view of two sets of pædiatricians. The list of diseases attributed to latent congenital syphilis includes such affections as chorea, mitral stenosis, exophthalmic goitre, and infantile paralysis, and greatly exceeds both in quality and quantity the result of experience in this country. It may be that congenital syphilis is a much more common disease in France than it is in this country, and there are certain statistics to bear out this contention. Prof. MARFAN'S figures, collected, it is true, in a sort of Poor-law institution where many illegitimate children are presumably to be found, go to show that 16 per cent. of all infants are definitely infected, while about 30 per cent. are probably so. In this country, on the other hand, figures collected by Dr. G. F. STILL show that not more than 1 per cent. of all out-patients in a big children's department are suffering from congenital syphilis, as judged on clinical grounds alone, and he further quotes the results of the Wassermann reaction in the blood of young infants in an investigation in the East End of London where only 4 out of 677 cases were positive. Even this striking statistical difference will not, however, account for many of the views held by French authorities. Prof. MARFAN'S teaching on rickets, for example, is to the effect that the large majority of cases are due to congenital syphilis, and the difficulty arising with regard to negative Wassermann reactions in many of these cases of so-called masked congenital syphilis is met by the statement that the biliary pigment in the blood of new-born babies interferes with the hæmolysis involved in the test. Another somewhat dangerous point of view brought forward in support of the latent congenital syphilis theory is the fact that many of these cases respond to antisyphilitic treatment. This post hoc line of argument may be particularly misleading in dealing with a vague and heterogeneous group of chronic infections in which almost any therapeutic measure may at times secure a striking success.

On the subject of the treatment of congenital syphilis there is in general more agreement, although in the course of the discussion on this aspect of the problem there was a distinct tendency to give first position to the intravenous use of arsenical preparations and to place mercury as a rather poor third in the list—arsenic, bismuth, mercury. In this respect a recent publication of the results of the treatment of congenital syphilis in this country by Mr. JOHN ADAMS is particularly interesting.[1] He has treated since 1917 164 consecutive cases in young babies at the Thavies Inn Clinic for pregnant women suffering from venereal disease. The mother's blood is examined on admission and treatment instituted at once if the pregnancy has not yet terminated. As soon as the child is born a specimen of blood is taken from the umbilical cord and also from the mother and sent for a Wassermann reaction to be performed. It was found that about 3 per cent. of pregnant women, although undoubtedly suffering from syphilis, gave a negative Wassermann reaction, and of the babies born of syphilitic mothers this reaction was positive in 51 out of 152 cases. The treatment adopted has been the intramuscular injection of galyl in glucose, commencing on the first day with 1·25 cg. and working up to 3·5 cg. in fortnightly doses. Altogether nine doses are given, the second one at the end of the first week. Combined with this are intramuscular injections of mercury in doses of ⅛ gr. working up to ⅓ gr. at fortnightly intervals and grey powder by the mouth. At the ninth and twelfth months courses of three injections of 3–5 cg. of galyl are given, and 1 gr. of grey powder daily for a month and repeated at the eighteenth month. Further treatment is governed by the progress of the case. During the last five years not one baby born alive has died in the hospital, and there have been altogether only four deaths in the whole period of eight years, while in the last few years there has been no still-born fœtus in the clinic. The effect of the treatment is to convert a positive Wassermann reaction in the infant into a negative one in an average period of 10 to 11 weeks; this has occurred in every case, a striking contrast to continental experience and to the reports of other workers in this country. Babies thus treated grow up into strong, healthy children with a mortality-rate actually below the normal for non-syphilitic children. Mr. ADAMS utters a word of warning against puncturing the superior longitudinal sinus for obtaining blood, and describes a very satisfactory method for getting it from the heel. His experience is that congenital syphilis, like syphilis in general, is becoming less frequent in this country.

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CIVILISATION AND BLOOD PRESSURE.

HIGH blood pressure is a subject of wide and perennial interest—an interest justified by the obscurity which still surrounds the condition. Speaking before the Academy of Medicine of Toronto on Oct. 12th, Lord DAWSON of PENN referred to high blood pressure as an apparently increasing result of modern civilisation. Apart from nephritis, he considers the blame should fall on faulty metabolism, on anxiety, and perhaps on inborn traits. About the age of 46 a jump in blood pressure from 120 to 140 is not uncommon, and although raised pressure is not rare in thin people, the man who becomes too fat in middle life is most open to suspicion. At this age a general loss of flexibility may begin to show itself, and what Lord DAWSON aptly called "a certain fibrositis of the mentality." How far a rise of arterial tension depends at first on circumstances is illustrated by a case which he cited of a barrister in whom the blood pressure was in two successive years reduced by the annual holiday from 140 to 120, but who failed to respond on the third occasion. It is, says Lord DAWSON, the anticipation of work that plays so important a part at certain ages, especially in those who show a general vasomotor excitability and lack of adaptability. That such a predisposition exists was shown in an examination of 1500 students at the University of California, of whom fully 20 per cent. had high blood pressure. A similar examination was made by Lord DAWSON and others in four English schools, when it was found that 8 per cent. of the 659 children between the ages of 11 and 17 showed too high pressure, though the affected children appeared as healthy as the others. The group in which it occurred was one in which the boys and girls of almost 17 years of age were trying to pass examinations on which much depended, either for themselves or their parents. Many of them had a blood pressure of over 130 and in some it reached 150. Here the influence of anxiety was obvious.

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[1] Ante-natal and Post-natal Syphilis. By John Adams, F.R.C.S. London: John Murray. 1925. For private circulation. See also THE LANCET, 1920, ii., 990, 999.

The American view of the importance of a small rise in arterial tension is illustrated by a somewhat popular treatise written by Dr. W. E. SADLER, of Chicago, and entitled "Americanitis."[1] It is clear that in the United States a man with a blood pressure of over 140 is looked at askance. Lord DAWSON does not go as far as to share the view there prevailing; but he states that a youth with this degree of tension should endeavour to find a salaried appointment. Whole families may show an increased blood pressure, and there may be no obvious results because work and surroundings are favourable. A great deal of the world's most important work is, in fact, done by those who suffer from hyperpiesis and it would be easy to exaggerate the alarming nature of small rises; their disastrous sequels have yet to be shown. Twenty years ago persons applying for life assurance policies commonly found themselves heavily loaded on account of the readings of the sphygmomanometer; yet we are informed that many experienced physicians to-day have records of continuous good health in such people, who have endured their high blood pressure without symptoms or obvious ill-effects. It is well known that the outlook is grave in cases with marked elevation of both systolic and diastolic pressure; but the importance of a pressure of 140 mm. in otherwise healthy young people cannot be estimated accurately yet. It often shows a state of mind and body which demands consideration of appropriate environment and work; but until full records have been obtained which clearly show some relation between moderate juvenile high blood pressure and early death, judgment may be reserved, and it seems undesirable to penalise or alarm those in whom such a condition is discovered.

LEAGUE OF NATIONS: MEMORIAL PRIZES FOR THE STUDY OF MALARIA.—In memory of Dr. Norman Lothian (see THE LANCET, 1925, i., 1150) and Dr. Samuel Darling (ibid., 1925, i., 1320), the two members of the Malaria Commission of the League of Nations who were killed in a motor accident near Beyrouth on May 21st, 1925, while investigating malaria conditions in Syria, the League's Health Committee has decided to create a Lothian Scholarship and a Darling Prize, which will be awarded periodically for the encouragement of malariological study. The Lothian Scholarship, for which a credit has been found in the budget of the Health Organisation of the League, will be awarded by the Malaria Commission to a selected candidate "whose course of study should be in conformity with the general programme of the Malaria Commission," while the Darling Prize (a medal or other reward) will be given to the scientist who "has carried out recent distinguished research work on a subject connected with malaria which comes within the general scope of the Commission's investigations." The funds for the latter foundation will be raised by private subscription.

Annotations.

"Ne quid nimis."

THE DENTAL BOARD.

IN his address at the opening of the ninth session of the Dental Board of the United Kingdom on Nov. 10th Mr. F. D. Acland, the chairman, dealt with three matters of considerable importance to the welfare of the dental profession. With regard to advertising, he said that very considerable progress had been made in carrying out the Board's duty of checking undesirable methods of announcing a dentist's practice. It was not only interesting but gratifying to find how willing practitioners were to conform to the wishes of the Board; the only proviso made was that all dentists should be on the same footing. This, of course, is reasonable, and the Board is endeavouring to ensure that all are treated alike, though naturally it is difficult to enforce exact uniformity and simultaneity of action. Some practitioners, he continued, desired that the Board should lay down hard-and-fast rules to which all should conform. There was much to be said on both sides. In a professional district and in a crowded shopping street, the question arose whether it would be possible to give sufficient definition of the difference in situation of premises as would at the same time afford a clear guide to dentists, and prevent the occurrence of numerous and difficult border-line cases on which the Board would have to make special decisions. Some of the general principles which the Discipline Committee have so far evolved are as follows: (1) Where, as is almost always the case, it is possible to have a brass plate reasonably visible at all hours at the entrance to premises, it is not also necessary to have a further announcement on a fanlight. (2) Where, as is sometimes the case, a projecting sign must be permitted, it is not necessary also to have announcements on the windows. (3) If there is an announcement on the windows, a projecting sign should not be allowed. (4) Windows should not be used to call attention to the extent of a dentist's premises. The Chairman suggested that dentists who received patients in the evenings might use a uniformly coloured plain lamp, either red, or, in districts where some doctors use red lamps, of some other colour, if they desired to distinguish their premises from those of doctors.

Dealing with the Board's scheme for assisting suitable students to qualify, Mr Acland recorded gratification that the scheme now seemed to be established, and was becoming better known amongst schoolmasters and parents. The applications for grants which were considered this autumn were in excess of the help available, with the result that it was possible to make a selection of the most suitable candidates. "There are some," said the Chairman, "who think that the Board is unwise, and is even acting harshly towards those who have to pay for the retention of their names on the Register, by taking steps just now when times are none too easy to add to the number of qualified practitioners. It must be remembered, however, that it will generally be four years before the students who are helped by the Board will qualify, and, further, I am informed that the number of students who are registering this year is certainly not more than those who registered last year, and may even be less. We shall probably be able to assist some 40 or 50 students a year, and if the quality of those assisted is high I believe that much useful work from the national point of view will be done in assisting them."

Dental health propaganda work has made good progress. Organisations of all kinds have shown appreciation of the Board's work. Bodies interested in children, such as the National Union of Teachers and the child welfare organisations; in nursing, such as the College of Nursing and Queen Victoria's Jubilee Institute of Nurses; in industrial workers, such as the Industrial Welfare Society and Industrial Health Education Council; and in general health, such as the National Association of Insurance Committees, have all been willing to coöperate, and it cannot be doubted that much good has already resulted. It is hoped, continued the Chairman, that Women's Institutes also, through the interest of their National Federation, will soon give their aid, for they are often the best means of approach to those who count most in our villages. The Girl Guide movement is also helping, and the Chairman welcomed particularly the coöperation of the rural community councils. By the help of these and other organisations, and in other ways, the Dental Board has already accomplished more than it ventured to hope for a year ago.

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[1] "Americanitis—Blood Pressure and Nerves." By William G. Sadler, M.D., F.A.C.S. New York: The Macmillan Co. 1925.

A LILLIPUTIAN GARDEN.

THE list of organisms growing in the National Collection of Type Cultures,[1] of which an account appears on p. 1086, is even more fascinating than a catalogue of garden flowers. Their sources are far afield. There are strains of *Aspergillus fumigatus* isolated from penguins, pigeons, black swans, golden eagles, water hens, flamingoes, and owls; there is one of Metchnikoff's original strains of *Lactobacillus bulgaricus;* there are strains of acid-fast bacilli isolated from guinea-pigs inoculated with butter samples in 1912; there are organisms obtained from a wilted peony, from a tuberculous terrapin, and from the spleen of a skunk which lived, and presumably died, at a skunk farm in the North of England.

It may be observed that those who take up gardening are first intent upon a show of flowers, but afterwards think nothing of such simple pleasures, but are for ever collecting, classifying, dividing, transplanting, manuring, and improving. Of all gardeners the most skilful is the bacteriologist. To him it is given to revel to the full in " the purest of human pleasures "; but whereas Bacon considered this impossible in an area of less than 30 acres, to-day it can be done (out of the wet) in 30 feet. In a small space collection, classification, division, and tender culture of all known microscopic plants is being pursued with zeal and with profit by men and women who are fortunate indeed in their choice of occupation. And the extent of their efforts may be measured by the fact that at the Lister Institute there are well over two thousand living strains, both good and bad, gathered together under one roof.

HOSPITAL ENDOWMENT BY INSURANCE.

Mr. James E. Kavanagh, a prominent official of a New York insurance company, has recently suggested a new application for the principles of insurance—namely, the endowment of universities, colleges, and hospitals. In a speech delivered in Kansas City and summarised in the pages of the *Agents' Journal and Official Gazette*, he states that the United States contain nearly 800 universities and colleges suffering from lack of financial support, only half the money for their maintenance being found by the students, the remainder being a charge upon public and private generosity. He recommends that the difficulty be removed, or at any rate lightened, by students insuring their lives on the endowment plan in favour of the institutions to which they belong. Alternatively, he suggests that they should be canvassed with a view to initiating some organised scheme under which they take out policies in favour of those institutions, the students paying the yearly premiums. Mr. Kavanagh quotes the example of a Roman Catholic educational institution which in 1900 "took out 100,000 dollars of 20-year endowment assurance on the lives of 20 students (that is, 5000 dollars each)," and by 1920 " had drawn 90,000 dollars matured endowments, 10,000 dollars in two death claims, and 5000 dollars bonus."

The idea that our hospitals, established by ancient benefactors, should now be re-endowed by the organised insurance of their medical students will no doubt be noted by those who, in strenuous competition, direct the financial fortunes of these establishments. No doubt, also, the ingenuity of the insurance companies will be equal to the task of working out details, for, as our contemporary observes, the 100,000 insurance agents in this country will not only be furthering a noble work on behalf of our hospitals and other benevolent institutions, but will also be promoting the interests of themselves and their respective offices. They must not expect too much from hospital patients, medical students, or young practitioners engaged in the first struggle to establish themselves; moreover, their chief interest is likely to lie in the educational rather than the charitable side of their medical school. These have the wish to help, but seldom the wherewithal. The idea may fructify amongst the charitably-minded members of the public to whose benevolence so many appeals are already addressed, or amongst members of the medical profession who have happily passed their first struggles and have attained prosperity. Observers of educational conditions in America have noted the remarkable sums which the alumni of a trans-Atlantic school, college, or university will contribute to the support of their *Alma Mater*. In this country it may be that the existence of ancient endowments has made the formation of a similar tradition a less obvious course. But the ancient endowments are sadly inadequate to-day.

ANTITYPHOID AND ANTICHOLERA INOCULATION IN EUROPE.

Dr. Louis Poncet, the champion in France of the medical use of Esperanto, has shown the potentialities of the " auxiliary language " in a very interesting way by his monograph on the practice of prophylactic vaccination against the typhoid group of diseases and cholera in 28 European countries.[1] The statistics were extremely difficult to obtain, and even more so to compile, including, as they do, figures attained by an exasperating diversity of methods and results calculated on widely different scales, and texts of legal enactments where the meaning was often obscure even after close study. The figures are almost certainly less than they ought to be, even in countries where notification is strictly in force, and several are missing, but nevertheless the work gives a valuable comparison both of the application and the results of these prophylactic measures in the principal countries of Europe. The countries are classed under three heads: (1) those where these inoculations have never been compulsory; (2) where they have been widely used, although not legally enforced; and (3) where they are enjoined by law. The second category contains our own country and Ireland only, while the first has some rather surprising names. Everyone knows that there is no hygienic legislation in Albania, and no one expects any great sanitary enterprise from Portugal, but it is striking that neither Switzerland nor Denmark, two of the most civilised States in the world, considers these precautions necessary. Carriers are very severely dealt with in Denmark, and in Switzerland the inhabitants coöperate with the doctors by accepting wholesale vaccination during épidemics. Norway owes its comparative immunity to the care it has taken over its water-supplies.

In Great Britain antityphoid and anticholera inoculation has always been voluntary, even in the Army and Navy, but in practice it became almost universal in both services from 1915 onwards. Even as early as 1900 most of the troops who served abroad were protected. Among our civil population, except for those employed in medicine, nursing, and sanitation, hardly anyone ever applies for vaccination, but our typhoid incidence has fallen nevertheless from 8200 in 1912 to 3800 in 1921. The Anti-Vaccination League comes in for some sharp criticism from Dr.

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[1] Catalogue of the National Collection of Type Cultures. Second edition. Published for the Medical Research Council (Special Report No. 64) by H.M. Stationery Office. Pp. 67. 2s.

[1] Vaccination Obligatoire ou Vaccination Facultative contre les Maladies Typhoides et contre le Choléra en 28 pays d'Europe. Essai d'enquête internationale par l'Esperanto. Lyon: Office Espérantiste, Rue Gerrandière, 30.

Poncet for its work in hindering the spread of these beneficial measures. In Ireland, where the hostility to vaccination is even greater, the typhoid mortality was 21 per 10,000 in 1923.

Of the countries that come under the third heading, Germany is probably the most important. Vaccination against typhoid has long been compulsory in the Army, but is still optional for civilians, though carriers are pursued vigorously and even to the point of compulsory operation. In other countries, especially in Eastern Europe, where typhoid is a serious scourge, inoculation is compulsory in times of epidemic, and permanently in the armies. The author devotes a long chapter to the progress of these measures in France, where they have always been optional for the civil population; energetic propaganda during the war induced a considerable number of civilians to undergo inoculation. He has published in full numberless orders, circulars, advertisements, and statutes from all sources, and has given every chart and table of figures it was possible to obtain.

Apart from the significance to public health of this laborious collection of statistics, they have probably real value in showing the practical use of Esperanto as a medium of intercourse in international medicine. Dr. Poncet is obviously much more interested in Esperanto than in antityphoid inoculation, and has written a lengthy chapter in its praise; but even he could hardly exaggerate the benefits that the general adoption of some universal language by medical societies throughout the world would confer on medical science.

REDUCED PRICE OF BLUE BOOKS.

SOME months ago we announced[1] an offer by the Ministry of Health to supply public authorities and medical officers with copies of the Registrar-General's statistical reviews at a reduced price. The offer was conditional on the subscription being taken up for five years and on a sufficient response. We understand that although the response has not reached the expectations which had been formed, the degree of success realised has been such as to obtain Treasury consent to the confirmation of the arrangement. Subscribers will accordingly be furnished with copies of "Tables, Part I.—Medical" and "Text" volumes of the Statistical Review for 1924 and future years within the subscription term at the reduced price of 12*s.* 6*d.* per annum. The subscription list cannot be kept open indefinitely, and the higher price will be charged to all purchasers who do not enrol themselves as subscribers before the subscription list is closed. Early application is therefore advisable on the part of those who, not having already subscribed, desire to obtain the benefit of the reduced price.

TONSILLECTOMY FOR RHEUMATIC AFFECTIONS.

THE doctrine of focal infection, as applied to the rheumatic affections, appears sometimes to have been put into practice with more fervour than discrimination, and the number of healthy teeth sacrificed on the altar of this new faith must be very large. But there is much to be said in favour of it, notably in the case of the tonsils, and a paper by Dr. Reidar Gording in *Norsk Magazin for Laegevidenskaben* for September illustrates what can be expected of tonsillectomy, when the indications for it are kept within narrow and well-defined limits. Dr. Gording's material consisted of 200 rheumatic patients, most of whom were treated at the Sandefjord hydropathic establishment. They suffered from one or other of the following forms of rheumatic disease: (1) primary, chronic polyarthritis with an insidious onset; (2) chronic rheumatism limited completely, or almost completely, to the muscular and nervous systems; (3) chronic polyarthritis secondary to acute rheumatic fever; (4) acute articular rheumatism with serous effusions which, as a rule, developed in several joints and was often associated with endocarditis. The patients in these four groups were further classified, according as there were or were not signs or a history of disease of the tonsils. There were 93 patients who belonged to the tonsillar group, and whose average age was 27 years, and there were 107 who belonged to the non-tonsillar group and whose average age was 44 years. Tonsillectomy was not attempted in this group, and it was practised with discrimination in the tonsillar group, only 40 to 50 of the patients in this group being operated on. Only in 31 of these cases was the observation period after the operation long enough to warrant drawing conclusions as to its effects. In 25 of these 31 cases the rheumatic disease had developed more or less directly after an attack of tonsillitis or peritonsillitis. In eight other cases there was a history of recurrent attacks of sore throat and abscesses associated with an exacerbation of the rheumatic condition. Only in one case was tonsillectomy performed solely on the indications afforded by an examination of the tonsils. In two cases the rheumatic disease had lasted only four months, and in four it had lasted about 15 years. The average duration of the disease was about four years. In 22 of the 31 cases the patients stated that the tonsillectomy definitely represented a turning point in their illness; in the remaining 12 cases no benefit could be claimed. In the course of a long discussion of the literature of the doctrine of focal infection, Dr. Gording points out that two courses may be followed: the surgeon may make a clean sweep of the tonsils of every patient with signs of rheumatic disease and then count up his gains; or he may follow the course pursued by Dr. Gording and perform tonsillectomy only in those cases in which a more or less definite relationship between the tonsils and the rheumatic affections can be established. At first sight the latter course might seem the most reasonable and plausible. But is it? With careful classification of all the cases before operation the wholesale procedure might well yield more valuable data than the pick-and-choose method, and that without depriving the individual patient of the chance of rapid improvement following a not very serious operation.

LIPIODOL FOR CEREBRAL LOCALISATION.

THE use of lipiodol injections for the localisation of tumours of the spinal cord is now firmly established. Prof. Sicard, who devised this procedure, has now turned his attention to the possibility of getting this opaque iodine-containing oil into the ventricles of the brain, and Rimbaud, Lamarque, and Janbon[1] have recently reported a successful application of Sicard's method to a case of general paralysis in which they obtained X ray pictures of all the ventricles. It is obvious that direct intraventricular injection of lipiodol presents too much difficulty and risk to be a feasible proposition, and Sicard's method has been to use an emulsion of cerebro-spinal fluid and lipiodol of a low density which rises to the highest point of the nervous system bathed by this fluid. The technique adopted was to perform lumbar puncture in the ordinary way with the patient sitting, and allow about 10 c.cm. of cerebro-spinal fluid to escape. A glass syringe is then fitted to the lumbar puncture needle and a further 5 c.cm. of fluid withdrawn. The syringe is detached and a stylet placed in the needle to prevent escape of the fluid, while 5 c.cm. of low density lipiodol are drawn into the syringe and well shaken until an emulsion is produced. This is then slowly injected through the lumbar puncture needle into the spinal canal. Sicard's original technique was very similar, except that his emulsion was made in a separate vessel by stirring with a glass rod. An X ray picture of the skull taken one hour after injection, during which time the patient remained sitting, failed to show any abnormal opacity, but in a second picture taken three days later definite shadows could be seen in the regions of the lateral and third ventricles. The patient showed no ill-effects whatsoever, even when leaving the hospital and taking a tram journey after the first radiograph. Encouraged by their results the authors made a second injection of lipiodol eight days later and obtained very striking radiographs at the end of 48 hours. These showed the outline of the lateral, third, and fourth ventricles, and also extraventricular shadows corresponding to the fissure of Sylvius and the insula. Such an addition to the radioscopy of the brain opens up great possibilities in the localisation of tumours and might also possibly assist in determining whether the intraventricular injection of serum is necessary in cases of cerebro-spinal fever where basal adhesions prevent the upward passage of serum injected by the lumbar route. It is also suggested that the close contact of iodine with the brain may have a possible therapeutic application in cases of cerebral syphilis.

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[1] THE LANCET, August 8th, p. 291.

[1] Bulletin de la Société des Sciences Médicales, Montpellier, September, 1925, p. 426.

UNIFORM NOMENCLATURE OF DISEASES.

A "Nomenclature of Diseases" was first issued in 1869 by the Royal College of Physicians of London, the aim of the compilers being, as stated in the preface, "to prepare a nomenclature suitable to England and to all countries where the English language is in common use." Half a century later American medicine found a similar need and the first report of the Committee on Mortality Statistics was submitted at the Cincinnati meeting of the American Public Health Association in October, 1916, and appeared in *Public Health Reports* (Sept. 22nd, 1916. Reprint No. 363). A second report was presented to the Washington meeting in 1917 (P.H. Reports, Sept. 28th, 1917. Reprint No. 440). A third report of the Committee, over which Dr. Haven Emerson presides, is before us now.[1] The natural desire of every public health administrator to see an accurate system of death certification uniform throughout the United States meets with the unsolved difficulty of the federal aims for uniformity infringing the supposed rights of the several States. When this has been adjusted the next step should be an easy one, when the Royal College of Physicians undertakes its decennial revision, due in 1928. It should then be possible, in agreement with the United States of America, to prepare a revised "Nomenclature" suitable for all the English-speaking peoples. Such a revision would concern the sectional headings as used in the table of contents to the "Nomenclature" (fifth edition, 1918), as well as the titles adopted to distinguish the several diseases. From a survey of the conclusions reached by the American Public Health Association, there should be no difficulty in bringing about agreement on one principal title. The American report includes an approval of a large number of synonyms, some of which have been discarded by the Royal College of Physicians after careful consideration. Most of the remainder of the approved synonyms may be regarded as subordinate to the principal titles and not as substitutes. The American Committee have to keep in mind the practice of the Bureau of the Census and of the various State and Municipal Registration Offices. It is the "International List of Causes of Death" which should form the basis for agreement with the next revision of the "Nomenclature" of diseases by the Royal College of Physicians.

PARATYPHOID IN SWITZERLAND.

Dr. W. Silberschmidt,[2] of the Institute of Hygiene of Zurich University, remarks that though a knowledge of paratyphoid bacilli dates back to nearly 30 years ago, when they were first described by Achard and Bensaude in France and subsequently by Schottmüller in Germany, who was the first to distinguish paratyphoid A and B bacilli, not much has been published on the subject of paratyphoid fevers in Switzerland. During the period 1920–24 340 cases of paratyphoid were notified to the Swiss federal authorities, 45 being reported in 1920, 56 in 1921, 79 in 1922, 115 in 1923, and 45 in 1924. Like other infectious diseases of the alimentary canal, most of the cases were observed in the summer and the smallest number in the first three months of the year. The value of these statistics, however, is not very great, as they are far from complete, notification of paratyphoid not being compulsory throughout Switzerland and the diagnosis often not being made in the absence of bacteriological examination. During the period 1920–24 cases of paratyphoid were observed in almost all the Swiss cantons. The most striking feature was that they were almost always isolated cases. The towns of Bâle and Zurich, however, were exceptions, as they headed the list with 53 and 31 cases respectively during the period mentioned, with a maximum of 36 and 18 in 1923. This does not mean that these two towns were more affected than the rest of Switzerland, but the larger number of notifications merely indicates that notification of contagious diseases was carried out more conscientiously and greater use was made of bacteriological examination at Bâle and Zurich than elsewhere. In the canton of Zurich bacteriological examination of the stools, urine, and blood is carried out gratuitously in all cases suspected to have typhoid, paratyphoid, or infectious enteritis, more than 800 examinations of the kind being made annually at the Institute of Hygiene. About 20 years ago an epidemic of paratyphoid caused by consumption of salt-water fish occurred at Zurich. Formerly many cases were due to consumption of meat from diseased animals, but at present, owing to stricter supervision of the slaughter-houses, the number of these cases has diminished. As in typhoid fever, contamination may take place by contact, but according to the Swiss statistics this mode of propagation is not very frequent in paratyphoid.

The second Victor Horsley memorial lecture will be delivered by Mr. Wilfred Trotter in the house of the British Medical Association on Friday, July 9th, 1926.

Rebuilding of Middlesex Hospital.—In order that the rebuilding may begin, the west wing of Middlesex Hospital will be closed in January. The governors have acquired an old Metropolitan Asylums Board infirmary in Cleveland-street, a few hundred yards away, to which the wards in the wing will be removed. This "Cleveland-street Annexe" has had to be given a new roof and new floors, to be drained and replastered, and it has now to be completely equipped as a hospital with two operating theatres and all the necessary apparatus. It will accommodate 200 patients, and as soon as they are removed the reconstruction of the old hospital will begin. About £212,000 has now been received towards the £500,000 that the work will cost.

Fellowship of Medicine and Post-Graduate Medical Association.—Mr. G. R. Girdlestone will lecture on Tuberculosis of the Spine on Monday, Nov. 23rd, at 5.30 P.M., in the Lecture Hall of the Medical Society of London, 11, Chandos-street. All members of the medical profession are welcome. The following courses begin on Nov. 23rd: Medicine, surgery and gynæcology at the Royal Waterloo Hospital; nervous diseases in the out-patient department of the West End Hospital, 73, Welbeck-street, and a late afternoon course (4.30 to 6 o'clock) for the convenience of the general practitioner at the London Temperance Hospital. On Nov. 30th to Dec. 13th the Infants Hospital will hold a special course occupying the afternoons only. The Hampstead General Hospital has also arranged a late afternoon course for the convenience of the general practitioner from Dec. 7th to 19th, covering all branches of medicine, surgery, and the special departments. There will be a course in dermatology at the Blackfriars Hospital for Diseases of the Skin from Dec. 7th to 19th. Instruction will be given in the out-patient department, and venereal clinics will be held twice weekly. A copy of each syllabus and the Fellowship general course programme will be forwarded on application to the secretary, 1, Wimpole-street, London, W. 1.

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[1] Report of the Committee on the Accuracy of Certified Causes of Death and its Relation to Mortality Statistics and to the International List. Vital Statistics Section of the American Public Health Association at its meeting in St. Louis, Mo. Public Health Reports, Oct. 2nd, 1925.

[2] Revue Médicale de la Suisse Romande, 1925, xlv., 480.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXLVIII.—CHRONIC NASAL DISCHARGE IN INFANTS.[*]

Coryza Neonatorum.

ACUTE rhinitis in infants is of importance, because this affection may produce intranasal changes with a chronic discharge. Moreover, when older children are brought to us with "chronic catarrh," which is said to have begun with "a cold in the head" at or shortly after birth, a knowledge of the varieties of coryza neonatorum assists in elucidating the pathogenesis and in suggesting suitable treatment in each case.

There are three varieties of the acute rhinitis from which an infant may suffer shortly after birth :—

1. Coryza neonatorum simplex, which is due to air-borne infection and which resembles the cold in the head of adults.

2. Coryza neonatorum blennorrhoica, in which the discharge is profuse and purulent from the onset and is caused by leucorrhœal or gonorrhœal discharge in the mother's vagina at the time of birth; the nose is infected directly or from the eye through the naso-lacrymal duct.

3. Coryza neonatorum syphilitica, the nasal symptoms of which are manifestations of the secondary stage of inherited syphilis.

At an early period of the illness it may be difficult to determine which of these affections is present. It is usually found, however, that when a healthy infant contracts coryza after birth the symptoms appear later, are less severe, and of shorter duration. In the blennorrhœal variety the onset within the first day or two of life of an abundant and persistent discharge of pus, sometimes containing gonococci, and the swelling of the nose and crusting of the nostrils are outstanding features. Snuffles may be the first and for several weeks the only sign of a syphilitic infection. Confirmatory evidence of the existence of this diathesis is supplied by the characteristic signs on the buttocks, around the anus, and at the angles of the mouth. This specific coryza differs from the other varieties also in that the nose is drier and the nasal discharge is thicker and tends more to crust.

Coryza neonatorum, whatever its origin, is always a serious ailment owing to the swelling of the lining membrane of the nose and accumulation of secretion which prevent nasal respiration. The instinct to breathe by the nose is strong and mouth-breathing is not readily adopted, so that a constant tendency to suffocation is produced. The nasal obstruction interferes also with sucking, which has to be stopped at very brief intervals to allow of breath being taken. The efforts to obtain a sufficient supply of air and food cause rapid exhaustion, and when to this are added complications in the larynx and chest owing to an extension of the inflammatory process and the low vitality of the majority of these little patients, the outlook becomes extremely grave.

The indications in coryza neonatorum are: to maintain the strength, diminish the catarrh, improve the nasal patency, guard against infection of the conjunctiva if it has escaped, and treat any underlying dyscrasia. It is necessary to act promptly. Spoon-feeding or a tube must be used. If the inspiratory efforts tend to cause aspiration of the tongue the infant must not be laid on its back. The crusts filling the nostrils should be softened with warm almond oil or paroleine and removed. The pus and mucus in the nasal fossæ should be liquefied by instilling at intervals with a medicine dropper a few minims of a warm solution of bicarbonate of soda (3 gr. to 1 oz.) or other alkaline detergent. Great care must be taken that the fluid does not reach the naso-pharynx in any appreciable amount owing to the danger of causing otitis. When the discharge is thinned it should be mopped or sucked out of the nose by means of an all-rubber pear-shaped syringe having a long tapering end. The catarrh is best treated by silver preparations. The nitrate is most in favour instilled or used as a paint (2 per cent.) and less often as an insufflation (2 parts with talc 100 parts). Argyrol (10 per cent.), protargol (1 per cent.), collosol argentum, &c., are also recommended. If obstruction is great owing to swelling of the mucous membrane the passages may be painted every two hours with adrenalin solution (1 in 10,000). Cocaine is not admissible except in weak solutions (¼ per cent.) and at long intervals, and menthol has produced fatal glottic spasm in babies. The skin of the nostrils and upper lip should be smeared with cold cream in order to counteract the tendency to excoriations and eczema.

In congenital syphilis constitutional treatment is of first importance; the local measures outlined above, or, if considered preferable, a paint of colloidal mercury or insufflations of calomel and sugar (1 in 25) may be employed. When there is tendency to dryness of the nose tampons soaked with diluted Mandl's solution (iodine gr. 3, iodide of potassium gr. 12, glycerine 1 oz.) may be introduced.

Osteomyelitis of the Superior Maxilla.

Osteomyelitis of the superior maxilla causes a variety of nasal suppuration occasionally met with. This affection in most cases sets in suddenly one to three weeks after birth, with general disturbance and unilateral local signs. Of the latter, the principal are swelling of the eyelids, cheek, alveolus, and palate on the affected side; formation of an abscess below the inner angle of the eye; and discharge of pus from the eye, nostril, and alveolus. Later, a tooth protrudes through the swollen alveolus and being loose is easily removed. Access is thus obtained to a comparatively large cavity containing pus and often communicating with the nose. This cavity is a dental sac, but it has been repeatedly mistaken for the antrum—which in early life is smaller than the sac—and the affection has been described as empyema of the antrum of Highmore in infants. Areas of bare bone may be detected in the alveolus and outer wall and floor of the nose; and during the later course of the disease sequestra are extruded. In some cases that have succumbed the whole upper jaw has been found necrosed. Metastases occasionally take place. The disease has been attributed to various causes, but the most probable is a blood-borne infection.

In the early stages of the disease special attention should be paid to nutrition of the infant in order to help it to withstand the effects of a long and debilitating illness. Free escape should be provided for purulent collections, but it is rarely necessary to incise the skin below the eye, and if possible this should be avoided. A tooth projecting through the gum should be removed. The patient may come under our care when there is merely a purulent discharge from the nose, alveolus or a sinus. Search should then be made for sequestra and their removal effected provided this does not entail a severe operation, which is badly borne and liable to be followed by disfigurement.

A. BROWN KELLY, M.D., D.Sc.Glasg.,
Consulting Surgeon for Diseases of Throat and Nose, Victoria Infirmary, Glasgow.

NUNEATON: CALDECOTE HALL.—The Centra Council of the Church of England Temperance Society announces that on Tuesday, Dec. 8th, at 1 P.M., Sir William Joynson-Hicks, Bt., will open Caldecote Hall as a home fo cases of certain types of functional nervous disorders.

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[*] An article by Mr. Brown Kelly on Chronic Nasal Discharge and Sinusitis in Children will appear in THE LANCET next week.

Special Articles.

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.

The Commission resumed its sittings, after the summer interval, on Nov. 10th, Mr. Hugh Macmillan, the Chairman, presiding.

Evidence of Sir Maurice Craig.

The first witness was Sir Maurice Craig, lecturer in psychological medicine at Guy's Hospital and hon. consulting neurologist to the Ministry of Pensions. He said he was for 15 years assistant physician to Bethlem Royal Hospital, and for a year was an assistant medical officer at the West Riding Mental Hospital, Wakefield.

Certification or Notification.—Sir Maurice Craig declared that the Lunacy Acts of 1890–91 were intended to protect the liberty of the subject, but in effect they had interfered with the liberty of persons intending to use them. Medical treatment took only a secondary instead of a primary place. No branch of medicine had been so trammelled by legal enactments as had psychological medicine, hence its progress had been slow, and many medical practitioners were shy of taking it up. In connexion with the certification of people of unsound mind the legislature had placed an obligation on the medical man which had nothing to do with medicine. Certification, indeed, he regarded as an embarrassment to medical science, as it confused the relationship of the physician to the patient, and his own view was that it was responsible for much recoverable mental disorder being permitted to become chronic before suitable treatment had been entered upon. Often mental disease was of slow development, the patient was conscious of his gradual mental failing, and dreaded that he might become insane. He needed to be reassured and have appropriate treatment early. Some medical men were afraid of undertaking treatment of these cases, the conditions attending certification acting as a deterrent. Yet it was practically unknown for a person to take action against a medical man for malpraxis when certification had not been reached. He said it was not surprising that medical men were refusing, in increasing numbers, to sign certificates of lunacy, the reason given being that they did not know what insanity, in the legal acceptation, meant. Sir Maurice Craig said the harm done by certifying patients in the early stage of their illness far outweighed any advantages. He would like to see certification abolished, at least temporarily; this would do much to bring mental disease into line with physical disease. Mental patients could be placed in three categories: (1) the willing and cooperative, (2) the passive and indifferent, (3) unwilling and hostile patients who demanded their freedom. One of the results of the temporary abandonment of certification would be, the witness considered, a large proportional increase in cases in the first category, as patients would soon find that application for treatment of their mental condition was not likely to endanger their personal liberty. Cases in this first class should certainly be treated in special hospitals or clinics, buildings which were not even in the same grounds or precincts as properly named mental hospitals. A non-volitional patient should be granted the same freedom from certification as a willing one, at least for such a period as would make possible his recovery. Patients in the third category should continue to be treated in the same kind of institution as the present mental hospital, but under some form of provisional notification or provisional certification at first. He agreed with borough or county hospitals being permitted to take voluntary patients, and added that until such time as fresh accommodation could be found the non-volitional group of cases should be admissible to those institutions without having to be certified. He favoured the perpetuation of licensed houses, and thought the willing cases should be able to go to them for treatment on their own written request without it being necessary for them to apply to the central authority for permission. Sir Maurice Craig thought it was desirable to permit, by legislation, non-volitional cases to be treated on notification only—i.e., short of certification—while the unwilling group could be under some form of provisional certification. Where patients were given the choice they usually preferred private single care; he would himself.

Mental Symptoms Associated with Bodily Illness.—He stressed the necessity of recognising the acute mental conditions which were associated with bodily illness, such as pneumonia. He would have a routine inspection of all nursing homes, ordinary and special, and would like this largely to take the place of so much inspection of the patient. At one time he did not favour this supervision being carried out by the Board of Control, as he then considered that body was too much steeped in the traditional treatment of mental disorder; but he now appreciated how much the Board had taken up modern views on the subject, and thought it was quite fitted to undertake this supervision, including cases in the early stage of mental illness. Still, he thought the medical side of that Board should be strengthened, as contrasted with the legal constituent. At Guy's Hospital there was one neurological department, and in that were included cases of early mental disorder. This did away with a reluctance on the part of patients to attend an obtrusively mental clinic. The activity of this department was steadily increasing.

In answer to a question by Sir Humphry Rolleston, the witness said he felt himself in a difficulty when he had a case of mental disease as a sequel to pneumonia, because though from the hospital standpoint the patient was regarded as primarily suffering from pneumonia and the mental trouble was secondary, that was not so in the eyes of the law. Yet it would be a very serious step to certify such patients, especially in view of the detrimental effect of the certification on their subsequent life. Asked whether he advocated a measure to afford further protection to the medical man dealing with cases of insanity, Sir Maurice Craig said he personally would not seek such a measure, because if he were charged with a wrong procedure in such a case it would merely mean he was being charged with behaving like a human being. He thought increased research would show that more and more mental states had a definite causal relationship with physical disorders. He had always encouraged the idea that mental ailments were a branch of general medicine. At the Cassel Hospital, at Penshurst, Kent, there was always a waiting-list of 40 to 50 *non-certified* cases. These cases, on admission, paid 5 guineas per week, an inclusive fee, and there were two wards at 3 guineas. The cases were followed up, and a return made to show what had happened to them.

Following a discussion on the mental condition of a man who was insane only at certain periods, the Chairman said he felt that the doctor should not be subject to be influenced by the idea that he might get into trouble for what he did; he should be able to approach a case without fear or favour, and he should be protected, always assuming that he acted in good faith. In the course of answers to further questions, the witness said that to neglect to make provision for the early treatment of mental disorder was equivalent to telling a patient who came feeling ill that the illness could not be treated until there were cavities in the lung and hæmoptysis occurred, but after that he would be treated and looked after for the rest of his life. He also had a great objection to early mental cases being placed with confirmed cases, which constituted for them a tragic outlook. He favoured the general hospital being a clearing-house, where new cases could be investigated and passed on.

Sir Humphry Rolleston suggested that if notification were substituted for certification it might only be a matter of time before the former was viewed, in the popular mind, in the same way as certification now was.

Mr. Jowitt put to Sir Maurice Craig the disadvantage to fresh patients of being placed in noisy surroundings, and the reply was that the witness was very much in favour of more single rooms; he had often wondered how patients were expected to sleep in a dormitory. He believed such noise and lack of sleep might drive a patient over the borderline.

Sir Humphry Rolleston reverted to the question of the reluctance of the profession to certify, and asked the witness whether he thought it well that there should be a specialised class of medical officer to deal with this subject, allocated to districts, as in the case of tuberculosis and venereal disease officers. Sir Maurice Craig replied in the affirmative, adding that such officer should not himself be in practice. In further replies he said he did not think any private mental home would object to revealing its balance-sheet to the Board of Control; he did not see any need to make such statement public.

The Student's Curriculum.—Questioned as to the inclusion of the study of insanity in the curriculum, witness said the desire was to get this subject recognised along the same lines as clinical medicine, though he well knew how burdened the curriculum was already. It was essential, he thought, that every medical student, on entering practice, should know something about the mind and its working, and he would accord more prominence to that, even if it were necessary to curtail something else. At Guy's Hospital Medical School courses on mental neuroses would be given, and it was hoped to proceed to a systematic study of the mind. Personally, he would have both an extended scope and some knowledge of psychiatry possessed by every qualified student.

Evidence of Dr. F. L. Golla.

Dr. Frederick Lucien Golla, pathological director of the Laboratory of the London County Council, was the next witness. He considered it desirable that facilities should be afforded for pathological research, not only in individual mental institutions, but also at central institutions, throughout the country, the latter offering assistance and advice to the smaller laboratories, and undertaking training of asylum medical staffs.

Research Facilities at the Maudsley Hospital.—That was the scheme under which London worked. He himself did his work at the Maudsley Hospital, where he had in coöperation three skilled assistants, engaged whole time. Four assistant medical officers from mental hospitals acted for a period of three months at the laboratory as a training, and the choice was determined by the medical superintendents or the assistant officer's own application. This procession of four assistants went on throughout the year. All the Wassermann and other tests for the London County institutions were done at his central laboratory. Dr. Golla said he also engaged in research initiated by himself, and supervised that done at the other asylum laboratories in the County, and suggested subjects for study at those laboratories. There was, at the Maudsley Hospital, a department for physiological psychology, for investigating the physiological concomitants of mental disturbance; they investigated the changes in metabolism occurring in association with various mental states, the reactions in those states, and, in another department, questions of more or less pure psychology were dealt with, and a record was kept of the family histories of all the cases and their coördinate relationships. All that work he regarded as of the greatest importance. He thought the ordinary medical officer should be encouraged to investigate cases; it would assist diagnosis and in the suggestion of remedies. An enormous field was opened by this work; we were definitely behind several other countries in this matter. He said that in psychology there was no such clearly cut classification of disease as in physical medicine, hence there must be means of investigating the patient himself, and the London County Council had recently effected great progress in providing these facilities. In the provinces four or five counties could be grouped for coördination with one central institution. Outside London, with the exception of Birmingham, Cardiff, and one or two other centres, there was not much research being done in mental disease. He thought medical officers should be granted adequate leave from their duties so that they might continue their studies, and time spent in research should be regarded as part of the duties of the asylum medical officer. He favoured the idea of local authorities making grants-in-aid to such institutions in the provinces. The malarial treatment of general paralysis of the insane was a good instance of a definite advance due to a modern discovery; again, true asylum dysentery, at one time very prevalent, was now practically unknown, an enormous economy in the matter of money and life.

Evidence from the Central Association for Mental Welfare.

Dr. A. F. Tredgold, Miss Evelyn Fox, and Miss F. Andrew attended to give evidence on behalf of this body, mainly concerning adolescent mental disorder, which was, they affirmed, widely prevalent and was a menace to the general state of society. These cases were not incipient, and no existing administrative provision covered them, yet they needed supervision, training, and treatment of a kind not possible in the home. The establishment of training homes for these cases was urged, where skilled treatment would be available. It was suggested that admission to such establishments, if set up, should be on the application of a parent or guardian, or in the alternative, of a local authority backed by a medical certificate that the case was a suitable one.

Mr. Jowitt questioned whether this matter was not outside the terms of reference, and following upon this an argument took place as to whether these cases really came within either the Mental Deficiency Acts or the Lunacy Acts. The Chairman thought the category was so indefinite that charity might meet the need.

Sir Humphry Rolleston asked Dr. Tredgold as to the degree of prevalence of mental disorder accompanied by misconduct, and the witness replied that the number of cases of mental disorder which had recently been met with as a sequel to *encephalitis*, chiefly lethargic, rendered the problem more acute. Sir Humphry Rolleston said he thought it possible a case could be made out for an amended Mental Deficiency Act.

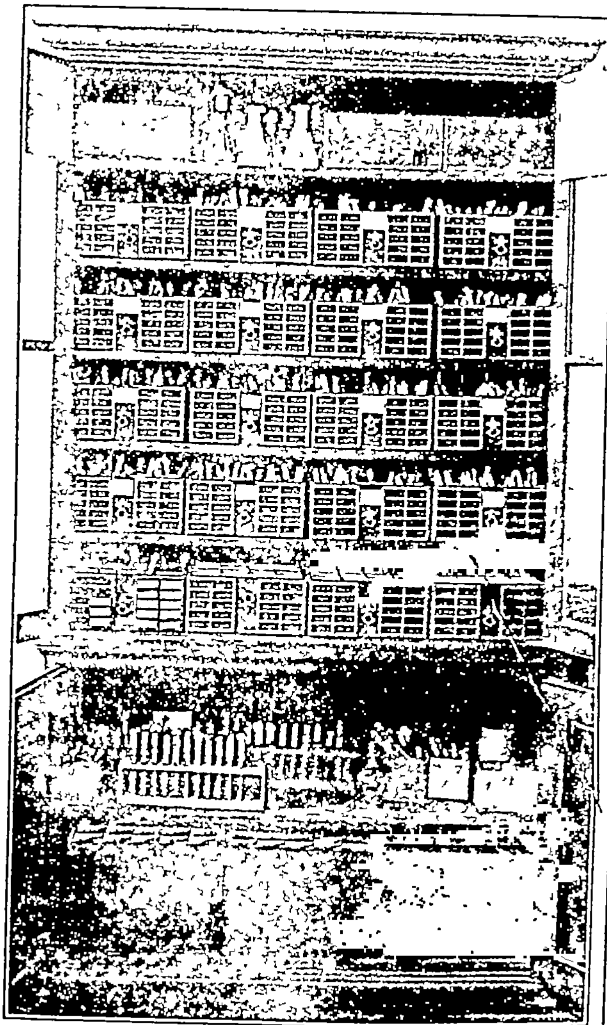
Another submission tendered by the witnesses was that there should be an adequate investigation, from the mental standpoint, of all persons criminally charged in whom there was reason to suspect mental defect.

The Commission then sat privately, and adjourned to a day to be notified.

PHILADELPHIA: ALVARENGA PRIZE.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about $300, will be made on July 11th, 1926, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but cannot have been published. The essay should represent an addition to the knowledge and understanding of the subject based either upon original or literary research. Essays must be received on or before May 1st, 1926, by the secretary of the College, 19, South 22d-street, Philadelphia, Pa., U.S.A., from whom all further information may be obtained. The Alvarenga Prize for 1925 was awarded to Dr. Raphael Isaacs, of Boston, Mass., for his essay on the Nature of the Action of Roentgen Rays on Living Tissue.

THE NATIONAL COLLECTION OF TYPE CULTURES.

IT was in 1920 that the Medical Research Council made arrangements to maintain at the Lister Institute this admirable collection of type cultures. In the past the demands of biologists and bacteriologists for an available supply of authentic strains of bacteria and protozoa had never been fully met, and the need for such a supply was particularly felt in medical research work, both for the study of principles and methods in bacteriological investigations and for systematic classification of species and strains. The Lister Institute had assisted bacteriologists at home and abroad as far as its private resources permitted and there was a certain amount of international coöperation, but conditions were far from satisfactory. The National Collection has filled the gaps. At first attention was concentrated on obtaining fully authenticated strains of pathogenic organisms, but as opportunity has offered additions have been made of those of economic importance. In 1921 it became apparent that mycologists were in need of a collection on similar lines, and by cooperation this was added at the Lister Institute. Though the mycological section is at present limited to a few hundred strains it is hoped to collect and maintain cultures of all fungi of importance in plant pathology, medicine, veterinary science, technology, and soil biology, besides specially rare or interesting species.



A cabinet in the collection of type cultures at the Lister Institute.

To keep up so large an establishment is a task of some magnitude and gives ample opportunity for research on economical and labour-saving methods of subculture. The work is so apportioned that a certain number of organisms come up for subculture every day and a diary is kept in which the dates are entered up many months in advance. There is, therefore, no fear of any organism or group of organisms being inadvertently overlooked. Some require frequent subculturing, such as gonococci, *M. catarrhalis*, *B. bulgaricus* and *acidophilus*, and anaerobic actinomyces. Others are extremely hardy, for example, *B. anthracis*, most of the anaerobes, *B. coli*, and other coliforms, *B. typhosus*, yeasts and various moulds (penicillium and aspergillus). Many of these could be safely left for a year, but in practice no organism is left more than six months without subculturing. In between these extremes there are many which are subcultured at monthly and two-monthly periods. Some species of pathogenic organisms (e.g., *B. anthracis*, *B. avisepticus*) appear to maintain their virulence for many years in artificial cultivation. Others become rapidly attenuated. At the Institute a few types (streptococci, *B. pestis*, *B. enteritidis* Gaertner, *B. tuberculosis*) are kept virulent for animals and an endeavour is always made to exalt pathogenicity on special request. Cultures of *B. tuberculosis* lose their virulence on long cultivation in the laboratory; freshly isolated strains of the bovine variety, for example, lose their virulence in about three years.

But, apart from research, such a collection requires and deserves to be used as much as possible by practising bacteriologists. The new edition of the catalogue is intended to stimulate microbiologists in this and other countries to avail themselves further of the resources of the collection and also to deposit important strains for maintenance and reference. Every effort is made to meet the needs of applicants for cultures, and help is given in identifying strains submitted for the purpose. Although the Director can only accept cultures for the collection at discretion, it is hoped that this will not deter workers from forwarding strains of even the commonest types of organism. These are useful in maintaining an adequate representation of strains of recent origin, and studies in classification are aided if large series of authentic specimens of closely related species are made available.

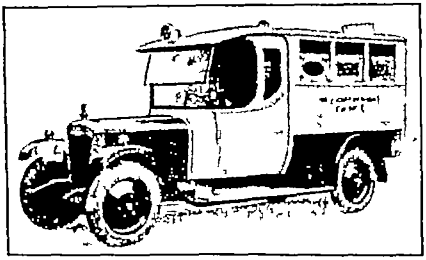
Communications on the subject may be addressed to the Curator, National Collection of Type Cultures, Lister Institute, Chelsea, London, S.W. 1.

AMBULANCES AT OLYMPIA.

ALTHOUGH the cars shown at the Commercial Motor Exhibition, held at the end of last month, were very varied, and included vehicles for almost every purpose, it was disappointing to find only six ambulances. The ambulance is one of the most highly specialised forms of motor vehicle there is; it must be fast and very comfortable, and perfectly fitted, lit and warmed, and must also be designed so that it can be readily cleaned and disinfected. Ambulances, therefore, fall into two classes. The first is designed by motor manufacturers to fit their own commercial chassis, like the Bean, the Berliet, and the Austin; the second is designed by ambulance builders to fit the largest and most luxurious private-car chassis, and of these hardly a representative was to be seen. Their advertisements are familiar to readers of medical journals, but for some reason they did not exhibit. The Pickford ambulance, on a 25/85 Daimler chassis, was the only true example, and the Talbot 25/50 was an instance of a first-class ambulance made by a motor-car firm. These are the cream-white vehicles with the musical gong that are so familiar in the London streets. The car-makers' ambulances are by no means to be despised, as, although they are not as luxurious and fastidiously equipped as the work of ambulance specialists, they are yet extremely efficient, and as motor vehicles are absolutely reliable

The Bean ambulance is designed to provide essential equipment at the lowest possible price; "extras" of every kind are listed so that the purchaser can choose just what he wants. The chassis is the 20–25 cwt. Commercial, with four speeds, and 5 in. straight-sided pneumatic tyres, and for £500 is fitted with two stretchers and a hinged seat. Heaters, wash basins, starter, headlamps, &c, are extras. The ventilation system is excellent, and the body is easily disinfected The finish is "self" coloured—i e, varnished wood panels—and the springing is very good All possible extras, including four wheel brakes and wash basin, total £90.

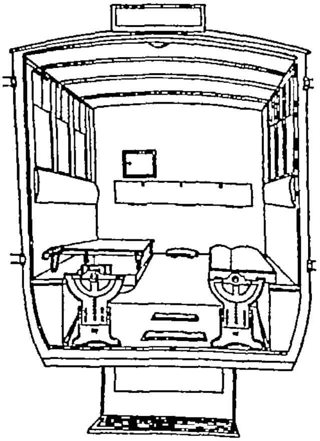
FIG 1.



The J.H C type ambulance, fitted on a 25 h.p Daimler chassis.

Automobiles Berliet fit ambulance bodies to all of their 15, 20 and 30 cwt. chassis. The model at Olympia was the 20 cwt. 15·9 h p, slightly larger than the Bean, and also varnished inside and out in self-colour. There is room for two stretchers, of which the bottom one is fitted with 12 in. rubber-tyred wheels, so that a patient can be wheeled any distance If the ambulance is intended for infectious cases the body is specially prepared with all corners neatly blocked and rounded off, and the stretchers are fitted with Dominion wire mesh, which can easily be disinfected. Four gears are fitted, and the price is £525 The body of this machine is made by Wilson and Stockall, of Bury.

FIG. 2

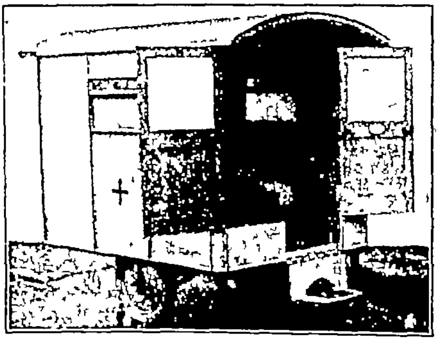


Interior of J H C. ambulance

The Austin ambulance is fitted to the well-known Austin 20 chassis, with a lowered gear ratio It is a handsome vehicle, finished in dark green, with two large frosted-glass windows on each side The top stretcher lowers with the reliable and popular parallel-ruler and worm-wheel device. The back doors expose the whole interior when open, and shut with a slam lock; there is a further safety lock to prevent theft. A sliding door can be fitted in front beside the driver if required, to facilitate the entry of sitting cases. The interior is enamelled white, with linoleum or rubber tiling on the floor, and is very fully equipped. The price is £725 at the works.

The Talbot 25/50 hospital ambulance is a splendid vehicle. The stretcher-frames are made of non-staining steel alloy, and run on rubber-tyred wheels; the stretchers can be replaced by upholstered seats with padded back-rests. The car will take two stretcher cases, one stretcher case and four sitting cases, or eight sitting cases. Two folding seats are fitted for attendants. The interior of the roof and walls is smooth-surfaced and has rounded corners, and the lower portion of the sides and floor are sheathed in aluminium. Heating pipes fed from the exhaust run under both seats. Full medical equipment is fitted, and two roof lights, roof ventilation, an electric fan, and an inspection lamp. The price is £850. The Accident type, at £785, is identical with the Hospital model, except that it is less lavishly fitted and has no heater nor fan.

FIG 3.



Ambulance trailer
By Eccles Motor-Caravans.

The ingenious "penny-in-the-pound" scheme adopted by the Sheffield Joint Hospitals Council has not only maintained the hospitals of Sheffield on an adequate footing, but has made them almost prosperous. A part of the Council's activities is the provision and maintenance of a fleet of ambulances, and they have chosen one of the most luxurious and beautifully equipped machines obtainable. The makers are E. H. Pickford and Co., Ltd, of Sheffield, who designed a type of body known as the J. H. C. (Fig 1), especially to suit the requirements of the Council The chassis is the 25/85 h p. 6 cylinder Daimler, and the cost of the ambulance, complete, is £1130, or £1030 on the 20/70 chassis. Four wheel brakes are fitted The stretcher equipment (Fig. 2) is beautifully designed Four stretcher cases can be carried, and the two top racks lower instantaneously with a special extension device which projects them clear of the back of the ambulance so that cases can be easily laid on them and swung into place, and the whole stretcher equipment can be quickly folded up to make room for ten sitting cases. Splints, utensils, and a medicine chest are included in the equipment, the whole of which can be easily taken out to cleanse and disinfect the interior. The finish is left to the customer's choice, but the model shown was in black and white. It is certainly one of the finest ambulances on the road.

Few hospitals or municipalities can afford ambulances as expensive as this, however, and many cottage hospitals and nursing homes find even the cheaper models outside their reach. For these there is a really admirable little vehicle made by Eccles Motor Caravans (Fig. 3), a trailer which, although it is only 7 ft. 3 in. by 5 ft. 6 in. by 5 ft. 9 in., will take two stretcher cases in comfort, and possesses the completest outfit down to hot-water bottles and blankets. It can be trailed at a very fair speed behind any 10 h.p. car, and costs only £135. It has automatic brakes of its own, and is beautifully finished inside and out. The "Eccles" sounds such a godsend to the small hospital that it will be surprising if it does not become extremely popular.

BERLIN.

(From our own Correspondent.)

Closed Pharmacies.

Your Paris correspondent lately complained of the drawbacks of the closure of Paris pharmacies. Things are arranged otherwise in Berlin. Until the war the pharmacies were compelled to be open day and night, Sundays and holidays included. There was always a chemist on night duty in each pharmacy who received the prescriptions through a hole in the shutters, whilst the individual fetching the medicine had to remain outside in the street. During the war, when the great majority of chemists and their assistants had joined the army, the Government, under the powers conferred upon them, ordered that of four pharmacies only one had to be open on Sundays, holidays, and at night. The other pharmacies, even when they wished to keep their shops open, were not entitled to do so. This system was maintained after the war, although there was no longer a shortage of qualified assistants to do night duty. A licensed chemist in Hanover, who tried to keep his shop open day and night, was prevented by the local police under the regulations issued during the war. He therefore brought an action against the police, pleading that the regulations had been contrary to the apothecaries law, and that they had expired with the lapsing of the Emergency Act. The High Court indeed gave a judgment that this was really the case, and that the chemist had the right of having his shop open day and night. The German Association of Licensed Chemists and the Union of Assistants, who had been very much satisfied with the state of things during the war, thereupon decided to maintain it by agreement amongst themselves. The system certainly works very satisfactorily from the point of view of the public. To save the public unnecessary trouble there is on every closed pharmacy a poster indicating the nearest pharmacies open, on a system of weekly rotation. Moreover, every medical man residing in Berlin receives in the beginning of the year from the Chemists' Association a calendar with a complete list of the pharmacies which are open by rotation at night or on Sundays. In this way there is no need for a sick person to do his pharmaceutical shopping early. It never occurs that a pharmacy described as open is actually closed, as stated by your Paris correspondent. It must, however, be considered that the licensed chemists in this country are under strict Government control, and are regularly visited by the district medical officer of health, together with a Government chemist. Contrary to the law in France, there is a "numerus clausus" for licences. A chemist after having duly qualified is not entitled to open a shop at once, but he must wait until a licence becomes vacant by the death of a licensed chemist or until the Government grants a new licence when there is a need for the increase of pharmacies. It is not legal to sell or to buy a licence; a licence may, moreover, be withdrawn by a law court in cases of grave misdemeanour. In Berlin, which has about 4 million inhabitants, there are only 380 licensed pharmacies. This number would be inadequate were there not an unlimited number of druggists, who, however, are not allowed to make up prescriptions or to sell poisonous drugs.

Medical Lectures for Working People.

Laymen frequently complain of medicine being a science which has but little connexion with the nation. This view is, however, erroneous, as shown by the fact that eminent medical men have accepted an invitation of the trade unions of the great industrial city of Essen to deliver lectures to their members. Among the lecturers are Prof. Sauerbruch, of Munich, on the surgical treatment of tuberculosis; Prof. Rubner, of Berlin, on fatigue; Prof. Thomas, of Leipzig, on the self-government of the human body; Prof. Krehl, of Heidelberg, on the prophylaxis of infectious diseases; Prof. Aschoff, of Freiburg, on the value of autopsies and of experiments on animals for the public health; and Prof. His, of Berlin, on the circulation of the blood and its derangements. The first lecture, delivered by Prof. Bier, of Berlin, on the importance of physical exercises for the prevention of tuberculosis, was very well attended. The scheme of the lectures is a good one, and will certainly contribute to inform the working people of the value of medical researches for their health. The series was opened by an introductory speech from the Chancellor, Dr. Luther, formerly mayor of Essen.

The Institute for Tropical Diseases.

The Institute for Tropical Diseases and Tropical Hygiene in Hamburg recently celebrated its twenty-fifth anniversary, representatives of the Government, the city of Hamburg, and of the medical profession being present. The foundation of the Institute was suggested by the late Prof. Koch, and it was first planned that its seat should be at Berlin, and that it should be attached to Prof. Koch's Institute for Experimental Medicine. It was, however, decided that Hamburg was preferable, because in that great port where seamen from every part of the world meet there is a greater opportunity for the study of tropical diseases and the treatment of patients. The first home of the Institute proving too small, new premises were built and opened in 1914. The premises consist of several buildings. In the main building there is the office of the medical officer of the port of Hamburg, to whom tropical diseases are notified by ships entering the port and who can therefore at once direct patients to the Institute. There is a museum of tropical hygiene, a laboratory to accommodate 50 students, and a library of 20,000 volumes, being the most complete on that subject in Germany. An animal station is connected with the laboratory, where the animals are observed after experiments performed on them. The hospital attached to the Institute has 70 beds, intended for seamen of every nation, and for Germans who have resided in tropical climates. Hitherto about 1000 medical men have worked in the Institute, and about 600 scientific publications have been issued under its auspices. It is a matter of congratulation to the city of Hamburg, which finances the Institute, that the work has been maintained even during the hard times of the inflation. In connexion with the jubilee the Society for Tropical Medicine held a meeting, Prof. Nocht, of Hamburg, being in the chair. Prof. Plehn, of Berlin, formerly of East Africa, read a paper on the development of blackwater fever. Prof. Fülleborn, of Hamburg, gave a report on researches into ascaris infection, and described the complicated mode of entry of the larvæ into the host through the intestines and the lung to the stomach, where the larvæ develop as worms. Dr. Winkel, of Java, Dutch East Indies, gave a report of the salvarsan treatment of frambœsia. By a few injections the disease is, as a rule, cured. Prof. Ziemann reported on a disease known in the tropics as gangosa, somewhat resembling frambœsia. Dr. Hoppenhauer, of Tübingen, praised the results obtained by the treatment of dysentry by yatren, which he described as the best remedy in acute and chronic cases. Excellent results have been reported from the Congo, from the British and the Dutch East Indies, from Japan, and from South America by many authors, who all agree with the extremely good action of the compound. Dr. Werner, of Berlin, spoke on the five-days' fever (febris quintana), a disease which had been observed during the war in the Balkans. Among other papers read before the congress was one by Prof. Thiel, of Leyden, on anopheles; one by Prof. Mühlens on his travels through South America for the study of malaria; and one by Prof. Zschukke on the diseases in Central America. The meeting was attended by 200 medical men who had had experience in tropical diseases.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following health statistics for Liverpool and Leeds show a great similarity. Liverpool has a higher birth-rate, while Leeds shows higher cancer and childbirth mortality. In Liverpool the childbirth death-rate is generally low, perhaps owing to the excellent lead that has been given for many years by the Ladies' Charity.

Name of city.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Liverpool ..	836,306	21·0	13·6	1·52	1·12	3·7	35	103	3·0
Leeds	471,000	18·1	14·3	1·40	1·35	3·8	39	108	3·8

Liverpool.

Dr. A. A. Mussen, the present medical officer of health, and Dr. E. W. Hope, his predecessor, produce a joint report. Only one case of small-pox occurred during the year, and about 75 per cent. of the child population are successfully vaccinated. The results of an inquiry suggested that a considerable amount of vaccination of unvaccinated children is also done within the school period. Six cases of anthrax were reported during the year. Two of the patients handled wool, three handled hides, and one looked after a machine for crushing bone. Up to 1924 nearly all the cases of enteric fever in Liverpool have been caused by *B. typhosus*, but in that year there were 24 cases caused by *B. paratyphosus*, besides 36 caused by *B. typhosus*. Most of the paratyphoid cases occurred in April and May and they had an unusual sex and age distribution. Females and persons under 15 were chiefly affected, and as none of the usual food sources of typhoid fever could be traced, it is deduced that the agent responsible is widely used but not heavily infected, and is more indulged in by children than adults.

There were 230 notifications of encephalitis lethargica compared with 111 in the previous year. The diagnosis was revised in 33 cases after admission to hospital in favour of tuberculous meningitis (eight cases), enteric fever (three cases), pneumonia (four cases), or other conditions, but there remained 180 cases with a case fatality of 19·6. The case fatality in 1923 was 32·4, and it is suggested that the decrease is partly due to mild cases being recognised. Up to the autumn of 1923 lethargic symptoms were predominant, during 1923 cerebral irritation became a more prominent symptom, and in 1924 there was a tendency to revert to the lethargic type. Prior to 1923 the disease occurred in groups with no direct association of cases, during 1923 it was widespread in the city and neighbourhood, in 1924 the area chiefly affected was a broad band of city and suburbs. Half of the 1924 cases were under the age of 20. Before this age sequelæ are commoner, whilst the mortality increases with advancing age. The Liverpool experience is exceptional in that the infectious nature of the disease is clearly demonstrated. In about 18 per cent. of the 1924 cases, and in 9 per cent. of the 1923 cases, a possible connexion with a preceding case was made out. The incubation period is usually from a week to a fortnight. A diagram shows that encephalitis and influenza are not as a rule prevalent together; but in 1924 epidemics of the two diseases occurred simultaneously. Inquiries about the condition of 94 survivors under 16 years of age showed that 37 had made a complete recovery or were but slightly affected. Of the remaining 57, 37 were attending elementary schools, 9 were absent from school, 3 had left school, 4 were in reformatory schools for delinquency, 2 in special schools, and 2 in asylums. Among the 57 the most frequent condition was alteration of the sleep rhythm, which was usually associated with a want of self-control and in extreme cases with moral imbecility. The admission of these children to asylums is not recommended, for recovery may still be possible; and it is suggested that an attempt should first be made to educate them in special classes, and that, if this fails, a residential institution may have to be considered. In view of the definite infectivity of the disease, school-children from infected houses are excluded from school for a period of three weeks.

A chart shows the death-rate in Liverpool per 100,000 from diabetes for each quinquennium since 1890. During 1890–94 the rate was 8·8, and during the next three quinquennia it was 5·3, 6·5, and 8·4. During 1910 to 1914 it was again 8·4; in the war quinquennium it fell to 7·4, and during 1920–24 it rose to 8·6. During the first six quinquennia about 120 males died, compared with 100 females, but in the last quinquennium only 75 males died, as against 100 females, and it seems conceivable that this alteration is due to insulin having a more marked effect in males. A satisfactory scheme is now in operation for dealing with all classes of blind persons, and the city council has passed a resolution recommending all corporation committees to give special consideration to the workshops of the blind when making contracts for articles such as brushes and mats. The Carnegie Welfare Institute is proving a most valuable addition to the maternity and child welfare scheme, and the present report contains photographs and a plan of this new building. Out of 20,590 births, 13,270 were attended by practising midwives and 1501 by the midwives of the staff of the Ladies' Charity; 398 still-born babies were examined by the city bacteriologist, of which 26 (6½ per cent.) were reported as probably syphilitic. There were 690 notifications of ophthalmia neonatorum during the year with three cases of damaged sight among the survivors. X ray examination has been much used for the diagnosis of tuberculosis, and the satisfactory results are shown by the facts that whilst out of 1806 admissions to sanatoria, only nine patients were subsequently considered to be non-tuberculous; cases diagnosed as negative seldom return to see the tuberculosis officer. The Seamen's Dispensary was opened in January, 1924. Though it is intended primarily to deal with venereal disease, seamen will be able to obtain advice there for other ailments, including tropical diseases, before being referred to other institutions. The number of new cases of venereal disease dealt with at the dispensary during 1924 was 428. A few years ago the Welsh sheep farmers suffered serious loss from the condemnation of their mutton at the Liverpool abattoir owing to the effects of liver fluke. The efforts of the Board of Agriculture to eradicate the disease in North Wales by spraying the pastures and brooks with chemical substances intended to destroy the water snail, which is the intermediate host of the liver fluke, have apparently been successful. The Welsh sheep now show remarkable freedom, though the Irish and Scotch sheep are severely infected. Of 3740 cows in the city cowsheds in 1924, 26 were found with tuberculosis of the udder. The bacteriological report on the examination of milk samples taken from bulk does not indicate that tubercle of the udder is getting less but rather that it is on the increase. Of samples of country milk examined during the eight years 1913–20, 6·4 per cent. were tuberculous, while for the four years 1921–24 the figure was 10·1. During 1924, 57 out of 549 " bulk " samples of country milk and 22 out of 232 " bulk " samples of city milk proved tuberculous (10·4 and 9·5 per cent. respectively).

Housing is still a serious problem in Liverpool, and the houses provided since the war have neither overtaken arrears nor met the needs of the growing population. An estimate is put forward that Liverpool is worse off now than it was at the end of 1914 by rather more than 10,000 houses.

Leeds.

Dr. J. Johnstone Jervis records the prevalence of influenza of a peculiarly malignant form at the beginning of the year. The deaths registered numbered 404, and the death-rate for the year (0·86) was the highest since the influenza years of 1918–19. During the epidemic the infant mortality-rate went up with a bound, and in the third week of February reached the phenomenally high figure of 321. The general death-rate rose to 38·4 in the first week of March and was 35·9 and 26·1 in the two subsequent weeks. Normal figures were reached about April. A good many cases ended fatally within 48 hours of the first symptoms. Some cases were removed to hospital, but as a rule too late to be of any use, and Dr. Jervis has not much faith in hospital removal for influenza complicated with pneumonia. He refers to the inadequate hospital accommodation provided for the city for non-infectious diseases. All the voluntary institutions have long lists of patients awaiting admission, whilst the Poor-law infirmaries are partially empty. The way out of the difficulty, says Dr. Jervis, is obviously to open the doors of the Poor-law infirmaries to the whole community. Atmospheric impurity in Leeds is getting less. The percentage of factory chimneys emitting dense smoke for more than three minutes during an hour's observation is also decreasing. Thus, the percentage from 1920–24 has been 12·4, 8·6, 7·1, 3·3, and 1·7. During these five years over 25,000 observations of one hour each have been made. Among 2063 cows in the city 13 cases of tuberculosis were found, in 5 of which the udder was affected, whilst the remaining 8 had generalised tuberculosis. There has been little advance in cleanliness of methods.

There were only seven (mild) cases of small-pox notified with no deaths, and Leeds also showed less increase in encephalitis lethargica than many other towns. The cancer death-rate was the highest ever recorded. The health committee have set up a special committee to inquire into the local incidence of the disease. Considerable progress has been made in the reorganisation of the tuberculosis scheme. A whole-time clinical tuberculosis officer has been appointed, and a sanatorium school for children with signs of early disease of a non-infective type has been opened at the Hollies, Weetwood. The provision of sanatorium accommodation for women and children is a matter of extreme urgency. Dr. Jervis is also of opinion that no tuberculosis scheme can be considered complete which does not find suitable remunerative employment under favourable conditions for the men and women who undergo sanatorium treatment. 993 new cases attended the 14 antenatal centres, and there were 8558 births. About 20 per cent. of the total births took place in institutions or nursing homes. The corporation have made arrangements for the provision of maternity beds at the three Poor-law union infirmaries. This scheme came into operation on April 1st and was not much used during the year. It is, however, expected that when the excellence of the accommodation becomes known the facilities will be utilised to the full. A special block at the city hospital has been opened for cases of puerperal sepsis. Cases of septic abortion and abscess of the breast will also be admitted.

The health committee have spent considerable sums during the year in providing convalescent home treatment for mothers and babies. The housing problem is as pressing as ever. Dr. Jervis points out that about two-thirds of all the deaths occur in back-to-back houses. He is unable, however, to give separate figures for the ancient and modern back-to-back houses. The modern ones, he says, are little different from " through " houses in healthiness, and this statement appears to be borne out by the figures of deaths, seeing that 77,790 of the 115,289 houses in Leeds, or very nearly two-thirds, are of the back-to-back type.

MENTAL HOSPITAL REPORTS.

Dorset finds that its mental patients are steadily increasing in number, especially the women, but *Dorset Mental Hospital* has still some of its 950 beds vacant. The recovery-rate for the year was 43 per cent. and the death-rate 7·44 per cent., a figure which, the superintendent complains, in common with so many of his colleagues, might be lower if the infirmaries were prepared to relieve the asylums of their unnecessary burden of senile cases. There was an epidemic of scarlet fever, introduced by a nurse, and over 100 persons were affected by a mild influenza epidemic in the spring. A visiting surgeon has recently been appointed and his services will be much appreciated. The dental surgeon has seen 193 patients during the year. Recent structural improvements include an automatic telephone system, a steam disinfector, and the installation of four special baths for continuous treatment. The hospital now has 70 additional acres of farm land which will be extremely helpful to the patients and organisation staff. Dorset county was one of the first to develop the important out-patient aspect of the mental work. The clinic at the Dorset County Hospital continues to flourish. The number of new cases is increasing and many patients discharged from the hospital report from time to time for advice or treatment. This is clearly a most valuable function of the clinic. The commonest type of out-patient is the anxiety neurosis. Parole is granted to 33 patients outside the hospital grounds and to 81 on the estate, and there are open-door wards and a club ward. The laboratory has been busy with routine examinations and three typhoid carriers have been detected, with the result that there has only been one case of typhoid in the hospital, whereas it used to be endemic. Investigation has been made into the urea-content of the blood in epilepsy.

Wilts County Mental Hospital has over 1000 patients under care. The recovery-rate was 27·7 per cent. and the death-rate 7·1 per cent. 44·4 per cent. of those who recovered were admitted in their first attack within three months of its onset. Almost all those discharged had a probationary period on trial and several of these were helped with a money grant. The general health during the year was good, but there were 12 cases of dysentery and two of typhoid fever, which has not yet been traced to its source. A cinematograph apparatus has been installed. The patients are encouraged to wear their own clothes, though at present only a small proportion are doing so. At present there is no laboratory.

Derby Borough Mental Hospital has had a recovery-rate of 10·7 per cent. for men and 53·3 per cent. for women, among its 400 patients. The death-rate was

8·0 per cent. and post-mortem examinations were held on all but one of the fatal cases. The general health of the patients has been good except for an epidemic of influenza. The recommendations of the "dietary" report of the Board of Control have been adopted to a large extent. Of the nursing staff, 63 per cent. on the male side and 24 per cent. on the female side hold the certificate of the M.P.A., a much higher figure than that for the country generally. Parole is allowed to a number of patients, and money allowances were granted to a few of those sent out on trial. There is at present no visiting specialist staff, not even a dentist. The borough has 42 certified mental defectives in its charge and, like so many other places, has continued difficulty in finding accommodation for urgent cases.

Roxburgh District Board of Control has published an annual report to May last. It maintains 350 patients in the asylum at Melrose. The female admissions are usually greater than the male, but this year they have been more than double. The recovery-rate was 31·8 per cent. and the death-rate 7·2 per cent. Influenzal attacks and a few cases of diphtheria were the only infectious diseases. The source of the diphtheria could not be traced. For two years in succession there have been no failures among the nurses sitting for the final examination of the M.P.A. The number of voluntary boarders shows a satisfactory increase.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED Nov. 7TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 50 (compared with 98 last week); scarlet fever, 2537; diphtheria, 1105; enteric fever, 60; pneumonia, 1010; puerperal fever, 51; cerebro-spinal fever, 11; acute poliomyelitis, 9; encephalitis lethargica, 40; dysentery, 8; ophthalmia neonatorum, 117. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 3 deaths from enteric fever, 31 from measles, 14 from scarlet fever, 11 from whooping-cough, 81 from diphtheria, and 59 from influenza. In London itself there were 9 deaths from diphtheria and 26 deaths of infants under 2 years of age from diarrhœa and enteritis.

MEDICINE AND THE LAW.

Paraldehyde as a Dangerous Drug.—Mistaken Identity.

RECENTLY an inquest was held at Hammersmith upon the body of a man whose death was attributed by medical evidence to pneumonia accelerated by the use of paraldehyde. The deceased, it seems, had been addicted to cocaine until he had become the object of police-court proceedings under the Dangerous Drugs Acts; he had then turned to paraldehyde which, as a medical witness observed, can at present be bought without difficulty and should be placed under severe restrictions. The coroner, who recorded a verdict of death from misadventure, confirmed this opinion and remarked that the evidence showed that restrictions should be placed upon the sale of all drugs of a hypnotic nature.

There was one remarkable feature of the case. The dead man, it seems, used the name Geoffrey Wentworth Malim. The Medical Directory contains an entry of a doctor of that name. It thus happened that, when the inquest was opened, it was assumed that the body was that of Dr. Malim, and more than one newspaper report appeared under the headline "Doctor as Drug Victim." The inquest was adjourned. When it was resumed the West London coroner announced that it had now become known that the dead man's proper name was Samuel Neville Appleton. The real Dr. Malim had written to say that Appleton had used his name frequently, and had caused him much trouble by running up bills in that name.

The incident has two important aspects. There is the aspect personal to Dr. Malim, who is entitled to the amplest amends which publicity can make for the injury done to him by the dead man—an injury for which the law affords little remedy. Scotland Yard, it appears, had been notified by Dr. Malim four months earlier that this imposture was being carried on. It is unfortunate that the police authorities, through whom (in part, at any rate) the identity of Appleton was established at the inquest, should not have found themselves able to take action at the time. The other aspect of the case is general. The proceedings were reported, as already stated, under headlines which inevitably suggested that a member of the medical profession had abused the facilities which have been, and must be, entrusted to medical practitioners in respect of dangerous drugs. Three years ago the Home Office inserted in the Dangerous Drugs Regulations the sentence "the prescription shall not be given for the use of the prescriber himself." Considerable feeling having been aroused in the profession, the offending sentence was formally rescinded six months afterwards. Lest there should still be a tendency to distrust doctors in such matters, it is the more essential to emphasise the fact that the recent case was not that of a "Doctor as Drug Victim."

The Services.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments have been notified:—Surg. Comdrs.: C. G. Sprague to the *Emerald*; R. Kennedy to the *Ark Royal*; H. D. Drennan to the *Yarmouth* (on completing) to the *Hawkins*, and as Fleet Medical Officer; and W. L. Hawkins to the *Yarmouth*, for passage home. Surg. Lt. W. Young to the *Ark Royal*.

Surg. Lt. L. P. Spero, R.N.V.R., to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

Maj. H. B. Kelly to be Lt.-Col., vice Lt.-Col. B. A. Craig to ret. pay.

Maj. M. Keane retires on retd. pay and is granted the rank of Lt.-Col.

Capt. R. I. Sullivan is secd. for service under the Colonial Office.

J. M. Johnston to be temp. Lt.

SUPPLEMENTARY RESERVE OF OFFICERS.

Lt. G. Marshall, late Temp. Lt., R.A.M.C., to be Lt.

TERRITORIAL ARMY.

Capt. J. L. Johnston (late R.A.M.C.) to be Lt., and relinquishes the rank of Capt.

Capt. A. R. Ross to be Div. Adjt., 56th (1st London) Div., T.A., vice Capt. G. G. B. Holroyde, R.A.M.C., who vacates that appt.

Capt. J. H. Fletcher, R.A.M.C., to be Div. Adjt., 48th (South Midland) Div., T.A., vice Capt. F. G. L. Dawson, R.A.M.C., who vacates that appt.

Supernumerary for Service with the O.T.C.: Lt. L. B. Maxwell to be Capt.

General List: 2nd Lt. A. Barr (late R.G.A.), to be Lt.

ROYAL AIR FORCE.

Medical Branch: Flight Lt. T. J. Thomas is promoted to the rank of Squadron Leader.

Flight Lt. (hon. Squadron Leader) E. A. Aldridge relinquishes his temporary commission on ceasing to be employed.

Flying Officer H. J. Henderson (temp. Lt., Dental Surgeon, General List, Army) relinquishes his temporary commission on ceasing to be employed.

INDIAN MEDICAL SERVICE.

Revised rates of furlough pay in India for regular executive officers of the I.M.S. in military employ have been announced.

Maj. W. G. Hingston is appointed Surgeon Naturalist Marine; Maj. G. Covell has been appointed temporarily to the Medical Research Department and posted to the Central Research Institute, Kasauli; Maj. S. S. Sokhey, who was one of the selected candidates for the Rockefeller Foundation Scholarship of 1922–23, has returned to India and has been appointed Medical Officer in Charge of the Biochemical Unit of the Haffkine Institute, Bombay; Maj. R. F. D. MacGregor, on return from leave, has been posted as Agency Surgeon, Bhopal; Col. R. P. Wilson, Acting Surgeon-General, has vacated his seat on the Bengal Legislative Council in favour of Maj.-Gen. R. Heard, who on return from leave has resumed his substantial appointment as Surgeon-General with the Government of Bengal; Lt.-Col. W. J. Powell, Inspector-General of Prisons, acts as Director of Public Health of the Central Provinces in addition to his own duties.

Correspondence.

"Audi alteram partem."

MEDICAL MANIFESTOES.

To the Editor of THE LANCET.

SIR,—During the past ten days I have received circular letters from two medical bodies. Each body proposes to issue a memorial or manifesto. One states that agreement will be assumed unless dissent is made. The other concludes: "If I do not hear from you by return of post I shall conclude that you are willing to allow your name to be published in this connexion." And accordingly the names of non-committed men will be attached to a manifesto to the lay press which begins: "We, the undersigned——." It seems to me that this procedure is wrong, and that if it be allowed medical manifestoes will be treated with contempt.

I am, Sir, yours faithfully,

N. BISHOP HARMAN.

Harley-street, W., Nov. 17th, 1925.

THE SANITATION OF DAVOS.

To the Editor of THE LANCET.

SIR,—As I had the privilege of representing Great Britain—if unofficially—along with Dr. Leonard Hill at the recent climatological congress in Davos, I should like to supplement the account of the climatic advantages of that place, described by Dr. Hill and Dr. Bernard Hudson in your issue of Oct. 24th, by a few remarks on its sanitation from the point of view of a medical officer of health.

On arriving there on August 13th last I was first struck by the general cleanliness and freshness of the town—a feature which I may say it has in common with most other towns and villages in Switzerland. The streets are wide, clean, well paved and drained, so that rain does not remain long on their surfaces. The hotels, sanatoria, &c., are supplied with the most modern sanitary fittings for baths and lavatories, and would satisfy the most exacting health officer. Somewhere about the commencement of 1900 the whole sewerage and drainage systems were thoroughly overhauled, and with the help of the swift mountain torrents and a good supply of water, both sewers and drains are kept thoroughly and regularly flushed. The drinking water is cool, sparkling, and most refreshing, and comes from gathering grounds in the mountains where risk of contamination is nil.

The most efficient and thoroughly up-to-date piece of sanitation I had the opportunity of examining was the system of collection and disposal of house refuse. In the first place, in 1913 Davos got a special Act of Parliament enabling the town council to acquire land, put up a refuse destructor, and provide for the collection and removal of household dust in suitable movable bins supplied by them. The working charges are provided for by levying a contribution on hotels, &c., according to the amount of household refuse removed. Non-compliance with this Act and the regulations made under it is punishable by a fine of from 5 to 50 francs.

The bins are cylindrical in form, the diameter at the top being 16¼ in., the bottom 15½ in., and the height 2 ft. 8 in. They are constructed of very strong galvanised iron, and have a tightly fitting lid, which *must* be kept closed when the bins are in use. In summer when full they are placed on a lorry which calls for them, and in winter these lorries are replaced by sledges. They are then driven to the railway station, a[illegible] special wagon and sent to the refuse destructor, attached to the gasworks in Laret, some six Eng[illegible] miles away.

From the railway the[illegible] special siding running into the destructor where [illegible]ustbins are unloaded.

The destructor is of the high temperature type with forced draught, and after removal of the lid the bin is placed in a special mechanical contrivance in which it can be easily inverted, and by pulling out a damper which replaces the lid the whole of the contents fall through an opening of the same diameter as the bin, straight into the furnace. In this process not a particle of smoke or dust can escape while the bin is being emptied. The bin is again turned upright, removed from the holder, and placed in a washer, where it is thoroughly cleansed by boiling water. This is provided by a steam boiler attached to the furnaces. The whole destructor is really part and parcel of the gasworks, and the steam raised is used in the first place for driving the machinery of the destructor, and the surplus is passed on to the gasworks to assist in driving their machinery. If there is insufficient steam to drive the destructor the deficit comes from the gasworks. The cleansed bins are returned to the town as required, and a sufficient stock is kept by the council to leave empties as the full ones are removed.

Complete combustion of the refuse is the first consideration, and suitable mechanical arrangements are made for separating the clinker from the lighter materials, as well as dealing with gases. The main point seems to me is that the dust once it is deposited in the bins only leaves them to go direct into the furnace, and, therefore, no opportunity is given for fly breeding or nuisances being created in its handling or disposal.

I am, Sir, yours faithfully,

R. KING BROWN, M.D.

Bermondsey, Nov. 7th, 1925.

PARACUSIS WILLISII.

To the Editor of THE LANCET.

SIR,—Since Thomas Willis called attention to the phenomenon in the seventeenth century paracusis has been regarded as symptomatic of oto-sclerosis unaccompanied by labyrinthine involvement. The phenomenon is of value in diagnosing fixation of the stapes and in judging the prognosis of the case. The fact that the low-tone limit is raised while high tones are unaffected in purely obstructive deafness suggests that the ossicular chain is not a mere passive pathway for the conduction of sound waves, but plays an active part in rendering low musical tones perceptible. The individual with normal hearing regulates the force of his voice by his own perception; he instinctively raises his voice in a noisy circle. This is a striking example of Sherrington's "auditory and speech reflex." An oto-sclerotic, on the other hand, does not raise his voice in a noisy railway carriage, but persists in talking in a low well-modulated voice hardly audible to a companion. He maintains this characteristic tone whether talking in a noisy circle or a quiet room. Evidently the coarse vibrations of long amplitude produced by extraneous noises fail to stimulate the perceptive mechanism of an oto-sclerotic.

The oto-sclerotic, then, has certain advantages over one who has normal hearing. The coarse vibrations of long amplitude produced by railway trains and the like fail to reach his consciousness; he calmly concentrates on his friend's talk. Knowing his disability he pays greater attention to the conversation. The normal individual instinctively raises his voice in a noisy place to the great advantage of his oto-sclerotic friend, who is not disturbed by the extraneous noises quite to the same extent. Further, the man knowing that he is talking to one who is hard of hearing the normal individual sympathetically raises the force of his voice. All these factors, working together, enable the oto-sclerotic to follow conversation in a noisy circle with ease.

I am, Sir, yours faithfully,

J. M. DAMANY, M.B., B.S.

Oxford-road, Putney, S.W., Nov. 17th, 1925.

FOOD EDUCATION SOCIETY.

To the Editor of THE LANCET.

SIR,—Our late premises are coming down, but we have been fortunate in obtaining an office in the new Mary Sumner House of the Mothers' Union, between whom and ourselves there has been in the past cordial coöperation. The expenses of removal and furnishing and of notifying the press, members, and correspondents of our change of address are necessarily considerable. The Committee have accordingly resolved to raise, as in 1909, a special fund for the purpose. Moreover, in view of the gratifying testimony received from all parts of the world, including the formation of a branch for the State of Victoria, the Committee feel that the moment is opportune for an effort to free the society from a deficit—materially reduced, but still standing at £350—which is mainly the result of its labours for the prevention of dental disease. The service to the nation thus rendered has been recognised by the Dental Board of the United Kingdom (a Government body), on whose late advisory committee the society was represented, as likewise by the President of the British Dental Association and by Sir George Newman.

The society is also urgently in need of funds to reprint such favourites as "Economical Dishes for Workers" (over 100,000 sold), "Diet for Brain Workers," "Sugar, Why Worry About It?" "The Feeding of Nurses" (edition of 1000 exhausted), and to issue fresh publications, with reports of its many-sided activities.

Donations should be addressed to the Hon. Treasurer, Sybil, Viscountess Rhondda, at the undermentioned address.—We are, Sir, yours faithfully,

HARRY CAMPBELL,
Chairman.
H. BALDWIN,
Vice-Chairman.
SYBIL RHONDDA,
Hon. Treasurer.

21, Tufton-street, Westminster, S.W. 1.
Nov. 13th, 1925.

PRE-CANCEROUS STATES.

To the Editor of THE LANCET.

SIR,—May I be permitted to supply a few additional details to the condensed report of my remarks in the course of the discussion on pre-cancerous states reported in THE LANCET of last week (p. 1022). When dealing with the changes found in chronic mastitis, and referring to the part played by the basement membrane in guiding us to form an opinion as to whether carcinoma is present in certain doubtful cases, I said:—

> "In certain cases it will be found that—perhaps in one small area—this smooth regular band or limiting membrane is absent, the clumps of epithelial cells are lying loosely in cavities and not attached to the walls . . . the border-line has been crossed and carcinoma is present. . . . In such examples as I have endeavoured to outline above in which the main part of the section consists of inflammatory tissues and only a small portion is carcinomatous, it appears to me quite evident that inflammation has preceded the new growth. Carrying the argument a step further—the above evidence points clearly to the great probability that in many instances a breast affected with chronic inflammation is in a pre-cancerous state."

It will be seen therefore that my view is that in *many instances* breasts affected with mastitis are in a pre-cancerous condition; but, if we carry things back too far, we shall be placed in the position of having to state that everyone affected with some trifling inflammatory affection is in a pre-cancerous condition, which is absurd.

As to papillomata, it is obvious that when invasion of the deeper tissues by the superficial cells has taken place, carcinoma is already established. It is the presence in some papillomata of groups of squamous cells at the base lying in masses of small round inflammatory cells that suggests a pre-cancerous stage.

I am, Sir, yours faithfully,
ERNEST H. SHAW.

Royal Northern Hospital, Nov. 16th.

THE CINEMA IN NEUROLOGY.

To the Editor of THE LANCET.

SIR,—The writer of the annotation with the above title, which appeared in your issue of Nov. 7th, is in error when he states that the films exhibited in Paris by Dr. S. Philip Goodhart "are the only ones in existence dealing (from the technical aspect) with nervous disease." On the contrary, films of an analogous kind have frequently been made and used in this country, as is well known. As a single instance, I may mention those made by Dr. A. F. Hurst during the war and dealing largely with functional nervous disease. When delivering the Croonian lectures last summer before the Royal College of Physicians I exhibited two long films devoted entirely to the technical side of some neurological conditions, and included in them were sections made by the slow-motion camera.

I am, Sir, yours faithfully,
S. A. KINNIER WILSON.

Harley-street, W., Nov. 16th, 1925.

SPIRITUAL HEALING AND MODERN MEDICINE.

To the Editor of THE LANCET.

SIR,—Will you allow me to disclaim, in the most formal fashion, any but a few slight correspondences between the remarks attributed to me in THE LANCET of last week and those which I did make at a meeting of the Hunterian Society on Nov. 9th. My remarks were read from a typescript, now before me, which, after the meeting, was in the hands of the reporters present.

I understand, however, that the impossibility of forwarding a proof accounts for a version which substitutes the words *medical* for *metaphysical*, and *material grounds* for *ratiocination*, at the same time making use of expressions and phrases never employed by me during the debate. I did not say that psycho-analysts had shown that states of mind must be held responsible for many organic conditions. I did say that, as a result of the work of the Viennese psycho-analysts, it was beginning to be believed by many that states of mind must be held responsible for many bodily disorders and for at least the functional beginnings of organic disease. The point of a remark made to me not very long ago by the late Dr. Sidney Martin is completely destroyed. The old curé in "Maria Chapdelaine" (and no old French physician) said that while the doctors do what they can, only God understands diseases. He did not say that only God understands humanity. I said that longevity is marked and the standard of physical health extremely high amongst the Quakers; I did not say that the standard of health was nowhere so high as amongst the Quakers.

More importantly: I did not say that a belief in miracles was essential to the doctor's art. I said that the conception of miraculous healing, whatever the historical evidence, is as necessary to our philosophy of the healing art as is our knowledge of the reparative power possessed by the salamander or newt. Above all, far from saying that the miracle of healing represented the manifestation *in ourselves* of a certain power, I said that it represented, for the physician, the manifestation, *in the Absolute*, of a certain power!

There are many other errors and misleading paraphrases of my remarks in this report; may I beg, therefore, for lenient consideration at the hands of your readers?

I am, Sir, yours faithfully,
F. G. CROOKSHANK.

Wimpole-street, W., Nov. 10th, 1925.

*** Our reporter's claim to have given a very fair account of Dr. Crookshank's general attitude is supported by others who were present.—ED. L.

DEFECTIVE ILLUMINATION IN RELATION TO EYESIGHT.

To the Editor of THE LANCET.

SIR,—In an annotation with this title in your issue of Nov. 7th, referring to a bulletin issued by the United States Public Health Service, appears the rather contradictory comment:—

> "We find no evidence that defective illumination is in itself a cause of permanent injury to the eyesight. . . On the other hand, there is plenty of evidence . . . that work for the eyes under defective illumination involves fatigue, and that this may cause permanent injury to 'weak' eyes."

Is this not rather quibbling with the original cause? It is quite possible that the only effect of defective illumination on good normal eyes might be fatigue, but even fatigue alone connotes lowered resisting power, and again how many eyes are normal? There is not an atom of doubt that defective illumination does accentuate eyestrain, such eyestrain being possibly produced by a very small amount of astigmatism or anisometropia or imbalance (not unbalance) of the muscles. The end-result of such a condition may show itself as (*a*) local disease of the eyes owing to lowered resistance to germs, some of which are always present producing some form of conjunctivitis, or even deeper trouble, such as cyclitis or even iritis; (*b*) general effects of eyestrain, due to loss of nerve energy, manifesting itself in headaches, insomnia, indigestion, &c. I look upon the recent improvement in the illumination of public buildings, offices, &c., as one of the very important methods of "preventive medicine."

I am, Sir, yours faithfully,
ERNEST CLARKE.

Chandos-street, W., Nov. 16th, 1925.

⁂ The harmfulness of defective illumination is agreed; it is surely of more than verbal interest to determine precisely how the harm is done. We do not share Mr. Clarke's objection to the American use of the word unbalance.—ED. L.

X RAYING OF TEETH.

To the Editor of THE LANCET.

SIR,—The letter from Sir Gould May in your issue of Oct. 31st raises two important points, on which, as a dental surgeon, I should like to comment. The two points are these: the value of radiographs of the teeth and reports based on the radiographic findings, and the significance of dental sepsis as a factor in general disease.

Concerning the first. Sir Gould May suggests very plainly that either radiographs of the teeth and jaws have little diagnostic value or else that the reports made by radiologists are made with so little judgment and knowledge that no reliance can be placed on them. I do not suppose that it is intended, but the letter could be read as though it were a reflection on the bona fides of radiologists. A dental radiograph, like that of any other part, is a shadow photograph in two dimensions of solid structures. Fallacies may arise which are due to distortion, though they may simulate a pathological condition, such as the appearance of the mental foramen which has before now been mistaken for apical rarefaction. There are also fallacies due to the technique which can mislead the unwary. A competent radiologist should, however, be able to eliminate such errors, and I doubt if many reports contain inferences which are based on an actual misinterpretation of the films. The report which accompanies the radiograph is not a diagnosis of the pathological conditions of the teeth and jaws, and never can be. It is an aid to diagnosis, and often of great value. Two factors go to the making of a good report of a dental radiograph—a sound technique and a thorough knowledge of the normal anatomy of the teeth and jaws, as well as of their pathology. Radiographs may be taken by radiologists who are medical practitioners, by dentists who usually limit themselves to dental radiology, though by training and usually by experience they are familiar with dental surgery in its clinical aspects; and by radiographers who have no medical qualification and whose knowledge of the anatomy and pathology of the teeth and jaws cannot be very extensive, though their technical achievements are frequently of a high standard. All three may take dental radiographs of great technical excellence, though candour compels me to state that not infrequently I have seen dental films taken by general radiologists so distorted that no report of any value could possibly be based on them. (This is not to be taken as a reflection on radiologists or as suggesting that only dental radiologists should take dental films.) Reports on films, however, vary much in their value. To the dentist familiar with the teeth they may add considerably to the value of the films or they may add nothing. Obviously the greater the knowledge of the anatomy and pathology of the teeth on the part of the radiologist, the better is his report likely to be. To the dentist the radiograph will always be of more importance than the report, for he should be in a position to interpret the films for himself, though I cannot agree with those dentists who tacitly regard the radiologist's report as unnecessary and without practical value.

Sir Gould May infers that the reports invariably state that disease is present. Does he think that radiologists have fallen into the habit of doing this as a routine, whether the films justify it or not, much as some osteopaths are said always to find displacement of the vertebræ? It must be remembered that when a patient is sent to have radiographs taken of the teeth there is generally primâ facie reason to suppose some degree of dental infection. But the real point is the degree of value attaching to a radiograph. It is an aid to diagnosis only. A diagnosis of the dental condition should be based on *all* the data available. It involves a clinical examination by a dentist with all the methods at his disposal. Among these radiography is of considerable value, but only when taken in conjunction with the clinical examination. Every dentist knows that a careful examination of the mouth may reveal more than a radiograph, though conversely the latter may reveal what a clinical examination is unable to detect. But often radiography is used as the only method of diagnosis, and hence, I believe, arise the difficulties to which Sir Gould May alludes.

It is becoming an increasingly common practice for doctors to send their patients direct to the radiologist for a film of the teeth. Armed with the radiologist's report, plus what he may discover (or imagines he discovers) by a casual inspection of the mouth, he will often condemn the teeth in advance and then send the patient to a dentist with a statement of what he considers should be done. I submit that this is the incorrect procedure, and must inevitably lead to blunders. The proper way would be for the doctor, who has reason to think that the patient's dental condition may be related to some ailment elsewhere, to send the patient first to his dentist with a request that the latter should investigate carefully the dental condition and report thereon to the doctor. The dentist will obviously get all the data available, including so valuable a procedure as a radiograph. His conclusions as to the conditions present, their pathological significance, and the best treatment to be pursued, may not be infallible, but they will be based on all the evidence instead of a part only. The doctor and dentist should work together as members of a team who have the common aim of desiring to better the bodily condition of their patient. This might not be always feasible, but often it could be done and it would be far preferable to rely on the imperfect evidence of radiography unbacked by the all-round examination of the dentist.

As to Sir Gould May's other point, the rôle of dental sepsis in disease, this is a vast subject. Admitting that the hypothesis of focal infection may have been pushed to too extravagant a length by some, yet there is a wealth of evidence to show that dental sepsis is often a potent factor in leading to a widespread train of diseased conditions elsewhere This in itself is a justification for the interest taken in this subject, though it does not justify a belief that extraction of the teeth is a panacea to be applied in every case of disease elsewhere

I am, Sir, yours faithfully,
Wimpole-street, W, Nov 14th, 1925 A. T. PITTS.

To the Editor of THE LANCET.

SIR,—It seems to me the real point at issue is not whether teeth should or should not be examined by X rays, or any other rays, but what use will be made of the information obtained I have had much to do with Americans; they believe they can see further through a stone wall than most people, and have therefore a strong predilection to prophesy what they think is going to happen, and then to suggest treatment for the disease which will be present later on rather than to consider the complaint before them. In a consultant this power of provision is invaluable; in the general practitioner it is very dangerous. For simplicity may I illustrate? My wife went to a dentist, who told her she had pyorrhœa and must have her teeth out. I gave her some quinine and sulphuric acid mixture, and sent her back in three months to have a tooth filled, when the pyorrhœa was gone. By all means use all these new powers we possess, but let us not forget to cure the patient I am astonished at the number of people I meet who have no teeth, and yet are still suffering from the disease for which the teeth were extracted; in some cases simple medical remedies have removed the trouble. Cure of the patient should be our object rather than the diagnosis of disease, which is not always possible and is of little interest to the patient. Diagnosis is of great interest to the doctor, but the extraction of all the teeth is a method of diagnosis which is being carried too far to-day.

I am, Sir, yours faithfully,
Bournemouth, Nov 16th C G S BARONSFEATHER.

DIALACETIN IN EPILEPSY —Dr C Worster-Drought writes to correct the dosage of dialacetin in epilepsy contained in his letter which appeared in THE LANCET of Oct. 24th (p 802) The dose of dialacetin should read: ½ to 1 tablet either at night, or twice daily, and not 1¼ gr. as stated. Each tablet of dialacetin contains 4 gr. of allylparacetaminophenol and 1¼ gr of dial. The dose in epilepsy, therefore, is 2⅝ to 5¼ gr. of the combined substances at night only in nocturnal cases, and twice daily in others.

DONATIONS AND BEQUESTS —Mr. W L Bowles, of Cardiff, has given £1000 to endow a bed at the Cardiff Royal Infirmary to commemorate his seventieth birthday —Sir Robert Appleby Bartram, of Thornhill Park, Sunderland, has left by will £5000 to the Sunderland Royal Infirmary, and £3000 (additional) to the Sunderland Royal Infirmary for the Children's Hospital.—The West Riding Coalowners' Association has given £25,000 to the Leeds University Appeal Fund —Mr E. G Bates, a former member of the Croydon Council, has given another £1000 for the pension fund for the blind which bears his name Mr Bates started the fund in 1919 with £3000, and has added to it since The capital invested is now £8000 —Lady Rebecca Inglis, of Reigate and Bath, who left estate of £70,801, directed that her jewellery be sold and the net proceeds given to the Throat and Chest Hospital, Golden square, London. She also left £1000 to the Reedham Hospital for Children, and £1000 to Dr William Stanley Melsome, her medical attendant at Bath. After other bequests, the residue of her property—which will amount to about £50,000—to be equally divided between St. Dunstan's Hostel for Blinded Sailors and Soldiers, St. George's Hospital, the Middlesex Hospital, St. Bartholomew's Hospital, the Hounslow Hospital, the Reigate and Redhill Hospital, the Royal Blind Pension Society, the Royal Hospital for Incurables, the Orphan Working School, the Infant Orphan Asylum, and the London Orphan School, Watford —The Refuge Assurance Company, Limited, has sent a cheque for £1000 to the Lord Mayor of Manchester for the Manchester Cancer Research Fund —A cheque for £1517, the proceeds of a pageant in the Stretford area of Manchester, has been given to the Basford House Hospital, which will be officially opened in March next year.

Obituary.

JUAN GUITERAS.

THE death has occurred in Cuba of Prof. J. Guiteras, an authority on yellow fever and other tropical diseases, in his seventy-fourth year.

PROF. GUITERAS.

Juan Guiteras y Gener was born at Matanzas in Cuba in 1852. After being educated in Cuba he went to the University of Pennsylvania and became M D. and Ph D. in 1873. After six years as resident and visiting physician at the Philadelphia Hospital he served for ten years in different parts of America in the Marine Hospital Service. Later he became professor of pathology in the University of Pennsylvania, and in his writings and teaching laid especial and uncommon emphasis on the necessity for looking at pathological processes from a physiological viewpoint. From 1900 onwards he occupied the chair of general pathology and tropical diseases in Havana University, which was the first chair of its kind in America, and in 1909 became Director of Public Health of Cuba and President of the National Board of Health. Guiteras's name is chiefly associated with the campaign against yellow fever. He served as expert adviser in all the epidemics of this disease in the United States since 1881, and it was he who established the importance of yellow fever in children and of benign cases in propagating epidemics. He confirmed experimentally the work of the American Commission on the transmission of yellow fever by the mosquito, and by his active propaganda was able to win agreement for C. J Finlay's original thesis that the disease was actually transmitted by the bites of the insect. On the staff of General Shafter in the Santiago campaign of 1898 he did good service, and was later given scope for his work under the Yellow Fever Commission set up by the International Health Board of the Rockefeller Foundation. The success of the antimosquito measures which he advocated in Cuba is shown by a decrease in the death-rate from yellow fever in Havana from 81 per 1000 in 1870, for instance, to nil in 1909. Guiteras's attention was, however, by no means confined to yellow fever. He was the first to demonstrate *Filaria bancrofti* in the United States and ankylostomiasis in Cuba. His wide interests and pioneering spirit were shown by his publication, in collaboration with Emilio Martinez, of the *Revista de Medicina Tropical*, which was the first journal of tropical medicine in the continent of America and the second in the world Prof. Guiteras was a vice-president of the Association of Health Officers of North America, and was also well known in the United States for his interest in the political position of his native island. He was a cousin of the late Dr Ramon Guiteras, urologist, of New York.

PROF. PAUL HEGER.

A GREAT physiologist and a distinguished Belgian savant has passed away by the recent death, the sad result of a motor accident, of Dr. Paul Heger, professor in the Faculty of Medicine of Brussels University. He was born in Brussels in 1840 and was the son of Prof. Constantin Heger, the friend and teacher of Charlotte Brontë.

Dr. Heger studied medicine in Brussels, and having graduated as M D. began practice in his native city, directing his attention more particularly to the study of nervous diseases Amongst his patients was

Mr. Ernest Solvay, and it was largely at his instigation that Dr. Heger relinquished the practice of medicine and resolved to devote himself to physiology. To this end he studied in Leipsic under Prof. Carl Ludwig in the mid-seventies and while there devoted special attention to the perfusion of blood through surviving organs, the particular problem he studied being perfusion of blood through the excised liver to determine to what extent nicotine was absorbed by the liver cells. He was appointed professor of physiology at the University of Brussels, a post which he held until 1907. In 1899 he became director of the physiological institute, which had been erected at the expense of Mr. Solvay in the Parc Léopold—an institute which was a veritable crystal palace, so excellent was the natural lighting. There he and his pupils carried out important work, and many of his researches were published in the *Archives Internationales de Physiologie*, of which he was joint editor with Prof. L. Fredericq, of Liège. On his retirement from the active pursuit of physiology he was appointed honorary professor and president of the University. During the war he took a leading part in the organisation of the medical equipment of the Belgian Army and busied himself in clinical work in the city of Brussels, where he was president of the clinic to which Miss Edith Cavell was attached, and it was he who brought her body to England.

Tall, erect, and of striking personality, Heger was adored by his pupils and assistants and beloved by all who knew him. He had a wonderful and entrancing power of graphic exposition of a subject, the problem in hand seeming to unroll itself with perfect lucidity. When, in 1912, the British Association met in Dundee, Prof. Heger was one of the foreign men of science on whom the University of St. Andrews conferred the degree of LL.D. His wife, who died several years ago, was the daughter of a banker in Brussels. He is survived by a son, who has made for himself a distinguished position in medicine in Brussels, being specially interested in medico-legal medicine.

GEORGE REID, O.B.E., M.D., C.M., D.P.H. ABERD.

Dr. George Reid, formerly medical officer of health to the Staffordshire County Council, died at Stafford on Nov. 7th at the age of 71. He was born in Aberdeen and studied medicine at the University of his native city, graduating M.B., C.M., in 1875, and M.D. in 1881. In 1890 he obtained the D.P.H. Aberd. and was appointed medical officer of health for Staffordshire County Council, an office which he filled for 32 years. Upon his retirement in 1922 he was appointed consultant medical officer to this county, which post he held at the time of his death. Dr. Reid also acted as school medical officer for Staffordshire, medical officer to the Staffordshire, Wolverhampton and Dudley Joint Committee for Tuberculosis, medical officer to the South Staffordshire Joint Small-pox Hospital Board, and examiner in State medicine to the Universities of Cambridge and Birmingham.

At the beginning of Dr. Reid's term of service to the county, Staffordshire had an unenviable record as regards the disposal of human excreta and refuse. Dr. Reid set his face firmly against pollution of rivers and streams, and under his direction the Public Health Committee of the council were successful in persuading the local authorities to disburse nearly two million pounds in schemes to purify the Staffordshire waters. The effect was soon apparent in a reduced typhoid mortality. The experiment in biological treatment of sewage at Hanley attracted much attention, and in 1906 he gave evidence before the Royal Commission on Sewage Disposal with reference to bacterial filtration of sewage, the outcome of which was the erection, at the instance of the Commission, of works to establish Dr. Reid's conclusions. He served also on the Departmental Committee on the use of lead in pottery which sat for two years and reported in 1910. He was early in the field with a scheme for the control of ophthalmia neonatorum. Dr. Reid was the author of a valuable text-book on "Practical Sanitation," which first appeared in 1892, with the primary intention of guiding sanitary inspectors in their work. Successive editions of this book, up to the twentieth in 1921, registered the progressive outlook of a public sanitary department. Dr. Reid was the originator of the Staffordshire or pavilion-type of elementary school building, which has been extensively adopted in this country and abroad.

Dr. Reid was at one time president of the Society of Medical Officers of Health, and while holding this office he was associated with Sir Alfred Keogh, then Director-General of the Army, in organising the sanitary services of the Territorial Forces, and he was one of the first sanitary officers to be appointed with the rank of Major. In this capacity he served with the forces at the outbreak of war.

Dr. Reid, who was predeceased about a month ago by his wife, leaves a son and a daughter.

Medical News.

UNIVERSITY OF OXFORD: LECTURESHIP IN EMBRYOLOGY.—The University of Oxford has accepted a bequest by Mrs. Constance Jenkinson for the endowment of a lectureship in comparative and experimental embryology in memory of her husband, John Wilfred Jenkinson, of Exeter College, who was killed in the war.

UNIVERSITY OF CAMBRIDGE.—Applications are invited for a Pinsent-Darwin Studentship in Mental Pathology. The studentship is of the annual value of about £200 and is tenable for three years in the first instance. The student may be of either sex and need not be a member of the University of Cambridge. He shall engage in original research in Cambridge or elsewhere, but may, subject to the consent of the managers, carry on educational or other work concurrently. Further particulars may be obtained from the Registrary of the University of Cambridge, and applications for appointment should be sent before Dec. 1st, 1925, to the secretary, Pinsent-Darwin Studentship, Psychological Laboratory, Cambridge. This studentship was founded in 1924 by the benefaction of Mrs. Pinsent and Sir Horace and Lady Darwin for the purpose of promoting research into any problem which may have a bearing on mental defects, diseases, or disorders.—The Managers of this Studentship announce that they have given a grant to Miss M. F. Bridie of Birmingham, in order to facilitate her investigations as to the effect of education among the mentally deficient.

UNIVERSITY OF LONDON.—The extensions to the Department of Physiology at King's College have now been completed, and were formally opened on Nov. 6th by Emeritus Professor W. D. Halliburton, F.R.S. A reception was held in the new laboratories at which were present many well known physiologists and biologists. The new building will provide facilities for experimental research, for the teaching of advanced practical mammalian physiology, and a professor's room. In addition, the rooms formerly occupied by the Bacteriology Department have been taken over for biochemistry, the provision of animal and polarimeter rooms, and for a staff room and library. The reception was followed by a public inaugural lecture on Science and Culture by Mr. Julian Huxley, who has recently been appointed to the Chair of Zoology at King's College, in succession to the late Prof. Arthur Dendy, F.R.S.

St. Thomas's Hospital.—A lecture on the Earlier Inhabitants of London will be delivered by Prof. F. G. Parsons in the Governors' Hall, St. Thomas's Hospital, at 5 P.M. on Friday, Dec. 4th. During the lecture, which will be illustrated by lantern slides, skulls of the various people mentioned will be shown. Admission is free, without ticket.

Charing Cross Hospital Medical School.—The twelfth biennial Huxley Lecture on Recent Advances in Science in their Relation to Practical Medicine will be delivered by Sir Oliver Lodge, F.R.S., on Thursday, Dec. 3rd, at 3 P.M., in the Out-patients' Hall of the Hospital. Admission free (to medical men), without tickets.

A course of two lectures on the Efficiency of the Heart and its Measurement will be given by Prof. Yandell Henderson (Professor of Applied Physiology in Yale University) in the Physiology Theatre, University College, Gower-street, London, W.C. 1), on Nov. 30th and Dec. 1st, at 4.30 P.M. At the first lecture the chair will be taken by Prof. E. H. Starling, F.R.S. Admission free, without ticket.

The Schorstein Memorial Lecture will be delivered by Sir Humphry Rolleston on Dec. 4th, at 4.15 P.M., at the London Hospital Medical College on Lymphadenoma.

UNIVERSITY OF MANCHESTER.—The Knight Travelling Fellowship in Psychological Medicine has been awarded to Mr. L. C. Chevens, M.R.C.S. Eng., L.R.C.P. Lond., D.P.H. Manch., assistant medical officer in the Cheshire County Mental Hospital, Macclesfield.

UNIVERSITY OF GLASGOW.—The degree of doctor of medicine (M.D.) was conferred on the following candidates on Nov. 11th:—Hugh S. D. Garven, B.Sc., Ch.B. (with honours); Charles M. Smith, M.B., Ch.B. (with high commendation).

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—As the result of the Final Examination, held from Oct. 6th to 29th, the following candidates were approved in the subjects indicated, but are not eligible for diplomas:—

Medicine.—B. W. Alexander, St. Bart.'s; R. E. Barrett, London; H. L. Belcher, Guy's; E. I. Bieber, Liverpool; Hilda M. P. Bond, St. Mary's; R. Broomhead, Leeds; P. R. Buckton and J. C. K. Chilcott, King's Coll.; J. H. Chitty, Guy's; Olive C. Crowley, Charing Cross; T. W. Davies, Cardiff; T. E. Davies, St. Thomas's; Elaine O. H. Earengey, Univ. Coll.; R. Edmondson, Manchester; J. A. Eyres, King's Coll.; R. A. Fitzsimmons, Charing Cross; Rachel D. Fox, Royal Free; J. Freudenheim, Charing Cross; S. C. Gawne, Liverpool; P. J. Gonsalves, Guy's; R. M. Greenop, King's Coll.; H. L. Groom, Univ. Coll.; A. A. M. Groot, Leiden and Westminster; B. Guyder, London and King's Coll.; Kathleen M. Halloran, Calcutta; K. A. Hamilton, St. Bart.'s; H. G. Harvey, St. Thomas's; G. F. Henderson, Univ. Coll.; T. H. Hobbes, St. Bart.'s; J. E. Howard, St. Mary's; Mary H. McC. Huggett, King's Coll.; B. D. Jain, Charing Cross; Edith M. Little, Katharine G. Lloyd-Williams, and Marjorie Low, Royal Free; Elsie Lyon and Margaret B. MacDonald, Charing Cross; C. L. M. McElligott, St. Thomas's; Evelyn T. D. Maclagan and Mary A. Marshall, St. Mary's; E. H. Moir and J. F. C. Morton, St. Bart.'s; E. R. Owen, Liverpool; B. N. Palnitkar, London; J. G. Paley, St. Bart.'s; H. A. Picton, Birmingham; D. C. Price, St. Bart.'s; E. K. Pritchard, St. Thomas's; Henrietta Procter and Muriel A. Pugh, Charing Cross; J. H. Randall, Univ. Coll.; Margaret G. P. Reed, King's Coll.; H. G. St. M. Rees, Cardiff; R. P. Ross, King's Coll.; D. W. Seth Smith, St. George's; W. D. Sheldrake, Guy's; Nancie A. Simmons, Charing Cross; Beryl M. Stevens, Royal Free and St. Mary's; R. D. Summers, London; E. M. Town-Jones, Leeds; Mary M. Tulloch, Charing Cross; Aimee A. L. Vaillant, Charing Cross and Liverpool; H. D. Weatherhead, St. Thomas's; Gwendolen I. Wilkins, Royal Free; Beatrice A. Wilkinson, King's Coll.; Jane C. Williams, St. Mary's; J. E. B. Williams, Univ. Coll.; J. H. Williams, Cardiff; and Eileen C. Wise, King's Coll.

Surgery.—C. E. Allen, Guy's; F. J. Bach, St. Bart.'s; M. Behr, Middlesex; H. L. Belcher, Guy's; R. H. Bettington and M. S. R. Broadbent, St. Bart.'s; G. H. Brown, Liverpool; H. A. Bulman, Middlesex; A. Byrne-Quinn, St. Thomas's; H. A. Byworth, St. George's; G. P. Chandler, A. L. Canby, and R. Childs, St. Thomas's; J. H. Chitty, Guy's; Violet H. Comber, Univ. Coll.; A. R. Connell, St. Thomas's; F. R. Corfe and J. B. Crabtree, St. Bart.'s; B. B. Dalal, Univ. Coll.; L. Dass, Middlesex; S. T. Davies, Univ. Coll.; A. C. de Souza, Middlesex; T. S. Dewey, St. Thomas's; R. P. S. Edden, St. Mary's; D. C. McC. Ettles, Guy's; S. H. Evans, Sheffield; B. Fink, Manchester; E. L. Fothergill, St. Thomas's; W. L. Gilliard, St. Bart.'s; A. P. Gorham, Bristol; C. R. M. Greenfield, St. Bart.'s; T. R. Hill, Guy's; W. S. Hinton, St. Bart.'s; F. R. How, St. Thomas's; N. C. Hypher, London; R. J. Isaac, St. Mary's; K. N. Isherwood, Leeds; T. Jones, Cardiff; F. J. L. Lang, St. Mary's; F. W. Law, Middlesex; J. R. E. Lee, Liverpool; H. P. Lehmann, St. Bart.'s; E. A. Lewis, St. George's; P. C. K. Lewis, Birmingham; R. A. V. Lewys-Lloyd, St. Bart.'s; G. F. H. McCormick, Univ. Coll.; E. H. Mackenzie, St. Thomas's; A. R. Marsh, Guy's; I. O. Martin, Cardiff; S. R. Matthews, Middlesex; W. Mayne, Guy's; C. A. L. Meredith, Middlesex; H. L. Milles, King's Coll.; J. Mintzman and E. F. Morton, Middlesex; A. H. Musgrove, Guy's; H. P. Nelson, St. Bart.'s; C. S. Netscher, St. Mary's; D. A. Newbery, Guy's; C. B. Nicholson, Middlesex; J. R. P. Norman, Birmingham; C. E. Ogden and R. Okell, St. Bart.'s; Maud Palmer, Royal Free; S. C. St. G. C. Parry, Middlesex; W. E. Parry and P. H. Perkins, London; R. K. Phillips, Bristol; N. R. Pooler, St. Mary's; J. H. Randall, Univ. Coll.; W. H. G. Reed, King's Coll.; L. A. Richardson, St. Thomas's; O. Richardson, St. Bart.'s; J. H. Ripka, London; L. Roberts, Middlesex; G. E. Rowan, St. Thomas's; E. B. Rudalsky, Guy's; S. F. Saint, London; J. W. Schabort, Guy's; G. Scheuel, Westminster; J. W. Schofield, Middlesex; J. A. Screech, St. Thomas's; M. Shlosberg, Manchester; D. P. Simpson, St. Bart.'s; J. F. Simpson, St. Mary's; B. Singh, Leeds; W. S. Slater, Manchester; E. V. Slaughter, Middlesex; Beatrice G. Smith, Univ. Coll.; C. E. R. Stephenson, St. George's; Dorothy S. Tait, St. Mary's; M. Taylor, Charing Cross; J. G. T. Thomas, St. Mary's; G. O. Tippett, St. Thomas's; H. Walden, Leeds; N. Wassif, Charing Cross; Janet Welch, Royal Free; J. G. Wisley, St. Thomas's; J. I. Williams, Middlesex; H. Williamson, King's Coll.; J. Wiseman, Guy's; H. R. Youngman, St. Thomas's; A. M. M. Zeiwer, St. George's; and A. B. Zimbler, Middlesex.

Midwifery.—P. W. A. Agnew, St. George's; M. T. Aung, Guy's; J. D. Bailey, St. George's; G. N. Beeston, Charing Cross; V. C. Benson, Guy's; R. H. Bettington, St. Bart.'s; Hilda M. P. Bond, St. Mary's; J. D. Borham, Middlesex; K. J. Box, St. Thomas's; P. R. Buckton, King's Coll.; R. H. Burns, London; C. H. Burridge and A. Byrne-Quinn, St. Thomas's; C. J. N. Cameron, Univ. Coll.; Elizabeth J. Carpenter, Royal Free; Pamela M. G. Churchill, King's Coll.; J. H. Clapp, London; Evangeline A. Clark and Enid Clarke, Royal Free; Violet H. Comber, Univ. Coll.; F. R. Corfe, St. Bart.'s; A. R. Cox, Guy's; Lucy M. Cranage, Royal Free; G. H. Crisp, St. Bart.'s; S. D. Dalal, Bombay; K. E. D. Dauncey, King's Coll.; T. W. Davies, Cardiff; H. G. de Silva, Ceylon and Middlesex; A. C. de Souza, Middlesex; C. W. L. De Souza, St. Bart.'s; G. C. Dewes, St. George's; Helen L. Dunn, Charing Cross; Elaine O. H. Earengey, Univ. Coll.; J. A. Edward, St. Bart.'s; G. Edwards, St. George's; D. C. McC. Ettles, Guy's; J. P. Evans, Charing Cross; J. C. Fast, Guy's; C. Fernando, Ceylon; Alice B. Field, King's Coll.; R. A. Fitzsimons, Charing Cross; E. L. Fothergill, St. Thomas's; Rachel D. Fox, Royal Free; L. W. Freeman, St. Mary's; Z. A. Goma, Birmingham; P. J. Gonsalves, Guy's; J. A. Gorman, Manchester; E. C. Grant, Otago; A. F. W. Hall, Guy's; R. N. Hall, St. George's; C. W. Harrison, Los Angeles; R. A. Haythornthwaite, Westminster; H. J. Heathcote, St. Bart.'s; A. H. B. Hessom and C. A. N. Hicks, Guy's; Catherine E. Hill, Royal Free; C. G. Hill, London; T. R. Hill, Guy's; N. M. Hodivala, Bombay and London; W. Holdsworth, St. Bart.'s; H. O. Hopkins, Middlesex; S. Howard, London; E. G. Howe, St. Thomas's; J. H. Howells, Cardiff; M. L. Hutchinson, Guy's; N. C. Hypher, London; K. N. Isherwood, Leeds; J. H. F. Jayasuriya, Middlesex; Iris A. Jenkin Lloyd, Royal Free; A. J. Johnson, St. Bart.'s; E. C. Johnson and Margaret E. Jones, St. Mary's; J. Kabanas, London; J. A. Kerr, Birmingham; W. A. Kerr, King's Coll.; T. P. Lalonde, Bristol; Alice B. Laker, Charing Cross; Mary Langdon-Down, Royal Free; J. R. E. Lee, Liverpool; W. Leslie, Guy's; R. A. V. Lewys-Lloyd, St. Bart.'s; Edith M. Little, Royal Free; D. G. Lloyd, London; Katharine G. Lloyd-Williams and Marjorie Low, Royal Free; W. S. Maclay, St. Bart.'s; G. F. H. McCormick, Univ. Coll.; S. M. Mallick, A. R. Marsh, and C. W. Marshall, Guy's; W. N. Mascall, St. Thomas's; A. N. Mathias, St. Mary's; Bertha I. Meyer, Royal Free; D. E. J. Mitchell, Manchester; Mary S. Mitchell, St. Mary's; J. W. Monro, London; Anna P. Montgomery, Charing Cross; M. N. Nicolson, Sheffield; J. R. P. Norman, Birmingham; H. P. O'Keeffe, London; E. N. O'Neill, St. Mary's; T. C. Pain, Guy's; B. N. Palnitkar, London; F. Parker, St. Bart.'s; W. E. Parry, London; L. L. P. Paterson, St. Mary's; Isabel D. Patterson, London; N. J. Pettimangin, Royal Free; H. A. Picton, Birmingham; J. C. C. Poole, St. Bart.'s; W. O. Porter, Guy's; Dorothy F. Pratt, Royal Free; E. N. Price, St. Mary's; Henrietta Procter, Charing Cross; E. I. Puddy, St. Mary's; M. Ragheb, Univ. Coll.; K. S. Rao, Madras and London; M. M. Raouf, Cairo; H. G. S. M. Rees, Cardiff; D. V. Rice, London; Hilda M. Richards, Royal Free; O. Richardson, St. Bart.'s; N. Rizkalla, Manchester; K. Roberts, Liverpool; R. I. Roberts, Manchester; E. Robinson, E. H. Roche, and E. B. Rudalsky, Guy's; Audrey E. Russell, Univ. Coll.; Mona M. Russell-Cruise, St. Mary's; H. W. Sadlier, St. George's; S. F. Saint, London; W. F. Savage, Manchester; J. W. Schabort, Guy's; G. Scheuel, Hamburg and Westminster; R. Schofield, Guy's; Helen D. S. C. Scott, Charing Cross; Evelyn I. M. Sheppard and H. L. Shimmin, Manchester; C. W. Simpson, London; Beatrice G. Smith, Univ. Coll.; G. H. A. Soysa, Ceylon; W. E. Snell, Univ. Coll.; Dorothy E. Stewart, Royal Free; C. N. Suter, St. Mary's; A. G. S. Tabb, Charing Cross; J. W. de W. G. Thornton, King's Coll.; G. O. Tippett, St. Thomas's; H. A. Tracey, St. Bart.'s; S. D. H. D. Wallis, Guy's; N. Wassif, Charing Cross; Edith M. Webb and Gwendolen I. Wilkins, Royal Free; D. A. J. Williams, G. P. Williams, and J. H. Williams, Cardiff; L. S. Williams, Guy's; and Joan Worsfold, Royal Free.

THE King has granted to Dr. James Ferguson Lees, C.B.E., lately Director-General of Public Health, Ministry of the Interior, authority to wear the decoration of the Order of Ismail (Insignia of the Second Class) conferred upon him by the King of Egypt, and granted to Dr. Robert Stewart Miller, Director of the Egyptian Hospital for the Insane at El Khanka, authority to wear the Insignia of the Fourth Class of the Order of the Nile, conferred upon him by the King of Egypt.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At an ordinary meeting of the Council of the Royal College of Surgeons on Nov. 12th, Sir John Bland-Sutton, President, in the chair, Mr. James Sherren was elected a member of the Committee of Management of the Examining Board in England. The President reported that at a meeting of the Executive Committee of the Streatfeild Research Fund on Oct. 7th Mr. Norman L. Capener, F.R.C.S., was appointed the third Streatfeild Scholar, the subject of his research being the Comparative Anatomy and Function of the Prostate Gland. A letter was read from Mr. Hugh Lett, resigning his membership of the Court of Examiners. The President reported that Mr. C. H. Fagge's term of office on the Court of Examiners would expire on Dec. 9th, and that the vacancy thus occasioned, together with that occasioned by the resignation of Mr. Lett, would be filled up at the ordinary Council on Dec. 10th. Diplomas of Member were conferred upon 204 candidates, whose names were given in THE LANCET of Nov. 7th (p. 996).

CLOSE OF CONSUMPTIVE COLONY HOSPITAL.—The Cumberland County Council have decided to close the Englethwaite Industrial Colony for the After-care of Consumptives, which last year cost the council £6800.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—A meeting of the Fever Hospitals Medical Service Group will be held at the Society's House on Nov. 27th, at 3 P.M., when a paper on the Dick Test by Dr. R. A. O'Brien and Dr. C. C. Okell will be read.

KING'S COLLEGE HOSPITAL.—The annual report of King's College Hospital, which has just been issued, states that as the result of the recent special appeal, the outstanding liabilities, which were £36,000 at the beginning of the year, have been reduced to less than £15,000. Forty additional beds have been maintained in occupation.

ROYAL SANITARY INSTITUTE.—A sessional meeting of the Institute will be held on Friday, Nov. 27th, at 8 P.M., and on Saturday, Nov. 28th, at 10 A.M., in the Town Hall, Plymouth, when discussions will take place on the Disinfection of Ships, to be opened by Dr. G. A. Borthwick, port medical officer, and Some Points in Public Health Propaganda, to be opened by Dr. A. T. Nankivell, medical officer of health. The chair will be taken at 8 P.M. on Friday by Dr. W. J. Howarth. Those proposing to attend should notify the hon. local secretary, Dr. Nankivell, Plymouth, not later than Nov. 21st.

Messrs. Heffer and Sons, Cambridge, announce that they have in the press a volume by Dr. G. W. Nicholson entitled "The Nature of Tumour Formation: the Erasmus Wilson Lectures, 1925." The object of the lectures is to correlate knowledge of the cellular changes which result in tumour formation with the established facts of biology and physiology. The Oxford Medical Publications, London, are publishing a book by Mr. G. R. Girdlestone, B.M., F.R.C.S., on "The Diagnosis and Treatment of Tuberculosis of the Hip," which is an attempt to show how the objective of "a permanently safe and useful limb" may be reached by the safest and most direct route.

BELFAST MATERNITY HOME.—The Duchess of Abercorn last week paid a visit of inspection to the Belfast Maternity Home. In a speech she expressed her amazement that there are only 26 maternity beds to serve the whole Province of Ulster. Dr. R. W. Livingstone, Vice-Chancellor of Queen's University, stated that the conditions in which lectures are given to students at the Maternity Hospital were deplorable, and that the students were gravely handicapped in this branch of their training. He considered that the hospital was worthy neither of Belfast nor its staff, but Prof. J. A. Lindsay, the chairman of the Board of Governors, expressed the opinion that before a remedy was possible there would need to be better public recognition of the work of the hospital.

CRIPPLED CHILDREN IN WALES.—A meeting of representatives of county and local authorities in North Wales was held at Wrexham on Nov. 6th. The gathering was large and representative, being attended, amongst others, by Dr. D. Llewellyn Williams, chief medical officer of health for Wales, and Mr. Howell James, secretary of the Welsh Department of the Ministry of Health, presided. Sir John Lynn-Thomas urged the need for early treatment of the crippled child by persons specially trained to undertake it, and expressed the hope that provision would be made in the Prince of Wales Hospital, Cardiff, for the training of surgeons in orthopædic surgery. It was decided to form a Welsh branch of the Central Council for the Care of Cripples.

A PIONEER OF OPEN-AIR TREATMENT.—A complimentary dinner was given at Shrewsbury on Nov. 7th to Miss Agnes Hunt, the founder of the Baschurch Surgical Home, which has now developed into the Shropshire Orthopædic Hospital. Among those present were Mr. W. C. Bridgeman, First Lord of the Admiralty, presiding, and many distinguished surgeons. Sir Robert Jones said Miss Hunt's methods, once described as visionary, were being imitated all over the world, not only in open-air treatment, but also in the establishment of after-care centres. Sir William Wheeler described Miss Hunt as the Florence Nightingale of the crippled children's world—"her lamp was the sun." At Baschurch, in 1900, half a dozen children were accommodated in an improvised shed in a garden, and now the institution, which took over the old war hospital at Park Hall, Oswestry, in 1920, accommodated some 340 patients from all parts of the country. Lord Kenyon presented Miss Hunt with a cheque for 1000 guineas and an illuminated album. There were over 500 subscribers to the testimonial—a gift of gratitude for 25 years' service for humanity whereby many thousands, apparently doomed to cripplehood, had been restored to strength and vigour.

MANCHESTER: NORTH-WESTERN TUBERCULOSIS SOCIETY.—A meeting of this society will be held on Nov. 26th at the Tuberculosis Offices, Joddrell-street, Deansgate, Manchester, when Dr. G. E. Loveday will read a paper on Vaccine-therapy with Special Reference to Tuberculosis.

IRISH MEDICAL SCHOOLS AND GRADUATES' ASSOCIATION.—The autumn dinner of this Association will take place at Pagani's Restaurant, Great Portland-street, London, W., on Wednesday, Nov. 25th, at 7.30. Tickets may be obtained from Dr. J. F. Peart, 5, Harley-street, W. 1. The guest of the evening will be the Right Hon. Charles Andrew O'Connor, P.C.

FRENCH MEDICAL CRUISES, 1926.—The Compagnie des Messageries Maritimes have again organised two special cruises to the Mediterranean for members of the medical profession, to leave Marseilles on March 9th and April 21st, 1926, respectively, each tour occupying 30 days. Full particulars of these special cruises, as well as of other tours, can be obtained at the London offices of the company, 72–75, Fenchurch-street, E.C. 3, and 62, Pall Mall, S.W. 1.

PORTMADOC HOSPITAL.—This war memorial, established six years ago, has proved so useful that it has been decided to add new buildings. A site has been presented free by Dr. Richard Griffith, J.P., of Portmadoc. Donations of £200 have been received from Mr. J. E. Greaves, Lord-Lieutenant of Carnarvonshire, and £100 each from Mr. R. M. Greaves and Mrs. Charles Breese.

BRISTOL HOSPITALS CONTRIBUTORY SCHEME.—Last year the total deficit on the working of the six Bristol hospitals was approximately £30,000. It has therefore been decided to establish a contributory scheme, and it is hoped to make arrangements with the participating institutions whereby persons with incomes exceeding £300 may, on payment in advance of £1 per annum, join a central association and receive the same benefits as the ordinary contributor.

HOSPITALS AND MOTORING ACCIDENTS.—At the anniversary meeting of governors of Nottingham General Hospital, Mr. James Forman, the President, pointed out that motor-car accidents represented 25 per cent. of the total casualty cases. He added that if there were as many admissions of victims of motor accidents in proportion during the next 12 months as there have been during the last eight, 2200 bed days would be occupied by them, and that there would be 190 patients in this category.

ROYAL NORTHERN HOSPITAL, LONDON.—In aid of the hospital a fancy dress ball was held in the Royal Albert Hall on Nov. 12th. The date originally fixed was Armistice night, Nov. 11th, but this was subsequently changed to the following night. The ball, which was under the chairmanship of the Duchess of Sutherland, was a brilliant spectacle, the chief guest being H.R.H. the Prince of Wales. The extent to which the hospital benefited financially from this function will be announced later.

ROYAL MEDICAL BENEVOLENT FUND.—The treasurer (Sir Charters Symonds, 11, Chandos-street, W. 1) appeals for £350 to enable the committee to distribute to the annuitants and some of the most necessitous grantees a Christmas gift of 25*s*. Last year the remnant of the Dinner Fund (raised in 1913) was used for this purpose, and though subscriptions are coming in satisfactorily, the exhaustion of this "nest-egg" makes it difficult to meet this extra expenditure.

DUBLIN: NATIONAL MATERNITY HOSPITAL.—At the annual meeting of the National Maternity Hospital held last week it was reported that 871 patients had been admitted to the maternity wards during the year, and 402 to the gynæcological wards. In addition, 710 patients were attended at their own homes. It has been found impossible for the hospital to carry on its work without extension, and a site for extension has been obtained by the purchase of several adjoining houses. A sum of at least £10,000 will be necessary, however, before building can be undertaken. An appeal is now made for this sum.

PLYMOUTH MEDICAL SOCIETY.—At a recent meeting of this society the following officers were elected for the session 1925–26:—President, Mr. Gerald Robinson; vice-presidents, Mr. C. L. Lander and Dr. Colin Lindsey; hon. treasurer, Mr. J. Elliott Square; hon. librarian, Mr. H. Guy Ludolf; hon. secretaries, Mr. Cecil B. F. Tivy and Mr. James Riddel. Members of Council: Dr. R. J. Percy Thomas, Mr. H. F. Vellacott, Dr. T. M. Jamieson, Dr. A. Bertram Soltau, Dr. Eric Wordley, and Dr. R. H. Wagner. The library and rooms of the society are at Beaumont House, Plymouth.

Dr. John Divine, J.P., barrister-at-law, has been appointed coroner for Hull.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH.—The new operating theatre, isolation ward, and X ray department at the Hospital of St. John and St. Elizabeth, Grove End-road, were formally opened last month by Cardinal Bourne. The theatre wing contains the operating theatre, a nurses' room, a large anæsthetic room (which is also used for minor operations), a wash-up room, a surgeons' disrobing room, a surgeons' dressing room with shower bath attached, and a store room; all the rooms lead off from a broad central hall. One of the features of the operating theatre is the apparatus for hot and cold sterile water and saline solution, which is fixed in the sterilising room and has pipes carried through the wall into the theatre. The theatre, one of the most up to date in England, has been built and equipped through the generosity of Mrs. H. G. Tetley, in memory of her late husband, Henry Greenwood Tetley. The architect is Mr. Keith Young, and the total cost of building and equipping was about £10,000. Mrs. Tetley has also endowed two private rooms in the hospital so that the board of management are able to receive, at an inclusive fee of £2 10s. weekly, patients whose circumstances do not admit their paying ordinary fees charged for private rooms. The isolation ward was erected through the generosity of Miss Winifred Berthe de La Chere. The X ray department, which was recently built by subscriptions collected by the chairman, Sir Charles Russell, is fitted with the latest appliances, and has photographic, treatment, and developing rooms. At the opening ceremony Mrs. Tetley and Miss de La Chere were presented with inscribed keys, and a reception was held in the hospital afterwards. Amongst those present were Viscount Fitzalan of Derwent (president of the hospital), Adele, Countess Cadogan, and the members of the board and honorary staff.

Parliamentary Intelligence.

HOUSE OF COMMONS.

MONDAY, NOV. 10TH.

PARLIAMENT reassembled after the summer recess.

Medical Enlistment for the Services.

Colonel DAY asked the Secretary of State for War whether any agreement had yet been reached with the British Medical Association in regard to their action affecting the enlistment of medical men into the Royal Army Medical Corps.—Sir L. WORTHINGTON EVANS replied: The pay and conditions of service of medical officers in the Navy, Army, and Air Force are being examined by an Inter-Departmental Committee appointed by the Government. The Committee has authority to take evidence from outside the Government service, and will, I understand, obtain the views of the British Medical Association on the subject.

Penal Reform.

Colonel DAY asked the Home Secretary whether the International Prison Commission, held in London during August, made any recommendation as to penal reform; and, if so, what recommendations were likely to be carried into effect.—Sir W. JOYNSON-HICKS replied: The proceedings of the Congress and the resulting resolutions will, it is hoped, be published shortly by the Secretary-General, Prof. Dr. Simon van der Aa, K.B.E., of Holland, when they will receive my careful consideration.

Progress in Housing.

Captain BOWYER asked the Minister of Health how many houses had been sanctioned, were being built, and had been completed under the Housing Acts of 1923 and of 1924 respectively.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: On Nov. 1st the position under the Housing Acts of 1923 and 1924 was as follows:—

	Act of 1923.		Act of 1924.
No. of houses completed ..	116,811	....	15,122
No. of houses under construction	47,001	....	30,036
No. of houses definitely arranged for but not started	29,840	....	24,046
No. of houses authorised but not definitely arranged for ..	49,036	....	20,202
Totals (No. of houses authorised)	233,288	....	90,326

TUESDAY, NOV. 17TH.

Use of Insulin in Scotland.

The House considered the Public Health (Scotland) Amendment Bill on report. This measure authorises local authorities under the Scottish Public Health Act of 1897 to make arrangements for providing medicines and treatment to persons suffering from diabetes.

Dr. SHIELS moved, at the end of Clause I., which is the operative clause, an amendment providing that the Scottish Board of Health should require the local authority to arrange that any medicine used for the treatment of persons suffering from diabetes and who, in the opinion of the local authority, required assistance in obtaining such medicines and treatment, should be dispensed by a registered pharmacist, or by a registered medical officer or practitioner. He said insulin ought to be distributed under medical supervision. That precaution, he said, was already taken by the Poor-law authorities and under the National Health Insurance Acts. He did not see why the poor people who were to receive the insulin under this Bill should not have the same definite safeguards as others. Insulin was a very dangerous drug and unless it was distributed with care the results might be very serious.

Sir J. GILMOUR (Secretary for Scotland) said he was unable to accept the amendment. They all wished to see that the greatest safeguards were observed in the use of this drug. It was manufactured in bulk and sold in closed capsules. It was prescribed by a doctor, and at a certain stage of the treatment it might under careful medical directions be administered by the patient. So far as its purity was concerned it did not matter whether it was handed by the local chemist over the counter or dispensed by the local authority at their clinic. It could not be said that the risk of its being mishandled was any greater under the Bill than in the way proposed by the amendment. They were desirous that the Scottish Board of Health, working through the local authorities, should be able to dispense insulin at a price which would bear a fair comparison with that at which it could be obtained from a chemist's shop. The chemist would, of course, have to make a certain profit.

Sir A. SINCLAIR asked if there was any risk of deterioration in capsules and had not chemists previously been able to detect this fact and had they not rejected some of the supplies?

Sir J. GILMOUR said deterioration of the drug could not be detected by the local chemist.

Mr. WESTWOOD asked for a guarantee that only those persons properly qualified under the Pharmacy Acts should be allowed to manufacture insulin.

Sir J. GILMOUR said that he appreciated very much the natural and proper desire of Members to see that every precaution was taken in regard to the manufacture of this drug. He could give a guarantee that it was manufactured directly under the supervision of the Medical Advisory Council. So far as the handling and manufacture were concerned that was done by properly qualified people. The Bill dealt not with the manufacture but the distribution of the drug, and that was done in glass capsules so that the drug was properly protected.

Dr. SHIELS's amendment was rejected without a division.

On the motion for the third reading of the Bill,

Mr. W. ADAMSON said that although the Labour Party supported the Bill, they regretted that it was limited in its scope. The measure should have been extended to other diseases so as to bring the administration of public health in Scotland into line with England. An effective remedy might be found for cancer at any moment. It would be a tragedy if the poor people of Scotland could not get such remedy because of its costly nature.

Sir J. GILMOUR said that he appreciated the support of the Opposition in regard to this Bill. The problem of cancer, about which they were all anxiously waiting for a solution, was of such magnitude and so important that, in their judgment, it should be dealt with when it arose. No one could visualise either what the nature of the solution or the cost might be. In those circumstances they felt very strongly that if and when that solution was found there could be no reasonable doubt in the minds of anyone that Parliament would deal with it adequately and properly.

The Bill was read a third time, and passed.

Appointments.

COYTE, RALPH, M.B., B.S. Lond., F.R.C.S. Eng., has been appointed Assistant Surgeon to the Queen's Hospital for Children, Hackney-road, E.

GALLOWAY, R. L., M.B., F.R.C.S. Edin., Assistant Surgeon, North Middlesex Hospital, Edmonton.

HUTT, C. W., M.D. Camb., D.P.H. Oxf., Lecturer in Hygiene and Public Health, Charing Cross Hospital Medical School.

LINDEBERG, E. W., M.B., Ch.B. Glasg., Certifying Surgeon under the Factory and Workshop Acts for the Friockheim District of the County of Forfar.

PROMIRE, GERTRUDE E., M.R.C.S., L.R.C.P. Lond., Surgeon, North Dispensary, Vauxhall-road, Liverpool.

St. Thomas's Hospital: Tompson, B. E., M.B., B.Ch. Oxon., Thomson, G. W. R., M.R.C.S., L.R.C.P. Lond., Rees, W. E., M.B., B.S. Lond., de Jersey, G. W. S., M.R.C.S., L.R.C.P. Lond., Wrigley, A. J., M.B., B.S. Lond., Barrett, J. C., V.C., M.B., B.S. Lond., Crawford, D. P., M.R.C.S., L.R.C.P. Lond., Dobie, J. M., M.B., B.Ch. Cantab., Casualty Officers and Resident Anæsthetists; Archer, E. C., M.R.C.S., L.R.C.P. Lond., Sims, T. H., M.B., B.Ch. Cantab., Rea, R. H. T., M.B., B.Ch. Cantab., Alexander, R. D., M.B., B.Ch. Cantab., Resident House Physicians; Cooke, A. M., M.B., B.Ch. Oxon., Resident House Physician for Children; Marks, D. P., M.B., B.Ch. Cantab., Boggon, R. H., M.R.C.S., L.R.C.P. Lond., Robinson, A. B., M.R.C.S., L.R.C.P. Lond., Battson, A. A., M.B., B.S. Lond., Resident House Surgeons; Wiener, R. A. K., M.R.C.S., L.R.C.P. Lond., Resident Orthopædic House Surgeon; Nicholson, H. W., B.A. Cantab., M.R.C.S., L.R.C.P. Lond., Resident House Surgeon (Ear); Rees, D. I., M.R.C.S., L.R.C.P. Lond., Resident House Surgeon (Throat); Robinson, J. J. R., M.B., B.S. Lond., Senior Obstetric House Physician; Heath, W. E., M.R.C.S., L.R.C.P. Lond., Junior Obstetric House Physician; Saunders, K. G. W., M.R.C.S., L.R.C.P. Lond., Senior Ophthalmic House Surgeon; Coverdale, H. V., M.B., B.Ch. Cantab., Junior Ophthalmic House Surgeon; Neilson, D. F. A., F.R.C.S. Eng., Amesur, C. A., M.R.C.S., L.R.C.P. Lond., Haward, F. C., M.R.C.S., L.R.C.P. Lond., Barron, H. T., M.D. Lond., Sellick, R., M.R.C.S., L.R.C.P. Lond., Sworn, B. R., M.R.C.S., L.R.C.P. Lond., Marriner, H. I., F.R.C.S. Edin., Grey J. C. P., M.R.C.S., L.R.C.P. Lond., Walford, A. S. H., M.B., B.Ch. Cantab., Lloyd-Williams, P., M.R.C.S., L.R.C.P. Lond., L.D.S., Miller, A. K., M.R.C.S., L.R.C.P. Lond., Miller, N. A., M.R.C.S., L.R.C.P. Lond., Shires, B., M.B., Ch.B. Edin., Rickman, J., M.B., B.Ch. Cantab., Brockman, E. P., M.B., F.R.C.S. Eng., Gillam, J. F. E., M.R.C.S., L.R.C.P. Lond., Ames, C. R., M.R.C.S., L.R.C.P. Lond., Plum, D., M.R.C.S., L.R.C.P., Milford, R. D., M.R.C.S., L.R.C.P. Lond., Walter, A. G., M.R.C.S., L.R.C.P. Lond., Chiesman, W. E., M.B., B.Ch. Cantab., Alston, R. B., M.R.C.S., L.R.C.P. Lond., Edwards, J. L., M.B., B.Ch. Cantab., Gibbens, J. H., M.R.C.S., L.R.C.P. Lond., Belilios, A. D., M.R.C.S., L.R.C.P. Lond., Thornton, F. S., M.R.C.S., L.R.C.P. Lond., Chief Assistants and Clinical Assistants.

Vacancies.

For further information refer to the advertisement columns.

Birmingham City Education Committee.—Asst. Sch. M.O. £600.

Birmingham, Selly Oak Hospital.—Res. Jun. Asst. M.O. £300.

Bradford Royal Eye and Ear Hospital.—Res. H.S. £120.

Bristol General Hospital.—Hon. Clin. Assts.

Cambridge, Addenbrooke's Hospital.—H.S. £130.

Cambridge, Mental Hospital.—Med. Supt. £800.

Cancer Hospital, Fulham-road, S.W.—Surg. Reg.

Cardiff City Mental Hospital, Whitchurch, near Cardiff.—Locum Tenens. 7½ guineas weekly.

Cardiff, King Edward VII. Welsh National Memorial Association.—Asst. Tub. O. £600.

Cardiff, Welsh National School of Medicine.—Lecturer in Pathology and Bacteriology. £750.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Res. H.S. £75.

Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100. Also Dental S.

Corporation of London Public Health Department.—Sanitary Inspector. £238 15s. 6d.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Asst. P. £50.

General Lying-in Hospital, York-road, Lambeth, S.E.—Res. M.O. At rate of £100.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S. and H.P. Each at rate of £50.

Hove Hospital, Sackville-road.—Res. M.O. £175.

Iraq Health Department.—Two M.O.'s. Rs.1200.

Italian Hospital, Queen-square, W.C.—Hon. Radiographer.

Liverpool, Hospital for Consumption and Diseases of Chest, Mount Pleasant.—Asst. M.O. and Pathologist. £150.

London Royal Free Hospital, School of Medicine for Women, 8, Hunter-street, W.C.—Sen. Second and Third Assts. for Obstetrical and Gynæcological Unit. £350 to £500. Also Res. Asst. Pathologist. £125.

Maidstone, West Kent General Hospital.—H.S. £220.

Manchester, Ancoats Hospital.—H.S. At rate of £100.

Manchester City Education Committee.—Asst. Sch. M.O. £600.

Manchester, Northern Hospital for Women and Children.—Sen. H.S. and Jun. H.S. £130 and £100 respectively.

Margate, Royal Sea Bathing Hospital.—H.S. At rate of £200.

Metropolitan Asylums Board.—Appointments in Tuberculosis Service. Sen. Asst. M.O.'s. £650. Jun. Asst. M.O.'s. £500.

Metropolitan Hospital, Kingsland-road, E.—Pathologist.

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Sen. Res. M.O. and Jun. Res. M.O. £140 and £100 respectively.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Two Jun. Non. Res. H.S.'s. At rate of £100.

Northamptonshire County Council.—M.O.H. and Sch. M.O. £1100.

Prince of Wales's General Hospital, Tottenham, N.—Clin. Assts.

Prison Medical Service.—M.O. £405.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—H.P. At rate of £100.

Rochester, St. Bartholomew's Hospital.—Res. Surg. O. At rate of £250.

Royal Northern Hospital, Holloway, N.—Clin. Assts.

St. George's Hospital, S.W.—S. and Asst. S.

Salford Royal Hospital.—Res. Surg. O. £200.

Sheffield, Jessop Hospital for Women.—Asst. H.S. At rate of £100.

Singapore, College of Medicine.—Prof. of Biochemistry and Prof. of Biology. Each $850–$1000.

South Shields County Borough.—Ven. Dis. M.O. £750.

University College Hospital, Gower-street, W.C.—Med. Reg. £150. Also Hon. Dental S.

West Middlesex Hospital, Isleworth.—Asst. Med. Supt. £250.

Willesden General Hospital, Harlesden-road, N.W.—Hon. P.

York County Hospital.—H.P. £150.

The Chief Inspector of Factories, Home Office, London, S.W., announces a vacant appointment for a Certifying Factory Surgeon at Peterhead, Aberdeenshire.

Births, Marriages, and Deaths.

BIRTHS.

Aikman.—On Nov. 12th, at Westwood, Beaconsfield, the wife of Kenneth Blackie Aikman, M.D., of a daughter.

Cocking.—On Nov. 15th, at Strada Mezzodi, Valetta, Malta, the wife of Surgeon-Lieutenant-Commander A. Wilkinson Cocking, R.N., of a son.

Whitfield.—On Oct. 16th, at Trimulgherry, India, the wife of Captain C. A. Whitfield, R.A.M.C., of a daughter.

MARRIAGES.

Thomas—Last.—On Nov. 3rd, at St. Mary's, Bryanston-square, John Oscar Thomas, *M.C.*, M.D., M.R.C.P., to Dorothy Mary, daughter of Mr. and Mrs. Last, of Roselands, Clacton-on-Sea.

DEATHS.

Bardsley.—On Nov. 12th, Percy Crofts Bardsley, M.B., B.C. Camb., aged 59.

Blundell.—On Nov. 10th, at Holcombe, House, West Worthing, Hight Blundell, M.D., aged 61 years.

Gervis.—On Nov. 11th, at Belsize-park, N.W., Arthur Frederick Gervis, M.R.C.S., L.R.C.P. Lond.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, Nov. 23rd.

ODONTOLOGY: at 8 P.M.

Casual Communication:

Mr. G. B. Pritchard: A Case of Exposure of the Pulp of Uncertain Origin.

Paper:

Mr. Harold G. Watkin: The Evolution of Radiography.

Tuesday, Nov. 24th.

Library: The Library will be open until 10 P.M.

MEDICINE: at 5.30 P.M.

Discussion on

The Clinical Aspects, Treatment, and Prognosis of Nephritis. To be opened by Prof. Hugh MacLean.

Wednesday, Nov. 25th.

COMPARATIVE MEDICINE: at 5 P.M.

Paper:

Dr. Carey F. Coombs, Dr. Hadfield, and Mr. G. E. Henson: A Note on the Endocarditis of Swine Erysipelas and its Relation to Endocardial Lesions in Man.

Thursday, Nov. 26th.

BALNEOLOGY AND CLIMATOLOGY: at 5 P.M.

Presidential Address:

Dr. Llewellyn J. Llewellyn on Diathesis.

UROLOGY: at 8.30 P.M.

Clinical and Pathological Evening.

Friday, Nov. 27th.

Library: The Library will be open until 10 P.M.

BALNEOLOGY AND CLIMATOLOGY: at 10 A.M.

Joint Meeting with the International Society of Medical Hydrology to discuss The Treatment of Rheumatism in Industry.

The President of the International Society of Medical Hydrology (Dr. Gustave Monod, of Vichy) will occupy the chair, and the following are expected to take part in the discussion:

Sir George Newman, K.C.B., Chief Medical Officer to the British Ministry of Health; Dr. Van Breemen (Holland); Dr. Kerr Pringle (Harrogate); Dr. Otto May (London); Dr. Buckley (Buxton); Dr. Jansen (Denmark); Dr. Louis Blanc (France); Dr. Schmidt (Czechoslovakia); Dr. L. J. Llewellyn (London); Dr. M. B. Ray (London); Dr. Fortescue Fox (London); and others.

STUDY OF DISEASE IN CHILDREN: at 8.30 P.M.
Discussion on
The Diagnosis and Treatment of Splenic Enlargements in Children.
To be opened by Sir Humphry Rolleston, and continued by Dr. G. A. Sutherland, Mr. Arthur Edmunds, Dr. L. G. Parsons (Birmingham), and Dr. Hugh Thursfield.

EPIDEMIOLOGY AND STATE MEDICINE: at 8 P.M.
Paper:
Dr. A. K. Chalmers: National Death-rates in Relation to National Differences in Housing.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Nov. 23rd.—8 P.M., Clinical Evening: Exhibition of Cases and Skiagrams.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, *Nov. 23rd, to* SATURDAY, *Nov. 28th.*—Fellowship of Medicine lecture, Medical Society, 11, Chandos-street, W. Mon., 5.30 P.M., Mr. G. R. Girdlestone: Tuberculosis of the Spine.—LONDON LOCK HOSPITAL, Dean-street, W. Instruction daily in the Out-Patient Department and lectures.—LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W. General Practitioners' Course, 4.30 to 6 P.M.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special Course in Medicine, Surgery, and Gynæcology. Lectures, demonstrations will be given in the Out-patient Department and Wards.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street, W. Lecture-demonstrations illustrated by cases, daily at 5 P.M.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.
POST-GRADUATE COURSE: OCTOBER-NOVEMBER, 1925.
CLINICAL LECTURES AND DEMONSTRATIONS.
MONDAY, Nov. 23rd.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Alterations in the Visual Fields: Mr. Williamson-Noble.
TUESDAY, Nov. 24th.—2 P.M., Out-patient Clinic: Dr. Walshe. 3.30 P.M., Neurosyphilis: Dr. Hinds Howell.
THURSDAY, Nov. 26th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Methods of Testing the Eighth Nerve (in the Out-patient Department): Mr. Just.
FRIDAY, Nov. 27th.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Cerebral Diplegia: Dr. Collier.
COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.
THURSDAY, Nov. 26th.—12 noon, Syphilis of Nervous System: Dr. J. G. Greenfield.
COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.
MONDAY, Nov. 23rd.—12 noon, The Autonomic System, (*b*) The Growth of the Mind: Dr. J. L. Birley.
Dr. H. J. Macbride is giving a COURSE OF EIGHT CLINICAL DEMONSTRATIONS, chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays.
Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.
J. G. GREENFIELD, Dean of Medical School.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
THURSDAY, Nov. 26th.—3 P.M., Mr. T. H. C. Benians: The Investigation of Obscure Febrile Conditions. 4.30 P.M., Dr. F. G. Crookshank: Colon Bacillus Septicæmia.
Daily: In-patient and Out-patient Clinics in General and Special Departments, Operations, &c.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Nov. 27th.—4 P.M., Mr. Nicol Rankin: Ear Ache.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 40, Leicester-square, W.C.
TUESDAY, Nov. 24th.—5 P.M., Dr. A. Whitfield: Diseases Due to Fungi (2).
THURSDAY.—5 P.M., Dr. A. M. H. Gray: Bacterial Affections.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Nov. 24th.—4.15 P.M., Dr. T. H. Oliver: Functions of the Pituitary Gland.
FRIDAY.—4.15 P.M., Prof. J. Shaw Dunn: Recent Work on Renal Function.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, ST. ANDREWS.
TUESDAY, Nov. 24th.—4 P.M., Dr. I. McKenzie: Insulin in the Treatment of Toxic Delirium.
THURSDAY.—5 P.M., Mr. Lane Roberts: Conditions Leading to Obstructed Labour.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Nov. 25th.—4 P.M., Dr. W. M. Willoughby: Infection in Ships and the Prevention of Spread Therefrom.

CHADWICK PUBLIC LECTURES.
THURSDAY, Nov. 26th.—8 P.M. (in the Lecture Hall, Royal Institute of British Architects), 9, Conduit-street, W., Mr. A. Macmorran, K.C.: Sanitary Provisions of the New Public Health Act, 1925.

Notes, Comments, and Abstracts.

THE DEVELOPMENT OF SPEECH IN THE NORMAL CHILD.

IN an address to the Child Study Society, on Nov. 12th, Mr. Macleod Yearsley described the results of his study of the development of speech in his son. Too little attention has been given, he considers, to normal development, which is necessarily the basis of all attempts to build up speech in abnormal children. The literature of the subject, he states, is very meagre, and has received no very notable additions save the fourth chapter of Wylie's "Disorders of Speech" since the appearance of Preyer's "Mind of the Child" in 1890. After summarising previous observations Mr. Yearsley gave an account of his own.

The first methods of communication are laughing, crying, and grunting, with facial expression and gesticulation. These precede, and are concurrent with, the development of speech, towards which the first steps are automatic exercises of the speech organs such as babbling, crowing, mimic reading, and echolalia. Automatic unconscious babbling may be compared to kicking and movements of the arms, and begins very early. The sounds *a-a-ah*, *e-e-e* and *oo-eh* were present on the third day and *laa-laa* on the fourth. On the twenty-fourth a nasal consonantal sound *na-na* was noted, and by the seventieth day the following sounds were heard:—*Aah, aah-boo, aah-goo; boo, boo-ah; goo, goo-ak, gur-gur-rll; lloo, l-loo-oo, lloo-loo; maa; naa; ooh, o-ur, oo-mum, oo-laa*, and "something beginning with a D." Crowing occurred on the seventieth day, and mimic reading about the thirteenth month. The place of babbling is gradually usurped by echolalia—i.e., unintelligent parrot repetition of adult speech, and this is important as a preliminary exercise. There were distinct traces of echolalia as early as the seventy-sixth day, when the boy often repeated his own name without the least intelligent application. On the 182nd day this, and the imitation of other sounds, was well marked. The sound of a watch excited him to *tick-tick-tick*, and on the 304th day he made the same noise when shown the picture of a watch. Sounds repeated easily by echolalia may give difficulty when intelligent speech is developed later. Wylie states that "the first efforts of intelligent speech call into action the higher and more conscious functions of the cerebrum, which as yet have had little or no concern with the process of articulation. Everything goes to show that the higher centres can learn their own duties with regard to speech and train the lower centres to prompt and perfect obedience only after a period of persevering effort." The boy frequently repeated *Loo-ey* by echolalia, but later had difficulty with his *l*'s, and called himself 'Ouis. The letter *y* was frequently substituted for *l* as in "yadies" and "yetters." Understanding of spoken words comes before speech. Preyer's child, however, did not develop an ability to discriminate words heard until the twelfth month. On the 117th day Louis could clearly recognise "bottle," "up," "daddy," and "mummy." On the 253rd day he associated "dad-dad" with his father and "Peter Pan" with a picture; ten days later he waved his hand and arm of his own volition on hearing "Ta-ta," and on the 290th day said "Nan-nan-nan" to his nurse. The 333rd day was noteworthy because he said "daddy" when his father entered; he remarked "bath" when the article arrived on the 362nd day, and at 1 year 27 days he correctly answered the time-honoured questions about the peculiar utterances of cows and dogs with the words "moo" and "bow-wow." Three days later, when he was told that his father was about to take a bath, he said "dad-dad ba-ban." At 1 year 35 days he noticed a dog on his own initiative and said "woo-woo," and at 1 year 90 days began to ask the names of things by pointing to them and saying "*Er?*" At 1 year 110 days he remarked, "Fire," on seeing a stove, and replied "Ba!" on being asked where he was going; and at 1 year 186 days he visited the Zoo and called the lions *woo-woos* (a name appropriate to dogs), referred to a bear as "Be'r" (he possessed a teddy-bear), and imitated the sea-lions!

Another phase in the normal development of intelligent speech is the invention of words. Preyer's boy said *Momm* at 10 weeks, and subsequently whenever he was hungry. Romanes records the case of twin boys who invented a language and could not be induced to speak anything else for several years; they understood each other perfectly. Usually the words are partly onomatopoeic. Louis invented only four, namely, *A-wah-wah* = a horse (1 year 108 days, changed 15 days later to *Ah-wah*); *Fuf-fuf* = a motor vehicle, *woo-woo* = a dog, and (1 year 300 days) *num-nums* = grapes, apparently derived from *neum-neum*, which was a sign of pleasure on eating. At 18 months Louis had a vocabulary of 36 words, to which he added 15 by 19 months. At 21 months he had about 200 words, and at 2 years he had over 400. The first question was asked at 2 years 1 month, when he picked up a tie and said "What is that?" He has never ceased to ask questions since. The first answer was at 1 year 6 months, when he replied "A bear," and at 2 years 2 months he said, "No, I haven't." The first personal pronoun was used at 1 year and 5 months, when he remarked, "*My* daddy," and he said, "I want Nannie" at 1 year 10 months. The first personal pronoun, suggesting a realisation of personality, has been in continuous use since then, and 11 days after its first employment he used the second in "Oo want to go tatas too?" Sentences began at about 1 year 9 months, with such remarks as "Mummy cut it," and "Slide—hair—mummy's—broken—mend it." At 1 year 8 months he said (appropriately), "Roof — high — man — door—key—hole," which was an early step in speech production as it consisted of nouns only. At 2 years 7 months, on looking at a picture, he said, "Look at all those boats. There's one with smoke coming out of it. There's one with sails on it. There's one with a flag on it." A month later he expressed causality by saying, "When you get a lot of 'buses and taxis it makes *traffic*." At 2 years 11 months he was heard to murmur to himself, "Old Mother Goose, when she wanted to wander, didn't ride in a taxi or a 'bus. Oh, no! but she rode on the back of a very fine gander." At the same age he told his first story—on somewhat conventional lines—and developed an interest in puns. He said for instance, "That's a Russian engine—rushin' along," and "Is Brighton bright?"

The first three years of life may perhaps be apportioned as follows, always remembering that there is a certain amount of overlapping. The first year is spent in methods of communication which are part animal and part primitive human. These methods serve as a scaffolding beneath which articulate speech is built up. The second year is devoted to acquiring and experimenting with a vocabulary, and the third is occupied in perfecting and correcting. These three stages seem to recapitulate in brief the development of speech in the human race. The first year represents the long night of animal and pithecoid ancestry; the second the period of pleiocene or eolithic man, and the third represents the period of astonishingly rapid development from pleistocene or palæolithic man to the period of history. The marked difficulty of pronouncing words intelligently which came glibly with echolalia has been mentioned. It may be tentatively suggested that babbling and echolalia represent the earlier stages of proto-speech which made its mark on the organism very deeply, and is therefore more easily reproduced automatically in the young. Comparison of the speed at which speech was acquired by Louis and other contemporaries with the children's progress recorded by Wylie and Preyer shows a relative (and not undesirable) precocity in the modern child. Perhaps this may be explained by the fact that nowadays parents take a greater personal interest in their children.

THE TECHNIQUE OF THE ARTIST.

ANY attempt to grasp the technique of another art is a pleasant relaxation from the sometimes wearisome practice of one's own. Few medical men have leisure to attend any of the many series of critical lectures delivered by Mr. Stewart Dick at the National Gallery. Many will be grateful for their issue, suitably modified, in the form of a little handbook entitled "Hours in the National Gallery" (London: Duckworth, pp. 144, 3s. 6d.), to which Sir Charles Holmes has contributed an introduction. The volume is of convenient pocket size, and will help visitors to this and other galleries to keener appreciation of those differences in period, school, and manner that any collection rich in classical pictures has to offer.

CUTANEOUS PROTEIN TESTS.

IN a handbook entitled "Biological Therapy," Messrs. Parke, Davis and Co. have recently described the means of testing susceptibility to various specific proteins. The original material is extracted with water or physiological saline, to which a small quantity of a non-irritating preservative has been added. After the addition of glycerine it is concentrated and mixed with boric acid powder in sufficient quantity to make a rather stiff paste. It is claimed that the necessary activity and stability are thus obtained, and a small portion of each paste to be tested can be applied to as many as 25 small scarified areas on the arm without discomfort. A control reaction is observed, and a positive result is indicated within 30 minutes by the development of a definite weal not less than half a centimetre in diameter. For no apparent reason a test may be positive to-day and negative to-morrow, so that failure to get a reaction does not necessarily mean an absence of supersensitiveness, though it is doubtless accepted as such by the majority of observers. On the other hand, a positive result is said to be of definite significance. The unfortunate feature of the test is that a definite result is seldom given by one particular protein, whilst all others remain quite inactive; more frequently there is found a general idiosyncrasy for allied proteins. Such things as pollen, hair, feathers and dandruff, which come into direct contact with the respiratory mucous membrane, are more likely to give a definitely positive reaction than proteins, like those in food, which in the course of nature are subjected to digestive ferments. It may be noted that experiments by J. O. Walker[1] suggested that the younger the patient when asthma appears the greater the chance of protein sensitiveness being the important, if not the sole, ætiological factor, and in old people such a cause is certainly very rare.

MITCHELL BANKS MEMORIAL LECTURE AT LIVERPOOL.

Sir John Bland-Sutton delivered the Mitchell Banks Memorial Lecture on Nov. 5th in the Surgery Theatre of the University to a large audience representative both of the undergraduates and the profession as a whole. The lecturer chose as his subject Surgical Technique, and developed his theme with a world-wide wealth of allusion which made it at the same time fascinating to hear and provocative of thought. In speaking of methods of suture he passed from the simple armamentarium of the tailor bird through the use of living Michel clips in the shape of ants' mandibles by primitive peoples, up to the 50 different methods of closing the abdomen collected on the continent for a recent thesis. He deplored the lack of a perfect suture material. Turning to the varied methods of dressing wounds, he reminded his audience that, within the memory of those still living, cow-dung had been used for the purpose in this country, as it still was in India, where the "sanctity of the cow gave an added virtue to the cataplasm." The gilder used gold-beater's skin, whereas the carpenter employed glue and shavings, and in spite of all nature generally won. This observation had led him to discard dressings altogether except in cases where discharges required to be absorbed. The lecture, illumined by many a quiet shaft of humour, and borne along throughout on a deep under-current of philosophy, was brought to a close by a noble tribute to Lord Lister and the wonderful edifice of aseptic surgery which had been raised upon his work. At night Sir John Bland-Sutton was the guest of honour at the biennial dinner of the Liverpool Medical Institution. There was a crowded gathering of members and their friends at the Exchange Hotel. An interesting point was raised by Dr. Adami, Vice-Chancellor of the University, in replying on behalf of the guests. He pointed out how, in spite of the tributes constantly paid to the scholarship of classical centres of learning, none of our universities had followed their example in setting training of body and mind side by side as the ancients did. Only 200 of our 1800 undergraduates took part in the university athletics, and he thought that as medical men we should press for the establishment of a spacious gymnasium where men and women alike could discipline the body in rhythmic exercise and true physical culture, as an integral part of university life. Mr. R. Craig Dun, the president, who was in the chair, spoke of the Medical Institution and the admirable part it played in the professional life of the city.

THE CULT OF BEAUTY.

"WITH beauty comes the birth of beneficent optimism, the joy of living, the daring of creative effort, the elation and nobility of the personality—in a word, happiness." Such is the creed of the author of this book,[2] and when all allowance has been made for enthusiasm Dr. Frumusan does manage to convey the conviction that beauty and health go hand in hand. He urges that only with a return to the cult of the aesthetic in regard to our bodies will come that race regeneration with which the French as a nation are beginning to concern themselves. This return is to be accomplished by giving physical culture almost as important a place as mental culture in all educational establishments, and, while we in this country are considered by the author largely to have solved the problem by our school games, he would go further and cut down all time spent in school to five hours, of which three hours shall be devoted to study and two to physical exercise. But it is not only with the rising generation that Dr. Frumusan is concerned: the present generation is condemned for its habits, its clothing, its feeding, its ignorance on elementary matters of washing and cleansing, and, above all, for its sedentary method of living. Movement, from the cradle to the grave, is the keynote of the book, and while the author is often over-enthusiastic, there is running through it such a strong touch of common sense that it should make an interesting appeal to those concerned with health and the prevention of avoidable disease.

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[1] Boston Med. and Surg. Jour., 1918, clxxix., 288.

[2] Beauty: How to Regain and Retain. By Dr. Jean Frumusan. Translated from the French by Elaine A. Wood. London: Bale, Sons and Danielsson, Ltd. 1925. Pp. 124. 7s. 6d.

Bradshaw Lecture

ON

THE MUSCULAR DYSTROPHIES, SYMPATHETIC SYSTEM, AND ENDOCRINE GLANDS.

Delivered before the Royal College of Physicians of London on Nov. 5th, 1925,

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I PROPOSE to confine my remarks to the group commonly denoted as muscular dystrophy with special reference to the ætiology of these disorders. I shall submit to you evidence from various sources which appears, to me at least, to suggest that the muscular dystrophies may not be myopathies or primary diseases of muscle, as they are generally regarded at the present time, but that their symptomatology may perhaps be determined by disease of the sympathetic nervous system. I shall also refer to the question of a possible relationship between the muscular dystrophies and the endocrine glands. While I admit that the evidence which I shall adduce is suggestive rather than conclusive, for it is based to some extent on observations which require further corroboration, my remarks may prove of value should they serve to focus attention upon points calling for elucidation in the determination of this problem.

The observation, that in the majority of cases of muscular dystrophy the sternal portion of the pectoralis major wastes while the clavicular portion escapes, is well known to all clinicians. It has often occurred to me that this very striking fact must afford a clue to, or at any rate must be taken into consideration in any explanation which may be advanced to account for, the incidence of the muscular involvement in these disorders. I shall in the first instance approach the problem from this standpoint, but it may be well that I introduce my remarks with a brief and pertinent historical prelude with special reference to the ætiological considerations which it is my present purpose to discuss.

THE RECOGNITION OF THE MUSCULAR DYSTROPHIES.

Aran's communication,[1] published in 1850, was the means of directing general attention to the progressive muscular atrophies. Ten years later Luys (1860)[2] observed changes in the grey matter of the spinal cord in cases of the kind, and in 1874 Charcot expressed the opinion that the paralysis and wasting in cases of progressive muscular atrophy were due to a chronic degeneration of the anterior horn cells of the spinal cord. This view, which was for a time opposed by Friedreich and others, who regarded the cell changes in the spinal cord as secondary, before long met with general acceptance. Various clinical types of progressive muscular atrophy had, however, been previously differentiated in which no spinal cord changes had been observed. Thus Meryon (1852),[3] in a communication entitled a Granular and Fatty Degeneration of the Voluntary Muscles, described four cases of progressive muscular atrophy in brothers, in one of which, examined post mortem, the muscles presented the appearances referred to in the title of his paper, while no abnormality was found in the spinal cord. Then in 1861 Duchenne of Boulogne published his classical description[4] of pseudohypertrophic paralysis. Again in 1875 Leyden[5] reported certain cases of muscular atrophy, occurring in families, to which he applied the designation "hereditary type of progressive muscular atrophy." Gowers,[6] whose monograph upon pseudohypertrophic paralysis appeared in 1879, clearly recognised that "hypertrophy and atrophy may exist in different proportions, and there are cases which connect the two extremes—in some enlargement of many muscles, and in others wasting of all." Erb,[7] of Heidelberg, in 1883 described his juvenile type, and three years later (1886) Landouzy and Dejerine[8] a form, which differed merely from the juvenile type of Erb in that the facial musculature was involved, to which they applied the term "facio-scapulo-humeral." The recognition of the types last mentioned is of especial interest, since progressive muscular atrophy in the adult had previously been believed to be of myelopathic origin.

Erb[9] was chiefly responsible for placing our knowledge of these disorders upon a sure footing. Basing his conclusions upon a large series of cases which he had personally examined both clinically and pathologically, Erb laid it down that there are two kinds of progressive muscular atrophy, one in which there is a degeneration of the anterior horn cells to which the symptoms are to be directly attributed, and another in which no such changes are observed. To the latter group he applied the term muscular dystrophy. Further, he demonstrated that these two groups of cases differed not only in the distribution and nature of the atrophy, but also in the structural changes presented by the muscles. Again, he pointed out that the types described by Meryon, Leyden, Moebius, Duchenne, Landouzy and Dejerine, and himself were merely variations of the same disease.

THE PRIMARY MYOPATHIC VIEW A NEGATIVE CONCEPTION.

While the earlier writers agreed as to the absence of changes in the spinal cord, numerous cases of muscular dystrophy have since been reported in which a reduction in the number and size of the anterior horn cells has been observed. These changes have, however, been regarded as of secondary origin. Thus Gordon Holmes,[10] who in 1908 reported a case of pseudohypertrophic paralysis in which such changes were present, and reviewed the literature up to that date, writes:—

> "The histological changes in the ventral horns in my case were, it seemed to me, quite distinct from the degenerative cell changes I have found in any of the many spinal amyotrophies which I have examined, and the muscular affection exceeds them very much in both degree and extent . . . the most probable explanation of these cases is that the neural changes are secondary to the primary muscle disease."

Further, he adds:—

> "It appears to me very improbable that the myopathies have a neuropathic basis, indeed, I cannot see how this contention can be logically sustained. In the first place, there is no reason why the muscles of certain individuals should not possess a morbid tendency to regressive changes quite as well as parts of the nervous system, and, secondly, in the majority of cases which have been examined no histological evidence of nervous change to which the muscular atrophy could be secondary has been found."

The generally accepted view according to which the muscular dystrophies are of primary muscular origin is, however, a negative conception, for it is essentially based upon the negative findings in the nervous system. It is, indeed, interesting to note that Landouzy and Dejerine suggested in 1886[11] that although the nervous system has been found normal in muscular dystrophy, it may nevertheless be altered in a way we are unable to detect, an opinion which was also held by Vulpian. Again Erb wrote in 1890:—

> "I cannot avoid the suspicion that after all the affection may be dependent upon the nervous system. It is tempting to suppose, as I formerly expressed it, that we have to do with a kind of tropho-neurosis having its origin in the trophic centres of the cord—a disturbance of the function of these centres which finds its expression in the very complicated muscle changes of the disease. A further rich experience, much thought expended upon the question, and particularly the above described anatomical findings (he refers to the changes in the muscles observed in poliomyelitis), have served to confirm me in my scruples."

New data have of late emerged which have a bearing on this problem, and I shall now direct your attention to certain apposite facts and discuss the conclusions which would appear to be legitimately derived from them.

INFERENCES FROM COMPARATIVE ANATOMY.

The incidence of the muscular involvement in the common types of muscular dystrophy—the atrophic type without muscular enlargement, the pseudo-hypertrophic paralysis of Duchenne, the juvenile type of Erb, and the facio-scapulo-humeral type of Landouzy and Dejerine—is strikingly similar. (I do not include the distal type, since I am not satisfied that these cases are distinct from peroneal muscular atrophy. Again, I have omitted myatonia congenita, regarding which there is still considerable difference of opinion, as also myotonia atrophica, which I am inclined to think is a distinct disease.) Although great individual variations are met with, certain muscles are very commonly picked out, while others are as commonly spared. The question arises, Does comparative anatomy afford any explanation of the facts? A study of the earlier stages of the disease is, you will agree, more likely to prove informative than at a later date when the atrophy has become generalised. The case of a miner at present under my care provides a useful illustration for discussion,. since the atrophy is very localised and complete, although its distribution is in some respects exceptional.

The patient, aged 46, is a particularly muscular man. He has suffered from no illness of a serious nature, nor, so far as he is aware, have any cases similar to his own occurred among his relatives. He states that, some ten years ago, he first noticed slight "stiffness" about the shoulders. The condition has, he thinks, become slowly more pronounced, but that it has not until recently given rise to any serious disability is evident from the fact that almost up to the time of his admission to hospital he was capable of doing a full day's work.

On examination a very localised but very complete bilateral atrophic paralysis is present. The muscles involved are the latissimus dorsi, the trapezius (including the upper third), the sternal portion of the pectoralis major, the serratus magnus, and the rhomboids, all of which are much wasted and absolutely powerless. The levatores anguli scapulæ are somewhat weak and wasted, especially on the right side. The brachioradialis is absent. All the muscles of the body apart from those mentioned are well developed and powerful, including the sternomastoid and the clavicular portion of the pectoralis major, the teres major, spinati, deltoid, and the muscles of the trunk and lower limbs. No fibrillary tremors are to be observed. There is no sensory loss and no alteration in the reflexes.

The atrophic paralysis in this case is limited, with the exception of the brachioradialis, to the extrinsic muscles of the shoulder-girdle. All these muscles are indeed completely paralysed excepting for the sternomastoids and the levator anguli scapulæ (the last-named muscle being somewhat weak and atrophic), and yet the patient suffers little inconvenience in consequence. The distribution of the atrophic paralysis if limited is, you will agree, characteristic of muscular dystrophy, although the fact that the levator anguli scapulæ and the upper third of the trapezius are affected is unusual, for these muscles are not, as a rule, involved until the later stages of the disease. Does comparative anatomy throw any light upon the localisation of the atrophic paralysis? Those of you who have read Sir Arthur Keith's fascinating Hunterian lectures[12] upon Posture: its Evolution and Disorders, will recall that he points out that in the pronograde animal the weight of the body is transferred to the upper limbs by a series of muscular slings or hammocks which are constituted by the extrinsic muscles of the shoulder-girdle, and that in the arboreal anthropoids, in which the arms and shoulders have to sustain the weight of the trunk, certain modifications take place in the musculature of this region. On the other hand, in man the trunk has to sustain the weight of the shoulders and arms, and "consequently we have here only to suppose a perfecting of a supporting reflex mechanism for the maintenance of the shoulders—a human character of late evolution." Now, is it not a striking fact that in the great majority of cases of muscular dystrophy it is the extrinsic muscles of the shoulder-girdle—the latissimus dorsi, the lower part of the pectoralis major and trapezius, the rhomboids, and the serratus magnus—which are prone to suffer: while, on the other hand, I think you will agree that the sternomastoid, as also the upper part of the trapezius and levator anguli scapulæ, the latter being muscles which constitute part of the sling system, but which have acquired new functions in relation to the supporting reflex mechanism necessitated by the erect posture, are in the earlier stages at any rate but seldom involved.

The escape of the clavicular portion of the pectoralis major calls for separate consideration. The pectoralis major is referred to by Dr. C. E. Beevor[13] as "one of the most interesting muscles of the body." As Wilfred Harris[14] has pointed out, the clavicular head below the gibbon is replaced by the anterior fibres of the deltoid. Indeed, Sir Arthur Keith indicates that the clavicular head of the pectoralis major is a new muscle—a late development in the process of evolution.

The absence of the brachioradialis in this case is of much interest. This muscle is, in my experience, very often absent in the muscular dystrophies. I have met with three additional cases in which it was absent, while all the other muscles of the forearm and upper arm were intact. The brachioradialis is really an upper arm muscle. W. Colin Mackenzie[15] points out that while in some animals, for example, the wombat, it is a muscle of great importance, in man it is "struggling hard to retain its place in the human economy." It would indeed appear in man to be a retrograde or regressive muscle with a comparatively unimportant function. And yet Sir Arthur Keith writes me it is a muscle which "is wonderfully constant—never absent."

These considerations would appear to suggest that it is the regressive or primitive muscles, as exemplified by the brachioradialis, which are especially predisposed in the muscular dystrophies, while, on the contrary, a muscle which is acquired late in the process of evolution—as is the case with the clavicular portion of the pectoralis major—and muscles which take on new functions in relation to the erect posture—as, for instance, the sternomastoid and upper part of the trapezius—escape.

CONCLUSIONS DERIVED FROM EMBRYOLOGICAL OBSERVATIONS.

The well-known observations of Babinski and Onanoff,[16] reported many years ago, are of much interest in relation to the problem under discussion. These observers found that the muscles of a five-months' fœtus varied greatly in their degree of development. Further, they noted that it is those muscles in which development is most advanced which are especially prone to suffer in the muscular dystrophies. In other words, their observations indicate that there is an intimate association between the degree of rapidity of the muscular development and the degree of predisposition to muscular dystrophy. Babinski and Onanoff employ figures with which to indicate the degree of development of the individual muscles, and tabulate their results as follows:—

Hand: muscles of thenar eminence, 2; muscles of hypothenar eminence, 2.

Forearm: brachioradialis, 5; extensors and pronators, 3; flexors of the fingers, 2.

Upper arm: biceps, 3; triceps, 3.

Shoulder, intrinsic muscles: deltoid, 4; infraspinatus, 3; subscapularis, 3. Extrinsic muscles: serratus magnus, 5; latissimus dorsi, 5; rhomboids, 5; adductor portion of trapezius, 5; clavicular portion of trapezius, 2.

Face: orbicularis palpebrarum, 5; masseter, 2; muscles of the auricle, 1.

Lower limbs: quadriceps, 5; calf muscle, 3; anterior tibial, 5.

It is interesting to compare these observations upon the development of the muscles in the fœtus with the incidence of the muscular involvement in the muscular dystrophies and with the observations on comparative anatomy to which I have just referred.

INCIDENCE OF MUSCULAR INVOLVEMENT REGARDED FROM THE STANDPOINT OF FUNCTION.

The problem of the incidence of muscular involvement may also be considered clinically from the point of view of function. Sir Charles Sherrington[17] has pointed out that while in various invertebrates individual muscles are specially differentiated for the execution of movements and the maintenance of posture, in the vertebrates, on the other hand, "the same muscle is used for the two purposes, though some muscles are predominantly concerned with one, some with the other function." Again, in the case of certain vertebrates, the rabbit, for instance, as Ranvier long ago demonstrated, some muscles—those which are obviously concerned more especially with active movement—are paler in colour than others which are obviously more especially concerned with the function of fixation. In man, however, there is no such difference in the naked-eye appearance of the individual muscles, nor, so far as I am aware, have two kinds of muscle-fibre been differentiated. Consequently, while further observation may serve to establish the presence of two kinds of fibres in the muscles of man, the possibility must be admitted, in the absence of evidence to the contrary, that the two functions—execution of movement and maintenance of posture—may be subserved by the same muscle-fibre.

The distribution of the muscular involvement in the muscular dystrophies suggests, I think, that muscles which are of special importance as fixators in relation to the maintenance of posture are predisposed, whereas muscles more especially concerned with active purposive movements of which we are more directly conscious are either spared or only suffer at a later date. We have already seen that the extrinsic muscles of the shoulder-girdle are commonly in great part involved, although the sternomastoid, upper part of the trapezius, and the levator anguli scapulæ as also the clavicular portion of the pectoralis major, which is, as I have mentioned, an intrinsic muscle, as frequently escape. Again, in the juvenile and facio-scapulo-humeral types the upper arm and thigh muscles are also affected. Further, when the muscles below the elbow and knee suffer, is not the weakness commonly most pronounced in the extensors of the wrist and the anterior tibial group, while the flexors of the fingers and the calf muscles, though the latter may be enlarged, remain comparatively powerful until a much later date? Dr. Beevor[18] laid it down that—

> "We have to differentiate in any movement between the muscles which take part directly in that movement and the muscles which are used to fix the joints which lie between the joint which is actively engaged and the fixed point or base on which the structure works."

The extensors of the wrist and the muscles of the upper arm play an important part as fixators in forcible grasping, while in running the anterior tibial muscles and the muscles of the thigh play a similar and equally prominent rôle. Now it is these muscles, which are especially concerned with fixation, which are at any rate first affected in the muscular dystrophies. On the other hand, the flexors of the fingers, the small muscles of the hand and the calf muscles, which are the prime movers in relation to the most important functions of grasping and running, tend to escape, as do the small muscles of the hand. Is it not the case, speaking generally, that as we pass from the periphery towards the trunk the muscles play a relatively more prominent part in relation to fixation as compared with conscious purposive movement? I would submit that muscles which are predominantly concerned with fixation are especially predisposed in the muscular dystrophies. This apparent relationship of the incidence of the atrophy to function suggests, does it not, a difference in nerve-supply?

DUAL INNERVATION OF SKELETAL MUSCLE.

It has long been known that the skeletal muscles are innervated by the somatic nerves which arise from the multipolar cells in the anterior horn of the spinal cord. Recent observations would, however, appear to indicate that the skeletal muscles also receive a sympathetic nerve-supply. Prof. J. T. Wilson,[19] who has summarised the evidence from the histological standpoint, concludes that—

> "It is difficult, if not impossible, to avoid the conclusion drawn by Boeke and supported by Agduhr and others from the results of what would appear to be crucial experiments, that these accessory fibres are sympathetic in origin and hypolemmal in their mode of termination. These relationships, if admitted, would seem to indicate a centrifugal conduction along these fibre paths of nerve impulses, presumably of motor and possibly of tonic contractile character."

The subsequent investigations of the late Prof. Irvine Hunter[20] upon this subject have, as you know, aroused widespread interest. While it is not my intention to discuss this question I may remind you that it was Kulchitsky's observation[21] "that the medullated and non-medullated fibres never terminate in the same muscle-fibre" which inspired Hunter's investigations. Hunter came to the conclusion from his histological and experimental observations that the differentiation of muscles into "movement" and "fixing muscles," which is so apparent in some invertebrates, is not lost in vertebrates, and that "the skeletal muscle of vertebrates consists of two sets of muscle-fibres disposed in groups each with its own specific innervation and consequently its own specific function." These two muscle systems of invertebrates are, he affirmed, represented as small muscle groups which mingle together to constitute the skeletal muscles of vertebrates. Further, Hunter's investigations led him to suggest that there are two kinds of muscle tone—first, "plastic" tone, which is responsible for the maintenance of any posture once it has been assumed, a function which he believes to be subserved by the sympathetic; and, second, "contractile" tone, which imposes posture on a limb as a result of shortening of appropriate muscles. These investigations and conclusions have been criticised by Walshe[22] who, in a brilliant review of Hunter's work, concludes that a sympathetic motor innervation of striated muscle has not yet been satisfactorily established, and that the experimental investigations undertaken to demonstrate the existence of two forms of tonic muscular activity, plastic and contractile, have not succeeded in doing so. It is, in Walshe's opinion, extremely doubtful if postural tone can be so divided into two separable components, and "consequently the question of a sympathetic innervation of a hypothetical 'plastic' component of postural tone cannot arise until the morphological problem is settled and until the existence of such a component has been demonstrated." Walshe's destructive criticism is of the greatest value, since it serves to indicate the possible fallacies and gaps in the chain of evidence, and indicates the necessity for caution in distinguishing between hypothesis and proved fact. At the same time, after carefully reading his review, I am still left with the impression that there is good reason for believing that the non-medullated fibres which pass to the skeletal muscles are probably sympathetic in origin and that they terminate in the muscle-fibres. In other words, as Langley, whom Walshe quotes, remarks, "the evidence is decidedly in favour of Boeke's views." Further, it is obvious that these fibres must have some function, and if they do terminate in the muscle-fibres, as the evidence would suggest, it seems probable that they are concerned with movement and very possibly with the maintenance of posture. The suggestion that the sympathetic supply to skeletal muscle has to do wit muscle tone, the maintenance of posture and fixation has not been definitely proved; nevertheless, the evidence bearing on the point is, I think, very suggestive.

DEDUCTIONS FROM HISTOLOGICAL APPEARANCE OF MUSCLES.

I shall now very briefly direct your attention to the histological appearances of the muscles in the muscular dystrophies in so far as they appear to have a bearing upon the question at issue. Our knowledge of these appearances, which have been studied and described in detail by many observers, has been derived in part from the examination of portions of muscle excised during life and in part from post-mortem examination. The changes met with vary according to the stage of the disease and are characteristic, if not absolutely distinctive. Again, while they present certain common features, they vary in different muscles and even in different parts of the same muscle. In some muscles, and this would seem to be the earliest stage, the muscle-fibres are swollen and show a rounded contour with poor striation, an increase of nuclei, and little if any increase in the interstitial tissue. On the other hand, in other muscles many fibres of unusually small calibre are met with, together with a great increase of interstitial tissue, thickening of the wall of the blood-vessels, and narrowing of the lumen. The enlarged muscles of pseudohypertrophic paralysis may be found to consist chiefly of large fibres. Later both large and small fibres are found, together with a great interstitial deposit of fat. Eventually the fat is absorbed and the muscles diminish in bulk.

How are these various appearances to be explained? The possibility that the primary change consists in an increase of connective tissue with secondary alterations in the muscle may be dismissed, since in some of the muscles the fibres show pronounced pathological changes with little or no increase in connective tissue. Further, the whole trend of pathological thought of recent years has been to regard proliferation of interstitial tissue as a secondary compensatory process. We see this exemplified, for instance, in relation to certain diseases of the kidney, liver, and heart. Are the muscle changes primary? This is the view which is generally accepted at the present time. On the other hand, the increase of interstitial tissue is often very much greater than one would expect were its increase due to a secondary compensatory process. It is often, for instance, very much more pronounced than that which is met with in the muscular atrophies of spinal origin. This being so, is it not more probable that both the changes in the muscle and in the interstitial tissue are due to a common cause? I would remind you that Duchenne, in writing of pseudohypertrophic paralysis,[23] remarked:—

> "The causative irritation which produces the abundant muscular proliferation and the other alterations in the interstitial connective tissue of the muscles, appears to me to be the probable cause of their enfeeblement. But how is this alteration to be explained and at the same time the change in the connective tissue? This is a problem still awaiting solution."

The suggestion has been advanced that the thickening of the walls and narrowing of the lumen of the blood-vessels which are often to be seen in the connective tissue may be the determining cause. *Buzzard and Greenfield*,[24] for instance, referring to these changes in the blood-vessels, remark:—

> "It is thus possible that the disease is primarily one of the sympathetic system and that inadequacy of blood-supply to a muscular area may determine the changes in the muscle-fibres. But the bulk of opinion favours the hypothesis that the muscles themselves are primarily affected and that the interstitial and vascular changes are secondary."

The thickening of the blood-vessels is, however, only observed when there is a pronounced increase of interstitial tissue, consequently it would seem to be unlikely that the appearances in the muscles are due to a defective blood-supply. Possibly, however, we have here an explanation of the localised atrophy and "the cricket-ball appearance" which, although only occasionally met with, is so characteristic.

Is it not possible that if both the changes in the muscle-fibres and the increase of interstitial tissue are due to a common cause they may both be a direct consequence of disturbance of sympathetic innervation? Have we not a possible analogy in the tabetic arthropathies? Here we find trophic changes in bone, a tissue of low order. While in some arthropathies there is a great bony increase, in other instances the process is apparently atrophic from the first. We know little if anything of the changes in the muscles which follow sympathectomy. Hunter's observations[25] are suggestive in this connexion, for he has noted the presence of a number of small fibres, an observation which would appear to indicate that the sympathetic has a trophic influence on the muscle, and he also appears to have observed an increase of interstitial tissue greater than that which follows division of the somatic fibres. Thus he writes:—

> "In the case of sympathetic denervation which removes plastic tone, increase in fibrous tissue no doubt renders the muscle more efficient in maintaining a position imposed by active movement or by selective reflex activity. When contractile tone is removed by somatic denervation only a very slight increase of connective tissue occurs over a period of 60 days."

This sentence would certainly seem to suggest that Hunter observed a greater increase of connective tissue after sympathetic than after somatic denervation. Further experimental observations are, however, required with direct reference to this point. Lastly, I would remind you that Erb long ago pointed[26] out that in acute poliomyelitis similar morbid changes (hypertrophy, proliferation of nuclei, division of the fibres), both in the muscles and connective tissue had been noted by W. Muller, Dejerine and Huet, Joffroy and Achard, and Hitzig. But is it not the case that poliomyelitis is a disease in which changes referable to the sympathetic system—coldness and discoloration of the limbs, atrophic changes in the bones and contractures—are often pronounced? In chronic progressive muscular atrophy of spinal origin, in which the pathological changes are limited to the anterior cornual cells, no such changes are observed.

SYMPTOMATOLOGY APART FROM THE MUSCULAR ATROPHY.

Some of the phenomena observed in cases of muscular dystrophy cannot be accounted for on the assumption that these disorders are due to a primary disease confined to the muscles. The marbled appearance of the skin, which is not uncommonly seen in the muscular dystrophies, was such a striking feature in Meryon's cases that this observer was led to suggest a sympathetic origin for the disease. *Contractures* are often met with both in the early and later stages. They have been especially studied by Hahn[27] and others. Again, while contractures are not observed in the chronic progressive muscular atrophies of spinal origin, they constitute a feature of the clinical picture in many cases of acute poliomyelitis, a disease in which other manifestations pointing to disturbance of the sympathetic system are often present. Further, trophic changes in the bones have been described by Friedreich, Le Gendre,[28] Schlippe,[31] Dreyer,[32] Schultze,[30] Spiller,[29] Timme,[37] and others. Spiller remarks: "In a case reported by me the bones were undoubtedly involved, which seems to indicate that the disease may not be merely muscular." Schlippe, too, believes that the skeletal changes are brought about most probably by the same cause that produces the changes in the muscles. The thigh bone in one of Schultze's cases was only the thickness of one's middle finger, and the humerus was still thinner, the medullary cavity being very small. In the case of a boy of 15 with a muscular dystrophy of the pseudohypertrophic type at present under my care, the bones are almost as thin as in Schultze's case, though they are of normal length. Eulenberg[31] and Bregmann,[32] on the other hand, have reported cases *of muscular dystrophy* in which the bones were hypertrophied. Changes in the heart muscle have, I may remind you, been found by Bunting,[33] Potter,[34] Globus and others in pseudohypertrophic paralysis. Again, intellectual impairment, which is generally admitted to be not infrequent, led Duchenne at first to believe that he was dealing with a cerebral disease. Further, as I shall *presently point out, pronounced* disturbance of the endocrine glands is an occasional accompaniment, while it may be that slighter degrees of endocrine disturbance are not infrequent. These facts all suggest, do they not, that the atrophy of the muscles in the muscular dystrophies is to be regarded as merely the most prominent manifestation *of a pathological process which is not* confined to the muscles but is much more generalised.

HYPERTROPHY AND PSEUDOHYPERTROPHY.

Enlargement of muscles is a striking feature of some cases of muscular dystrophy. Very exceptionally, as in the case figured by Duchenne, most of the muscles are enlarged. As a rule, however, the enlargement is limited to certain muscles. It may be that the enlargement is sometimes a true compensatory hypertrophy as in two cases I have *observed, in* which there was great wasting of the quadriceps group, while the tensor fasciæ femoris was very large and powerful. The muscles in this case were not, however, examined histologically. In pseudohypertrophic paralysis enlargement of muscle is typically observed. But it is a mistake to suppose that the enlarged muscles are *necessarily* weak muscles. The increase in size may, as has been shown, be due, in the earlier stages at any rate, to an increase in size of the muscle-fibres, and there may be no increase of interstitial tissue and fat—i.e., no pseudohypertrophy. I have, for instance, under my care a boy of 11 with great enlargement of the calves and some contracture of the calf muscles, as a consequence of which he walks on his toes The movement of plantar flexion of the feet in this case is very powerfully carried out against resistance; indeed, I am almost inclined to say that the power evinced suggests a true hypertrophy of the calf muscles; on the other hand, dorsiflexion of the feet is overcome with comparative ease, although there is *no actual* wasting of the anterior tibial group. The muscles of the upper extremity most often enlarged in pseudohypertrophic paralysis are the spinati, deltoid, triceps, and ,the extensors *of the forearm*; while the muscles of the lower limbs, in which enlargement is most often observed, are the gastrocnemii, glutei, quadriceps, and sartorius. Enlargement of the *trunk* muscles, the serrati, masseters, and tongue is occasionally observed. Very exceptionally are other muscles enlarged. Why is it that some muscles should show a tendency to *enlarge*, while others, if affected, invariably waste from the first, and why do certain muscles enlarge more often than others? It is, I think I may say, speaking generally, *the* bulky muscles which usually show enlargement. Is it possible—I put forward this suggestion with considerable diffidence—that these muscles are, on account of their bulk, *of* especial importance as glycogen storers, and that the enlargement is in some way associated with this function?

Why does pseudohypertrophy occur in *some* cases of *muscular* atrophy and not in others? This is not to be explained by the age factor, for although pseudohypertrophy is pre-eminently met with in the cases which occur in childhood, it is not observed in all children suffering from muscular dystrophy, and it is also met with in adults as, for example, in some cases of the juvenile type. Then, again, it is *not an* essential family trait, for a number of instances have been recorded (Erb, Gowers, Byrom Bramwell, and others) in which some members of a family have suffered from pseudohypertrophic paralysis and others from the same type of muscular dystrophy but without enlargement of the muscles. Obviously, under such circumstances individual predisposition must be the determining factor. A relationship between the *muscular dystrophies and the endocrine* system has recently been suggested, and I shall presently cite cases which appear to indicate a relationship between disturbance of pituitary function and pseudohypertrophic paralysis. I would suggest that the pseudohypertrophy may possibly be a superadded phenomenon so to speak, and that its occurrence may *be determined by a tendency to hypopituitarism*, the fat being absorbed at a later date in response to the economic demands of the tissues. Falta[39] refers to a case of hypophyseal dystrophy reported by *Marinesco* and Goldstein in which fat-permeation of the muscles was apparently found, and he states that this is also observed in primary genital adiposity and in castrated animals.

CAUSE OF THE PARALYSIS.

The *sympathetic supply to skeletal* muscle is part of an involuntary system, and if the muscular dystrophies are due to disease of the sympathetic, how are the loss of power and atrophy to be *explained?* If it is the case that the same muscle-fibre is innervated by both somatic and sympathetic nerve-fibrils, may it be that disease of the latter eventually interferes *with the* voluntary contractile function of the muscle? If, on the other hand, Kulchitsky's view is correct and Hunter is correct in his conclusion that "the two muscular systems of *invertebrates* are represented as small groups which mingle together to constitute the skeletal muscles of vertebrates," may it be that the voluntary muscle-fibres or the nerve-fibrils which innervate them are secondarily involved? Gordon Holmes suggests[40] that the changes met with in the anterior horn cells in some cases of muscular dystrophy may perhaps be *explained* by supposing that "the terminal branches of the axis-cylinder, left naked by the disappearance of the muscle-fibres, will be probably injured and possibly destroyed by the connective tissue which proliferates secondary to the muscle disease." May it be that the voluntary nerve-fibrils are secondarily injured and ultimately destroyed by the changes in the *muscle* or in the interstitial tissue, the increase of the latter resulting not as a secondary process but, as I have suggested, as a direct consequence of disturbance of the *sympathetic* innervation? But if this is so, why is it the exception to find changes in the anterior horn cells? Here, again, I would refer to Gordon Holmes's suggestion[41] that—

> "*The integrity* of the nervous system in some cases of primary muscular atrophy is parallel to the fact that sometimes all the ventral motor horn cells disappear after amputation of the segment of the limb which they supply, *while in other cases* these cells may be practically unaffected."

The enlarged muscles in pseudohypertrophic paralysis for long retain their power. May it be that the fat acts as a cushion *or buffer* and prevents strangulation of the voluntary fibrils which are only involved at a later date when, as the fat is absorbed, the muscle wastes?

MUSCULAR DYSTROPHIES AND ENDOCRINES.

The question of a relationship between the ductless glands and *the myopathies* has of late been referred to repeatedly in the literature, notably by the endocrinologists. References to this relationship from the neurological standpoint are, *on the* other hand, comparatively infrequent. The muscular dystrophies have not received much attention in this relation. Isolated clinical observations have been accumulating, but hitherto *very few* post-mortem examinations upon cases of muscular dystrophy have been reported in which special attention has been directed to the condition of the endocrines. *In two* cases studied anatomically by Goodhart and Globus,[43] the only pathological changes in the organs of internal secretion were observed in the thymus, while Clarke and Atwood[44] *found* in one case an enchondroma of the hypophysis. Pathological observations are necessary in order definitely to establish the suggested relationship on a sure basis.

I shall now direct your attention to certain observations which seem to me to suggest that there is a relationship between disturbance of pituitary function and the muscular dystrophies. I may commence by citing briefly the leading facts of a case in which pseudohypertrophic paralysis was associated with adiposity and defective sexual development.

W. M., aged 11, was admitted to my care on the recommendation of Dr. Andrew Rutherford. The youngest of a family of five, none of his relatives so far as is known have been similarly affected. Always somewhat stout, at the age of 6 he was operated upon for an acute appendicitis. At that time it was first noticed that he was easily knocked over and often fell when walking, and at the same time he began to increase greatly in weight. The muscular weakness has been steadily progressive.

The patient is very stout. His height is 4 ft. 1 in., his weight 7 st. 13 lb. The mammæ are somewhat prominent and there is a definite mons veneris. Although he is said to have been rather backward at school his intelligence appears to be little, if at all, below the average. The genitals are poorly developed, the testes being very small and soft. Headache has not been complained of. The visual acuity, the fields of vision, and the fundi (examined by Dr. H. M. Traquair) show no abnormality. The total quantity of urine for the 24 hours averages 24 oz. The fasting blood-sugar, taken on two separate occasions, was 0·108 per cent. and 0·113 per cent. The sugar tolerance could not be determined. The basal metabolic rate was +11 per cent. on June 1st, 1925; —14 per cent. on Oct. 28th, 1925. Examination of the fæces shows 33 per cent. of fat in the dried stool (split 57 per cent., unsplit 43 per cent.). The systolic blood pressure is 112, the diastolic 90. X ray examination shows no enlargement of the sella turcica or other obvious abnormality. Further, there is a pronounced atrophic paralysis with a typical distribution as met with in pseudohypertrophic paralysis, affecting particularly the muscles of the shoulder-girdle and trunk, the upper arm muscles, and thighs. The muscles below the elbow, notably the extensors of the wrist (the brachioradialis was absent), as also the muscles below the knee, especially the anterior tibial group, show pronounced weakness. There is very definite enlargement of the calf muscles, but on account of the adiposity it is not possible to determine whether there is enlargement of other muscles.

When two uncommon pathological conditions coexist in the same individual the question naturally arises: Is the association accidental or is there some relationship, and, if so, what is it? I have been able to find records of similar cases reported by Foerster, of Breslau,[43] Dziembowski,[44] and McCouch and Ludlum.[41] I have also heard of two further cases as yet unpublished. Foerster refers to the frequency of adiposity and high sugar tolerance in muscular dystrophy. I can personally recall two or three cases of pseudohypertrophic paralysis, seen many years ago, in particularly fat children, and it is, I think, very probable that these would nowadays be regarded as cases of pituitary adiposity. Gardiner-Hill, I. Jones, and Forest-Smith[45] have recently reported 60 cases of adolescent pituitary obesity "in which the primary disturbance seems to be one of pituitary function," a fact which indicates that this condition is far from uncommon. It is, indeed, probable that slighter degrees of pituitary adiposity are often not recognised. Again, it may well be that the muscular weakness may be overlooked in cases in which the glandular symptoms are pronounced. Dr. John Thomson recently mentioned to me a case of pseudohypertrophic paralysis in which the patient became very stout, an observation which would suggest in this case at least a special tendency to put on fat.

But it is further of interest to note that cases have been described by Eulenberg, Marquard,[46] Timme,[47] and Janney, Goodhart and Isaacson[48] in which appearances suggestive of acromegaly occurred in association with muscular dystrophy, a rather striking fact in view of the age of these patients. The following case of muscular dystrophy in which the patient's appearance is suggestive of acromegaly is of interest in this connexion.

J. A., aged 18. A younger brother suffers from pseudohypertrophic paralysis, and a sister has symptoms of rib pressure. A maternal uncle was dumb and is said to have walked in a similar manner to the patient. At the age of 7 the patient developed measles, and from that time his lower limbs and arms became progressively weaker. There is no definite history of enlargement of the muscles. Two years ago people began to remark upon his changed appearance, and he himself noticed about that time that his face was becoming larger.

The patient is somewhat childish. His height is 5 ft. 4 in., his weight 11 st. 13 lb. His features are coarse and large, the lower jaw is long and heavy, the lower teeth project above the upper and are set widely apart; the lips are thick and the mouth very large. The palpebral fissures are narrow, the nose broad and flat, the eyebrows and eyelids thick, the tongue large. There is a large simple goitre. The scalp is very mobile, the hands and feet are thick and broad. The hair is thick and coarse, and there is an excessive growth of hair below the knees. There is a good growth of pubic hair which extends upwards towards the umbilicus. The genitalia are rather infantile. The visual fields show no abnormality. X rays of the skull show no enlargement of the sella turcica or frontal sinuses. The average amount of urine passed during the 24 hours is 37 oz. The heart is somewhat enlarged to the left, but the sounds are pure. The systolic blood pressure is 135, the diastolic 95; sugar tolerance is diminished. The distribution and features of the muscular atrophy are typical of the later stages of pseudohypertrophic paralysis.

All these observations suggest that disturbances of pituitary function are met with in cases of muscular dystrophy with a comparative frequency which cannot be accounted for by coincidence.

A relationship between the pineal gland and muscular dystrophy has been suggested by Timme[47] who, in reporting four cases of "a somewhat atypical muscular dystrophy rather resembling Erb's infantile type," states that "the probability approaches pretty closely to proof that disturbances of the pineal gland play an important rôle in the pathogeny of progressive muscular dystrophy." I cannot here discuss Timme's interesting observations and conclusions. I may say, however, that he attaches considerable importance to "changes in the pineal gland demonstrated by roentgenology." Again, when an endocrine disturbance is met with in association with a muscular dystrophy, may it not be that both are dependent upon a common cause? Cases of muscular dystrophy associated with a pluriglandular disturbance have been reported by Claude[49] and by Brock and Kay.[50]

A hypoglycæmia has been noted by several observers in cases of muscular dystrophy. Thus Janney, Goodhart and Isaacson report nine cases of muscular dystrophy in all of which there was a definite hypoglycæmia. They remark that—

> "The constant presence of hypoglycæmia and the evidence of delayed glucose utilisation in muscular dystrophy make it probable that defects in carbohydrate metabolism are intimately connected with, if not directly causative of, the metabolic picture of the disease. . . . It seems likely that the muscles in this condition undergo weakness, atrophy, and degeneration as the supply of their carbohydrate pabulum is interfered with."

McCrudden and Sargent,[51] who have studied a case of muscular dystrophy with hypoglycæmia in great detail from the laboratory point of view, are of opinion that the hypoglycæmia may underlie the great fatiguability. Again, Goodhart and Globus, who also emphasise the association of hypoglycæmia with muscular dystrophy, hold similar views. But while these observations are of much interest further facts are required, for my own experience leads me to doubt the constancy of hypoglycæmia in muscular dystrophy.

Nature of the Process.

If, as I have suggested, the muscular dystrophies are determined by disease of the sympathetic, what is the nature of the process? If the sympathetic is selected by disease, is it not reasonable to assume that it may be affected by different pathological processes as are the somatic neurons? Is it not possible, for instance, that the sympathetic neurons may not only degenerate but that they may be picked out by selective poisons? Here, however, we are on the boundaries of a field of which we have little if any knowledge. Cases of recovery from muscular dystrophy have been reported by Erb,[52] Marina,[53] Jendrassik,[54] and others. The diagnosis between pseudohypertrophic paralysis and a toxic neuritis may on occasions, notably in the absence of a family history, give rise to great difficulty. This was so in a case which I have reported elsewhere.[55] In this case the late Dr. F. E. Batten, who was in doubt as to the cause, finally committed himself to a diagnosis of pseudohypertrophic paralysis, and the patient eventually recovered. So far as I know, in all the reported instances in which recovery has occurred, the cases were isolated, no other members of the family having been similarly affected. Is it possible that in these cases of reported recovery from muscular dystrophy the process may have been a toxic neuritis which has selected the sympathetic neurons and thus produced an atrophic paralysis similar in distribution to that met with in the muscular dystrophies? Whereas may it be that the familial cases are determined by a degenerative process, a tendency for the sympathetic neurons to die an early death? I am, however, fully aware that speculation has its limitations.

CONCLUSIONS.

1. The generally accepted view according to which the muscular dystrophies are regarded as myopathies or primary diseases of muscle is a negative conception.

2. There is very considerable evidence which would appear to suggest that the skeletal muscles in man have a dual innervation—a somatic supply concerned with movement, a sympathetic supply with fixation. The suggestion is advanced that the muscular dystrophies may perhaps be determined by disease of the sympathetic supply to skeletal muscles.

3. The muscles especially predisposed to suffer in the muscular dystrophies are: (*a*) those which develop early in the fœtus; (*b*) those which are regressive (in the sense that they no longer fulfil such an important function as in an earlier stage of evolution) as opposed to those which have been acquired at a later date or have taken on new functions; and (*c*) those especially associated with the function of fixation. A difference in function suggests a difference in innervation.

4. The histological appearances met with in the muscular dystrophies are more easily accounted for by postulating a common cause than on the assumption that the process is a primary one affecting either the interstitial tissue on the one hand or the muscle on the other. An analogy is drawn with the tabetic arthropathies in which both hypertrophic and atrophic changes are met with.

5. Symptoms are observed in the muscular dystrophies which cannot be explained by a primary disease confined to the muscles. This would suggest that the atrophic paralysis of the muscles is merely the most prominent manifestation of a more widespread process.

6. It is suggested that the gradual loss of power and wasting may be determined either as a direct consequence of interference with the sympathetic innervation or as a consequence of secondary involvement of the somatic nerve fibrils by the changes in the muscles and interstitial tissue which result from disease of the sympathetic nerve-supply.

7. The suggestion is advanced that cases of muscular dystrophy in which great improvement or recovery has occurred may perhaps be explained by a difference in the nature of the pathological process. While the familial cases may be due to an abiotrophy of the sympathetic neurons, these isolated cases may conceivably have been determined by a toxic neuritis which has selected the sympathetic fibres and produced an atrophic paralysis of similar distribution.

8. Pseudohypertrophy, when it occurs, is an individual rather than a familial characteristic. It is here suggested that it may possibly be a superadded phenomenon dependent upon relative pituitary insufficiency.

9. Facts are submitted which appear to indicate a relationship between disorders of the pituitary gland and the muscular dystrophies. It may be that disturbances of the pineal and other glands also occur. The probability would appear to be that both conditions are due to a common cause rather than that the muscular dystrophy is secondary to the endocrine disturbance.

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DR. SCHWEITZER'S HOSPITAL FUND.—Some eleven years ago Dr. Albert Schweitzer, musician and medical missionary, opened a hospital at Lambarene in French Equatorial Africa specially for the treatment of sleeping sickness and leprosy. Early last year he returned to Africa with the object of starting a second hospital in the Cameroons, full facilities being provided by the British Government. Circumstances then prevented the carrying out of the project, but an appeal for help has recently been made by a British council, of which Dr. P. Manson-Bahr is the medical member, in order that Dr. Schweitzer's work may be extended. British Bulletin No. 1 explains the reasons why it should be possible to establish a hospital in British territory at Nyasoso. Up to Sept. 10th last £128 had been received in contributions. Anyone who desires to receive further bulletins should send name and address to Miss M. O. Bronner, hon. treasurer of the fund, at 15, Castleton Mansions, Barnes, London, S.W. 13.

THE SPECIFIC TREATMENT OF PNEUMONIA.

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THERE is little doubt the treatment of pneumonia at the present time is more chaotic than that of almost any other ailment. Some cases are treated with orthodox stock mixtures; others with some drug or combination of drugs in which the prescriber has faith; some believe in poultices, others in icebags. Specific treatment is not uncommonly given without any serious attempt to ascertain whether it is in fact specific—in other words, the precise nature of the infection is inferred, not demonstrated.

Serums and vaccines have revolutionised the treatment of some serious or intractable diseases, but opinions are still sharply divided on the question of their value in pneumonia. There seems, however, to be a fairly general consensus of opinion that specific treatment is more likely to be of decisive value if employed as a first, not as a last, resort. Wynn reports that of 107 cases of influenzal pneumonia 28 were treated with pneumococcal vaccine on the first day, and all recovered; whereas of 20 cases so treated on the fourth day of the disease five died. Lister, from a wide experience in South Africa, is in favour of vaccines in early cases, given in larger doses than we have been accustomed to in this country. He has demonstrated experimentally that the blood serum of rabbits develops specific antibodies after suitable doses of pneumococcal vaccine, and that rabbits so treated resist infection by living and virulent pneumococci, whereas rabbits not so protected invariably die. Lister seems to have definitely proved that prophylactic inoculation of pneumococcal vaccine reduced the incidence of pneumonia.

I have been using pneumococcal vaccine regularly for 15 years as opportunity offered, and, though I have had cases in which this treatment seemed to have no effect, I feel strongly that every incipient case of pneumonia or doubtful "influenza" should be treated with pneumococcal vaccine without delay. If vaccine is given as a routine in doubtful "influenzal" attacks, before definite physical signs are present in the lung, the results will often be so good that we are subsequently in doubt whether we have been dealing with an incipient pneumonia or not. For example:—

CASE 1.—Some years ago I was asked to see a patient in consultation a little before midnight. The doctor in attendance had, with another medical man, come to the conclusion in the afternoon that the patient was suffering from incipient pneumonia. When I saw him his temperature was about 101° F.; he had a well-marked malar blush. His illness began some 12 to 18 hours before my visit. All the evidence available was in favour of the diagnosis already made. I gave him a medium dose of pneumococcal vaccine; and it was arranged that the three of us should meet in consultation the following afternoon. We did so, and were astonished to find that a complete transformation had occurred in the interval. His temperature was normal; his pulse had also fallen; but, fearing that he might not make an uninterrupted recovery, I took a blood culture, with a view to preparing an autogenous vaccine if necessary. The culture was negative.

A wider experience has shown that a negative result might have been anticipated. It is now clear that I should have taken a blood culture when his temperature was high the night before. If this had revealed a pneumococcal infection there would have been no doubt as to the nature of the illness, and little doubt as to the value of the treatment adopted. Of course, it may be argued that a negative blood culture does not exclude a pneumococcal infection. I quite agree; but it seems to me that for the purpose of establishing this treatment on a firm basis only positive cases should be considered.

Diagnosis by Hæmoculture.

Diagnosis by hæmoculture is more frequent than it was a few years ago; but I doubt whether its advantages and limitations are even now generally appreciated. A septicæmia is probably always present during the first few hours of a pneumonia. When this septicæmia persists to the later stages, and is associated with a comparatively low leucocyte count, I have found that the prognosis is bad, though the patient's general condition may seem fairly hopeful. Hæmoculture in pneumonia has recently become more important for treatment also. When positive it is the most convenient and rapid method for ascertaining the type of pneumococcus present, as a preliminary to the use of the Rockefeller serum in Type 1 cases. But this septicæmia is, as a rule, transient; it usually disappears in a day or two in cases of moderate severity. Fortunately, it is present most frequently at the stage when we are most in need of help in diagnosis and guidance in treatment. Besides, a positive blood culture permits of the earliest possible preparation of an autogenous vaccine.

As evidence of the comparatively transient character of the septicæmia in pneumonia, I may recall a case I published ten years ago. It came under observation during the incubation period, the only case of the kind I have seen. It is also relevant in this connexion as it was treated with pneumococcal vaccine on the first day of the fever.

CASE 2.—A man, aged 46, consulted me in the evening on his way home from work. His pulse was 92; temperature normal (? or subnormal); he had no pain or other sign of a serious illness, but I was well acquainted with him, and, though I could find nothing wrong, I believed him when he said he *felt* ill, as he was paler than usual, with a distinctly "pinched" expression. Next morning I found his temperature 102° F.; pulse 108; respirations 40. Pneumococcal vaccine was given at once, and at the same time a blood culture (10 c.cm.) was taken; this yielded a profuse growth of pneumococci. Next day there was some improvement, but on the third day of the fever his temperature again touched 102° and his respirations 48–50. There was now some cyanosis, and for this reason some blood was taken from a vein and 10 c.cm. of it used for a second culture. This culture was sterile, though the patient was obviously in a serious condition. A larger dose of vaccine was now given, and next day (the fourth day of the fever) the following observations were made: Morning: temperature, 102°; pulse, 120; respirations, 58. Evening: temperature, 98°; pulse, 76; respirations, 54. The respirations continued high for several days, and there was still some delirium and restlessness. His pulse, however, never rose again above normal, and the temperature only touched 100° one evening. He has remained in good health up to the present time (1925).

I suggest that in this case there is a reasonable presumption that the natural course of events was modified by the vaccine. If this view be accepted it follows, I think, that this method of treatment should be tried on a larger scale than hitherto in incipient cases; but I venture to urge that hæmocultures are indispensable until conclusive evidence of the value of the treatment is forthcoming on a large scale. A mere multiplication of results similar to that recorded in Case 1 can hardly be expected to settle the question. I have had a number of results similar to that in Case 2 in the last 15 years, and many others are recorded in papers by Harris, Morgan, Raw, and Wynn. My experience points mainly to the necessity for prompt treatment of incipient cases. I can cordially endorse Dr. Wynn's dictum that early pneumonia "should be regarded as an acute medical emergency demanding prompt action in the same way that a perforated duodenal ulcer and acute appendicitis are regarded as acute surgical emergencies."

The treatment of incipient pneumonia is the concern mainly of the private practitioner, for it is he who is faced with these emergencies. The consulting physician sees them at a later stage, often, indeed, so late that specific treatment, if employed at all, is not given a reasonable chance. But material for a final assessment of the value of specific treatment in early pneumonia can hardly be anticipated from the isolated efforts of individual private practitioners under present conditions. If pneumonia were dealt with on similar lines to diphtheria as regards diagnosis, specific treatment, and notification the outlook would be more promising. In connexion with pneumonia, however, I suggest that it would be desirable not only to provide pathological facilities and vaccine or serum, but also some sort of clearing-house, preferably as a department of the public health service, which would collate clinical records. This would eventually permit of a sufficiently wide scrutiny of results to settle the matter to the satisfaction of all except perhaps the occasional crank who refuses to be influenced by evidence.

Conclusions.

I may summarise my conclusions as follows: (1) A medium dose of stock pneumococcal vaccine is free from risk; it appears to be of decisive value in many incipient cases; it should be used with the least possible delay. (An autogenous vaccine or Rockefeller serum involves some delay; they can be used later, if required.) (2) Any estimate, favourable or unfavourable, of specific treatment is comparatively worthless where the diagnosis is based solely on clinical evidence. (3) Hæmocultures are more frequently positive in incipient pneumonias than in the later stages; when positive at the onset they are helpful in treatment as well as diagnosis; when positive in the later stages they provide one of the most reliable foundations for accurate prognosis.

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Malone: Ind. Jour. Med. Research, 1924–25, xii.

LIPIODOL IN THE DIAGNOSIS OF PREGNANCY.*

BY DR. CARLOS HEUSER,
BUENOS AIRES.

SINCE the discovery of X rays efforts have been made in different maternity hospitals to obtain radiographs of the fœtus during pregnancy, in order to make diagnosis clear and to throw light on conditions not recognisable by ordinary clinical methods. This problem has been partly solved by the newer apparatus, for it provides us with rays of such quality as to allow the taking of radiographs of the fœtus after the third month of pregnancy. These rays comprise a certain percentage of hard and white rays, from which must be eliminated the secondary rays and the reflections produced by the Potter Bucky diaphragm, in order to obtain a picture of the bony structure of the fœtus. There is no other way to make clear or to confirm a diagnosis in the early stages; X rays are absolutely indispensable for the diagnosis of a twin pregnancy, an anencephalous fœtus, or a dermoid cyst in case of non-appearance of the period for the first month or two. The exact appreciation of a pelvis narrowed in its different diameters can only be had after a good radiograph, and all the cases diagnosed by us have been successfully operated upon, for, before starting operation, we knew exactly what we had to deal with.

Apparatus and Method.

The best method of taking a good radiograph is to use a modern equipment—an apparatus which produces 100 kilo volts, 80 milliampères, tube Müller, Metro, or Medor, double reinforcing screen, films Victor, &c. These are the elements that must be relied upon in order to give a full measure of security. The photographer's art is indispensable in these cases in order to obtain the highest possible definition and clearness. It is also of great importance to have the bowels evacuated and that the fœtus and patient should be motionless. A purgative and an enema must be given the day before the radiograph is taken, and on the day of examination another enema is given with 40 drops of laudanum (Sydenham) in 50 c.cm. of water, and 10 to 20 drops are given to the patient one hour before the radiograph is taken. In this way a successful radiograph may be obtained from the fourth month of gestation.

Radiography Before the Fourth Month.

What I am about to explain is something different, something essentially new—viz., the taking of radiographs before that stage, a method entirely my own. It was perhaps by a scientific inspiration that, after the injection of lipiodol into the trachea, as used by Prof. Sergent, I conceived the idea of adopting the method with the uterine cavity, and so making possible a diagnosis of pregnancy. When a period or two is missed you can never be quite sure that a patient is pregnant, for the uterus might be small or it might be ante- or retro-flexed. In such cases a precise diagnosis is only possible by the use of X rays to show whether the cavity be occupied or not. In the different pregnant patients in whom we have injected lipiodol into the uterine cavity we did not provoke an abortion, while, on the other hand, the radiograph has enabled us to arrive at a positive diagnosis.

Usefulness of the Method.

In these conditions we have laid down fixed rules. When a woman after conception, and after one or more missed periods, wants to know if she is pregnant, and the clinical examination is indecisive, lipiodol must be injected into the uterus. A radiograph should then be taken in order to give absolute certainty. Under no other conditions must we proceed, in order to avoid dangerous eventualities.

If the injection has been successfully made the radiograph of the uterine cavity filled up with lipiodol shows: 1. That the cavity is not well filled if the fœtus is more or less developed, the lipiodol penetrating round the fœtus, and showing that the cavity is occupied. 2. The round shape of the stain with the radiograph of a tube together with the clinical symptoms indicating the pregnancy. 3. When the fœtus is larger, the liquid penetrates very little, in a line more or less curved, and the form of the radiograph of the uterus indicates the pregnancy. 4. If the period is missed once or twice and the patient thinks herself pregnant, the injection of lipiodol into the uterine cavity may show in triangular shape and at the same time one or both tubes may fill up with the liquid. In such a case the radiograph shows that the uterine cavity is unoccupied and there is no pregnancy. 5. Every radiograph of the uterine cavity must be complete in order to show the neck and cavity for a satisfactory diagnosis to be made from it, together with the clinical symptoms. 6. The radiograph may thus allow us to diagnose sterility due to obstruction of the tubes; for it may be observed that they do not fill or fill up badly. 7. In cases of pyosalpingitis and old salpingitis a radiograph of the tubes can be obtained and the diagnosis confirmed.

The procedure to be described is entirely new and is submitted now to others for the test of further experience. Hitherto we have had no means of trustworthy diagnosis of pregnancy in the first months. The problem is a serious one, for in all maternity homes there are records of cases of early pregnancy which have been operated on for fibroma. The injection of lipiodol into the uterus does not provoke abortion if definite rules are observed.

Technique of the Method.

We have applied this method in the case of all our patients who have presented themselves without any special selection and without any disturbance further than a careful disinfection of the

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* Presented at the London Congress of Radiology.

THE SPECIFIC TREATMENT OF PNEUMONIA.

BY J. STAVELY DICK, M.B., B.CH. R.U.I.,
HON. CLINICAL PATHOLOGIST, HOSPITAL FOR SKIN DISEASES; LATE PATHOLOGIST, NORTHERN HOSPITAL; AND TEMPORARY HON. PHYSICIAN, ANCOATS HOSPITAL, MANCHESTER.

THERE is little doubt the treatment of pneumonia at the present time is more chaotic than that of almost any other ailment. Some cases are treated with orthodox stock mixtures; others with some drug or combination of drugs in which the prescriber has faith; some believe in poultices, others in icebags. Specific treatment is not uncommonly given without any serious attempt to ascertain whether it is in fact specific—in other words, the precise nature of the infection is inferred, not demonstrated.

Serums and vaccines have revolutionised the treatment of some serious or intractable diseases, but opinions are still sharply divided on the question of their value in pneumonia. There seems, however, to be a fairly general consensus of opinion that specific treatment is more likely to be of decisive value if employed as a first, not as a last, resort. Wynn reports that of 107 cases of influenzal pneumonia 28 were treated with pneumococcal vaccine on the first day, and all recovered; whereas of 20 cases so treated on the fourth day of the disease five died. Lister, from a wide experience in South Africa, is in favour of vaccines in early cases, given in larger doses than we have been accustomed to in this country. He has demonstrated experimentally that the blood serum of rabbits develops specific antibodies after suitable doses of pneumococcal vaccine, and that rabbits so treated resist infection by living and virulent pneumococci, whereas rabbits not so protected invariably die. Lister seems to have definitely proved that prophylactic inoculation of pneumococcal vaccine reduced the incidence of pneumonia.

I have been using pneumococcal vaccine regularly for 15 years as opportunity offered, and, though I have had cases in which this treatment seemed to have no effect, I feel strongly that every incipient case of pneumonia or doubtful "influenza" should be treated with pneumococcal vaccine without delay. If vaccine is given as a routine in doubtful "influenzal" attacks, before definite physical signs are present in the lung, the results will often be so good that we are subsequently in doubt whether we have been dealing with an incipient pneumonia or not. For example:—

CASE 1.—Some years ago I was asked to see a patient in consultation a little before midnight. The doctor in attendance had, with another medical man, come to the conclusion in the afternoon that the patient was suffering from incipient pneumonia. When I saw him his temperature was about 104° F.; he had a well-marked malar blush. His illness began some 12 to 18 hours before my visit. All the evidence available was in favour of the diagnosis already made. I gave him a medium dose of pneumococcal vaccine; and it was arranged that the three of us should meet in consultation the following afternoon. We did so, and were astonished to find that a complete transformation had occurred in the interval. His temperature was normal; his pulse had also fallen; but, fearing that he might not make an uninterrupted recovery, I took a blood culture, with a view to preparing an autogenous vaccine if necessary. The culture was negative.

A wider experience has shown that a negative result might have been anticipated. It is now clear that I should have taken a blood culture when his temperature was high the night before. If this had revealed a pneumococcal infection there would have been no doubt as to the nature of the illness, and little doubt as to the value of the treatment adopted. Of course, it may be argued that a negative blood culture does not exclude a pneumococcal infection. I quite agree; but it seems to me that for the purpose of establishing this treatment on a firm basis only *positive cases should be considered.*

Diagnosis by Hæmoculture.

Diagnosis by hæmoculture is more frequent than it was a few years ago; but I doubt whether its advantages and limitations are even now generally appreciated. A septicæmia is probably always present during the first few hours of a pneumonia. When this septicæmia persists to the later stages, and is associated with a comparatively low leucocyte count, I have found that the prognosis is bad, though the patient's general condition may seem fairly hopeful. Hæmoculture in pneumonia has recently become more important for treatment also. When positive it is the most convenient and rapid method for ascertaining the type of pneumococcus present, as a preliminary to the use of the Rockefeller serum in Type 1 cases. But this septicæmia is, as a rule, transient; it usually disappears in a day or two in cases of moderate severity. Fortunately, it is present most frequently at the stage when we are most in need of help in diagnosis and guidance in treatment. Besides, a positive blood culture permits of the earliest possible preparation of an autogenous vaccine.

As evidence of the comparatively transient character of the septicæmia in pneumonia, I may recall a case I published ten years ago. It came under observation during the incubation period, the only case of the kind I have seen. It is also relevant in this connexion as it was treated with pneumococcal vaccine on the first day of the fever.

CASE 2.—A man, aged 46, consulted me in the evening on his way home from work. His pulse was 92; temperature normal (? or subnormal); he had no pain or other sign of a serious illness, but I was well acquainted with him, and, though I *could* find nothing wrong, I believed him when he said he *felt* ill, as he was paler than usual, with a distinctly "pinched" expression. Next morning I found his temperature 102° F.; pulse 108; respirations 40. Pneumococcal vaccine was given at once, and at the same time a blood culture (10 c.cm.) was taken; this yielded a profuse growth of pneumococci. Next day there was some improvement, but on the third day of the fever his temperature again touched 102° and his respirations 48–50. There was now some cyanosis, and for this reason some blood was taken from a vein and 10 c.cm. of it used for a second culture. This culture was sterile, though the patient was obviously in a serious condition. A larger dose of vaccine was now given, and next day (the fourth day of the fever) the following observations were made: Morning: temperature, 102°; pulse, 120; respirations, 58. Evening: temperature, 98°; pulse, 76; respirations, 54. The respirations continued high for several days, and there was still some delirium and restlessness. His pulse, however, never rose again above normal, and the temperature only touched 100° one evening. He has remained in good health up to the present time (1925).

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Apparatus and Method.

The best method of taking a good radiograph is to use a modern equipment—an apparatus which produces 100 kilo volts, 80 milliampères, tube Müller, Metro, or Medor, double reinforcing screen, films Victor, &c. These are the elements that must be relied upon in order to give a full measure of security. The photographer's art is indispensable in these cases in order to obtain the highest possible definition and clearness. It is also of great importance to have the bowels evacuated and that the fœtus and patient should be motionless. A purgative and an enema must be given the day before the radiograph is taken, and on the day of examination another enema is given with 40 drops of laudanum (Sydenham) in 50 c.cm. of water, and 10 to 20 drops are given to the patient one hour before the radiograph is taken. In this way a successful radiograph may be obtained from the fourth month of gestation.

Radiography Before the Fourth Month.

What I am about to explain is something different, something essentially new—viz., the taking of radiographs before that stage, a method entirely my own. It was perhaps by a scientific inspiration that, after the injection of lipiodol into the trachea, as used by Prof. Sergent, I conceived the idea of adopting the method with the uterine cavity, and so making possible a diagnosis of pregnancy. When a period or two is missed you can never be quite sure that a patient is pregnant, for the uterus might be small or it might be ante- or retro-flexed. In such cases a precise diagnosis is only possible by the use of X rays to show whether the cavity be occupied or not. In the different pregnant patients in whom we have injected lipiodol into the uterine cavity we did not provoke an abortion, while, on the other hand, the radiograph has enabled us to arrive at a positive diagnosis.

Usefulness of the Method.

In these conditions we have laid down fixed rules. When a woman after conception, and after one or more missed periods, wants to know if she is pregnant, and the clinical examination is indecisive, lipiodol must be injected into the uterus. A radiograph should then be taken in order to give absolute certainty. Under no other conditions must we proceed, in order to avoid dangerous eventualities.

If the injection has been successfully made the radiograph of the uterine cavity filled up with lipiodol shows: 1. That the cavity is not well filled if the fœtus is more or less developed, the lipiodol penetrating round the fœtus, and showing that the cavity is occupied. 2. The round shape of the stain with the radiograph of a tube together with the clinical symptoms indicating the pregnancy. 3. When the fœtus is larger, the liquid penetrates very little, in a line more or less curved, and the form of the radiograph of the uterus indicates the pregnancy. 4. If the period is missed once or twice and the patient thinks herself pregnant, the injection of lipiodol into the uterine cavity may show in triangular shape and at the same time one or both tubes may fill up with the liquid. In such a case the radiograph shows that the uterine cavity is unoccupied and there is no pregnancy. 5. Every radiograph of the uterine cavity must be complete in order to show the neck and cavity for a satisfactory diagnosis to be made from it, together with the clinical symptoms. 6. The radiograph may thus allow us to diagnose sterility due to obstruction of the tubes; for it may be observed that they do not fill or fill up badly. 7. In cases of pyosalpingitis and old salpingitis a radiograph of the tubes can be obtained and the diagnosis confirmed.

The procedure to be described is entirely new and is submitted now to others for the test of further experience. Hitherto we have had no means of trustworthy diagnosis of pregnancy in the first months. The problem is a serious one, for in all maternity homes there are records of cases of early pregnancy which have been operated on for fibroma. The injection of lipiodol into the uterus does not provoke abortion if definite rules are observed.

Technique of the Method.

We have applied this method in the case of all our patients who have presented themselves without any special selection and without any disturbance further than a careful disinfection of the vagina and the bladder. For that purpose we give, before taking the radiograph, a mild laxative in order to clean out the bowels; at the same time we douche the vagina with rivanol and instil twice a day silver nitrate solution or choleval into the bladder if there be cystitis. Four hours before we give 20 to 30 drops of opium, in order to keep the patient quiet. On the day of the injection we clean the vagina with liquid formalin soap, we brush the neck of the uterus with tincture of iodine, and with the most careful antiseptic precautions we introduce a large metallic cannula into the uterine cavity until the Brandt ring can pass. Then we inject 1 to 2 c.cm. of lipiodol, we take the radiograph, and inject, if possible, another 2 to 5 c.cm. and take a second radiograph. At the same time, if a better radiographic picture is wanted we inject 40 to 60 c.cm. of air into the bladder. The patient must be lying on her shoulders and in the Trendelenburg position.

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* Presented at the London Congress of Radiology.

In the cases in which diagnosis is doubtful between a tumour and pregnancy we inject the first day 2 to 5 c.cm. of lipiodol, and the following day we inject air into the tubes in order to cause a pneumoperitoneum of 150 to 200 c.cm., the patient being in the Trendelenburg position. Afterwards we inject 5 to 10 c.cm. of lipiodol in order to show the uterine cavity. We use the liquid warm, without employing much force, with a light pressure, and without moving the cannula within the uterus.

During the injection the eyes of the patient must be observed, for the pupil is dilated when the liquid enters the tubes. The pupillary reaction is characteristic. When the injection enters the tubes it produces a little colic, and first there is a dilatation and afterwards a contraction of the pupils. If the woman has had salpingitis, this reaction is much stronger, but the passing of the liquid through the tube does not cause any pain. The lipiodol runs all over the uterine walls and penetrates into the tubes if these are free, but if they are obstructed on account of a former salpingitis they do not fill up. In these cases it is necessary to persist with the injection once or twice more in order to get them filled.

In cases where we wish to know if the tubes are permeable, whether for the diagnosis of sterility or of salpingitis, the technique is different. In these cases we previously empty the bowels, make the patient urinate, and give her 30 drops of opium in some water one hour before. Then we introduce 10 to 20 c.cm. into the uterus with a big cannula, the neck of the uterus being well closed in order to avoid the passing of the lipiodol into the vagina. The lipiodol fills up the uterus and passes into the tubes. If the lipiodol drops out into the vagina we repeat three or more times, until we are sure that it has passed. Before taking the radiograph we fill the bladder with air. In the cases of salpingitis the tubes do not fill up with the first injection; and it is necessary to repeat the injection until we obtain a good radiograph.

By this procedure it is possible to find out the causes of sterility in women, whether that be obstruction of the tubes or malposition. In cases where the tube is twisted the radiograph will give us a clear view of all details. If we are confronted with a tumour of doubtful nature we induce pneumoperitoneum by the ventral way or by way of the tubes, and then the injection of lipiodol is made into the tubes and the radiograph taken, the patient being in the Trendelenburg position. By this means the clear space in the pelvis due to the pneumoperitoneum reveals the tumour of the uterus and the relations of both with other organs.

Finally, I wish to mention that in Buenos Aires Dr. Uslenghi, Dr. Martinez, and the author have tried to provoke abortion in tuberculous patients by this means when it was indicated, but we did not succeed.

Corrigendum.—In the legend to Dr. C. C. Chesterman's illustration of the effects of tryparsamide in sleeping sickness (THE LANCET, Nov. 7th, p. 966) the word "tryparsamide" where it twice follows "ago" should read "trypanosomes."

A CASE OF

POLYCYTHÆMIA RUBRA RELIEVED BY X RAY TREATMENT.

BY S. W. PATTERSON, M.D. MELB., D.Sc. LOND.,
PHYSICIAN, RUTHIN CASTLE, NORTH WALES.

THE case about to be described has been under close observation for 12 months, and is of interest because of the great improvement effected by X ray treatment applied to the long bones of the limbs, with the object of arresting overproduction of blood. It is suggested that the method may also be useful in treating certain cases of high blood pressure.

Clinical Record.

The patient was an unmarried woman, aged 42, whose mother died of Bright's disease at 38, and the father at 48 of "meningitis." During life his appearance and symptoms were similar to those of his daughter. The patient had had no severe illnesses until 1919, when she first noticed a blotchy non-pruritic rash on the left forearm. In April, 1919, she had two attacks of what was thought to be a severe nettle-rash of the face. The blotches on the left forearm came at intervals, but in other respects she was well till May, 1921, when she felt giddy and sick, and fell in the street. About a month later she woke one morning and felt a sharp pain down the left side of the head and left arm; the arm was numb and the hand has been weaker since. The power is gradually coming back, but the fingers are still weak. At that time the left knee-jerk was found to be exaggerated, and there was some staggering on walking. Headache and giddiness increased gradually. In the autumn of 1923 she noticed swelling and numbness of the left hand; and when examined in Paris in November, 1923, the blood was found to contain 7¼ million red cells per c.mm. and blood pressure was 175 mm. Hg. The patient was put on a lacto-vegetarian diet with rests, and remained without much improvement till admission to Ruthin Castle in June, 1924.

On examination the face was high-coloured, fingers tended to be clubbed, and there was a blotchy, dark pink rash on the left forearm. The pulse was regular, of good volume, the artery wall not palpable during diastole, blood pressure 204/120 mm. Hg. The cardiac impulse was in the left nipple line, and the aortic second sound was accentuated. The electrocardiograph showed a normal P.-R. interval and an inverted T in lead III. The blood had 130 per cent. hæmoglobin measured by Sahli's apparatus, and contained 7 million red cells and 8000 white cells per c.mm. The differential count showed a normal distribution of these white cells. The viscosity of the blood was greatly increased; its withdrawal through a needle of ordinary bore was difficult and the blood clotted rapidly. There was no loss of power or altered sensation in the distribution of any of the cranial nerves, but distinct weakness and slight diminution in the circumference of the left arm and forearm. The muscles of the leg appeared normal. The knee-jerks were active and normal, and the left arm-jerks were increased in comparison with the right. Both plantar reflexes were flexor. Sensation to touch and pin-prick in left arm normal, but there was inability to name objects by touch (astereognosis).

The edges of the liver and spleen were firm and palpable. The urine contained 0·5 per cent. of albumin, and there were a few casts and epithelial cells in the deposit. The urea-concentration test was at the third hour 2·4 per cent., a low normal value. The basal metabolism rate was 100 per cent. of the normal. Sugar-tolerance curves for glucose and lævulose gave normal figures. The fractional test-meal showed super-acidity. X ray examination of the alimentary tract showed an abscess of the right upper premolar tooth, enlargement of the liver and spleen, and considerable delay in the colon. The diagnosis was made of essential polycythæmia rubra, with thrombosis of a vessel supplying the cortical centre for the left arm and hand.

Treatment.—The patient was treated as follows: The lacto-vegetarian (anticonstipation) diet, which had been taken for some time, was continued and the affected tooth removed. One grain of thyroid was administered twice a day and an intestinal douche twice a week. X ray treatment to the long bones was given twice weekly, on 25 days for 8 minutes each treatment, from July 4th to Oct. 17th, with the object of arresting the overproduction of blood. Diathermy was applied from hands to feet on the other 4 days a week, 12 minutes for each treatment, passing 800 ma. Fig. 1 shows curves of the blood count and blood pressure before, during, and after the treatment.

Clinically, the colour became normal, headache and giddiness disappeared, and the spleen was no longer palpable. A subjective feeling of well-being accompanied the return of the red blood cell count to normal. The urine still contained on April 21st, 1925, a faint trace of albumin. No casts were found. The electrocardiograph showed as before an inverted T wave in lead III.

It is now nine months since the treatment was discontinued. During this time the patient has remained well and repeated examinations have shown a normal blood count.

Results.—A steady improvement in the blood count, the blood pressure, and the clinical state took place when these measures were used. It will be seen that the red cells and hæmoglobin diminished to normal values, which have been maintained. At the same time the blood pressure fell to a normal figure.

Discussion.

The simultaneous fall in blood pressure to a normal level is striking. This fall may have been the result of diathermy treatment, but, from a comparison with a large number of other cases, I think this is unlikely. The blood was at first much more viscous than normal and was aspirated with difficulty through a needle. The increased viscosity itself is an explanation of the high blood pressure owing to the increased work which the heart must do in order to drive the viscous blood through the arterioles. Parkes Weber¹ has pointed out that many cases of polycythæmia show no rise of blood pressure, and attributes this to a compensatory dilatation of capillaries. Other possibilities are that adrenalin-like substances having a pressor action might bring about a raised blood pressure, and at the same time an inspissation of the blood, owing to greater perfusion of the watery constituents; but such a toxin would probably not have so continuous an effect. It may be that there is also excessive production of red blood corpuscles by a bone-marrow overstimulated by some poison.

FIG. 1.

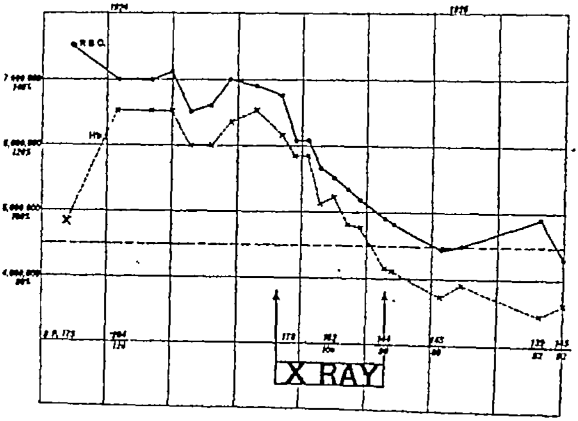
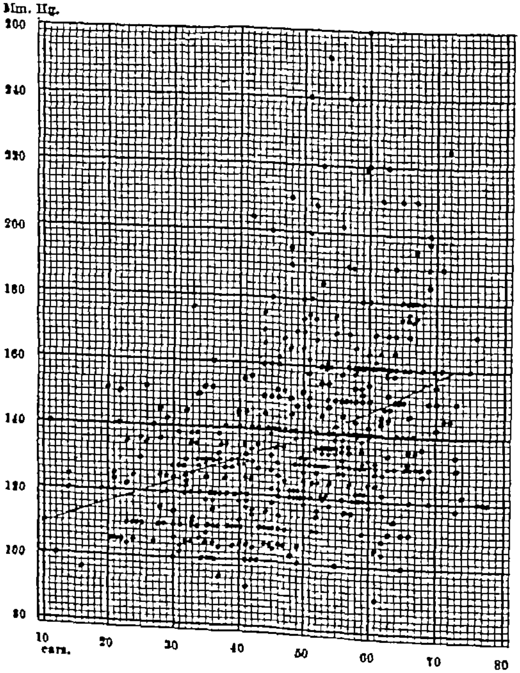


FIG. 2.



Suggested Use of X Rays in Cases of High Blood Pressure.

The successful result in the above case suggests that the application of X rays to the long bones may be of value in the treatment of high blood pressure. The red cell count in patients with high blood pressure may be above or below normal. Those showing counts above normal are often the subjects of early heart failure and show signs of cyanosis, but a certain number of patients with blood pressure above normal have been found to have a supernormal red cell and hæmoglobin count, apart from any failure of the heart. Patients with low red count are often the subjects of secondary renal disease. From the records of Ruthin Castle, of the last 41 patients with a systolic blood pressure of 180 mm. Hg or more, 19 had a red cell count and hæmoglobin above normal—i.e., nearly 50 per cent. The chart (Fig. 2) shows the systolic blood pressures of 480 cases at Ruthin Castle in relation to their age. There is, of course, a rise in the average systolic blood pressure with increasing years. Of those having a blood pressure above normal, 41 out of 84 had also a high red cell and hæmoglobin value, 29 being distinctly supernormal.

Patients suffering from hypertension have been greatly benefited by venesection and the removal of one-half to one pint of blood, but the good effect of this is only temporary, and it is suggested that a more lasting effect may be obtained by diminishing the red blood cells by applying X ray to the marrow in the long bones, in this way reducing the red blood corpuscles slowly and under control.

During the treatment of patients in the Frankfürter Frauenklinik by deep X ray therapy, Wolmershäuser[2] noted that 75 per cent. showed a fall in blood pressure which might amount to 50 mm. of mercury, and this fall occurred whether the patient suffered previously from hypertension or not. This was attributed to a dilatation of the skin vessels and possibly to increased vagus action on the heart.

The first patient on whom this method was tried was a married women, aged 52, who had been admitted on a previous occasion for high blood pressure, headaches, and attacks of giddiness. Under treatment for four months by diet, rests, graduated exercises, diathermy, baths, and venesection (three times), the blood pressure, which had been 240, was reduced to about 170–180. Soon after her return home the headaches and giddiness recurred, making her an invalid and calling again for venesection. She was readmitted to Ruthin Castle and the same treatment carried out with the addition of X ray exposures of the long bones twice a week. The blood pressure fell from 214 to 150–160 mm. Hg in two months, and the patient has been able to lead a comfortable though restricted life for the last four months. Recent reports give the blood pressure as still 150–160, although the hæmoglobin and red corpuscles have increased again.

Summary.

A case of essential polycythæmia rubra was treated successfully by exposing the long bones to X rays with the object of arresting overproduction of blood. It is suggested that the method may also be useful in treating certain cases of high blood pressure.

References.—1. Parkes Weber: Polycythæmia, Erythrocytosis, and Erythræmia, London, 1921, p. 14; Brit. Med. Jour., 1925, i., 1108. 2. Wolmershäuser: Ref. in Klin. Wochenschr., 1924, p. 995.

TWO CASES OF
ACUTE GLOMERULITIS.

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THE picture of acute nephritis usually presented to students and practitioners alike in this country is that of a disease associated with œdema, hæmaturia, and albuminuria. It is, in fact, the clinical picture presented by either the "nephrotic" or "Misch" forms of nephritis of Volhard and Fahr,[1] the most recent systematic writers on the subject. This type of acute nephritis is by far the most commonly met with in practice; none the less, it is well to bear in mind that it is quite possible to have a very acute and fatal nephritis presenting no œdema at all in the clinical picture. Such a type of nephritis is the acute glomerulitis described by the German authors. It is probably not a common condition, though its rarity may be more apparent than real, since the possibility of its occurrence is seldom taken into account in the making of a diagnosis. These considerations serve as the reason for the publication of the cases described below.

Clinical Records.

CASE 1.—Female, unmarried, aged 22. In good health up to three days before admission. Sudden onset with abdominal pain followed on the second day by vomiting and severe headache. No urine was passed during the 48 hours preceding admission to hospital.

Condition on Admission.—The patient was drowsy and almost comatose; temperature normal; pulse 76. Blood was oozing from the gums and the head was retracted. The abdomen was rigid and both pain and tenderness were present in the epigastrium. Catheterisation resulted in the drawing off of a few ounces of blood-stained and highly albuminous urine. Death occurred on the day following admission, the patient up to that time having been running a temperature up to 102° F.

Post-mortem Examination.—The body showed no œdema, nor was any excess of fluid present in the serous sacs. The only organs showing any abnormalities were the kidneys; these appeared large, tense, and deeply congested; on section the capsule stripped readily, the cortex was increased in depth and dark in colour. Microscopically the kidneys showed no fibrosis and little round-celled infiltration, and no apparent abnormality of the tubular epithelium. Many of the tubules, more especially the convoluted, were stuffed with blood, coming apparently from the glomeruli, upon which the whole brunt of the pathogenic agent appeared to have fallen. The glomeruli were universally affected and all in the same way and to the same degree. The tufts were so swollen that they completely filled the capsular space; the normal differentiation of the tufts had disappeared and the nuclei appeared to be increased in numbers. Many of the tufts showed hæmorrhage. The endothelium lining Bowman's membrane in every instance showed some degree of proliferation, which in many cases had proceeded to the formation of pronounced "endothelial crescents." All the glomeruli showed collections of round cells about their periphery; in some instances these collections were fairly extensive, and where this was the case it was often apparent that the continuity of Bowman's membrane had been dissolved, and the inflammatory round cells had actually passed into the intracapsular space and were invading the tuft itself. Although all the glomeruli without exception showed signs of morbid change the tufts showed no inflammatory cells, except in those instances in which solution of Bowman's membrane had occurred. The appearances suggested that the vitality of the tufts had been universally damaged by some pathogenic agent, and that the invasion by round cells was occurring as the result of this devitalisation. The objective of the round cells appeared to be the tuft itself, but it would seem that they were unable to reach it until actual solution of the capsular membrane had been brought about.

CASE 2.—Female, aged 12. Had been in bed for two weeks prior to admission with diarrhœa and vomiting, becoming increasingly acute. At the onset there had been swelling of the face in parotid region on both sides, but this had subsided.

Condition on Admission (May 23rd, 1925).—Temperature normal, pulse 84; mouth and tongue very foul; patient almost comatose. There was general tenderness and rigidity over the abdomen; the urine contained much albumin.

Course in Hospital.—May 24th: Vomiting continuing. Condition otherwise unchanged. Only 5 oz. of urine passed. 25th: Bleeding commenced from mouth and gums and continued until death. A dark red morbilliform rash appeared, patchy in distribution, affecting face, trunk, and limbs alike. No urine passed. 26th: No urine passed; 2 oz. collected by catheter. 27th: Temperature still normal; pulse 96. The vomiting became violent, and blood was brought up in considerable quantities up to the time of death on the following day. No urine passed.

The results of the laboratory investigations on this case were as follows.

Urine.—May 24th: Much blood present, no casts or organisms seen. Albumin + + +; reaction acid; urea 1·64 per cent. 26th (catheter specimen): Much blood present, film shows numerous streptococci but no pus cells. Culture *B. coli* and streptococcus. 27th: Same as for previous day except that streptococci were obtained in pure culture.

Blood.—May 26th: Urea, 648 mg. per cent.; red cells, 5,580,000 per c.mm.; white cells, 36,700 per c.mm.; polymorphs, 95 per cent.; lymphocytes, 5 per cent.

Cerebro-spinal Fluid.—May 26th: No pleocytosis. Globulin slightly in excess (? due to contamination by blood). Sugar, 137 mg. per cent.

Post-mortem Findings.—Body was that of an emaciated and poorly developed female child showing the remains of a dusky rash on face, trunk, and limbs. Heart: Nothing abnormal. Lungs: Right lung showed some small localised patches of consolidation; left lung nothing abnormal. The liver, spleen, intestines, and brain showed no abnormalities. The stomach showed some areas of hæmorrhage into the mucosa, but no bleeding points from which the vomited blood might have come. Kidneys: Right 185 g., left 176 g.: both large, dark red, and tense. On section the capsule stripped readily leaving a perfectly smooth surface. The cut surface showed marked bulging; the cortex was greatly increased in thickness and somewhat pale in colour. The histological appearances of the kidneys were almost identical with those described under Case 1. The only difference was in the comparative lack of proliferation of the endothelium lining Bowman's membrane with a consequent rarity of endothelial crescents. These were present, but not nearly so plentifully as in Case 1. The tufts showed the same changes as in Case 1, but on the whole to a rather greater extent. Proliferation of the intracapillary endothelium was marked and degeneration had proceeded to breaking up and pyknosis of the nuclei.

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[1] Volhard, F., and Fahr, Th.: Die Brightsche Nieren-Krankheit, Berlin, 1914.

Comments.

Case 2 corresponds fairly closely to the intracapillary type of glomerulitis of Volhard and Fahr, while Case 1 is a good example of the extracapillary type. These two cases, however, serve as illustrations of the fact that these two types are not really distinct entities, as each showed changes both of the extra- and intra-capillary types, though the relative distribution of the two types of lesion differed in the two cases. Owing to its rapid termination in death Case 1 was incompletely investigated. Considering, however, the close resemblance of the histological appearances of the kidney in this case to those shown in Case 2, it seems justifiable to assume that the results of the clinical laboratory investigations would have been the same. The blood-urea in Case 2 was very high, and presumably urea retention was also a feature in Case 1. This, of course, was to be expected in view of the almost complete suppression of urine. The blood picture in Case 2 is interesting; the high white count would seem to indicate an acute infection; the temperature, however, remained normal throughout. In Case 1 the rise of temperature to 102° F. just before death also points to the presence of an infective agent. The generalised morbilliform rash in Case 2 serves also to point to the activity of an infective agent. This rash occurs occasionally in cases of mixed glomerulo-tubular nephritis; curiously enough, such a case with rash happened to be admitted to the same ward a few weeks after the death of Case 2.

The presence of streptococci in the urine in very large numbers in Case 2 suggested that this organism might be the cause of the condition. The complete absence of pus cells from the urine, however, was strongly against this assumption. It seemed much more likely that the streptococcus was a saprophyte growing in the scanty stagnant urine; the presence of *B. coli* along with it lent support to this view, as also did the fact that the streptococcus was non-hæmolytic and gave the reactions of *S. fæcalis* (Holman). Careful search through sections stained with eosin and methylene-blue failed to reveal any organisms in either case, and on this evidence the streptococcus was definitely ruled out as an ætiological agent.

The combined evidence presented by these two cases none the less points strongly to the infective origin of acute glomerulitis. The absence of any pus cells in the cellular reaction occurring around the affected glomeruli would appear to rule out the pyogenic cocci as the causative agents, while at the same time the histological picture corresponds to that produced by none of the recognised pathogenic organisms. Granted the existence of an infective agent it would seem that it must be one of those not detectable by ordinary microscopic methods. The relationship of this extremely acute and rapidly fatal type of glomerular nephritis to the more common glomerulo-tubular type is open to question. It is possible that with a less overwhelming infection the course of the condition might have been slower, allowing for the appearance of the characteristic tubular changes. On the other hand, acute glomerulitis of the type described may be an entity in itself, bearing no relationship to the mixed form.

Summary.

Two cases of pure acute glomerulitis are described, both with fatal issue. Both cases were characterised by almost complete suppression of urine and complete absence of œdema. Evidence is adduced pointing to the infective nature of this type of case, though in neither of the two instances described could the causative organism be identified.

My thanks are due to Dr. T. H. Galbraith and Dr. E. H. Coleman, in whose beds the cases described were patients while in hospital.

Clinical and Laboratory Notes.

A CASE OF
UNDULANT FEVER CONTRACTED IN ENGLAND,

AND COMPLICATED BY HÆMORRHAGIC EFFUSION INTO THE PERITONEAL CAVITY.

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AND

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As a condition arising in this country undulant fever is sufficiently rare to command attention. There appear to be few such instances in the literature, but one was reported by Byam[1] in 1918. The following case presented unusual features.

The patient was a male, aged 28, by occupation a draughtsman. His family history revealed nothing of import. During the war he served in France, and was inoculated with T.A.B. vaccine in 1916. While in France in 1917 he suffered from trench fever and influenza, but there was nothing to suggest that during this period he suffered from undulant fever. Early in October, 1923, patient was staying in the country, and whilst there on one or two occasions drank raw goat's milk. A few days later he returned to London, and about the middle of October, ten days or so after partaking of the milk, his illness began. This incubation period of ten days corresponds to that usually described. The first symptoms noticed were severe night sweats, rise in temperature, and a general feeling of unfitness. A week later both hip-joints became stiff and painful, and a little later still the left wrist was painful and swollen. At the end of a fortnight, however, both hips and wrist had returned to normal, but pains in the shoulders followed and these in turn passed off. The night sweats became worse, and his temperature taken on two successive nights was 104° F. This condition continued, and he was admitted to St. Thomas's Hospital on Jan. 1st, 1924, at the request of his medical attendant, Dr. R. C. P. Whitcombe, who suspected undulant fever.

Condition on Admission.—The patient was anæmic, and had obviously lost a considerable amount of weight. The pulse was 96, regular, full and easily compressible. The heart sounds were normal, and there was no evidence of cardiac enlargement. No abnormal physical signs were found in the chest. The spleen was just palpable. The urine had a sp. gr. of 1020, acid, and contained neither albumin nor sugar. The illness proved to be long and tedious.

After admission the fever continued, with headaches and night sweats varying in intensity from time to time. On Feb. 9th it was noticed that the abdomen was becoming distended. There was tenderness over the spleen and dullness on percussion in both flanks. About the 10th the fever began to subside, but the abdominal distension slowly increased, and on the 15th 50 c.cm. of a dark hæmorrhagic fluid was withdrawn for examination. The distension, however, became more and more marked, and on the 20th 8½ pints of similar fluid were withdrawn. Following paracentesis the patient showed a marked improvement in the general condition, the severity of the symptoms diminished, and though a certain amount of fluid was left in the peritoneal cavity this was slowly and gradually absorbed, until, on examination on March 24th, the abdomen appeared normal. He also began to gain in weight. At the beginning of April, however, a relapse occurred, the temperature rising, and frontal headaches and night sweats returning with their former intensity. There was no recurrence of the arthritis or ascites.

On May 3rd, 1924, the patient was discharged from hospital at his own request, and since discharge he appears to have made rapid improvement, as in a letter received months later, in April, 1925, he states that his temperature has been normal since July, 1924, and that he is in good health and able to do his work without difficulty.

Bacteriological Examination.

A blood examination was undertaken on Jan. 2nd, 1924, the day after admission. The total leucocyte count was instance of special interest, one would be entitled to ask proof that the patient was "Schick positive," that he had no antitoxin in his blood, that the course of the disease was typical, that the smear from an overnight culture made from a swab showed a preponderance of diphtheria bacilli, and that these bacilli proved to be virulent. In a number of instances reports had been received that people who were negative to the Schick test had afterwards suffered from frank clinical diphtheria. In every instance which the speaker had the opportunity of investigating it had been found that the Schick test result had been wrongly recorded, in some instances through the use of diluted toxin many months old, or that the clinical diagnosis was in error. With regard to the recent prohibition of active immunisation in Vienna owing to the Baden accident, the mixtures the speaker and colleagues had worked with had for a year or two past been made of toxoid and antitoxin. The toxin was first deprived wholly, or almost wholly, of its toxicity by treatment with formalin; it was then diluted ten times and a considerable amount of antitoxin added. The mixture still remained an efficient immunising agent and was, so far as test and experience went, a "safe" one. There was apparently some slight misunderstanding about the position of active immunisation in New York. In the course of health propaganda which was always going on in that city, it had recently been pointed out by the health authorities that the immunisation of children of school age was of great value, but that as a very large percentage of diphtheria occurred in children of pre-school age the time had now come for the public to realise that effort must be directed more especially towards the immunisation of young children through welfare centres, nurseries, &c. Active immunisation had, in the opinion of people in America, proved itself as a valuable aid to public health and it would be even more vigorously recommended to the public. The campaign had recommended itself to the financial judgment of insurance societies who had contributed considerable sums of money to the work.

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[1] Byam, W.: A Case of Malta Fever arising in England, THE LANCET, 1918, i., 873.

Dr. C. C. **OKELL** gave a short description of the recent work of the Dicks and Dochez on scarlet fever and discussed some of the problems that have arisen from it. There was a possibility that more than one type of scarlet fever toxin might exist, but as yet there was no definite evidence on the point, and it was much more likely that the toxin was always the same. Five strains carefully examined by cross-immunity experiments showed no essential differences in the properties of their toxins. The practical bearings of the modern work on actual practice could be summarised as follows: (1) The Dick test divides those who are susceptible to scarlet fever from those that are not. (2) Active immunisation with toxin renders Dick-positive persons Dick-negative and presumably non-susceptible. (3) Potent antitoxic serum can be obtained in the horse which in 5 c.cm. doses temporarily renders Dick-positive persons Dick-negative and which in 40–50 c.cm. doses has a definite therapeutic effect on cases of scarlet fever. The newer knowledge had also an application to diagnosis, since early rashes of scarlet fever were for the most part blanched by intradermic injections of either horse antitoxin or of serum from convalescent patients. The Dick test itself was almost always positive in the first 48 hours of the disease.

Dr. **GRAHAM FORBES** confined his remarks to the subject of diphtheria and the question of the practicability of immunisation on an extensive scale in so large a centre as London. The recent decision of the London County Council not to include that preventive measure at present in their scheme of medical treatment of school-children was not unexpected in view of the difficulties which the problem presented in the matter of the numbers to be dealt with, quite apart from anticipated parental objections. Further, results were also awaited of the immunising work, chiefly in residential institutions, being done by the Ministry of Health and various local authorities in Great Britain, where up to date it was estimated that in all about 22,000 of the population had been Schick tested and some 4000 immunised, inclusive of 4500 of tested and 2000 immunised in the Edinburgh schools—figures which provided insufficient data in comparison with the high totals supplied by New York; there, since 1920, roughly half a million had been tested and one-third of the school population had been immunised. The outcome of such widespread prevention was being watched with the greatest interest, but the results were not yet regarded as entirely conclusive. Time would doubtless show how far immunisation was proving effective in the reduction of the incidence and mortality of diphtheria in New York. The decline in 1922 and 1923, which seemed to point to a marked improvement, had not apparently been maintained in 1924 and 1925.

New York.

Year.	Cases.	Mortality per 10,000 population.
1921	15,000	16·0
1922	10,000	15·0
1923	8,050	9·0
1924	9,687	11·9
1925 (6 months)	6,056	14·9

Dr. O'Brien, however, had informed him that the recent rise in New York had been forecast by Dr. Park as likely to be associated with a concomitant prevalence of measles, and to be expected from the large number of susceptible children, of former pre-school age and not previously immunised, now entering school and, therefore, coming in closer contact with possible infection. The example set by the Borough of Holborn, thanks to the initiative of the medical officer of health, seemed to point a way to obtaining the more widespread prevention of diphtheria in London if adopted by the authorities of other metropolitan boroughs.[1]

Considered from the purely financial aspect, it had been estimated that diphtheria alone in 1921 had cost the ratepayers no less a sum than £500,000. Even if it were possible or necessary to test the whole of the elementary school population (some 600,000) and immunise, say, 40 per cent., reckoned as susceptible, the total cost, he calculated, would not exceed a tenth of the sum spent on the present system of hospital isolation, treatment, and home disinfection. Therefore, by the introduction of immunisation, there was to be added to the hope of saving life and averting sickness the prospect of reducing heavy public expenditure.

BRITISH INSTITUTE OF PHILOSOPHICAL STUDIES.

THE Institute opened its winter session on Nov. 19th at the London School of Economics with a discussion on the

Idea of Responsibility, Legal and Medical.

The chair was taken by Mr. **HAROLD LASKI**, and Sir **TRAVERS HUMPHREYS**, opening the discussion from the legal side, limited his field to the medical aspect of legal responsibility and the criminal responsibility of a person for his own acts. A lawyer's business, he said, was to obey the law and not to *criticise it*, and he would therefore simply state the law of responsibility and the theory which he understood to underlie it. It was for the doctors to say what the law ought to be.

The Mens Rea.

The criminal law of the country was based on common sense, and the broad principle of responsibility was that a prisoner was regarded as responsible for his acts unless it was proved that he had not acted with a "mens rea," a criminal intent. A person would not be held responsible if he committed a crime in a state of somnambulism or hypnotism (unless he had himself hypnotised for criminal purposes), nor was he liable for an injury resulting from pure accident, though if a serious injury happened where a trivial one were intended he was held responsible because of his intent to harm. It had been found, however, in the course of legal evolution, that there was a class of criminals to whom this principle could not be applied; either they did not know what they were doing or else they thought that their action was perfectly lawful. They were thus legally "not guilty," but it was in the interests of society that they should be restrained from repeating the offence. These people were usually insane, and it became customary to record a special verdict in such cases, when the judge would order the accused to be detained for the state of his mind to be examined. This practice was subsequently regularised by law.

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[1] See THE LANCET, Nov. 7th, p. 962, Dr. C. W. Hutt: Diphtheria Immunisation in a Metropolitan Borough.

The McNaghten Ruling.

Insanity was notoriously difficult to define; many people were mentally unsound in some respects and not in others, or situated on the border-line. The famous McNaghten ruling was not new law, but merely a restatement of what had been legal for many years. The same principle was enacted in an Edinburgh trial of 1795. To plead ignorance of the nature of a serious crime was, of course, practically to plead insanity.

The Uncontrollable Impulse.

It had often been urged that the law should excuse a person who could prove that he committed a crime under the influence of an impulse which he was unable to control. The law certainly admitted no such plea at present, as a recent judgment of the Court of Criminal Appeal had emphatically declared; the Court further expressed the opinion that such a plea would have a subversive effect on justice. It seemed to be put forward only in murder cases. The difficulty in its application was the practical impossibility of establishing the fact of uncontrollable impulse by evidence.

Dr. WILLIAM BROWN spoke from the medical aspect of the question, and pointed out that the doctor could not escape from the problem, as the lawyer could, by disregarding all but the intellectual factor and making it an axiom that volition was the only test of responsibility for an act. An emotional factor had also to be considered. Many crimes were committed by people who knew well the nature and quality of their act, but who were nevertheless irresponsible through mental disorder. He instanced epileptics, melancholics, maniacs, and alcoholics. In a post-epileptic condition a butcher or soldier might commit a crime of violence through performing what was to him a habitual act. A melancholic who believed that ruin or torture were about to befall his family might deliberately murder them to save them from a worse fate, while the paranoiac might kill those whom he suspected to be plotting against him. Both would feel convinced that they were perfectly justified.

Individuals such as kleptomaniacs and exhibitionists knew that they were doing wrong, but suffered from compulsions so strong that the power of control of the normal man was insufficient to keep them in check. Psychological analysis showed that the events and phantasies of childhood and the repressions associated with them accounted for the impulses, so that in one sense the individual was responsible, but often less so than those who had brought him up. Responsibility must be put on the right persons, and collective responsibility was often as real as personal responsibility and as rigidly exacted.

The Question of Insanity.

Legal responsibility inevitably introduced the question of insanity as only the insane were held not responsible. Insanity was not a scientific concept; the scientific distinction was between the normal and the abnormal. Certification and legal "insanity" were concerned only with whether the individual were a danger to himself or others and depended to some extent on social position. To define abnormality was to enter the realm of metaphysics; science had to stop short of the problems of determinism and freedom, and assume that an individual's actions were explicable in terms of his heredity and antecedent acts. A normal man might be regarded as one whose whole heredity and life was a continuous progress towards the synthesis and harmonisation of his impulses. Most people, however, were abnormal, and the question was how far the law could take account of their abnormalities. At present it did so in terms of knowledge only. He wondered whether it would be a sufficient proof of uncontrollable impulse if the accused showed that he had had a deep analysis which revealed the source of these impulses. He illustrated his meaning from war-time court-martials on deserters. The phrase "tout comprendre est tout pardonner" was entirely wrong. Understanding made one realise the patient's difficulties but not think less of the crime. Responsibility was a matter of degree; a person in robust health was more responsible than an invalid. Psychologists did not want to abolish responsibility, but to redistribute it.

Discussion.

Mr. M. GINSBERG said that responsibility was intimately connected with punishment, and the only true test of responsibility was whether the man was capable of knowing at the time that he might be punished for it.

Mr. D. CARSWELL said that the McNaghten judgment had been abandoned in Scotland since 1870. He did not see that metaphysics and psychology had much to do with the question; it was for the jury to decide whether, considering a prisoner's mental state, it was fair to punish him.

Dr. T. B. HYSLOP declined to attempt a definition of insanity until the lawyers had defined responsibility. In his experience the question of responsibility was never put to a medical witness. A sane man might commit a crime under the influence of hypnagogic hallucinations, and he had known an epileptic hanged for murder. What might be good law was bad medicine, and he regarded the McNaghten ruling as an effete judgment.

Dr. BROWN, in reply, said that a man might be responsible to something beyond society, to his conscience, his ideals or his ideas of the cosmos, and that society might condemn him and be right according to its limited view of the situation. The distinction between the fanatic and the prophet was part of the work of deep analysis, which might thus help to solve the problem of responsibility.

ULSTER MEDICAL SOCIETY.

AT a recent meeting of this Society, Mr. J. A. CRAIG, the President, in the chair, Prof. J. E. MACILWAINE read a paper on

Hyperpiesia.

The speaker gave Allbutt's definition of hyperpiesia as essential or primary arterial hypertension and discussed the mechanism of its possible production, dealing with the rôle played by the nervous system; cerebro-spinal and autonomic, together with the vascular musculature and the associated myoneural junctions. He referred to the experimental production of the condition by hormones, adrenalin, pituitrin, and by protein metabolites such as guanidin, tyramin, and emphasised the variable relationship to true arterio-sclerosis as well as the distinct separation of hyperpiesia from the hypertension of renal disease. Special stress was laid upon the hereditary tendency as well as the association of the condition with a history of vasomotor instability in early life. The endocrinic adjustment occurring at the menopause was cited to illustrate the part these glands must play in the hyperpiesia of this period of life. The signs and symptoms which may be complained of were briefly recapitulated, and it was pointed out that in many cases they were so vague as to be indefinitely classed as neurasthenic. Referring to a previous paper read before the Society upon nervous mechanism in disorders of the circulation, the speaker restated his assumption that in disordered action of the heart we had a toxic or inherent manifestation of instability in the autonomic nervous system which might be classified as a neurasthenic syndrome. To-day in the knowledge of the close association of psychic, psycho-motor and autonomic nervous system with the endocrine activities we might use a similar theoretical conception of an instability of this great controlling mechanism as a practical basis for the treatment of hyperpiesia. To relieve stress on this mechanism wherever possible should be the ideal, and he emphasised the primary importance of attention to the demand made by the assimilation of food on the autonomic nervous system.

Dr. S. BOYD CAMPBELL read a paper on

Aortitis, its Prognosis and Treatment.

The speaker, after referring to the frequency of a syphilitic ætiology in aortitis, showed a series of 35 cases which were first seen in 1919–20. All of these cases had at that time definite signs of varying degrees of aortic dilatation, in some cases definitely aneurysmal in character. Of the 35 cases 7 died; in 5 of these the death was associated with œdema and cardiac failure, and in 2 death was due to a ruptured aneurysm. Signs of failure of compensation are always of grave import. Antisyphilitic treatment, he said, depended on the case. In active lesions iodides and later small doses of mercury were used. Arsenical preparations should be given in small doses, starting with 0·3 g. If patient was kept in bed the dose was increased to 0·45 g., but if the patient was treated as an out-patient the 0·3 g. dose was not increased.

LIVERPOOL MEDICAL INSTITUTION.

AT a pathological meeting held on Nov. 19th Mr. W. A. THOMPSON read a paper on

Pyloric Stenosis of Infants.

He gave a short résumé of the various opinions held on the pathology of the affection, and explained how even when the condition was present at birth it failed to give rise to symptoms immediately because the pylorus was still unobstructed; later, under the influence of feeding, retention occurred; this caused enlargement of the mucosa, which further closed up the pylorus and induced added spasm. This increased the hypertrophy and the vicious cycle thus created brought about pyloric obstruction. The time required for this sequel of events varied from a fortnight to a month. According to the severity of the obstruction so the symptoms varied. The mild cases should be treated medically, the severe cases operated upon at once; whilst he advocated early operation on all moderately severe cases, since by this means an anxious period from 6 to 16 weeks was eliminated and the child was operated on when it was in the best physical condition. He was convinced that if this were done the mortality from this affection would be very small, as the majority of medical and surgical deaths came from this group. He described Ramstedt's operation and emphasised the importance of giving saline intraperitoneally. Ether was the anæsthetic used at his operations. He had performed Ramstedt's operation on 21 occasions with 19 recoveries. The two deaths occurred in greatly debilitated children.

Numerous specimens were shown, including a spinal cord tumour with lipiodol injection, by Prof. John Hay and Prof. R. E. Kelly; an acoustic tumour removed without facial paralysis, by Dr. Henry Cohen and Prof. Kelly; carbolic acid gangrene of finger, by Mr. Ashcroft; carcinoma of a reascended testis by Mr. Frank Jeans; and simultaneous chorion-epithelioma and adenomyoma of the uterus, by Dr. A. A. Gemmell.

STIRLING ROYAL INFIRMARY.—A new infirmary is to be erected at a cost of between £70,000 and £80,000, the existing building having become insufficient. A site of 15 acres has been acquired for £5200; the building fund now exceeds £52,000.

Reviews and Notices of Books.

THE SURGERY OF PULMONARY TUBERCULOSIS.

By JOHN ALEXANDER, B.S., M.A., M.D., Assistant Professor of Surgery in the Medical School, University of Michigan. Philadelphia and New York: Lea and Febiger. 1925. Pp. 356. 21s.

"THIS volume," says Dr. Alexander in his preface, "presents the entire subject of the surgery of pulmonary tuberculosis with the object of acquainting the medical profession with the principles and practical details that will enable it each year to save thousands of lives which certainly will be lost if surgery is not undertaken."

Dr. Alexander does, indeed, present the entire subject, and in a most thorough and painstaking manner. His book is not a record of personal experience—personal experience is, in fact, entirely omitted—it is an epitome of the experience of all the surgeons and physicians in the world who have interested themselves particularly in thoracic surgery. *He has condensed the world literature, and from the* number of his references we may gather that he has extracted the pith of 500 books, papers, and personal communications; he has also weighed and summed up the value of recent advances and of the various efforts that have been made towards further improvement in technique. His book, which is a great achievement, was awarded the 1925 quinquennial Samuel D. Gross prize by the Philadelphia Academy of Surgery.

Dr. Alexander emphasises the great need for a fuller understanding and appreciation of the value of the surgical methods available to-day. He says, with truth, that "there exists to-day among many physicians and patients a hazy notion that the shock and mortality from the 'rib operations' are terrific, the post-operative pain scarcely endurable, and the permanent clinical success a rarity. They believe that the survivors, grossly mutilated and crippled, may only hope to drag themselves through a few extra years of burdensome life. That the notion is not based upon fact will be evident to anyone who is informed on present-day technic and results." Dr. Alexander has collected 1159 thoracoplasties done during the period 1918–25. The results of these have been as follows: "Cured," 26·8 per cent.; improved, 24·4 per cent.; died from causes directly or indirectly connected with the operation, 13·2 per cent. There are, out of 1159 cases on whom the major operation has been done, nearly 500 "cured" or *greatly* improved. This is a remarkable record in view of the fact that scarcely one of these patients was expected to survive his disease by continuing with artificial pneumothorax and sanatorium régime. The author deals thoroughly with the indications and contraindications for the treatment he advocates. Artificial pneumothorax is compared with thoracoplasty, their respective merits being well summed up. Claus's epigram is quoted (p. 97): "A good pneumothorax is better than a thoracoplasty, but a good thoracoplasty is better than a bad pneumothorax." The following operative procedures all receive consideration: extrapleural paravertebral thoracoplasty (Wilms-Sauerbruch and Brauer methods); paravertebral thoracoplasty of the upper ribs combined with phrenicotomy, phrenicotomy, extrapleural pneumolysis, intrapleural pneumolysis, drainage of tuberculous lung cavity, tuberculous effusion and empyema.

The book should be read by all interested in the treatment of pulmonary tuberculosis.

INTERNAL SECRETIONS.

The Personal Equation. By LOUIS BERMAN, M.D. London: George Allen and Unwin. 1925. With 7 plates. Pp. 303. 8s. 6d.

EVERYONE who read "The Glands Regulating Personality" will remember the gaiety with which

Dr. Berman pursued his thesis that we are mostly the product of our endocrines and that by personalities and temperaments we may best be classified as pituitarians, adrenalists, and so on. He urges the same views in the present volume which in substance does not add much to his first book. And some of the zest seems to have gone from his exposition. It may be that the ideas are now less novel and exciting, but we cannot avoid a suspicion that the author's thyroid (or is it his pituitary ?) may be beginning to fail.

A TEXT-BOOK FOR MIDWIVES.

Fourth edition. By JOHN S. FAIRBAIRN, F.R.C.P., F.R.C.S., Obstetric Physician to St. Thomas's Hospital. London: Humphrey Milford, Oxford University Press. 1925. With 3 plates and 113 illustrations, 5 in colour. Pp. 365. 25s.

THE author states in his preface that the alterations in the present edition are solely confined to those necessitated by the recent revision of its rules by the Central Midwives Board and by the issue of the regulations regarding the lengthened training which will shortly come into force. These rules are incorporated in the text wherever they apply and when necessary an explanation is given of their rationale. This is a commendable innovation which will prevent the pupil from learning these precepts by rote without understanding their practical application. The book as it originally appeared contained more than was necessary for the midwife. Since that time the period of training has been—or is shortly to be—quadrupled. Presumably a higher all-round standard of knowledge will be now required by the examining body, but this text-book will meet modern requirements in every way and will not need to be supplemented by larger works. Antenatal hygiene, the management of the lying-in woman, and the feeding of the infant are adequately dealt with from a practical standpoint. The last-named section is particularly useful and constitutes one of the best accounts of infant feeding to be found in any text-book of midwifery.

APHASIA.

Kritische Studien zur Methodik der Aphasielehre. By E. NIESSL VON MAYENDORF. Berlin: S. Karger. 1925. Pp. 108. M.6.

Dr. Niessl von Mayendorf's latest contribution to the aphasia problem takes the form largely of destructive criticism. It is divided into three parts, dealing respectively with the methods of localisation of Prof. S. E. Henschen, the question of agrammatism, and the theories of Prof. G. Mingazzini. In regard to the first of these, Henschen's view, briefly, is that lesions of the lower end of the left ascending frontal gyrus produce dysarthria, not aphemia (Broca's motor aphasia); lesions of the posterior end of the third left frontal convolution (pars opercularis frontalis) produce motor aphasia. Von Mayendorf is at pains to collate and analyse a number of the cases relied on by Henschen and to endeavour to show they cannot possibly bear the interpretation put on them by the latter. The view he advocates is that since words are commonly aroused in the auditory speech areas, it is unnecessary to postulate a motor speech centre apart from these; the defect of speech of many lower frontorolandic cases is simply the result of interruption of the path from the auditory area to the motor centres for innervation of the speech musculature. Dealing next with agrammatism, the author criticises adversely the well-known views of the late Prof. Arnold Pick, and concludes that agrammatism is nothing else than paraphasia, or, rather, is no more than the syntactical form of paraphasia. He adopts the view that both dysarthria and agrammatism (paraphasia) are restitution phenomena which appear "after the first acute stage of amnesia verbalis kinæsthetica is over." Finally, the views of Mingazzini, that in the lenticular nucleus is a "centre" disorder of which produces dysarthria or anarthria, and that in the frontal centrum ovale just outside that nucleus and extending across and in front of the internal capsule to the head of the caudate nucleus is an area lesions of which cause word-dumbness, are submitted to analysis in the same way as in the case of Henschen's views—viz., by an independent scrutiny of the cases on which Mingazzini largely depends. The conclusion is reached that of 22 cases supposed to favour Mingazzini's theories, not fewer than 21 also showed right hemiplegia, whence it is argued that "lenticular" theories are entirely unnecessary.

The matter of von Mayendorf's monograph does not lose any of its impressiveness by the emphatic and forceful, not to say caustic, language with which the arguments are clothed. His own theories, it may be pointed out, are, in respect at least of the non-existence of a special motor speech area apart from the rolandic centres for innervation and of agrammatism, open to no little criticism themselves. But his communication serves a useful purpose in drawing attention to the complexity of many recorded cases from which authors have unjustifiably made deductions of a pleasing simplicity to support favourite views of their own.

SCHISTOSOMIASIS VEL BILHARZIASIS.

By C. G. KAY SHARP, Chief Medical Officer, Education Department, Province of Natal. With a Foreword by Dr. J. B. CHRISTOPHERSON. London: John Bale, Sons and Danielsson, Ltd., 1925. Pp. 74. 7s. 6d.

THE incidence of urinary schistosomiasis in Natal and Zululand is a high one—in school-children, for instance, it may be 13 per cent.—though the severity of the disease appears to be not so great as in Egypt. Contrary to the general opinion, schistosomiasis is not confined to the coastal belt, for several cases recorded in this booklet have been contracted 4000 feet above sea-level and 150 miles inland from the coast. The intermediary hosts of the schistosome in South Africa are *Phyopsis africana* and *Limnæa natalensis.* Few original views are expressed in this volume; the greater part is a compilation of the work of others and includes substantial quotations from popular text-books, while the section on treatment lacks such practical details as are required by the general practitioner. Not many of the illustrations are original. The absence of any scale showing the magnification of cercariæ is a defect, and the omission of a good illustration of the egg of *Schistosoma hæmatobium* is unfortunate. However, in directing attention of medical officers in Africa to the outstanding features of this disease and its method of spread a publication of this nature will serve a useful purpose.

THE SLEEPING CHILD.

Über den Schlaf des Kindes. By Dr. PAUL KARGER, Privatdozent for Diseases of Children in the University of Berlin. Berlin: S. Karger. 1925. Pp. 50. M.2.40.

A BRIEF introduction on the general characters of the sleep of the normal child, with its more or less normal periods of alternating quietude and movement, its depth and duration, and with an interesting discourse on the night movements of plants, animals, and man, is followed by a series of personal investigations of an objective kind on the sleeping child in health and disease. An apparatus resembling in part the familiar self-registering barometer was used, the recording point on the drum, which moved by clockwork at the rate of 4 cm. an hour, being connected up by a simple method with the framework of the bed or cot. Every movement of the child communicated a vibration to the bed which was thus recorded on the graph. A large series of these are reproduced in the book, and their comparison is instructive. The effect of various hypnotics and sedatives was also thus graphically measured. The method is practically useful and capable of extension.

COLLOIDS.

An Introduction to the Physics and Chemistry of Colloids. Fifth edition. By M. L. HATSCHEK. London: J. and A. Churchill. 1925. Pp. 183. *7s. 6d.*

THIS well-known little book was first published in 1923, being based upon a series of lectures delivered by the author at the Sir John Cass Technical Institute. Until quite recently it was the only small English text-book upon the subject. Within the last few months some rivals have entered the field, but Dr. Hatschek's volume is far too well established to fear competition. The volume deals with colloidal chemistry as a whole, and provides a readable introduction to a complicated subject. The new edition has been brought quite up to date, and includes a lucid account of the work of Porter and Hedges on the vertical distribution of particles and more importantly of the recent work upon absorption. The theories of L. Michaelis, Freundlich, and J. Loeb are carefully considered; indeed, we find no omissions of any consequence and the balance is well maintained.

Laboratory Manual of Elementary Colloidal Chemistry. Second edition. By M. L. HATSCHEK. London: J. and A. Churchill. 1925. Pp. 153. *7s. 6d.*

THE subject of colloidal chemistry is usually taught by means of lectures, with possibly a few demonstrations. The student hardly ever performs experiments himself; the difficulty of devising an adequate course may partly account for this lack of practical work. The object of Dr. Hatschek's laboratory manual is to provide a book of elementary instructions for practical classes; the course prescribed is well suited to the needs of elementary, general, and medical students, since the experiments are arranged so as to lead to a definite sequence of ideas. After an introductory chapter on apparatus, exercises on dialysis are described. Correct details are given for the preparation of dialysis membranes, and for the carrying out of a series of experiments upon typical colloids. The student is then taken through the preparation of typical suspensoid sols, suspensions, and other general properties. Ultra filtration, Tyndall phenomenon, and the electrical behaviour of colloids are dealt with in a series of simple illustrative procedures. The principles of absorption and the Liesegang phenomenon are also described with examples. Everywhere the accounts are accurate and instructive, and there can be no doubt that this book, which has now reached its second edition, is a worthy companion to the volume noticed above.

IMMUNO-CHEMICAL STUDIES.

Edited by CARL H. BROWNING, Professor of Bacteriology in the University, and Director of the Laboratory of Clinical Pathology, Western Infirmary, Glasgow. London: Constable and Co. 1925. Pp. 239. *12s. 6d.*

THE objects of this volume are carefully defined in the preface by the editor, Prof. C. H. Browning; it is intended as a summary of the work of the Glasgow school upon the humoral aspects of immunity. Practically the whole of the information contained in the book has been published in various journals by the contributors. In many cases the articles are reprinted almost word for word, but the editor believes that their collection under one cover is likely to be appreciated by workers in this field. The volume opens with an introductory chapter by Prof. Browning upon antibody action in general. This consists of a summary of the general principles of immunity, and of the chemical basis of the reactions so far as known. The succeeding chapters consider in detail the factors of immunity, such as the properties of antigens and antibodies, opsonic action, and the final chapter deals with complement. The subject is difficult, and one which lends itself readily to confusion. In this volume, by means of careful classification and excellent summaries at the end of each chapter, the editor and contributors have kept the argument clear. The references are well selected and will be of great value to anyone engaged in immuno-chemical researches. The volume as a whole represents an admirable and laborious piece of work.

HYPERKINESIS.

Der hyperkinetische Symptomenkomplex und seine nosologische Stellung. By Dr. KURT POLISCH. Berlin: S. Karger. 1925. Pp. 92. M.6.

THE subject of this little volume is a synthetic and analytic study of cases of psychosis characterised by restlessness, inability to keep still, motor agitation, and hyperkinesis generally. A distinction is drawn between hyperkinesis in the sense of the neurologist—viz., chorea, athetosis, tremor, tic-like movements, and so forth, and the much more general character of the "psychomotility" of the author's psychotic cases. He alludes to the types of movement seen recently with some frequency after attacks of epidemic encephalitis, but concludes that in respect of them also a distinction should be made from the "pseudo-spontaneous" movements of his patients, which are more closely allied to those of some mental defectives—dancing and rotatory movements, pacing up and down, and so on. The essential difference resides in the fact of the hyperkinesis being accompanied by unmistakable psychotic signs, such as amnesia, mental confusion, hallucinations, and being therefore psychogenic in origin. Out of a large series of cases two main groups are separated: (1) those in which hyperkinesis was the major symptom and in which only one attack occurred; (2) those in which recurring attacks took place. Ætiological evidence is adduced associating the phenomena in many instances with infections. The author concludes that the hyperkinetic psychosis, so to call it, occupies a position midway between the exogenous and the endogenous psychoses; however this may be, he has clearly made out a case for the further study of this interesting clinical type on the basis of the peculiar character of its intrinsic features.

AMERICAN ILLUSTRATED MEDICAL DICTIONARY.

Thirteenth edition. By W. A. NEWMAN DORLAND. London and Philadelphia: W. B. Saunders Company. 1925. Pp. 1344. *37s. 6d.*

THE preface to this revised and enlarged edition of Dr. Dorland's admirable dictionary states that since the last edition appeared there has been no "let-up" in the appearance of new terms in medical literature. Some 2500 new words have been added, several hundred of them from the terminology of dentistry, which seems to be going apace. Certainly, no medical word in current use, however new, seems to be missing from the dictionary, and the few omissions, which we have noticed in previous editions, have been made good. We are especially glad that the great scientific repute now associated with the name of Banting has at last led the compiler to admit that the Banting of the anti-fat diet was an undertaker (the word used is "coffin-maker") and not a physician. Pseudocoxalgia is now included with a cross-reference to its various synonyms. Curiously enough, the confusion in regard to the several bearers of the name Schwartz(e) and their operations remains unresolved. Perhaps the word "stent" of the new prosthetic surgery might deserve admission. Stent was, we believe, an American dentist who invented a plastic material for taking impressions, a resinous compound which sets very hard; the word is now used to mean the impression itself, and in plastic work denotes a little mould used to hold a graft in place. In spite of the vast area of knowledge covered—there must now be more than 50,000 definitions and 120 tables—the dictionary remains of moderate size and pleasant to handle. In this its latest form "Dorland" will retain its old friends and find many new friends.

NEUROLOGICAL STUDIES.

Études neurologiques. Deuxième série. By GEORGES GUILLAIN, Professor of Clinical Neurology in the Paris Faculty of Medicine. Paris: Masson et Cie. 1925. Pp. 300. Fr.20.

WHEN the first series of these studies appeared in 1922 it was favourably reviewed in our columns, and general comment was then made on the advantages of the clinico-pathological method as practised by the French school with conspicuously good results ever since the days of Charcot. Prof. Guillain follows worthily in the succession of Maîtres whose labours combined to raise the repute of the Parisian school of neurology to its present high level. In this volume he pursues the same method of precise clinical examination correlated with equally careful pathological research. Among his papers herein collected are many of which the neurologist has already taken note; 40 in all, they range over the whole field, and include the description and study of the phenomena of a new reflex, the medio-pubic reflex; a case of callosal tumour (splenium) of an unusual kind; a series of communications on disseminated sclerosis and on Parkinsonian cases; and numerous others too varied to specify in detail.

While some are quite brief they are none the less informative; the majority date between 1922 and the present year, though a few belong to an older period. We hope that Prof. Guillain will continue to furnish the neurological world with similar essays, in which the graceful style of the author is used to impart valuable information of abiding interest.

JOURNALS.

BRITISH JOURNAL OF SURGERY.—The October issue opens with Sir D'Arcy Power's eighteenth Eponym on Thomas Bryant's ilio-femoral triangle and its diagnostic value.—R. Lawford Knaggs, in a series of able Hunterian lectures, has added very considerably to our knowledge of those bone diseases grouped around osteitis fibrosa. This issue contains his lecture on osteitis deformans, and having described its clinical picture and its histology he shows how close is the relationship between Paget's disease, osteitis fibrosa, and osteomalacia.—E. Rock Carling and J. A. Braxton Hicks contribute a paper on two cases of cyst-adenoma of the pancreas, one an operation case and the other found post mortem.—H. P. Winsbury White discusses the pathology of hydronephrosis, particularly of the pelvic type, and suggests that most of these cases have an underlying inflammatory cause.—F. G. Bell completes his survey of the pathology of the tumours of the testicle with a description of the carcinoma group.—Lymphaticostomy in cases of bad peritonitis is the subject of two papers by C. Hamilton Whiteford and Arthur Cooke. Though short, each paper makes it clear that this method of treatment is by no means satisfactory, nor is it clear that the original experiments in dogs on which it is founded can be proved correct.—The longest and by far the most important contribution is a Consideration of the Hypophysial Adenomata, by N. M. Dott and Percival Bailey, with an introductory note by Harvey Cushing. Their work is based on 162 cases of these tumours and is a brilliant example of the value of correlation of the clinical and histological findings. They give an exact description of the different types of tumour—the chromaphil and chromophobe adenomata and the mixed ones. It is found that the chromaphil group give acromegaly, while the chromaphobe produce hypopituitarism, and the mixed type show a mixed clinical syndrome. The authors have put the treatment on a rational basis for the first time.—F. R. Brown reports a case of a right duodenal hernia successfully operated on, thus giving the fourth recorded recovery.—B. C. Maybury and S. C. Dyke record two cases of urinary papillomata which spread by implantation, one in a hydronephrosis which resulted from the primary operation, and the other in three separate places in the abdominal wall after a suprapubic cystostomy.—The following rare or obscure cases are reported: 1. A Strangulated Femoral Hernia in Association with an Appendix Abscess in a Hernial Sac, by Norman Hodgson. 2. Two Cases of Hernia Through the Transverse Mesocolon, by F. S. Heaney and G. C. E. Simpson. 3. An Unusually Large Tumour of the Breast, by W. E. Tanner.—Section 2 of the Pathological Atlas contains further examples of the malignant diseases of bone, and begins the benign series with the chondromata.

A Liverpool surgeon writes to point out that Mr. F. T. Paul's "Selected Papers" were published not by "the surgeons to Liverpool Royal Infirmary," but by "the surgeons of Liverpool." The list of subscribers includes the name of every surgeon and assistant surgeon of the Liverpool voluntary hospitals.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 987.)

Provision of Extended Medical and Allied Services.

(App. CIII. and Q. 23830-24024.)

Mr. L. G. Brock, C.B., and Dr. Smith Whitaker, on behalf of the department of the Ministry of Health concerned with the administration of medical benefit, attended before the Commission to answer questions arising out of the evidence of various witnesses. They presented a memorandum of discussions on certain of these questions which took place at five conferences convened by the National Health Insurance Commissioners in 1919. These conferences were held not only with the recognised representatives of insurance practitioners, but with various consultants and specialists, some of whom were nominated by the Joint Committee of the Royal College of Physicians, London, and the Royal College of Surgeons of England, and the Society of Medical Officers of Health, which had been conferring with the Government as to the working of the Ministry of Health Bill.

Grants had been voted by Parliament in 1914 for extra services in connexion with the insurance medical service and included provision for a service of medical experts, general practitioner clinics, laboratory services, &c. Those grants were suspended owing to the war, and the conferences of 1919 were convened partly in view of the possibility of the revival of such provisions and partly because of the prospective early constitution of a Ministry of Health.

In the memorandum the question was examined of the possibility of some provision under the control of a public authority of the services under the following heads: (1) expert "out-patient" medical services; (2) ancillary services of skilled persons not medically qualified—e.g., nurses and masseurs; (3) general practitioner clinics; (4) referees and supervisory medical officers; (5) laboratory facilities; (6) treatment in residential institutions (as in-patients).

Under the first head questions of the necessary limitations both as to the range of service and the persons to whom it should apply were examined and also the nature of the checks which would have to be imposed to prevent excessive demands. It was recognised that the medical personnel of such a service would have to be selected and that remuneration would have to be on a time basis. The chief purposes for which general practitioner clinics might be set up were indicated to include joint surgery accommodation, facilities for second opinions and for special study, and also subsidiary centres at which treatment might be given by specialists attached to the clinics.

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* References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 89," and references to the oral evidence thus—Q. 1369.

The object of the discussions having been expressly stated to be the free exploration of the important subjects discussed and not the formulation of or agreement upon any definite proposals, no definite recommendations emerge, but it may fairly be inferred that those taking part in the conferences were satisfied as to the practicability (if financial considerations permitted) of setting up public services of the kinds referred to.

Specialist and Consultant Services.

Mr. Brock was asked whether an extension of medical services, as urged by witnesses, to include a specialist and consultant service was desirable, if the necessary funds were forthcoming, and, if so, how such a service could best be provided. He said that there were several reasons which made some extension very desirable if funds were available. The out-patient departments of the hospitals did not cover the ground; there was not sufficiently close touch between the general practitioner and the hospital specialist; and thirdly, such a service would have a valuable educative effect on the general practitioner.

As to the method, it was thought that the service would best be secured by the provision of consultant centres at which specialists in different subjects would attend, payment being made on the basis of so much per session. Such a system would also allow of arrangements being made to provide at those centres ancillary services such as treatment, massage, electrical treatment, and radiography. Where the patient was well enough to travel to the centre it would ordinarily be much more economical to pay for his conveyance than to pay for the conveyance of the doctor. Where a domiciliary visit was asked for, probably in the great majority of cases all that would be required would be a visit by an experienced general practitioner, the type of doctor who would normally be called in by his colleagues in the locality in any case of difficulty.

A rough estimate of the cost of this service was 2*s.* a head of the insured population, to include provision for domiciliary attendance, or about £1,250,000 for England and Wales, including about £100,000 for laboratory services for aids in diagnosis. It was not thought that a system based on contracts with the hospitals would work satisfactorily, but it would be very desirable to utilise hospital premises by renting them wherever possible. The utmost importance was attached to communication between the general practitioner and the consultant.

Treatment of Dependants.

Mr. Brock said that if a complete medical service, short of institutional treatment, were going to be provided for insured people, it must emphasise the anomaly that at present their wives and dependants can only obtain such medical treatment as they are able to pay for. It seemed, however, open to question whether an insurance system which left a good many sections of the population out of account was the best way to provide for the case.

> If it was proposed to provide either a general practitioner service or a complete medical service for the whole industrial population, there are strong arguments in favour of providing this service out of local funds and making it available to all sections of the population who desire to take advantage of it. . . . If such an extension of State or municipal medical service is contemplated, then the whole basis of payment and the method of organisation of that service would require to be reviewed.

The contingency appeared, however, too remote to call for any detailed examination.

An Income Limit for Manual Workers.

With regard to the British Medical Association's proposal that a limit of income should apply to manual workers, the witness pointed out that insurance at the present time depends not on total income, but on rate of remuneration; the distinction was very important, because the rate of remuneration is something which is ascertainable now, but total income is something which is only ascertainable in arrear. He said that to apply an income limit to manual workers the majority of whom are necessarily subject to the risk of unemployment, would in the Ministry's view be a quite unworkable scheme.

Hospital Provision.

Mr. Brock said that if out-patient departments were, in fact, providing, except in emergency, for cases falling within the competence of the insurance practitioner, they had only themselves to blame.

> But there is ground for believing that indirectly the Insurance Acts have increased the demand on the hospitals, because the institution of a general practitioner service has, I think, to a large extent broken down the old dread of entering a hospital, and has led to a demand for operative treatment at a much earlier stage than used formerly to be the case.

In the view of the Ministry it would not be desirable to attempt to include institutional treatment in the Acts as a statutory benefit. To provide the whole cost of in-patient treatment of insured persons would be extremely costly, and there is the difficulty that a statutory benefit implies some guarantee that the required accommodation will be available when it is needed.

> Any scheme which resulted in preference being given to a particular class, however large that class might be, must in our view be prejudicial to the voluntary system. The voluntary hospital appeals to everybody at present, because at present in theory it is available to everybody.

With regard to the pressure on the bed accommodation Mr. Brock said :—

> The amount of avoidable suffering and of unnecessary claims on the sickness benefit funds, of course, cannot be calculated, but it is safe to say that in the aggregate it is very considerable, and a more effective use of the bed accommodation already existing in Poor-law hospitals is urgently needed both as a matter of economy and even more as a matter of humanity.

It would, however, certainly not be safe to say that this would make up the deficiency in the provision of beds, partly because the vacant Poor-law beds are not always in the area where the demand is greatest.

As to the standard of equipment in the Poor-law infirmaries, Dr. Smith Whitaker said :—

> I am immediately responsible for the work of the medical officers who inspect the Poor-law infirmaries, and while I *have not gone into the matter closely, I certainly have* not gathered from their reports that there is such a low standard of equipment of Poor-law institutions, taking them generally.

(*To be continued.*)

DONATIONS AND BEQUESTS.—Mrs. Martha Sarah Gatfield, Ross, Herefordshire, who left £6808, bequeathed one-fifth thereof to the Hereford Hospital and the London Hospital.—The Manchester Public Health Committee have adopted a recommendation to contribute £1000 for the work of cancer research in the city.—Mr. Henry George Hill, Bristol, ironmaster, who left £293,893, bequeathed £1000 to the Bristol Royal Infirmary, and £500 each to the Bristol General Hospital and the British Benevolent Institution.—Mr. Robert, Killaloo, Londonderry, besides other bequests, left £1000 to the Londonderry Borough Infirmary. After other bequests he left the residue of his estate as to one-third to the Londonderry County Infirmary and one-third to such charitable institutions as the trustees of his will may determine.—The trustees of the late Colonel John Barlow, of Bury, have given £4000 to Preston Infirmary, especially for the accident ward, in view of the fact that the institution is called upon to take into account cases from a much wider area than that from which it draws its funds.—During the past month the Royal Manchester Children's Hospital has received a legacy of £1500 from the late Mr. William Henry Armitage, and £341 from Queen Alexandra flower festival.—Mr. Joseph Harriman, Leicester, left £500 to the Loughborough and District General Hospital and Dispensary, and £500 upon trust for the poor and infirm people of the parish of Shepshed.—Mr. James Chapman, manufacturer, Sheffield, who left £40,146, directed that, after certain bequests, the residue of his property be given as to two-eighths each to the Sheffield Royal Infirmary, the Sheffield Royal Hospital, the Jessop Hospital for Women, and one-eighth each to the Sheffield Free Hospital for Sick Children and the Blind School, Manchester-road.

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SCARLET FEVER STREPTOCOCCUS ANTITOXIN.

Five Cases Successfully Treated.

We have received from a large City Hospital a report containing particulars of five cases treated with Scarlet Fever Streptococcus Antitoxin (P., D. & Co.), in every case with very successful results, and we have been given permission to publish the charts; these are here reproduced. It will be noted that, with one exception, one dose of 10 c.c. was sufficient to bring down the temperature to normal, the exceptional case being given two doses of 10 c.c. each. In the cases hitherto published in this country, where scarlet fever has been treated with serum, it is stated that a dose of 100 c.c. is commonly necessary. P., D. & Co.'s Scarlet Fever Streptococcus Antitoxin is, however, so concentrated that doses of this amount are unnecessary. Moreover, the antitoxin being a globulin serum, there is not the same risk of serum rash as frequently attends the injection of a natural horse serum. The following are the notes of the cases furnished with the charts :—

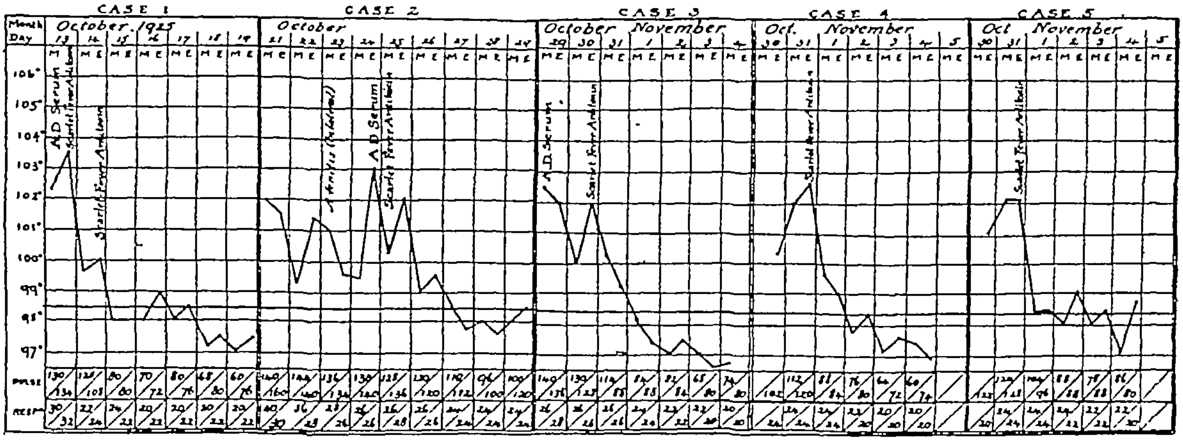
Case 1.—Age 12 years. Female. Admitted October 13th, 1925. Condition on admission :—Intense scarlatiniform rash on trunk and extremities. No circum-oral pallor. Raw, red tongue. Throat very much congested, huge slimy exudate on both tonsils. Very severe case indeed. It was considered advisable to inject 8000 units Antidiphtheria Serum intramuscularly. The evening condition was unchanged, but now marked circum-oral pallor, and 10 c.c. of Scarlet Fever Streptococcus Antitoxin, P., D. & Co., were injected. October 14th: Rash still very bright. Cardiac condition unsatisfactory. In the evening a further 10 c.c. of Streptococcus Antitoxin were injected. On the morning of the 15th the temperature fell to normal, and there was marked improvement generally.

Case 2.—Age 4 years. Female. Admitted October 21st, 1925. Rash well developed, but commencing to fade. Tongue furred. Throat much congested. Tonsils + and ragged. 22nd: Rash fading. 23rd: Bi-lateral adenitis developed. 24th: Glands still ++. Throat much congested, with exudate on tonsils adherent. 24th: A. D. Serum 8000 units. 25th: Scarlet Fever Antitoxin 10 c.c. 27th: Temperature normal and improvement general and local.

Case 3.—Age 13 years. Male. Admitted on October 29th. Rash exceedingly bright, almost lobster red. Face flushed. Marked circum-oral pallor. Throat much congested. Tonsils ++. Adherent membrane on right. Suggestive odour. Adenitis below angle of jaw. 8000 units A. D. Serum intramuscularly. 30th: Tonsils still much enlarged with great œdema of peritonsillar tissues. Membrane thinner and tending to bleed. Scarlet Fever Antitoxin, 10 c.c., intramuscularly. 31st: Temperature 99·2. General condition improved. November 1st, 1925: Serum undoubtedly beneficial in this severe case.

Case 4.—Age 16 years. Female. Admitted October 30th, 1925. Scarlatiniform rash on trunk and extremities well developed. Face flushed; blepharitis. Tongue thickly furred; peeling at top. Throat much congested. Tonsils ++. Much purulent exudate. Diffuse adenitis (bi-lateral) behind angle of jaw. A very severe case of scarlet. 31st: 10 c.c. Scarlet Fever Antitoxin intramuscularly. November 1st: Serum beneficial. Cardiac condition much improved. Tongue ulcerated, but general condition much more satisfactory.

Case 5.—A younger sister of previous patient. Admitted October 30th. Rash fading, but typical. Tongue thickly furred, papillæ prominent. Throat much congested. Tonsils ++. Exudate on both. Moderately enlarged glands behind angle of jaw (bilateral). 31st: 10 c.c. Scarlet Fever Antitoxin. November 1st: Temperature normal; tongue strawberry red. Congestion of fauces continues. Right tonsil diminished. General improvement.



SCARLET FEVER STREPTOCOCCUS ANTITOXIN (P., D. & Co.) is supplied in bulbs of 10 c.c., and the dose is 10 c.c., irrespective of age. The antitoxin is injected in the gluteal region intramuscularly. A second dose is seldom required.

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THE LANCET.

LONDON: SATURDAY, NOVEMBER 28, 1925.

THE DEATH OF QUEEN ALEXANDRA.

THE death of the Queen-Mother at Sandringham House on Nov. 20th has left its impression in every home in the country, for the Danish Princess who came to England 62 years ago to wed the PRINCE of WALES had identified herself more than any royal person had done before with the life of the common people. Owing to the spread of wireless equipment her progress was followed from hour to hour by a populace for whom she had become the embodiment of beauty and gracious service, and the wireless announcement of her death produced a spontaneous outburst of sympathy for the KING and the Royal Family.

Sympathy for others was an outstanding feature of Queen ALEXANDRA's nature, and these personal experiences did much to divert her genuine philanthropy into practical service. Her determined and unflagging efforts to alleviate and prevent misery continued throughout her long life, and the names and records of countless institutions commemorate the share she took in the work for which the nation constantly thanks the Royal Family. Her contribution to the efficiency of military nursing was in itself notable. At the beginning of the South African War the astonishing influence of FLORENCE NIGHTINGALE had not yet borne its full fruit, and the War Office did not provide anything approaching a suitable equipment of nurses for the front. Had it not been for the voluntary work of civilians the conditions in South Africa would have been even worse than they were, and in this work the PRINCESS of WALES took an important part. Realising that unreadiness was causing much preventable suffering and endangering lives which should be saved, she was beforehand with the War Office and insisted upon a substantial contingent of nurses being sent out from London hospitals to South Africa. Not only was the nursing of the wounded during the campaign placed on a more satisfactory basis, but both the country and the Army were awakened to the need for reform and better organisation.

The war was no sooner over than Queen Alexandra's Imperial Military Nursing Service was established to provide primarily for the nursing of sick soldiers in time of peace and, also, to form the basis of a larger organisation in time of war. To this was added a reserve service as the first means of expansion in the hour of need. Later there was set up Queen Alexandra's Army Nursing Board to which is committed the oversight of the entire military nursing service, and in 1921 Queen Alexandra's Military Families' Nursing Service was started to look after the welfare of the wives and children of Service men. Similar Queen Alexandra Nursing Services were established for the Navy and for India, and immediate descendants of these organisations are the Nursing Services which have been created for the Air Force and the Territorial Army. In all of them the Queen-Mother took the keenest personal interest, and she had an active part in the details of their establishment. But these are not the only positive achievements in the realm of nursing that the country owes to the eager alertness of a mind at once profoundly benevolent and essentially practical. It was at Queen ALEXANDRA's instance that the Finsen light was brought from her native land to the London Hospital. She gave the hospital the first lamps and so was the means of introducing into England that cure of lupus by light which might otherwise have tarried. Her work for the London Hospital, of which she was President for the last 21 years of her life, was both public and private. To the full she used the healing touch that Royalty still possesses. She would go to Whitechapel at very short notice, and delighted to walk through the wards and chat with the patients, her face irradiated by sympathy and by the friendly smile which meant much to those whose share of pity and sympathy had often been small. To the nurses she was an equally welcome visitor. She realised the nature of their trials and fatigues, and it was often said that she would herself have made an excellent nurse. The number of hospitals, nursing and charitable institutions in which Queen ALEXANDRA took a more or less direct interest was great, and it is not surprising that her name should have been attached to curative institutions in such widely sundered lands as Canada and Burma. "Alexandra Day" is certain to keep her name fresh in the hearts of future generations who will erect the worthiest memorial to her, and that which she would best have appreciated, by continuing and enlarging the help to hospitals and other charities which flows from this annual expression of England's affection and reverence for the best beloved of all her adopted daughters.

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A NEW JOURNAL OF EUGENICS.

IT is now more than 30 years since the appearance of the first of the series of memoirs in which Prof. KARL PEARSON has proved what valuable service the mathematician can perform in the general field of biology. At the beginning of this period, such researches—sufficient to occupy the whole time and establish the reputation of most men—were the parergon of a teacher and active investigator of applied mathematics, but, for the past 16 years, as first Galton Professor of National Eugenics, Prof. PEARSON has devoted the whole of his energies to the invention and application of exact quantitative methods to the study of biological problems, above all of the problems of human biology. Much of the gigantic output of himself and his pupils has, naturally and rightly, been methodological; the equipment of a factory must come first. Many of these methods have been invaluable to workers outside the biological field, but they were devised for biological ends, and in no year has the Galton Laboratory failed to produce results as well as methods.

The tools of this intellectual factory are now so numerous and so sharp that its manager feels justified in making new provision for the distribution of output. The *Annals of Eugenics*, the first two parts of which have recently appeared,[1] will be devoted wholly to the scientific treatment of racial problems in man; bibliographical matter will be reduced to a minimum, no other topics than the problems of race in man will be dealt with, and the papers published will be the work of trained scientists. It is to be expected that a majority of the papers will be statistical, but that good papers which are not

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[1] Vol. I., Parts 1 and 2, October, 1925. Pp. 256, with four plates. Francis Galton Laboratory for National Eugenics, University of London. 25*s*.

"mathematical" will not be excluded is shown by the inclusion in the first issue of an interesting pedigree of Epicanthus and Ptosis, the work of Dr. C. H. Usher. Mr. Anthony Hill contributes a study of the movements of the birth- and death-rates in England and Wales since 1838, and in Sweden since 1749, which shows that the inter-connexion of these rates is a much more difficult thing to interpret than some enthusiastic neo-Malthusians would have us believe. In fact, he says, "taken as a whole the evidence is that, apart from the secular trend, there has been but slight connexion in either country between the death-rates and the birth-rates closely following them, over the period of time for which the statistics are available." The bulk of the number is devoted to two memoirs (each to be continued), one by Prof. Pearson and Miss Margaret Moul on the Problem of Alien Immigration into Great Britain, illustrated by an examination of Russian and Polish Jewish children, the other by Miss Ethel M. Elderton on the Relative Value of the Factors which Influence Infant Welfare, based upon data provided by the medical officers of health for Rochdale, Bradford, Blackburn, Preston and Salford. In the former memoir the question is posed whether it is expedient to permit unrestricted immigration of aliens into this crowded land unless they possess some racially desirable character to a degree above the average of our own population. A thorough investigation of school-children leads to the conclusion that Jewish immigrants from Eastern Europe do not fulfil the postulated condition. Miss Elderton's equally careful study of the medical officers' data leads to the conclusion that purely environmental factors are, as a whole, far less influential upon infant welfare than factors which are presumably inborn. These two memoirs are, we think, of a high order of merit, indeed worthy of their authors' scientific reputation; as high praise as can be accorded to any contribution to statistical science. Nobody who has not worked through such papers with a calculating machine beside him is competent to offer detailed criticism.

In their article on the Immigrants Prof. Pearson and Miss Moul have correlated a large number of pathological or quasi-pathological characters (condition of cervical glands, tonsils, ears, signs of tuberculosis, heart trouble, defective teeth) with intelligence. Most of the coefficients are insignificant and, they say, "to sum up we have not succeeded in finding any relation of real prognostic value between intelligence and such pathological characters as we have been able to measure." Robust anti-eugenists may regard this as an admission that Nature does not improve the racial average of intelligence when she uses tuberculosis, for example, as a means of selection, or alternatively that "intelligence" is not of racially important survival value. Perhaps the truth is that we have not such exact knowledge of the after-fates of school-children with pathological stigmata as we usually suppose. Continuous health records telling us what happens after the children leave school are a crying need. Perhaps the time will come when Prof. Pearson and Miss Moul can treat in the same detail school and adolescent populations. We conclude with one tiny caveat to Miss Elderton. Although, like all scientific statisticians, she warns us against assuming that causation and correlation are identical, she does sometimes use language that implies that correlation between cleanliness of home depends upon health of mother. "In Blackburn the delicate mother seems able to keep her home clean." May not "dirty homes" sometimes have meant conditions beyond the power of the most robust housewife to remedy? The dirty home may have been the antecedent rather than the consequent term. Dr. W. McC. Wanklyn's remark may be recalled: "Persons so placed may make some effort, and wear out body and soul in the process, or they may just sit down, as it were, and give it up; the task is too hopeless, too impossible for any human being. They lose heart, they lose hope, they lose self-respect. It is an oft-told tale, but none the less true. They become bankrupt both in money and in self-respect. That is one of the principal causes of the insanitary conditions found in houses let in lodgings." We are not quite sure that the argument of p. 143 really surmounts the difficulty.

We wish the new journal that prosperity which the merit of its first numbers should ensure and heartily congratulate the editors on its form and contents.

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HEALTHY GERM CARRIERS: LIBERTY AND THE LAW.

A grave problem of public health administration is raised by incidents like the recent outbreak of typhoid fever at Streatham, where 27 persons were infected by a woman milk-seller who, though herself healthy, was an unconscious germ-carrier. "We have no power to keep her in permanent isolation," said Dr. F. G. Caley, the Wandsworth medical officer of health; "she is actually a person in good health. All we can do is to prevent her going back to the milk business and handling any kind of food for sale." Even greater difficulty is suggested by a recently reported American case,[1] where a sailor on board a fishing schooner appears to have been the unconscious cause of six cases of typhoid fever amongst the crew. The man was not a food-handler at all. What powers would a medical officer in England have in such a case?

There are powers in our public health legislation for ensuring the notification of certain diseases and for preventing the spread of infection. There are well-known sections devoted to the limited purpose of protecting food-supply by restraining the employment of persons likely to spread infection. Local Acts often contain provisions which go still further, and sometimes compensation may be awarded to persons who, as sources of infection, are induced to give up their trade.[2] Specific references to the "carrier" are rare as yet in the general legislation of the country. Articles XIII. and XV. of the Public Health (Pneumonia, Malaria, Dysentery, &c.) Regulations of 1919 give certain powers to medical officers of health who suspect that anybody employed in preparing or handling food or drink for human consumption is "a carrier of dysentery infection" or "a carrier of enteric fever infection." They may notify the manager of the business that it is necessary to examine the suspected person, and the Regulations enjoin that everybody concerned is to give the medical officer all reasonable assistance. If the medical officer thus discovers a carrier of dysentery or enteric fever he may notify the carrier's manager and the carrier himself with a view to preventing his further employment in that business for a specified period. On receipt of such notice the person addressed must comply with its terms. These Regulations give the usual general powers for securing the treatment of fever cases in suitable hospitals, but there is nothing specific as to the isolation and treatment of the healthy carrier, nor do the Regulations apply to any carriers except those engaged in preparing or handling food or drink.

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[1] Public Health Reports, vol. xl., No. 42 (Oct. 16th, 1925).

[2] See, for example, S. 102 of the Wakefield Corporation Act of 1924.

Similar provision was made for Scotland in 1910, but two years later (as we noted at the time[1]) the Scottish Board of Health took a definite step in advance of England. It cancelled its provisions as to dysentery and enteric fever carriers and issued the Public Health (Infectious Disease Carriers) Regulations (Scotland) of 1921. These defined a "carrier" in relation to a particular infectious disease to mean "a person who has within himself the germs or other infective virus of that infective disease, but has no other sign or symptom thereof, and is certified to be a danger to others in terms of these Regulations." To make a man a carrier for this purpose in Scotland he must first be certified by a *medical officer of health* and one other doctor as dangerous by reason of the probability of his spreading infection. Certification is for three months, with power to re-certify on re-examination. On the carrier's side a fresh examination may be demanded at any time on giving notice to the medical officer, and there is a right of appeal to the Board. The important point is that, so long as anyone is a carrier of an infectious disease, the Scottish Public Health Act and the Regulations made thereunder apply to him as they apply to a person actually suffering from that disease. The effect is that, by the application, for example, of Sections 51–56 of the Scottish Act, if the carrier is without proper lodging or is so lodged that proper precautions cannot be taken against spreading infection, he can be removed to hospital and detained there; moreover, he incurs a penalty—though the maximum (£5) is trifling in comparison with the cost of an epidemic—if he wilfully exposes himself without proper precautions. The Scottish Regulations, however, stop short of compelling the carrier to undergo prescribed treatment. We must look overseas for a stronger lead. New South Wales, under her Public Health (Amendment) Act of 1921, made Regulations in 1922 which begin with a similar definition. "A carrier shall be any person having in his nose or throat, or in his excretions or discharges, germs of any infectious disease, although presenting no signs or symptoms of the disease." They provide for authenticating the presence of disease germs by bacteriological tests, and for compulsory medical examination of the carrier by a medical officer of health or authorised medical practitioner. They enact that carriers may be placed under medical surveillance, or isolated and detained if necessary to prevent the spread of infection. Anyone who has been formally notified that he is a carrier is forbidden to take part in the preparation, handling, or serving of food or drugs, or the handling of vessels or receptacles used *for that purpose*. Moreover, the carrier must obey such instructions as a medical officer of health or an authorised practitioner may specify, for such period as is directed. This last provision is indispensable. To know that a carrier has been tracked down in a district and that an eye must be kept upon his activities is something, but it is not enough. There should be power to isolate and treat him just as *much as if* he were an actual sufferer from the disease which he is liable to disseminate. The individual *must* put up with inconvenience in order that the many may not suffer through him.

There seems no reason why the Ministry of Health might not legislate along these lines by regulations issued under its existing statutory powers. Section 130 of the Public Health Act of 1875, which corresponds to Section 78 of the Scottish Act of 1897, is surely wide enough. But do we know the extent of the problem? Are carriers of fever infections in England to-day to be numbered in tens or in hundreds or in thousands? And, if special institutions are provided for their isolation and treatment, will there not be obstinate cases in which prolonged detention will have all the appearance of imprisonment for life? If this be so, the law courts will probably be inclined to say that the liberty of an outwardly healthy and morally blameless person is not to be taken away by mere departmental ukase, but that if Parliament intends the healthy carrier to be incarcerated Parliament must say so. Until there is something specific upon the statute-book judges can hardly be blamed for thinking more of habeas corpus than of *Bacillus typhosus*. Meanwhile, if it is true that healthy carriers cannot legally be segregated against their will, still less can they be subjected to compulsory surgical operation. It may be reasonably proved that operations (tonsillectomy, for example, in cases of diphtheria carriers or removal of the gall-bladder in cases of typhoid carriers) offer a *fair prospect of cure*. Even if it were enacted that healthy carriers must submit themselves to prescribed treatment, the question of surgical operations would require careful handling. It might strike the public mind as too suggestive of those advanced American States which (on paper, at any rate) adopt the eugenic principle of sterilising their degenerates. With the recent Streatham case fresh in its memory, this country might be willing to empower the detention of the healthy carrier till such time as he can be certified as innocuous, all medical and surgical facilities being offered him in order to expedite his cure and release. Some years ago several American States passed a measure for compulsory notification, examination, quarantine, and treatment (backed by fine, imprisonment, and liability in damages) in respect of venereal disease. This country has not shown itself ready to follow suit. One of those States (Iowa), as an alternative to quarantine, allowed the patient's release on bond of 1000 dollars on condition that he would not expose anyone to infection, would continue his treatment till cured, and would observe all rules and regulations prescribed. It was an *interesting* experiment, but in this *country* we shall do more by appealing to the good sense of our countrymen who have the misfortune to be germ-carriers than by exacting money bonds from them.

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[1] THE LANCET, 1921, i., 452.

PUBLIC HEALTH ADMINISTRATION.

SHOULD the Rating and Valuation Bill now before Parliament become law, the Ministry of Health has stated its intention of reviewing the question of percentage grants to local authorities for health services. The new proposal, outlined in a letter addressed by the Minister to municipal authorities, is to devise a scheme by which a fixed grant covering a period of years is made to the *local authority*, to be expended upon whatever health work the authority chooses, provided that a recognised standard of efficiency is maintained. The same letter intimates the Government's intention to make one local authority responsible for the finance of each sanitary area; as it is, municipal finance may at any moment be upset by the activities of boards of guardians over which the council has no *control*. Expression is also given in the letter to the Government's conviction that if the total health and hospital provision in any area is to be effectively and economically worked, it must be handled as a whole by a *single* health authority. The Government scheme therefore proposes to institute a single set of local authorities in the various areas of local government with provision for coördinated action. These proposals bring one stage nearer the reform of the Poor-law in the sense of the Minority Report of the 1905–09 Commission.

ROYAL DENTAL HOSPITAL OF LONDON, SCHOOL OF DENTAL SURGERY.—The annual clinical "at home" was held at the Royal Dental Hospital on Nov. 21st, when about 80 patients attended. There were shown various conditions of clinical and scientific interest, including pathological conditions of the jaws, teeth, and associated parts; cases illustrating the relation of dental to general disease, cases of orthodontic interest and prosthetic cases. Mr. F. St. J. Steadman gave a very successful demonstration of regional anaesthesia and there was also a display of specimens, models, and X ray photographs. About 250 visitors were present.

Annotations.

"Ne quid nimis."

EXPERIMENTAL CANCER RESEARCH.

IN the twenty-third annual report of the Imperial Cancer Research Fund which we notice on another page, Dr. J. A. Murray, F.R.S., the director, refers to the publication in THE LANCET of July 18th, 1925, of the paper by Dr. W. E. Gye as the outstanding event of the year. He summarises Dr. Gye's conception of the ætiology of cancer in the following terms:—

> "The essence of Dr. Gye's conception is that malignant growth results from the concurrence of two factors—an ultra-microscopic microbe and an unstable chemical factor derived in his experiments from propagated malignant tumours of animals, and it would be erroneous to regard either of these factors, singly, as the cause of cancer. The direct evidence of this dual origin of new growths has so far only been furnished for the Rous fowl sarcoma and for a transplantable sarcoma of the mouse. For other tumours the evidence is indirect, cultures of these supplying the ultra-microscopic microbe, the specific unstable chemical factor being supplied by an extract from the Rous fowl sarcoma, in which species of animal the two injected simultaneously gave rise to progressively growing sarcoma. Injected singly, they are inert. The delicate racial and tissue specificity governing the transmission of malignant new growths therefore attaches to the labile chemical factor, and not to the microbe. One of the gravest objections to previous forms of the parasitic hypothesis of cancer is thereby met. These experiments have only been possible by the use of the propagated animal tumours which are sufficiently exempt from ordinary bacterial contamination, and it is a legitimate source of satisfaction to this Fund that their prevision in maintaining this material over many years, including the war period, should have received its due acknowledgment and reward.
>
> "It is obvious that this dual conception of the ætiology and pathology of cancer, should it be confirmed, introduces a new orientation in every aspect of the cancer problem: statistics, epidemiology, causation, prevention, and treatment."

Dr. Murray states that the workers of the Fund have, at Dr. Gye's request, undertaken a critical repetition of his fundamental experiment, and he deprecates premature speculation and anticipation in view of the fact that the new problems are susceptible of direct experimental study. But we may perhaps be allowed to express the opinion that everybody interested in the cancer problem—and there are many—will look forward to the next annual report of the Fund with the keenest interest.

Of the work published during the past year two papers are specially referred to by Dr. Murray. It is now recognised that cancer of the skin can be produced at will in mice by repeated painting of a localised area of the skin with tar. If this is repeated over many months several times weekly about 70 per cent. to 80 per cent. of the animals will after five to nine months develop a typical skin carcinoma. Dr. Findlay has found that even the single application of hot tar may, in exceptional cases, produce cancer after a long period of time—about a year. The tar no doubt remained in the traumatised area for a prolonged period of time. But from the clinical point of view it is interesting to have an experimental demonstration that a trauma due to a single extraneous intervention may be responsible for the genesis of cancer. The second investigation referred to deals with the theory which has been propounded that cancer is due to a loss of nervous control over a group of cells. Malignant new growths are not efficiently innervated, if indeed they contain any nerves at all. The cells of the normal skin, on the other hand, are supplied with a very rich network of fine nerve-fibres. It has been suggested, therefore, that the origin of cancer is to be found in this difference; in other words, that normal cells become cancerous or, at least, predisposed to cancer when they escape for some reason or other from nervous control. This view was submitted to an experimental test by Dr. W. Cramer, who denervated an area of skin and then submitted it to chronic irritation by tar-painting. It was found that the denervated area responded to tar-painting by the production of tumours not more rapidly but much more slowly. It is clear, therefore, that absence of nervous control does not predispose to cancer. On the contrary, it seems to retard the genesis of cancer. It would appear from these observations that in the production of a tar tumour we are dealing with the effect of a chronic irritant not on the epithelial cells only but on the tissue as a whole. Owing to the fact that these experiments necessarily extended over many months and that during that time a gradual nerve regeneration took place in the denervated area it was not possible to determine whether a permanent absence of nerve control would completely inhibit the genesis of cancer. These results would appear to be in keeping with the regression or limitation of the growth of a cancer which has sometimes been obtained in man by denervation.

To the superficial observer it may seem remarkable that the production of cancer by the laborious application of tar should still occupy the time of investigators while acknowledgment is made of the revolution in cancer research introduced by the work of Dr. Gye and Mr. Barnard. It is obvious, however, that any new knowledge must be harmonised with what is already known, and furnish a rational account of the way in which cancer arises from normal tissues, before it can be recognised as an adequate solution of the problem of the ætiology of malignant new growth.

GASTRO-ENTEROLOGY IN SPAIN.

THE subject of special clinics and hospitals for special diseases is being discussed with increasing frequency in medical circles in this country, and a point seems to have been reached when the advocates of so-called all-round knowledge have come to defend with increasing vigour those portions of the human body whose study has not yet been seized from them by otologists, neurologists, dermatologists, cardiologists, urologists, and other specialists. The outcome is yet to be seen, but it has already become somewhat remarkable that special departments for diseases of the endocrine organs, the alimentary tract, and metabolic diseases are not to be found in London. Opinion may differ as to whether this is desirable or not. Advocates of further specialisation will, however, be interested in a recent Spanish publication which we have just received.[1] The Madinaveitia Institute at Madrid was recently created for the closer study and appropriate teaching concerning gastro-enterology, endocrinology, and the disorders of nutrition. It comprises a large out-patient clinic and 12 wards, where upwards of 400 severe cases are treated in the course of each year. The X ray and laboratory equipment are of the latest pattern, and the yearly reports contain matter of high scientific interest. The article on the surgical treatment of gastric ulcer, by Dr. Urrutia, contains a learned survey of the present opinion of surgeons in all countries on this subject, and it is instructive to note the growing interest in the operation of gastrectomy, and the increasing suspicion as to the ultimate value of gastro-enterostomy prevalent in Spain. Dr. Carrasco Cadenas has contributed an article on the diagnosis and treatment of diabetic coma, and his insistence on the diagnostic value of estimation of the alveolar CO_2 tension is sufficient proof of the deep attention being given to the subject. Dr. Cadenas is emphatic concerning the necessity of giving large and repeated doses of insulin during coma, and shares the scepticism of other authorities concerning the value of bicarbonate administration. The laboratory examination of cases with deranged gastric, pancreatic, or hepatic function is conducted by Dr. H. G. Mogena, who contributes three excellent articles to the annals of the Institute. By a special technique, carried out with the aid of the X rays, this observer has been able to introduce duodenal sounds with rapidity and precision, and calls attention to the facility with which the duodenum can in this manner be filled with barium and useful pictures obtained in cases where ulceration is suspected. He has also been able in many cases to demonstrate hepatic insufficiency by the delay in appearance in the bile of tetrachlorphenolphthalein after intravenous administration of that dye. Altogether the first volume of the reports of the Institute will be received with deep interest in this and all other countries where the progress of medicine excites sympathy.

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[1] Anales del Instituto Madinaveitia. By Drs. Urrutia, Carrasco Cadenas, Madinaveitia, and Mogena. Vol. I. Madrid: Editorial Paracelso. 1925.

BIOLOGY OF POPULATION GROWTH.

IT is an interesting fact, coming within the experience of most scientific workers at one time or another, that a conclusion on any subject reached by apparently unassailable logic often turns out to be erroneous when detailed practical experimentation is substituted for theoretical exposition. The common jibe of "armchair critic" indicates that this experience is not infrequent in other departments of life. In this connexion the overwhelming logic of some of the arguments put forward by Malthus are no exception, and the obvious difficulties attendant upon controlled population experiments over a long period of time are probably sufficient reason why so much of what Malthus taught is accepted by many of his unquestioning followers at the present day. Prof. Raymond Pearl is not one of these; his painstaking and laborious investigations into some of the problems of applied biology are sufficiently well known to demand great respect, for his writings and his ingenious work with flies for carrying out population experiments in a laboratory to some extent get over the apparent difficulties of putting Malthusian doctrines to a scientific test. It was the "compelling logic" of the argument that the prophesied increase in human population would be bound to lead to an increase in the sum total of human misery and wretchedness that first aroused his suspicions, and in a new book[1] he has carried his previous work a step further by analysing in considerable detail the course of population among the indigenous tribes in Algeria over a period of 75 years of recorded census history. As a result of this and of other work already referred to on the fruit-fly, and further investigations in the experimental population of hens, he has reached certain important conclusions. He first shows "that populations grow in size according to the same mathematical law that individual animals and plants follow in the growth of their bodies in size." Further, "human populations grow according to the same law as do the experimental populations of the lower organisms," and the trends of the birth-rate and death-rate amongst the Algerian natives have been what would have been expected on certain mathematical considerations as expressed in the form of a logistic curve. The evidence necessary to establish these conclusions represents an enormous amount of labour, but Prof. Pearl and his collaborators have gone further and endeavoured to establish the biological causes influencing the shape of this curve. Evidence is brought forward to show that both for the lower organisms and for urban populations of human beings density of population will adversely affect the rate of reproduction. The economic factors of wealth by indirect psychological and social effects tend to express themselves in the sexual activity of human beings, and through sexual activity in birth-rates. With all this evidence and with the certain fact before him that "the human population of the world is going on increasing for a long time to come," Prof. Pearl is beginning to feel very uncertain as to the "inevitable misery doctrine" to which at one time he appears to have adhered. He now maintains that this doctrine overlooks certain important facts. In the first place, the great increase in population of recent years in various countries, and in the world as a whole, has not led to such a marked increase in squalor and wretchedness and general unhappiness as would have been expected. "Even allowing for the misery entailed by the great war," he writes, "it is surely true that at no previous time in the recorded history of mankind was so large a proportion of the population on the whole so happy, and so socially and humanely well off as they are right now." The reason for this is said to be, first, in the orderly evolution of human knowledge; applied biology is still in its infancy, and "one hears no note of pessimism from the chemists." Secondly, the adaptive potentiality of the human organism appears to be largely ignored, and yet it seems to be the crux of the whole matter. The new situations beginning to arise by the threat of over-population will be met by adaptation to environment. Birth control Prof. Pearl defines as "an intelligent adaptive response to an environmental force, population pressure." Public health and hygiene are further examples of these adaptive processes already at work. The comparative optimism of Prof. Pearl's conclusions is perhaps the most striking feature of his latest work, and both his work and his conclusions demand close attention.

LIPIODOL IN BRONCHO-PULMONARY DISEASE.

REFERENCE was made in THE LANCET last week to certain advances in the use of lipiodol in cerebral localisation. In the present issue Dr. Carlos Heuser, of Buenos Aires, describes his application of Sergent's method to the diagnosis of early pregnancy and to find out whether the Fallopian tubes are patent. But this is not all. Recent work in Canada indicates that in the diagnosis of broncho-pulmonary affections there is opening up an extended field for the use of this iodine-containing oil. Introduced first in France by Sergent and Cottenot for radiological investigation of bronchiectasis, and described first in this country by Armand-Delille and A. Moncrieff,[1] lipiodol has been increasingly used for the diagnosis of this particular disease, while a warning against its possible adverse influence on tuberculous lesions of the lungs has been uttered by the French workers. Dr. D. H. Ballon, however, in a recent paper,[2] points out that this theoretical objection, based upon the danger of pulmonary congestion from the iodine, has not been substantiated in his experience. Further, he maintains that the intratracheal route favoured by Armand-Delille and his co-workers, while perhaps justifiable in children, has no justification in the case of adults when a bronchoscope in skilled hands presents a much more satisfactory method. One part of a 20 per cent. solution of cocaine and two parts of 1 in 1000 adrenalin are used as a local anæsthetic for the pharynx and larynx, and bronchoscopy is performed on the radiographic couch. The instrument is passed beyond the vocal cords, and after further anæsthetising the operator injects about 30 c.cm. of warmed lipiodol through a long syringe. X ray pictures are then taken in various positions, the oil being moved by gravity to any particularly indicated part of the lungs. No discomfort appears to result from the lipiodol; the lung is remarkably tolerant, although there appear to be personal idiosyncrasies for the oil. No ill-effects have been noticed on tuberculous lesions, and lipiodol has been employed in certain cases described by Dr. E. Archibald in the same journal for determining the suitability of these patients for operative interference. Such surgical measures as thoracoplasty for the collapsing of cavities in the lungs are being undertaken more frequently, and the exact localisation of the extent and situation of such cavitation rendered possible by the use of lipiodol has an obviously important bearing on these procedures. In particular, in patients in whom such an operation as total posterior thoracoplasty has been performed, for example, two or three years previously, the new bone formation, irregularity of the chest wall, and thickening of the pleura render any subsequent ordinary radiogram of the thorax particularly obscure. If such a patient has a recrudescence of symptoms, as occurred in the three cases described by Dr. Archibald, accurate diagnosis is impossible without the use of lipiodol injection. This recent work is of importance in introducing a comparatively harmless method of injecting lipiodol and in establishing the fact that this oil is apparently non-irritant even to tuberculous lesions. The application of both these facts still further extends the use of this already useful substance.

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[1] The Biology of Population Growth. By Raymond Pearl, New York: Alfred A. Knopf. 1925. Pp. xiv. + 260. $3.50.

[1] Brit. Med. Jour., 1924, ii., 7.

[2] Canadian Medical Association Journal, October, 1925, p. 995.

ABDOMINAL LEVELS.

It is a commonplace of information, not only among surgeons and anatomists, but also among students, that the abdominal viscera are not always arranged within the cavity in absolute accordance with the simple plan that adorns all anatomical diagrams of the contents of the belly. We are not referring to the morphologically interesting examples of abnormal situation which are met with occasionally, but to what may be termed exaggerated lowness of levels with normal general arrangement. The transverse colon, placed in the pictures above the umbilicus, is more often found below—and well below—that point, and the stomach levels are no less striking in their variations. Anatomically, it would seem natural to give to these freely movable viscera a wide latitude in levels, associated with changes in the content of small intestine, and reserve narrow limits of "normality" for the colon on each side, where it is secondarily fixed to the dorsal wall. Among the interesting papers presented at the meeting of the Anatomical Society on Nov. 20th was one by Prof. R. J. Moody, who has been for some little time in this country. He had been able, by radiological methods, to estimate the position of the stomach, colon, and edge of the liver in 1000 students in California and, in demonstrating his results before the Society, showed how much these normal and healthy young people differed in respect to the positions of these viscera from what is usually accepted as the correct description. His material ranged in age from 16 to 25, male and female, and included athletes and gymnasts. None seemingly had any abdominal weakness or complaint. The average lowness of level of the organs mentioned, rather more marked among the women, would seem—even if all allowances are made for the conditions of X ray work on the one hand, and for those of the dissecting room subjects on the other—to call for the admission of much greater extent in range of level, and of possible lowness in individual level, than is generally conceded. The anatomists present appeared to have no objection to such conclusions. Radiologists have been instrumental in many ways in modifying some of the rigid conceptions held by the older school of formal anatomists, especially in the abdominal domain, but much more work and observation is required before the divergence of opinions in some cases can be reconciled. It is well that the formal anatomist should freely recognise the range of informality in the living body.

THE SURGEON IN BATTLE AT SEA.

In the *Military Surgeon* for October Rear-Admiral E. R. Stitt, the well-known Surgeon-General of the U.S. Navy, writes on the work of the naval surgeon in battle at sea. He opens with a story of the loblolly boy of the *Chesapeake* in her famous action. The loblolly boy was, in the British Service also, precursor of the sick-berth staff, loblolly being vernacular for the gruel he brought to the sick. After a glance at the medical preparations made by Augustus, as he became, at Actium, Admiral Stitt remarks that Hadrian's triremes (with a complement of 200 men) had each a surgeon, who received twice an ordinary officer's pay and hence went by the name of *duplicarius*. In the eleventh century barbers practised on board ship, and later Venice put surgeons and physicians in her galleys. In the wooden man-of-war the medical station was in a protected place below the water line. In those days British and Colonial ships-surgeons scalded their amputating knives, thinking by doing so to diminish the pain of the cut, and so anticipated Lister. In the Chinese-Japanese War the medical station was single, and it is on record that all the doctors and medical equipment of a ship were sometimes lost by a single shell explosion. Dressing stations were thereafter divided and put behind armour. The first "hospital for battle" was provided in the plans of the *Tsarevitch* in 1903. Admiral Stitt recounts the horrors of the defeat at Tsushima, when the ship *Askold* had one dressing station in the torpedo room, and two auxiliary stations, forward and aft, in charge of "feldshers," a word which recalls the "field shearer" or barber. Even at Jutland the ship's barber was among the ambulance party on *Seydlitz*. After reviewing reports of many recent naval engagements, Admiral Stitt concludes that two or more dressing stations must in future be available below the protective deck, and in the latest ships of the U.S. Navy a third is planned for the engine-room. Accessibility is difficult to attain now that ships are so much cut up into small sections as a protection against poison gas. For the same reason it must be possible to shut off the plenum ventilation without a moment's delay. A perfect stretcher for naval use is still wanting; Admiral Stitt mentions the Neil Robertson with approval, but in the future the wounded seaman may be removed on an ambulance aeroplane and the naval hospital ship come to resemble the aeroplane carrier. Every naval medical officer will be grateful to the Surgeon-General of the U.S. Navy, to whom we already are indebted for an admirable laboratory manual, for the picture he has given of life on shipboard in past times, and for his glimpse into the future.

NINETEENTH CENTURY SCIENTISTS.

Burns's well-known aspiration that we might see ourselves as others see us is one which workers in the field of natural science should bear in mind. There used to be a popular idea (it has nowadays almost disappeared) that science, as opposed to other fields of thought, was generous to fellow workers, was never dogmatic, did not know the meaning of heresy, and was ready to receive new ideas with open mind. This view of science was contrasted with the conventional views of religion, and the popularity of such "tenth rate" books (the epithet is Mr. Murray's) as Draper's Conflict between Religion and Science showed that this view had gained much ground. In the book [1] before us Mr. Murray, a parish priest, a widely read man, and by internal evidence a mathematician, pins out science in the nineteenth century on the dissecting table and sets out with cold precision the failings, the quarrels, the heresy hunts, and hidebound convictions of scientists to one another. His book is not pleasant reading, but, like many a bitter medicine, it should do good. The faults which Mr. Murray shows up so unsparingly may not be at present in evidence, but history shows that they are likely to recur. Sir Oliver Lodge, who has contributed an introduction to the book, gives the matter of it in a nutshell: "Surely the world of science is free from prejudice and is ever ready to welcome truth! So we try to think. But is it so? Does history bear this out?" Mr. Murray answers the question in the negative. He takes the lives and works of nineteenth century leaders in science—Jenner, Simpson, Lyell, Helmholz and Joule, Darwin and his predecessors, Pasteur and Lister, and a numerous band of others ("forgotten scientists" he calls them)—and shows how one and all met with bitter opposition or, still worse, with studied neglect from their fellows. Mr. Murray might have included in his list the John A. R. Newlands, who discovered and published papers on the Periodic Law, provisionally styled by him the Law of Octaves, some five years before *Mendeléeff* and Meyer, and whose work was received with derision. Occasionally one who had fought and conquered neglect or opposition to his own work (we forbear to cite instances), so far from profiting by discipline, proved just as bitter towards a new seer as any of his fellows. Mr. Murray's book is a store-house of information upon nineteenth century science; it is a work which should be read by everyone interested in human nature.

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[1] Science and Scientists in the Nineteenth Century. By the Rev. Robert H. Murray, Litt.D. London: Sheldon Press. 1925. Pp. 450. 12*s*. 6*d*.

POLYCYTHÆMIA RUBRA AND X RAYS.

WE publish in this issue of THE LANCET an interesting and suggestive note by Dr. S. W. Patterson, physician to Ruthin Castle, North Wales. He gives a clinical record of a patient suffering from polycythæmia rubra, associated with high blood pressure and blotchy non-pruritic rashes. The treatment adopted consisted of a lacto-vegetarian diet, the administration of 1 gr. of thyroid twice a day, and intestinal douching twice a week. X ray treatment to the long bones was given twice weekly, on 25 days for eight minutes each, during a period from July 4th to Oct. 17th, diathermy being applied to the hands and feet on the other four days a week. The treatment seems to have been dramatically successful, the red cells being diminished from over 7,000,000 per c.mm. to normal, and the blood pressure from a systolic level of 204 mm. Hg and a diastolic of 120 to normal, the improvement being associated with a marked sense of well-being. Nine months after treatment the improvement has persisted, the blood count still being normal. The condition of polycythæmia rubra is an extremely interesting and somewhat obscure one. Since the year 1023 when Osler first clearly defined the condition, after its previous description by Vaquez, Cabot, and others, a great deal of attention has been paid to it, and it is probably somewhat more common than it was originally supposed to be. A routine examination of the blood in patients with florid appearance and high blood pressure would probably reveal more cases in an early stage. The association of high pressure with polycythæmia has long been familiar, and a form was described by Geisböck as polycythæmia hypertonica. There are two special points of interest about Dr. Patterson's case. First, the persistence of the good results of the X ray treatment, and secondly, the remarkably good effect of this treatment upon the raised blood pressure. The first of these may possibly be due to the fact that the case would appear to have been comparatively mild in degree with only just over 7,000,000 red cells per c.mm., and thus possibly was discovered in an early stage. The beneficial effects upon the blood pressure support the suggestion made by Dr. Patterson that this method of treatment is worth trial in cases with high blood pressure apart from this disease, especially those associated with some increase in the red cells and heightened viscosity of the blood.

ROYAL SOCIETY OF MEDICINE.

THE annual banquet of the Royal Society of Medicine, held at the Hotel Victoria, London, gave its President, Sir StClair Thomson, the opportunity to set out something of the great part played by the Royal Society of Medicine in the life of the community. He described the Society as a guild for the diffusion of knowledge in the science and art of medicine, the gold being dug in practice, in hospital wards, in laboratories and museums, as well as garnered from the progress of neighbouring sciences; but it was, he said, the function of the Society to test this gold, to mint it, and to put it into circulation. He spoke of the developments likely to take place under the management of the new whole-time secretary, Mr. Geoffrey R. Edwards, B.A., who had already made arrangements for keeping the library open during the long vacation, and for making it available on two evenings a week up till 10 P.M. It is, as the President remarked, not only the chief medical library of its kind in the Kingdom, but the most complete medical library in the Empire. But he also took the opportunity of acknowledging once again the signal services of the late secretary, Sir John MacAlister, whose 38 years of ungrudging and loyal service came to an end in April last. It was during this period that the removal took place of the old Medico-Chirurgical Society from "two or three stuffy rooms" in Berners-street to a building in Hanover-square, followed by the federation of this Society with 17 others into the Royal Society of Medicine. In the last session, as he remarked with some pride, the Society and its sections held 171 meetings and discussions attended by 6800 members, while the library was visited by more than 20,000 readers, and 3051 parcels of books were sent carriage free to members in the provinces and abroad. Not that he was content with the present position, for he spoke enviously of the recent endowment of the New York Academy of Medicine with half a million pounds jointly by the Carnegie Corporation and the Rockefeller Foundation. This gift was enabling the Academy to maintain a bureau of clinical information and a committee for post-graduate medical education, enterprises both of which the Royal Society of Medicine would gladly undertake, should the means be forthcoming. Mr. Neville Chamberlain, the chief guest at the banquet, in proposing "The Royal Society of Medicine," spoke of the immediate need for the establishment of a post-graduate school in London, and bespoke the good will of the Society for this project. With the help of the committee over which he was to preside as Minister of Health, he thought that the difficulties which had so far baffled endeavours might be surmounted. At the conclusion of the banquet a portrait of Sir John MacAlister, by Mr. Eric Kennington, was unveiled by Miss Williamson, his assistant secretary, and the Jenner medal of the Society was presented to Dr. S. Monckton Copeman.

BERNHARD NAUNY

Bernhard Naunyn was for more than a generation one of the foremost leaders of medical research in Germany, but when he died in July last, at the age of 86 years, he had so long survived his co-workers, and, indeed, many of his pupils, that his death passed almost unnoticed. Naunyn qualified from the School of Medicine in Berlin, he began his long clinical career with Frerichs, one of the founders of the Clinic of Internal Medicine, and succeeded him as the leading exponent of this branch of investigation. In 1871 he founded with Schmiedeberg, at Berne, the *Archives of Experimental Pathology and Pharmacology*, in which his aim was to further the principle of making the clinic itself the arena where pathological questions were solved and applied. He held most emphatically that the problems of illness belonged to the clinician alone, and that although the clinician was indebted for help and method to the physiologists, pharmacologists, pathologists, and bacteriologists, he must be "master in his own house." He was only in Berne for a year, but during that short time he made many close friends, and remained a lover of Switzerland for the rest of his life. His next chair was in Königsberg, and in the year after he occupied it he contracted an ideally happy marriage with his cousin Anna, who survives him after inspiring his best work for 52 years. His time in Königsberg was the happiest and most fruitful of his life. Here he published works that are now standard text-books, on the echinococcus, toxæmia, fever, and the effect of high altitudes on the hæmoglobin, and laid the foundations of all later work on diabetes and diseases of the liver. He worked from 1888 to 1004 in Strasbourg, and then spent the last 20 years of his life, a period when most men of his age are past work, in research on the colloid chemistry of the gall-stone. The reaction and diffusion of crystalloids and colloids in a colloid medium is at once one of the most interesting and one of the most difficult aspects of colloidal chemistry, and it was Naunyn who first showed that the "facetting" of a gall-stone was due not to pressure from outside, but to a chemical process. His mental acumen remained unimpaired to the last, and he was still equal to the most abstruse chemical problems when he died. He has been described as "a clinician body and soul." He knew that the ultimate application of medical science must be practical, at the bedside, and that science which could not be thus applied was not worthy of the name. As far as speculation solved problems or set them he was not averse from it, but had no use for it in itself. He was one of the most severely practical research workers that there has ever been. He disliked the whole field of modern psychotherapy, holding that to treat it as a separate study was misleading and dangerous, for it was an inseparable part of medical practice. His last published work, entitled "Thanks, Memories and Opinions," is ample proof that he was as good a critic as he was a clinician or an investigator.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXLIX.—CHRONIC NASAL DISCHARGE AND SINUSITIS IN CHILDREN.[1]

Foreign Bodies in the Nose.

OCCASIONALLY a child pushes a foreign body into his nose without the parents' knowledge. If the object is hard or metallic—e.g., a bead or button—no trouble may arise until years later when a calculus has formed around it which causes obstruction, ulceration, and sanious discharge. On the other hand, when the object is soft or absorbent—e.g., sponge, paper, or wool—it soon becomes a foul purulent focus. The pus trickles from the affected nasal passage, excoriating the nostril, and the breath is fœtid. Headache, aural and other symptoms may also be present. Inspection generally reveals the foreign body, but if it is covered with pus, concealed by the swollen mucous membrane, or offers no resistance to the probe its detection may prove difficult. Under such circumstances, or if the child is young or intractable, a few whiffs of adrenalin solution (1 in 10,000) should be sprayed into the affected nasal passage and a general anæsthetic given. If chloroform is chosen no adrenalin should be applied after narcosis is commenced. A thorough rhinoscopic examination is thus possible, and with a probe search can be made beneath the inferior turbinate and in the upper parts of the nose. The body having been located should be extracted by means of nasal forceps, a hook, or suitably bent probe. All manipulations should be carried out as gently as possible in order to keep the field free of blood.

Chronic Rhinitis.

This term comprises: (1) Affections of the nose, in which the lining membrane has undergone chronic inflammatory changes. These are commonly caused by colds, influenza, the exanthemata, &c., irregularities of the nasal chambers, sinusitis, and adenoids. (2) The groups of nasal signs—the chief of which is hypersecretion—manifested by certain general diseases—e.g., early tuberculosis, intestinal toxæmia, nephritis, &c.

As a rule, when the intranasal changes are slight or absent the discharge is serous or mucous, and when pronounced, muco-purulent. A serous or seromucous discharge is an early sign of simple chronic rhinitis. At this stage of the disease the inferior turbinates swell unduly, causing partial nasal obstruction and secrete excessively, thus giving rise to snuffling and running nose. Colds are readily contracted and the discharge temporarily becomes muco-purulent. In the course of time the congested inferior turbinates undergo hypertrophy. Obstruction and muco-purulent discharge are then constant and the inferior turbinates even after the application of cocaine, are flabby, especially along their lower edges and at both ends.

Chronic rhinitis is often associated with adenoids and tonsils. When these are removed before the stage of turbinal hypertrophy is reached, cure of the nasal catarrh generally follows. On the other hand, if permanent enlargement of the inferior turbinates has taken place, and is left untreated, the removal of the tonsils and adenoids will not free the child of its nasal symptoms. The frequency of these enlargements has so impressed some rhinologists that the recommendation has been made to reduce the inferior turbinates in every patient operated on for tonsils and adenoids. This is an over-estimate; nevertheless, inquiry should be made in all cases of adenoids as to symptoms of excessive swelling of the inferior turbinates—e.g., pronounced variations at short intervals in the patency of the nose, stuffing in the morning or in a warm room, which passes off on going out of doors, and blocking of one or other side of the nose from time to time. If nasal obstruction and hypersecretion occur independently of adenoids, the parents should be cautioned as to the harmful effects of overheated and close rooms, too little exercise, and too much food. The sending of a city-bred child to the country or of a boy to a preparatory school often dispels all nasal symptoms.

Intermittent obstruction due to turbinal congestion may be benefited, at least temporarily, by a camphor-menthol spray or ointment. A chronic discharge of mucus or muco-pus may be diminished or checked by a nasal wash. For this purpose a warm solution of bicarbonate of soda or common salt (1 drachm of either to one pint of tepid water) is effective. Elaborate formulas made up as powders, tablets, or solutions for the preparation of nasal washes may be found in the lists of manufacturing chemists, but it is doubtful whether these possess specific virtues. Their beneficial action probably is chiefly mechanical. The main requisite in a wash is that it does not irritate the nasal mucous membrane, particularly the olfactory epithelium, and so lead to blunting or loss of the sense of smell. Astringents such as alum and zinc salts are banned on this account.

When the discharge persists or recurs on contracting a slight cold, operative measures may be necessary. The shrivelling of the swollen inferior turbinates by the application of fused chromic acid or the galvano-cautery may suffice. If hypertrophy is established it may be reduced by scissors and snare. This should be done sparingly so that the turbinates may not be undersized when the nose is fully developed. The resection of a deviated septum should be postponed until the patient is at least 17 years of age.

One of the most intractable nasal discharges is that following scarlet fever; it is largely purulent. The inferior turbinates are not enlarged and their lining membrane is not thickened. Nasal washes are only of temporary assistance; mild cauterisation with solutions of chromic acid (10–50 per cent.) afford most benefit. Frequently the antra and several of the other accessory sinuses contribute to the discharge and demand treatment both on this account and because of the recurrent infections—e.g., pneumonia—to which they give rise. When a vasomotor disturbance exists in addition to the turbinal congestion, sneezing may be a pronounced symptom. The obstruction, rhinorrhœa, and sneezing are then usually paroxysmal in character—they set in suddenly, are severe while they last, and cease abruptly. In such cases protein sensitisation and nervous exhaustion must be investigated. When the former can be excluded benefit is most likely obtainable from a course of arsenic.

Some children suffer from a watery nasal discharge which may excoriate the nostrils and upper lip. No turbinal swelling or other intranasal abnormal condition is found. The patients are usually of poor physique and backward; they feel the cold readily, suffer from chilblains, and sometimes from enuresis. Thyroid extract and calcium preparations are indicated in such cases. A unilateral watery discharge is usually due to unequal patency of the nasal passages, especially from deviation of the septum. The discharge comes from the wider fossa when out of doors on a cold day. The application of the cautery or escharotics to the inferior turbinate on this side, unless it is much hypertrophied, is useless or even harmful, because a considerable amount of the discharge is not secreted by the turbinate, but is due to condensation of the moisture in the expired air. The proper treatment is to equalise the patency of the two sides, but when this involves the correction of the deviated septum operation must be postponed, unless the circumstances are exceptional, until the patient is fully grown.

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[1] An article by Dr. Brown Kelly on Chronic Nasal Discharge in Infants appeared in THE LANCET last week.

Sinusitis.

Anatomical investigations, post-mortem examinations, and clinical experience all go to prove that the accessory sinuses of the nose, even in early infancy, may be the seat of inflammatory and suppurative processes. The infection causing these comes oftenest from tonsils and adenoids, acute colds, measles, scarlet fever, diphtheria, and pneumonia. The commonest symptoms are nasal discharge, obstruction, and cough. Occasionally a severe local disturbance with orbital, intracranial, or other complications arises. In some cases the sinusitis is unaccompanied by local symptoms, but acting as a septic focus causes frequently recurring colds in the head, arthritis, nephritis, laryngitis, pulmonary affections, &c. Dean recommends that if, after the removal of tonsils and adenoids, the usual improvement is not obtained, the child continuing listless, pale, with poor appetite, &c., and if, apart from the respiratory tract, the systemic condition is satisfactory, toxæmia should be suspected and search made for a septic focus in the nose or its accessory sinuses.

When the accessory cavities in infants and young children are under suspicion, radiographs should be taken in order to determine which sinuses are present, and their size. Unfortunately, this method in the young is not helpful in diagnosing disease, owing to the pictures of the cavities being ill-defined. The source of a purulent discharge may be discovered by inspection of the nasal fossæ, but oftener no pus can be seen. The pharyngoscope sometimes proves a useful aid. Exploratory sounding, aspirating, and washing may be employed when the sinuses are sufficiently developed. The ethmoidal cells and antrum are of chief clinical importance in the young, the frontal sinus of least. Usually several sinuses on the same side are involved.

The first step in treatment is the removal of the tonsils and adenoids. The improved ventilation which results is followed by the cessation of the sinus discharge in the majority of young patients. Nasal washes and instillations—e.g., argyrol 10 per cent.—should be used to reduce the swelling of the nasal lining membrane and so facilitate drainage of the sinuses. Outdoor life in a warm climate has a beneficial effect. Skillern has found vaccines of greater service in this class of sinus disease than in any other. The ethmoidal cells, frontal sinus, and antrum have been opened and drained in patients even under 3 years of age, but excepting in the case of the antrum such operations are rarely called for. When the patient is over 8 years the antrum can be reached from the inferior meatus and intranasal treatment carried out as in adults. Reference to a radiograph will usually show that this method is not applicable in younger children owing to the floor of the antrum being still too high in relation to the attachment of the inferior turbinate and that attempts to enter the cavity will endanger the rudimentary teeth. For the latter reason the canine fossa route also is not available.

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Special Articles.

GENERAL MEDICAL COUNCIL.

PRESIDENT'S ADDRESS.

THE winter session of the General Medical Council was opened on Nov. 24th, Sir DONALD MACALISTER presiding.

The PRESIDENT began by paying a tribute to the late Queen Alexandra, and expressed the wish of the Council that on a suitable occasion an assurance of the Council's respectful sympathy and deep regret should be conveyed to Their Majesties. Referring to the retirement, after 15 years' service, of Sir Isambard Owen, the President said that few men in the medical profession in this generation had done so much constructive work of an abiding kind in settling the framework and directing the policy of modern universities. His successor was Prof. Edward Fawcett, Dean of the Bristol Faculty of Medicine, whose distinction and experience made him a welcome member of the Council. The session would mainly be devoted to the hearing of charges against registered practitioners, which were brought before the Council as, in the words of Chief Justice Cockburn, "the tribunal to whom the legislature has left the decision, as being the best judges in the matter."

The Functions of the Council.

"Apart from cases of conviction in the criminal courts," continued the President, "the charges to be investigated allege conduct, which in the words of the Act constituting the Council is '*infamous* conduct in a professional respect.' These words are sometimes misinterpreted and misapplied by persons ignorant of their history, sometimes even by advocates practising before this tribunal. It is therefore desirable in the common interest that, from time to time, their legal definition should be recalled. The legal definition was not framed by the Council, it was laid down for the direction of the Council by the Supreme Court, and it was prepared by Lord Justice Lopes, Lord Justice Davey, and Lord Esher, Master of the Rolls, in consultation. *It is this*:—

> If a medical man in the pursuit of his profession has done something with regard to it which will be reasonably regarded as disgraceful or dishonourable by his professional brethren of good repute and competency, then it is open to the General Medical Council, if that is shown, to say that he has been guilty of infamous conduct in a professional respect.

The Master of the Rolls added further:—

> The question is not merely whether what the medical man has done would be an infamous thing for any one else but a medical man to do. He might do an infamous thing which would be infamous in any one else, but if it is not done in a professional respect, it does not come within Section 29 [of the Act]. Yet, if in relation to his profession—that is, either with regard to his patients or to his brethren—he does that which may fairly be considered '*infamous* conduct in a professional respect,' then I think it is within the Section.

"Within the jurisdiction defined by the Statute, according to the procedure laid down by the Lords Justices when giving judgment in certain leading cases, and in accordance with the definition of the technical term '*infamous* conduct' furnished by the same authority, the Council performs its statutory duty as a 'domestic forum.' If swayed by fear, favour, or clamour the Council fails to perform any duty vested in it by law for the protection of the public, the Medical Acts themselves provide that the public shall not go unprotected. The Privy Council may issue its directions to the General Council to make good the default, and failing compliance, 'may exercise any power or do any act or thing vested in or authorised to be done by the General Council.' In other words, the Medical Council is a public department, with judicial functions defined by Statute and by the Courts, working under the supervision of the Privy Council, and subject to supersession by the Privy Council if it defaults. It is not vested with any powers or duties for the 'protection' of the medical profession, other than those implied in the preamble to the Medical Act, 1858—namely, 'That persons requiring medical aid should be enabled to distinguish qualified from unqualified practitioners.' For that purpose, which is obviously a purpose of public utility, the Register was set up. The Council's duty to the public is simply to ensure that no one who is not legally qualified by adequate professional training and testing shall get on to the Register, and that no one, who by his conduct has forfeited his claim to be entrusted with the status of a legally qualified practitioner, shall remain on it.

Privileges of Qualified Practitioners.

"The legal privileges of the qualified practitioner of medicine and surgery, as compared with the unqualified, are few. He has no monopoly of practice in either branch, such as the law confers on dentists and midwives in their specialties. The 'privileges' are rather trusts than advantages. Thus only the qualified can legally grant a valid medical certificate of illness or injury, or of death, or legally prescribe a dangerous drug for a patient. In many cases the attestation of a qualified practitioner is legally equivalent to that of a magistrate or a clergyman. These 'privileges' are clearly based on the assumption that members of a learned and honourable profession may be trusted to deal honourably. Whoever, therefore, abuses that trust by misusing the privileges his status confers, or by covertly enabling others for private gain to evade their legal disabilities, is chargeable with misconduct 'in a professional respect,' and makes himself liable to the penalty of removal from the Register. As the law stands, he is then as free to practise as if he had not been registered, and the public is as free to employ him, if they think fit. But the Council, as the guardians of the Register, have neither the power nor the responsibility of controlling his conduct thereafter. His status is that of an unqualified practitioner, and he is outside the Council's jurisdiction. . . .

"There are indications that, both within and without the profession, misunderstandings and confusions exist regarding the Council's functions and limitations. We are, for example, frequently confounded with voluntary organisations and societies of medical men, constituted for scientific and professional purposes, and subserving these purposes with eminent efficiency. These bodies are not, however, charged by statute with our duties and powers, nor we with theirs. We have no professional interest to serve other than the efficient performance of the specific duties laid upon us by the law in furtherance of the public welfare. . . .

Reciprocity.

"As regards Ireland, I have only to say that the Act of the Free State passed in February, 1925, which made the Medical Acts operative in Southern Ireland for one year, has been working smoothly so far as this office is concerned. We have had no official intimation from the Free State Government or from the Privy Council that the Act will be renewed next February. Unofficial communications from members of the Irish Branch Council, and others, indicate that indefinite renewal is improbable, and that conferences on the question are in progress between the Government of the Free State and a Committee representative of the Irish medical profession. Until the legislative proposals of the Government in Dublin for the future regulation of medical practice in Southern Ireland are known, it would be inexpedient for this Council to discuss the potential reactions of such legislation on medical education and registration in Great Britain and Northern Ireland. The Free State is autonomous within its own territory, and we must await the decision of its own Government and Parliament.

"The agreement for medical reciprocity with Italy," continued the President, "had been signed by Signor Mussolini and the British Ambassador, as plenipotentiaries, on May 21st, 1925. Certain difficulties of an administrative kind, which related chiefly to the documents to be furnished by British practitioners desirous of practising in Italy, had been satisfactorily overcome, and the cordial understanding regarding medical reciprocity, which subsisted between Italy and this country from 1910 until the promulgation of the recent Italian law on the subject, had been completely restored.

"The position taken up by the Province of Saskatchewan, by which it, in effect, denied to British practitioners registered here the privileges granted in this country to provincial licentiates, had been the subject of negotiation, and action by the Privy Council in regard to the discontinuance of the unreciprocated privilege of Saskatchewan at present remained in abeyance, in order that every opportunity should be afforded for reconsideration of the anomalous position created by Saskatchewan legislation."

[After referring to the appointment of Col. R. A. Needham as a visitor to Calcutta University and to the fact that the recognition accorded to the degrees of the University of the Punjab were to be continued for another year under the same conditions as before, the President continued as follows] :—

Revision of the British Pharmacopœia.

"The Pharmacopœia Committee is now in a position to proceed with its preparations for the revision of the British Pharmacopœia, 1914, which it has for some time been contemplating. Two recent events have cleared the way. The first is the passing of the Therapeutic Substances Act, 1925, by which Government machinery is provided, in association with the International Commission of the League of Nations, for fixing standards, &c., in relation to preparations requiring biological methods of testing. The second is the issue of the report of the International Conference on Potent Drugs, held at Brussels in September. At this Conference the Council was represented by Sir Nestor Tirard, who will report to the Pharmacopœia Committee its proceedings and conclusions. If the latter are accepted, with or without reservations, by the British Government, this acceptance will necessarily involve modifications, some of them important and far-reaching, in the text of the Pharmacopœia. . . . As the Pharmacopœia has by the nature of the case to serve the purposes of all the parts of the Empire in which it is current, it has to include within its scope a much larger number of drugs and preparations than would be deemed necessary for any one part. A given preparation may be thought obsolete or useless here, and yet be much in demand elsewhere. Any drug, in fact, which is (1) in current use over any considerable area, and (2) requires for the safety of the public that it should be exactly defined, in respect of source, preparation, standard of purity, &c., has a claim to admission. The modern freedom of international communication further makes it expedient that, in different countries, the same or equivalent names, especially in the case of potent drugs, shall mean preparations of equivalent strength and composition. In so far as this end can be attained by international agreement, the assimilation makes for public health and safety. All these considerations have to be kept in mind by the Pharmacopœia Committee; and it hopes, with the assistance which it has invited from authorities at home and overseas, and with the coöperation of its expert Committees of Reference, in the next issue to 'afford to the members of the medical profession and to those engaged in the preparation of medicines throughout the British Empire one uniform standard and guide, whereby the nature and composition of substances to be used in medicine may be ascertained and determined.'"

At the conclusion of the presidential address a vote of thanks to Sir Donald MacAlister, proposed by Dr. J. A. Macdonald and seconded by Sir Norman Walker, was passed by the Council, which then proceeded to the discussion of reports by the Dental Board and the Dental Education Committee and to the consideration of penal cases.

IMPERIAL CANCER RESEARCH FUND.

THE annual report of this Fund was adopted at a meeting of the General Committee held at 8, Queen-square on Nov. 10th, the Duke of Bedford presiding. In introducing the report, Sir Humphry Rolleston, Chairman of the Executive Committee, summarised the account given by the Director, Dr. J. A. Murray, F.R.S., of the work published from the laboratory during the period under review; this extends to 16 months since it has been decided in future to hold the annual meeting in November rather than in July. Among the 11 papers communicated to general and special journals attention was drawn to one by Dr. W. Cramer on the influence of innervation on the experimental production of skin cancer by tar,[1] and one by Dr. G. M. Findlay on the production of cancer by a single application of tar.[2] Dr. Cramer deprived a skin area in a number of mice of the nerve-supply and then painted it twice weekly until cancer supervened. This only occurred after a longer course of tarring than was necessary in normal animals, and, therefore, absence of nerve-supply certainly does not predispose to the genesis of cancer as has been suggested. The nerves grow again into the denervated area, so that the experiment does not give an absolute answer to the question, whether, if renewal of the nerve-supply could be prevented, cancer would not be produced at all.

Dr. Findlay's experiments were devised to determine if it is possible to reproduce in animals the remarkable sequence reported in the human subject from time to time, in which an accidental tar burn has been followed after a short interval by the appearance of typical progressive carcinoma at the point of injury. For this purpose a large number of mice received a single application of hot tar on a small area of the back. A slight swelling and reddening of the skin followed but soon subsided. It was not till the lapse of a year that any further change was observed, and then three mice showed typical cancer of the skin in the site of the application. This experimental result is important in that it shows that general intoxication with tar, which has been invoked by many workers as an important factor in the causation of tar cancer is, to say the least, not essential. Dr. Findlay is also continuing his research into the action of manganese salts, especially as regards the more delayed effects, but has not published any further report in the year under review.

The work under the Atholstan Grant for research is being carried on with great diligence by Dr. A. M. Begg. His investigations on the Rous fowl sarcoma and the infective lymphosarcoma of the dog have inevitably taken on a new orientation since the publication of the work of Dr. W. E. Gye, of the Medical Research Council. Dr. B. R. G. Russell took a keen interest in this work, and since his lamented death Dr. Begg has had the advantage of close association with Dr. Gye. This informal collaboration has been a source of great satisfaction to the Executive Committee. Dr. Begg's investigations are progressing satisfactorily and it is hoped will soon be ready for publication. The important work of Dr. Gye and Mr. Barnard, in addition to the many new lines of inquiry it opens up, calls for the most careful repetition with as many different kinds of tumours as possible. This is now occupying much of the time and energy of the scientific staff.

The Duke of Bedford made sympathetic reference to the loss entailed by the deaths of Dr. Sidney Martin, F.R.S., and of Dr. B. R. G. Russell, for 17 years a member of the scientific staff. As to the report of the hon. treasurer, Sir George Makins, he pointed out that the expenditure had exceeded the fixed income of the Fund—that is, the income derived from investments—by £1765. Subscriptions and legacies had made good that adverse balance, but to be compelled to rely on subscriptions and legacies for carrying on the work of the Fund was always unsatisfactory. He called attention to the list in the Director's report of workers in different parts of the world to whom material has been supplied from the laboratories of the Fund. The ability of the Fund to assist in the investigation of cancer in other laboratories, and the willingness of the staff to do so seemed a most practical way of making collaboration in research really effective, especially as it did not encroach in any way on the freedom of the workers. But this service was often a very laborious one, took up a great deal of the time of the workers, and consequently entailed a considerable addition in working expenses. But it was an increase in expenditure which was a legitimate source of satisfaction inasmuch as it means furthering research throughout the Empire. It was satisfactory to learn that the Stroud Laboratory (at Mill Hill) had been completed, that full opportunity could now be given to carrying out research under Lord Atholstan's gift, and that papers relating to the subject of this research might shortly be expected.

Sir Thomas Barlow, Bart., was nominated for re-election by the Royal Colleges of Physicians and Surgeons as a member of the Executive Committee, and Prof. William Bulloch, F.R.S., and Prof. A. E. Boycott, F.R.S., were re-elected members of the same Committee.

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[1] Brit. Jour. Exp. Path., 1925, vi., 71.

[2] THE LANCET, 1925, i., 714.

THE GENEVA OPIUM CONFERENCES AND THE HAGUE CONVENTION.

AN epitome of the work accomplished at the two prolonged Opium Conferences at Geneva has already appeared in THE LANCET,[1] and full official records[2] of the proceedings and a special Foreign Office report[3] have now been issued. It will be remembered that the first of the two conferences purported to deal only with the suppression of opium-smoking (Chapter II. of The Hague Convention), while the second conference was concerned with the abuse of morphia, cocaine, and other drugs of addiction (Chapter III. of The Hague Convention). Again and again in the course of the debates it was manifest that this artificial dissection of The Hague Convention and the reference of its chapters to two different conferences had no logical justification, and indeed caused considerable confusion leading to the regrettable withdrawal of the United States delegation, followed by that of China. This unfortunate dichotomy occasioned lengthy and somewhat pedantic discussions as to the competence of one conference to encroach on the reference to the other, and to the unpleasant suggestion that the first conference (which included only representatives of countries concerned with "prepared" or smoking opium) was in fact "a prepared opium bloc" whose members were seeking to release themselves from their obligation under The Hague Convention (Article 6) to bring about the effective suppression of "prepared opium." The American delegation contended for the limitation of the production of opium so as to preclude the use of it or its products for other than medical and scientific purposes. This general principle had been endorsed by the Advisory Committee of the League of Nations on the traffic in opium as being the basis of The Hague Convention of 1912, and the Fourth Assembly of the League had requested the Council of the League to give effect to this principle and to summon a conference for that purpose. It is true that the delegate for India made reservation as to opium-eating as practised in that Dependency not being regarded as illegitimate, and this reservation occasioned considerable difficulty in relation not only to production of opium in India but also to the invasion of sovereign rights by international engagements.

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[1] THE LANCET, 1925, i., 878.

[2] League of Nations. Records of the Second Opium Conference (Geneva). Vol. I. and II. (C.760, M.260. 1924. xi.). London: Constable and Co., Ltd. Vol. I., 14s. 6d.; Vol. II., 9s.

[3] H.M. Stationery Office. Cmd. 2461.

The attempt to discriminate between opium-eating as harmless or even beneficent, opium-smoking as a "social vice," and addiction to morphia or its derivatives, has not received scientific or pharmacological justification; while the finding of the Joint Health and Opium Subcommittee of the League of Nations, "that the medical use should be considered the only legitimate use," probably represents the best and informed opinion. When Lord Cecil appeared on the scene as first British delegate on Jan. 19th, 1925, he used all his forensic efforts to separate the work of the two conferences, urging that "opium-smoking had nothing whatever to do with the question of drug addiction." Yet he admitted that "unless growth and production are controlled it will be very difficult to control the use of drugs," and again he said, "it is quite true that a good deal of Indian opium is exported for the purpose of smoking." Much of this Indian-grown opium goes to Crown colonies for smoking purposes, and Sir Malcolm Delevingne in his report to the Foreign Office, says:—

> "The fact that a very considerable proportion of the revenues of certain of the Crown colonies is drawn from the traffic in opium-smoking, which is a criminal offence in the self-governing parts of the British Empire and which His Majesty's Government is internationally bound to suppress, lends colour to this allegation. . . . It is doubtful whether, even among the neutral delegations who were not prepared to support the United States proposal, that feeling has been dissipated. It is certain that the United States held it strongly. It is a point of which more will undoubtedly be heard."

At times the fate of the two Geneva conferences was pronounced to be "critical." An attempt to remove the "deadlock" by reference to a joint delegation or commission of the two bodies led to an inconclusive result, and Lord Cecil was constrained to admit that it would very likely have been better not to have had two conferences but one. The final protocols and convention elaborated by the two conferences have already been published and criticised. The suppression of opium-smoking, envisaged by Chapter II. of The Hague Convention, is to take place within 15 years from a date, to be determined by a League of Nations' Commission, when smuggling of opium from producing countries shall have ceased to be a serious obstacle to the enforcement of restrictive measures. A group of opium-producing countries, of which China was not one, agreed to take such measures within five years. A new convention made some additions to The Hague Convention, e.g., the inclusion of coca leaves and Indian hemp, empowered the exclusion of certain preparations, and established a Permanent Central Board to receive information, to compile statistics, to watch international trade, to ask for explanations to publish reports thereon, and communicate them to the Council. All these provisions are dependent on the ratification of the convention (the period for signature closed on Sept. 30th) by ten Powers, including seven who are accorded representation on the Central Board, of which two must be members of the Council of the League.

Some who have reviewed the work of the Geneva conferences find consolation in thinking that an advance has been made even though, as Mr. Zahle, the able President of the second conference, admitted, the attempt to limit production to medical purposes was not successful, and on the definite suppression of opium-smoking no agreement was reached. Mr. J. P. Gavit, who attended every session of the conferences, concludes[4] that "the agreement of the first conference represents no progress worth discussing, and the new drug convention adopted by the second is a thing of printed paper with the odds heavily against its ever being anything else." Prof. W. W. Willoughby, who acted as technical expert to the Chinese delegation, considers[5] that "the initial mistake" was providing for two conferences instead of one, and he holds that "little substantial result is to be expected" from the protocols arrived at. Other writers, including Sir William Collins,[6] and Prof. Perrot,[7] from the French point of view, have also commented on the results. In a pamphlet entitled "Public Health Aspects of the Narcotic Problem," which has reached us from China, Dr. Wu Lien Teh, who speaks with first-hand knowledge of the Far East and was one of the delegates of China to the first Hague Conference, laments the conclusion of the Geneva Conference which made suppression of opium-smoking contingent upon the success of efforts against smuggling. He disputes the alleged virtue of opium against plague, malaria, and tuberculosis, or the necessity of opium-smoking for the Chinese or opium-eating for the natives of India. He alleges that morphia has been and is smuggled into China by the ton, much of which is derived from European countries. It is to be regretted that the legislative results of The Hague Convention in Great Britain in the shape of the Dangerous Drugs Acts, and in the United States in the shape of similar statutes, cannot be given wider and international application, for no one disputes that the production of opium, morphia, cocaine, and other "habit-forming" drugs is grotesquely in excess of any conceivable medical or scientific requirement, and that the surplus output is prostituted to purposes of vice and crime, and to the degradation and demoralisation of the pliant victims of addiction to these dangerous drugs.

IRELAND.

(From our own Correspondent.)

Sanitary Condition of School Buildings in the Irish Free State.

Mr. T. Johnson, leader of the Labour Party in the Dail, recently asked the Minister of Local Government to give some definite statement of his intention with regard to putting the school buildings into habitable condition. The Minister, in reply, said that the management of the school was responsible for upkeep; the schools were not State schools, but State-aided schools. It was evidently not possible, without changing that system, to impose by the authority of the State a system of local maintenance, whatever might be done to encourage it.

The Minister's answer shows for the first time in history any official appreciation of the responsibility of the State for the sanitary condition of the schools. It has long been recognised that many of the school buildings in all parts of Ireland were unsuitable and insanitary and likely to cause disease among the children crowded into them. The fact that the local manager was legally responsible for the condition of the school premises rendered the central education authority slow to interfere. Indeed, a former chief official of primary education in Ireland, when a demand was made on him by a committee of persons interested in the public health that his department should exercise some control over the sanitary condition of the schools, ridiculed the suggestion, and declared that he and his department were concerned only with the minds of the children and not at all with their bodies.

Enforcement of Vaccination.

For some months past the Department of Local Government and Public Health of the Irish Free State has been endeavouring by means of persuasion to induce the Health Board of Co. Wexford to enforce the laws concerning vaccination. These exertions seem to have been useless, and the Department has at length been compelled to adopt stronger measures. The Health Board was notified last week that the Minister had issued instructions to the Chief State Solicitor to take proceedings by way of mandamus to compel the Board to carry out its legal obligations. The Minister adds that the names of the members who had voted against the enforcing of the law had been furnished to the State Solicitor in order that hey might be named as special defendants and that osts might be recovered from them personally. The etter of the Department was marked "Read." The question of compulsory vaccination was also raised in the Dail last week, when, in reply to a question, the Minister said that he did not intend to introduce legislation to abolish compulsory vaccination, but that he proposed to enforce the existing law.

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[4] Opium. By John Palmer Gavit. Messrs. Routledge.

[5] Opium as an International Problem. Prof. W. W. Willoughby. The Johns Hopkins Press.

[6] Contemporary Review, August, 1925.

[7] Revue Scientifique, July, 1925.

False Economy.

The authorities of two asylums in the Free State propose to save money by measures which are likely to interfere seriously with efficiency. At the Grangegorman Mental Hospital proposals of economy put forward by a subcommittee were adopted. Among these proposals were a 10 per cent. reduction of the salaries of all employees, and reductions in the yearly increments and long service pay. It seems that a proposal was also made to lengthen the hours of duty of attendants and nurses, but the subcommittee did not accept this. The present working week consists of 56 hours. It is, of course, doubtful how far the Committee of Management has power to alter existing rates of pay, which must, in some cases at least, be matters of contract. The mere proposal, however, is bound to give rise to discontent. In Mullingar Mental Hospital an even more dangerous experiment is to be tried whereby not only the salaries of employees but the dietary of the patients would be curtailed. It is to be hoped that the Department of Local Government will refuse to sanction a dietary strongly condemned by the medical officer, who is primarily responsible for the health of the patients.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Foreign Patients in the Hospitals.

THE chiefs of the Paris hospitals have been struck by the increasing number of aliens whom they attend as patients in the wards. In this connexion Dr. P. E. Weil quotes statistics from the Hôpital Tenon to show that in a period of six months (the last quarter of 1924 and the first quarter of 1925) there received treatment, in medical and surgical wards together, 8321 French people, as compared with 537 aliens, respectively 93·6 and 6·4 per cent. The points of inquiry were the length of time these foreign patients had been in France, their state of health previous to their arrival in the country, the work they had done since their arrival, whether they were suffering from temporary or chronic illnesses, their family responsibilities, and finally their social status. 33 per cent. suffered from curable complaints, 66 per cent. were affected with conditions which more or less seriously diminished their earning powers, and many became a charge on the Assistance Publique. Almost all the foreign patients had been in France for several months, some for several years. There were many cases of old-standing tuberculosis, and many patients had been infected long before their arrival in France. Tuberculosis and chronic bronchitis are of frequent occurrence among natives of Tunis and Morocco, who do not readily become acclimatised in France. In three cases syphilis was found to be of very old standing, but its visceral manifestations were so extensive as to render the patients useless for work. Of the total of foreigners, two-thirds were single, but one-third were married with families. Thus the number of aliens under treatment in the Paris hospitals is considerable, and as many have chronic diseases which render them non-productive to the State they become a burden on the community. Further, a certain proportion of these patients are carriers of infection, particularly of pulmonary tuberculosis. There is, therefore, some need of measures to control immigration and ensure the possession of a certain "fund of health" by those who enter France. To this end the Academy of Medicine has nominated a commission which will give full consideration to the question and outline suitable measures for reform.

Serum Therapy for Poisoning by Mushrooms.

Dr. Dujarric de la Rivière has been for several years conducting researches on animals experimentally poisoned with non-edible mushrooms of the genus Amanita (*A. phalloides, verna, virosa, citrina*) to test the efficacy of the serum of horses immunised by progressively increased doses of the extracts of such fungi. This serum, which he has named "sérum antiphallinique," and which has given encouraging results on the experimental animals, has recently been tried out in man. The effects of the serum were sufficiently satisfactory to justify further trials being made, first because at present there is no adequate therapeusis of fungal poisoning, and secondly because it appears that the use of the serum is not attended with any risk. Treatment should be begun as early as possible after ingestion of the poisonous mushroom and should be administered by the intramuscular route. The exhibition of the "sérum antiphallinique" does not interfere in any way with the employment of the usual therapeutic measures, such as cardiac tonics. It would be of advantage if this serum was available at all treatment centres and particularly in the hospitals to enable further tests to be made, where doctors might obtain it when necessary.

Tuberculosis in France.

In France tuberculosis was a grave menace before the war, and the war only increased the dangers of its spread through female labour, insufficient feeding, increased exposure, and abnormal expenditure of bodily energy. The intensive campaign against this disease, initiated by the Rockefeller Foundation, has been continued with excellent results, according to the report of the National Committee against Tuberculosis. In 72 of the French Départements 530 dispensaries are now in active operation. Since the campaign was opened consultations have numbered about 495,000 per annum, the sputum examinations 81,000, and the number of patients placed in conditions favouring good treatment 28,000. The mortality from tuberculosis, which was rising in 1916 and 1917, declined from 1918 to 1920, falling from 278 to 185 per 100,000. Since 1920 no State money has been available for maintaining the statistical records of tuberculosis in France. The *Matin* assigns this unfortunate condition of things chiefly to rivalry between Government bureaus. It appears that the task of keeping the tuberculosis records was transferred from the general statistical bureau to the Ministry of Hygiene, which failed to receive a corresponding budgetary increase.

MEDICINE AND THE LAW.

Workmen's Compensation: Epithelioma of the Scrotum in a Cotton-Spinner.

MEDICINE and the law are probably in agreement over a decision of the county court judge at Oldham in respect of a spinner who had suffered from epithelioma of the scrotum, an occupational disease on which interesting observations have been recorded by Dr. Alexander Scott and Dr. E. L. Kennaway amongst others.[1] From the account published in the *Oldham Evening Chronicle* it appears that the employers did not dispute that the workman acquired the disease through the nature of his work as a cotton mule spinner. He had undergone an operation which the employers contended had been entirely successful. The point at issue between the parties was whether he could be expected to go back to his former employment or not. If not, then he would sink from the wage-level of a skilled workman to that of an unskilled workman and compensation would have to be assessed on the basis of the consequent difference in his earnings. Medical evidence for the applicant expressed the opinion that the fact of his having had the disease indicated that he was predisposed to the action of the mineral oils in that particular kind of employment and that therefore it could not safely be said that cancer would not return. This view was ultimately admitted by the medical witnesses called on behalf of the other side. As soon as this point was conceded, there was an end of the case. For the employers it was stated that other men with a similar history had returned to their old work without recurrence of the disease. A doctor testified that the applicant had been certified last April to have sufficiently recovered to be fit for work, and that on recent re-examination he was found to be a sound and healthy man so far as the operation was concerned. The learned judge pressed this witness to know if any medical expert would stake his professional reputation on the non-recurrence of the disease. Naturally no one was prepared to go so far. The judicial attitude is worth noting as a guide for future cases of this kind.

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[1] THE LANCET, 1925, i., 932-3.

His Honour: Do you think he is a person predisposed to this disease?

Dr. Carr (called by the respondents): I don't think I quite agree with those words.

His Honour: Then how is it that of all these people who work on these mules he should get it? Why should he be singled out? By providence or what?

Dr. Carr (after consideration): I think you must say he is predisposed to it.

His Honour: Knowing a man is predisposed to a disease, would you recommend him to go back to the place and occupation where he got the disease?

Dr. Carr: No.

This was a fair and candid answer, and it meant that the employers could carry their case no further. The learned judge, who, it must be remembered, does not sit regularly in a town like Oldham without acquiring considerable experience in cases of industrial and occupational disease, assessed the applicant's present earning capacity at 38*s.* per week and awarded 6*s.* 11*d.* per week compensation. The principle of the decision seems to be well established, and it is difficult to see how it could be reviewed upon appeal.

The Services.

ROYAL ARMY MEDICAL CORPS.

Maj. E. M. Pennefather to be Lt.-Col., Capt. W. P. Croker to be Maj. to complete estabt.

Capt. G. O. F. Alley is granted the temp. rank of Maj. whilst empld. as a Dep. Asst. Dir. of Hygiene and Pathology.

SUPPLEMENTARY RESERVE OF OFFICERS.

Maj. H. B. Walker, late temp. Maj., R.A.M.C., to be Capt.

TERRITORIAL ARMY.

Capt. G. W. B. Shaw, R.A.M.C., to be Divl. Adjt., 44th (Home Counties) Divn. T. A., vice Capt. S. D. Reid, R.A.M.C., who vacates the appt.

Capt. H. A. Sandiford, R.A.M.C., to be Divl. Adjt., 49th (West Riding) Divn., T.A., vice Capt. C. Popham, R.A.M.C., who vacates the appt.

General List: Lt. Horace Smith Ward (late M.G. Corps) to be Lt.

Sanitary Companies: Lt. G. W. Wright to be Capt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. J. C. Robb (supernumerary for serv. with the Belfast University Contgt., O.T.C.) from the Active List, to be Capt.

ROYAL AIR FORCE.

The undermentioned are granted short service commissions as Flying Officers, for three years on the active list: G. M. Anderson, B. L. Edwards, and W. D. McKeown.

Flying Officer R. W. White is promoted to the rank of Flight Lt.

INDIA AND THE INDIAN MEDICAL SERVICES.

Lt. C. Hudson to be Col.

Des Raj Nayar to be temp. Lt.

The King has approved the grant of a temporary commission to Harbans Singh.

His Majesty has also approved the relinquishment of their temporary commissions by Capt. Priya Nath Lahiri, who is permitted to retain the rank of Capt.; Capt. Ramesh Chandra Basu, who is permitted to retain the rank of Capt.; Lt. Mir Abdul Basir, who is permitted to retain the rank of Lt.; and Lieut. Fakhar-ud-Din.

Capt. M. Moosa Khan has been appointed Superintendent of the Central Jail, Cannanore, vice Maj. J. C. Bharucha, who reverts to the Madras Civil Medical Department; Lt.-Col. A. W. Overbeck-Wright, on return from leave, has been reposted as Superintendent of the Mental Hospital, Agra. On return from leave, Capt. J. H. Smith has been reposted to charge of the Mandalay Central Jail in relief of Maj. J. Findlay, who has been appointed Superintendent, Insein Central Jail at Mandalay; Capt. A. J. De Souza will act as Civil Surgeon, Cochin.

Revised Rates of Furlough Pay in India for Regular Executive Officers of the Indian Medical Service in Military Employ.

The furlough pay in India of regular executive officers of the I.M.S., while on leave in India, other than privilege leave, will be at the monthly rates given below, to which full overseas pay will be added, when admissible.

Lieutenants	Rs. 375
Captains—	
During first three years' service as captain ..	500
With more than three years' service as captain	600
With more than six years' service as captain	700
Majors—	
During first three years' service as Major. ..	750
With more than three years' service as major ..	900
With more than six years' service as major ..	1050
Lieut.-Colonels—	
Until completion of 23 years' total service ..	1200
During twenty-fourth and twenty-fifth years of service	1300
After completion of 25 years' service	1400
When selected for increased pay..	1550

These revised rates of pay will have effect from Jan. 1st, 1926.

WEST AFRICAN MEDICAL STAFF.

The following appointments are announced: Dr. M. W. Fraser, medical officer, Gold Coast, to be a Senior Medical Officer in Nigeria in succession to the late Dr. J. A. Beamish; Dr. S. Goodbrand, medical officer, Gold Coast, to be a Senior Medical Officer in Nigeria to fill the vacancy caused by promotion of Dr. J. M. Pollard, to be an Assistant Director of the Medical Service in that Colony; and Dr. J. E. Moffatt, medical officer, Gold Coast, to be a Senior Medical Officer in that Colony in succession to Dr. R. O. White who has retired.

Surg. Comdr. H. E. Yeo White, M.V.O., R.N., has been appointed, on the occasion of the visit of H.R.H. the Prince of Wales to Africa and South America, an officer of the Civil Division of the Most Excellent Order of the British Empire.

DEATHS IN THE SERVICES.

Colonel John Lloyd Thomas Jones, I.M.S., retd., brother of Sir Robert Armstrong-Jones, died at his residence in London on Nov. 12th, aged 62. The fourth son of the late Rev. Thomas Jones, of Eisteddfa, Criccieth, he was a student at St. Bartholomew's Hospital and graduated in medicine at the University of Durham in 1885, in which year he also obtained the M.R.C.S. Eng. Two years later he entered the I.M.S., became Captain in 1888, Major in 1899, and Lieut.-Colonel in 1907. In India he first acted in medical charge of the 3rd Beloochistan Regiment at Mhow, later performed similar duties with the 23rd Bombay Light Infantry, and afterwards with the 16th Bombay Infantry; respectively at Karachi, Malegaon, Seetabuldee, and Kamptee. For some time he was in civil charge at Ratnagiri and Karwar, when he was again transferred to military duties, serving with the 7th Bombay Lancers in Quetta, and with the 11th Bombay Infantry at Cutch-Bhuj. He afterwards acted as civil surgeon at Kaira, Broach, and Aden. In 1897 he was appointed on famine duty, serving as deputy sanitary commissioner and special plague officer at Poona. By his tact and special knowledge he overcame the native prejudices against segregation, and for these services received the special thanks of the Government of India. In 1899, after leave in England, his services were transferred to the Finance Department of the Government of India and he was appointed Deputy Assay Master to H.M.'s mint in Calcutta, and in 1908 he was transferred to the mint at Bombay as Assay Master. He served at Calcutta and Bombay until his retirement in 1918, when his continuous and devoted services to the British and native officers were recognised by a presentation of gold and silver plate. Colonel Lloyd Jones was a Fellow of the Geological Society, of the Institute of Chemistry, and of the Chemical Society of London, and a member of the Institution of Mining and Metallurgy. He was a member of the Order of St. John of Jerusalem, and during his residence in Bombay served as one of the justices of the peace in that city. A keen horseman and a good judge of horses, he excelled in polo and was well known in Bombay.

Public Health Services.

SCHOOL MEDICAL SERVICE.

THE following are figures for 1924 :—

Name of district.	No. on roll.	Average attendance.	Routine inspections.	No. examined in "code" groups.	Special and re-inspections.	Percentage found on routine examination to require treatment.
Liverpool.	Not stated	Not stated.	30,008	—	78,030	19·7
Carlisle ..	8,024	7,120	—	2,544	1,510	33·3
Hastings .	9,751*	6,142*	3,103†	—	5,091	18·1
Tunbridge Wells ..	Not stated.	Not stated.	208	701	1,175	20·5

* These are the figures for last quarter.
† In addition 60 other reinspections.

Liverpool.

In his introduction Dr. A. A. Mussen, medical officer of health and school medical officer, mentions four directions in which he looks for further progress—namely: (1) The provision of more open-air education for delicate children, of whom there are a large number in Liverpool. (2) The extension of the scheme for dental treatment, as out of 80 public elementary schools in the city placed on the list for treatment it was only possible to deal with 62. The number of children examined showed, however, considerable increase, being nearly twice as many as in 1921, and the number of parents accepting treatment showed a marked increase. (3) Increased facilities for dealing with the question of uncleanliness. On this subject Dr. Mussen points out that *infestation with vermin* is in the majority of cases a family condition, and he shows that a satisfactory scheme for dealing with the problem on a large scale involved: improvement in the housing and domestic facilities; the enlightenment of the public and the setting of a higher standard; increased public facilities for cleansing—e.g., the use of large spray baths. (4) His fourth desideratum is the reopening of a class for stammering children which was discontinued during the war. In general, the organisation for inspections and treatment seems quite satisfactory; for example, we note there are six special schools for mentally defective and physically defective children, and there are two classes for children of defective vision. There is an interesting note on 57 children suffering from the after-effects of encephalitis lethargica, and Dr. Mussen shows how these may take the form of paralysis of Parkinsonian type in a few, of mental defect in a few others, but that in others (the great majority) the essential feature is character change. We agree with Dr. Mussen that it would be inadvisable to certify these children either as mentally defective or as lunatics, and that the right method is to certify them as physically defective, but to deal with them apart from the ordinary physically defective child.

Carlisle.

The report of Dr. Joseph Beard is short but full of statistical tables. It may be doubted whether sufficient attention is *attracted* by these tables; short comments might make them more interesting to both lay and medical minds. There is a noticeable decrease in the figures for defective vision, and Dr. Beard suggests that this may be a result of changes in the curriculum. There are no schools for the physically or the mentally defective. The report deals with open-air education at some length and is very instructive. The "Newtown delicate class" presents some interesting features. There is a fair sprinkling of tuberculous cases in the class, and 45 children received injections of tuberculin B.E. out of 83 children dealt with in the class. The items of cost for this class are illuminating, the average total per child being only 8*d.* per day.

Hastings.

Dr. G. R. Bruce, medical officer of health and school medical officer, publishes his school and general public health reports together, and it is evident that the coördination now in force is very complete. For example, the borough is divided into four districts, each with a health visitor, the scope of whose activities is very large and who also does the school work, so that, as Dr. Bruce says, "the nurse with continuity of office may follow the children from birth to the end of their school days, while the long-suffering mother has one visitor the less." Each nurse has also an infant welfare centre in her district, while each half of the town is served by an antenatal centre. There is cordial coöperation with the many activities of the voluntary associations which Hastings is fortunate in possessing. Dr. Bruce is responsible not only to the Education Committee for the mentally defective school-children, but also to the Mental Deficiency Act Committee for other persons. There is a special school for mentally defective children at Hollington doing good work; it is benefited by the recent establishment of an occupation centre for lower grades. There is at present no school for the physically defective. Crippling of severe degree is uncommon in Hastings, thanks to the comparative absence of acute poliomyelitis, rickets, and surgical tuberculosis. There are, however, several mild cases, and the solution is an orthopædic scheme together with the open-air school, which is now being considered by the Education Committee and should soon materialise.

Tunbridge Wells.

Dr. F. C. Linton, medical officer of health and school medical officer, includes school work in his public health report, and deals with it briefly. Coördination is, he states, complete, since he is responsible for child welfare and the care of debilitated children under school age as well as for school-children. He considers that the increased treatment of tonsils and adenoids may be a factor in the reduction of the incidence of infectious disease; a similar opinion has been expressed in other areas. We are sorry to see there are no special schools in the area, though Dr. Linton states that, using the term in a very broad sense, there are 113 physically defective children. Sixteen of these are, however, attending a private and voluntary open-air school provided by the kindness of a lady resident.

TUBERCULOSIS SERVICE.

YEAR by year the county councils and the county boroughs find themselves bearing a larger and larger share of the tuberculosis work of the country, and we note the welcome tendency for reports of tuberculosis officers to become more informing and valuable.

The report of the central tuberculosis officer of the *Lancashire County Council* for the year 1924 gives an extensive survey of the conditions of tuberculosis in the county. Details of death-rates, notifications, radiological investigation, research work, propaganda and education of the public, housing conditions, after-care, new hospitals and dispensaries, are all dealt with at considerable length. One of the most interesting sections of the report is devoted to radiological work in which the value of X ray examination in diagnosis and treatment of tuberculosis is emphasised. X ray installations have now been increased so that there is one dispensary in each area equipped for this purpose, and over 4000 radiological examinations have been made during 1924, in comparison with less than 200 in 1920 when the first installation was made. The radiograms given in the report show that the tuberculosis officers of Lancashire possess a wealth of clinical material of which they make good use. A considerable amount of research work is being done and no less than nine special methods of treatment have been investigated. As the central tuberculosis officer points out, the results of these investigations do not show that any drug or preparation can be regarded as definitely beneficial in the treatment of tuberculosis, yet the time spent by the staff has been by no means wasted but rather valuable experience has been gained. The report shows that a further decline in deaths from tuberculosis and new cases notified occurred during the year 1924, the death-rate being the lowest so far recorded.

The report for the *City and County of Newcastle-upon-Tyne* shows a definite decrease of the notifications for the year for the first time since the introduction of compulsory notification. The figure for pulmonary tuberculosis in adult females exceeded that for adult males, and is the highest recorded since 1912. The tuberculosis medical officer considers that the adverse economic condition of recent years has been a contributory factor in this result, but suggests that there may be other explanations still to be found. The report also contains a record of institutional treatment at Barrasford sanatorium, where early or moderately advanced cases of pulmonary tuberculosis are treated; at the sanatorium pavilions of the City Hospital, where more advanced and emergency cases are dealt with; and at Stannington sanatorium, where tuberculous children are cared for. Statistical tables are given showing the previous occupation of patients, the average number of beds occupied, and the number of patient days, results of treatment, and other important details.

In the report on tuberculosis for 1924 from the *Public Health and Housing Department for Birmingham* figures are given showing the mortality from tuberculosis in 1923 of eight other large towns in Great Britain with which to compare the Birmingham figures. The mortality-rate per 1000 of all forms of tuberculosis in these towns shows that Birmingham occupies a very favourable position. The report emphasises the advantage which Birmingham possesses in having sufficient beds for the work. Interesting statistics are given showing the working capacity of patients when first examined, newly notified cases, old cases, "suspects" and "contacts," and a section showing results of dental treatment. The services of a part-time dental surgeon are utilised and the treatment consists mainly of extractions, fillings, and scalings. It is very encouraging to find this important aspect of the tuberculosis problem so carefully dealt with. The report also devotes a section to the new light treatment department which has been installed.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 14TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 73; scarlet fever, 2262; diphtheria, 1052; enteric fever, 67; pneumonia, 880; puerperal fever, 37; cerebro-spinal fever, 4; acute poliomyelitis, 0; acute polio-encephalitis, 1; encephalitis lethargica, 43; continued fever, 1; dysentery, 2; ophthalmia neonatorum, 93. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 6 deaths from enteric fever (none in London), 34 from measles, 5 from scarlet fever, 20 from whooping-cough, 28 from diphtheria, and 44 from influenza. In London itself there were 8 deaths from diphtheria and 17 deaths of infants under 2 years of age from diarrhœa and enteritis (a substantial fall from previous weeks).

LACK OF SMALL WARDS.—The Minister of Health has drawn the attention of the guardians to the lack of small wards in Lambeth Poor-law Infirmary and to the consequent difficulties of administration. Stress is laid on the value, for instance, of small wards in the treatment of puerperal fever. At Lambeth such cases have to be treated in large wards, and the Minister points out that the advantages of treatment in small ones apply to other diseases besides that mentioned, and suggests that the guardians should consider the adaptation of an existing block at the institution for such purposes.

Correspondence.

"Audi alteram partem."

INOCULATION AGAINST THE COMMON COLD.

To the Editor of THE LANCET.

SIR,—Dr. A. I. Simey's address on the prophylaxis of the common cold and febrile catarrhs in your last issue will be of great interest to all who are responsible for the care of children at boarding schools. Dr. Simey understates rather than overstates the importance of this matter as, in addition to all those who come under the care of the school medical officer for catarrhal infections, there are always a considerable number who suffer from colds without pyrexia, and who fail to report to the house matron or medical officer lest they be put off games. These minor cases, although less serious to themselves, are fruitful sources for spreading the infection.

Dr. Simey's bold suggestion concerning prophylactic inoculation in boarding schools deserves the consideration and support of school medical officers. The fact that inoculation with certain specific bacteria is advocated does not mean that these bacteria must be accepted as the primary cause of the disease. It is conceivable, and perhaps even probable, that the primary cause, if unattended by secondary infections, would be negligible. With regard to the details of his suggested experiment, I think that it is important that vaccines should be made from recently isolated cultures from acute infections, and that the vaccines should be of recent date—say not more than four months old.

With regard to the organisms which should be included in the vaccine, there will be some difference of opinion, but if several large schools are carrying out such an experiment in conjunction with different laboratories, valuable statistical evidence may be obtained on this point. Dr. Simey's suggestion of inoculating during the summer and Christmas holidays would, I think, be unsatisfactory. In the summer holidays no large numbers of recent cultures would be available, and few parents would be inclined to go to the necessary trouble during the summer months when they and their family are probably away from home and out of reach of any doctor they know. Similarly, it would not be popular to disturb the round of Christmas-time festivities. The whole matter would more simply and efficiently be carried out by the school medical officer.

I would suggest, therefore, that two inoculations should be given during the first half of October, and again two in the second half of January. This would enable the vaccine to be made up from the first batch of catarrhal infections which usually occur towards the end of September, and also allows for the probability that artificial immunity to the bacteria in question is in many cases of comparatively short duration.

I am, Sir, yours faithfully,
G. T. WESTERN.
London Hospital, E., Nov. 23rd.

NASAL LAVAGE AND ACUTE MIDDLE-EAR INFLAMMATION.

To the Editor of THE LANCET.

SIR,—Acute middle-ear inflammation and its complications, due to nasal lavage in some form or another in healthy and unhealthy noses, has become so frequent that the subject requires thorough examination and ventilation. The usual reasons given for nasal lavage when there is nothing whatever the matter are that it keeps the nose clean and clear, and prevents infection. The Ministry of Health must accept part of the responsibility, for, in one of the recent influenza epidemics, they advised it as a preventive measure. It does not seem to be realised that the lining membrane of the nose is a very delicate thing and possesses the functions of warming, moistening, and purifying the air passing over it; in these functions the ciliæ, mucous glands, and blood-supply play a large part and the application of any unnatural material must hinder them in their work—at first overstimulating and then temporarily paralysing them. Patients often say, "But you should see what a large amount of stuff comes away after doing it," thinking they are getting rid of a collected nasty discharge, and not realising that the nasal mucous membrane, by pouring out the extra normal mucus, is protesting as vigorously as it can against the outrage inflicted upon it. It is quite common for repeated attacks of acute middle-ear inflammation to result from some of the injected solution passing up the Eustachian tube. It should be generally known that the healthy nose is hindered in its work by the application of anything unnatural and the danger to hearing and life is a very real one.

Nasal lavage is used in unhealthy noses whatever is the matter when, in the majority of cases, surgical interference is the proper treatment. A placebo is sometimes a useful thing, but nasal lavage is a dangerous one. It is common to treat an ordinary cold by irrigation, usually with salt and water, and it is then especially likely to cause middle-ear inflammation. I have lately had three such cases in private practice in 48 hours, one of which just escaped with life after an extensive mastoid operation. In each one the solution was felt to enter the ear immediately before the onset of pain. A cold is an infective inflammation of the nasal lining membrane and such treatment is not only a danger to the ears, but violates the fundamental rules for the treatment of inflammation—namely, rest and heat. I am constantly hearing of this method of treatment for colds by the matrons in our schools. I wish to protest most strongly against it, but am afraid that nothing will stop it unless parents order that nasal lavage in any form should never be used by their children before they enter a school and if, in spite of this, it is done and evil results, an action for damages is brought against those responsible.

I am, Sir, yours faithfully,
ARTHUR H. CHEATLE.

Harley-street, W., Nov. 23rd, 1925.

POST-GRADUATE EDUCATION.

To the Editor of THE LANCET.

SIR,—At the dinner of the Royal Society of Medicine on Thursday last the Minister of Health referred to the establishment of a post-graduate school in London which would attract general practitioners from the country and towns to learn from the leaders of the medical profession. I am in agreement as to the advantage such a school would possess for those fortunate enough to attend it. I cannot help feeling, however, what an advantage it would be if the leaders of the profession who have spent so much time dealing with the end-results of disease in our hospitals could in their turn go to the country practitioner and to the welfare medical officers of our big factories for a time and study the very first symptoms of diseases which, if unchecked, will ultimately bring their victims into the out-patient department, and finally into the in-patient department of the great hospitals. The worker suffers from these early symptoms for quite a time while still carrying on his daily task, and only goes off duty when he has used up the reserves which enabled him to carry on in spite of his disability.

If this form of interchange were associated with post-graduate teaching, the medical profession would benefit, and the public to an even greater extent. The present system of hospital staffing is not the one best calculated to assist in the progress of medical knowledge. The young physician takes on the care of out-patients, and when he is older and more experienced he takes on the care of beds in the wards which are filled with the end-results of disease. If the situations were reversed and the senior men had charge of the out-patient department they might prevent many cases passing on to the in-patient stage of diseases, and the number of beds which needed their experienced care because of the rare diseases would not be great. No very special knowledge is required to deal with cases of advanced disease which occupy so large a proportion of medical beds. In time the junior staff would be promoted to the out-patient department.

I am, Sir, yours faithfully,
BRUCE BRUCE-PORTER.

Grosvenor-street, W., Nov. 23rd, 1925.

MYOMECTOMY AS THE TREATMENT OF ELECTION FOR UTERINE FIBROIDS.

To the Editor of THE LANCET.

SIR,—I suppose the majority of gynæcological surgeons are in agreement with Mr. Victor Bonney in his teaching that the uterus during the child-bearing period should be conserved if possible, and that it is possible in many cases at least to conserve the organ when the seat of fibroid formation, to the extent indeed of rendering future pregnancy possible in some, he has shown. But that myomectomy is of service and should be done after the climacteric is another question. The uterus at this time is presumably of no further use, is liable to serious disease, and the value of conserving it, to say the least, is questionable. The incidence of malignant disease of the uterus in the general population may be small, and not much greater or not greater in women with than in those without fibroids, but the danger is always there. When we think of the mortality of Wertheim's operation, even in expert hands, and the number of recurrences after this operation, it seems to me that the conservation of the uterus, the seat of fibroids in post-climacteric life, is carrying the art of surgery too far. If prophylactic pan-hysterectomy for slight and suspicious lesions of the cervix in such period of life is justifiable, as I think it is, much more reasonable, it seems to me, is the removal of the whole uterus when the seat of fibroids in such period. In this respect, the slightly greater risk of pan-hysterectomy compared with sub-total comes up for consideration. With the advance of pelvic surgery it can hardly be believed that the mortality and morbidity of the former operation is not greatly less at present than it was fifteen years ago. The position requires reviewing. Personally, I think the sub-total operation to-day is too often performed.

But however gynæcologists may view this subsidiary question, few, I think, will sympathise with Mr. Bonney's teaching or accept the reason he gives for conserving the uterus, the seat of fibroids, in some elderly women. In his series of 120 cases of all ages, he had three deaths. Two of these deaths occurred in "elderly women" in whom the "object of conserving the uterus was . . . to ventrofix it and make it act as an artificial ligament to hold up a prolapsed vaginal vault." Mr. Victor Bonney knows, or should know, as well as anyone else, that the uterus cannot be made to serve the purpose of a ligament to hold up the vaginal vault. Many instances have been cited of the uterus having been used in this way, but with the return to active life the same result has always occurred. If the "prolapse" is not prevented by other means, with resumption of general activity, the uterus elongates or the part of the abdominal wall to which its fundus is attached is depressed, the prolapse returning and the state of the patient becoming worse than before. The uterus as a suspensory agent is of no service in the prevention of pudendal hernia. It can only be of service if it can be used to play the part of a pessary (or an intracorporeal truss), as in the interposition operation—in which, however, if malignant disease be feared, the endometrium can be removed.

It is unfortunate that Mr. Bonney should thus weaken his otherwise excellent argument.

I am, Sir, yours faithfully,
R. H. PARAMORE, F.R.C.S. Eng.

Rugby, Nov. 21st, 1925.

THE TROPHOBLASTIC HYPOTHESIS OF CANCER.

To the Editor of THE LANCET.

SIR,—Prof. Blair Bell's adoption without acknowledgment of the unfruitful trophoblastic (or chorionic) hypothesis of the nature of cancer, first put forward more than 20 years ago (THE LANCET, 1902, i., 1758) by my former teacher, the late Dr. John Beard, cannot be allowed to pass without remark from me. From that paper, in which the theory was outlined, the penultimate sentence may be quoted:—

> If such a chorion the representative more or less complete of the asexual generation, when robbed of its embryo or when it fails to form such, can—and this is established—give origin to a malignant carcinomatous tumour the nature of cancer is clear.

The patronising attitude towards other workers which pervades Dr. Bell's whole lecture comes ill from one who, it is charitable to assume, is himself ignorant of the recent literature of the subject.

I am, Sir, yours faithfully,

J. A. MURRAY.

Imperial Cancer Research Fund, 8, Queen-square,
W.C. Nov. 25th, 1925.

TELLING THE TRUTH.

To the Editor of THE LANCET.

SIR,—Doctors, in the course of their professional duties, have to tell many falsehoods, and now and again a discussion arises as to the ethics of professional lying, or rather, lying by a professional healer. It is not often, however, that such a witty defence of the professional lie is made as that published by Dr. Boutarel in a recent number of *Paris Médical.* After recalling the famous controversy, celebrated by Pascal in *Les Provinciales*, between the Jansenists and the Jesuits on the subject of restrictions of thought, Dr. Boutarel reminds us that in actual fact we all practise such restrictions. You borrow 50*s.* from a friend, saying: "I will pay you back," but adding, in your own mind, "if I have any money." The Jansenists would call this hypocrisy, the Jesuits diplomacy. Or again a dealer in antiques lays his hand on a piece of furniture, declaring solemnly: "I guarantee that this is old," but he carefully avoids touching the bronze corner-pieces which have just been added. "Disgracefully underhand!" cry the Jansenists. "Merely skilful," protest the casuists.

In the medical profession such restrictions are everyday affairs. Morphine, administered to a hopeless case, is termed "serum." The pretty wife of a faithless husband is assured that her husband has become infected through drinking out of a dirty glass. A bullet wound in the head is called a cerebral hæmorrhage, and so the pious falsehoods go on. Some doctors try to solve the insoluble by refusing a diagnosis in certain cases, but this is no real solution. *Qui ne dit mot consent* and to withhold a diagnosis is equivalent in some cases to making an accusation. With regard to professional confidences, there is only one attitude to take, thinks Dr. Boutarel, and that is for the doctor to keep sacred all secrets confided to him, even if questioned in a court of law. Should a medico-legal expert be called and should his evidence prove the correct diagnosis, and thus show up the doctor in charge of the case, the latter ought to be exonerated from any blame. Life without falsehoods would be insupportable; we lie daily through politeness, through laziness, through self-interest, so why should we not lie occasionally in the interests of a third person?

It seems to me that many besides Dr. Boutarel have found that a few lies, in the shape of half-truths, will sometimes go a long way towards effecting a cure.

I am, Sir, yours faithfully,

Nov. 22nd, 1925. CROIX ROUGE.

Obituary.

SIR ROBERT CHARLES BROWN, F.R.C.P. LOND., F.R.C.S. ENG.

Sir Robert Charles Brown, a well-known physician of Preston, Lancs, died at his residence in Winckley-square, Preston, on Nov. 23rd at the age of 89. He was a son of Alderman Robert Brown, F.R.C.S., and was born in Preston, where he received his early education. He pursued his medical studies at King's College Hospital, London, and in Edinburgh and Dublin, qualifying L.S.A. and M.R.C.S. Eng. in 1858. Three years later he obtained the M.B. Lond., and in 1862 was admitted F.R.C.S. Eng. by examination. In 1908 he was admitted a Fellow of the Royal College of Physicians. Throughout his professional career he was closely associated with the Preston Infirmary since its opening in 1870, as medical officer in his younger days and as a generous benefactor to its material needs in later years, besides holding the post of consulting medical officer. It was in recognition of his services to that and other institutions that he was made an hon. freeman of the borough in 1910. From the first he was closely connected with the work of the Cambridge Committee for the Study of Special Diseases. He promoted it in various ways, by personal effort and enlisting the support of others, by installing a complete X ray apparatus, by providing the most efficient microphotographic microscope obtainable, and, above all, by founding a studentship for pathological research. For these services the University of Cambridge conferred on him the hon. degree of M.A. in May, 1912, and on the following day he formally opened the Research Hospital built on the Hills-road. Sir Robert Brown was three times president of the Lancashire and Cheshire branch of the British Medical Association, and was an esquire of the Order of St. John of Jerusalem. He was knighted in 1919.

JOHN JAMES BLAGDEN, M.R.C.S. ENG.

BY the death of Dr. Blagden, Chester has lost one of its leading surgeons. He studied at St. Bartholomew's Hospital, London, and at Cambridge, graduating B.A. Camb. in 1893, and qualifying M.R.C.S. and L.R.C.P. in 1896. After qualifying he was assistant house surgeon at the Taunton and Somerset Hospital and honorary surgeon at the Tavistock Cottage Hospital. He settled in Chester nearly 30 years ago, where he was assistant honorary surgeon at the Chester Royal Infirmary from 1909 to 1919, when he was elected honorary surgeon to this institution. He retired last May owing to ill-health. During the war he rendered valuable service in orthopædic surgery as surgeon in charge of this department in Chester. He was a past president of the Chester Medical Society and chairman of the Chester Division of the British Medical Association. He leaves a widow and one son, who was recently called to the Bar.

MEMORIAL COTS AT VINCENT-SQUARE HOSPITAL.—Last week Mr. J. Gomer Berry, the chairman, formally accepted more than 20 "memorial cots" which have been given to the Infants Hospital in Vincent-square, Westminster. The Prudential Assurance Co. has given six cots in "The Prudential Ward," together with the installation of the X ray room.

ENLARGEMENT OF LONDONDERRY INFIRMARY.—The Duchess of Abercorn has this week opened the new Poston wing of Londonderry City and County Infirmary. The wing is named after two brothers, the late Robert and John Poston, who provided a large proportion of the cost. It will hold 25 patients, which brings up the total number of beds to 100. Accommodation is also provided for a resident surgeon, two house surgeons, the matron, six sisters, and 19 staff and probationer nurses. The infirmary, which dates from 1789, was last enlarged 20 years ago.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

At a recent meeting of the Section of Surgery held in the Royal College of Physicians of Ireland, with Mr. R. C. B. Maunsell, the President, in the chair, Mr. R. A. Stoney showed a woman of 30 who had suffered from all the clinical symptoms of exophthalmic goitre. In spite of rest in bed, sedatives, and Lugol's solution the pulse-rate, which at first fell, increased and the patient lost weight. Immediately before operation the basal metabolism was increased by 40 per cent. The patient was given rectal ether and the right lobe isthmus and lower half of the left lobe were removed. Three weeks after operation the basal metabolism had fallen to 27 per cent. below normal, the pulse had fallen and was steady. Tremors had almost entirely disappeared, exophthalmos had decreased, weight had increased, and the patient stated that she felt much better and was now eating and sleeping well.

Mr. H. Stokes said that he had operated on a good many cases of patients with exophthalmic goitre, and the results on the whole had been distinctly good. He had found that iodine acted very well; recently he had a patient whom he had put on iodine, and her pulse-rate had come down, but immediately he stopped the iodine her pulse went up again. He did not do lobectomy, but he took out a large portion of the centre of each lobe, after doing a preliminary ligature of the upper lobe. He had done about four or five such operations a year for the last few years. He had altogether operated on about 35 patients, and only two had died. One, a very bad case, did not recover from the anæsthetic, and the other died from septic pneumonia.

Dr. G. E. Nesbitt said that it was sometimes stated that physicians were reluctant to give their patients with exophthalmic goitre over for operation. He did not think this was true, but they wanted more proof that operation was the best method of dealing with these cases. No mention had been made of the treatment by X rays, and he thought that most people if they got exophthalmic goitre would prefer to be treated in that way first. Good results certainly were often obtained by X ray treatment. At present he had a patient in hospital, a girl of 18, who on admission was practically moribund, and for some time it was impossible to do anything for her. When he managed to get her weight it was only 3 st. 8 lb. Later she had a course of X rays, and during this time she put on 9 lb. in weight. He now wondered whether she should have a further course of X rays or whether she should be operated on. She would not have stood an operation before, and he doubted if she would stand one now. He thought that it was very hard to judge how much thyroid should be removed in these cases.

Mr. H. Meade said that he thought surgeons seldom get patients of exophthalmic goitre handed over to them early enough and so they really did not get a chance with them. If good results were to be obtained by operation it was necessary to operate early.

Mr. L. G. Gunn said that he saw a good many cases of goitre, and he would divide them into two classes, mild cases and really very severe cases. He had operated on 14 severe cases and two had died directly as a result of the operation. Of the other 12, two had shown a definite return of exophthalmic symptoms, one after five years and the other after eight years. He thought that probably he had not taken a sufficient amount of thyroid gland away; but he felt that even after surgery there was likely to be a certain amount of recurrence. A great deal depended on the patients; if a patient had only to do light work, or no work at all, then medical treatment and X rays might be given; but if the patient had to do hard work, then he would advise operation. He had seen a good many cases greatly improved after medical treatment, but very few of these had been fit to go back fairly soon to work, while after operation they were fit to work in quite a short time. Of course, sometimes quite a simple operation was followed by a very severe reaction, and even death.

THE IMPERIAL NURSING SERVICES.

The name of the late Queen Alexandra is intimately associated with all the official nursing services of the Army, the Navy, and of India.

The committees of *Queen Alexandra's Imperial Military Nursing Service* and of the Territorial Army Nursing Service conjointly make up the *Queen Alexandra's Army Nursing Board*. This Board, formed in 1902, was constituted as follows:—

President: H.M. Queen Alexandra.

Vice-President: The Dowager Countess of Airlie, G.B.E.

Chairman: The Director-General, Army Medical Services.

Two members nominated by the President and holding office for three years.

Two members of the Advisory Board, Army Medical Service, one of whom is a civilian.

Four matrons of large civil hospitals with medical schools.

Matron-in-chief, Q.A.I.M.N.S.

Joint Secretaries: Matron-in-chief, T.A.N.S.; Principal Matron, Q.A.I.M.N.S.

The Board meets twice yearly, and is responsible for advising the Army Council in all matters affecting the Army Nursing Services. The Q.A.I.M.N.S. Committee meets monthly to deal with applications of candidates for the service, promotions, retirements, and reports of hospitals. The Board has not merely to advise in regard to the nursing of the soldier in peace, but has also to initiate schemes for the rapid and extensive expansion of the service on the outbreak of war. To meet these requirements a reserve of nurses has been formed. The T.A.N.S. Committee meets twice a year on the same day as the Board.

By Order in Council of March 6th, 1902, authority was obtained to designate the staff of nursing sisters in naval hospitals by the title of *Queen Alexandra's Royal Naval Nursing Service*. The present staff comprises three head sisters, eight superintending sisters, and 61 nursing sisters. Members serve at R.N. Hospitals at Haslar, Chatham, Plymouth, Portland, and Queensferry; R.N. Sick Quarters at Dartmouth and Shotley; and R.N. Hospitals abroad at Malta and Hong-Kong.

The *Queen Alexandra's Military Nursing Service for India* consists of a chief lady superintendent, a number of lady superintendents, and nursing sisters to the number required by the strength of British troops in India. The chief lady superintendent is an administrative official; the other members undertake the nursing of sick and wounded British soldiers, besides instructing the male nursing orderlies in nursing duties and supervising their work. The Nursing Service also supervise the management of the family hospitals, which exist for the care of the families of British officers and soldiers. A proposal is under consideration to amalgamate the Nursing Service for India with the Imperial Military Nursing Service, and to arrange for members of the combined service to proceed to India in the course of their career for a tour of duty with British troops, on the same system as that in force with regard to the Royal Army Medical Corps.

Queen Alexandra's Last Message.—The annual meeting of Queen Victoria's Jubilee Institute for Nurses was held at St. James's Palace on Wednesday in last week. The Duke of Portland, who presided, read a message which he had received from Queen Alexandra wishing prosperity to the Institute, and expressing the hope that the financial outlook might continue to improve, and her thanks to all the workers for "the good cause which is so near to my heart." Mr. Neville Chamberlain, the Minister of Health, delivered an address in which he said that much of the money and work spent on medical services would be thrown away if it were not for the work of the district nurses.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

New Public Health Bill.

ON Monday, Nov. 23rd, the House considered the Rating and Valuation Bill as amended in Standing Committee, and Mr. BARKER moved a new clause to exempt underground sewers from rating. Mr. NEVILLE CHAMBERLAIN said that he had much sympathy with the proposal to exempt from rating not only sewers, but also such things as pipes which conveyed water from a reservoir to a town many miles distant and which passed through the areas of different local authorities. While he could give no guarantee as to future legislation, he hoped next year it might be possible to introduce a Bill to amend the Public Health Acts and if so that might be a suitable opportunity to deal with the matter. The clause was negatived.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 18TH.

Approved Societies and Dental Benefit.

Mr. FORREST asked the Minister of Health what were the types of benefits now being given by the approved societies, and especially how many of them provided dental benefit; and whether he was in a position to make specific recommendations to the societies as to the directions in which benefits should be given.—Mr. N. CHAMBERLAIN replied: The additional benefits which are now being provided by approved societies out of surpluses disclosed on a valuation include, in addition to increases of the standard rates of sickness, disablement and maternity benefits, dental benefit, ophthalmic benefit, treatment in convalescent homes, the provision of medical and surgical appliances, and payments to hospitals and for nursing. Dental benefit has already been adopted in England by 794 societies and 2662 branches, and these numbers will no doubt be increased when the whole of the schemes following the second valuation have been formulated. As regards the last part of the question it rests with each society to consider which of the additional benefits are best suited to the needs of its members, but any scheme adopted requires the sanction of the department before it can be brought into operation, and where a society's proposals are thought for any reason to be inappropriate recommendations for amendment are made to the society.

Reduction of Insurance Contributions.

Mr. FORREST asked the Minister of Health whether he was now in a position to make a definite statement as to the intentions of the Government regarding the proposal to reduce contributions under the National Health Insurance Act.—Mr. N. CHAMBERLAIN replied: The answer is in the negative. It will be remembered that a Royal Commission is at present investigating the National Health Insurance scheme.

British Social Hygiene Council.

Major-General Sir JOHN DAVIDSON asked the Minister of Health what was the amount of the grant given to the British Social Hygiene Council and what, if any, stipulations were made as to the manner in which it was expended.—Mr. N. CHAMBERLAIN replied: The amount of the grant paid to date during the current financial year is £5500. The grant is expended on the carrying out of a programme of educational work, the details of which have received the prior approval of my department.

Preventives for Venereal Disease.

Major-General Sir JOHN DAVIDSON asked the Minister of Health whether he was in a position yet to give any reply to the joint deputation of the National Council for Combating Venereal Disease and the Society for the Prevention of Venereal Disease received by him on March 5th, 1925, in relation to the alteration of the law regarding the sale by chemists of preventives for venereal disease.—Mr. N. CHAMBERLAIN replied: I would refer my hon. and gallant friend to the answer which I gave to his question of June 22nd. I am still awaiting a reply to the letter which I addressed to the two societies on May 15th last.

Geneva Opium Convention.

Mr. CAMPBELL asked the Secretary of State for Foreign Affairs which of the powers had ratified the Opium Convention, signed at Geneva on Feb. 19th, 1925.—Mr. CHAMBERLAIN replied: No information has yet been received as to which powers, if any, have ratified the Convention. The period for signature only closed on Sept. 30th last.

Vaccination and Small-pox.

Mr. GROVES asked the Minister of Health if he would give statistics, with such approximate accuracy as the available information permitted, showing the proportion of the population then living which had been vaccinated at public expense in each of the years 1852, 1853, 1854, 1871, 1872, 1882, 1883, 1884, 1902, 1903, 1904, 1922, 1923, and 1924, if figures for that year were available, and the number of deaths from small-pox in each year; and the number of cases of supposed small-pox notified in each year beginning with 1892.—Mr. N. CHAMBERLAIN replied: There are no statistics available showing what proportion of the population living in the years mentioned in the question had been vaccinated at public expense, but I would refer the hon. member to the figures given him on April 7th last as to the percentages of vaccinations to births, and the numbers of deaths from small-pox during each of the years 1872 to 1924. The deaths from small-pox during the years 1852, 1853, 1854 and 1871 numbered 7320, 3151, 2808, and 28,062 respectively. As regards the last part of the question particulars of the numbers of cases of small-pox notified are available only for the years 1911 onward, and the figures (excluding port sanitary cases) are as follows:—

1911	265	1916	135	1921	311
1912	111	1917	6	1922	967
1913	90	1918	51	1923	2477
1914	57	1919	262	1924	3757
1915	78	1920	243		

It should be understood that these figures represent not notifications only. They have not been subjected to the corrections and additions set forth in the small-pox section of the annual reports of the Chief Medical Officer of the Ministry of Health.

Panel Doctors and Medical Certificates.

Mr. WALTER BAKER asked the Minister of Health whether he was aware of the practice of panel doctors to charge for a medical certificate for a patient's private employer, such certificate being additional to that required by the patient's approved society; whether any provision was made under the Health Insurance Act for providing such additional certificate free of charge; and, if not, whether he would take steps to secure that some such provision is made.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: My right hon. friend is aware that such a charge is sometimes made, though he has no information as to the extent to which the practice prevails. There is no statutory provision for the issue of certificates other than those required for National Health Insurance purposes and the hon. Member's proposal would require legislation.

Registration of Nursing Homes.

Mr. GERALD HURST asked the Minister of Health whether he would now appoint a Committee to inquire into the desirability of legislation for the purpose of registering and supervising nursing homes.—Sir KINGSLEY WOOD replied: In view of the present pressure of work and the difficulty of completing the inquiry before the end of the session it is not proposed to proceed with the appointment of a Select Committee this year, but steps will be taken to set up the Committee at the earliest practicable date next session.

Transference of Pensions Work from Scotland to London.

Dr. SHIELS asked the Minister of Pensions what was the exact nature and extent of the work formerly done in Scotland, and now transferred to the Ministry of Pensions in London; was it intended to carry this process further within any definite period, and would the Scottish Advisory Council be consulted before any such steps are taken in the future.—Mr. THOMAS KENNEDY asked the Minister of Pensions if he was aware of the very strong feeling aroused in Scotland by the intimation that the Scottish Regional Office of the Ministry of Pensions was to be closed, and the work now being done there transferred to London; and if he would concede the request of the Scottish Advisory Council that the decision to transfer the widows and dependants section to London should be delayed pending Parliamentary discussion of this proposal.—Lieut.-Colonel G. F. STANLEY replied: The work transferred from the Ministry's sub-office in Edinburgh to London consisted in the handling of claims of widows and dependants referred from the area offices. The work involved formed only a small section of the work of the Regional Office in Edinburgh, as may be gauged by the fact that it occupied the time of only 22 clerks, or less than one-tenth of the Regional Office staff. The transfer of this small branch of the work, which has now been carried out, was directed by my right hon. friend for technical reasons. My right hon. friend must hold himself free, in the exercise of his responsibility as a minister, to make any change in administrative routine which he is satisfied will make for efficiency of administration consistently with the interests of pensioners. The re-centralisation of the entire work of the Regional Office in Edinburgh is, as already publicly stated, not in issue at the present moment, though the time is probably not far distant, according to present indications, when the decline in the volume of the Ministry's work will render the retention of a sub-office unjustifiable in Edinburgh, as has already been found to be the case in other parts of the United Kingdom. When, however, the time arrives for a decision to be taken, it is my right hon. friend's intention to give his Scottish Advisory Council an opportunity of expressing their views.

THURSDAY, NOV. 19TH.

Supply of Artificial Limbs.

Mr. GEORGE HARVEY asked the Minister of Pensions if he was aware that the number of contractors to the Ministry for artificial limbs had been recently reduced from 14 to 2, and special concessions made to those favoured 2 firms to the unreasonable detriment of the other 12; and was he prepared to reconsider his decision and meet a deputation from the remaining 12, whose businesses had consequently been necessarily seriously curtailed, if not actually closed down.—Mr. ROBERT MORRISON asked the Minister of Pensions why the number of firms supplying artificial limbs to disabled ex-Service men through the Ministry of Pensions had recently been limited to two.—Major TRYON replied: In consequence of refusal by the firms of limb makers hitherto under contract with the Ministry for the supply of artificial metal legs to continue to renew their contracts, except on terms which would have involved a greatly increased charge on public funds, I appointed a committee of inquiry, presided over by Sir Godfrey Collins, and including Major Cohen and other representatives of disabled officers and men, to investigate the whole position with regard to the supply and repair of this type of limb. Following the committee's report and recommendations, the number of firms with whom contracts were made for the supply and repair of artificial metal legs has been restricted to two. I have also received a deputation representing 10 of the 12 firms of limb makers who no longer hold contracts for the supply and repair of these limbs and have informed them that the matter cannot be reconsidered. The position is that certain firms had formed a combination against the Government, but, thanks to the committee; a cheaper supply of artificial limbs has been obtained.

In reply to further questions Major Tryon said that the limbs supplied were of first-rate quality. The House would wish him to express the debt of ex-Service men and of the country generally to the committee.

Bakers' Dermatitis.

Mr. FORREST asked the Home Secretary whether any legislation was contemplated in connexion with the spread of dermatitis among bakers, in view of the fact that operatives suffering from this disease were at present permitted to go on working with consequent risk to the consuming public.—Sir W. JOYNSON-HICKS replied: No legislation is contemplated, but the question of issuing an order requiring the occupiers to adopt special precautionary measures is now under consideration.

Colonel DAY asked the Minister of Health if he was aware that improvers, such as boric acid, used by bakers to improve bread, resulted in dermatitis; and whether, in view of this danger to public health, he would consider the advisability of making an order prohibiting the use of such improvers by bakers.—Mr. N. CHAMBERLAIN replied: The effect on the health of the consumer of the treatment of flour with "improvers" and other chemical substances is at present being investigated by a departmental committee, and pending their report I could not entertain a proposal to make restrictive regulations. I may add that so far as I am aware boric acid is never added to flour.

Increase in the Population.

Mr. SANDEMAN asked the Minister of Health what was the estimated increase of population in Great Britain since the last Census returns.—Mr. N. CHAMBERLAIN replied: The estimated increase of population in England and Wales from the date of the last Census in 1921 to the middle of 1925 is 1,003,000.

Smoke Abatement.

Sir WALTER DE FRECE asked the Minister of Health whether he proposed to introduce a Bill dealing with smoke abatement; and, if so, whether he could indicate when this would be.—Mr. N. CHAMBERLAIN replied: I hope to introduce a Bill on this subject next session.

The Case of Prince Ahmed.

Lieut.-Commander KENWORTHY asked the Minister of Health whether, when Prince Ahmed Seif-ed-Din escaped from Ticehurst asylum, detectives attached to the special branch of Scotland Yard were sent to France to effect his arrest; if he was aware that the prince had been confined in asylums in England since 1902 and that repeated efforts to have the patient examined by independent specialists had been refused; and whether he would make a statement on the subject, in view of the fact that the prince had established his sanity since leaving this country.—Mr. N. CHAMBERLAIN replied: I would ask the hon. and gallant Member to address the first part of his question to the Home Secretary. As regards the second part, I am informed that Prince Ahmed was confined in an asylum in this country from July, 1900, to September, 1925. During that period he has been frequently seen by medical and legal commissioners of the Board of Control. Within a year of his original detention a special visit was paid to him by a medical commissioner; and a similar visit was paid as recently as July, 1924, when the commissioner was satisfied that the prince was insane and properly detained. In September, 1924, the patient was examined by three independent specialists, two being eminent alienists of this country and one a specialist from Zurich. They also expressed the view that the prince was definitely of unsound mind. A further application for an examination by independent specialists was made to the Board in the same month, but was declined because it was considered that another medical inquisition at such a short interval might be detrimental to the patient's health. In regard to the third part of the question, I have no information relative to the statement that the prince has established his sanity since leaving the country; but I am advised that, judged by the standard of conduct recognised in this country, he was undoubtedly insane at the time of his escape.

Patients in Poor-law Hospitals.

Mr. NAYLOR asked the Minister of Health whether he would consider the advisability of introducing a Bill to remove the anomaly existing under the provisions of Section 46 (1) (*b*) of the Local Government Act, 1894, whereby members of boards of guardians and borough councils were disqualified from office owing to their entering or a member of their family entering a Poor-law hospital, notwithstanding that the full cost of maintenance was paid for the whole period of chargeability.—Mr. N. CHAMBERLAIN replied: I cannot see my way to introduce a Bill for this purpose at the present time.

Instruction in Birth Control.

Mr. BASIL PETO asked the Minister of Health whether he had received requests from electors in London and the provinces asking that advice and instruction on birth control should be given at maternity centres to married women on the recommendation of medical men; and whether these requests included many from medical officers of health and other persons in authority.—Mr. N. CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative. As regards the second part I have no record of having received such a request from any medical officer of health, but a few have been received from magistrates, doctors, teachers, and other responsible persons.

Free Clinics for Cancer Treatment.

Mr. FORREST asked the Minister of Health whether, in connexion with the prevention of cancer, his attention had been drawn to the establishment in America of free clinics whereat all persons with suspicious growths were able to attend, whether he had ascertained if medical opinion in this country was in favour of the inauguration of such centres here; and, if so, whether he could give any estimate of what the cost would be.—Mr. N. CHAMBERLAIN replied: I am aware that certain free clinics have been established in the United States for the purpose indicated by the hon. Member. As regards this country, there are numerous out-patient departments of general hospitals and other medical institutions (specialised for the treatment of cancer or otherwise), at which persons who suspect that they are suffering from the early stages of cancer can receive gratuitous diagnosis, advice and treatment. In July, 1923, the Departmental Committee on Cancer, appointed by one of my predecessors, made certain recommendations as to the way in which local facilities for early diagnosis and treatment of this disease might be improved by local action. These recommendations were embodied in a circular issued by my department to local authorities on August 14th, 1923,[1] and are, I understand, now being followed in several of the larger cities.

Bethnal Green Medical Officer.

Lieut.-Colonel Sir FREDERICK HALL asked the Minister of Health whether, seeing that the Bethnal Green Metropolitan Borough Council recently approved a proposal for the appointment of a medical officer of health at a salary of £800, rising to £900 a year, and that his department intervened and expressed the view that the commencing salary should be not less than £1000, and in view of the recognised need for public economy and the fact that the salary offered by the borough council was considerably more than the income earned by a number of able, highly-trained general practitioners, he would state what were the general principles which had actuated the Ministry in taking this line.—Mr. N. CHAMBERLAIN replied: The salary first proposed by the borough council was considerably below the standard arrived at as appropriate to such an area after lengthy discussions between representatives of the Ministry of Health and of the British Medical Association and Society of Medical Officers of Health, with the assistance of advice from gentlemen of standing in the field of local government. In the circumstances I felt it impossible to approve the proposal of the authority and have sanctioned a temporary appointment.

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[1] THE LANCET, 1923, ii, p. 479.

Treatment of Encephalitis Lethargica.

Captain HUDSON asked the Minister of Pensions how many ex-Service men were now in the Star and Garter Home for Disabled Soldiers and Sailors suffering from encephalitis lethargica; how many were receiving pensions on account of this disease; and how many wives of such men were receiving allowances.—Major G. C. TRYON replied: This institution is not under my control, and I am not therefore in a position to furnish the desired information, except as regards those cases for whose treatment in the institution my department is responsible. Three such cases suffering from the disease referred to are being maintained in the home at the cost of the Ministry. In each case the usual treatment allowances are being paid in lieu of pension.

Contamination of Fish.

Captain FAIRFAX asked the Minister of Health whether, in view of the fact that fish is moister than meat, and, for that reason, more liable to contamination and risk by and from flies and dust, he had considered or would consider applying to fish the provisions of the Public Health (Meat) Regulations, 1924.—Mr. N. CHAMBERLAIN replied: That part of the meat regulations dealing with inspection at the time of slaughter would obviously be inapplicable to fish. The conditions under which fish and other foods are stored or sold are now governed by Section 72 of the Public Health Act, 1925, which applies to fish (amongst other foods) the important provisions of the regulations dealing with the conditions under which meat is stored or sold in shops.

MONDAY, NOV. 23RD.

Indian Medical Service.

Mr. DAVID GRENFELL asked the Under Secretary of State for India whether the recommendations of the Lee Commission with regard to the substitution of the Indian Medical Service by the Civil Medical Service had been given effect to. —Earl WINTERTON replied: The recommendations of the Lee Report as to the constitution of Provincial Civil Medical Services have been accepted in principle, subject to the need for maintaining for army requirements a reserve of medical officers in civil employ, and for providing medical attendance by British doctors for British members of the Services. It has been decided to maintain the Indian Medical Service in substantially its present form to meet army requirements, and the Government of India are now considering how best to adapt the civil branch of the service to the general scheme of medical reorganisation.

Opium Conditions in India.

Mr. CECIL WILSON asked the Under Secretary of State for India whether there was any intention on the part of the Government to have an official inquiry into opium conditions generally in India; and, if so, whether he could give this House any information as to the nature and scope of the inquiry.—Earl WINTERTON replied: About the beginning of this year the Government of India addressed local governments, drawing attention to some prima facie evidence of abuses of opium in various directions, and asked them to examine the question and to consider with the Government of India by what kind of special inquiry or committee the problem should be dealt with if the local governments come to the conclusion that the evidence makes it desirable to review the conclusions of the Royal Commission of 1893. In September last the Government of India stated that they were still awaiting the replies of local governments.

The Government and the Amani Institute.

Mr. RAMSDEN asked the Secretary of State for the Colonies the policy of the Government with regard to the Amani Institute.—Mr. AMERY replied: I am glad to be able to say that the governments of the East African territories are prepared to grant sufficient funds to enable the Institute to be reopened. The necessary capital expenditure in this connexion can be found from the proposed guaranteed loan for which a Bill will in due course be laid before Parliament. H.M. Government are fully alive to the importance of Amani for the future development of East Africa.

Yaws in Kenya Colony.

Mr. HERBERT WILLIAMS asked the Secretary of State for the Colonies the total number of cases of yaws in Kenya Colony last year; and how many of these received adequate medical treatment.—Mr. AMERY replied: 20,402 cases of yaws were treated at Government hospitals and dispensaries in Kenya during the year 1924; and, in addition, 16,125 cases were treated by Government medical officers while on tour in their districts, either at out-dispensaries or otherwise. I fear it is impossible to estimate the number of cases which did not come to the notice of medical officers.

Replying to a supplementary question by Lieut.-Colonel FREMANTLE as to whether the Amani Institute was investigating this disease, Mr. AMERY said the Institute was established for the purpose of research in connexion with plants and agriculture, but he was very anxious to promote research in health questions as well.

Medical Men in Kenya.

Mr. HERBERT WILLIAMS asked the Secretary of State for the Colonies the number of qualified medical men in the public service and in private practice in Kenya Colony.—Mr. AMERY replied: According to a return published on Jan. 21st last, there were 76 registered medical practitioners resident in Kenya, of whom 32 were European Government medical officers.

Machinery Accidents.

Mr. WALTER BAKER asked the Home Secretary whether, having regard to the high total of deaths due to transmission machinery, it was proposed to introduce fresh legislation rendering owners or persons responsible for the machinery liable to imprisonment in the case of avoidable accidents.—Sir W. JOYNSON-HICKS replied: In cases where an accident is due to neglect of the occupier to comply with the requirements of the law, the occupier is liable to a maximum penalty of £100, but I find that this maximum is not often imposed, and I doubt whether a power to sentence to imprisonment would be of much practical use. Successful proceedings for failure to fence transmission machinery have been recently taken in a number of cases and important decisions as to the liability of occupiers have been obtained from the High Court. Special steps have also been taken to instruct occupiers by the issue of a Safety pamphlet on the subject, and I am hopeful that these measures may have the desired effect.

Pensioners and the Spahlinger Treatment.

Mr. VERNON DAVIES asked the Minister of Pensions whether the information available in his department regarding the Spahlinger treatment was yet sufficient to justify him in arranging for the provision of this form of treatment for pensioners suffering from tuberculosis.—Lieut.-Colonel G. F. STANLEY (Parliamentary Secretary to the Ministry of Pensions) replied: No Sir. I would refer the hon. Member to the reply I gave on July 28th last. The matter is one primarily for the Ministry of Health. My right hon. friend understands that the case must still, for the present, be considered "not proven."

Evidence by Former Lunacy Patients.

Sir CHARLES OMAN asked the Minister of Health whether any further evidence from former inmates of asylums was to be taken by the Royal Commission on Lunacy; and whether requests for permission to give such further evidence had been received by that Commission during the last few months and refused.—Mr. N. CHAMBERLAIN replied: I understand that the Royal Commission, having heard oral evidence from 13 former inmates of asylums and considered a large number of written statements, do not propose to take further evidence of this nature. During the last six months eight applications have been received from former inmates desiring to give oral evidence; but the Commissioners have been unable to comply with these requests.

TUESDAY, NOV. 24TH.

Alterations in Pensions Administration.

Mr. ROBINSON asked the Minister of Pensions what were the names and salaries of the regional directors in the Ministry of Pensions; how many, if any, were on part time; how many had received an intimation that their services might at an early date be dispensed with; and whether his department had under consideration such reorganisation of the administration as would involve the closing of all regions by June, 1926, and the centralisation of administrative work in the Ministry headquarters in London.—Lieut.-Colonel C. F. STANLEY replied: On the completion of the recentralisation of the Midlands region on the 5th proximo there will remain only two regions, Northern, with headquarters at Newcastle-on-Tyne, and Scotland, with headquarters at Edinburgh. In the Northern region the duties of regional director have for many months past been combined with those of the Commissioner of Medical Services without increase in emoluments. In the Scotland region the regional director is at present required to give part-time service only and receives a salary of £600 per annum. His services cease at the end of next month, and thereafter the duties will be combined with those of the Commissioner of Medical Services without increase in that officer's emoluments. Recentralisation is the policy of the present Government, as it was of the last, and arrangements are already in contemplation for closing the headquarters of the Northern region early in 1926. No decision has yet been taken on the question of the recentralisation of the Scotland region, but, as I indicated on Nov. 18th, the time is not far distant, according to present indications, when the decline in the volume of the Ministry's work will render the retention of separate regional headquarters in Edinburgh unjustifiable.

Health of Merchant Seamen.

Mr. BENJAMIN SMITH asked the President of the Board of Trade whether he would arrange for an annual report to be issued regarding the health of merchant seamen, giving a scientific analysis of disease in the statistics published in the Return of the Shipping Casualties to and Deaths on Vessels Registered in the United Kingdom; give information as to the total number of men serving amongst whom the deaths occurred; and, in view of the apparent absence of medical advisers in the department, would he consider whether the health of seamen was a responsibility which might with advantage be transferred to the Ministry of Health.—Sir P. CUNLIFFE-LISTER replied: I will consider whether the statistics for which the hon. Member now asks can be prepared, but I would call his attention to the replies given him on March 3rd last, of which I am sending him copies.

Tests for Motor Drivers.

Sir FRANK SANDERSON asked the Minister of Transport if he would introduce legislation making the granting of licences to automobile drivers conditional upon their passing a recognised test in driving.—Colonel WILFRID ASHLEY replied: As I have stated on previous occasions, I am disposed to agree with the conclusion arrived at by the Departmental Committee on the Taxation and Regulation of Road Vehicles, as stated in their second interim report, that any advantages which at first sight might appear likely to result from the institution of tests on the lines indicated would be outweighed by the expense, difficulties, and disadvantages inseparable from any such system.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the undermentioned subjects:—

Surgery.—T. M. Beattie, Leeds; N. Cohen, Guy's Hosp.; S. E. Henty, King's Coll. Hosp.; M. Hook, Boston, U.S.A.; B. Horwitz, Guy's Hosp.; J. M. F. Whitby, St. Thomas's Hosp.; and D. Winstanley, Liverpool.

Medicine.—V. G. Crowley, Sydney and St. George's Hosp.; N. C. Ghose, Middlesex Hosp.; B. D. Jain, Charing Cross Hosp.; E. Kessel, Kharkov and Westminster Hosp.; and E. W. D. Long and J. Mindess, London Hosp.

Forensic Medicine.—M. Bannoumah, A. M. El Mishad, and C. L. Froehlich, Guy's Hosp.; M. Hook, Boston, U.S.A.; J. Mindess, London Hosp.; S. H. G. Pinun, Guy's Hosp.; L. A. Rostant, St. Thomas's Hosp.; and F. Widlake, Guy's Hosp.

Midwifery.—C. L. Froehlich, Guy's Hosp.; E. W. Hayward, Cambridge and London Hosp.; S. E. Henty, King's Coll. Hosp.; F. G. Martin, Charing Cross Hosp.; H. A. Sack, Middlesex Hosp.; and F. Widlake, Guy's Hosp.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: C. L. Froehlich, M. Hook, F. G. Martin, and D. Winstanley.

UNIVERSITY OF LONDON LECTURES.—A course of five lectures on the Physiological and Pathological Activities and Functions of Bacteria will be given by Dr. F. W. Twort (Superintendent of the Brown Institution) in the Theatre of the Royal College of Surgeons (Lincoln's Inn-fields, W.C.) on Dec. 7th, 8th, 10th, 11th, and 14th, at 4 P.M.—A course of two lectures on the Efficiency of the Heart and its Measurement will be given by Prof. Yandell Henderson (Professor of Applied Physiology in Yale University) in the Physiology Theatre, University College, London (Gower-street, W.C.), on Monday and Tuesday, Nov. 30th and Dec. 1st, at 4.30 P.M. At the first lecture the chair will be taken by Prof. E. H. Starling, F.R.S. Admission to these lectures is free, without ticket.

Charing Cross Hospital Medical School.—The Huxley Lecture on Recent Advances in Science, in their Relation to Practical Medicine, will be delivered by Sir Oliver Lodge, D.Sc., F.R.S., on Thursday, Dec. 3rd, at 3 P.M., in the Out-patients' Hall of the hospital.

UNIVERSITY OF CAMBRIDGE: *Chair of Physiology.*—The election of a successor to the late Prof. J. N. Langley will take place in December. Candidates are requested to communicate with the Vice-Chancellor not later than Dec. 14th.

UNIVERSITY OF MANCHESTER.—The Court of Governors have appointed Mr. Walter Hamilton Moberley, M.A., D.S.O., at present Principal of University College of the South-West of England, at Exeter, to succeed Sir Henry Miers in September next as vice-chancellor.

NATIONAL HEALTH SOCIETY.—Dr. Robert Hutchison will deliver the Lady Priestley Memorial Lecture on Diet in Childhood and Adolescence on Thursday, Dec. 3rd, at 5 P.M., at 90, Buckingham Palace-road, S.W. (the Royal Sanitary Institute), Sir James Crichton-Browne, M.D., F.R.S., in the chair.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN.—A dramatic entertainment in aid of the Jubilee Endowment Appeal Fund will be given by the staff of the school on Dec. 11th at 8.30 P.M., and Dec. 12th at 8 P.M., and again at 8 P.M., at 8, Hunter-street, London, W.C. Tickets, 5s. and 2s. 6d., may be obtained from Miss Bond, 8, Hunter-street, London, W.C. 1.

METROPOLITAN ASYLUMS BOARD: *DIPLOMA IN PUBLIC HEALTH.*—A course of lectures and demonstrations (three months) in hospital administration will be given at the North-Western Hospital, Lawn-road, Hampstead, N.W., by Dr. E. W. Goodall (medical superintendent), on Mondays and Thursdays, at 4.45 P.M., and alternate Saturdays at 10.30 A.M., beginning Thursday, Jan. 7th, 1926.

SOCIETY OF MEMBERS OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.—Sir John Bland-Sutton presided at the annual meeting of the Fellows and Members of this Society held at the College on Nov. 19th, when Dr. L. Haden Guest, M.P., moved the resolution which appeared in THE LANCET of Nov. 14th (p. 1018). It was, he said, inconceivable that in any other body than the College of Surgeons the same resolution should have been passed 30 times without notice being taken of it. All were agreed that the administration of the College had been and was being carried on in an exemplary manner, but the College owed a duty both to its members and to the public. The Council of the College had to deal with the conduct of examinations, the course of study, the choice of subjects, and the approval of schools and hospitals where instruction was given. The income of the College was derived to a large extent from its members, and he associated himself with those who advocated that the controlling body should be brought into closer touch with the general practitioner. Mr. F. Lawson Dodd, L.D.S., seconding the resolution, said that he represented the great unorganised mass of members who would like to have a closer union with the parent body. The result would be to give the College greater authority, a wider sanction, and more influence with the public. Dr. A. Haydon hoped it would be possible shortly to elect five members of the College on the Council, one for London and four for the provinces. Should this privilege not be granted he proposed the foundation of a new College of Surgeons with power to hold examinations and issue diplomas at lower fees than the present College. The resolution was carried with three dissentients. The President stated that the decision did not rest with him, but with the Council which was intending, before sending in the supplementary charter to the Privy Council, to give this matter very earnest consideration.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Monday, Nov. 30th, at 5.30 P.M., Mr. Herbert Tilley will lecture on Tuberculosis of the Larynx, in the lecture hall of the Medical Society of London, 11, Chandos-street, W. The lecture is free to all members of the medical profession. On Nov. 30th to Dec. 13th the Infants Hospital will hold a special course during the afternoons only, with the exception of Sunday, when a morning visit will take place to Thavies Inn, Holborn. Lectures and demonstrations will be given by Dr. Eric Pritchard and other members of the staff. Visits will be arranged to the Nursery Training School, Hampstead Garden Suburb, and the Home for Blind Babies, Chorley Wood. For the convenience of the general practitioner whose available time is limited, the Hampstead General Hospital will hold a 4.30 to 6 P.M. course from Dec. 7th to 19th, covering all branches of medicine, surgery, and the special departments. At the Hospital for Diseases of the Skin, Blackfriars, a course in dermatology will take place from Dec. 7th to 19th. Instruction will be given in the out-patient department, and venereal clinics will be held twice weekly. The following are the special courses for January:

Medicine, surgery, and the specialties at the Prince of Wales's General Hospital; cardiology at the National Hospital for Diseases of the Heart; diseases of children at the Queen's Hospital; infectious fevers at the North-Eastern Hospital; neurology at the West End Hospital for Nervous Diseases; and psychological medicine at the Bethlem Royal Hospital. A copy of each syllabus and the Fellowship general course programme will be forwarded on application to the Secretary to the Fellowship of Medicine, 1, Wimpole-street, London, W. 1.

WHITBY'S WAR MEMORIAL HOSPITAL.—Princess Mary on Nov. 18th opened a new cottage hospital at Whitby erected by the townspeople as a war memorial. For the new building—which has seven beds in the women's department, six in the men's ward, and three in the children's ward, besides four small wards with one bed in each—nearly £19,000 was raised to cover the cost of building and equipment. The operating block is the gift of Sir John Harrowing in memory of a son killed in the war.

AIMAI MERWANJI CHAMARBAGWALA FREE OPHTHALMIC HOSPITAL.—The report of this institution for the year 1924 shows that it was started on a small scale in the year 1914 by two Bombay doctors. Its scope was enlarged in 1922 by the generosity of a Parsi gentleman after whose wife it is now named. In 1924 9200 new patients were treated. The number of cases operated on for cataract was 188, for glaucoma 26. The committee of management of this young institution consists of the two senior surgeons and the donor of the extension. It has an honorary staff of four and one house surgeon.

MANCHESTER CANCER COMMITTEE.—The Manchester Cancer Committee has issued an appeal for £20,000 for the investigation into cancer during the next three years. The committee, which was formed at the instigation of the Minister of Health, numbers now 40 members, and consists of officially appointed representatives from the Public Health Committee, the University, the Manchester Royal Infirmary, the Christie Hospital, the Radium Institute, and other large hospitals in the city concerned with the problem of cancer in all its forms. The following scheme of investigation into cancer has been decided upon:—(1) Investigation of the blood and tissue changes in cancer cases by modern methods. (2) The collection of specimens from cancer cases for submission to a histologist for research purposes. (3) The establishment of a regular and complete system of record-keeping of cancer cases in all the city hospitals and in private practice. The occurrence of cancer amongst mule spinners gives the cotton manufacturing districts a special interest in any research work bearing on the investigation of the causes and increasing prevalence of cancer. The approved scheme will necessitate the appointment of full-time research workers and laboratory assistants and the provision of the necessary apparatus and clinical assistance. All money received will be expended entirely on investigations to be carried out in Manchester.

QUEEN MARY'S HOSPITAL FOR THE EAST END, STRATFORD, E.—The twenty-second annual festival dinner of this hospital was held at the Hotel Victoria, Northumberland-avenue, on Nov. 23rd. Prince Henry, President of the hospital, had expressed the wish that the festival should not be postponed on account of the death of Queen Alexandra, and in his absence from the chair Lord Birkenhead presided over a large assembly of some 500 guests. The Chairman in giving the loyal toasts, briefly voiced the sympathy that all felt towards the Royal Family in their bereavement, and later in the evening made an eloquent appeal for funds on behalf of the hospital, for the maintenance of which £50,000 was required annually. Sir Leonard Lyle, chairman of the hospital, in response to Lord Birkenhead, said that there was a deficit of £7380 on the work of the past year, and that in future the expenses of the hospital would exceed the figure for 1924 by £9000 a year. Mr. H. Roper Barrett gave the toast of the honorary medical staff, the nursing staff, the voluntary workers, and officials of the hospital, to which Mr. A. J. Couzens and Major Raphael Jackson, the secretary, responded. In the course of his reply, Major Jackson announced that the sum of £5500 had already been received towards the total of £15,000, for which a special appeal was being made to free the hospital from debt and carry out a number of improvements. Sir Charles Wakefield gave the health of the Chairman of the Appeal Fund, Mr. H. Percy Shepherd, who himself headed the list of donors with a gift of £1000. The toast of the Visitors was given by Mr. W. A. Vernon, hon. treasurer of the hospital, and was acknowledged by the Mayor of West Ham. Sir Ernest Wild, K.C., proposed "The Chairman," to which Lord Birkenhead replied.

THE DEATH OF QUEEN ALEXANDRA.

TRIBUTE OF THE GENERAL MEDICAL COUNCIL.

AT the first sitting of the General Medical Council, the President, Sir Donald MacAlister, paid a tribute to the late Queen Alexandra. The Council, he said, were meeting under the shadow of a national bereavement. "The death of the Queen-Mother Alexandra, revered and beloved by the whole nation, has made us all fellow-mourners with the Royal Family." Members rose in silence in homage to her memory.

LETTER OF CONDOLENCE FROM THE BRITISH MEDICAL ASSOCIATION.

The following letter, dated Nov. 24th, has been sent to Lord Stamfordham signed by the Chairman of Council of the British Medical Association:—

MY LORD,—On behalf of the members of the British Medical Association throughout the Empire I respectfully beg leave to express to His Most Gracious Majesty the King, our Patron, Her Majesty the Queen, and the members of the Royal Family, the Association's heartfelt sympathy and profound sorrow at the death of Queen Alexandra, whose gracious thoughtfulness and unfailing devotion to the relief of suffering have endeared her to the profession. The Association joins with the whole Empire in mourning one so greatly beloved, and in expressing to His Majesty its loyalty and devotion.

I am, your Lordship's most obedient Servant,

(Sgd.) ROBT. A. BOLAM,
Chairman of Council.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Dec. 1st.

ORTHOPÆDICS: at 8.30 P.M.
Discussion:
The Treatment of Fractures of the Forearm, Excluding Fractures of the Olecranon and those of the Lower End of the Radius of the Colles's Type.
Opener:
Mr. St.J. D. Buxton.
Mr. Bristow, Mr. Fairbank, Dr. James B. Mennell, Mr. Slesinger, and others will take part in the discussion.

PATHOLOGY: at 8.30 P.M.
Laboratory meeting at Guy's Hospital, S.E.
Communications:
Dr. G. W. Nicholson: Heterotopic Squamous-celled Carcinomata.
Dr. C. P. Symonds: Pathology of a case of Disseminated Sclerosis.
Mr. A. A. Osman: Treatment of Nephritis with Alkalies.
Prof. J. W. Eyre and Dr. Ali: *B. Ægypticus,* Rough and Smooth Colonies.
Mr. W. W. Payne: A Note on Various Carbohydrate Foods.
Demonstrations will be announced at the meeting.

Wednesday, Dec. 2nd.

SURGERY: at 8.30 P.M.
Clinical and Pathological Evening:
Cases and specimens will be shown.

Thursday, Dec. 3rd.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.
Specimens:
Dr. Everard Williams:
(1) Fallopian Tube containing a Loose Fragment of Menstruating Endometrium associated with Endometrioma of the Ovaries.
(2) Uterus showing Multiple Polypi of the Cervix.
Short Communications:
Dr. D. J. Malan:
(1) Gliosarcoma in a Full-time Stillborn Fœtus.
(2) Ruptured Acute Pyosalpinx during the Third Month of Pregnancy.
Papers on Puerperal Sepsis:
(1) Dr. H. J. Phillips: Rational Treatment of Puerperal Infections.
(2) Dr. L. Colebrook: Some Laboratory Investigations in Connexion with Puerperal Sepsis.

Friday, Dec. 4th.

LARYNGOLOGY: at 5 P.M. (Cases at 4 P.M.)
Cases will be shown by Mr. H. Bell Tawse, Mr. A. J. Wright, Mr. Douglas Guthrie, and others.

ANÆSTHETICS: at 8.30 P.M.
Paper:
Dr. M. S. Pembrey and Dr. F. E. Shipway: Apnœa, Dyspnœa, and Cyanosis in Relation to Anæsthesia.

Saturday, Dec. 5th.

OTOLOGY: at 10.30 A.M. (Cases at 9.45 A.M.)

Cases and Specimens:

Dr. Albert A. Gray and Dr. Sarah B. Nelson: Pathological and Anatomical Conditions found in a Case of Deaf-mutism (illustrated by lantern slides).

Other cases and specimens will be shown.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Nov. 30th, to SATURDAY, Dec. 5th.—Fellowship of Medicine lecture, Medical Society, 11, Chandos-st., W. Monday, 5.30 P.M., Mr. Herbert Tilley: Tuberculosis of Larynx.—INFANTS HOSPITAL, Vincent-square, S.W. Special Course, Lectures, and Demonstrations every afternoon. Friday, "Round Table" Consultation. Saturday, Visits to Model Pasteurising Plant, Willesden, and Nursery Training School, Hampstead Garden Suburb.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special Course in Medicine, Surgery, and Gynæcology. Lectures, Demonstrations, &c., will be given in the Out-patient Department and Wards.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street, W. Lecture-demonstrations illustrated by cases daily at 5 P.M.—LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W. General Practitioners' Course, 4.30 to 6 P.M. (second week). All information as to fees, &c. from the Secretary.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

THURSDAY, Dec. 3rd.—3 P.M., Mr. W. Ibbotson: Demonstration of Practical Tests for Vertigo. 4.15 P.M. (Clinical Meeting of the North-East London Clinical Society).

Daily: Clinics, Demonstrations, Wards, and Out-patient Department, General and Special Departments, Operations, &c.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C. 1.

FRIDAY, Dec. 4th.—4 P.M., Mr. Archer Ryland: Musculature of the Vocal Cords.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone-road, N.W.

THURSDAY, Dec. 3rd.—5 P.M., Mr. L. C. Rivett: Ante-partum Hæmorrhage.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Dec. 1st.—5 P.M., Dr. A. C. Roxburgh: Seborrhœa. Seborrhœic Dermatitis.

THURSDAY.—5 P.M., Dr. Haldin-Davis: Acne. Rosacea.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, Dec. 1st.—4.15 P.M., Mr. W. R. Douglas: Ureteral Calculi.

FRIDAY.—4.15 P.M., Prof. J. Shaw Dunn: Recent Work on Renal Function.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, St. Andrews.

TUESDAY, Dec. 1st.—4 P.M., Mr. M. Ramsay: The Ocular Complications of Diabetes.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Dec. 2nd.—4 P.M., Dr. A. Helen A. Boyle: The Attainment of Nervous and Mental Health.

Appointments.

COHEN, H., M.D. Liverp., has been appointed Lecturer in Practical Therapeutics in the University of Liverpool.

MCFARLAND, B. L., M.B., Ch.B. Liverp., Honorary Assistant Orthopædic Surgeon to the Royal Liverpool Children's Hospital.

Vacancies.

For further information refer to the advertisement columns.

All Saints Hospital, Vauxhall Bridge-road, S.W.—Res. H.S. At rate of £200.

Birmingham and Midland Hospital for Skin and Urinary Diseases. Hon. Asst. P.

Birmingham Corporation Infectious Diseases Hospitals.—Sen. Asst. M.O. £500.

Birmingham, Queen's Hospital.—Anæsthetist, Obst. and Ophth. H.S. Also Cas. H.S. All at £70 to £100.

Bradford Royal Eye and Ear Hospital.—Res. H.S. £150.

Brighton, Hove, and Preston Dispensary, &c., 113, Queen's-road.—Hon. M.O.

Cairo, Memorial Ophthalmic Hospital, Giza.—Ophth. S. £E.1500.

Cambridge, Addenbrooke's Hospital.—H.S. £130.

Cardiff City Mental Hospital, Whitchurch, near Cardiff.—Locum Tenens. 7½ guineas weekly.

Cardiff, Welsh National School of Medicine.—Lecturer in Pathology. £750.

Chelsea Hospital for Women, Arthur street, S.W.—Jun. H.S. At rate of £100.

Dumfries County Council.—Bacteriologist and Chemist. £650.

Essex County Council and U.D.C.'s of Grays Thurrock and Tilbury.—M.O.H. for U.D. of Grays Thurrock. £200. M.O.H. for U.D. of Tilbury. £200. And Asst. County M.O. for U.D. of Grays Thurrock, &c. £100.

Gloucestershire Royal Infirmary and Eye Institution.—Asst. H.S. At rate of £150.

Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—H.S. and Cas. Surg. O. Each at rate of £100.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S. and H.P. Each at rate of £50.

Iraq Health Department.—Two M.O.'s. Rs.1200.

Kirkcaldy Hospital.—Res. M.O. At rate of £125.

Leeds Maternity Hospital.—University Tutor in Obstetrics and Res. M.O. £300.

Manchester, Ancoats Hospital.—H.S. At rate of £100.

North Middlesex Hospital, Edmonton, N.—Res. M.O. £200.

Nottingham General Hospital.—Res. Cas. O. At rate of £200.

Rainhill, County Mental Hospital.—Temp. Asst. M.O. £7 7s. weekly.

Royal Free Hospital, Gray's Inn-road, W.C.—Surg. Reg. £200. Also Med. and Gynæcological Reg. £100.

St. Andrew's Hospital, Dollis Hill, N.W.—Hon. Asst. P. and Hon. Asst. Gynæcologist.

Salford Royal Hospital.—Res. Surg. O. £200.

Singapore, College of Medicine.—Prof. of Biochemistry and Prof. of Biology. Each $850–$1000.

Stockport, County Borough.—M.O.H. £1200.

University College Hospital, Gower-street, W.C.—Med. Reg. £150. Also Hon. Dental S.

Winchester, Royal Hampshire County Hospital.—H.S. £150.

Windsor, King Edward VII. Hospital.—Jun. H.S. At rate of £100.

York County Hospital.—H.P. £150.

Births, Marriages, and Deaths.

BIRTHS.

ALLERTON.—On Nov. 12th, the wife of George Allerton, *M.C.*, M.R.C.S., Longridge-road, S.W., of a daughter.

COWEN.—On Nov. 17th, at Stafford House, Church-road, Sutton, Surrey, the wife of Dr. E. G. Huxley Cowen, of a son.

NOBLE.—On Nov. 17th, at Hill Crest, Husbands Bosworth, Leicestershire, the wife of Dr. Noble, of a daughter.

STEWART.—On Nov. 10th, at Woodside, Leavesden, Herts, the wife of R. M. Stewart, M.D., of a daughter.

TRACE.—On Nov. 3rd, the wife of Laurence A. Trace, L.D.S. R.C.S., Kingsbridge, South Devon, of a daughter.

MARRIAGES.

SCOTT—RICHARDS.—On Nov. 12th, at St. Stephen's Church, Bournemouth, Dr. Maitland Scott, to Ursula, only daughter of Mrs. Richards, of Sunbury, St. Stephen's-road, Bournemouth.

DEATHS.

CANTON.—On Nov. 10th, at The Corner Cottage, Ventnor, Frederick Arthur Canton, L.D.S. R.C.S. Eng., of Ludham, Norfolk, aged 75.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

LONDON COUNTY COUNCIL SCHOOL MEDICAL AND DENTAL SERVICE.—The extent to which the school medical and dental service of the L.C.C. is developing may be gathered from the fact that the Council has made financial provision for treatment, during the year 1926–27, of no less than 35,000 cases of refraction and eye diseases, 14,080 ear, nose, and throat cases, 1500 cases of ringworm, 70,000 cases of minor ailments, and roughly 126,000 dental cases. These figures represent an increase of nearly 11,000 over the number of cases authorised for treatment in the current year. The medical services of the Council have recently been under review. It has been found that the large increase in the number of cases treated by the Council's doctors is largely due to the fact that the hospitals are experiencing difficulties, and are being used to a less extent than formerly in the case of ailments for which the Council provides treatment. It is stated that the in-patient centres for the treatment of tonsils and adenoids have become so popular that many parents now refuse immediate appointments for treatment of their children as hospital out-patients, and prefer to wait until they can secure treatment at one of the in-patient centres. More parents also now appreciate the importance of obtaining dental treatment for their children. The cost of the arrangements, apart from administrative charges, during the financial year is estimated at £94,827, which includes eye, ear, nose and throat (including ambulance), and ringworm, £22,208; minor ailments, £26,187; dental cases (treatment £39,694, inspection £3008), £42,702; maintenance grants (including Cyril Henry centre), £2200; allowances for use of centres for inspection purposes, £580; remedial exercises, £150; stammering classes, £200; and initial grants to new centres, £500.

Notes, Comments, and Abstracts.

THE TREATMENT OF ALCOHOLISM.

BY PAUL BOUSFIELD, M.R.C.S. ENG.,
FORMERLY PHYSICIAN TO THE LONDON NEUROLOGICAL CLINIC.

It is nearly always the case that when an individual approaches the doctor on the subject of the treatment of his alcoholic craving he does so at a time when he is almost without any control of the habit; that is to say, he is either in the middle of a drinking bout or an exacerbation of his chronic state. His physical condition has, therefore, to be dealt with first, so that we may confidently divide our treatment under two headings, physical and psychic.

Physical Treatment.

The physical treatment assists in substituting for the alcoholic euphoria a feeling of well-being without narcotising the brain. It also helps to eliminate the gastritis, which is one of the chief factors in driving the patient towards an early resource to alcohol on the day after he has taken excess, and which, thus, leads to a continued state of excess. It is not necessary to forbid alcohol completely at once. As a rule, however, it should be reduced and left off after two days' treatment, though in some cases it will be found better to immediately discontinue it. Although the treatment can be carried out at home, the patient should preferably be placed in a nursing home for from four to seven days. If the gastritis and general malaise are very bad it is well for the patient to remain in bed for the first 24 or 48 hours. Cheerful companionship is a great accessory, and if it can be afforded a special nurse of bright disposition or some other companion should be constantly available during the short stay in the home.

If the condition is very bad, and the patient comes in with a stomach loaded with alcohol, gr. 1/10 of apomorphine hydrochloride should be given hypodermically if the heart be in fair condition. This has a twofold object: it will probably induce vomiting, but, more important, it will probably give the patient a good long sleep. For apomorphine is a hypnotic of the greatest value in alcoholism. Further doses, 1/30 gr. to 1/20 gr., may be given at intervals of six to eight hours, and one of these doses should be given immediately before the patient retires to rest for the night. On the second day a small dose of apomorphine may be given in the morning and another at bed-time. These small doses will not induce vomiting except in rare instances. If a small dose does produce vomiting it must be discontinued and some other hypnotic substituted. Hyoscyamine sulphate followed by a full dose of potassium bromide is an excellent combination under these circumstances. As soon as the patient commences treatment he should be given a mixture such as will combine a general tonic with a stomachic and will simultaneously reduce his physical craving for alcohol. The best mixture to employ is probably the following, given at intervals of two hours and a half to three hours six times daily:—

Liq. atrop. sulph.	♏½.
Liq. strychnin.	♏i.
Tr. cinchonæ co.	ʒss.
Glycerin.	ʒss.
Inf. gent. co.	..ad. ℥ss.

After four days this atropine mixture should be discontinued, and a mixture somewhat similar to the following substituted, and ʒi. given two-hourly in a wineglass of water:—

Ext. cascara liq.	♏x.
Tr. cinchonæ co.	ʒss.
Aloin.	gr. 1/10.
Liq. strych. hydrochlor.	♏iii.
Inf. gent. co.	..ad. ʒi.

This may well be varied after a week to the following:—

Ext. cascara liq.	♏iii.
Aloin.	gr. 1/10.
Tr. cinchonæ co.	ʒss.
Inf. quassia (conc. 1–7)	♏vii.ss.
Inf. gent. co.	..ad. ʒi.

Colloidal Gold.

The remaining part of the physical treatment is empirical. It consists in giving 2 c.cm. per diem of isotonic colloidal gold. As a control the author has tested this on many occasions against different inert isotonic solutions similarly coloured without letting the patients know it, and the tests have left no doubt in his mind that those treated with gold picked up more rapidly, and were more successful, than the others. The dose of gold should be divided into three parts and given after each meal. It should be started as soon as the patient enters the nursing home and continued for three weeks. It is important that both the gold and the tonics should be divided up into frequent doses, for this rather burdensome method of treatment has a very considerable moral effect in assisting the patient to remove his fears from immediate relapse. After the first four or five days the actual desire for alcohol has ceased, but the fear of the desire does not disappear until experience has shown the patient how easy it is to abstain. This fear is a most potent form of tension acting as a cause for continued alcoholism. If at this stage the patient is solemnly warned not to touch alcohol again under any circumstances a fair proportion will be freed from its slavery. Unfortunately, however, conditions of tension will recur, which if they are not understood and controlled by the patient will cause a relapse. Probably rather more than 50 per cent. of the patients cured by this method do relapse.

Psychotherapy.

A much greater percentage of permanent cures is established when we add to this physical treatment some form of psychotherapy. As to suggestion it is almost impossible to make its effects last a long period against permanent tensions, although, of course, indirect suggestion plays a part in the physical method. Where alcoholism partakes of the nature of hysteria, or compulsion hysteria, or is symbolic in some way or other of an unconscious conflict, there is sometimes a very difficult proposition to face, which only a lengthy psychological analysis is likely to solve. It is amongst these patients that most of the failures occur, for many of them are not suitable for, and cannot enter into, analytical procedure.

But the vast majority of cases suffer from what may be termed a series of normal tensions, which they do not recognise as such consciously, but which are very near the surface, and can be fairly rapidly brought to light by a much more superficial form of analysis directed essentially to a minute examination into the history of his alcoholism, including an examination into the various emotional states of his mind which were present on various occasions when alcohol was taken. An example may be of value here.

An Example.

A civil engineer, aged 35, complained that he suffered from chronic alcoholism, and that it was hereditary in his family. He had suffered from it for 12 years, and had already undergone two forms of treatment for it. One of these had been at the Norwood Sanatorium and the other at the Keely Institute. After the first treatment he had been an abstainer for six months, and then considered himself safe, but a single drink was immediately followed by three months heavy drinking daily. He then went into the other institution, and on his discharge succeeded in maintaining three months' abstinence, when he had another relapse which lasted four months, after which period he came to me for further consultation. He was placed in a nursing home for five days, and the physical treatment already described was instituted. Simultaneously, a minute investigation into the history of his alcoholism was commenced. Various kinds of impatience were almost always the starting-point for his taking alcohol. Thus, if he had to wait an hour for a message to be delivered he would find the tension of waiting intolerable. If he had a long journey to make, the idea of the boredom of wasting several hours before he could get to the end of it had a similar effect. To arrive home half an hour before dinner with no fixed programme of work to fill up that time was another source of tension which he could not bear. Loneliness was another cause of unpleasant stimuli. He liked working with three or four people around, and analysis showed that the reason of this was in order that his work might receive continual attention and praise, and under these circumstances only could he really enjoy his work. There were a large number of similar conditions which aroused more tension in this individual than they did in the average person, or, in other words, this patient was too intolerant of these conditions. Other factors which made him drink heavily, when the first exciting stimuli had passed, were the fear of the ultimate consequences of his habit and the fear that he would never be cured. He was an example of the type that drinks in order to abolish the fear of drinking.

During this investigation, which took about eight weeks, the patient was taught to consider the various points, and to give himself well-considered suggestions night and morning directed towards his habits of impatience and exhibitionism (in his work and so forth). The suggestions were not directed towards eradicating his alcoholic habit, but towards his control of the underlying tension. He was daily impressed by the physician with the needlessness of fear concerning alcohol, and the fact that if he could entirely eliminate his desire for it in a few days in a nursing home he could certainly do the same for himself on any future occasion. He was disabused of the idea that alcohol was hereditary, and he was told that at the end of the treatment he must entirely use his own judgment as to whether he attempted to take alcohol again or not. If he did so and found that he had not got complete control, he must come back at once for a little further investigation of the particular circumstances which were causing him tension which he could not face. He did, in fact, have one or two short relapses for a few days each, but after a little further investigation he succeeded in pulling himself up short and curing himself by means of a little introspection and auto-suggestion on each occasion. He has now reached the stage in which he regularly has alcoholic beverages on his dinner-table, which, however, he scarcely ever touches. And he had not had a relapse of any kind for two years.

Conclusion.

Many cases are not so simple as this, and many patients cannot afford the time for the necessary analytic procedure. In such cases, however, although frequent minor relapses may take place, the patient is nearly always in a position to cure himself by taking a week-end holiday of three days with a suitable companion. In other words, he has sufficient confidence in himself to know that if he can put behind him for a short period the tensions of home life and business he can overcome, without the aid of a physician, the gastric tension and general malaise which are the chief causes in the continuation of a bout of drinking. A frequent cause of the beginning of a bout in these minor relapses is undischarged sexual tension. If for any reason this is raised and cannot be discharged, an individual who has been prone to alcoholism tends naturally to the old habit-path which has been formed in order to avoid the tension, although he may not be fully aware that the tension is present.

COLONIAL HEALTH REPORTS.

UNFEDERATED MALAY STATES.

Kedah.—The report of Mr. W. Peel, British Adviser, for 1924 gives the estimated population at 350,000. The birth-rate per mille was 31·70 and the death-rate 22·41. There was considerable improvement in infantile mortality, the rate being 126·27 per mille, as against 161·73 in the previous year. The number of deaths was 7877, of which 3159 were attributed to fever, but the returns are not very reliable. The only accurate figures are those for the hospitals. Eight Government hospitals were maintained and 13,057 patients treated therein. The principal diseases were malaria, venereal disease, ankylostomiasis, dysentery, pulmonary tuberculosis, and respiratory diseases. There was a marked increase in the number of dysentery cases, but the death-rate was considerably less. In addition to the outdoor departments at the hospitals, there are seven Government outdoor dispensaries; they did good work, the number of cases treated being 18,698. Small outbreaks of small-pox occurred in different parts of the State, involving 26 cases and 3 deaths; the outbreaks were quickly controlled. 7020 injections of neosalvarsan were given for puru (yaws), as against 1183 in the previous year; the people show eagerness for this treatment. There was a decrease in the number of deaths due to diseases connected with childbirth, but the prejudice against competent medical assistance in such cases remains very strong. 20 lepers were being maintained at the end of the year at Pulau Jerejak and 5 at Pulau Pangkor Laut. The accommodation at these places is limited, and 80 patients were awaiting vacancies at the end of the year. The position with regard to lepers is not satisfactory, and it may become necessary to consider one central camp for the State. Dr. D. Bridger officiated as State surgeon throughout the year. Dr. J. T. Clarke and Dr. R. B. Hawes acted as medical officers for Kulim and Sungei Patani respectively. Dr. C. J. S. Nicholas, assistant surgeon, officiated in the post of medical officer at Alor Star. A separate health department was maintained, Dr. A. G. H. Smart being in charge until he went on leave.

Trengganu.—This is a Malay State on the east coast of the Malay Peninsula. Its configuration is long and narrow, the length being approximately 150 miles and the greatest breadth 65 miles. The western and inland half is mountainous and almost uninhabited. The population is concentrated in the eastern half of the State, along the river-plains and coastal belt. The population at the census of 1921 was 153,765, of whom 145,523 were Malays, 7246 Chinese, 211 Indians, 31 Europeans, and other nationalities 751. The highest recorded annual rainfall on the coast is 165·5 inches; the average rainfall is about 120 inches. In the coastal region the regular sea and land breezes modify the heat, which is never at any time oppressive, and the climate is both pleasant and healthy. Mr. J. L. Humphreys, the British Adviser, in his report for 1924, states that Dr. A. B. Jesser-Coope (medical officer) and Mr. Ibrahim Syed Noor (assistant medical officer) were in charge throughout the year, with a staff of eight dressers and apprentice dressers. The department was transferred in February to the completed new administrative buildings; they include store, dispensary, dressing-rooms, laboratory, and a well-equipped operating theatre. The hospital ward was completed and brought into operation in May; the second ward was completed in November; 158 cases were treated in the hospital during the year. Two major and 35 minor surgical operations were performed, and 1147 clinical pathological examinations made. Lunatic cells, a leper ward, and a vagrants' ward are under construction. The total area of the medical department reserve is approximately 18 acres of land; the site is open sandy ground, just outside town limits, and within half a mile of the sea. The commissioner of police made arrangements for the distribution through 15 police stations of drugs for simple ailments (fever, wounds, worms, sores), and a Jawi booklet of instruction on common matters of sanitation, hygiene, and infant feeding was published during the year. It is hoped that these measures will encourage the use of European medicines and help to bring the medical department more into touch with the general population. No vital statistics can be given. Of general diseases treated the more prevalent were skin diseases, intestinal worms, bacillary dysentery, diseases of respiration, yaws, and influenza. Venereal disease is not common; many cases formerly thought to be tertiary syphilis are now considered to be tertiary yaws. There was no epidemic at Kuala Trengganu during the year. There were epidemics of influenza at Kretai in July, and of bacillary dysentery at Kuala Brang in August; they were cleared up with aid sent from Kuala Trengganu. The vaccination campaign was continued during the year, 12,890 cases being successfully treated (10,750 in 1923). At the end of the year the vaccination of the whole State was completed, except for Hulu Marang and Telemong, where some opposition from religious pundits was again met with.

Perlis.—In 1924, 851 births were registered, comprising 750 Malays, 28 Siamese, 69 Chinese, 3 Tamils, and 1 Sikh. The deaths numbered 585. The number of indoor patients in the Kangar hospital was 540, and the percentage of deaths was 6·57; or, if deaths occurring within 48 hours of admission are excluded, 4·01. The daily average of in-patients was 37·40. The principal diseases treated were malaria, dysentery, phthisis, other lung complaints, ankylostomiasis, syphilis, and ulcers. The number of out-patients rose from 11,001 to 12,513. It is satisfactory to observe that Malays are taking outdoor treatment very freely. A travelling dispensary was started during the year. It distributes quinine, treats ulcers and other simple complaints, and is well patronised. Neosalvarsan injections numbered 3409, against 2027 in the previous year.

INSECTS AND PUBLIC HEALTH.

ON Nov. 18th Sir Wilfred Beveridge delivered a Chadwick Public Lecture at the Royal Society of Medicine on Insects in Relation to Public Health. Sir James Crichton-Browne occupied the chair. After referring to the general educative value of the study of insect life, Sir Wilfred Beveridge said that training in entomology was very desirable for every medical man. To be of real value this training should be of such wide scope as to confer the true entomological sense, which enables the student to tackle any new problem which may arise. The chief function of insects in nature, he said, appears to be the destruction of waste and putrescent organic matter and the suppression of superabundant vegetation. At the present time we devote much attention to the destruction of the house-fly and the carrion flies because they can under some circumstances transmit certain disease germs; but if man took the proper precautions as to the disposal of infected excreta and the protection of food, the fly would not be in the unfortunate position of being a disease carrier. We should so regulate our sanitary efforts as to make the insect carrier a negligible factor in the transmission of disease, and not concentrate all our energy in destroying insect life, while failing to put our own house in order. The presence of lice was one of the many trials of the war, and great temporary loss of man power was caused by trench fever, a disease new to active service in the field, which was definitely proved to be transmitted by the louse, and the louse only. It was estimated that at least 50 per cent. of the total sick admissions among troops in the line was primarily due to the presence of vermin, and arrangements have now been made to provide mobile laundries and bathing units for an army in the field, so that in future wars the men with care should be kept entirely free from vermin. Unfortunately, however, vermin are only too common in the civil population, though by the avoidance of overcrowding and the observance of ordinary cleanliness they can be eradicated entirely.

It is quite possible that the list of insects now known to be responsible for transmitting disease will be increased, and a closer study of many household insect pests certainly appears desirable. It has been estimated in the United

States of America that the loss of labour by all insect diseases costs the country over 300,000,000 dollars each year. During the war demands for repellants against lice, mosquitoes, and sand flies were constant and pressing, and the result of trials in many theatres of war left a feeling of doubt as to their practical value; many of them were very expensive and some difficult to obtain. To sift the problem properly, and to extricate from a mass of substances expected to act as efficient insecticides and repellants those which are reliable and effective under conditions of service in various countries, it would be necessary to institute an experimental station, where the various necessary insects can be bred and maintained so as to determine the value and action of insecticides and repellants, not only from a personal but also from an economic point of view. The bed-rock of control, said Sir Wilfred Beveridge, is efficient sanitation. The protection of food during manufacture and on exposure for sale is greatly neglected both in this country and abroad. Food is exposed to contamination by flies in shops and on the streets, in kitchens and stores, with little attempt at protection. In America, Canada, and Australia regulations are in force to prevent the contamination of food by exposure, and no food is allowed to be exposed for sale unless screened by glass or gauze. In houses the protection of food is a simple matter. The provision of screened meat safes, the screening of our store-rooms and kitchens, and the use of gauze coverings for cooked food set aside, such as those now sold as "fly foilers," is not an expensive matter and should never be neglected.

CHILD WELFARE PROPAGANDA.

A MEETING of the National Baby Week Council was held at Carnegie House on Nov. 18th, the chair being taken by Dr. W. J. Howarth in the absence of Prof. Bostock Hill. The subject for discussion was Propaganda by Local Authorities: Ways, Means, and Costs, and Dr. Howarth said that under the new Public Health Act local authorities were empowered to spend money on health propaganda, thus opening up opportunities not available hitherto. Dr. W. Allen Daley (M.O.H., Kingston-upon-Hull) spoke of various methods of health propaganda. Newspaper publicity was perhaps the most valuable, as nearly every home possessed one diligent reader of the paper who handed on news to the others and stored up information for future use. Health bulletins issued by public health departments were useful, but could only be afforded by the larger authorities. There was need for a central committee to act as a publicity and information bureau, to standardise the publications issued, so that none might show serious deviation from the general consensus of medical opinion. At a cost of from £10 to £20 a lecture, and by securing really good lecturers, Dr. Daley had found it possible to collect audiences of from 1000 to 3000, the most popular lectures being those illustrated by films. Health talks by panel doctors to their patients would be a paying proposition, and two doctors in Hull were adopting this plan. Posters were costly but useful, and broadcasting, health week exhibitions, and education of school-children were all valuable. Dr. James Fenton (M.O.H., Kensington) called attention to the fact that London was not included in the provisions of Section 67 of the Public Health Act. London boroughs did not enjoy the local patriotism enjoyed by towns, and the difficulty was rather to attract audiences than to obtain good lecturers. The ideal was to use the infant welfare centres as propaganda units and to make them educational centres. The Kensington Council had just appointed a whole-time woman lecturer, approved by the Ministry of Health, but, until the new Act applied to London, she would have to confine her efforts to maternity and child welfare. Groups of people considered by members of the audience to be in need of health education included municipal councillors, corporation officials—policemen, tramwaymen, and the like—and adolescent boys and girls.

A VISITING LIST FOR 1926.

Smith's Physicians and Surgeons' Visiting List,[1] consisting of diary, almanac, and book of engagements for 1926, appears this year for the eightieth time. A pocket-book which has not only satisfied three generations of practitioners, but has been modified by their friendly criticisms and has been constantly kept up to date in form, contents, and spacing carries its own recommendation. After the diary, which takes up the bulk of the book, come special sections for obstetric and vaccination engagements, memoranda, bills and accounts asked for, addresses of patients and of nurses, drugs and instruments wanted, and finally a list of things lent with space for name and address of the borrower. A medical man who uses the facilities here provided to their fullest extent cannot fail to profit by their methodical arrangement.

MALARIAL TOXIN.

Dr. I. Pentman, writing from the Pathological Institute at Omsk[1] in Western Siberia, relates the case of a boy of 10 who died comatose in a relapse of tertian (benign) malaria. *Post-mortem* examination showed that he had no other disease, and only *P. vivax* was found in his blood. There was degeneration and proliferation of the endothelium of the blood-vessels of the brain, also small hæmorrhages in the medulla and elsewhere, which accounted for the clinical symptoms. Dr. Pentman attributes this alteration of the endothelial cells to a definite malarial toxin, quoting in his support Pewnitsky (1903) and also Dürck in the German Medical History of the War. This toxin, even in quite acute cases, may cause waxy change in the kidneys and spleen, but not in the liver.

ROAD WISDOM.

THE familiar maxims known as "Pratt-itudes of the Road," which have recently appeared in the press, have been collected into a neat pamphlet under the title of "Road Wisdom," together with hints on garages, traffic driving, gear changing, and other subjects by expert motorists. The courtesy of the road still leaves something to be desired, and the little book contains useful reminders of road ethics. It may be had free on application to the Anglo-American Oil Co., Ltd., at 36, Queen Anne's-gate, London, S.W. 1.

A MISSION HOSPITAL IN NORTH CHINA.

THE Mosse Memorial Hospital at Ta Tung Fu, Shan Si, North China, was built as a memorial to the Rev. E. H. Mosse, who was killed by a bomb during an air raid in the neighbourhood of Covent Garden in 1918. The first annual report, dated 1924, is addressed to medical men and shows that during the year 1896 men and 568 women were treated as out-patients, a total of 2464 with return visits of 4272, making a total of 6736 attendances. There were 396 in-patients, of whom 329 were men and 67 women. Several cases necessitated abdominal surgery and there was a large amount of surgical tuberculosis, though the results of treatment in this last category were very poor. Trachoma, as might be expected, formed the bulk of the eye patients. The majority of operations were done under local or sacral anæsthesia, the latter for rectal operations. Severe rickets and osteomalacia are common and severe in the out-patient department, where syphilis is found to be widespread and the treatment of gonorrhœa is unsatisfactory as patients do not persevere. Most skin cases are syphilitic and scabies is frequent. The staff consists at present of Dr. D. S. Bryan-Brown, Dr. G. A. M. Hall, and a nursing sister with native assistants. A nursing school is in prospect.

QUICK REFERENCE.

TIRESOME as they may sometimes be, statistics are indispensable; they are the social worker's raw material, and they furnish the test of progress. The Permanent Consultative Committee on Official Statistics, set up by the Treasury in 1921, has just produced its third annual survey, covering the contents of all the official publications of 1924 and of some of those of 1925. The new volume[2] consists of two sections. The first and larger is a subject index with a comprehensive system of subheads and cross-references. The guide covers the whole field of official activities, from accidents and afforestation to women police and wrecks, but one has only to glance at titles such as children, deaths, disease, health, and so on, to see what valuable compilations of statistics are available of a kind likely to interest the medical profession. There are also of course, more specialised headings, such as factories and workshops, industrial fatigue, prostitution, vaccination and workmen's compensation—to name a few samples taken almost at random—which indicate the varied nature of the mass of information which our blue-books and other official publications contain. The second section comprises a list of those publications to which the subject index has referred. Medical practitioners and students of public health administration have seldom the leisure to read and digest the colossal output of departmental reports and returns, census figures, Royal Commissions' reports, and similar literature which H.M. Stationery Office pours forth. The less time they have, the more valuable is such a guide as this.

CHEYNE HOSPITAL FOR CHILDREN.—An exhibition and auction sale of oil and water colour paintings, drawings, engravings, jewellery, &c., in aid of the Cheyne Hospital for Children last week realised £750.

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[1] Smith's Medical Visiting Lists for 1926. London: Hazell, Watson & Viney, Ld., 52, Long Acre, London, W.C. Price, No. 3 for 75 patients (with journal), cloth 7*s.* 6*d.*, leather 10*s.* 6*d.*: No. 4 for 100 patients (without journal), cloth 10*s.*, leather 12*s.*

[1] Arch. f. Schiffs- u. Tropen-Hygiene, September, 1925.

[2] Guide to Current Official Statistics of the United Kingdom, Volume III. (1924). London: H.M. Stationery Office. 1925. Pp. 249. 1*s.*

An Address

ON THE

CASE FOR THE UNBORN CHILD.

Being the David Lloyd Roberts Lecture delivered at St. Mary's Hospital, Manchester, on Nov. 17th, 1925,

BY THOMAS WATTS EDEN, F.R.C.S. EDIN.,
F.R.C.P. LOND.,
CONSULTING OBSTETRIC PHYSICIAN, CHARING CROSS HOSPITAL, LONDON.

IT is universally accepted among us that the care of infants and young children is one of the chief concerns of the State and of society. Public interest in the matter has been one of the main forces behind those developments which in the last 25 years have brought down our infant mortality-rate from 154 to 75 per 1000. I am asking you on this occasion to consider to what extent we as medical practitioners are also concerned with the well-being of the child *before birth*. French obstetricians have for many years been much more concerned about all matters pertaining to infant mortality than we have, on account of their falling birth-rate, which has now reached a point at which the depopulation of that country may be said to have commenced. With their well-known gift for regarding questions in a strictly logical manner, the French have taken wide views, and many years ago Adolphe Pinard[1] pointed out that in reality the preservation of child life, or as they call it puèriculture, to which there is no exact English equivalent, must be considered in relation to three periods.

(1) The *pre-conceptional period*, in which the seed to be sown and the soil in which it is to germinate are the elements concerned; (2) the *intrauterine period*, in which development is carried from the blastomere stage up to the birth of the fully developed infant; (3) the *postnatal stage*.

With the preconceptional period we are not now concerned; in this field the eugenists would like to experiment, selecting and allotting candidates for marriage mainly from the point of view of their suitability for breeding, and scarcely at all from the point of view of individual preferences, tastes, or disposition. To this field belong such interesting questions as the varying degrees of fertility of different races, the causes which underlie the dying-out of some families, and the rapid multiplication of others. Nor need we enter the domain of the pædiatrician and discuss the questions associated with infant mortality and morbidity. It is Pinard's second period which concerns us—viz., that in which the child is developing in the uterus; this period is under the care of the obstetric department of medical practice. It is therefore part of our duty to consider whether there is anything we can do, and if so what, to ensure that the intrauterine child is given the best chance of completing its development, and entering upon its separate existence under the most favourable possible conditions. Strictly speaking, this period of the child's existence includes the birth process as well, and we cannot entirely overlook, in our review of the subject, the risks to which the child is subjected in the birth-process, although it will not be necessary to enter into much detail in that particular.

The subject obviously forms a branch of what is known now as antenatal work; usually this work is looked upon as being concerned with the expectant mother, and as such it is now understood and welcomed by the public. Antenatal work should not be regarded only as a maternal safeguard, although its primary object is to ensure that the expectant mother gets through her pregnancy with the minimum of risk, and that she enters upon her labour under the most favourable obstetrical conditions. The steady, although slight, diminution which has occurred in the total maternal mortality of childbearing—i.e., the mortality from all causes—during the last 20 years, and is still continuing, is due at any rate in part to widespread establishment of antenatal clinics, and to the enthusiastic band of medical and lay assistants who work these clinics. I think I can show, however, that the fœtal and infantile mortality of pregnancy and labour is appallingly high, and unless we regard this aspect of childbearing on its merits, and as distinct from, although supplementary to, the maternal risks, we shall fail to realise its great importance.

ANTENATAL CARE AS AFFECTING THE CHILD IN UTERO.

The question I am asking you to consider then is to what extent can antenatal care of the mother influence the well-being of the child in utero? Can we in any degree safeguard it against the risks of intrauterine death? or against premature expulsion either when non-viable, or later on when viable but heavily handicapped by prematurity? or from grave defects of development? or from transmitted intrauterine disease? or from the perils of the birth process? We have, perhaps, in the past been too much inclined to wash our hands of all responsibility for the child until it is born. We have considered its fate as lying in the hands of the two great forces which control development—viz., heredity and environment—forces which may well at first sight appear to be beyond our control. Heredity we must not stop to consider; environment, on the other hand, we should certainly consider carefully, making use of the term in its broadest possible signification.

The child in utero leads an extraordinarily sheltered existence, and can only be affected through the mother. Generally speaking, the relation of the fœtus to the mother is that of a parasite to its host, although Ballantyne, who did so much to arouse interest in the unborn child, inclined to the view that the relationship was a *symbiosis*—i.e., a kind of compromise in which parasite and host become of service to each other. The mechanism by which the embryo is formed, and the various stages of its organogenesis are completed, is an intrinsic embryonic mechanism. The embryo needs only food and shelter; given these necessaries it works out its own development. Should the supply of nutriment to the embryo be deficient in quantity or quality, or should it fall under the influence of poisonous substances which reach it from the mother's blood, or should its resting place be subject to injury from without, the environment will be so modified as to deflect the normal course of development and perhaps to render the continued existence of the embryo impossible. The number of infectious diseases which can be transmitted to the fœtus through the placenta is a very large one, and no useful purpose would be served by my detailing them to you. In some other conditions, such as the pregnancy toxæmias and chronic renal disease, the placenta may be damaged to such an extent as to cause the death of the fœtus. We know little or nothing of the effect which minor departures of maternal health produce upon the placental exchanges.

It is, perhaps, not unreasonable to suppose that not only what the pregnant woman eats and drinks, and the air she breathes, but also her occupations and even her emotions, may exert an influence upon the child in her womb. We know that the state of the circulation may be profoundly influenced through the nervous system, and the character of the glandular secretions may be modified by psychical influences. I have not time to mention instances of these changes, but given their occurrence in a pregnant woman it is not unreasonable to suppose that the placental interchanges may be modified by them. It may be a long time before we are able to estimate the degree of importance which should be attached to considerations such as these which are in the meantime merely speculative, but we shall, as we proceed, find reason to admit that the placental interchanges probably cover much that cannot properly be included in the functions of nutrition and respiration.

Next to the welfare of the mother our great concern in antenatal work is that the child should complete its proper period of intrauterine development and be born not only alive, but with the best possible chance of survival. Let us first of all consider what are the present chances of the child completing its intrauterine development and being born alive. It may be cut off either by miscarriage or by stillbirth; and further, if born alive, it may be born in a condition which renders its survival impossible, or at the best a matter of great uncertainty.

As regards the frequency of miscarriages there are, of course, no official figures in this or any other country. Some years ago my colleague, Dr. Amand Routh,[1a] attempted to estimate the frequency of miscarriages, partly from the experience of several clinical observers, and partly from returns obtained from certain cities in the U.S.A. His figures indicated that almost one in five of all pregnancies terminated in miscarriage. If this figure is to be accepted for our own country it would follow that in England and Wales in the year 1924 something like 190,000 pregnancies terminated in miscarriage. I do not suggest that we should accept this figure without reservation, but there can be no doubt that miscarriage is a very frequent occurrence.

Regarding stillbirth there is information available in this country but it is limited. We know the number of stillbirths notified under the Notification of Births Act, but no information as to the cause of death is given for stillbirths at all. Another source is the returns which are published by some but not by all of our lying-in hospitals. According to the report for 1924 of the chief medical officer to the Ministry of Health, over 25,000 stillbirths were notified in that year. This corresponds to a rate of 3·3 per cent. of live births. The total maternal mortality of child-bearing for the same year was 3·7 per 1000 live births, so that the stillbirth-rate alone, and taking no account of miscarriages, was roughly ten times greater than the total maternal mortality.

In France in the year 1922, according to Couvelaire,[2] the proportion of registered stillbirths (and only those are included which had passed the sixth month) amounted to 44 per 1000 live births. The same author shows that in France it is in the great centres of population that the highest stillbirth-rate is found; Paris had a rate in that year of 93 per 1000; a group of large towns a rate of 69 per 1000; rural departments only 26 per 1000. Fœtal death is, however, not the only consideration to be borne in mind. Many infants born alive die in the very early days of the neonatal period from injury received in labour, from prematurity, from disease, or from debility of unknown origin. It is clear, therefore, that if we are properly to envisage the problem of prevention we must endeavour to bring into view all the conditions which are capable of influencing the well-being of the child during its intrauterine development.

Ballantyne[3] divided the duration of intrauterine life into three periods, and it will be a help to us to make use of his classification. The three periods were: first, the *embryonic period*, which extends from the act of fertilisation to the end of the eighth week; second, the *fœtal period*, from the end of the eighth week to the onset of labour; third, the *intranatal period*, comprising the birth process itself.

1. The Embryonic Period.

The embryonic period is that in which are laid down the sex of the offspring, its inheritance of hereditary characters, and the general plan of all the organs of the body. Ballantyne also speaks of it as the organo-genetic period. Sex and inheritance are decided, according to modern views of development, at the moment of the first segmentation of the fertilised ovum. Malformations of all kinds are initiated in the embryonic period. The mechanism by which the sex of the individual is determined and also its inheritance of hereditary characters, in view of recent biological advances is now clearer than it has ever been before; it even appears to be not impossible that experimental means may be found of altering the sex ratio, that is, the proportion of males to females, in the case of some creatures such as insects. It is therefore not out of the question that not we ourselves, but those who may follow us, will discover some practical method of influencing the segmentation of the ovum in the direction of maleness, or femaleness, at will. It will consequently be well for us to keep in mind as clear a conception as we can of the biological hypotheses of to-day relating to the determination of sex and of heredity.

Sex Determination.

Modern biological research first placed the difficult subject upon a firm foundation in the case of insects and certain genera of birds, and there is little doubt that in principle these results are applicable to the higher animals.

Sex is determined at the moment of fertilisation—i.e., when the male and female gametes unite, and the arrangements are such as to produce an approximately equal number of individuals of either sex. When the gamete or sex cell divides its nucleus breaks up into a series of dense, deeply-staining bodies known as chromosomes; each species of creature has its own special number and arrangement of chromosomes which are constant for that species. After division of the gamete each daughter cell contains the same number and arrangement of chromosomes as the parent cell. Before the male and female cells fuse in the act of fertilisation, certain preparatory changes take place in the chromosomes. They become arranged in pairs, and as a result of cell-division the two members of each pair separate from one another so that each resulting nucleus contains only half the original number of chromosomes. This is called the *reduction-division* and it is accomplished in the human egg-cell by the extrusion of the polar bodies. In the chromosomes are carried the elements which determine sex and also those which determine hereditary characteristics. The reduction division is the mechanism by which variations in inherited characteristics are produced, the elements extruded at this moment representing the hereditary traits which will be absent in the new individual.

It is obvious that this mechanism gives possibilities of an almost endless variety of combinations of hereditary characteristics, and is comparable to the shuffling of a pack of cards. It offers an easy explanation of the differences both physical and temperamental which are so commonly observed in children of the same parents. Indeed, with the exception of "identical twins"—i.e., uniovular twins of the same sex and identical physical characteristics, these variations are almost universal. The close similarity of uniovular twins of the same sex strongly supports the view that this form of twin results from the fertilisation of a single egg-cell.

It is known that in certain insects the number of chromosomes differs in the two sexes, the female having one more than the male; a similar difference between the two sexes exists in the case of many other creatures. The sex-chromosomes are called X-chromosomes and in the simplest form the female has two similar chromosomes XX; in the male there are two dissimilar sex-chromosomes—viz., XY, the female always has XX. After the reduction-division has occurred the female gamete will, in consequence, always contain an X chromosome; in the case of the male gamete one-half will contain an X, another will contain a Y chromosome. If an X female fuses with an X male the result will be XX—i.e., female; or if X female fuses with Y male the result will be XY—i.e., male.

Certain experimental work which has been done in the case of insects and birds, however, appears to indicate that the proportion of individuals of either sex may be altered to some extent by external influences. Leiter found in experimenting with the eggs of certain moths that by exposing them to a temperature of 35–37° C. (about 90° F.) the proportion of male individuals was markedly increased, while conversely a similar exposure to a low temperature markedly decreased this proportion. In the case of pigeons experimental work has so far advanced that in the words of Julian Huxley,[4] "there exists a very strong probability that we shall be able to find some agency which will alter the sex-ratio to suit our wishes."

He would be a bold man who would affirm that these results are incapable of extension to the case of the higher animals such as the mammalia. At the present moment we are not justified in assuming that they can be so applied, for it is obvious that in animals which carry their young in the womb, the fœtal environment could be modified, if at all, only with the greatest difficulty in the direction of altering its temperature. Of course, rises of body temperature are not uncommon, but when fever occurs in pregnant women the ovum is subjected not merely to the raised temperature of the body but also to the toxic bodies which result from fever or those to which the fever is due. The experiment of subjecting the mammalian ovum during segmentation to an elevated temperature uncomplicated by other changes seems almost impossible of attainment.

The idea that it was possible by extraneous measures to determine the sex of the unborn child has been tenaciously held since the beginning of history. Gifts to pagan deities and pilgrimages to shrines of saints represent the appeal to the supernatural which human nature is prone to make on all critical occasions. These are, however, not, strictly speaking, therapeutic measures and do not concern us now. The belief still persists among the laity that matters can be so arranged by husband and wife as to produce a child of the desired sex, but this belief has no basis in accredited facts.

Malformations.

Let us in the next place consider the causation of malformations. We have seen that the embryonic period is the time at which those deflections from the normal course of development occur which result in the production of malformations of all kinds. There was no clear idea possible of the causation of these defects until it was shown by experiment that they could be produced by subjecting the developing embryo to various kinds of abnormal stimuli; from small beginnings an extensive field of experimental teratology has now been covered, and it appears that there is no known malformation which cannot be experimentally reproduced, in the case of certain classes of animals. It is, of course, admitted that the particular stimuli which have been made use of experimentally could not well be applied to the mammalian embryo. They are all sufficiently powerful to produce actual injury, and their effects may fairly be classed as traumatic. These experiments lead us to believe that the cause of malformations in man must be sought in some alteration of environment which would be comparable to the physical or mechanical stimuli used in these experiments.

It would serve no practical purpose to enter at all fully into it, but one or two examples may be cited of the results of injury of the segmenting ovum. The expression "injury" must be understood to include all abnormal stimuli, mechanical, thermal, chemical, and electrical.

Some of the earliest experiments were made with the incubation of hen's eggs, when it was found that variation in the temperature of the hatching medium in either direction resulted in the production of a large percentage of deformed chicks. By shaking the eggs, or standing them up on end St. Hilaire produced double-monster chicks. Other observers worked with chemical stimuli, and it was found that the injection of alcohol into the blastomere of the incubating egg produced a large percentage of deformed chicks. The more toxic forms of alcohol, such as isopropyl alcohol, might result in the appearance of over 80 per cent. of such deformities (Féré).[5]

More recently experiments have been made with the ova of sea-urchins and similar forms. It has been discovered that by violently shaking the fertilised ova in a centrifuge, the component cells become separated from one another, and each separate cell may then develop a complete individual of proportionately smaller size than the normal. These latter experiments support the view that triplet, quadruplet, or quintuplet pregnancy may possibly be accounted for, not by simultaneous fertilisation of more than one ovum, but by traumatic separation of the cells of the blastomere at a very early stage of its formation. With ascidian ova it has been shown that if, in the two-cell stage, one cell is destroyed by heat the other develops into a half-embryo. Similarly, if in the four-cell stage the two posterior cells are destroyed the remaining ones develop into an embryo minus a tail and other hinder parts. Another observer found that in the frog also a hemi-embryo could be produced in much the same manner as in the ascidian, but his results lack confirmation (Rowe). Further, if the frog's egg be turned upside down in the two-celled stage, double-bodied or double-headed embryos may result. Siamese twins and two-headed forms in man probably result from partial separation of the cleavage cells. In vertebrate animals spina bifida has been produced by changes in temperature, and in other cases cyclops has been produced.

We must not conclude that traumatism is the invariable cause of malformations, because F. W. Browne[6] has shown that there is good reason to believe that the anencephalic fœtus is the result of non-development of the pituitary body. And further, remarkable effects may be produced by alterations of nutrition. At any rate, it is clear from what has been said that deformities should not be regarded as mere freaks of the developmental forces, or as the result of hereditary vicious tendencies. The future may possibly teach us the nature of the terato-genetic traumata which operate in man and how to avoid them. At the moment we have no gleam of light on the subject.

Causes of Embryonic Death.

Of the actual causes of death in the embryonic period we know little, and there is no reliable basis on which an estimate can be formed of the frequency of embryonic death. It is probable that a considerable number of miscarriages occur which are not the result of disease, but are either produced by slight traumatic causes or are due to a certain unfitness of the early embryo to complete its development. In all creatures the reproductive process is attended by a certain amount of wastage.

It is not the rule of nature that all the ova which ripen and are discharged from the ovary should become fertilised, nor that all those which do become fertilised should complete their development into new individuals. The character and cause of this normal wastage have been carefully examined by Arthur Robinson[7] in the case of horses and ferrets, the former being either Clydesdales or thoroughbreds, about which accurate details as to mating and foaling could be obtained. Robinson showed that in ferrets a considerable proportion of the zygotes or fertilised ova perished at various stages of development, although in the same uterine cornu neighbouring zygotes on either side of them developed normally. He regarded their death as being due to structural unfitness of the zygote to fulfil its destiny, and not to any abnormal maternal condition. In this conclusion he was no doubt right. The occurrence of fœtal death in the case of mares is not clearly proved by Robinson's data, and it would appear that his conclusions are mainly to be read as applicable to animals which produce their young in litters, and in whom, consequently, a high fœtal death-rate would not be prejudicial to the continuance of the species.

In animals which produce only one, or at the most two, young at birth, like mares, a high fœtal death-rate would be of graver significance. It may be admitted, however, that in man it is, at any rate, probable that a certain unknown proportion of the abortions which occur, and for which no pathological explanation can be found, may be set down to the reproductive wastage described by Robinson.

2. THE FŒTAL PERIOD.

Before proceeding to consider the conditions which are mainly accountable for loss of fœtal life, it will be well to review one or two matters which are concerned with what may be called the general hygiene of the fœtus in utero. Let us look at the case of the child of healthy parents, suffering from no disease which can be transmitted to it such as the infections, or which can prove inimical to its continued existence such as toxic albuminuria and eclampsia. Besides providing it with food and shelter, does a healthy mother influence the condition of the child in utero by her own physical health, or by her occupation, or by the struggle for existence?

Transmission of Immunity.

On the threshold of this question lies the subject of the transmission of immunity. Is the new-born child in any way prepared, by the transplacental passage of immunity bodies from the mother, to resist infection acquired after birth? Clinicians have frequently drawn attention to the great susceptibility of young infants to infections of all kinds, and the view has been often expressed that the child does not acquire a power of actively resisting infection until the second year has been passed. Passive immunity may, however, to some extent be acquired from the mother—i.e., antibodies present in the mother serve to confer a certain measure of protection upon the child while its own powers of resistance are undeveloped. It will, perhaps, be of interest to summarise as well as I am able the present state of our knowledge on this subject.

For a long time it was thought that such antibodies as the young infant possesses reach it through the mammary secretion, and that mainly through the special secretion of the first two to three days, known as the colostrum. This view was the outcome of experimental work done on ruminant animals such as the cow, the goat, sheep, and also on pigs and horses. In these animals antibodies do not reach the fœtus in utero at all, but they are present in large amount in the breast milk, and can be found in the blood of the young after suckling. Two American observers, Kuttner and Ratner,[7] have recently shown that these results do not hold good for all mammalia, and that in certain rodents antibodies can be detected in the umbilical blood at birth. Similarly, these observers have shown that antibodies can also be found at birth in the blood of the new-born human infant. This difference between ruminants and rodents is attributed by these investigators to a difference in placentation; in the former the placenta consists of a double layer of epithelium, while in rodents and in man the placental epithelium consists of only a single layer, and is therefore more readily permeable.

The experimental work has been done mostly with the antitoxin of diphtheria, because in the cutaneous reaction known as the Schick test we have a very convenient means of checking the individual power of resistance to the diphtheria toxin. I may remind you that the Schick test consists in the intradermal injection of a specific dose of a graduated solution of diphtheria toxin; if this dose is inadequately "resisted" by the tissues a local reaction occurs in 24–36 hours; if the resistance is adequate there is no local reaction. A positive result is therefore an indication that the individual is inadequately protected.

Kuttner and Ratner found in a series of 30 observations that whenever the mother gave a Schick negative test, the diphtheria antitoxin could be detected in the blood of the umbilical cord as well as in that of the mother. In a further series of 15 cases in which quantitative tests were applied, they found that the amount of antitoxin in the umbilical blood was identical with that in the mother's blood. This observation has been amply confirmed by other investigators. There is, therefore, in these animals (rodents) no loss of antitoxin in passage through the placenta, which clearly allows these bodies to pass through freely. These immunity bodies transmitted from the mother's blood during pregnancy would confer immunity on the child, in the same degree as it exists in the mother.

The observation was first made in 1895, and has since been established beyond question by numerous observers, that the new-born child is protected against diphtheria. According to Zinsser,[8] 93 per cent. of new-born infants give a negative Schick reaction provided that the mothers are negative also. This protection diminishes during the first year, so that at the beginning of the second year two out of every three infants have no antitoxin in their serum. The immunity of the new-born infant is brought about by the transplacental distribution of the antitoxin present in the mother's blood, and, as we have just seen, the amount of antitoxin is the same in both the mother's and the child's blood.

These American authors further made a comparison between the protective value of the umbilical blood and that of the colostrum in guinea-pigs. In 9 cases out of 12 the cord-blood gave complete protection against a lethal dose of diphtheria toxin, while colostrum gave complete protection in only 1 out of 12; further, they found that the antigen content of the blood of the young was not raised after suckling had begun. It is, therefore, clear that in these creatures immunity bodies pass to the fœtus mainly through the placenta, and only to an inconsiderable extent is this amount supplemented from the mammary secretions. In the case of calves, on the other hand, it appears that the colostrum is the chief vehicle by which immunity bodies pass to the young; this fact is confirmed by a striking clinical observation that while calves deprived of suckling regularly fall a prey to the disease known as "scours," a form of *Bacillus coli* infection characterised by diarrhœa, those which are suckled are completely protected from the disease. Owing to the fact that the rodents and man have a similar form of placentation—i.e., a single-layered epithelial filter, it is probable that results obtained with these animals are more likely to throw light upon what occurs in man than are experiments with ruminant animals.

One further observation I should like to mention in relation to immunity. Kleinoff[9] claims to have shown that the umbilical blood of the new-born child possesses definite hæmolytic or bacteriolytic powers. He found that if the serum of the infant's blood were added to cultures of certain bacteria the growth of these organisms was inhibited, and in some cases the bacteria were broken up. The effect is the same, although less in degree than that obtained with the blood-serum of an adult. It is clear, therefore, that the fœtus acquires certain passive immunities in utero through the placental interchanges. What may be the actual extent of this process of passive immunisation of the child we cannot tell in the meantime. A very wide field is opened up by these suggestive experiments, and although at present the number of infections in respect of which it is possible to confer passive immunity is not large, it must be remembered that the science of immunology is in its infancy, and great developments may be witnessed in the future.

Effect of General Maternal Conditions.

Next we must consider to what extent the well-being of the fœtus in utero can be influenced by general maternal conditions such as nutrition, occupation, hardship, and what we may perhaps term "nervous stress." The tendency within the profession has been to consider that the child in utero, like all parasitic organisms, would succeed in looking after itself no matter how much the mother might suffer from such conditions as hardship or under-feeding. It is doubtful if this view can be maintained absolutely, and there are certain facts and considerations bearing upon the point to which I should like to draw your attention. It will be convenient if in the first place we consider conditions which may conceivably be detrimental to the fœtus in utero without actually terminating in miscarriage or stillbirth.

If an inquiry is made as to what extent the occupation and environment of the expectant mother may affect the well-being of the child at birth, a serious difficulty is at once encountered—viz., that it is very difficult to find any reliable criteria of well-being in the new-born except that of weight and length. It does not necessarily follow that the heaviest infants are the most vigorous at birth, or that they make better progress than the others. There are, undoubtedly, exceptions, but, as a rule, babies under the average weight at birth are less vigorous than those of normal or more than normal weight. It does not necessarily follow that every few grammes added to the weight of the child add in corresponding degree to its vigour and to its chances of survival. It is, however, an arguable proposition that such is the case, and certain investigations have been made upon this assumption which are worthy of our consideration.

Effect of Maternal Occupation on the Child.

Adolphe Pinard[1] was for many years an advocate of the view that women engaged in industry who continued at their work during the last three months of pregnancy showed a marked tendency to premature confinement; their infants were accordingly under-sized and less vigorous than full-time children. He carried out an inquiry as to the weight of the child at birth in different classes of women, with a view to testing the effects on the child of the mother's occupation, and particularly as to the value of cessation of work and admission to the clinique well in advance of the confinement. Investigations on similar lines were made about the same time by Letourner.

The results of Pinard's examination of 4445 cases were as follows:—

	Average weight at birth.
1. Women industrially occupied up to time of confinement and working in standing position	2787 g.
2. Women industrially occupied working in sitting position	3133 g.
3. Women who ceased their work from one to three months before confinement	3362 g.

This difference between the women who were engaged in hard industrial work up to confinement, and those who had ceased work for at least a month, is represented by an average increase in the weight of the infants of the latter of 575 g. The increase in the children of the women who rested is attributed by Pinard solely to the fact that these women carried their infants to term, while an undue proportion of the others did not.

Letourner's results were very similar. He divided the subjects of his inquiry into three classes as follows:—

	Average weight.
1. Women who worked up to confinement ..	3010 g.
2. Women who ceased work for at least ten days ..	3290 g.
3. Women who were admitted to the clinique before labour	3366 g.

An independent inquiry was being carried on about the same time in Germany and the results were reported by Fuchs in 1890.[14] His work was done on somewhat different lines and is perhaps more convincing than that of Pinard. He rightly thought that in investigating the effects of maternal occupation on the weight of the child the comparison should be made strictly between infants of an equal degree of development, and he accordingly excluded all premature infants from his inquiry. Incidentally, it may be said that he disagreed with Pinard's conclusion that continuance in industrial work tended to result in premature labour.

Fuchs classified his cases into occupational groups:—

	Average weight at term.
1. Domestic service and allied occupations—	
(a) No hospital treatment	3285·33 g.
(b) Hospital treatment	3437·16 g. (+152)
2. Dairy and other agricultural work—	
(a) No hospital treatment	3324·65 g.
(b) Hospital treatment	3354·50 g. (+ 30)
3. Factory workers—	
(a) No hospital treatment	2948·35 g.
(b) Hospital treatment	3123·75 g. (+175)
4. Light work only—	
(a) No hospital treatment	3196·42 g.
(b) Hospital treatment	3305·70 g. (+109)
5. Married women, housekeepers, &c.—	
(a) No hospital treatment	3278·45 g.
(b) Hospital treatment	3410·15 g. (+130)

The main conclusions which appear from Fuchs's observations are (1) that the infants of factory workers are smaller than those of the other classes, (2) that the infants of all classes of patients benefit by a hospital régime during the latter weeks of pregnancy, (3) that especially women who work in factories, and to a less extent town workers generally, benefit more from the hospital régime than do women engaged in outdoor agricultural occupations. These conclusions serve to emphasise the generally accredited view that country women engaged in farm work, who are necessarily of good physique, who are engaged in outdoor occupation, and are well-fed, are the most likely to produce vigorous and well-developed infants. The problem of the weakly infants whose chances of survival are below the average is essentially an urban problem.

Effect of Maternal Privation and Hardship.

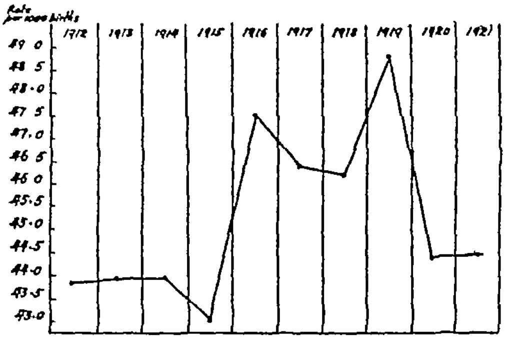
Closely linked to the question of fatiguing occupation is the question to what extent privation and hardship endured by the mother during pregnancy can influence the well-being of the child in utero. The experience of the Central European countries during and immediately after the war has shown us the result of an experiment on a scale far exceeding that which would be possible under any ordinary circumstances. The reports from Germany and Austria were almost unanimous that no appreciable diminution could be detected in the average weight or length of infants born during these years of privation. One authority, Prof. Klotz,[11] of Lübeck, has, however, noted a point which is worthy of consideration. In the years 1919 and 1920, which were perhaps even more difficult for the lower classes in Germany than the actual war period, Klotz found that if a comparison were made between the legitimate and illegitimate infants it was found that while the former showed no difference in weight between pre-war years and these two post-war years, it was not so with the illegitimate infants, and he gives the following figures:—

Average Birth Weights Before and After the War (Klotz.)

	Legitimate.	Illegitimate.
1913	3742 g.	3671 g.
1914	3819 g.	3521 g.
1919	3789 g.	3481 g.
1920	3810 g.	3569 g.

It is to be borne in mind that for a long time before the war the proportion of illegitimate births in Germany was unusually high—viz., between 9 and 10 per cent. of the total births. This already high proportion increased during the war period because the number of legitimate births became reduced at a much greater rate than the illegitimate ones. The stress of hardship and want will naturally fall more heavily on the illegitimate mothers than on others, and it is not unreasonable to suppose from these data that there is a limit beyond which such conditions as privation and hardship would become definitely detrimental to the child in utero (see chart).

While we are speaking of the effects of war conditions, I should like to call attention to a further point—viz., their influence upon the occurrence of stillbirths. The accompanying chart shows the changes which occurred in the stillbirth-rate in France during the period covered by the war and the two following years. The figures are worked out in their ratio to the total births, and it will be seen that a marked rise in the stillbirth-rate occurred during the years 1916–19.



The figure for 1914 is a provisional one.

The corresponding figures for our own country are not available. War conditions included so many different varieties of privation and nervous stress that it is impossible to attempt any explanation of their modus operandi. We must simply record the fact that there is a point beyond which such conditions are unfavourable to the proper development of the fœtus in utero.

There is one more study of the effects of maternal nutrition on the new-born child to which I should like to refer—viz., that published by Darwall Smith[12] in 1916. He closely examined the records of over 6000 hospital cases in London and Dublin with regard to the ratio of height to weight, the nutritional history, and the observed nutritional condition of the mother on admission and on discharge from the hospital. He divided his cases into three groups—those in which the nutritional condition of the mother were (*a*) bad, (*b*) average, and (*c*) good—and his conclusions as regards the influence of these conditions (1) on fœtal mortality, (2) on prematurity, (3) on the birth weight are of great interest.

	Condition.		
	Good.	Average.	Bad.
Fœtal mortality	1·9%	.. 1·1%	.. 7·7%
Prematurity	1·3%	.. 2·7%	.. 11·9%

As regards the birth weight, Darwall Smith found that there was little difference between the classes of bad and average nutrition, but the infants in the class of good—i.e., over-average—conditions were decidedly above the average weight.

These observations suggest that a bad nutritional condition of the mother greatly increases the percentage of stillbirths and of premature labours, and slightly decreases the birth weight. The mothers who were over-nourished showed a considerable average increase in birth weight, and a higher percentage of them were able to suckle their babies.

Effect of Maternal Diet.

A question related to that which we have just considered, but in reality distinct from it, is whether specific deficiencies in the mother's diet can influence the development of the fœtus. It is obvious that this may be so, although general insufficiency of food may be without effect. In its clinical aspect this question has hardly been explored at all, so far as I am able to find, but there is a certain amount of experimental work which I think deserves notice. In 1921 Reynolds, of Boston, well known in the United States for his interest in the subject of sterility, published in conjunction with Macomber a series of observations on the manner in which the fertility of rats could be influenced by feeding them on specifically deficient diets.[13] In his experiments he took a certain strain of albino rats which had been inbred for 34 generations, and whose fertility-rate was well determined. The rate was somewhat lower than that of rats of a heterogenetic strain.

For the purpose of his experiments the rats were fed upon four different kinds of deficiency diet; the deficient elements were not absent from the diet, but were present in quantity somewhat less than the standard quantities of the stock diet, with which they were compared. The four varieties were:—

1. Low in fat-soluble vitamin.
2. Low in protein.
3. Low in calcium.
4. Double deficiency — i.e., low in protein and fat-soluble vitamins, high in carbohydrates.

The test consisted of determining the number of matings which proved fertile, and resulted in litters, under each form of diet, and the results were as follows:—

	Per cent.		Per cent.
On stock diet..	66	On diet No. 2	31
On diet No. 1	55	On diet No. 3	14

In addition to diminishing the number of fertile matings it was found that the progeny of these animals did not begin to breed until a more advanced age than the stock rats, and the total period of their sexual activity was reduced. By continuing the deficiency diet through several generations complete infertility could be produced. These infertile rats were apparently well-developed animals with the exception of those bred under a double-deficiency diet which were feeble and undersized.

The authors made a further very interesting observation—viz., that abortion with a macerated fœtus occurred in eight instances out of a comparatively small number of rats on a double-deficiency diet. After an extensive search through the literature of rat-breeding they had failed to discover an instance of this occurrence under other conditions. The authors further state that Steinbock has also reported the birth of macerated fœtuses in cattle and swine fed on similar deficiency diets.

It cannot be questioned that these observations of Reynolds and Macomber are very suggestive. It is difficult to make tests of sufficient numbers of cases in clinical work, but occasional opportunities may arise of seeking the explanation of failure to conceive, or after conception, of failure to carry the child to term, in deficiency of some important dietetic element. We have all seen those rare but puzzling cases in which a woman has on several occasions carried her child almost to term, and then for some quite obscure reason the fœtus has died in utero before labour has set in. Such cases, of course, are generally syphilitic, but failing this explanation, it would be worth while to explore the possibility of a dietetic deficiency being the operative cause. Occasional instances of what used to be called "habitual abortion" may also possibly arise from some dietetic fault.

The calcium content of the diet of an expectant mother is especially deserving of consideration. Blair Bell has estimated that the mother parts with 800 g. of calcium during the nine months of pregnancy; unless the element is freely renewed in the diet, it is quite possible that the fœtus may be calcium-starved with disastrous effects to its vitality. Milk and green vegetables are the principal dietetic sources of calcium, and this element can, of course, be readily supplemented medicinally.

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(*Continued at foot of next page.*)

Clinical Lecture

ON

TRIPLE PUNCTURE:

LUMBAR, CISTERNAL, AND VENTRICULAR.

Delivered at Westminster Hospital

BY SIR JAMES PURVES-STEWART, K.C.M.G., C.B., M.D. EDIN., F.R.C.P. LOND.,
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WITHDRAWAL of the cerebro-spinal fluid is a familiar clinical procedure which has now been practised regularly for over 20 years. It is recognised as being of the highest value, sometimes for purposes of diagnosis, in other cases for treatment. A large and increasing literature has grown up with regard to this fluid, its pressure, its cellular content, its chemical composition, and its various pathological reactions, such as the Wassermann reaction, the colloidal gold and colloidal benzoin tests, and so on. These reactions I do not propose to discuss, but shall confine myself to a consideration of the various ways in which the cerebro-spinal fluid can be withdrawn for purposes of examination.

ANATOMY.

Let us first recall a few anatomical points. It is now well recognised that the cerebro-spinal fluid circulates slowly through an endothelial-lined system of its own. It is secreted by the capillaries of the choroid plexuses into the cerebral ventricles, much in the same way as the watery constituent of the urine is secreted by the renal capillaries into the glomeruli of the kidney. Starting at the lateral ventricles, the cerebro-spinal fluid flows slowly downwards along the Y-shaped foramen of Monro into the third ventricle. Here it receives accretions of fluid from the small plexuses within this ventricle; it also receives, through the infundibulum, the secretion of the posterior lobe of the pituitary gland. Then, passing along the aqueduct of Sylvius, or iter, the fluid reaches the fourth ventricle, again receiving accretions from the choroid plexuses of the fourth ventricle. From the fourth ventricle it passes back into the *cisterna magna* or *spino-cerebellaris* through three openings in the pia-arachnoid. One of these openings, the foramen of Magendie, is situated mesially in the roof of the fourth ventricle; the others are the bilateral foramina of Luschka, situated in each lateral recess of the ventricle. The direction of the stream now changes. It turns forwards, coursing from the *cisterna magna* along the ventral aspect of the medulla, pons, and mid-brain, to the wide and deep *cisterna basilaris, pontis, or interpeduncularis*, a quadrilateral space extending laterally from one temporal lobe to the other and postero-anteriorly from the upper border of the pons to the optic chiasma. At the chiasma the stream turns upwards again to enter another cistern, the *cisterna terminalis*, a triangular space whose base is at the optic chiasma whilst its apex is directed upwards beneath the anterior end of the corpus callosum, surrounding the anterior cerebral arteries. The basilar cistern comprises three parallel longitudinal channels, one in the middle line, surrounding the basilar artery, and one on each side, enclosing the internal carotid artery. From each side again a lateral continuation passes outwards and upwards, constituting the *cisterna fossæ Sylvii*, leading along the course of the middle cerebral artery. Finally, there is a *cisterna venæ magnæ*, situated between the hinder end of the corpus callosum and the upper surface of the middle lobe of the cerebellum, containing the posterior cerebral arteries and the vein of Galen.

Passing from the cisterns along these various peri-arterial arachnoidal channels into the cerebral fissures, the cerebro-spinal fluid is ultimately distributed to the meshes of the subarachnoid space in the sulci of the cerebral cortex and to the arachnoidal villi and Pacchionan bodies. In these situations it is reabsorbed into the blood circulation through the venous sinuses in the dura mater. There are also certain funnel-shaped prolongations of the subarachnoid space which surround the cranial and spinal nerves as far as their foramina of exit through the dura mater. These are specially evident around the optic and trigeminal nerves. Thus the Gasserian ganglion of the trigeminal nerve lies in a special little arachnoidal pond, a diverticulum of the cisterna pontis, known as the *cavum Meckelii*. The subarachnoid cerebro-spinal fluid also communicates through the internal auditory meatus with the perilymph of the internal ear. From the cisterna magna there is also a slow downward current around the spinal cord, leading to the lowest end of the spinal subarachnoid space. Some of the spinal fluid escapes en route into the interpial lymph spaces and thence outwards along the peri-radicular lymph spaces. There is also a contrary upward current within the spinal cord itself, leading upwards to the fourth ventricle.

PHYSIOLOGY.

Let me also recall one or two physiological points. By experiments it has been shown that most of the cerebro-spinal fluid is reabsorbed through the cerebral arachnoid spaces, and only a small proportion through the spinal subarachnoid space. It is doubtful whether any absorption takes place from the cisternæ, whose main function is that of large conduits leading the fluid from the ventricles towards the surface of the brain.

The posterior lobe of the pituitary gland pours its secretion into the cerebro-spinal fluid of the third ventricle through the hollow infundibulum. The cerebro-spinal fluid also receives various products of metabolism from the nerve centres through the peri-neuronal and perivascular lymph spaces of the brain and spinal cord, which communicate directly with the general subarachnoid space.

Some poisons, such as salvarsan, which easily gain entrance into the blood stream, are held up and prevented from reaching the central nervous system by the activity of the choroid plexuses, which act as a protective hæmato-encephalic barrier. On the other hand, various other drugs are not held up, but pass through the choroidal filter and can be detected in the cerebro-spinal fluid. Thus, for example, urotropin taken by the mouth can be shown to yield formic aldehyde in the cerebro-spinal fluid, whilst in acute alcoholic poisoning, as we have repeatedly observed for ourselves in hospital, alcohol can be demonstrated in the fluid within two or three hours after it has been drunk.

POSSIBLE SITES FOR WITHDRAWAL OF CEREBRO-SPINAL FLUID.

From what we have already seen, it is evident that there are various ponds or collections of cerebro-spinal fluid, more or less accessible to the clinician, from which we can obtain samples of the fluid for purposes of examination. Let me mention one or two of the less common sites first.

Fractures of the base of the skull may permit of escape of cerebro-spinal fluid from the cranium. Sometimes this occurs through a broken cribriform

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(*Address to be concluded next week.*)

plate of the ethmoid, so that the fluid leaks down into the nose; sometimes it results from fracture of the temporal bone, causing escape of fluid through the ear.

Some years ago Beriel, of Lyon, devised a method of passing a needle along the orbit into the *cisterna basilaris*. The needle was passed along the orbit, close to its outer wall, and pushed through the dense fibrous tissue which fills up the sphenoidal fissure. Clinicians, however, found this method inconvenient, not only on account of its painfulness, but also because of the liability to wound the cavernous sinus.

Another rare and accidental path of obtaining the fluid is from the cavum Meckelii, through the foramen ovale at the base of the skull. This happened to me one day when I was injecting the Gasserian ganglion with alcohol in a patient with trigeminal neuralgia. The needle had been introduced longitudinally along the foramen ovale in the usual way, from before backwards. Before injecting the alcohol, I happened to notice that clear fluid was dropping from the facial end of the needle. This was collected in a test-tube and was found to give the ordinary reactions of cerebro-spinal fluid, including its reaction for glucose. It was thus evident that the point of the needle was in the cavum Meckelii. This route, however, is too uncertain to be reached except by a happy accident and is not recommended as a mode of approach.

We now come to what we may term the normal modes of obtaining the cerebro-spinal fluid.

(1) LUMBAR PUNCTURE.

This is the commonest, simplest, and most useful method for routine withdrawal of the fluid. The spinal theca is entered through one or other of the interlaminal spaces, somewhere between the level of the second lumbar vertebra where the spinal cord ends, and the second sacral vertebra where the fluid-containing cavity of the spinal arachnoid comes to an end. The two widest interlaminal spaces are the third and fourth lumbar spaces. We usually select the fourth space, which, as a rule, is slightly the larger. To identify this space we draw a horizontal line at the level of the summits of the iliac crests; this line intersects the tip of the fourth lumbar spine. The patient is most conveniently placed on a rather low seat, stooping forwards, with his head between his knees and his knuckles touching the ground. In this posture the interlaminal spaces are separated to their maximal extent. Or, if the patient is in bed and unable to assume the foregoing posture, we make him lie horizontally on his left side with his hips fully flexed, so that the knees touch the chin. In an unconscious patient, and even in one who is delirious or violent, this may be accomplished by passing one loop [of a roller-towel over the neck, then passing the far end of the roll (both layers) beneath the patient's flexed knees, and pulling them up towards his face. Or a strong stout portmanteau-strap may be used for the same purpose if we happen to be single-handed.

By means of iodine we carefully sterilise the skin in the region of our puncture, usually including an area which covers two or three consecutive inter-spaces. Then, having frozen the skin with an ethyl chloride spray, we make our puncture, using a fine platinum or nickel needle, which can be boiled without rusting. In a child we may enter straight in the middle line, but in the adult, in order to avoid the dense interspinous ligament, it is convenient to select a point about half an inch to the right of the middle line (if the operator is a right-handed person). We now push our needle horizontally forwards, converging towards the middle line. If we have selected our level accurately no bone is touched and the needle passes directly through the spinal muscles until it reaches the ligamentum subflavum between the laminæ. Through this ligament the needle passes easily with a characteristic sense of resistance and at once perforates the spinal theca which lies in immediate contact with the ligament. In a successful puncture, after the sense of resistance, we suddenly feel that the point of our needle is no longer opposed but in an open cavity. On withdrawing the stilette which fills the needle, the clear cerebro-spinal fluid at once begins to well out, drop by drop.

During this process one or two minor impediments may occur, for which we must be prepared. First, if our level is not quite accurate, or if the patient has osteophytes projecting from his spinous processes or laminæ, the point of the needle may strike a bone. It is no use trying to push forcibly through this; we would only bend or break our needle. The proper thing is to withdraw the needle slightly, change its direction of puncture to a level either slightly above or slightly below, and try again. Secondly, it may happen that although our needle has safely penetrated the ligamentum subflavum, no fluid comes out. This may be due to blockage of the needle by a tiny blood clot, or by a small plug of muscle or fibrous tissue; if so, these are easily cleared away by passing a stilette along the needle. Or again, the blockage may be due to one of the cauda equina roots having floated against the mouth of the needle; if so, by slightly rotating the needle the nerve-root will no longer obstruct it. Or it may happen that the needle has successfully pierced the ligamentum subflavum but has pushed the whole spinal theca in front of it, like the empty finger of a glove, without perforating into the arachnoid cavity. In this case, even although the needle is unobstructed, as shown by the stilette, no fluid comes. If this happens we must just withdraw our needle and start again at the space above or below.

We sometimes read of "dry punctures." This usually means, not that there is no fluid within the theca, but that the operator has failed to penetrate within its cavity. True absence of fluid is a very rare occurrence; it may occur, however, in cases where the theca in the region of the cauda equina is filled with blood clot or with tumour tissue.

It is hardly ever advisable to employ suction to induce the fluid to flow. Normally it exudes, drop by drop, at a moderate pressure of about 20 cm. of water in the horizontal posture. If the pressure is abnormally low, and there is no obstruction within the vertebral canal above, the intrathecal pressure can be temporarily raised at once by Quickenstedt's manœuvre. This consists in compressing the jugular veins in the neck, either by the fingers or by using the hollow air bandage of an ordinary sphygmomanometer.

Having secured the requisite quantity of cerebro-spinal fluid for examination (usually 5 or 6 c.cm. are enough) we withdraw our needle as gently as we had pushed it in, seal the skin puncture with a little collodion, and instruct the patient to lie down for eight or ten hours afterwards.

(2) CISTERN OR SUBOCCIPITAL PUNCTURE.

This method of approach is through the occipito-atlantal ligament, which stretches from the posterior rim of the foramen magnum to the corresponding part of the laminæ of the atlas vertebra. In this way we withdraw fluid directly from the cisterna magna. As can readily be understood, owing to the close proximity of the fourth ventricle which lies in the floor of the cistern, we do not adopt this route rashly or as a routine method of obtaining cerebro-spinal fluid. Like the honourable estate of matrimony, it is "not to be enterprized unadvisedly, lightly or wantonly, but discreetly, advisedly and soberly . . . ."

There are, however, some conditions in which cistern puncture is almost essential for completing a diagnosis; for example, in compressive lesions of the spinal cord, where we desire to compare the composition and pressure of the fluids above and below the level of compression; or again, for therapeutic purposes, when we wish to introduce curative sera into the cerebral arachnoid space, as in certain varieties of meningitis.

If you feel the back of your own neck, the highest vertebral spine to be made out is that of the axis or second cervical vertebra; the first or atlas vertebra has no spinous process. Immediately above the spine of the axis vertebra you will feel a depression. This is the spot where our needle enters in order to reach the occipito-atlantal ligament beneath which lies the cistern magna. The patient's head should be flexed towards the sternum so as to open out the occipito-atlantal space as much as possible. We find that the most convenient posture is the left lateral, except in cases where we desire to inject a heavy oil, such as lipiodol, into the cistern; in these cases we select the sitting posture. The needle enters in the middle line. It is pushed forwards and slightly upwards, penetrating the thick resistant ligamentum nuchæ. The correct plane of puncture is one which traverses the depression above the second cervical spine, the upper edge of the external auditory meatus, and the prominence of the glabellum. Seen in profile, these three points should be in the same straight line. (Fig. 1.) As we, of course, are standing behind the patient, we cannot see the glabellum, but we can easily identify the external auditory meatus by getting an assistant to place a pencil horizontally into the patient's ear. We then aim our needle at the level of the upper border of the meatus, keeping carefully to the middle line. The occipito-atlantal ligament is reached at an average depth in the adult of 4 to 5 cm. It is rarely more than 6 cm., although I can remember several athletic men with large cervical muscles in whom the distance was as much as 7 or even 8 cm. Our cistern puncture needle should be somewhat stouter than the lumbar puncture needle, so as to overcome the resistance of the ligamentum nuchæ without bending, and it should be fitted with a bevelled stilette. It should also be marked off in centimetres, so that we may know the exact depth to which it has penetrated.

FIG. 1.

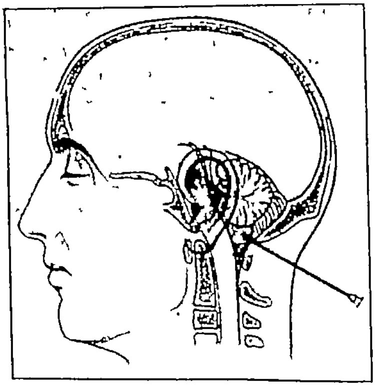

Diagram of cistern puncture.

In a successful cistern puncture, when we penetrate the occipito-atlantal ligament and enter the cistern, we feel a characteristic sensation of entering an open space, exactly similar to the feeling in a successful lumbar puncture. If the needle is wrongly directed it may strike too low, hitting the arch of the atlas, or too high, impinging on the occipital bone just behind the foramen magnum. This fault may be corrected by withdrawing the needle a short distance and trying again, carefully verifying the plane of puncture by means of the external auditory meatus and glabellum. On penetrating the occipito-atlantal ligament and entering the cisterna magna, cerebro-spinal fluid is at once obtained. If no fluid comes and we are certain that our needle is within the cistern, it may be that the middle lobe of the cerebellum is resting against the needle. But this is only likely to occur in two conditions: first, if our needle has been directed too acutely upwards; or secondly, in cases of increased intracranial pressure in which the cerebellum has prolapsed downwards towards the foramen magnum, forming part of a "pressure-cone." Such cases of intracranial pressure, however, can generally be recognised beforehand, and in them cistern puncture will be scrupulously avoided. In a successful cistern puncture we are careful to stop pushing in our needle the moment its point is within the cistern. The depth of the cistern varies from 1½ to 2 cm., which is our margin of safety, for it will be readily understood that if we are incautious and go too far, so as to reach the floor of the fourth ventricle, we might do grave and irreparable damage. In the hands of a skilful and careful operator, however, cistern puncture, although it sounds a hazardous procedure to those who have never witnessed it, is really easy and safe. In these wards you have all repeatedly seen it performed without difficulty and without discomfort to the patient.

(3) VENTRICULAR PUNCTURE.

This procedure, like cistern puncture, should be carried out with equal caution and reserved for exceptional cases. Sometimes it is of the utmost value, both for purposes of diagnosis and treatment. Thus, for example, in inflammatory affections, acute or chronic, of the nervous system, as in meningococcal, tuberculous, or syphilitic meningitis, it is important to compare the ventricular fluid with the subarachnoid fluid, whether derived from the cistern or from the lumbar pond. Again, in brain tumours, by withdrawing fluid from the lateral ventricle, replacing the fluid by air, and then taking radiograms of the air-filled ventricles, we can gain useful information not only as to the presence of internal hydrocephalus, but also as to the exact amount of distortion or displacement of the various cerebral ventricles. Further, in some inoperable tumours at the base of the brain, the headache and vomiting (symptoms which are due to internal hydrocephalus) can be promptly alleviated by ventricular puncture, which is a much less formidable affair than decompressive craniotomy. Some of you remember a patient in the ward a few weeks ago with a tumour of the pons in whom the agonising headache was at once relieved in this way.

In infants ventricular puncture can be carried out through the anterior fontanelle. In older patients, however, we have to penetrate the skull before reaching the dura mater. For this purpose Goetze has devised a steel drill which has a groove running along one side almost to its point. By means of this we quickly drill through the frozen scalp and skull until the point of the drill is through the inner table. We then pass a fine stilette along the groove into the brain. The drill is now withdrawn. A hollow blunt needle is next threaded on the stilette. Once this hollow needle is within the brain substance another blunt stilette, exactly filling it up, is inserted along the needle and the whole affair is cautiously pushed in, millimetre by millimetre, withdrawing our stilette from time to time to see when the ventricular cavity is reached, as shown by the welling out of clear cerebro-spinal fluid. The diameter of the ventricle in the line of puncture can be measured by first noting the depth at which fluid begins to flow, and then, on continuing to thrust in the needle to its far wall, noting the depth at which the flow ceases.

How do we approach the lateral ventricles in the adult skull? This can be done either from the vertex, from the side, or from the back of the head. The main cavity of the lateral ventricle is most conveniently approached from one or other side of the vertex, choosing a point 4 or 5 cm. in front of the upper end of the rolandic fissure. We may either do a vertico-internal puncture, entering our needle about 1 cm. from the middle line and directing it downwards and slightly outwards, or we may do a vertico-external puncture, which I find is rather more convenient, in which we select a point 4 or 5 cm. from the middle line and direct our needle downwards and inwards. (Fig. 2.)

To puncture the descending horn within the temporal lobe we take a line vertically upwards through the external auditory meatus or a little behind, and enter at a point a few millimetres above the upper edge of the pinna. In this case the needle is so directed that, when looked at from the front, it points towards the outer canthus of the corresponding eye.

The depth of a vertical puncture is somewhat greater than that of a temporal one; in the one case it is a few millimetres more, in the other a few millimetres less than the number of centimetres that go to the circumference of the head. Thus, in a skull that measures 65 cm., we expect to reach the normal ventricle at a depth of about 6·5 cm.

FIG. 2.

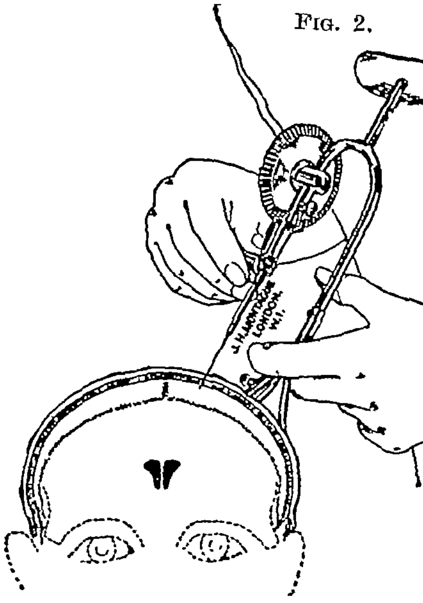

Diagram of ventricular puncture.

The posterior or occipital horn of the lateral ventricle is approached from behind. We select a point about ¾ in. above the superior curved line of the occipital bone and 1 in. from the middle line, and direct our needle horizontally forwards and slightly outwards.

Lewkowicz, of Krakow, who has done such valuable work on cerebro-spinal meningitis by studies on the ventricular and lumbar fluids, mounts his Goetze drill on a small electric motor such as is used ordinarily by dental surgeons. This, however, is difficult to carry about. Accordingly, I have devised a mechanical breast-drill with a multiplying action which has been made for me by Messrs. Montague, of 69, New Bond-street, W. This particular drill, as shown in Fig. 2, has an adjustable tripod base, whereby it can rest steadily on the convex surface of the head. It also has a movable sleeve on its shaft. This allows the drill-point rapidly to perforate the scalp and cranium and to stop short the moment we are through the bone. The stilette, followed by the hollow needle, blocked in its turn by the blunt stilette, are now passed through the drill-hole and pushed gently inwards until the ventricle is reached.

Contrary to what you might perhaps expect, ventricular puncture is almost painless, so that local freezing of the scalp is all that is required as an anæsthetic, even in the case of children.

The puncture mark on the scalp and cranium is only about the diameter of a large pinhole. As a matter of fact, within a few days after such a puncture it is impossible to detect any mark whatever, whether by the eye or on palpation of the patient's head. If we wish to do a subsequent puncture it is necessary to make a fresh drill-hole.

DIABETES AND OPERATION.

A NOTE ON THE EFFECT OF GASTRO-JEJUNOSTOMY UPON A CASE OF MILD DIABETES MELLITUS WITH A LOW RENAL THRESHOLD.

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AS a rule the publication of a single case, however rare, needs justification; in this instance it is not the case but the observations made upon it that make publication advisable.

Duodenal ulcer is not uncommon in diabetes mellitus—one condition does not protect from the other—but it is rare to meet it in a patient suffering from so mild a degree of diabetes as to make operation advisable. A general anæsthetic usually makes the diabetic condition much more grave. The change need not necessarily be sudden or dramatic, and therefore often fails to be recognised. Duodenal ulcer in a man with mild diabetes and a low renal threshold must be very rare, and so I publish the single case.

Diabetes mellitus is diagnosed, as a rule, by the glycosuria accompanying it. Diabetes mellitus is an unfortunate term, it is like "exophthalmic goitre," the name of the disease denotes the two most obvious signs. To say that one has met diabetes mellitus without the patient suffering from glycosuria sounds a contradiction in terms, but is no greater a contradiction than "exophthalmic goitre" without exophthalmos or goitre.

When one starts thinking about diabetes mellitus with a gradual onset one must realise there is a stage at which the patient's powers of burning and storing sugar have fallen from the normal 100 per cent. to 95 per cent., and that the deterioration may be very slow. In my opinion this gradual deterioration often is suddenly accelerated by some injury to pancreatic cells or by infection, and then the diagnosis of diabetes mellitus is made. The difficulty remains, however, that a man with only a 75 per cent. efficient carbohydrate metabolism will be able to eat and drink ordinary food without glycosuria occurring, provided his renal threshold for sugar is normal. In other words, he would be suffering from diabetes mellitus without glycosuria (hypoglycopyresis).

This avenue of investigation has not been explored very fully, and yet it may lead towards the origin of diabetes mellitus in middle life. The case I am recording had a very mild diabetes, his glycopyretic function was of 75 per cent. efficiency, and it seems unlikely that diabetes would have been diagnosed if he had not possessed a remarkably low renal threshold for sugar. At one time his urine contained quite a recognisable quantity of dextrose, whilst his blood-sugar was below 0·12 per cent. (many individuals do not have glycosuria until their blood-sugar reaches 0·21 per cent.).

Clinical Record.

T. M., aged 37. Admitted to hospital May 26th, 1924. He gave a history of being quite well until three years ago, when he began to have attacks of abdominal pain lasting for two or three hours, usually two or more hours after food. Occasionally he had free intervals of three to six weeks. Taking food relieved the pain. His appetite was good. The pain started in the epigastrium and ran round to the back, sometimes kept him awake at night, at other times awakened him in the early morning. Six months ago sugar was found in the urine. The patient, upon interrogation, admitted very slight thirst occasionally and cramp in the legs, but neither of these seemed to be sufficiently intense to suggest diabetes mellitus. The patient was placed upon a diet of 1600 calories containing 44 g. of carbohydrate, 78 g. of protein, and 130 g. of fat, and whilst on this diet his urine contained a small amount of sugar, whilst his blood-sugar was found to be 0·09 per cent. one hour after the mid-day meal. This suggested that his renal threshold for sugar was low. He was given 25 g. of dextrose and it was found that his renal threshold was below 0·11 per cent.

I decided to see the effect of a meal rich in carbohydrates, and on June 6th he was given a lunch containing as much meat and vegetable as he liked, along with a large helping of suet pudding and plenty of syrup. Samples of blood were taken at intervals of 20 minutes: at 2.10 P.M. his blood-sugar was found to be 0·30 per cent., it rose to 0·38 per cent., where it remained until 3.25 P.M., then it fell to 0·30 per cent., and was still 0·30 per cent. at 4.40 P.M. This was evidence that he was suffering from mild diabetes.

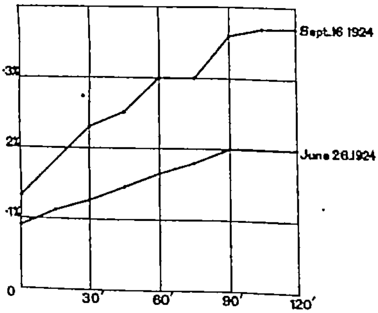
On June 17th he was given 75 g. of dextrose by the mouth at 1 P.M. An hour later his blood-sugar was 0·30 per cent.; 90 minutes after the dose it rose to 0·38 per cent. and had dropped to 0·18 per cent. three hours after the administration of the dextrose. This observation was corroborative evidence that the patient was suffering from diabetes mellitus, based not only on the excessive rise, but also the fact that after three hours the blood-sugar was double the normal fasting. Since the history left no doubt that he had duodenal ulcer as well, it seemed advisable to determine the efficiency of his carbohydrate metabolism before submitting him to operation. On June 24th he was given an intravenous injection of a 10 per cent. solution of dextrose at the rate of 1 c.cm. per minute for three hours. His blood-sugar started at 0·10 per cent. and did not rise above 0·14 per cent.; obviously the dose of sugar was too small to exercise fully the sugar-burning and storing function.

Therefore another intravenous injection had to be given. On June 26th a 20 per cent. solution of dextrose was injected intravenously at the rate of 3 c.cm. per minute for two hours. The blood-sugar started at 0·08 per cent. and rose to 0·20 per cent. after 90 minutes, where it remained for the following half hour. (Chart 1.) This curve proved, since it did not rise above 0·2 per cent., that the patient was able to store and burn sugar at the rate of nearly 0·6 g. dextrose per kilo body-weight per hour, instead of 0·8 g. dextrose per kilo body-weight per hour, which is considered to be normal. In other words, his carbohydrate metabolism proved to have an efficiency of 75 per cent. In the near future I shall offer the further interpretation of this curve along with many others of a similar type.

Operation.—The patient was then transferred to the surgeon. An ulcer was found on the anterior surface of the duodenum; the gall-bladder was thickened; a posterior gastro-jejunostomy was performed; the appendix was looked at, but not removed. The patient made an uninterrupted recovery. Was fed on Benger's food, and later upon custard, jellies, milk pudding, bread and butter, and fish.

The day after the operation the urine contained a considerable quantity of sugar, this gradually diminished, until the eighth day, when it was free. The urine remained sugar-free until the twenty-second day, when minute traces reappeared, but was quite free again later. The patient left the hospital on July 29th, 1924, free from pain and apparently greatly improved.

CHART 1.

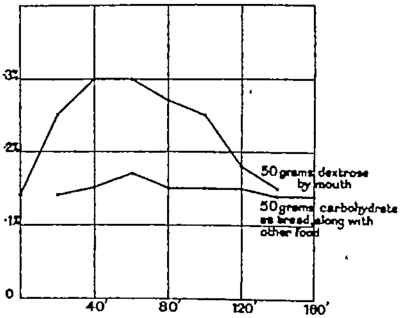


The question arose as to how far the operation had raised or depressed his sugar-burning capacity. Was the apparent improvement due to gastro-jejunostomy delaying absorption? On Sept. 16th intravenous injection of a 20 per cent. solution of dextrose was given for two hours in a manner exactly similar to the injection of June 26th. It was found that his blood-sugar rose to 0·37 per cent. after two hours instead of 0·2 per cent. There was loss of sugar in the urine at least equal to that during the previous intravenous injection. This observation proved that the patient's carbohydrate metabolism had been depressed by the operation. (See Chart 1.)

How can we account for the apparent improvement? The glycosuria was absent after operation in spite of a diet containing a fair amount of carbohydrate. In order to determine whether the operation had interfered with rate of absorption and also raised the renal threshold for dextrose the following observations were made.

On Sept. 20th the patient was given 50 g. of dextrose at 10 A.M., after he had had breakfast. His blood-sugar started at 0·22 per cent. and rose to 0·3 per cent. after 60 minutes and fell to 0·13 per cent. after 120 minutes. On Sept. 22nd he had breakfast at 9.30 A.M., two poached eggs on toast, cup of coffee and milk, 2 oz. of bread; the carbohydrate content of this meal was approximately 50 g. His blood-sugar did not rise above 0·17 per cent. after that meal, the highest being reached at 60 minutes, and later on the same day a second observation was carried out; 50 g. of dextrose was given at 2.5 P.M. His blood-sugar started at 0·13 per cent., rose to 0·3 per cent. after 40 minutes, and fell to 0·15 per cent. after 140 minutes (Chart 2).

CHART 2.



I think from this observation we may reasonably conclude that his power of absorbing starch had been diminished, and also from the fact that in spite of his blood-sugar rising to the region of 0·15 per cent. after an ordinary breakfast, and his urine, as a rule, being sugar-free, his renal threshold had been raised.

The operation in this case, as in many cases, led to the progress of the disease, due to the administration of an anæsthetic. In my experience it is extremely rare for a general anæsthetic, other perhaps than nitrous oxide and oxygen, not to lead to a definite deterioration of the carbohydrate metabolism in cases of diabetes mellitus.

WELLCOME HISTORICAL MEDICAL MUSEUM.—The museum, at 54A, Wigmore-street, London, W., will be closed for alteration and reorganisation from Dec. 1st until the end of May. Since the foundation of the Wellcome Historical Medical Museum in 1913, there have constantly been additions of important historical objects acquired by purchase, donation, and permanent loan. The growth of the collections has been so great that extensive alterations in the museum and a complete rearrangement of the exhibits have become necessary. The reorganisation will be of such a thorough character that the Director, Mr. Henry S. Wellcome, has decided to close the institution for several months. Although this may cause temporary inconvenience to medical and other scientific research workers and students, the change, when effected, will prove of great advantage by rendering the arrangement and classification more systematic, and the objects more accessible for inspection and study. Important additions have been made recently to the technical staff. Mr. L. W. G. Malcolm, M Sc. Camb., F.R.S.E., who has gained distinction in the field of anthropology and allied sciences, has been appointed conservator. Mr. Charles R. Hewitt, who for 23 years was connected with the library of the Royal College of Surgeons of England and 18 years librarian of the Royal Society of Medicine, has been appointed chief librarian.

A MULTIPLE ELECTRICAL STETHOSCOPE.

By JENNER HOSKIN, M.D. Camb.,
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The instrument on which my investigations have been made is the outcome of a large number of experiments, whose aim has been to provide the means of increasing the intensity of sounds produced within the heart and lungs without distortion, and of enabling several persons to listen to them simultaneously.

Historical.

Cabot[1] devised a mechanism whereby, with the aid of levers tapping on drums and of organ-bellows connected with a megaphone, the sounds of the heart and lungs could be imitated, and demonstrated it before the American Medical Association at Boston in 1906. Normal heart sounds and murmurs were transmitted electrically and recorded graphically by Einthoven[2] in 1907. In 1910 Brown[3] reproduced heart sounds by a tuned mechanical relay, consisting of a single microphonic contact and an electromagnetic element. The sounds were transmitted audibly, but with a considerable degree of distortion, over a commercial telephone line in London.

The earliest developmental work on electrical stethoscopes was centred about the carbon transmitter and other microphonic contact devices. Williams[4] was the first to make use of an electro-magnetic transmitter, and in 1921 with this type of transmitter and a two-stage amplifier he secured more accurate graphic records of murmurs. In the same year Squier,[5] using a carbon transmitter amplified normal heart sounds to a group of physicians. In 1923 Abbott,[6] by means of a transmitter, tuned to exclude all sounds except those of very low frequencies, amplified heart sounds and distributed them through a loud-speaker, as did Jacobsohn[7] about the same time in Berlin. The present instrument is, however, largely the result of the experiments of Cabot and Gamble[8] at the Massachusetts General Hospital and their coöperation with the Western Electric Company, who have designed it to their requirements. A multiple electrical stethoscope was first used by them for classroom lectures in 1923.

Description of Instrument.

The instrument used by me, which is a further improvement on that of Cabot and Gamble, consists of the following main parts, assembled in a portable cabinet about the size of a tea-wagon: (1) an electromagnetic transmitter; (2) a three-stage amplifier; (3) a series of electrical filters; (4) a number of output receivers; (5) one six-volt storage battery and one 130-volt "B" battery.

The *electromagnetic transmitter or microphone* is equipped with a special vibratory element, which is placed in direct contact with the patient's skin. It is insensitive to air-waves, and is provided with a special hand grip to prevent the vibrations of the operator's hand from causing undesirable noises. Owing to the high magnification of the sounds necessary, it has been found impossible to use a carbon transmitter or microphone, as the loose contacts introduce a certain amount of noise, which, when amplified along with the faint sounds of interest, tends to obscure them. This is known as the microphone roar, and cannot be eliminated.

The electromagnetic transmitter requires a more powerful amplification, but in a great measure gets rid of this noise. The *three-stage amplifier* employs resistance coupling between the first and second stages, and transformer coupling between the second and third stages, using two high impedance vacuum valves for the first two stages and a low impedance or "power" valve to furnish an adequate energy output in the third stage. This amplifier is capable of a power amplification of 100 million times, corresponding to an increase in intensity over the reproduction amplitude of the ordinary Bell's stethoscope of over 1000 times. There is a potentiometer between the first and second valves, which makes it possible to increase the amplification by small steps, each step giving twice the amplitude of the preceding one.

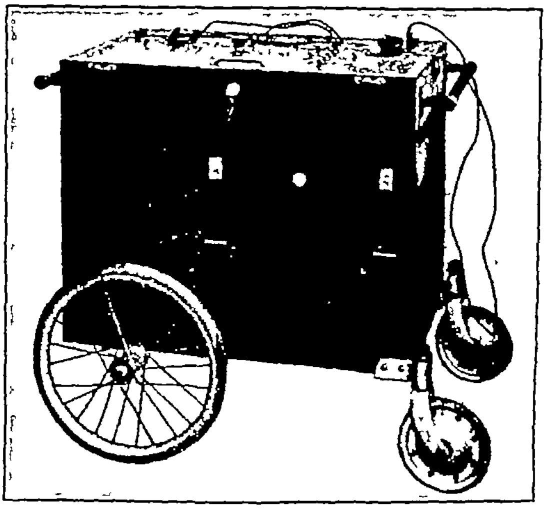
A preliminary analysis with *electrical filters* of sounds of clinical interest tended to show that these were composed largely of frequencies below 1000 cycles, and as the sound frequencies differed widely, it was found of great advantage to permit concentration on any given sound by the use of electrical filters. The function of filters is to allow sounds of certain frequencies to pass and to cut off those of other frequencies.

There are three types of filters—low-pass, high-pass, and band-pass. Low-pass filters allow currents below a particular cut-off frequency to pass freely, at the same time diminishing very considerably the transmission of those of higher frequency. High-pass filters do the opposite. A low-pass filter and a high-pass filter connected in series constitute a band-pass filter, which only allows the passage of currents of a certain range of frequencies.

The instrument has five filters whose cut-off frequencies have been based on 100 hospital cases of cardiac and pulmonary conditions. They are as follows: Low-pass, 130, 400, 650, 1100; high-pass, 130.

For example, the use of a low-pass 400 combined with a high-pass 130 would constitute a band-pass filter permitting the exclusive passage of frequencies between 130 and 400 cycles.

The *output receivers* are on the principle of those of the telephone, and consist of an electromagnetic diaphragm provided with a special cap and nipple, which is designed to fit the tubing of the binaural stethoscope in place of the ordinary chest-piece. Each receiver is provided with a spring clip for attachment to the observer's clothing, so as to leave both hands free for manipulating the control switches of the amplifier and filters. There are ten receiver-jacks, through which any number of receiver circuits up to ten may be connected. The receivers are connected in parallel in the output circuit, so that the volume of sound tends to decrease with the number of receivers in use. A volume control switch, however, is provided for maintaining efficient reproduction, whatever the number of receivers connected in the circuit.



The Multiple Electrical Stethoscope.

Special Uses of the Instrument.

My investigations have been directed to the following uses of the instrument: (1) Examination of the fœtal heart in the later stages of pregnancy. (2) Value of the instrument for ordinary teaching purposes. (3) Value for bedside demonstration of cardiac cases too ill to permit individual examination by a number of students. (4) Diagnosis of difficult heart cases. (5) Value for investigation of pulmonary conditions.

The amplification of the sound is controlled by the moving of a hand along the periphery of a circular disc, marked with the numbers 1 to 22, each number approximately doubling the amplitude of the preceding one. It was found that, when the filters were not in use, the intensity equalled that of the ordinary Bell's stethoscope when the hand was pointing to 8 or 9, but when the filters were in use the hand had to be advanced up to 11 or 12 to obtain the adequate volume of sound.

I investigated the fœtal heart sounds in the later months of pregnancy in a few cases. The fœtal heart could be heard distinctly using the low-pass filter with the hand of the amplifier about 15 to 18, and on advancing the hand still further the intensity of the sounds could be increased to an almost overwhelming degree. A sound which was probably the placental souffle could also be heard, and investigations are being made with a view to the possibility of diagnosing the position of the placental site by this means. Without the filters there was a tendency to "roaring," especially with high amplification.

The normal heart sounds are best heard with the low-pass 130, which cuts off most of the murmurs and pulmonary sounds. This filter, however, allows the sounds of a bass or baritone voice to pass. The low-pass 400 is useful for distinguishing presystolic murmurs and certain low-pitched systolic and diastolic murmurs. The low-pass 650 seems to be the most useful of all the filters for heart murmurs, as the majority are of frequencies below this. The low-pass 1100 brings out a few of the very high-pitched murmurs and high-pitched râles, but its usefulness is impaired by the amount of external noise which becomes audible when the higher frequencies are allowed to pass. The high-pass 130 has been found extremely useful in conjunction with the low-pass 400 and with the low-pass 650, especially with the latter. This has the effect of greatly diminishing the intensity of, whilst not obliterating, the heart sounds themselves, and so enabling a more thorough concentration on the murmurs. In general, the low-pass 130 has been found the best for the examination of *fœtal heart* sounds and for distinguishing alterations from the normal of the ordinary heart sounds. The low-pass 400 appears the most efficacious for distinguishing presystolic murmurs. Their determination is rather a matter of accuracy of timing than of hearing, and so it is of advantage to allow the full passage of the heart sounds. For distinguishing aortic diastolic murmurs the band-pass filter formed by low-pass 650 and high-pass 130 has been found to be the most useful.

My investigations have been mainly directed to the heart, but a few pulmonary conditions have been examined. I have been somewhat disappointed with the instrument in this connexion, as the breath sounds appeared to be so altered in pitch and character by the different filters as to make the differentiation of the various types of breathing difficult and uncertain, whilst without the filters it is difficult to separate the external sounds from those in the chest. I feel, however, that further investigation with the instrument in pulmonary conditions is necessary before forming a definite opinion as to its usefulness for this purpose.

The instrument has a definite though limited use in teaching beginners to recognise heart sounds and murmurs. Frequently they take a considerable time to become conversant with what they hear on listening to a heart, and the increased amplitude and the separation of the sounds and murmurs by means of the filters may tend to help them in their early training in auscultation. For more advanced students the instrument has been found satisfactory for the purpose of demonstrating cases in which the interest is centred in the auscultatory phenomena, in that without any external connexions ten persons are able to listen simultaneously, and the teacher can demonstrate the interesting points as they arise.

For diagnostic purposes the electrical stethoscope has, in my opinion, a definite sphere of usefulness as a means of bringing out slight changes in the heart sounds and facilitating the recognition of very faint murmurs such as may be present in some cases of aortic regurgitation. In the bedside demonstration of cardiac cases who are seriously ill the fact of having ten receivers avoids a great deal of the discomfort and fatigue that would ensue through examination by several persons.

There is one point which should be mentioned. In order to obtain the best results very careful adjustment both of the degree of amplification and of the filters is required, and the process of examination, therefore, tends to be a good deal more lengthy than with the ordinary binaural stethoscope.

Suggestions.

There is, in my opinion, room for improvement in diminishing the external noises, which become audible with the higher amplifications. An additional low-pass filter designed to cut off all frequency cycles above 100 would be of great value, both from the point of view of differentiating especially low-pitched murmurs and also for the purpose of eliminating all ordinary voice sounds. This might advantageously replace the low-pass 1100 filter, which has been found to be of very little practical value.

Conclusions.

The multiple electrical stethoscope has, in my opinion, a definite field of usefulness for diagnostic and teaching purposes both in the realms of medicine and obstetrics. I consider, however, it would be a mistaken policy to train students to place undue reliance on the instrument for the following reasons:—

1. It is of the highest importance that their clinical experience should be gained with the ordinary stethoscope, on which they must necessarily rely later on in the course of their practice.

2. In using the multiple stethoscope attention is naturally concentrated on auscultation, which constitutes only one, and in my opinion one of the less important methods whereby a cardiac case is investigated.

My investigations have been made at the Royal Free Hospital with an instrument presented to the hospital by Lord Riddell, its President, of whose generosity I wish to make grateful acknowledgement. I should like to express my indebtness to Dr. A. G. Phear, senior physician to the hospital, who has given me the benefit of his experience both in my investigations and in the writing of this paper. I should also like to thank Mr. Bulloch and other members of the Western Electric Company for the help they have given me in the technical details of the instrument.

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Clinical and Laboratory Notes.

A CASE OF
ACHOLURIC JAUNDICE WITH GALL-STONES.

BY H. H. GLEAVE, M.B. LEEDS, M.R.C.P. LOND.,
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AND
ROBERT PLATT, M.D. SHEFF., M.R.C.P. LOND.,
MEDICAL REGISTRAR AND BIOCHEMIST TO THE INFIRMARY.

CASES of acholuric jaundice, complicated by gall-stones, are rare, and the following seems worthy of record.

B., a man of 43 years, had been operated on 15 years ago at St. Mary's Hospital for gall-stones. He was jaundiced at that time. Cholecystostomy was performed, and he was told that he had a large spleen. Since then his skin has always been of a yellowish tinge, and there is a history that his mother's skin was also yellow. He had no further trouble, however, until August, 1923, when he had a typical attack of biliary colic. In August, 1924, he had another attack, and became very deeply jaundiced. He was then seen by Mr. R. St. L. Brockman, of Sheffield. The spleen was still enlarged, and a diagnosis of acholuric jaundice was made, but since the immediate cause of the symptoms was obviously a calculus, Mr. Brockman operated and removed a pigment stone from the ampulla of Vater. There was considerable difficulty in finding the stone, owing to adhesions from the previous operation, and to remove the spleen at the same operation would have been too risky an undertaking. The patient made an uninterrupted recovery, and although he felt very much better, the jaundice never disappeared. The Van den Bergh reaction was therefore done, and showed *that the remaining jaundice was of non-obstructive type.*

In April, 1925, the case was seen by Dr. A. E. Barnes and Mr. Ernest Finch, and some further tests were done (see later) confirming the diagnosis of acholuric jaundice. On May 15th, 1925, Mr. Finch and Mr. Brockman removed the spleen, one of us (R. P.) performing a blood transfusion while the wound was being stitched up. He again made an uninterrupted recovery, and his jaundice had disappeared within ten days of the operation. He is now feeling very fit in every way (December, 1925).

Observations: Blood Tests Before and After Operation.

—	1/5/25.	Operation (splenectomy) 15/5/25.	29/5/25.
Red cells	3,250,000		4,470,000
Hæmoglobin	67 %		89 %
Colour-index	1·03		0·99
Blood group	III.		—
Van den Bergh reaction. (Direct test always negative.)	15 units.		0·7 units.
Blood cholesterol ..	—		0·18 %
Hæmolysis to NaCl	Patient. Control.		Patient. Control.
Initial..	0·525 0·425		0·6 0·575
Marked	0·450 0·40		0·525 0·45
Complete	0·425 0·375		— —
Hæmolysis to saponin	—		Normal (same as control).

The urine before operation contained a large excess of urobilin.

Report on Pathology and Histology of Spleen.—Naked eye: A large firm spleen, weight 23 oz.; dimensions 7 in. × 5 in. × 1½ to 3 in. A small accessory spleen (about the size of a walnut) was attached at the hilum. About a quarter of the diaphragmatic surface showed signs of adhesions with great thickening of the capsule. There is extreme congestion

Microscopical: There are numerous thick fibrous septa. The Malpighian bodies are present, undoubtedly reduced in size and number. The supporting framework of the capillaries and endothelial cells of the pulp is unusually prominent. There is extreme congestion.

No foci of hæmopoietic tissue are to be seen. There is much brown pigment, giving the reaction of ferric salts ("hæmosiderin"). This is almost entirely confined to the pulp and hardly appears at all in the fibrous septa, capsule, or Malpighian bodies. It is seen chiefly as a diffuse brown staining (green with the Prussian blue reaction) of the endothelial cells forming the reticulum of the pulp. These cells have often delicate branched processes of cytoplasm which, like the body of the cell, are also pigmented, and in some cases the wall of a sinus or capillary is completely formed by such pigmented cells. In some cells, especially mononuclear cells lying free in the pulp, the pigment is seen as discrete granules or in masses distending the cell.

The general picture is that of hyperplasia of the reticulum cells, with deposition of iron pigment to a much greater extent than in health, though not to the degree seen in some cases of pernicious anæmia.

Discussion.

Cases such as the above, though rare, are by no means unknown.[1] Since hæmolytic jaundice differs from obstructive jaundice in that the blood cholesterol instead of being increased is actually lower than normal,[2, 3, 4] it is interesting to note that the calculus removed at the first operation was a pigment calculus. In some of these cases such calculi have been found to contain no cholesterol whatever.[5] Unfortunately we did not have the opportunity of examining this one. The blood cholesterol was only estimated after the splenectomy, and was found to be normal. A sharp rise after removal of the spleen is apparently the rule in these cases.[2]

In spite of the operation, at which very little blood was lost, the blood count was better a fortnight afterwards than it had been before. (This has, however, been recorded in a case without transfusion.[1]) The transfusion was performed with 450 c.cm. of defibrinated Group IV. blood, by a method modified from that of Colebrook and Storer,[6] no citrate whatever being added. It was the ninth transfusion of a series which has now reached 28, in which defibrinated blood has been used. In none of the 28 cases has there been any reaction following the transfusion, such as occurs in many cases with the citrate method.

The Van den Bergh reaction is of rather exceptional interest. The first test, done soon after the gall-stone was removed, gave a delayed bi-phasic reaction, presumably because some obstructive jaundice still remained, and the indirect method gave a reading of 15 units. The two subsequent tests gave an indirect reaction only, the reading falling from 15 to 0·7 units within a fortnight of splenectomy.

The resistance of the red cells to hypotonic saline was slightly decreased, and remained so after the operation. Most observers report a return to normal after splenectomy,[7, 8] others, as in our case, have found no alteration.[2, 9] The resistance of the corpuscles to saponin was tested in view of the suggestion of one of the authors (R. P.[10]) that it might on theoretical grounds be increased while the resistance to saline was decreased. In this case it was normal to saponin. Since doing the tests we find that others have found the resistance lowered in acholuric jaundice to both saponin and saline.[11]

The usual histological findings in the spleen of acholuric jaundice are deposition of iron-containing pigment, and distension of the sinuses by red cells.[12, 13] In the present case there is also evidence of hyperplasia of the cells of the reticulum.

We are indebted to Mr. Finch and Mr. Brockman for *permission to publish this case.*

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A CASE OF
RUPTURED ECTOPIC GESTATION.

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THIS case of ruptured ectopic gestation is of interest as it occurred in an unmarried girl of 18, with no definite history of pelvic inflammation.

The patient was admitted into the Leeds General Infirmary under the care of Mr. Carlton Oldfield on July 4th complaining of great pain in the lower abdomen, particularly on the left side, and of great weakness and thirst.

History.—The menstrual period began at 13, and had always been regular, the onset being every fourth Friday night or Saturday morning, the first few hours being accompanied by a slight dragging pain in the left iliac region. The loss was not excessive, and lasted 4–5 days.

Present Illness.—On Sunday, June 21st, the period began one day late, and continued, though the loss was very slight, until Sunday, June 28th. On that day she had an attack of pain, dragging in character in the left iliac region, and lost quite profusely for about half an hour. Similar attacks occurred daily until July 3rd, when at 9 A.M. in the morning the pain came on suddenly and with great violence, but was not accompanied by bleeding. It was relieved by "a pill," but returned at 7 P.M., and continued until admission, spreading over the whole of the lower abdomen. Vomiting occurred once on July 3rd after eating a biscuit. Patient never fainted, but felt very weak. She had exposed herself to the risk of pregnancy a month before the onset of symptoms.

Condition on Admission.—Temp., 97° F.; pulse, 120; resp., 27. The patient was very pale, the mucous membranes being practically colourless. Abdominal examination: the abdomen moved very little on respiration. Palpation: great tenderness and rigidity over left half of lower abdomen, much less over right half. Percussion: dullness over left lower abdomen extending little way across middle line.

Pelvic examination: the uterus was slightly enlarged, the cervix a little soft and patulous, the external os admitting the tip of the little finger. No bleeding occurred per vaginam. There was great tenderness in left fornix, with a feeling of fullness, but no definite tumour was felt. A diagnosis of ruptured ectopic gestation was made.

Operation.—Laparotomy was performed by Mr. H. W. Symons, of this hospital. On opening the abdomen the peritoneal cavity was found to contain much free blood and some blood clot. Brisk hæmorrhage was taking place from the left tube, which was ruptured in the inner third of the ampullary portion. Left salpingectomy was performed. Left ovary and right tube appeared normal. Right ovary contained a small cyst. All blood clot and free blood was removed from the peritoneal cavity. The ovum was not discovered. The abdomen was closed.

The *pathological report* on the tube made by Miss E. M. Hickman, M.D., was as follows: Typical decidual tissue and very early trophoblast are present with some hæmorrhage. The wall of the tube shows some lymphocytic infiltration.

The patient made an uninterrupted recovery and returned home on July 13th.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF MEDICINE.

A MEETING of this Section was held on Nov. 21th, with Dr. HUGH THURSFIELD, the President, in the chair.

Prof. H. MACLEAN opened a discussion on

Nephritis.

He said that the old division of this condition into "acute" and "chronic" was the best. The kidney was chiefly an organ for the elimination of water, salts, and waste products. In acute nephritis all its functions were suspended. In the chronic case only one important function was suspended—viz., the elimination of the waste products of nitrogenous metabolism; the organ was able to deal with water and salts. There was no such thing as "chronic parenchymatous" nephritis; either the patient recovered from his acute disease (which was not very common) or he died, or else he passed into a low form of the chronic interstitial nephritis. The books gave different descriptions because the patient was described at different stages. In a typical case of parenchymatous nephritis the one phenomenon present was the large accumulation of fluid; the patient was waterlogged. But the kidney could excrete nitrogenous proteins quite well—the urine was full of them. The clinical picture was one of excessive œdema with albuminuria. When the kidney passed into a state of chronic nephritis it regained its power of excreting water and salts and lost the power to excrete nitrogenous products. A waterlogged patient with vomiting was sometimes diagnosed as a case of uræmia; the vomiting was perhaps due to the fluid, but it was certainly not uræmic. A parenchymatous patient would seem to improve, feeling better and losing some of the fluid, but the change might be really for the worse as he was passing into the chronic condition. In determining the nature of such a case the tests used were helpful.

Urea Estimations.

There was no sense in the elaboration of tests practised in some places; quite as much information was gained from two simple ones—the estimation of blood-urea and of the urea concentration in the urine. For the practitioner the latter was the more important. A high blood-urea was not uncommon in conditions which were not renal at all, but much information could be got from knowing the amount of urea that the patient was capable of excreting under ordinary circumstances. Albumin in the urine was not important except as a hint that there might be something wrong. Albuminuria might be a most serious feature or might mean nothing at all; variations in the amount were not significant except that great variation was not usually found in serious cases. In estimating the urea concentration there was no need to take a 24-hour specimen. The concentration was the important thing, not the total amount. A nephritic case passed a lot of urine in the night when the normal person would not pass any and so might get rid of much the same total amount of urea as the normal person. In doing the urea test the most important point was to starve the patient of fluid for 12 to 16 hours before giving the 15 g. test-meal of urea. Quite often after the period of fluid starvation the urine voided before the test began would be found to contain 3 per cent. of urea, in which case no further testing was necessary. Elaboration of the tests was not only useless but also produced something of a mutiny among the patients.

Treatment.

The best diet for the case of acute nephritis was still debatable, but there was no point in giving large amounts of milk to reduce the protein; it was doubtful, in fact, whether protein did great harm. A small amount of protein could be given with advantage, the main diet being carbohydrates. It was no good trying to "wash out the kidney." The essential feature of the disease was the failure to excrete water, and the kidneys would not wash out, in spite of all the facilities already provided by Nature, such as high blood pressure and a lot of urea in the blood. Urea was one of the best diuretics known, and the addition of another diuretic would not help. It was cardiac œdema that benefited from diuretics. Sooner or later Nature would bring on a diuresis in the renal case, and if this happened to coincide with the administration of some diuretic drug it might be attributed to that drug. The symptoms must be treated as symptoms. The general impression that protein was detrimental to the kidney had been overdone, and many cases did very much better with a fairly liberal amount of protein. Many a patient who failed to improve was really suffering from his treatment—the low, sloppy diet given him. A certain amount of work had been done in America and Germany on the reaction of the kidney to protein, and Prof. MacLean had repeated the experiments. Rabbits fed on protein diet only showed albuminuria and casts and developed apparently a nephritis, but if the rabbit were given the smallest amount of green food along with the protein diet there would be no bad result at all. It seemed clear that it was lack of green food—and probably of the vitamins in it—and not the administration of protein that damaged the kidney. When the symptoms had been established they could be stopped by the addition of green food. There was therefore no experimental evidence that protein was deleterious to the kidney, nor was there much real clinical evidence for the deleterious effect of proteins in an ordinary mild case of nephritis. In acute parenchymatous cases some treatment by drugs or physical means was necessary to get rid of the fluid. On the whole, physical means were better, but large doses of urea helped, as did a diet rich in protein. There was some evidence from America that ammonium chloride in 5–15 g. doses thrice daily for a couple of weeks would sometimes clear up these œdemas, but the difficulty was to distinguish between real reaction to the drug and the coincidence of the natural tendency to get rid of fluid at some stage of the disease.

Prognosis.

Better than clinical evidence was the result of the blood-urea and urea-concentration in the urine tests. It was possible to have a patient with no symptoms at all who was yet bordering on uræmia. While blood pressure and cardiac changes were often associated with renal disease, each might occur independently. The outlook in the cardiac case was bound up with the question of whether or not the kidney would become affected; if it escaped for a few months the prognosis was not bad, but the physician should be very cautious until he had had the patient under observation for at least six months.

Discussion.

Dr. LANGDON BROWN agreed cordially with what Prof. MacLean had said, and especially welcomed the release from the tyranny of elaborate tests. At a discussion on nephritis 15 years ago he had said that the conventional views might be summed up as restriction of the protein intake, knowledge of the total output of urea in 24 hours, flushing out the kidneys, and the attempt to get elimination through the skin, and he had expressed his belief that every one of these was largely based on error, and should not be regarded as the criteria for the diagnosis, prognosis, and treatment of nephritis. The false idea that albuminuria could be affected by restriction of the protein in the diet was based on some early experiments of Sir D'Arcy Power, who had found an albuminuria in himself after eating a number of eggs. But he had also rowed a course, and the albuminuria he had had was merely the functional albuminuria of adolescence. As a result every nephritic patient had been since told that he must not eat eggs! Patients should not be filled up with proteins, but neither should they be starved of nitrogen, except perhaps in the acute cases. He had used van Noorden's diet, and found patients do well on nothing but fruit-juice and sugar. The urea excreted came from the food, so if the protein was cut down because the urea excretion was low the patient, receiving less and less urea, naturally excreted less until he either became worse or revolted against his treatment. There was a stage in which the hydræmia passed into a failure to excrete things for which the kidney had a threshold. The hot air bath might be a great help. The sweat had been found to contain a great deal of sodium chloride; the removal of the salt caused a reduction of the amount of water retained in the tissues, and the diaphoresis was followed by a daily diuresis. The bath, however, might be dangerous to those who had not much œdema. It must be remembered that although the blood urea was a valuable test, the other and unknown nitrogenous bodies constituted the toxic factor. The proportion of these to urea was not the same in disease as in health. His house physician had had a theory that the administration of hydrochloric acid might turn these amines to harmless chlorides, and certainly the first case to which the acid had been given had greatly improved. The medical profession should realise that many "remedies" for nephritis were futile where they were not actually harmful.

Dr. LEWIS GLOVER said that during the years 1918–1925 906 urine analyses had been done on his patients, and among these 60 males and 90 females had shown some albuminuria. Apparently all these examinations had been useless, and practitioners might as well save their time and their patients' money. Clinical observation had taught him that a small amount of albumin was of no value as an indication of the patient's condition.

Dr. LEWIS SMITH wondered whether we were not assuming more than we had a right to assume, and whether the present way of investigating nephritis was not too chemical. The kidney was a living substance, not a test-tube to fill up with drugs, which might or might not leak through. We had to ask why some cases get well and others do not. It was still possible that the kidney had an internal secretion. Many years ago he had found that treatment by glycerinated extract of kidney substance gave good results in some cases. He had seen cases a great deal worse for the Epstein treatment, and deplorable results from decapsulation. The skin was a very valuable and often neglected means of helping to relieve the kidney. In his opinion, cases of acute nephritis were better with a milk diet which contained very little protein and some carbohydrate.

Dr. A. BOUSFIELD said that he had seen no case of acute nephritis in his practice; it was almost non-existent, because people were taken so much care of in general practice. Yet he had large numbers of cases of pyelitis, cystitis, and chronic renal disease. The prognosis was extremely difficult. It was important to be sure that the albumin came from the kidney and not from the pelvis or bladder. He had known very acute cystitis follow an overdose of rhubarb and claret, and it was surprising how difficult it was to damage the kidneys; they seemed to be much more resistant to toxic materials than other parts of the urinary tract. That he had had only two fatal cases in the influenza epidemic he ascribed to the routine administration of sodium citrate and sodium phosphate; it had been noted that the fulminating cases in soldiers had had a very acute nephritis; perhaps these two drugs had saved the patients by preventing the nephritis. The treatment of nephritis was preventive rather than curative.

Dr. R. S. ALLISON said that at Ruthin Castle the type of case was rather that of general practice than of hospitals, the somewhat vague and early case of middle age with headache, giddiness, and gastro-intestinal disturbances. The blood pressure was high, and there would be a trace of albumin. They had been getting satisfactory results with Calvert's modification of Prof. MacLean's urea-concentration test. In this 15 g. of urea were given at bedtime and the urine collected until 7 next morning, when 2 pints of fluid were given and its excretion then observed for two hours. This gave a range between the maximum and minimum concentration which was useful in cases where the simpler test gave anomalous results. In borderline cases there was often a fairly good excretion of urea, but a difference in the diuresis after drinking, the percentage of urea in this stage being distinctly higher than in normal controls. When the two-hour period was extended to four hours it was found that it was a matter of delay in the time of excretion of the water, for the urea concentration fell markedly in the second two-hour period. This might prove a significant point in the detection of fine degrees of renal impairment. He was convinced that enlarged tonsils and adenoids were an important ætiological factor of nephritis in children.

The PRESIDENT said that the prognosis of acute hæmaturic nephritis in children was good; it was a condition that was cured permanently if it was cured at all.

Dr. ARTHUR ELLIS said that where the acid-ammonia ratio was equal the patient was more liable to nephritis than when the ammonia preponderated. The alkaline type was much more liable to sepsis than others, and the kidney might be infected that way rather than through the strain of excretion. He had found magnesium sulphate injections useful in getting the kidney to work; they produced a rapid and efficient emptying of the intestine, and this took a considerable strain off the kidney. For some unknown reason the addition of a hundredth of a grain of physostigmine to the injection led to a very rapid unloading of the œdema.

Reply.

Prof. MACLEAN, in reply, said that the unanswered question was why two apparently identical cases went different ways, one clearing up, while the other went on to a chronic condition. If the general practitioner could not in some measure use what had been discovered in the laboratory or hospital, then, in his opinion, the investigations were a comparative failure. The Epstein diet, or any régime which included a large amount of fat, meant more fat in the blood, and there was some evidence for the possibility that the œdema tended to be more permanent when there was much fat in the blood. The truth was that very little was known about kidney disease.

SECTION OF BALNEOLOGY

JOINTLY WITH THE

INTERNATIONAL SOCIETY OF MEDICAL HYDROLOGY.

THE TREATMENT OF RHEUMATISM IN INDUSTRY.

A JOINT meeting of these two bodies was held at the Royal Society of Medicine on Nov. 27th, the chair being occupied by Dr. GUSTAVE MONOD (Vichy), the President of the International Society, whose aim, he said, was to bring to bear on such subjects as the one to be discussed to-day—chronic rheumatism—the strength which internationalism gave to every question they dealt with. In France the general hospitals were not open to these cases, and the only opportunity open to the people for institutional treatment of them was to attend the thermal hospitals. And as the general hospitals of Paris did not publish statistics concerning rheumatism, it was difficult to know the degree of its prevalence.

National Loss by Rheumatism.

Sir GEORGE NEWMAN, Chief Medical Officer of the Ministry of Health, expressed on behalf of the Minister cordial congratulations to the Society and the Section on the efforts they were making to grapple with this formidable and protean disease. Through the channel of Government a survey of the incidence of rheumatism among the insured population of this country had been prepared. He had always felt that the first business was to endeavour to measure its prevalence and its gravity in order that all effort should be properly focused and directed. It was necessary to measure and gauge the problem before it was grappled with; there was a tendency, in all nations, to apply remedies without sufficiently careful diagnosis. In this country an effort had been made to measure both the condition which had to be met and our shortcomings in meeting it. The subject to be considered to-day was chronic non-articular rheumatism, such as was manifested in fibrositis, muscular rheumatism, sciatica, &c., and in the second place the form seen in chronic arthritis. In this country, said Sir George Newman, we were losing—or we were spending in benefit much of which was lost—£2,000,000 per annum in this group of disease, and among the insured population of 14 millions, time equal to 3 million weeks, or 60,000 years, per annum. This amount of invalidity was recognised by the Government as an equally serious burden on the State to that caused by such other diseases as cancer and tuberculosis. There was thus need of active organised treatment, as at present it was quite inadequate; in all countries this particular problem should be tackled.

Means of Dealing with the Disease.

What, Sir George Newman asked, was the sound way of grappling with this disease group? He felt sure it was necessary for greater care to be exercised both in discovery of the cause of the infection or the metabolic change in each case, and in regard to its removal. The old idea of making a frontal attack and dealing with the palpable and obvious was neither scientific nor effective; the profession must face and deal with the foci of infection. This meant, above all else, team-work, various experts combining in hospital to deal with the focus which came into their particular specialty—physician, dentist, radiologist, laryngologist, bacteriologist, surgeon. The second aspect of the combat against this group was the raising of the resistant and reactionary powers of the body. Measures must include thermal, electrical, hydrological, massage, and, indeed, any kind of treatment which would place the body in the best position to make its own great answer. It all came back to the question of the seed and the soil. A third point concerned the handling of the evidence of this morbid process as it represented itself in childhood. A beginning must be made at whatever age the disease process first affected the body. The riddle of end-results could not be answered unless the principles of preventive medicine were applied in childhood also. Rheumatism did not enter into death certification in the same way that other well-known scourges entered, and it must be recognised that this disease group formed a national problem in public medicine.

As regards institutions for treatment, to begin with we had, said Sir George Newman, three or four great spa hospitals, all of which could be used to advance the treatment of this disease. At the Ministry of Health arrangements were being sought by which there could be established an arthritis unit, in which diagnosis, treatment, and prevention could all be represented; and the Ministry hoped that one result of this meeting to-day would be to afford some guidance in this respect.

Holland.

Dr. J. VAN BREEMEN (of the Institute for Physical Treatment, Amsterdam) said the report of our Ministry of Health was an exemplary piece of pioneer work, and Holland had nothing to offer on parallel lines. The number of rheumatic patients in Holland was very large, but the scientific study and social means of combating the disease was still in its infancy. Chronic rheumatic symptoms were stubborn non-purulent inflammations of joints, muscles, nerves, and subcutaneous tissues, typical painfulness, and great susceptibility to cold, moisture, and draughts. Four factors must always, he contended, be kept in view: (1) special foci such as in tonsils, teeth, and appendix, or such general conditions as influenza; (2) the constitution, with its tendency to a rheumatic diathesis; (3) derangement of the circulation in the skin; and (4) external circumstances—climate, intoxications, traumata, excessive fatigue. Before instituting treatment each case should be very thoroughly examined. His method with his patients was to first give general treatment directed to improving the circulation, the metabolism, and the state of the nervous system—i.e., by means of baths (steam, hot air, and electric light), douche-massage, and mercury lamp. Next he applied diathermy, local hot air, light baths, and massage as local measures to improve the function of the joints. The form of arthritis known as "rheumatoid tuberculeux" needed actino-therapy, plenty of rest, good food, arsenic, and salt baths. Heroic measures such as strong bath cures or strong steam baths were often injurious here. For arthritis of larger joints he regarded diathermy as of great importance. High-frequency currents often greatly relieved the sufferings of people with a pronounced arthritic diathesis. His view was that the more definite and severe the arthritic diathesis the greater was the influence of diet. This should be sparing, especially in the matter of albumin and carbohydrates. But in rheumatoid tuberculeux a fatty diet was indicated.

It was necessary for the better prevention of invalidity that there should be a wider application of physical treatment and baths, and the skin should be specially studied. There should also be set up clinics and laboratories for conducting a methodical research into this disease group, and it must be recognised that a distinctive manifestation of rheumatism was associated with each occupation. He advocated the formation of an international committee for a large organised effort to combat chronic rheumatism.

Denmark.

Dr. HANS JANSEN (Copenhagen) said he included under the term rheumatism all the affections which Sir George Newman embraced in his report of 1924, and urged the importance of getting established an international uniform nomenclature in this branch of medicine. A year ago he, the speaker, pointed out in his country the need for setting up special hospitals for treating these diseases. In Denmark rheumatism accounted for 68,000 sick days per annum; and there were, among men workers there, 42,000 cases of that disease. At the end of 1923, 7237 people were declared to be totally invalided by it, and

14 per cent. had some form of chronic arthritis. There were, in his country, six or seven private sanatoriums where these conditions could be treated, general hospital cases being chiefly acute ones. In 1923, 3000 subjects of rheumatic disease were treated in Danish institutions and privately, but no Government agencies were at work on the subject. The poor were treated entirely free of expense, liberal grants being made towards the cost. It was the impression of himself and his colleagues that a cold and damp climate induced a considerable part of these diseases. Investigation had been made into the subject, including the effects of X rays and radium.

Sweden.

Dr. G. KAHLMETER (Stockholm) said that there were no exact statistics as to the incidence of rheumatic diseases in Sweden, but, next to old-age infirmities, articular rheumatism was the most serious cause of invalidity. 9·1 per cent. of all cases of permanent invalidity were due to chronic articular rheumatism, the next highest figure being 5·8, pulmonary tuberculosis. For treatment there were available in the country about 50 spas (during the summer), the institutions for medical treatment set up by the Board of Pensions, and the general hospitals. The spas, however, were not large or modern enough, and were only available during two and a half months in the year. The institutions organised by the Board of Pensions were intended to prevent disablement, and treatment was arranged for all rheumatic diseases and neuroses; they embraced 350 beds. Patients usually remained in them from two to three months, and if necessary had dental and orthopædic care, while some who needed it were taught another trade. Two-thirds of the cost at these establishments was paid by the Board (i.e., the State) and the remainder by the patient. Only patients were taken in who offered some prospect of again becoming self-supporting. The hospitals of the country were only intended for acute cases. Coöperation was of the greatest importance to ensure success in the treatment of these diseases, and the great need in Sweden was for a central arthritic hospital in Stockholm in association with the university clinics, especially for the facilitation of research. This would be one of the great objects of the newly constituted committee for combating rheumatism, of which the speaker was secretary.

Great Britain.

Dr. R. FORTESCUE FOX said many were of the opinion that the kind of cases under discussion were becoming increasingly prevalent. In the case of chronic rheumatism the profession was dealing with sick persons who were not, as a rule, hospital cases, but were cases who could be treated in out-patient departments, or special clinics, and at the spas and health resorts of the country. It was a very difficult matter to apply the physical remedies with the best effect; these cases had to be treated from many sides. Large numbers had an infective element, which ought to be removed if it could be discovered. Other methods which presented themselves were vaccines, thyroid treatment, and drugs. It was certainly a disease of cold and damp climates, and much could be done to counteract the ill-effects of climate by the right use of waters and baths. The claim which had been made that all the British spas could treat chronic rheumatism with success he regarded as a just one. They all had in common one important agency, well-appointed bathing establishments. In a large proportion of cases one could provide effectual and successful treatment by external methods alone, as given under medical direction and with proper skill. It was now clear that a condition of extraordinary sensitiveness underlay the rheumatic state, and in using heat and cold in rheumatic cases one was working with edged tools. He had seen excellent results, but he had also known many failures due to want of knowledge and care. It was very desirable that the benefits due to external treatment at spas should be made available in the towns. Was this work best done in connexion with hospitals, or ought there to be set up rheumatism clinics? In favour of the latter was the fact that intensive study and a proper grouping of maladies could be carried out, and there could be a liaison with institutions which were conducting special research. In such clinics there must be a whole-time expert medical director, with a suitable linkage with research establishments.

Dr. R. L. J. LLEWELLYN pointed out the gravity, from the national health standpoint, of the recent report of the Ministry of Health on the prevalence of rheumatic diseases in this country. Nothing could so raise the resistance of people to rheumatic infection as the discriminating use of hydrotherapeutic procedures, and there was need for these in the case of people employed industrially in the large centres of population. In Great Britain there were between 45,000 and 50,000 children of school age with rheumatic heart disease. Recently in a children's hospital in London it was found that out of 172 cases of rheumatic fever 66 per cent. developed heart disease; 22 of the 172 died and 38 were permanently invalided. One in every five of the population living at the age of 10 would, on the figures collected, succumb to organic heart disease. A campaign against rheumatic diseases similar to that against tuberculosis was much needed.

Dr. M. B. RAY said the yearly number of people in Greater London who were likely to seek advice in respect of rheumatic diseases was 60,000. In England and Wales some 372,000 suffered from some form of rheumatism. Not all cases of non-articular rheumatism required treatment other than could be given by the general practitioner. It was, he thought, safe to say that in the London district alone there were 22,000 insured persons who were likely to benefit from more enlightened treatment; a certain number needed in-patient care. Moreover, satisfactory research into causation could only be carried out if patients were constantly under observation.

Switzerland.

Dr. F. KORNMANN (Ragaz) said the treatment of these cases in Switzerland was available for both the well-to-do and the poor, the latter being assisted by grants from private bodies and from Government endowments. A large proportion of the cases in the country came from Geneva and places on the shores of the lake. The methods of treatment were electricity, baths, ionisation, massage, and protein therapy. Slight and early cases were often entirely cured, chronic cases were sometimes improved, but sometimes these latter proved intractable.

Roumania.

Prof. THEOHARY (Bucharest) said cases of arthritic and chronic rheumatism were treated at four spas in the main, other spas being mud and strong brine ones. Four classes of cases received some form of assistance—namely, civil servants, employers in small industries, labourers, and soldiers and the very poor. The last-named were treated in the sanatoriums organised by the Red Cross. Public bodies in the country were now subscribing increasing amounts to help those among the poorer population who stood in need of spa treatment for chronic ailments.

Spa Treatment.

Dr. KERR PRINGLE said that seven hydropathic hospitals in this country were entirely devoted to the treatment of these conditions. At Bath the largest hospital had 136 beds, with 1200 patients, while a small one had 10 beds. The Devonshire Hospital at Buxton had 300 beds and 4000 rheumatic cases. St. John's Hospital, Droitwich, had 30 beds with 603 annual cases. At Harrogate the Royal Bath Hospital had 150 beds and 2500 cases. Strathpeffer had 15 beds, and 80 or 90 cases under treatment, while at Woodhall Spa there were 30 beds available for this disease and 188 cases. At all these institutions there were considerable waiting-lists, and many cases yearly had to be refused admission. In Harrogate last season 140 cases had to be refused as unsuitable, without even seeing them. In Bath 12 per cent. of the men had osteo-arthritis, 6·9 per cent. women, while in Buxton the proportions were 6·6 per cent. men, 8 per cent. women. The Ministry of Health figures gave 8 per cent. in men, 9 per cent. in women. He contended that no case should be labelled one of osteo-arthritis unless a verification had been reached by means of X rays. An important matter to be taken into consideration was the environment of the patient. For rheumatic cases the most useful type of bath was the massage-douche, and the paraffin-wax bath at Harrogate had proved distinctly useful in certain types of cases. With regard to results, he said it was difficult to state these in figures. In cases of fibrositis and neuritis good results would be seen within a few weeks of the patient leaving the hospital; but in chronic joint cases it might be months before it could be said that there were definite results, and even then it was a question of degree. Patients' reports on their own condition were well known to be worthless.

Dr. CHARLES W. BUCKLEY spoke of rheumatic disorders in industry in the light of the experience he had gained as physician in the largest mineral water hospital in the country (the Devonshire Hospital), one which dealt with 4000 patients per annum drawn from the industrial classes. These cases among workers could be divided into four groups. In the first group were cases of rheumatic fever with its sequelæ, which might require long treatment, but for which any well-equipped institution would suffice. The second group embraced fibrositis of muscles, nerves, or joints, a group which reacted better to spa treatment than to any other, though some might require continued massage or other physical treatment, and attention to hygiene and diet after returning home. Thirdly, there were the cases of rheumatoid conditions. Many cases were now being sent to spa hospitals who were suffering from chronic osteo-arthritis of such degree as to be incapable of material improvement, and were occupying beds which could be used to greater advantage. Home treatment, where the services of a nurse skilled in massage could be obtained, was best for these, with such orthopædic treatment as could be made available under some scheme. His fourth group were the gouty, and these, he said, reacted more effectively to treatment at a suitable spa than to any other method, and this would definitely reduce the frequency, the severity, and the duration of attacks. The three principal measures required for these diseases were, first, those directed to the cause of the disease. This might be infective, or metabolic, or traumatic; sometimes the cause was dual. Attention to defective elimination was valuable in metabolic and toxic cases. Secondly, there were measures directed to increasing the patients' powers of resistance, by diet, tonics, and the improvement of home conditions. The third class of measures was the most difficult to obtain for the majority of patients—namely, those aiming to remove disabilities and their associated pain. These could only be satisfactorily secured for the industrial classes at present at the spa hospitals, but much might be done elsewhere under a well-organised scheme. Dr. Buckley proceeded to recount the chief advantages possessed by the great spa hospitals for the treatment of the conditions under discussion. There was a need for the education of the public concerning the causative factors and the importance of early treatment; also medical practitioners required more training in the recognition and treatment of ætiological factors. He also advocated the setting up of "rheumatic clinics," where facilities for various examinations could be provided and where the doctor could have consultation over his difficult cases. He felt doubtful as to the possibility of establishing hydrotherapy on any scale, save at the largest centres, though he was convinced of its value. The great need of the moment, he said, was that a skeleton scheme should be devised and put into force, either by the Government, the approved societies, or some other body. Perhaps no more worthy object existed for the activities of the Red Cross Society.

Discussion.

Mr. W. A. APPLETON, an official in the trade-union movement, said his organisation found that 9 to 10 per cent. (varying according to occupation) of the sickness among the workers was due to this disease, and he believed the actual amount of disability among artisans was really much greater than those percentages indicated. There was a need for unified action on the matter, and he would be glad if medical men would talk over the situation with those who were intimately concerned with the industries of the country. People expected the State to do everything, but the State moved slowly.

Dr. MAX BERG (Berlin) expressed the hope that some day Germany would join the League of Nations, and remarked that it would be a great advantage if his country was permitted to join this Society for the scientific study of hydrology, a subject which his countrymen were known to have furthered in a definite degree.

The PRESIDENT thanked the various speakers for their contributions, and expressed the hope that the Section of Balneology of the Royal Society of Medicine would show an active interest in the concerted effort being made to deal with these widespread conditions.

An informal conference in furtherance of future lines of action was held in the afternoon.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

AT a quarterly meeting of this Association, held in the rooms of the Medical Society of London on Nov. 17th, Sir FREDERICK MOTT, the President, in the chair, Dr. JOHN CARSWELL read a paper entitled

Insanity and Crime: Some Suggestions Arising out of the Atkin Report.

It could, he said, be taken that, at least in form, the McNaghten Rules had received such fresh support as to preserve them in being for another generation. Yet the medical profession would not admit that the controversy was ended; indeed, there seemed a desire for adjustment of the medical and legal points of view. The rule recommended by the Atkin Committee read as follows:—

> "It should be recognised that a person charged criminally with an offence is irresponsible for his act when the act is committed under an impulse which the person was by mental disease in substance deprived of the power to resist."

The committee added: "It may require legislation to bring this rule into effect," and later, "We have no doubt that if this matter were settled, most of the criticisms from the medical point of view would disappear."

Members of the Association, Dr. Carswell said, would acquit themselves as medical men acquainted with the clinical aspects of disorders of mind of expressing their ideas as to what they might regard as the test of criminal irresponsibility in these terms, which were lawyers' terms, and indeed, all the trouble had arisen in that way. Did the accused know what he was doing? And if he knew, did he know that it was wrong? These were the formulæ framed by lawyers, and the psychiatrist had no responsibility for them. Fitzjames Stephen, in his "History of the Criminal Law," Vol. II., p. 174, after considering Maudsley's observations, said:

> "I understand by the power of self-control the power of attending to general principles of conduct and distant motives and of comparing them calmly and steadily with immediate motives. Diseases of the brain and the nervous system may cause definite intellectual error, and if they do so, their legal effect is that of the innocent mistakes of fact. Far more frequently they affect the will by either destroying altogether or weakening to a greater or less extent, the power of steady, calm attention to any train of thought."

Dr. Carswell went on to say that a series of cases in recent years were available to show that judges had charged juries in the sense indicated, and even in the much debated Ronald True case Justice McCardie left three questions to the jury; the first two were in the terms of the McNaghten Rules, and the last was expressed in these terms:

> "Even if the prisoner knew the physical nature of the act, and that it was morally wrong and punishable by law, yet was he, through mental disease, deprived of the power of controlling his actions at the same time? If yes, then, in my view of the law, the verdict should be 'Guilty but insane.'"

Dr. Carswell said the point he wished to make was the following: All the judges who delivered charges in the sense he had quoted agreed that uncontrollable impulse could be read into the McNaghten Rules—i.e., the rules were logically insufficient unless some such idea could be incorporated with them. The recommendation was not based upon any unproved or doubtful category of mental disorder, nor upon any principle of criminal responsibility not already recognised. His object in this communication had been to start a fresh discussion of the problem of insanity and crime from what he understood to be the point of view of the Atkin Committee, with the hope of reaching some points at which medical men could agree that the legal conception of responsibility of the insane was more in accordance with the clinical facts as they were known to psychiatrists than at present was the case.

Discussion.

Dr. **Barker Smith** said that people were responsible in various degrees for what they did, and that was largely proportional to their education and culture. Many men acted with the same quick, unreflective impulse as lower animals. This question of responsibility in a particular person was a question for the medical man, not for the lawyers.

Sir H. **Bryan Donkin** said Dr. Carswell seemed to think that the conception of irresistible impulse was implicit in the McNaghten Rules, a very strong statement to make in his, the speaker's, view. And he did not see that any practical result could arise from the view that those ideas were implicit in the rules.

Dr. G. **Henderson** said he did not know that the term "irresistible impulse" had ever been properly defined, yet it was due that this Association should have a definition of it. In medico-legal cases the question of responsibility constantly came up, and if this question of irresistible impulse was likely to be brought into them, the issue would be more complicated than at present. Another important kind of case was that in which a prisoner's state of mind was questioned, and sometimes the man would be sent to a criminal asylum without having been tried—i.e., without the question having been decided whether he had committed the crime or not. He suggested it would be well to try to arrive at that point in the cases in which there was a certain amount of doubt.

Dr. G. D. **McRae** said a very important question arising out of this discussion was, "Is an insane man a criminal, whatever he does?" To him, it was cruel to say that a man ailing mentally was guilty for anything he did, and he regarded the expression "criminal lunatic" as archaic. An individual should be tried to prove whether he committed the act, or not. If he did commit the act but was found to be insane, the verdict should be "Proven but insane," for "guilty" in this relation was out of place. The question of responsibility should be left to the legal people. It had been said that medical superintendents of mental hospitals acknowledged the principle of partial responsibility by placing patients on parole; but the actual fact was that until the patient was certified cured the responsibility for him while out on parole attached still to the medical superintendent.

Dr. T. B. **Hyslop** said that until the medical profession awakened to the fact that in these cases it gave evidence on a question which was not at issue—namely, that of insanity, and the judge charged the jury on the question of responsibility, they would always be playing at cross purposes, and working under those absurd McNaghten Rules, which had caused grave injustice. Medical witnesses should see to it that they were examined and cross-examined on the real question at issue in the case.

Dr. W. C. **Sullivan** said the McNaghten Rules were really founded on a contradictory and unjustifiable view of the jury. The rules assured a degree of stupidity on the part of the jury which required that they should be instructed by the judge, and there was the further requirement that the medical evidence should be filtered through the strainer of the McNaghten Rules. The doctor giving evidence had no opportunity of expressing his views in full and in clinical terms, because the assumption was that the jury could not understand them. Yet that same jury was supposed to be gifted to the much greater degree required to distinguish between an act being irresistible and one which was unresisted. The present state of things resulted from excluding the jury from having a fair issue placed before them, hence the question was placed in the hands of the judge. It must always be borne in mind that there were very few murderers in whom something abnormal could not be found, and that abnormality could be magnified by medical witnesses to produce a verdict of "Guilty but insane"; but if the matter were left to the jury they would form their own opinion of the facts and on the history and the various episodes brought out.

Dr. J. M. **Mackenzie** asked whether irresistible impulse was supposed to operate in persons who were sane, as well as the insane. If so, where could the line of demarcation be drawn? Much might be learned on that from Dr. Rivers's book, "Instinct and the Unconscious."

Mr. D. **Carswell** spoke from the legal standpoint. He agreed that some of the hard things which had been said about the McNaghten Rules were justified, but asked how medical men proposed to get rid of them, as they were operative. He therefore advocated attempts being made to arrive at a concordat with the legal profession on the matter. He knew at least three senses in which the phrase "irresistible impulse" was used by lawyers.

Dr. J. G. **Soutar** remarked that even after all this argument he had never yet seen a case in which he could say that irresistible impulse was the only evidence of mental disorder in a person. When such a plea was advanced, investigation showed that a definite idea had preceded the particular act, perhaps for a long time. Impulsive acts were known to occur in perfectly sane people, and in them it was well known that the acts did not indicate insanity. If the McNaghten Rules could be wiped out, members of the Association would be in a much better position as medical witnesses. The medical man had to testify to the facts, and leave it to the judge and jury to say whether the facts testified to by skilled observers were indicative of that degree of unsoundness of mind which rendered a person irresponsible for his acts.

Dr. **Percy Smith** said the Association had done its best to show that the McNaghten Rules should be done away with, and that every case should be tried on its merits, with the fullest possible evidence. But the profession had been saddled with the rules by the verdict of the Court of Appeal in the True case, when Lord Birkenhead said they were the law of the land.

Dr. **Carswell**, in a brief reply, said he recognised that the Association had remained steadfast to its attitude; that the business of the medical man was to testify to the state of mind of the accused. That was the only logically sound position.

Reviews and Notices of Books.

DISEASES OF THE CHEST.

Physical Diagnosis of Diseases of the Chest. By JOSEPH H. PRATT, A.M., M.D., and GEORGE E. BUSHNELL, Ph.D., M.D. London and Philadelphia: W. B. Saunders Company. 1925. Pp. 522. 21*s.*

THE authors divide their work into two parts. The first deals with the physical signs of the lung, the second with those of the heart. They rightly insist that the study of physical diagnosis should begin with the normal chest and proceed from that to the abnormal. Consequently they devote a special chapter to a careful survey of the localised peculiarities of the chest in health. The physics of percussion and auscultation are discussed in detail, and in general sound reasons are offered for the various phenomena observed. A full chapter is reserved for the changes due to the presence of tuberculosis. Attention is drawn to the adventitious sounds often heard in the costo-pleural sinus and to the mistake sometimes made of interpreting them as evidence of pleurisy.

The second portion of the book, devoted to a study of the physical diagnosis of the various cardiac conditions, is particularly well arranged and lucidly expressed. We would suggest that pulsation in the second right interspace is more likely to be due to retraction of the lung owing to tuberculosis than to mitral stenosis. There is a refreshing candour in the statements that "it is not easy to time murmurs accurately," and that "when instructors claim that they can do so when the heart-rate is rapid, students may comfort themselves with the knowledge that the teachers are probably mistaken and are overrating their auditory ability." On p. 371 Mackenzie *or* Burnley should, of course, read Mackenzie of Burnley. The book can be placed with confidence in the hands of the student.

DISEASES OF THE EYE.

Swanzy's Handbook of the Diseases of the Eye and their Treatment. Thirteenth edition. Edited by LOUIS WERNER, M.B., F.R.C.S.I., Professor of Ophthalmology, University College, Dublin. London: H. K. Lewis and Co. 1925. Pp. 698. 21*s.*

THERE will always be a demand for an ophthalmic text-book neither bulky nor costly, but complete enough to satisfy the needs of the student. Twenty years ago Swanzy's text-book was deservedly reputed to be the best of its sort. To-day it has to compete with others of its size, but undoubtedly it remains one of the best. The structure of the book is substantially the same as in 1919, the date of the twelfth edition. There are some additions which add 25 pages to the book, and the whole is completely revised. The most notable alteration is that whereas in former editions diseases of the choroid were dealt with along with those of the iris and ciliary body as all belonging to the uveal tract, in the present edition choroidal diseases are classified along with retinal ones. If this is not so correct from the morphological point of view it is certainly more convenient from the clinical. In the chapter on diseases of the iris, which has been largely rewritten, we note that dental infection is hardly mentioned as a cause of inflammation of the uveal tract. Since Mr. William Lang drew attention to the subject some years ago it has come to be considered a by no means unusual cause. It would perhaps assist the student if writers of text-books were to indicate on which parts of their subject differences of opinion are legitimate. For instance, if the student is told anything at all about the pathology of retinitis pigmentosa it is only fair that he should know that different authorities hold two diametrically opposed views on it.

One of the features of this volume is the excellence of the illustrations. Of the few that have been added in the present edition perhaps the most important are the diagrams which illustrate the relations between the different parts of the visual cortex of one side and the corresponding parts of the visual fields. As we remarked in our review of the twelfth edition, the work would be improved by a short chapter on the therapeutics of the eyes including local anæsthetics. There is an unusually full appendix on the visual requirements for the public services which are not the same as when the last edition was published.

SURGERY.

Modern Surgery—General and Operative. Ninth edition. By JOHN CHALMERS DACOSTA, M.D., LL.D., F.A.C.S., Professor of Surgery, Jefferson Medical College, Philadelphia; Consulting Surgeon, Philadelphia General Hospital. London and Philadelphia: W. B. Saunders Company, Ltd. 1925. Pp. 1527. 45*s.*

THIS ninth edition has been entirely revised and reset, and though now brought up to date has been kept within the same limits. Certain chapters, previously considered desirable, have been omitted to make room for the new material; and there can be no doubt that asepsis, antisepsis, surgical bacteriology, and bandaging are best relegated to smaller handbooks. This edition was largely prepared by the author while he was on a bed of illness, and many of the chapters are the result of coöperation with his colleagues. The result is a very fine text-book of surgery, which evidently has an established reputation in the United States. One of its most striking features are the chapters at the end of the book on X rays, radium, and electrothermic methods of treatment. They give a detailed account of the uses of these various aids to the surgeon and provide useful notes for reference by practitioners and students. The book is freely illustrated and well got up.

Text-book of Orthopedic Surgery for Students of Medicine. By JAMES WARREN SEVER, M.D., Boston, Massachusetts, Assistant Orthopedic Surgeon, Children's Hospital, Boston; Instructor in Orthopedic Surgery, Harvard Medical School. New York: The Macmillan Company. 1925. Pp. 353. 20*s.*

As its title suggests, this is a rather elementary work, suitable as an introduction to the subject for students of medicine and as a survey of the scope of the specialty for nurses and even for educated laymen. Dr. Sever, in his preface, claims with justice that the book is written in simple terms, and that the student will not be led astray if he follows the advice here given. If, however, information is wanted as to the details of treatment or the technique of an operation it is to a more advanced and pretentious work that the inquirer must turn. For instance, although the author discusses the treatment of congenital dislocation of the hip and the necessary retentive appliances, he gives no hint as to the manipulations which may be necessary for the reduction of the luxation. Some other subjects are dealt with in similar fashion, while tuberculosis of bones and joints receives a good deal of attention. Even here the treatment of Pott's disease (the author has knighted the great Percivall) by the Albee and Hibbs methods is dismissed in a dozen lines of large print, and we have found no allusion to other operative procedures which have been advocated in caries of the spine. Hip disease and its treatment, especially that with the Bradford splint, and tuberculosis of the knee, ankle, and foot are dealt with from a properly conservative point of view. The author's remarks as to the importance of free removal of the diseased bone, if any cutting operation becomes necessary, are to be commended, and we endorse his conclusion that in tuberculosis of the ankle affecting adults the method of choice is generally amputation. The surgery of obstetrical paralysis of the shoulder is dealt with at some length and operations for its relief described, but the references to the operative treatment of other paralyses are sketchy and inadequate. The preparation and fitting of splints and supports are well described, and the technique of plaster-of-Paris is as thorough as would be expected from a member of the Boston School of Orthopædics.

Post-mortem Appearances.

By **Joan Ross**, M.B., B.S. Lond., M.R.C.S., L.R.C.P., Assistant Pathologist to St. Mary's Hospital, London. With Preface by **E. H. Kettle**, M.D., Professor of Pathology, Welsh National School of Medicine, Cardiff. London: Humphrey Milford, Oxford University Press. 1925. Pp. 216. 7*s.* 6*d.*

This well-printed little book sets forth in as compact a form as possible the characteristic post-mortem appearances encountered after death from various causes. The introductory remarks include a brief account of the method of performing a post-mortem examination and of the methods for preserving specimens for museum purposes. Section 1 describes the appearances seen after death from various physical and chemical agents; this is followed by sections dealing with the various diseases, general and systemic. There is a useful appendix giving, among other things, tables of average normal weights and measurements of organs.

The typical post-mortem findings in various types of disease are described in a brief and practical manner, and the book will be found most useful both to the student and to those who may be called upon to perform an occasional post-mortem examination.

Diseases of Children.

Twelfth edition. By the late Sir **James F. Goodhart**, Bt., F.R.C.P. Edited by **G. F. Still**, M.D., F.R.C.P., Physician, King's College Hospital, and Hospital for Sick Children, Great Ormond-street. London: J. and A. Churchill. 1925. Pp. 966. 28*s.*

There can be few medical readers who are not familiar with this well-known work, which has now been a standard text-book for 40 years. Dr. Still has carried out with notable success his object of bringing the book up to date without unnecessary alteration of its form. This twelfth edition contains four new chapters; encephalitis and erythrœdema are included for the first time, and separate chapters are devoted to diabetes and the purpuras. A number of minor additions have been made throughout the book. The popularity of "Goodhart and Still" among students and practitioners will be maintained by the new edition.

Anatomy.

Hand-Atlas of Clinical Anatomy. By **A. C. Eycleshymer**, B.S., Ph.D., M.D., and **Tom Jones**, B.F.A. London: Henry Kimpton. 1925. Pp. 424. 50*s.*

This atlas is a further growth and development of the "Manual of Surgical Anatomy" which was prepared for the use of the American Medical Services during the late war. Female anatomy has been included, and a certain amount of rearrangement and introduction of new plates has taken place. There is no doubt that the work, especially in its original form, met with a very good reception and demand in the country of its birth; equally without doubt it would be of considerable value to anyone called upon to carry out some surgical work, but possessing little experience to direct him and no anatomical memory as a guide. We confess, however, that we feel some disappointment with the book. It is little more than a collection, necessarily incomplete, of plates of gross anatomy. Such anatomy should be unnecessary for the operating surgeon, although it is conceivable that he might be glad of some anatomical advice in out-of-the-way circumstances. There are many points of surgical interest which could usefully find a place in an anatomical work for which we have looked here in vain—for example, the varieties in the cystic artery, or the palmar relations which are so fundamental in Kanavel's work on infections of the hand. A figure is certainly given from Kanavel, but no attention is paid to the areolar palmar spaces and their relations, and in the scheme of incisions on p. 274 the value of the lines shown would be vastly increased if there were some references or an explanatory diagram similar to those in the figure on p. 128. As in most books with many figures, some slips have missed the eye of the proof reader; we cannot help feeling doubt, too, about the nerve to which attention is called on p. 125. The figures are clear and good, and those showing usual incisions are among the best we have seen. A full and good explanatory index ends the volume, which is well produced and printed.

A Short History of Anatomy. By **Richard H. Hunter**, M.D., Lecturer in Anatomy, Queen's University, Belfast. London: John Bale, Sons and Danielsson. 1925. Pp. 51. 2*s.*

The time of a student of to-day is so taken up with things that have to be done that it would be cruel to suggest the further task of historical research, but this booklet, containing a quantum of reliable information, can be read through in a very short time, and will give the reader an idea of when some of these masters of ancient medicine had their being and of some of the things they did. Only those who love these dim, old, half-forgotten figures will try to get on better terms with them, but all ought to understand that medicine and its relations are not growths of yesterday and to-day, but that their roots were planted in very remote soils, and that their upgrowth was fostered in the past by many great and learned men. We would like to see brochures like this one in the hands of all students of medicine.

Sympathetic Disorder.

Vagotonies, Sympathicotonies, Neurotonies. Les états de déséquilibre du système nerveux organo-végétatif. By **A. C. Guillaume**. Paris: Masson et Cie. 1925. Pp. 281. Fr.14.

The output of books dealing with the sympathetic nervous system has been on the increase during the last ten years, in particular since the clinician began to apply to his own studies the conclusions drawn from experimental and pharmacological researches by the physiologist. These volumes, as must be admitted by those who have had occasion to read and test them, have been of rather pronounced inequality in merit, for not a few have been characterised by superficiality and too many by the tendency to simplify the subject by ignoring its complexities; still another fault is the habit of interpreting obscure phenomena by reference to mechanisms which have themselves scarcely emerged from obscurity.

On perusal of Dr. Guillaume's handy volume we think we may say these imperfections are less in evidence than usual in books dealing with its topic. The author takes the well-known dicta of Eppinger and Hess as to the differentiation between the two clinical types of vagotonus and sympathicotonus, and after an independent study of his own comes to the conclusion that mixed types are more common than either of these, and stresses the importance of recognising, as is too often forgotten, that the phenomena attributable to sympathetic disorder which the clinician encounters are occurring in an intact organism and *not in organs which have been isolated as in most* physiological and pharmacological experiments. His book really serves as a kind of introduction to the subject, and it is one which we consider will repay close examination, for the author is temperate in his assertions and cautious in his conclusions.

NEUROLOGICAL DIAGNOSIS.

Kompendium der topischen Gehirn- und Rückenmarksdiagnostik. Sixth revised and enlarged edition. By ROBERT BING, *Professor in the University of Berne.* Berlin and Vienna: Urban and Schwarzenberg. 1925. With 102 illustrations. Pp. 243. M.9.90.

WE have on several occasions given hearty recommendation to this now well-known and appreciated compendium of neurological diagnosis. It has appeared, we are informed, in Spanish, Russian, Polish, French, and Hungarian editions, as well as in English. Its commendable features are its relative uncomplexity, its clarity of exposition, the absence of controversial matter, and the conspicuously useful and simple diagrams scattered liberally through its pages. Learning is thus rendered as easy as possible by every device known to the teaching expert. On previous occasions we have found statements open to criticism and in need of correction, and it is satisfactory to note that some at least of these have been altered; in particular, it is now stated (p. 201) that certain involuntary movements are not caused by "irritation" but are of the nature of release phenomena. On the other hand, we consider the statement (p. 228, footnote) that spasmodic laughing and crying may be caused by the "irritation" of lesions in the vicinity of the *thalamic* reflex centres unfortunate and in need of modification.

L'Innervation périphérique. By Dr. EMILE VILLIGER, Professor in the University of Bâle. French translation by Dr. PIERRE HOFF, Chef des travaux anatomiques at the University of Geneva. Paris: E. Le François. 1925. With 66 illustrations. Pp. 314. Fr.22.

FOR the student of nervous anatomy a book such as that of Prof. Villiger is certain to prove useful and practical, though its title rather belies its contents. Not only is the peripheral nervous system *in the strict* sense fully described, but there are also sections dealing with nerve roots and their distribution, muscles and their innervation and actions, the sympathetic nervous system, and the central connexions of both motor and sensory nerves; the author *has also* managed to incorporate a few paragraphs on the clinical aspect of lesions of the motor and sensory tracts. The French translation reads easily and clearly.

PHYSIOLOGY OF REPRODUCTION.

Reproduction in the Rabbit. By JOHN HAMMOND. Edinburgh: Oliver and Boyd. 1925. With 20 plates and 40 tables. Pp. 310. 15*s.*

ANIMALS multiply in a variety of ways—sexually, by parthenogenesis, polyembryony, or budding. Even more diverse in detail are the breeding methods of different mammals. Reproduction is, indeed, one of the best illustrations of the great truth that the constants—i.e., the laws—of biology are the ends rather than the means, the results rather than the mechanisms by which they are achieved. Our knowledge of the physiology of oestrus, ovulation, conception, pregnancy and the rest seems much less advanced than it ought to be, and this delay is to a large extent due to attempts to generalise from one or two examples. This is now obviously impossible and the facts have to be worked out for each species separately. Mr. Hammond has here put together the data he has accumulated during several years' work at the School of Agriculture at *Cambridge, and Dr. F. H. A. Marshall contributes an* introduction and a chapter on the formation of the corpus luteum. The result is an interesting and well-documented work in which the processes in the rabbit are described and compared with those known in other animals. It will also be technically useful to those *engaged in breeding rabbits. Unfortunately,* the illustrations are with few exceptions poor.

POPULAR HYGIENE.

The Fight against Infection. By G. E. F. STAMMERS, Lieut.-Colonel R.A.M.C. (ret.). London: Faber and Gwyer. 1925. With 24 text figures. Pp. 214. 2*s.* 6*d.*

NEVER were the general public so anxious to be healthy as they are now, and this excellent little book will help them to understand what infection by parasites is and how it may be dealt with. After a general account of germs and resistance, Colonel Stammers takes ankylostomiasis, malaria, plague, sleeping-sickness, and enteric diseases as more detailed examples, and interpolates an admirable discourse on the text that scientific discovery is a process and not an event. It is, we think, rather a mistake to describe so many diseases with which we are now quite unfamiliar. The temptation which the spectacular successes of tropical hygiene offers is difficult to resist, but it is apt to give some impression of unreality; the quieter triumphs of domestic health work are in the end, perhaps, more convincing. *It is, of course,* difficult to say exactly how infantile mortality has been reduced to about one half of what it used to be, but the lay public would appreciate from this homely example that the fight against infection is one in which everyone can take part in quite a real daily way.

A TEXT-BOOK OF GENERAL BACTERIOLOGY.

Eighth edition. By EDWIN O. JORDAN, Ph.D., Professor of Bacteriology in the University of Chicago and in Rush Medical College. London and Philadelphia: W. B. Saunders Company. 1925. Pp. 752. 25*s.*

THE eighth edition of this text-book has still left it of manageable size and pleasing appearance. The section upon anaerobes has been revised and the book brought up to date by the inclusion of recent work upon the bacteriophage, scarlet fever, tularæmia, &c. There is little to add to the praise given to the book in the reviews of former editions. It maintains its *position as one of the* best balanced and most scholarly of the current text-books upon bacteriology and has the additional charm of viewing the subject widely, not being slavishly devoted to the pathogenic micro-organisms to the exclusion of due consideration of other forms.

JOURNALS.

JOURNAL OF INDUSTRIAL HYGIENE.—In the issue for October a contrast is drawn by D. R. Wilson, after a visit to America. between the way in which investigations into industrial activity are being conducted in that country and at home. Much work is being done in both places, but in America there is less coördination of research, rather more laboratory experiments, and rather less observations under industrial conditions. On the other hand, coöperation between engineers, technicians, physiologists, and psychologists is closer in America, and employers and operatives combine more to support inquiries of common benefit to both. Persons interested in experiments with animals on dust inhalation will find a useful note by C. K. Drinker, P. Drinker, and K. R. Drinker. These workers point out that by adding 10 *per cent.* carbon dioxide to dusty atmospheres breathing is increased, and comparatively short exposures result in a uniform and satisfactory distribution of dust particles in the pulmonary alveoli. By this means periods of exposure can be usefully shortened.—The chief article deals with the manufacture and repair of electric accumulators; it is contributed by C. W. Price and J. C. Bridge, two Home Office inspectors, who present the results of an intensive investigation of the industry in Great Britain. The industry, owing to demands for motor-cars and for wireless apparatus, has improved of late, with a great increase in cases of lead poisoning. They show how close is the incidence of cases to efficient exhaust ventilation for carrying away dust and fumes. For this purpose the various processes of casting the lead plates, of pasting them, of trimming and assembling them is described. The workroom conditions in which these processes are carried out are dealt with in detail, and recommendations are made for improving these conditions and so minimising the risk of lead poisoning and improving the general health of the workers. Arrangements for medical examination and accommodation for personal hygiene are considered. The result of this report led to the establishment of a new code of regulations, which came into force this year. The way in which this code strengthens the various safeguards is pointed out. This article is one of considerable importance.——November, 1925: A comparison of past diseases in university students coming from rural and urban districts is presented by W. P. Shepard and H. S. Diehl. Data were collected from 3478 males and about 1500 females. The common diseases in order of frequency were: measles, mumps, chicken-pox, whooping-cough, influenza, tonsillitis, scarlet fever, pneumonia, small-pox, and diphtheria. Students from rural communities were highest in past histories of pleurisy, pneumonia, rheumatism, small-pox, and tuberculosis; and lowest in chicken-pox, diphtheria, tonsillitis, typhoid fever, and whooping-cough. In contrast students from large cities were highest for chorea, and lowest for appendicitis, influenza, measles, mumps, pleurisy, and small-pox. The totals did not rise or fall regularly according to density of population. The areas were grouped into rural, villages, towns, small cities, and large cities, in order of population density. The totals for past history of infectious diseases came out: villages 317, small cities 296, towns 252, rural 232, and large cities 231. The present position of factory legislation in Australia is stated by D. G. Robertson. Each State in the Commonwealth has wide legislative powers and functions. Hence there is no one code prevailing throughout. The State of Victoria was the first to adopt legislation, which has been progressive and modelled upon the legislation of Great Britain. New South Wales, although an industrial State, followed later and has not progressed so far. Other States have legislation, but it is not extensive. There is need to-day for improvement and for the wider adoption of a uniform code. Action on these lines was taken at an industrial hygiene conference held in 1922, at which Dr. A. J. Lanza was present. Certain resolutions were then adopted as recommendations for consideration by the several States; these resolutions are given in detail. Since this conference, legislative advance has been made in Victoria and New South Wales, where medical inspectors of industrial hygiene have been appointed, and further powers to call for periodical medical examination have been taken in Western Australia.—The most important paper is one by M. S. Iszard, who recounts an investigation into the effect of calcium when inspired as a dust upon tuberculosis. Calcium hydrate was found not to be harmful to the lungs of rabbits, and to stimulate migration of macrophages containing silica particles. Inoculation with tubercle bacilli after a period of dust inhalation showed slight retardation in the development of tuberculous lesions. When lime dusting occurred after inoculation the retardation was more distinct. The investigation upon which these conclusions are based are carefully described and represent an extensive piece of useful, although somewhat negative, research.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics for 1924 of a group chiefly composed of counties and combined districts:—

Name of district.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Cambridgeshire (excluding Cambridge) ..	70,950	15·9	12·9	0·90	1·89	2·2	—	52	2·7
Cambridge B. ..	59,120	14·1	11·8	1·04	1·42	2·1	21	55	7·2
Heston and Isleworth U.D. ..	46,970	17·7	10·8	1·04	1·34	2·0	27	60	1·2
W. Gloucestershire C.D. ..	48,862	18·4	11·2	0·51	1·53	2·1	30	62	—
Herefordshire C.D.	50,371	18·7	13·6	0·76	1·67	2·6	24	52	3·2
Dumfries* ..	44,530	22·2	14·3	1·07	1·55	2·3	—	74	9·1
Isle of Ely ..	76,070	18·7	11·5	0·68	1·56	1·8	34	59	4·9
Stirling*	78,270	23·7	13·2	0·89	1·19	2·7	31	74	7·0
Dumbarton* ..	53,114	19·1	13·0	0·79	1·43	2·7	41	89	4·9

* Statistics of landward areas of county. B. = Borough. C.D. = Combined district. U.D. = Urban district. — = Figures not available.

Cambridgeshire.

Dr. Frank Robinson reports progress in the scheme for the provision of nurse-midwives in all the rural parishes of the county. The county council does not subsidise midwives directly but makes grants for the training and maintenance of midwives who will also act as sick nurses in the employment of the District Nursing Association and as infant life protection visitors for the Poor-law guardians. Of the 50 midwives now practising in the county only three are untrained, and of the 129 rural parishes there remain only 28 for which nurse-midwives have not been provided. Progress has also been made in the provision of pure water. In the Newmarket Rural District 103 water samples were analysed and 83 were found to be polluted; and in one parish out of 100 houses supplied by polluted wells 55 have been connected with the public water main. In other districts new wells have been sunk.

Cambridge.

Dr. Andrew J. Laird points out that the maternal mortality in Cambridge for the years 1919–22 was 2·39, as compared with 4·11 for England and Wales. Little use has been made so far of the arrangements for antenatal supervision, and Dr. Alice L. Robson suggests that the confidence of doctors and midwives can best be secured by the appointment of a specialist for this work. There is an arrangement for sending special antenatal cases to the out-patient department of Addenbrooke's Hospital; a fee of 10*s.* 6*d.* is charged for consultation and report and 2*s.* 6*d.* for each subsequent attendance. Arrangements have also been made with the same hospital for the admission of difficult cases of labour, normal confinement cases where the home conditions are prejudicial, and children under 5 suffering from ophthalmia neonatorum, epidemic diarrhœa, and non-infectious ailments. The charges made are 7*s.* per day for each adult (in addition to the surgeon's fee according to the scale under the Midwives Act), and 5*s.* per day for each child. Mr. W. B. Grandison, the public dental officer, reports on the dental scheme for mothers and pre-school children. When a baby has cut four teeth it is enrolled in the scheme and the mother promises to bring it to the clinic at least every six months thereafter. If this arrangement were carried out, says Mr. Grandison, every child should enter school free from dental disease, but unhappily there are lapses from grace. During 1924 67 mothers were recommended for dental treatment and 47 availed themselves of it. "Dental work for expectant and nursing mothers is almost confined to the complete elimination of teeth and their replacement by artificial substitutes." The exceptions are those mothers who previously attended the school dental clinic. During 1924 150 houses were erected, all with State assistance; 68 of them were put up by the local authority and 82 by other persons. There are at present 1324 applicants for corporation houses and many of these have been waiting for years.

Heston and Isleworth Urban District.

Dr. Elwin H. Nash reports that at the end of the year there were 61 private wells in use for water-supply and that in nine of these an alternative supply existed for domestic purposes. In 63 instances taps were placed on the main in compliance with a notice from the health department, in substitution for taps on pipes connected with inaccessible and uncovered cisterns. This remedies a very common source of pollution of the pure water from the main. A small outbreak of mild small-pox is recorded, in which seven secondary cases were infected by a tramp. Dr. Nash describes recurrent outbreaks of diphtheria during 1923–24 in a residential school dealing mainly with Poor-law boys. At the end of 1924 the whole school was Schick-tested and the non-immunes immunised. Of the 50 members of the staff, 15 were Schick-positive. Of the 480 boys 63 were positive. Two of the nurses when immunised had severe reactions, and the third had a very bad arm and was ill for six weeks. In the opinion of Dr. R. A. O'Brien, of the Wellcome Laboratories, the symptoms in the nurses were due to protein sensitiveness. None of the children showed the slightest inconvenience. There were 33 notifications of encephalitis lethargica, which occurred in two small outbreaks in a small and populous area of Hounslow. The housing conditions in the district remain unsatisfactory. In his school report Dr. Nash draws attention to the large amount of futile work involved in treating ear discharges and would like to see ionisation made available in the district. He is also opposed to the routine removal of enlarged tonsils, as he finds that many disappear after a septic mouth has been cleaned up. Complete enucleation is, he considers, the only proper method.

West Gloucestershire (United District).

Surgeon-Captain D. W. Andrews reports that progress has been made in the building of new houses, and mentions that many people object to being obliged to supply fixed baths which they say may be used as potato stores. The small-pox epidemic in the East Dean district began in April, 1923, and the last case was notified in May, 1924. Of the other districts in the combination Gloucester Rural was the only one affected by small-pox. Altogether there were 311 cases in East Dean with two deaths, and 24 cases in Gloucester Rural with no deaths. Dr. G. F. Rigden finds that there is a slow awakening of the public to the importance of antenatal work, but that "we are still far from the day of routine antenatal examination."

Herefordshire Combined District.

Dr. Herbert Jones states that one-fourth of the cottage houses have a distant water-supply, making a proper standard of cleanliness difficult. It is a constant practice to complete the building of a cottage before ascertaining whether there is a suitable water-supply available. The duty thrown on the rural district councils of enforcing a proper water-supply is not satisfactorily carried out. Of 80 samples of water examined, 32 were reported unfit. In many parts of the district "dip" wells are the source of supply. These are readily polluted, but when they are situated on a slope they can easily be made safe by enclosing them and providing a pipe outlet to slightly lower ground. The slop drains from many cottages discharge into the roadside ditch, and this practice has even been permitted in newly erected houses. The routine inspection of houses was discontinued in 1914 and is still in abeyance owing to the increased cost of executing repairs. Dr. Jones considers that it should be resumed. He discusses the difficulty of providing water-supply and drainage in rural districts, and expresses the opinion that financial assistance from the State should be forthcoming towards the provision of rural water-supplies and sewage disposal works. Between 10,000 and 12,000 men, women, and children come into the combined district for about four weeks in August and September for the hop-picking. Their employers pay much greater regard to the welfare of pickers than formerly. The Bromyard and Ledbury Councils, however, have not yet adopted the by-laws drawn up for the accommodation of hop-pickers in other districts.

Dumfries.

Dr. J. Maxwell Ross states that the increase of occupied houses is due partly to building but also to reoccupation of empty houses. In the village of Kirkconnel there are 21 one-roomed houses still used, six of which are occupied by three persons, five by four persons, one by five, and four by six. The analysis of the samples of Esk water supplied to Gretna and Eastriggs showed that the chemical treatment adopted, though expensive, was effective. The need for using the Esk water ceased in November when the gravitation supply became available. The River Nitt has been surveyed from its rise in Ayrshire to its fall into the Solway, and a good deal of pollution was found in Dumfries-shire owing to coal-washing and various sewage effluents. At one school an arrangement was found by which water from a mill stream was diverted to a channel under the seat of the latrine, the fæcal matter being washed out through a pipe on to the banks of the stream. This is reminiscent of the methods adopted by the monks at Kirkstall Abbey and other monasteries. There is practically no industrial pollution of the River Annan, and the sewage effluents of Moffat and Lockerbie are fairly purified before they reach the main stream.

Isle of Ely.

Dr. J. Pixton Walker reports that the death-rate in illegitimate infants has gone down from 120 to 80, and goes on to state that "a detailed examination of dates of birth of first-born children has shown us whole villages where forced marriages must have been the rule rather than the exception." About 60 samples of milk are examined annually under the Food and Drugs Acts, and the analyst's report has shown curious results during the last three years. The average fat-content in 1922, 1923, and 1924 was 3·58 per cent., 3·65 per cent., and 3·78 per cent. respectively, whilst the average non-fatty solids for the same years was 8·74 per cent., 8·72 per cent., and 8·56 per cent. The county council does not subsidise the Isle of Ely County Nursing Association, which will "probably soon be disbanded for lack of interest and of funds." A handsome nurses' home, however, with a maternity ward, has been erected for the March District Nursing Association, and the chairman of the county council at the opening proceedings stated that the county council pay £3 per annum towards administration expenses for every nurse employed by nursing associations who performs duties for the county council.

Stirling.

Dr. T. Adam reports that the new coördinated scheme of medical and nursing services which has been in operation since the beginning of 1924 has worked very smoothly and has given every satisfaction. Consideration is given to the suggestion of the Board of Health that fever nurses should spend two years in training at a fever hospital and subsequently two years in a general hospital so as to qualify, after examination, for both the fever register and the general register. It is pointed out that for the purpose a unit area is needed which includes both types of hospital. The central district of the county forms such an area readily, and the probationer staff of the two fever hospitals could easily pass on to the Stirling Royal Infirmary to complete their training after two years at the fever hospitals. Dr. Adam cordially approves of the new proposals. No antenatal clinics have so far been established in the county. The pollution of the rivers of the county by paper mills is receiving considerable attention.

Dumbarton.

Dr. Thomas Lauder Thomson reports a considerable outbreak of scarlet fever in the western district with which the Dumbarton Joint Hospital was inadequate to cope. There were 515 cases notified, several of which were of a severe type, and there were nine deaths. In two cases the infection spread to dairy farms, but it did not appear that the epidemic was to any appreciable extent milk-borne. Dr. Thomson thinks that the curtailment of the supply of milk to expectant and nursing mothers has caused hardship, especially in districts where there is much unemployment. There is no maternity hospital in the county. Of the 22 midwives practising, 16 have only the "bona-fide" qualification. The institutional accommodation for the treatment of tuberculosis is unsatisfactory. The county council have no control of the institutions used, patients frequently have to wait a long time for admission, and it is almost impossible to find accommodation for non-pulmonary cases. Dr. Thomson advocates the provision of a tuberculosis institution by the committees of the eastern and western districts, either by themselves or jointly with other authorities. The beds required for Dumbarton would be about 30 for pulmonary cases and 15 for non-pulmonary cases. Several improvements in the tuberculosis scheme have been approved, but the question of the provision of the sanatorium, of more dispensaries, and of a bacteriological laboratory is to be further considered.

South-West Kent United Health Area.

Dr. S. Nicol Galbraith reports that the arrangements for the hop-pickers in Kent leave much to be desired. The bad weather of 1924 showed up the unsatisfactory nature of their dwellings. "The sanitation in some camps was deplorable; in some positively indecent." He recommends the appointment of a permanent inspector. Temporary inspectors have done some good, but the time to get defects put right is not during the hop-picking, but between the seasons. In addition to the danger from infections amongst the pickers, other diseases such as rheumatism, pneumonia, and bronchitis have to be considered. Twenty-two deaths were registered among the families of the pickers, including those of 17 children, nine of whom were under 1 year of age. The hoppers' dwellings at East Farleigh come in for special condemnation. As a contrast to the bad conditions, some farmers provide model dwellings and offer prizes to the pickers for the best kept homes. It is suggested that the temporary hut encampment used for soldiers at home and abroad during the war should be taken as the minimum standard. The hop-picking in Kent means the migration of about 60,000 people into South-West Kent, and it is obvious that their accommodation is a problem which demands very careful consideration both from the point of view of the health of the pickers and of the menace to the health of the permanent residents.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 21ST, 1925.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 68; scarlet fever, 2404; diphtheria, 1031; enteric fever, 44; pneumonia, 1180 (as compared with 880 in the previous week); puerperal fever, 53; cerebro-spinal fever, 8; acute poliomyelitis, 11; encephalitis lethargica, 30; continued fever, 1; dysentery, 7; ophthalmia neonatorum, 98. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 8 deaths from enteric fever (none in London), 49 from measles, 13 from scarlet fever, 30 from whooping-cough, 29 from diphtheria, and 61 from influenza. In London itself there were 8 deaths from diphtheria and 24 deaths of infants under 2 years of age from diarrhœa and enteritis.

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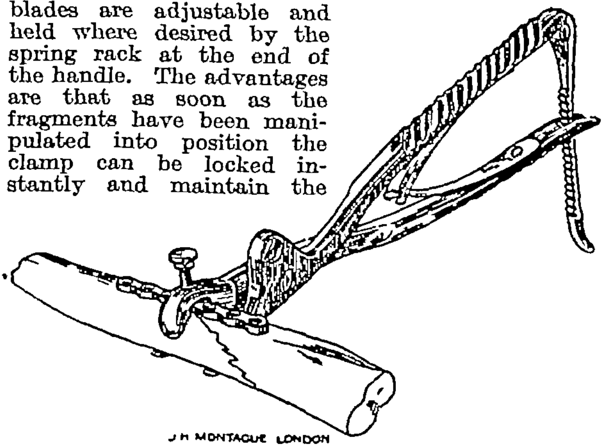

The forceps was made for me by J. H. Montague, 69, New Bond-street, W. 1.

K. F. D. WATERS, M.B., B.Ch. Oxf.
St. Stephen's Hospital, Fulham-road, S.W.

LADIES' MEDICAL GOLFING SOCIETY. — Prize-winners for 1925 of the Open Bogey Competition in aid of the Royal Medical Benevolent Fund Guild are as follows: Best aggregate of five cards: (scratch), Miss I. Doxford, 16 down; (handicap). Class 1, Mrs. Atkins, 5 down; Class 2, Miss Magee, all square. Best single card: Class 1, Mrs. Hopkins, 6 up; Class 2, Mrs. Perry, 7 up. Best aggregate of two cards: (England) Miss E. Steel, 12 up; (Scotland) Mrs. Ritchie, 2 up. This competition was started in 1923 with the object of endowing a scholarship for the Royal Medical Benevolent Fund Guild. As this object has now been attained, the competition will be discontinued. The thanks of the committee are offered to all those players who have contributed to this successful conclusion.

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[See also p. 83

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THE LANCET.

LONDON: SATURDAY, DECEMBER 5, 1925.

MEDICINE AND MONOPOLY.

Sir DONALD MACALISTER'S presidential address to the General Medical Council[1] usefully re-published one elementary fact with which the medical profession is more familiar than is the lay public. Whatever else it may be, the medical profession is not a rigidly protected trade-union. There is a register of medical practitioners who, after certain years of prescribed training, have passed certain examinations and who may be said to have pledged themselves to maintain certain standards. In 1858, when the various branches of the profession were united under one governing body, Parliament created this system of registration because it was "expedient that persons requiring medical aid should be enabled to distinguish qualified from unqualified practitioners." But, with the two exceptions of dentistry and midwifery, which Sir DONALD MACALISTER mentioned, there is no monopoly of practice in any of the healing services. We make no apology for elaborating this simple statement of the legal position. No woman may, habitually and for gain, attend women in childbirth (except, of course, under the direction of a qualified medical practitioner or in emergency) unless certified and enrolled under the Midwives Act; the prohibition is backed by a fine of £10. No person (save for certain obviously necessary exceptions) may practise dentistry, unless registered under the Dentists Act; the prohibition is backed by a fine of £100. But in creating the machinery of registration for medical practitioners Parliament has never said that no one is to give medical or surgical treatment unless his name is on the Register maintained by the General Medical Council. The registered medical practitioner has no more monopoly than the registered veterinary surgeon. Exclusion from the Medical Register is not exclusion from practice.

Hence in the present state of the law, as Sir DONALD MACALISTER reminded us, the man whose name is taken off the Register is as free to practise as if he had not been registered and the public is as free to employ him if they think fit. He escapes the jurisdiction of the Council and, if he has previously found difficulty in balancing himself upon the border-line of the recognised professional standards which the Council exists to maintain, he is happier if that feat is no longer required of him. There are, it is true, certain limited privileges which the unregistered practitioner does not enjoy. He cannot hold a medical appointment in the Army or Navy or in public institutions. He cannot give a medical certificate of illness, injury, or death; and he cannot prescribe a dangerous drug. If our countrymen think these restrictions are unfair to the unregistered, Parliament can abolish them. Meanwhile we can only repeat that, though a penalty awaits any unauthorised person who extracts a tooth or attends a woman in childbirth, nevertheless, in all other fields of medicine or surgery any person, whether registered or not, may perform any sort of operation upon the human body without liability, provided that his ministrations do not result in such untoward consequences as to give rise to a charge of culpable negligence. Even at this point, in the domain of civil and criminal liability for negligence, the law makes no difference whatever between the registered and the unregistered practitioner, the qualified and the unqualified. Probably judge and jury are more likely to find that treatment has been unskilful if administered by an unqualified person; to that extent a plaintiff brings his action against an unqualified person with better prospect of success than against qualified doctors and surgeons; but this bias, for what it is worth, arises from an inference of fact and not from a principle of law.

Let it not be said, then, that the medical profession is a jealously preserved trade-union. Do other professions have to tolerate like liberty of competition from unregistered practitioners? What opportunities of practice has the solicitor whose name is removed from the rolls of the Law Society? What right of audience has the barrister who is disbarred by the Inn which called him? There must be many members of the public who realise that more and not less protection is needed in the sphere of medicine and surgery. There must be many medical practitioners who, when they see their practice invaded by the unqualified, marvel more at the impotence of the General Medical Council than at the occasional exercise of its power of removal from the Register.

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THE MUSCULAR DYSTROPHIES.

THE neurologist, perhaps more than any other specialist in the profession, is often called on to deal with diseased conditions not attributable to extrinsic morbid action but to intrinsic, possibly congenital, defect. Among the groups with which he is concerned none is at once more simple of recognition and more difficult of treatment than that of the muscular dystrophies. Clinical classification and description are doubtless essential as a step towards the problem of ætiology and of treatment, but in respect of this particular class of case they have not taken us very far. The essential clinical features of the majority of the dystrophies have been familiar for half a century, and although difference of opinion still exists as regards their interrelation we are not likely to reach any rational conception for treatment from clinical considerations alone. Nor, regrettably, can we rely with confidence solely on the observations of the histo-pathologist, for he handles dead material, muscular cicatrices from investigation of which it is well-nigh hopeless to expect the deduction of any data concerning incipient morbid action. The end-results of the myopathies and of the myelopathies, as far as the histological picture of the muscle substance is concerned, are for practical purposes not to be distinguished. Even when recourse is made to biopsy, microscopical examination reveals a pathological state but not a morbid process, while the interpretation of the actual tissue findings is not a little difficult.

It is not to be wondered at, therefore, that dissatisfaction with mere clinical description and with the limitations of morbid anatomy should lead the neurologist who has imaginative curiosity to tackle the problem of the muscular dystrophies from other viewpoints. Prof. EDWIN BRAMWELL, whose Bradshaw lecture on this subject appeared in our columns last week, is to be congratulated on breaking away from neurological commonplaces and on his ingenious and suggestive endeavour to find an ætiological basis for these myopathic degenerations in disorder of the sympathetic and perhaps the neuroglandular systems. In brief outline of Prof. BRAMWELL's position, we may say that he is impressed by the idea that the muscles likely to be affected in the muscular dystrophies are those especially associated with the function of fixation, and he also supposes, relying on the observations of BABINSKI and ONANOFF, that such muscles as develop early in the fœtus are especially predisposed to suffer myopathically; he takes the further view that those muscles which can be shown to have acquired their functions late or to have taken on new functions are likely to prove more resistant. Applying, in the next place, the dual innervation theory as elaborated in recent years by not a few workers, among whom the late Dr. IRVINE HUNTER holds a prominent position, the lecturer admits as an attractive speculation the possibility of muscular weakness and wasting being due to implication of the sympathetically innervated elements in muscle structure, and submits clinical instances which may be taken to indicate that, in some cases at least, disorders of the endocrine system coexist with muscular dystrophy, though he is inclined to attribute both of these to an (unknown) common cause, rather than to pronounce the latter secondary to the former.

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[1] THE LANCET, Nov. 28th p. 1133.

Undoubtedly the clinical data calculated to prove of most suggestiveness in this difficult problem are those which can fairly be taken to indicate, if not to demonstrate, that other systems than the muscular are involved. For example, the vasomotor mottling of the limbs often seen in pseudohypertrophic muscular paralysis, the somatic infantilism of not a few cases of the same clinical variety, and, indeed, their occasional trait of relative mental infantilism, the frequent smallness of the bones, and other points to which allusion might be made, all serve justifiably to make the clinician think of the interjection of a neural or neuroglandular factor in the dystrophic conditions usually held in these days to be intrinsically muscular in origin. An explanation of such phenomena must be sought. Insufficient attention has hitherto been directed by the neuropathologist investigating the morbid anatomy of the dystrophies to the state of the cells of the intermediolateral tract in the spinal cord, the central connexion of the sympathetic system, and when a cord is reported to be normal in a dystrophic case we may legitimately ask whether that tract has been specially studied. Even so, however, we do not feel that Prof. BRAMWELL is on firm ground when he leaves the non-muscular clinical symptoms above alluded to, to apply a questionable hypothesis to a somewhat doubtful clinical distinction. Is it, as a fact, the case that the muscles prone to degeneration are those especially connected with the function of fixation? What is fixation? SHERRINGTON has shown us that the distinction between reflexes of posture and reflexes of movement is not clear-cut; we know that posture is often maintained voluntarily, and that movement is in reality a series of changes of posture. At one time a muscle may be employed kinetically and at another posturally. Prof. BARD, of Geneva, has in recent communications strongly urged the prima facie improbability of two separate mechanisms for fixation and for movement respectively; both on clinical and on physiological grounds the separation is more than a little doubtful. We wish Prof. BRAMWELL had referred to the implication of the facial musculature in myopathy; the remarkable selectivity, in the Landouzy-Dejerine type, of the circumoral and circumocular groups does not suggest any incidence on "fixation muscles." The specific difference, further, between the "myopathic smile" and the "myasthenic smile," scarcely supports a neuroglandular origin for the former disease if we accept it for the latter; or, alternatively, if it has its place in both conditions it will not by itself explain the clinical differences. The conclusion also drawn by the lecturer, that muscles with new or more recently acquired functions are relatively resistant, seems to run contrary to the general rule of involution as applicable to many other neural diseases with which the physician is familiar.

But the valuable service rendered by Prof. BRAMWELL in his Bradshaw lecture consists less in the sketching of hypotheses which are open to some criticism and for which a speculative rather than a definitely established basis is offered, since he himself admits with candour that speculation has its limitations; it resides rather in the courageous step he has taken of crystallising dissatisfaction with current views that describe but do not explain, and of applying to a large group of more or less intractable cases an analytical study on fresh lines which is bound to result in advance. His references to biochemical studies of the muscular dystrophies are comparatively few, although he has clearly envisaged the possibilities of progress in that direction; the now rather older work of Dr. E. I. SPRIGGS has been to some extent lost sight of, but the field is largely uncultivated and will repay any labour that is spent on it.

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RESEARCH IN SCHOOL MEDICINE.

WE have already dealt[1] with the general features of Sir GEORGE NEWMAN's recent report on the work of the school medical service during 1924. This report, like its predecessor, is no mere compilation of statistical facts and figures. Its pages present us with a living picture of the various branches of that work, its objects, its methods, its obstacles, its achievements, and even its deficiencies, and the whole is infused with a true spirit of idealism, modified only by such economical considerations in administration and organisation as the times make necessary. Throughout, the great aims of the service—prevention of disease, prevention of effects in adult life of disease in childhood, and the promotion of positive health—are kept steadily in view, and, as we read the report, we realise that its success in achieving these objects depends not only upon medical measures, but is intimately bound up with the solution of many social and educational problems. In some degree it is true to say that the school doctor discovers conditions whose causation it is beyond his powers to remove or to alleviate. Disease is found in the school-child which began in pre-school days, or if it only appears at the school age, owes its origin to hereditary causes and environmental conditions that have existed since infancy. Poverty, low wages, large families, bad housing, unsuitable and improperly cooked food, all play their part before the child enters school, and continue to do so during school life, and the persistence of these causes accounts for Sir GEORGE NEWMAN's statement that "the number of sick children at the commencement of school life is as large as ever." In matters of dietary, insanitary school accommodation, and hygienic living conditions generally the school doctor can be active as an educationist, instructing either personally or through qualified teachers, the child, the teacher, the parent, and the education committees to whom he is responsible. It is a melancholy fact that too many of our elementary schools are still models of what a school ought not to be, and that the hygiene teacher may have to give his lessons in buildings which violate in almost every possible way the principle he is trying to inculcate. To some extent the same is true of school meals. There is great scope for educative work here, and the report shows that it is not being neglected.

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[1] THE LANCET, Nov. 21st, p. 1077.

One of the most interesting sections of the report is that dealing with research work. Ever since the inauguration of the school medical service, individual officers have in such time as they could spare from routine work carried out investigations on special lines, and this report describes some of the more important of these in 1924. The subjects discussed include Rheumatic Infection in Childhood, Goitre, Prevention of Defective Vision Resulting from Squint, Epidemic Encephalitis, Methods of Measuring Fitness, Effects of Infantile Ailments upon Teeth. Obviously, the efficiency and accuracy of result of such work is limited by the fact that the medical officer is only dealing with conditions in his own area, and would be greatly increased if the research was extended to include many areas with differing types of school population. The Board has now instituted a scheme for coördinated research to make this possible, and already four extensive investigations are definitely in being on Enlarged Tonsils and Adenoids, Causes of Defective Vision, Determination of Anthropometric Norms, and Mental Deficiency. For each subject a committee has been formed, consisting of medical officers of the Board, school medical officers, and other experts on the subject, and this committee draws up a schedule of investigation for the use of the medical officers who are asked to take part in it. The methods as described are very comprehensive and include the study of "control" cases. It is proposed, for example, in studying tonsils and adenoids, to inquire minutely into their origin and their earliest symptoms and signs, and also to carry out a following-up investigation over a period of years of cases detected, whether treated or untreated.

It is to be hoped that local authorities will pay heed to Sir GEORGE NEWMAN'S remarks on the importance of research work. As he remarks, "Every year to examine the bodies of a million children without thinking, without building new knowledge, would be a species of mechanical labour, the essential value of which would be lost." The school medical service has an unrivalled amount of material to its hand for purposes of research, and while the routine duties of inspection and treatment of the individual child must not be neglected, local authorities will do well to cultivate the larger vision, and give opportunity to their staffs to partake in such work as is likely to be of benefit to the child of the future.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The forty-sixth meeting of the Commission was held at the Home Office, Whitehall, on Nov. 26th, Sir Arthur Worley, and later Lord Lawrence of Kingsgate, in the chair. Evidence was heard from the National Confederation of Employers' Organisations (represented by Mr. J. B. Forbes Watson and Mr. John A. Gregorson) on the financial aspects of the health insurance scheme. The Confederation submitted that the present need for relief to industry so as to stimulate employment was so urgent as to warrant a reduction in the weekly contributions of the employers and workers; that the present scheme is over-financed; and that the progressive expenditure on additional benefits is more than this country can afford and more than can be justified on any international comparison. Thereafter, the Commission sat in private to continue their review of the evidence which has been received since they began their work and to consider the questions arising therefrom. Proof copies of the oral evidence and the relative statements submitted at the meetings of Oct. 22nd, 23rd, and 29th, and Nov. 5th (the forty-first, forty-second, forty-third, and forty-fourth days) are now on sale at H.M. Stationery Office, price respectively 1s. 6*d*., 2s. 3*d*., 2s. 3*d*., and 1s. 6*d*.

Annotations.

"Ne quid nimis."

VITAL STATISTICS FOR 1924.

THE first part of the Registrar-General's Statistical Review,[1] which has just been issued, contains tabular matter only, the explanatory medico-statistical comments being reserved for future publication. Certain items of medical interest may, however, be culled by those trained in the use of figures. The decline in the rate of infant mortality during the present century remains the outstanding feature of our vital statistics; a reduction from 139 deaths of infants per 1000 deaths in the lowest quinquennial record of last century to 90 in 1916–20 and to 75 in 1924 meaning an improvement phenomenal in extent. It is customary to regard the improvement in infant mortality as limited almost exclusively to the last nine months of infancy, and as being unshared by infant life in the first month after birth. This point cannot be checked historically from the tables in this report, which deals almost solely with the year 1924; but it can be tested geographically from the summarised tables as are given on p. 48. Thus in the aggregate experience of all county boroughs infant mortality at ages under 4 weeks was 81 per cent. higher than it was in the metropolis, and in the aggregate experience of all rural districts was 19 per cent. higher than it was in London. These are average results; and the experience of individual districts in and out of the metropolis separately stated on p. 50 shows much wider ranges of difference. Even the average figures, however, demonstrate how large a part of so-called neonatal mortality is preventable and is being prevented in some parts and not in other parts of the country. The statistics of maternal mortality from childbirth form a further subject of great medical interest. So far as the whole country is concerned, the only historical comparison year by year given in this review is based on the use of rates per million females living. Thus stated, the reduction of mortality from puerperal sepsis from 72 in 1914 to 50 in 1924 requires checking by rates based on the number of births in connexion with which the sepsis occurred. If any importance can be attached to notifications of puerperal fever, there has been no decline in this period. More utilisable evidence is derived from the comparison of total childbirth mortality and mortality from puerperal sepsis given in the review for 1923 and 1924, and correctly stated per 1000 births. The largest ranges of total puerperal mortality for 1924 are from 8·85 in the Isle of Wight, 5·12 in Merionethshire, and 5·01 in Montgomeryshire, to 1·43 in Kesteven and in Northamptonshire, 1·50 in Middlesex, and 1·84 in London. In county boroughs total puerperal mortality ranged from 0·97 in West Ham, 1·14 in Oxford, 1·23 in Huddersfield, 1·30 in Northampton, and 1·30 in Tynemouth, to 4·55 in Blackburn and 5·30 in Bolton. In some of these towns the rates are based on a relatively small experience; but even when this is remembered, there can be no reasonable doubt that the standard of medical and midwifery attendance on women in childbirth is lamentably lower in some areas than in others.

From the point of view of ready comparisons for long periods Table 6 on p. 35 is the most valuable. Typhoid and typhus fever have disappeared from this table, and their place has been taken by tuberculosis; the addition is more welcome than the omission. A second page of long-period comparisons for individual diseases would enhance the value of the review. Perhaps the most impressive items in the existing table are the decreasing toll of measles and whooping-cough on child life. It would certainly appear that these diseases, as causes of death, are being more nearly controlled than in the past; and this appears to be so, even when the possibility of disease cycles of varying virulence is kept in mind. Medical officers of health will regret the belated issue of the sickness notification statistics in this volume instead of in a separate volume, issued not later than April, as was formerly the case. The chief value of these sickness figures lies in the possibility of early comparison between different parts of the country, and the 11 months required to ensure accuracy and completeness in the death returns is a long time to wait.

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[1] Registrar-General's Statistical Review of England and Wales, 1924. Tables. Part I.: Medical. 15s.

SEX GLANDS AND ENDOCRINE FUNCTION.

SIX lectures given at the Serotherapeutic Institute of Milan have just been reprinted in book form.[1] The course was designed to elucidate the following problems: Whether there is in the sexual glands an endocrine as well as a generative function; whether it is possible, by transplanting the glands, to utilise their hormones; and whether it is possible to isolate from these glands an active substance like adrenalin or insulin. The subject-matter of these lectures may be briefly set out thus:—

1. *The Sexual Characters, their Cause and Biology.*—Prof. C. Champy, of the Faculty of Medicine of Paris, describes his experiments on salamanders (*Triton alpestris*), in which by starvation (alimentary castration) a sexual inversion is produced. In birds, if a functioning left ovary is excised, the right gland becomes transformed into a testicle and secondary male characteristics appear. He further shows that, while the testicle secretes an exciting hormone which influences the development of the comb in the cock, the horns in the ram, the beard in man, and the thumb gland in the frog, there is also an inhibitory substance in the ovary, a "kalone," which prevents the growth of a comb in the hen. He emphasises the law of "all or nothing." Partial castration shows that there is no direct proportion between the mass of the genital gland and the action of the hormone. This law, as also the existence of an ovarian kalone, shows the necessity of reserve in interpreting the negative experiments of castration in invertebrates in which it can never be certain that some small residuum of the genital gland is left. Hence the hormone acts as a catalyser, the kalone as an inhibitor.

2. *The Laws of Action of Internal Secretions.*—Prof. E. Gley, of the College of France, also describes experiments on cocks to ascertain the relation between the volume of the testicle and length of the comb. He found that the animal with large testicles had a no more perfect comb than one in which a mere nodule remained. He consequently disbelieves in hypo- or hyper-function of the endocrine glands. A given secretion, however, may really be a complex of various products. The substance which determines sexual characters may not be the same as that which presides over the development of the cock's comb, and the thyroid substance which acts on the psyche, may not be identical with the substance which regulates the skeleton. If a given internal secretion is composed not of a single but of several products, and if one of these should be wanting either temporarily or permanently, a dissociation of morphological and functional phenomena would ensue. Cases of partial myxœdema are satisfactorily explained on this hypothesis. Another law of great physiological interest is that of "functional constancy," as shown in the retrogression of sexual characteristics in castrated cocks, characters which can be preserved by the injection of testicular extract at regular intervals.

3. *The Anatomical Basis of Ovarian Correlations.*—Prof. A. C. Bruni, of the Veterinary Institute at Milan, works out the thesis that the production of a morphogenetic hormone capable of stimulating the development of certain characteristics and preventing that of others cannot be ascribed to one part of the ovary rather than to another, but to the whole organ. The thecal and interstitial cells, besides being deposits of nutrient material, are an intermediary between the germinal elements and the somatic. The ovary on this hypothesis would act like other endocrine organs pouring into the blood useful products and abstracting harmful ones.

4. *Correlation between the Psychic System and the Sexual Glands.*—Prof. E. Lugaro, of the University of Turin, gives an interesting summary of the psycho-sexual development of the child, calling attention to pre-puberty misogyny which, in his opinion, is not a "repression" but a temporary redundance of sensuality through virile psychic tendencies. The effect of early castration is a certain degree of infantilism, but no deviation towards femininity. Genius is not a pure sexual characteristic. Discussing dementia præcox, Prof. Lugaro thinks that Mott's researches point to a phase of exhaustion of glandular activity that happens in these patients when, after a period of extraordinary exaltation, the sexual function ceases for ever, nor does he agree with Freud that the delirium, hallucinations, and sexual images are due to a psychogenic mechanism. He attributes mental disturbances at the menopause to thyroid and not ovarian influences, and hyperæsthesia sexualis to other causes than the sexual glands. As to sexual perversion, he thinks the sexual glands only play a part through the generic factor of precocious and exaggerated erotism.

5. *Old Age, and Rejuvenation by Grafting.*—S. Voronoff, of the Laboratory of Experimental Surgery in the College of France, discusses the cause of old age. Unicellular animals reproduce by fission, old age and death do not occur. Higher up in the scale the somatic cells have definitely lost the aptitude of reproducing the complete organism, but can only reproduce parts as in hydra and lumbricus. In the vertebrates even the power of reproducing parts is lost and it remains for the sexual cells to reproduce the species. Old age is due to hardening of the tissues and organs by fibrous material by which the quantity of functioning cells is diminished. The endocrine glands through their hormones act on the nutritive metabolism, on the evolution of the cells, and on their morphology—if they cease to function life becomes impossible. Observations on castrated animals show that testicular hormone directly influences morphological change in all parts of the body, as much of the brain cells as of the epidermis, bones, and other tissues. Such animals when not slaughtered do not live as long as others. Eunuchs become old at 60 and do not live long. Opotherapy only offers a slight palliative to insufficiency or suppression of endocrine glands. Hence the importance of grafting. Prof. Voronoff describes his experiments with grafting testicles on old rams and bulls which recovered not only sexual power, but all the other qualities of young animals. He shows photographic representations of several men, bulls, and rams before and after testicle grafting, claiming that the internal secretion of a young testicle in an old organism activates the multiplication of cells and their metabolism from which results a true rejuvenescence of the body. He claims that the beneficial results of these graftings both in animals and men lasted several years. The photographs are without doubt very striking.

6. *Reactivation of Physical and Mental Force.*—Max Thorek, chief surgeon at the American Hospital in Chicago, deduces from his experiments that the seminiferous and Sertoli cells play no part in the production of libido, sexual power, or sexual characters in the male, but that only the interstitial cells of Leydig have this power. He arrives at this conclusion from the grafting of testicles previously "interstitialised" by X rays. He describes his technique, the peculiarity of which consists in "fenestrating" the tunica albuginea with the actual cautery. He gives a table of the results of 143 cases—in 63 per cent. there was return to a normal condition, while 22 per cent. were unsuccessful. The cases included senility, dementia præcox, neurasthenia, and hypogenitalism. He protests against the prominence given to restoration of sexual function; what is aimed at is the general reactivation of physical and mental force.

These six lectures, written by men who may be considered masters in their special subject, are worthy of careful study. It is to be regretted that they have not as yet been translated into English so as to increase the number of their readers.

BACTERIAL CONTENT OF FÆCES.

IT has long been recognised that living streptococci are practically always present in the fæces of healthy persons. Considerable doubt, however, exists as to the importance that should be attached to variations in the number of colonies of these organisms obtained on plate culture. There are those to whom their occurrence in numbers even remotely approaching those of the coliforms justifies the attribution of pathological activity and the exhibition of a vaccine. Variations in the bacillary forms occurring in the fæces have come in for a good deal of investigation, particularly in America. The influence of diet in this respect is now well recognised, the standard example being the passage from the infantile to the adult type of flora consequent upon the passage from a milk to a mixed diet. That the reverse change from a mixed to a milk diet may in the adult bring about a return to the infantile type of flora has not been so widely recognised, and instances are not wanting in which organisms appearing in the fæces as a result of the ingestion of a diet adopted for the treatment of a disease have been accredited with the causation of the condition. Even more slowly has knowledge accumulated as to the factors governing the streptococcal population of the fæces. This question has lately been investigated by Dr. A. P. Garrod[1] at St. Bartholomew's Hospital with interesting results. Dr. Garrod has been able to demonstrate quite clearly the importance of at least two factors determining the length of survival of streptococci in the fæces. One of these is diet. On a diet rich in carbohydrate streptococci appear in far greater numbers in the fæces than they do on one consisting mostly of proteins. This was well shown by the investigation of the fæces of patients on a modified Allen diet, who showed only 3·3 per cent. of streptococcal colonies on culture as compared with 40 per cent. in individuals on an ordinary diet. In this connexion Dr. Garrod found that whereas streptococci preponderated in the fæces of the horse they were almost absent from those of the lion. A factor even more potent in modifying the number of living streptococci in the fæces is the rate of passage of the intestinal contents through the gut. The more rapid the passage towards the rectum the greater the number of living streptococci appearing in the fæces. This point is illustrated in the accompanying graphs showing the effects respectively of a course of aperients and a course of morphia upon the streptococcal population of the fæces.

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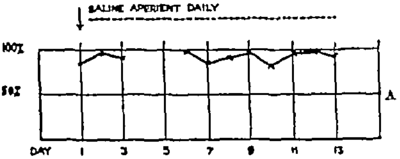
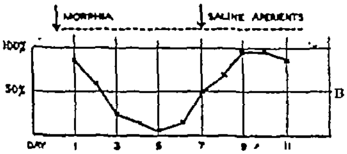
[1] La Funzione Endocrina delle Ghiandole Sessuali. Milan: Istituto Sieroterapico. 1925. Pp. 243. Lire 25.



A. Normal individual: Percentage of streptococci in fæces.



B. Ditto: Showing effect of constipation.

DOSAGE IN ULTRA-VIOLET THERAPY.

THERE is no less need for a practical method of measuring the doses of radiation used in ultra-violet therapy than in X ray or radium therapy. While nothing is easier than to specify theoretical units, so dear to the heart of the physicist, it is quite another thing with practical units. An illustration of this is the fact that if international agreement on the question of practical X ray units for medical purposes is reached next year, as it probably will be, it is only after 25 years of use of X rays in treatment. In the early days of light therapy, when Finsen was establishing its utility, quantitative methods, apart from the specification of the power consumed by the lamps, were not usual. At present there is a widespread use of open arcs with carbon or tungsten electrodes and of enclosed arcs of which only the mercury vapour type has any considerable vogue. With an open arc of a given type carrying a certain current at a given voltage there may not be much room for big variations in output of radiation during the running of a lamp, but with the mercury-vapour lamp there are two phenomena which preclude a uniformity of output. It has been shown by B. D. Watters that very soon after a mercury-vapour lamp is started the output of radiation diminishes and then increases to a steady level. The degree to which this happens depends on the power applied to the lamp, and the time taken to reach a steady condition may be as long as 15 minutes. The second phenomenon is the increasing opacity of the quartz container in the course of time. If, then, for no other reasons, it will be seen that, in order to know anything definite about the output of radiation from the mercury-vapour lamps, we must measure the radiation emitted by it and not only the power supplied to it.

But the need for some practical method of measurement for both open and closed arcs comes still closer home to clinical investigators who wish to compare their results with those of others in a strictly quantitative way. For practical purposes the method of measuring dosage should be rigid and yet easily practised, while the instrument itself should be portable, robust, and not too costly. The instrument described on p. 1205 by Mr. H. D. Griffith and Dr. J. S. Taylor consists of a cadmium photo-electric cell coupled up with a direct reading electroscope. When the rays from either of the sources mentioned fall upon the cadmium surface, electrons are liberated from the cadmium in quantity proportional to the intensity of the incident rays, and the emission of these electrons is indicated by a movement of the gold leaf of the electroscope. It appears from the description that the instrument fulfils a number of the requirements just mentioned, and it will be interesting to have the experiences of others when the instrument is in general use. The authors, wisely we think, refrain from claiming that the instrument is especially sensitive to that part of the radiation of greatest therapeutic efficiency. As a matter of fact, such terms require much qualifying before they can be scientifically used. Luminous and ultra-violet rays are now used for a very large variety of diseases, and whereas one complaint may benefit from radiation selected from one part of the spectrum, another may be more effectively treated by a different selection. It is not yet certain whether it is beneficial to apply heat radiation simultaneously with rays of low heat equivalent or whether the claim for the antagonistic action of different wave-lengths is substantiated in full. There is room for much investigation in this most promising field of radiotherapy, and it will be helped by methods which are, at any rate, quantitative in aim.

THE DIAGNOSIS OF DYSENTERY THROUGH THE MICROSCOPE.

A CONCISE, informative, and well-illustrated article of some 37 pages, recently published,[1] sets forth the *pathology, gross and minute, of bacillary* and protozoal dysentery. The method of cytodiagnosis, originally described by Willmore and Shearman,[2] forms the basis of the paper and has been elaborated so as to enable a rapid diagnosis of bacillary dysentery to be made from a microscopical examination of the discharges from the bowel. Should cultural methods of isolating the dysentery bacillus be solely relied upon, in a very high proportion of cases the information will be misleading. In presenting the subject in a manner which can be understood and practised by physicians and laboratory workers in countries where the two main forms of dysentery are rife, this paper has great practical value. The object throughout the paper is to correlate the pathological changes in the bowel wall with the nature and appearance of the cells which appear in the fæcal exudate. Many of the cells, notably the macrophages or clasmatocytes, seen in the fæces of bacillary dysentery closely resemble, to the uninitiated, stages in the life-cycle of *Entamœba histolytica*, and it naturally follows that a great deal of unnecessary confusion has risen with regard to the differential diagnosis, so important from the point of view of treatment, between these two conditions. A close study of the points of differentiation in the cell picture, as set forth in this paper, should dispel any doubts forthwith. A clear account of this subject was badly needed. The microphotographs of the cells which illustrate this article are striking and convincing. The section on treatment, which runs on familiar lines, is admirably handled.

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[1] St. Bartholomew's Hospital Reports, vol. lviii. London: John Murray. 1925. Pp. 63.

[1] Dysentery: Its Diagnosis and Management Through the Microscope. By Frank G. Haughwout, Protozoölogist and Chief, Section of Parasitology, Bureau of Science, Manila, P.I., and George R. Callender, Major Med. Corps, U.S.A., Curator, U.S. Army Medical Museum, Washington, D.C. International Clinics. Vol. II., Series 35. 1925.

[2] THE LANCET, 1918, ii., 200.

RESPIRATION IN ANÆSTHESIA.

THE Dental Board are conferring a benefit by their series of post-graduate lectures on General Anæsthesia, and the benefit will be a great one if the other lectures maintain the standard set up by Prof. Yandell Henderson, who started the series in London, Manchester, and Edinburgh. His subject was control of respiration in anæsthesia by inhalation of CO_2. The lecturer showed how by scientific employment of carbon dioxide as a respiratory stimulant safe and rapid induction of anæsthesia can be assured, and also rapid elimination of the anæsthetic drug with consequent diminution of after-effects, particularly those attributable to so-called acidosis. The practical anæsthetist will naturally not see eye to eye with all the statements of one whose observations are mainly conducted in the laboratory, and the general picture of an open administration drawn by Prof. Henderson is fortunately a caricature of the usual clinical induction. Nevertheless, the lecturer's deductions from his laboratory work and from the phenomena which are sometimes witnessed in the anæsthetising room are sound, and the lines which he lays down for conduct are of value and full of suggestion for the practising anæsthetist. Naturally the latter will have to adapt his doctrine to the circumstances of reality. For example, the principles advocated and demonstrated by Prof. Henderson can only be carried out with apparatus which involves the use of a closely applied face-piece. In practice there are many individuals for whom the one horror of anæsthesia is any device of this sort. These people are not merely fussy or neurotic. Either retching or an intolerable sense of suffocation attacks them when a face-piece is closely applied, and their peculiar disability has to be met of course by some gradual form of administration. These people are not amenable to the lecturer's first rule of good anæsthesia, which is, he states, rapid induction. The second is uniform concentration of vapour, and the third rapid termination. The most important lesson which he enforced, and with which every anæsthetist will agree, is that control of the breathing is the most essential of all factors in securing successful anæsthesia. Respiration, moreover, it was pointed out, should not be regarded merely in terms of rate of breathing. Pulmonary ventilation is what really matters, and the depth of the breathing is therefore as vital as the rate. It is the volume of air breathed per minute that is the important quantity. In this connexion Prof. Henderson dwelt on the great work done by Prof. J. S. Haldane, who has explained the significance and relations of the volume of air breathed. Carbon dioxide, he showed, is the normal stimulant and regulator of breathing. The supply of oxygen has relatively little influence on respiration, and the administration of this gas alone never acts as a respiratory stimulant. This stimulating effect of carbon dioxide on the respiratory centre is put to practical use in the methods recommended by Prof. Henderson for securing rapid induction of anæsthesia. Another factor of the method is that the ether used is fully vaporised before it is administered. Rebreathing is employed because more uniform concentration of the vapour can be thus attained than in any other way. The condition of surgical anæsthesia depends on nothing else but the concentration of the anæsthetic in the central nervous system. The degree of saturation of the rest of the body has no direct influence on anæsthesia. The concentration of ether in the brain is immediately determined by that in the lungs and in the blood. The anæsthetic tension of ether in the blood is 3·7 to 4 per cent. of an atmosphere, which comes to about 1·2 g. of ether per litre of blood. The anæsthetic concentration is probably the same for everyone, even the most alcoholic. The reactions prior to anæsthesia are the real variables as between different patients, not the concentration at the point of full anæsthesia. The practical problem, then, is how ether can be volatilised and the vapour passed into the lungs rapidly enough to raise the concentration in the arterial blood immediately to the full anæsthetic amount. This could only be achieved with normal breathing if the concentration of the ether vapour inhaled were extremely high. This method has indeed been employed, but is undesirable for one reason, because of the irritating effect on the lungs of these highly concentrated vapours. The problem resolves itself into this: how can 6 or 8 g. a minute of ether be introduced into the pulmonary blood, or how can 9 or 12 g. of ether per minute be introduced as vapour into the inspired air without increasing the concentration of ether in this air to more than about 5 or 6 per cent.? Obviously to introduce a large amount at a low concentration only one way is possible—by a large volume of breathing. This is achieved by stimulating respiration, by means of carbon dioxide, up to several times the ordinary resting volume, and then running in a sufficient concentration of fully vaporised ether to produce the concentration of ether in the blood necessary for full anæsthesia. Prof. Henderson pointed out also the value of carbon dioxide administration in cases of alcoholic poisoning, of drowning, and during the recovery period of anæsthesia. He claims it for an absolutely demonstrated fact that inhalation of air or oxygen to which a considerable percentage of carbon dioxide has been added is of very great benefit alike after a prolonged anæsthesia and after asphyxiation.

THE HOSPITAL SAVING ASSOCIATION.

IT cannot often have happened that any novel organisation, whatever its purpose, has progressed with the rapidity of the Hospital Saving Association which held its third annual meeting last week. The figures of its growth are, indeed, remarkable. In July, 1923, it had 15,000 members; by January, 1924, the numbers had grown to 25,000; by January of the present year they had swollen to 101,000; July saw 160,000, and there are now more than 200,000. A year ago the income of the Association was under £40,000; it is now £120,000. These figures go far to justify Lord Hambleden's forecast at last week's meeting that the membership will in time reach a million. The material for expansion is almost unlimited. Persons whose incomes are within "hospital limits" increase yearly in number, and there are, no doubt, still eligible many who have not yet joined the Association. For 3*d*. a week, some portion of which is often paid by the employer—the London Midland and Scottish Railway Company, for instance, contribute one-third—a man may ensure hospital treatment for himself and his family without loss of self-respect and with complete freedom from almoner's inquiries into means. Where so much can be obtained for so little it is not surprising that the movement should have achieved such rapid and substantial success. Nor are the benefits one-sided. Like the quality of mercy, these small payments are twice blessed, for if they give a remarkably cheap insurance on the one hand, on the other they provide the hospitals with large sums which they would otherwise almost entirely lack. During the past year the hospitals have received £65,000 from these weekly pence, a substantial proportion of which has been paid for extra benefits. Thus, while the contributor learns a little lesson in thrift he is rewarded with the best and fullest treatment that the modern hospital can provide. The fear that these easy terms would attract to the hospitals, to the detriment of the general practitioner, cases which would otherwise not have been treated there has been falsified, and may apparently now be dismissed. Mr. E. W. Morris's optimistic statement that the Association has "saved the hospitals" is, perhaps, a trifle premature, but it is well on its way to the achievement of the object for which it was created. This and other forms of contributory schemes are not only placing hospitals generally on a sound financial basis, helping to make possible the inevitable and costly developments of the near future, and giving the quietus to hasty talk about State interference, but inculcating valuable lessons of thrift, self-help, and independence among the mass of the people.

THE COLLEGE OF SURGEONS AND ITS MEMBERS.

THE Council of the Royal College of Surgeons of England is again considering the claim of Members of the College to representation on its Council. A few days ago the Council received a small delegation introduced by Dr. Redmond Roche, President of the Society of Members, who set out the story of the long unrequited desire of the Members to have a share in the government of a corporation in which they were numerically so preponderant. Ever since the charter of 1843 which instituted "a new class of Members who were to be called Fellows," on whom devolved the government of the College, there has been almost continuous protest by the remainder against this exclusion. In 1887 the Association of Members presented to the Privy Council a petition signed by 4000 Members, believed to be half the number which could then be reached by post, and in 1896 a half-yearly meeting of Fellows of the College passed a resolution admitting the desirability of giving Members direct representation on the Council. At every annual meeting for the last 31 years the Society of Members has urged this concession upon the President, and at the recent meeting, which we briefly reported, a motion to that effect was moved by Dr. L. Haden Guest, M.P., and seconded by Mr. F. Lawson Dodd, L.D.S., both Members of the College, in speeches which dealt with broad principles of democratic government. Dr. Guest spoke of the vast new store of knowledge and capacity available to the College which might be opened up by linking the general body of Members with the work of the institution, and Mr. Dodd spoke of the greater authority, the wider sanction, and the greater influence in the eyes of the public which the College would gain thereby. It was, he thought, refreshing in these days to have children coming forward and wanting closer union with their parents. No criticism was made by the Members' representatives of the conduct of the Council as at present elected and administered by Fellows of the College, for the charter of 1843, which excluded a large class from governing, removed the existing abuses of government. The number of the Council was then increased to 24, of whom three should retire annually, the choice of examiners was no longer restricted to councillors themselves, and any councillor became eligible for presidency or vice-presidency. The Council of the College as so constituted now carries out a triple function of developing the Hunterian Museum, of maintaining a valuable library, and of examining candidates in surgery. Other functions are less well defined. Section XV. of the College by-laws states that the Council will at all times protect and defend its Fellows and Members who may be disturbed in the exercise and enjoyment of their rights; and Section XIV., relating to the admission of Members, includes a declaration by them to obey every lawful summons issued by the Council and to maintain the dignity and welfare of the College. It may be that with the growth of wider professional associations and the institution of a disciplinary medical council the medico-political work of the College of Surgeons was likely to be dropped. In any case, since the conjoint method of examination was initiated in 1875, any political action might have to be taken with the coöperation of the sister College. It may also be contended that the term "Member" does not now entail more or other obligations than that of "Licentiate" of other medical corporations. But there is no reason to doubt that a body of Members is desirous of taking part in the corporate life of the College, and that this desire is to be considered on its merits by the Council. There may be other and larger issues than those which have appeared in the fitful light of controversy.

CENTENARY OF BIRMINGHAM MEDICAL SCHOOL.

THE centenary of the Medical School of Birmingham University will be celebrated on Dec. 8th, when it is proposed to confer honorary degrees on Mr. Neville Chamberlain, Minister of Health; Sir Donald MacAlister; Sir Humphry Rolleston; and on Mr. Priestley Smith, the doyen of the medical profession in Birmingham. The first records of any teaching in medicine in Birmingham go back to 1768, when Mr. John Tomlinson, surgeon to the Town Infirmary, held a course of anatomical lectures during the winter season for the medical students apprenticed to medical practitioners in the town. Tomlinson was the first provincial surgeon to give regular anatomical lectures, and his name should be handed down to posterity on that account. The General Hospital was founded in 1770 by Dr. John Ash, who became one of its first four physicians, the other three being Dr. Smith, Dr. Withering, the introducer of digitalis into practical medicine, and Dr. Edward Johnstone, who died in 1851 at the age of 94. The seed of the modern flourishing and important school was planted on Dec. 1st, 1825, when William Sands Cox, then 24 years of age, delivered the first of a series of anatomical lectures. Clinical lectures had been delivered long before this in Birmingham, but Cox introduced the systematic instruction of medical students at No. 24, Temple-row. Cox had studied himself at the General Hospital, and after being articled to his father had continued his studies in London at Guy's and St. Thomas's Hospitals, obtaining the M.R.C.S. in 1824. He then went to France, where he studied under Laënnec, Lisfranc, and Cuvier, and where he met Quain, the anatomist. On his return to Birmingham Cox urged the formation there of a school of medicine, and in 1828 the senior members of the local medical profession decided to follow the lead given by Manchester and Leeds. In spite of much opposition the school was *fairly* started by 1834, when 90 students were enrolled. Two years later King William IV. accepted the position of patron and conferred upon the school the title of the Birmingham Royal School of Medicine and Surgery. In 1843 a charter granted by Queen Victoria resulted in the renaming of the school as Queen's College. When Cox retired in 1863 the College was still heavily in debt and its future uncertain, but three years later it joined forces with the Sydenham College connected with the General Hospital. Later, after the foundation of Mason Science College, some of the preliminary medical training was transferred there, and in 1892 the medical faculty of Queen's College became the Queen's Faculty of Medicine to Mason College. The final step was the incorporation in 1897 of Mason College as a University College, the charter conferring University status being granted three years later. During the present century the growth of the medical faculty has continued unchecked, a flourishing dental school has arisen, and the outstanding event has been the opening of the new buildings at Edgbaston by

King Edward VII. in 1909. A short history of the School, compiled by the medical faculty and the Birmingham Medical Institute will be published[1] on the day of celebration.

THE PSYCHO-PHYSICAL BORDERLAND.

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Rupture of the Tendo Achillis.

The heel tendon is the most frequent to rupture. The injury occurs when the tendon is subjected to any sudden or forcible strain, of which dancing is a traditional example. A gap can be felt between the divided ends, but by bringing the foot into the attitude of equinus the interval is lessened and good union always takes place under proper treatment. I know of no instance during the last 12 years at the Royal National Orthopædic Hospital, where tenotomies are very frequently performed, where union failed after tenotomy of the tendo Achillis for congenital talipes—and this in spite of the fact that the tendency is deliberately to increase rather than diminish the gap after section. In treating this condition there is no need to make the patient lie up. All that is necessary is to raise the heel of the boot by adding half an inch of leather and to prevent movement at the ankle. This is accomplished by attaching a rigid metal rod to the heel of the boot and running it up behind the leg to terminate in a padded leather calf band which buckles to encircle the limb just below the knee. The patient will quickly accommodate himself to this appliance and walk with the limb rotated outwards. To keep the ankle quiet in bed at night a splint should be worn with foot and calf pieces so arranged as to keep the foot in slight equinus. Daily massage of the calf muscles with the foot grasped and held in the equinus attitude will help recovery and maintain muscle tone.

Another simple and efficient method is that devised by Lynn-Thomas through personal experience of the injury. A flattened strip of aluminium is moulded to the dorsum of the foot and front of the ankle and leg. It is then encased in a thick indiarubber tube and is worn between the tongue of the boot and the lacing, the lower strands of the boot-lace being made to encircle the splint to avoid undue pressure. The metal and rubber do not extend upwards much beyond the boot. The appliance may be discarded at the end of six weeks; by then the ends of the tendon will be united by strong white fibrous tissue.

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Owing to the great tendency to retraction, massage is of little avail; the only satisfactory treatment is to operate and suture the torn muscle. Of the three cases cited two refused operation and no improvement resulted. The third had the muscle exposed and the inner head was found ruptured with the lower end coiled up. The sheath was intact for its greater part. The upper end of the tendon was pulled down inside its sheath and the two ends united by catgut. The arm was nursed in the flexed position on a splint for ten days, when massage and passive movement were commenced and the splint retained for another ten days. After that the patient was allowed gradually to use the arm and recovered completely.

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Special Articles.

GENERAL MEDICAL COUNCIL.

DENTAL EXAMINATIONS.

AT the session of the General Medical Council held last May it was decided that certain resolutions of the council on dental examinations should be forwarded to the various licensing bodies, who should be asked to comment upon them. On Nov. 24th the Dental Education and Examination Committee of the Council presented its observations on the replies received. One of the recommendations of the Council was "that, where possible, candidates should be tested in the mode of administration of general anæsthetics in common use in dental practice and should be required to perform extractions." It was reported that in the final examination the University of Birmingham has no practical tests in the administration of anæsthetics and that the Universities of Liverpool and Manchester do not require candidates to perform extractions. At the Royal College of Surgeons of England a certain number of candidates is always called upon to extract teeth under anæsthetics in the final examination, but this test is only applied to a small proportion of the whole number examined. The Council of the Royal College of Surgeons of England strongly disapproves of candidates under examination being called upon to administer anæsthetics to patients. Having considered the answers received the Dental Education and Examination Committee recorded its opinion that—

> The test of performing extractions in the final examination for a dental qualification is as important as the other practical tests required by all the licensing bodies; and that, when circumstances permit, it would greatly add to the efficiency of the examination if candidates were tested in the administration of anæsthetics in common use in dental practice, carried out under the personal supervision of the examiners. If the anæsthetics be administered by a skilled anæsthetist the candidate should be questioned on the mode of administration, and the possible dangers which may arise therefrom.

A regulation making it obligatory to pass all the dental subjects of the final examination at one time is apparently enforced by all the licensing bodies except Manchester University; whilst the recommendation that candidates remitted in any subject of a professional examination should, before being readmitted to examination therein, produce evidence of further study in this subject, is not carried into effect at Queen's University, Belfast. The Royal Faculty of Glasgow suggests that this further course of study should be asked only of those who obtain less than 40 per cent. of the available marks. The Council decided that the application of the regulation should not entail a period of remission of more than six months, and directed that the attention of licensing bodies should again be drawn to its resolutions and to the observations on them contained in the Dental Education and Examination Committee's report.

THE DENTISTS REGISTER.

A communication was read stating that the Dental Board had considered the case of John Begg, which had been referred back by the Council for further inquiry, and had not found that his name ought to be erased from the Register. A report was also received from the Board concerning Thomas McGowan, registered as of 26, Whalley New-road, Blackburn, who was convicted of a felony at the Liverpool Assizes on Oct. 30th, 1925, and sentenced to 12 months' imprisonment. The solicitor to the Board presented the facts to the Council, which deliberated in camera and directed that Mr. McGowan's name should be removed from the Register.

The President then announced that the Registrar to the Dental Board had been directed to restore to the Register the names of Stuart Christopher Nicol and James Edward Smyth.

THE MEDICAL REGISTER.

The Case of Alexander Dawson Reid.—This case was adjourned from Nov. 27th, 1924, when Mr. A. D. Reid, registered as c/o R. Crosbie, Barclays Bank, High-street South, London, E. 6, appeared before the Council on account of convictions for drunkenness. The charges against him were then proved to the satisfaction of the Council, but in consideration of evidence that he was suffering under physical disabilities and of an assurance from Mr. Reid that he would henceforward refrain from alcohol, the Council postponed its decision for 12 months. Testimonials as to sobriety during this period were received, and Mr. Hempson, solicitor, who appeared on behalf of the Medical Defence Union, stated that Mr. Reid had kept his promise to abstain from drink. After deliberation in camera, the President announced that the Council had not seen fit to direct that Mr. Reid's name should be erased from the Register.

The Case of John Evans.—On Nov. 26th, 1924, Mr. Evans, registered as of 6, High-street, Yiewsley, Middlesex, appeared before the Council on a charge of having issued 79 medical certificates required for National Health Insurance purposes during the period Sept. 5th, 1922, to March 11th, 1924, without having seen the insured person to whom they referred at any time between these dates. The Council at that time postponed judgment for 12 months. Letters from practitioners testifying to the good conduct of Mr. Evans during the interval having been produced, the Council considered the case in camera and the President announced its decision as follows—

> "Mr. Evans: As I warned you a year ago, the Council takes a very grave view of any laxity on the part of a registered medical practitioner in giving Certificates, a privilege which is entrusted to him by the State in the belief that he will exercise it honourably; but, having had good reports of your conduct since November last, the Council are now satisfied that you will be more careful in the future and do not see fit to direct the Registrar to erase your name from the Medical Register."

The Case of Alexander Duguid.—The Council then considered the case of A. Duguid, registered as of 20, Meadow-road, Leeds, M.B., Ch.B. Aberd., who appeared on the following charge:—

> "That, being a registered medical practitioner and a lieutenant in the Royal Army Medical Corps, you were tried by a Field General Court Martial, held overseas on July 14th, 1917, on the following charge, viz.: when on active service drunkenness, in that you, at Mikesso on June 30th, 1917, having been warned for the duty of accompanying patients to Morogoro, were drunk, of which charge you were found guilty, and sentenced to be dismissed from His Majesty's Service; and that in relation thereto you have been guilty of infamous conduct in a professional respect; and that you were at the Leeds City Police Court convicted of the following misdemeanours viz.: On May 2nd, 1922, of disorderly behaviour while drunk, for which you were fined 10*s*. or seven days' imprisonment; on April 24th, 1925, of being found drunk and incapable, for which you were fined 10*s*. or seven days' imprisonment."

Mr. Duguid was accompanied by Mr. O. Hempson, solicitor, who was instructed by the Medical Defence Union. Mr. Hempson objected to the two offences of which his client had been convicted at the Leeds City police court, being classed as misdemeanours under Section 29 of the Medical Act, 1858. A misdemeanour, he argued, is an offence, less than a felony, which is the subject of indictment. The offences in question had been the subject of summary jurisdiction, and therefore should not be regarded as misdemeanours. The Council could only deal with them, he considered, under the heading of "infamous conduct" and not under that of "convictions." The Council's solicitor quoted authority to the effect that any crime less than a felony is a misdemeanour, whether indictable or not, and the President, on the advice of the Council's legal assessor, overruled Mr. Hempson's objection.

In the course of examination Mr. Duguid stated that on June 30th, 1917, he was off duty; he had transferred the care of his patients to a relieving officer and he had not been warned for duty as alleged. On May 2nd, 1922, he was one of a wedding party at a railway station, and although he had "had a drink" he was by no means drunk. He was taken to the police station and pleaded guilty to the charge in order that the incident might be closed as soon as possible; but he had resolved to abjure alcohol and had been a total abstainer ever since. The conviction on April 24th, 1925, was, he stated, the result of an error. On the previous night he had taken large doses of dial—8 or 10 tablets—for insomnia, and this had made him unwell. In the morning he called in a fellow practitioner, who advised him to stay indoors for 48 hours; but this advice he disregarded. He went out, was overtaken by faintness, entered a cab, and was driven to the police station. Neither on this nor on the previous occasion was he examined by a police doctor. Mr. Hempson produced letters of testimonials to Mr. Duguid's character, and the Council deliberated in camera. The President then announced that the charge and convictions had been proved to the Council's satisfaction; nevertheless, in view of the evidence submitted, the Council had not seen fit to direct that Mr. Duguid's name should be erased from the Register.

The Case of Charles Bertrand Wagstaff.—Mr. C. B. Wagstaff, registered as c/o National Provincial Bank, 50, Cornhill, London, E.C. 3, M.R.C.S. Eng., L.R.C.P. Lond., was charged with having abused his position as a medical practitioner by committing adultery with a married woman, with whom and whose family he stood in professional relationship, of which adultery he was found guilty by a decree of the High Court of Justice, dated June 11th, 1925. Mr. Wagstaff did not appear in answer to his notice, but wrote saying that he denied that adultery took place, but realised that it would be impossible to prove the contrary to the Council. Evidence of Mr. Wagstaff's attendance in a professional capacity on the persons concerned having been put forward, the Council considered the case in camera and the President announced that the Registrar had been directed to remove his name from the Register.

The Case of George Joseph Mary Fraser.—Mr. Fraser, registered as of 36, Blenheim-crescent, London, W. 11, and having the Irish Conjoint qualification, appeared to answer the charge that he had been convicted on Oct. 21st, 1924, of failing to notify a case of tuberculosis and the birth of a child, and—

"That, being a registered medical practitioner you, by your presence, countenance, advice, assistance, or coöperation, knowingly enabled an unqualified and unregistered person, viz., one Ulric Knyvett Hoff: (1) To attend, treat, or perform operations upon patients in respect of matters requiring professional discretion or skill, or otherwise to engage in professional practice as if the said person were duly qualified and registered; (2) to issue certificates, notifications, reports, or other documents of a kindred character in your name or on your behalf. That being a registered medical practitioner: (1) You signed a certificate of death on April 3rd, 1924, of one Mrs. Sarah Jenner, certifying that you attended her during her last illness, and that you last saw her alive on March 30th, 1924, whereas you had not attended or seen the said Sarah Jenner during her last illness at all; (2) you signed a certificate of death on Feb. 8th, 1925, of one Mrs. Amelia Wimmer Lembo, certifying that you had attended her during her last illness, and that you last saw her alive on Feb. 8th, 1925, whereas you had not attended or seen the said Amelia Wimmer Lembo during her last illness at all; (3) you signed a certificate of death on Feb. 12th, 1925, of one Mrs. Elizabeth Whiting, certifying that you attended her during her last illness, and that you last saw her alive on Feb. 12th, 1925, whereas you had not attended or seen the said Elizabeth Whiting during her last illness at all, which certificates were untrue, misleading, and improper; and that in relation thereto, you have been guilty of infamous conduct in a professional respect."

Mr. Charles Davis, solicitor, of the firm of Bulcraig and Davis, conducted Mr. Fraser's defence, and the hearing, which began on Tuesday, did not end till Thursday, Nov. 26th. In brief, Mr. Fraser's answer to the charge was that he never had any reason to doubt that Hoff was a qualified and registered practitioner until Feb. 8th, 1925, when Hoff informed him that he was not on the Register. He denied that the certificate of the death of Mrs. Sarah Jenner given on April 3rd, 1924, was in any way inaccurate; but admitted that, under the stress of circumstances, he gave the two other death certificates without having attended the patients as stated. He did not know that Hoff was unqualified until March 31st, 1925, some time after they had parted company.

Mr. Fraser's statements were to the following effect. In 1911, about the time of his qualification in Dublin, he was introduced to Hoff by a member of the honorary staff of his hospital. Hoff stated that he had a medical degree of Calcutta University and invited Mr. Fraser to act as his assistant and locum tenens on a tea plantation in Bengal of which he was medical officer. Mr. Fraser served in India in this capacity for more than a year and then returned to start a practice in Mile End-road, London, which he later left to serve in the war. In 1918 he received a call from Hoff, who acted as his assistant for a time. In January, 1924, he bought a practice in Kensington and on meeting Hoff in Southampton-row in a destitute condition invited him to act as locum tenens. Mr. Fraser was at times crippled by sciatica and the arrangement seemed satisfactory. Hoff had been acting as house physician at Doncaster and Hartlepool Infirmaries and elsewhere, and produced brilliant testimonials from a large number of doctors all over the country to whom he had acted as locum tenens or assistant. It never occurred to Mr. Fraser to question his qualifications or registration, and he engaged him at eight guineas a week. Later the remuneration was reduced to four guineas without night work. Hoff proved thoroughly competent, and the word registration was never mentioned between them until Feb. 8th, 1925, when Hoff suddenly appeared and asked Mr. Fraser to come and see Mrs. Lembo, whom he was attending, and who was dying. Dr. J. S. Goodall had been called in as a consultant. Hoff now admitted that he was not, in fact, registered though he was qualified for registration. (It was later discovered that he had taken a part of his examination for the licence of the Apothecaries' Hall, Dublin, and that whilst employed during the war at the institutions mentioned he had been granted by the Registrar-General a temporary privilege of signing death certificates for patients dying in these places.) Mr. Fraser and Hoff hastened to Mrs. Lembo's house, only to find the patient dead. It seemed impossible to ask Dr. Goodall for a certificate in case his suspicions should be aroused. Mr. Fraser was ill at the time. He thought it best to sign the certificate himself, pending Hoff's registration, and, having done so, he returned to his nursing-home. Four days later Mrs. Whiting died whilst under Hoff's care. Mr. Fraser again thought that the only possible course was to give a certificate himself. These two certificates were, he stated, his only lapses. On Saturday, March 14th, 1925, Mr. James Fenton, M.B., medical officer of health for the Borough of Kensington, had reason to make inquiries about a case of alleged scarlet fever said to be under Mr. Fraser's care. He called at the house, but was told that Mr. Fraser was in a nursing-home and that Hoff was acting for him. Hoff was out, but it occurred to Mr. Fenton to look up his name in the Medical Directory. On finding that it did not appear he rang up Hoff and told him of the omission. Mr. Fraser said that on returning home that day (Saturday) he heard of the incident and insisted that Hoff should accompany him to see Mr. Fenton on the following Monday morning. Mr. Fenton was then told that Hoff was not on the Register (although entitled so to be) and from March 14th onwards, said Mr. Fraser, Hoff and he had nothing to do with one another except in connexion with debts and defalcations which Hoff had incurred in the practice.

Special Articles.

GENERAL MEDICAL COUNCIL.

DENTAL EXAMINATIONS.

AT the session of the General Medical Council held last May it was decided that certain resolutions of the council on dental examinations should be forwarded to the various licensing bodies, who should be asked to comment upon them. On Nov. 24th the Dental Education and Examination Committee of the Council presented its observations on the replies received. One of the recommendations of the Council was "that, where possible, candidates should be tested in the mode of administration of general anæsthetics in common use in dental practice and should be required to perform extractions." It was reported that in the final examination the University of Birmingham has no practical tests in the administration of anæsthetics and that the Universities of Liverpool and Manchester do not require candidates to perform extractions. At the Royal College of Surgeons of England a certain number of candidates is always called upon to extract teeth under anæsthetics in the final examination, but this test is only applied to a small proportion of the whole number examined. The Council of the Royal College of Surgeons of England strongly disapproves of candidates under examination being called upon to administer anæsthetics to patients. Having considered the answers received the Dental Education and Examination Committee recorded its opinion that—

> The test of performing extractions in the final examination for a dental qualification is as important as the other practical tests required by all the licensing bodies; and that, when circumstances permit, it would greatly add to the efficiency of the examination if candidates were tested in the administration of anæsthetics in common use in dental practice, carried out under the personal supervision of the examiners. If the anæsthetics be administered by a skilled anæsthetist the candidate should be questioned on the mode of administration, and the possible dangers which may arise therefrom.

A regulation making it obligatory to pass all the dental subjects of the final examination at one time is apparently enforced by all the licensing bodies except Manchester University; whilst the recommendation that candidates remitted in any subject of a professional examination should, before being readmitted to examination therein, produce evidence of further study in this subject, is not carried into effect at Queen's University, Belfast. The Royal Faculty of Glasgow suggests that this further course of study should be asked only of those who obtain less than 40 per cent. of the available marks. The Council decided that the application of the regulation should not entail a period of remission of more than six months, and directed that the attention of licensing bodies should again be drawn to its resolutions and to the observations on them contained in the Dental Education and Examination Committee's report.

THE DENTISTS REGISTER.

A communication was read stating that the Dental Board had considered the case of John Begg, which had been referred back by the Council for further inquiry, and had not found that his name ought to be erased from the Register. A report was also received from the Board concerning Thomas McGowan, registered as of 26, Whalley New-road, Blackburn, who was convicted of a felony at the Liverpool Assizes on Oct. 30th, 1925, and sentenced to 12 months' imprisonment. The solicitor to the Board presented the facts to the Council, which deliberated in camera and directed that Mr. McGowan's name should be removed from the Register.

The President then announced that the Registrar to the Dental Board had been directed to restore to the Register the names of Stuart Christopher Nicol and James Edward Smyth.

THE MEDICAL REGISTER.

The Case of Alexander Dawson Reid.—This case was adjourned from Nov. 27th, 1924, when Mr. A. D. Reid, registered as c/o R. Crosbie, Barclays Bank, High-street South, London, E. 6, appeared before the Council on account of convictions for drunkenness. The charges against him were then proved to the satisfaction of the Council, but in consideration of evidence that he was suffering under physical disabilities and of an assurance from Mr. Reid that he would henceforward refrain from alcohol, the Council postponed its decision for 12 months. Testimonials as to sobriety during this period were received, and Mr. Hempson, solicitor, who appeared on behalf of the Medical Defence Union, stated that Mr. Reid had kept his promise to abstain from drink. After deliberation in camera, the President announced that the Council had not seen fit to direct that Mr. Reid's name should be erased from the Register.

The Case of John Evans.—On Nov. 26th, 1924, Mr. Evans, registered as of 6, High-street, Yiewsley, Middlesex, appeared before the Council on a charge of having issued 79 medical certificates required for National Health Insurance purposes during the period Sept. 5th, 1922, to March 11th, 1924, without having seen the insured person to whom they referred at any time between these dates. The Council at that time postponed judgment for 12 months. Letters from practitioners testifying to the good conduct of Mr. Evans during the interval having been produced, the Council considered the case in camera and the President announced its decision as follows—

> "Mr. Evans: As I warned you a year ago, the Council takes a very grave view of any laxity on the part of a registered medical practitioner in giving Certificates, a privilege which is entrusted to him by the State in the belief that he will exercise it honourably; but, having had good reports of your conduct since November last, the Council are now satisfied that you will be more careful in the future and do not see fit to direct the Registrar to erase your name from the Medical Register."

The Case of Alexander Duguid.—The Council then considered the case of A. Duguid, registered as of 20, Meadow-road, Leeds, M.B., Ch.B. Aberd., who appeared on the following charge:—

> "That, being a registered medical practitioner and a lieutenant in the Royal Army Medical Corps, you were tried by a Field General Court Martial, held overseas on July 14th, 1917, on the following charge, viz.: when on active service drunkenness, in that you, at Mikesse on June 30th, 1917, having been warned for the duty of accompanying patients to Morogoro, were drunk, of which charge you were found guilty, and sentenced to be dismissed from His Majesty's Service; and that in relation thereto you have been guilty of infamous conduct in a professional respect; and that you were at the Leeds City Police Court convicted of the following misdemeanours viz.: On May 2nd, 1922, of disorderly behaviour while drunk, for which you were fined 10*s.* or seven days' imprisonment; on April 24th, 1925, of being found drunk and incapable, for which you were fined 10*s.* or seven days' imprisonment."

Mr. Duguid was accompanied by Mr. O. Hempson, solicitor, who was instructed by the Medical Defence Union. Mr. Hempson objected to the two offences of which his client had been convicted at the Leeds City police court, being classed as misdemeanours under Section 29 of the Medical Act, 1858. A misdemeanour, he argued, is an offence, less than a felony, which is the subject of indictment. The offences in question had been the subject of summary jurisdiction, and therefore should not be regarded as misdemeanours. The Council could only deal with them, he considered, under the heading of "infamous conduct" and not under that of "convictions." The Council's solicitor quoted authority to the effect that any crime less than a felony is a misdemeanour, whether indictable or not, and the President, on the advice of the Council's legal assessor, overruled Mr. Hempson's objection.

In the course of examination Mr. Duguid stated that on June 30th, 1917, he was off duty; he had transferred the care of his patients to a relieving officer and he had not been warned for duty as alleged. On May 2nd, 1922, he was one of a wedding party at a railway station, and although he had "had a drink" he was by no means drunk. He was taken to the police station and pleaded guilty to the charge in order that the incident might be closed as soon as possible; but he had resolved to abjure alcohol and had been a total abstainer ever since. The conviction on April 24th, 1925, was, he stated, the result of an error. On the previous night he had taken large doses of dial—8 or 10 tablets—for insomnia, and this had made him unwell. In the morning he called in a fellow practitioner, who advised him to stay indoors for 48 hours; but this advice he disregarded. He went out, was overtaken by faintness, entered a cab, and was driven to the police station. Neither on this nor on the previous occasion was he examined by a police doctor. Mr. Hempson produced letters of testimonials to Mr. Duguid's character, and the Council deliberated in camera. The President then announced that the charge and convictions had been proved to the Council's satisfaction; nevertheless, in view of the evidence submitted, the Council had not seen fit to direct that Mr. Duguid's name should be erased from the Register.

The Case of Charles Bertrand Wagstaff.—Mr. C. B. Wagstaff, registered as c/o National Provincial Bank, 50, Cornhill, London, E.C. 3, M.R.C.S. Eng., L.R.C.P. Lond., was charged with having abused his position as a medical practitioner by committing adultery with a married woman, with whom and whose family he stood in professional relationship, of which adultery he was found guilty by a decree of the High Court of Justice, dated June 11th, 1925. Mr. Wagstaff did not appear in answer to his notice, but wrote saying that he denied that adultery took place, but realised that it would be impossible to prove the contrary to the Council. Evidence of Mr. Wagstaff's attendance in a professional capacity on the persons concerned having been put forward, the Council considered the case in camera and the President announced that the Registrar had been directed to remove his name from the Register.

The Case of George Joseph Mary Fraser.—Mr. Fraser, registered as of 36, Blenheim-crescent, London, W. 11, and having the Irish Conjoint qualification, appeared to answer the charge that he had been convicted on Oct. 21st, 1924, of failing to notify a case of tuberculosis and the birth of a child, and—

"That, being a registered medical practitioner you, by your presence, countenance, advice, assistance, or coöperation, knowingly enabled an unqualified and unregistered person, viz., one Ulric Knyvett Hoff: (1) To attend, treat, or perform operations upon patients in respect of matters requiring professional discretion or skill, or otherwise to engage in professional practice as if the said person were duly qualified and registered; (2) to issue certificates, notifications, reports, or other documents of a kindred character in your name or on your behalf. That being a registered medical practitioner: (1) You signed a certificate of death on April 3rd, 1924, of one Mrs. Sarah Jenner, certifying that you attended her during her last illness, and that you last saw her alive on March 30th, 1924, whereas you had not attended or seen the said Sarah Jenner during her last illness at all; (2) you signed a certificate of death on Feb. 8th, 1925, of one Mrs. Amelia Wimmer Lembo, certifying that you had attended her during her last illness, and that you last saw her alive on Feb. 8th, 1925, whereas you had not attended or seen the said Amelia Wimmer Lembo during her last illness at all; (3) you signed a certificate of death on Feb. 12th, 1925, of one Mrs. Elizabeth Whiting, certifying that you attended her during her last illness, and that you last saw her alive on Feb. 12th, 1925, whereas you had not attended or seen the said Elizabeth Whiting during her last illness at all, which certificates were untrue, misleading, and improper; and that in relation thereto, you have been guilty of infamous conduct in a professional respect."

Mr. Charles Davis, solicitor, of the firm of Bulcraig and Davis, conducted Mr. Fraser's defence, and the hearing, which began on Tuesday, did not end till Thursday, Nov. 26th. In brief, Mr. Fraser's answer to the charge was that he never had any reason to doubt that Hoff was a qualified and registered practitioner until Feb. 8th, 1925, when Hoff informed him that he was not on the Register. He denied that the certificate of the death of Mrs. Sarah Jenner given on April 3rd, 1924, was in any way inaccurate; but admitted that, under the stress of circumstances, he gave the two other death certificates without having attended the patients as stated. He did not know that Hoff was unqualified until March 31st, 1925, some time after they had parted company.

Mr. Fraser's statements were to the following effect. In 1911, about the time of his qualification in Dublin, he was introduced to Hoff by a member of the honorary staff of his hospital. Hoff stated that he had a medical degree of Calcutta University and invited Mr. Fraser to act as his assistant and locum tenens on a tea plantation in Bengal of which he was medical officer. Mr. Fraser served in India in this capacity for more than a year and then returned to start a practice in Mile End-road, London, which he later left to serve in the war. In 1918 he received a call from Hoff, who acted as his assistant for a time. In January, 1924, he bought a practice in Kensington and on meeting Hoff in Southampton-row in a destitute condition invited him to act as locum tenens. Mr. Fraser was at times crippled by sciatica and the arrangement seemed satisfactory. Hoff had been acting as house physician at Doncaster and Hartlepool Infirmaries and elsewhere, and produced brilliant testimonials from a large number of doctors all over the country to whom he had acted as locum tenens or assistant. It never occurred to Mr. Fraser to question his qualifications or registration, and he engaged him at eight guineas a week. Later the remuneration was reduced to four guineas without night work. Hoff proved thoroughly competent, and the word registration was never mentioned between them until Feb. 8th, 1925, when Hoff suddenly appeared and asked Mr. Fraser to come and see Mrs. Lembo, whom he was attending, and who was dying. Dr. J. S. Goodall had been called in as a consultant. Hoff now admitted that he was not, in fact, registered though he was qualified for registration. (It was later discovered that he had taken a part of his examination for the licence of the Apothecaries' Hall, Dublin, and that whilst employed during the war at the institutions mentioned he had been granted by the Registrar-General a temporary privilege of signing death certificates for patients dying in these places.) Mr. Fraser and Hoff hastened to Mrs. Lembo's house, only to find the patient dead. It seemed impossible to ask Dr. Goodall for a certificate in case his suspicions should be aroused. Mr. Fraser was ill at the time. He thought it best to sign the certificate himself, pending Hoff's registration, and, having done so, he returned to his nursing-home. Four days later Mrs. Whiting died whilst under Hoff's care. Mr. Fraser again thought that the only possible course was to give a certificate himself. These two certificates were, he stated, his only lapses. On Saturday, March 14th, 1925, Mr. James Fenton, M.B., medical officer of health for the Borough of Kensington, had reason to make inquiries about a case of alleged scarlet fever said to be under Mr. Fraser's care. He called at the house, but was told that Mr. Fraser was in a nursing-home and that Hoff was acting for him. Hoff was out, but it occurred to Mr. Fenton to look up his name in the Medical Directory. On finding that it did not appear he rang up Hoff and told him of the omission. Mr. Fraser said that on returning home that day (Saturday) he heard of the incident and insisted that Hoff should accompany him to see Mr. Fenton on the following Monday morning. Mr. Fenton was then told that Hoff was not on the Register (although entitled so to be) and from March 14th onwards, said Mr. Fraser, Hoff and he had nothing to do with one another except in connexion with debts and defalcations which Hoff had incurred in the practice.

In support of Mr. Fraser's case evidence was brought of the respect in which he and Hoff were held by their patients, and Mrs. Eileen Fraser testified to the circumstances under which her husband visited Mrs. Jenner on March 30th, 1924. In support of the charge the Council's solicitor called the daughter of the late Mrs. Jenner, who denied emphatically that it was possible for Mr. Fraser to have called on the deceased on March 30th, 1924, without her cognisance. Cross-examined, Mr. Fraser admitted that he had not examined the patient or recommended treatment and was uncertain as to who let him into the house. It was stated that no record of the visit had been made. The Council's solicitor then drew attention to an incompatibility in the statements of the defence. He quoted a declaration made by Mr. Fraser at Scotland Yard to the effect that when Hoff visited him in Mile End-road in 1918 he knew that Hoff was not registered, and also drew attention to a letter sent to the Council on Mr. Fraser's behalf by his solicitor in June last in which it was stated that Mr. Fraser was aware of this fact in 1922. In reply to cross-examination on these points Mr. Fraser said that both statements were incorrect. The first was made under the influence of nervousness, and the second was a result of confusion of dates.

At the conclusion of the hearing the Council deliberated on the case in camera, and the President announced that the charges had been proved to the Council's satisfaction and that the Registrar had been directed to erase Mr. Fraser's name from the Register.

The Case of Andrew George Tottenham Hanks.—Mr. Hanks, who is registered as of Edith-grove, Chelsea, London, S.W., and holding the Irish Conjoint qualification, appeared upon a charge of having been convicted of drunkenness on several occasions. He was not charged with infamous conduct in a professional respect. Mr. Hempson, instructed by the Medical Defence Union, appeared on Mr. Hanks's behalf and formally objected, as on a previous occasion, to the charges being brought under the part of the Medical Act, 1858, which relates to convictions for misdemeanours. His objection was overruled. It was stated that at the age of 51 Mr. Hanks had served in France as a Territorial and had been invalided home, since when he had been in poor health. In January, 1922, he had fallen from his horse and injured his head, and the illness and accident had made him very susceptible to alcohol. Since July last, however, he had been a total abstainer. Letters were read from doctors and others stating that before his health was damaged Mr. Hanks was an abstemious man, and testifying to his high character, and after the Council had considered the case in camera the President announced that judgment would be postponed until May next in order that evidence might be produced of satisfactory conduct in the intervening period.

The Case of Algernon Randolph Upton.—Mr. Upton, registered as of Medina Villas, Hove, M.R.C.S. Eng., L.R.C.P. Lond., appeared before the Council on the charge—

> "That, being a registered medical practitioner and whilst acting as locum tenens for Theodore Charles Pocock, a registered medical practitioner, and subsequently thereto, you sought to attract to yourself patients and to promote your own professional advantage: (1) By inviting panel patients of the said Theodore Charles Pocock to become panel patients of yours; (2) by filling in your name on the medical cards of panel patients of the said Theodore Charles Pocock, without being authorised so to do, in order to have them transferred to your panel; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

Mr. F. W. Gentle appeared as counsel for Mr. Upton, instructed by Mr. F. W. A. Cushman, solicitor, whilst the complainant, Mr. T. C. Pocock, M.B., was represented by Mr. Ray Neve, his counsel, instructed by Messrs. Dell and Loader, his solicitors.

In the spring of 1924 Mr. Pocock was compelled to enter a sanatorium, and it was suggested to him that he should retain Mr. Upton, the son of a neighbouring practitioner, as his locum tenens. Without making any special inquiries he fell in with the suggestion; there was no agreement that Mr. Upton should not later enter practice in the neighbourhood if he wished. At this time Mr. Upton was not on the panel, and in order to regularise the position an arrangement was made in October, 1924, that his name should appear as that of Mr. Pocock's deputy. The engagement ended on April 29th, 1925, when Mr. Pocock came back to his practice and the two parted on good terms. Later, however, Mr. Pocock received a list of the names of 73 patients who had removed their names from his panel and on making inquiries discovered—so he alleged to the Council—that Mr. Upton had been asking some of his patients whether they would like their names transferred to his panel, and that the doctor's name on the patient's card had in two cases at least been changed without the patient's consent. In support of these charges a number of witnesses was called. Several members of a family named Boone stated that Mr. Upton had been called in to see a child at their house and had told them, without being questioned, that he was going to start practice in the town and "that he already had a good few patients of Dr. Pocock's and would be glad to have the Boones on his list if they felt like making a change." One member of the family present at the time was unable to confirm the details of this conversation and said that she could not be certain whether she had heard this remark. Other witnesses stated that they had been invited to change to Mr. Upton's panel, and evidence was also tendered by a man who said that he had left his card at the surgery and had received in its stead a new card bearing Mr. Upton's name, although he had never authorised any such change. In the course of cross-examination Mr. Pocock said that he had been a candidate for municipal election, and whilst admitting that he might have offered the literature of his party to patients who came to see him, denied emphatically that he had ever allowed bottles of medicine to go out from his dispensary with the words "Vote for Pocock" written on them, and disagreed with the suggestion that a considerable number of patients had been alienated by his canvassing for his party. He was quite unaware, he said, that Mr. Upton had been in practice in Hove before acting as his substitute. Mr. Upton said that he had been a surgeon-lieutenant in the Navy and had served in the Indian Medical Service. After leaving India he had returned home and for two years had conducted a small private practice in Hove from his father's house. He denied absolutely the charges that had been made against him. He had never invited any patient of Mr. Pocock's to transfer to his panel, and the statements of the witnesses who asserted the contrary were not expressions of the truth, but of personal bias in favour of Mr. Pocock and against himself. The fact that cards had had the name of the doctor altered to his own was immaterial. Whether they were actually in the name of Pocock or of Upton, they were credited to Mr. Pocock, just the same, according to the arrangement by which he served as deputy on the panel for Mr. Pocock. He had started practice on May 1st, 1925, with only one panel patient of his own, who had transferred himself previously without any suggestion that he should do so.

At the close of the hearing on the following day, another witness tendered evidence on Mr. Upton's behalf and the Council considered the case in camera. The President then announced that the facts alleged against Mr. Upton had not been proved to the satisfaction of the Council.

The Case of Edward William Dacre Hardy.—Mr. Hardy, registered as of Durley-road, Bournemouth, M.R.C.S. Eng., L.R.C.P. Lond., appeared to answer a charge of having, between June 30th, 1924, and April 16th, 1925, sent 31 prescriptions for morphia tablets (to be supplied on three occasions) and morphia suppositories to a woman who had been his patient during May and June, but whom he never saw after June 24th, 1924; the giving of these prescriptions being an abuse of the privileges conferred on medical practitioners by the Dangerous Drugs Act.

Sir Travers Humphreys conducted the case on behalf of the Director of Public Prosecutions. He said that although the Home Office had no feeling against Mr. Hardy, whose record of practice was very creditable, it disapproved of his attitude towards what he had done. Mr. Hardy stated that the patient, Mrs. Coke, came under his care at Bournemouth in May, 1924. For the previous 10 years or so she had been suffering from cystitis and rectal pain and had become addicted to morphia, but under the care of a doctor the daily dose had been reduced to 2 gr. Mr. Hardy attempted to reduce the dose further, but this proved impossible, and when in June the patient said that she was going to London for about six weeks and was most anxious not to be transferred to another doctor, he agreed to send her prescriptions for this minimal quantity of the drug, thinking that the arrangement would prevent the patient taking her own measures to satisfy the craving. For the same reason he continued to send prescriptions, and as he often heard from Mrs. Coke did not realise that so long a time had passed since he had seen her. In February, 1925, she went to see Mr. G. E. Cope, to whom she gave Mr. Hardy's name as that of her medical attendant, and correspondence was exchanged. Mrs. Coke died on April 23rd, and at the inquest death was stated to be due to hydronephrosis and uræmic coma, accelerated by chronic morphia poisoning, together with local peritonitis and pneumonia. The coroner said that he hoped that Mr. Hardy was ashamed of himself, but Mr. Hardy replied: "No, Sir, I am not." He now realised, he said, that his action might have led to Mrs. Coke receiving the morphia ordered by him in addition to that prescribed by some other doctor, and that it was not a proper thing to have sent the prescriptions. Sir Travers Humphreys said that this was a very fair explanation. Dr. D. Hyla Greaves appeared as witness to Mr. Hardy's high character, and, amongst others, a testimonial was received from 35 members of the honorary staff of the Royal Victoria Hospital, Bournemouth, and another from the Bournemouth division of the British Medical Association, of which Mr. Hardy is chairman. After the case had been considered in camera the President said that the Council took a very grave view of any abuse of the privileges conferred upon medical practitioners under the Dangerous Drugs Acts, which involved a trust by the Government in the honour and good faith of the profession. The Council had already given notice that any contravention or any abuse of the privileges, whether it were criminal or not, constituted an offence of which the Council would take notice. The Council regarded the facts alleged against Mr. Hardy as proved, but, having regard to the warning he had received during the proceedings and to his assurance as to his conduct in such matters in the future, the Council trusted that his conduct in reference thereto would henceforth be beyond reproach. Accordingly it had not seen fit to direct the Registrar to remove Mr. Hardy's name from the Register.

The Case of William Lloyd.—On Saturday, Nov. 28th, the Council considered the case of Mr. Lloyd, registered as of Brook-street, London, W., L.S.A. Lond., L.R.C.P. and L.R.C.S. Edin., and L.F.P.S. Glasg., who appeared at the complaint of the British Medical Association on the following charge:—

> "That, being a registered medical practitioner you sought to obtain patients and to promote your own professional advantage by means of an article published in the *Daily Mail* of June 5th, 1925, entitled '*Hay Fever—New Treatment—Specialist's Report—Patients Cured*,' which was based upon materials supplied by you; and sought to obtain as patients certain persons who, after reading the article, had written to the *Daily Mail* for your name, and whose letters were forwarded to you by the *Daily Mail*, and to whom you wrote inviting appointments to be made for treatment, although they had not themselves communicated with you; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

Mr. W. E. Hempson appeared for the complainant and Mr. J. B Melville was counsel for Mr. Lloyd, instructed by Messrs. Cooper, Bake and Co., solicitors. A number of members of the Council who are members of the British Medical Association took no part in the proceedings.

An article was read which appeared in the above-mentioned newspaper of June 5th, 1925, and purported to describe the remarkable results obtained by a London specialist in the treatment of hay fever. The article was written in a "popular" manner and contained derogatory references to common forms of treatment. These were given as coming from the specialist himself, as also were certain details of successful cases and of experiments proving that cured patients remained immune when exposed in hay-fields. Statutory declarations were made by three sufferers who had applied to the *Daily Mail* to know the name of the specialist. One of these said that in reply to his application he had received an undated typewritten letter from the news editor saying that he now had permission from the doctor referred to in the article to give his name to inquirers. Mr. Lloyd's name and address were appended. Later the witness had received a card, from Mr. Lloyd's address and signed by a secretary, stating that Mr. Lloyd would be pleased to see him by appointment and that his fees were four guineas and two guineas. A second witness had had an undated typewritten letter from the news editor saying that his letter of inquiry had been forwarded to the specialist mentioned in the article and had later also received an appointment card. One of the witnesses had communicated with the British Medical Association. On behalf of the Association Mr. Hempson said that in view of the large circulation enjoyed by the newspaper referred to it was hardly possible to imagine a more gigantic advertisement. The article read like the announcement of a quack. A letter from the manager of the legal department of the Associated Newspapers to the General Medical Council stated that Mr. Lloyd had made no objection to the article being written provided that his name was not mentioned and no indication of his identity divulged. The article had attracted considerable attention and a large correspondence, and many telephone calls had been received from readers. Unfortunately a subordinate member of the staff had communicated Mr. Lloyd's name to a limited number of inquirers and the writer of the article had asked Mr. Lloyd to see a few selected cases by appointment.

Mr. William Lloyd said that for some years he had been in consultant practice as a specialist in diseases of the throat, nose, and ear, and held various hospital appointments. He had a very large practice and enjoyed an income of many thousands a year. He had no possible motive for advertisement. On June 4th, 1925, he said, he had a visit from a journalist connected with the Associated Newspapers, who came as a sufferer from hay fever. During treatment he spoke of the work he was doing, and showed a book on hay fever which he had written some years ago and which had been withdrawn and was not now obtainable. The journalist took no notes, and was not given a copy of the book or any written information. When the treatment was over he said to Mr. Lloyd that he might write an article on it. Would there be any objection? Mr. Lloyd said that if an article was written, on no account must his name be mentioned owing to his enormous practice. The article appeared next day. Mr. Lloyd was so busy that he did not pay a great deal of attention to it; but he protested vigorously to the journalist on several occasions when he came for treatment, saying that to have published the article so quickly without letting him know was very unfair and had placed him in a very awkward position. Not a word in the article was his own, and though some of it was founded on his conversation during treatment, much of it bore no relation to anything he had said. In reply to the protests the journalist had smiled; eventually he had said he was sorry. Mr. Lloyd sent neither protest nor any other communication to the *Daily Mail*, but when the journalist asked him if he would care to see a few selected patients who had inquired about the treatment he replied that he would be willing to see anyone whom the journalist liked to recommend, and informed one of his two secretaries that appointments should be given to a few cases which the journalist might send. Mr. Lloyd himself was so busy that he dealt only with that section of his correspondence marked "Personal," and owing to a misunderstanding his secretary had given cards to all those persons whose names were sent from the newspaper's office. He was not in general in the habit of asking patients where they came from, and neither the journalist nor those whom he recommended enjoyed special terms. Mr. Lloyd denied absolutely that he sought advertisement or professional advantage from the publication of the article.

The Council deliberated in camera and the President announced that the facts alleged had been proved to the Council's satisfaction, and that Mr. Lloyd had been adjudged guilty of infamous conduct in a professional respect. The Registrar had been directed to remove his name from the Register.

The Case of Henry Thompson Keating.—Dr. Keating, registered as of the School of Hygiene, Mount Pleasant Avenue, Liverpool, M.D., C.M. McGill, appeared on Monday, Nov. 30th, on a charge of enabling an unqualified and unregistered person called Looker to treat a patient named Mrs. Hedges, or otherwise to engage in professional practice; and of having been associated for the purpose of obtaining patients with an unqualified or unregistered person who procures or sanctions the advertising or publication of notices directing attention to his professional skill. Mr. Le Brasseur appeared for Dr. Keating, and Mr. Hempson on behalf of the Medical Defence Union which was the complainant. Mr. Le Brasseur said that the proceedings were the result of an unfortunate coincidence. Dr. Keating served in a medical unit in New York in which Looker was a medical officer. He had never had reason to doubt his qualifications, either then or afterwards when Looker was engaged in medical practice in America. In August, 1925, he paid a social visit to Looker, who had come to London, and was asked to see Mrs. Hedges. He examined her and afterwards made arrangements for her to have an operation. On no other occasion was he connected with Looker's practice. Dr. Keating had not seen advertisements of the practice before he saw the case; he was unwilling to operate on Mrs. Hedges, and he had not the slightest intention of unprofessional conduct. Evidence was produced showing that Dr. Keating by illness had been prevented from ventilating his case in order to anticipate the charge being brought. After the Council had deliberated in camera the President announced that the charges alleged had not been proved to the satisfaction of the Council.

The Case of Joseph Stenson Hooker.—Dr. Hooker, who is registered as of 4, Spanish-place, London, W. 1, L.S.A. Lond., L.R.C.S. and L.R.C.P. Edin., M.D. Durh., appeared before the Council on the charge—

> That, being a registered medical practitioner, you have sought to attract to yourself patients and to promote your own professional advantage: (1) By associating yourself with the advertising and canvassing carried on through the medium of articles published in the issues of March 21st and 28th, April 4th and May 30th, 1925, of *John Bull*, relating to an alleged "consumption cure," known as the Newell treatment; (2) by sending circular letters regarding the "cure" to persons not under your charge, but whom you thereby hoped to secure as patients; (3) by endeavouring in your own advantage to induce registered medical practitioners to use in the treatment of their patients, and to make themselves responsible for a medicament of whose properties and action such practitioners were ignorant, while refusing to disclose to them the compositions or formula thereof. And that in relation to the facts so alleged, you have been guilty of infamous conduct in a professional respect.

Dr. Hooker was represented by Mr. Leon Freedman, his counsel, instructed by Messrs. Lattey and Hart, and the complainant was the Medical Defence Union, represented by Mr. O. Hempson, solicitor.

During March and April, 1925, a series of four articles appeared in *John Bull* dealing with the Newell Treatment for Tuberculosis. These articles stated that the inventor of the remedy had consulted a fully qualified West End specialist in tuberculosis (whose name could not be given owing to the rules of the General Medical Council), who had had a very high percentage of cures amongst his patients, and that a committee had been formed in London to investigate the new treatment. It was suggested in several of the articles that the negative attitude of officialdom and the conservative outlook of the General Medical Council and the Ministry of Health were responsible for holding up the distribution of the remedy to suffering humanity, and there were photographs in illustration of Sir Donald MacAlister, Mr. Neville Chamberlain, Sir George Newman, and others. Readers of the newspaper were encouraged to write to the editor, who would put them in touch with doctors who could give the treatment. Mr. Hempson produced evidence that a reader who had taken this advice received a letter to say that the inquiry had been passed on to the London doctors investigating the treatment and that he later had a typewritten communication, signed on behalf of Dr. Hooker, saying that if the inquirer's own doctor was unwilling to give the treatment it might be possible to direct him to a doctor in the district who could do so, or possibly it could be arranged that one of Dr. Hooker's own staff should give the treatment. A committee of duly qualified medical men was in constant attendance for such cases. Later the inquirer had a letter saying that on receipt of 2 guineas, a minimal sum arranged to cover overhead expenses and the high cost of the medicaments, Dr. Hooker would send to the patient's doctor enough of the remedy to last for a month. The treatment, it was stated, could only be given by duly qualified medical men. A manifesto to the medical profession was afterwards issued which stated that the remedy was not a secret remedy in the accepted sense since Dr. Hooker and other investigators were aware of its components. The promoters were getting on with the work of curing tuberculosis rather than facing carping critics. The remedy could be guaranteed as absolutely harmless. In a later letter Dr. Hooker said that there were now 600 medical practitioners using the treatment.

Dr. Hooker appeared before the Council in such poor health that he was unable to tender his defence in person and his counsel read a declaration on his behalf. He said that he had never sought to attract patients to himself by advertisement and that at his age such an intention would be unthinkable. He had received the formula of the remedy from the inventor in strict confidence, and though he had been very anxious to reveal its exact nature to the profession, he had not had the right to do so. He had formed the highest opinion of the value of the treatment and had been, and was, extremely anxious to place it in the hands of doctors who were attending sufferers from tuberculosis. The circular letter which had been quoted recommended inquirers to apply to their own doctors, and it was far from the intention of the committee to attract patients to themselves. The suggestion that patients might receive treatment from the committee was in the nature of a last resort, if it was quite impossible for them to receive it otherwise; but it had been pointed out to him that the letter might have a wrong interpretation put upon it, and he had instantly cancelled its circulation. Dr. Hooker then gave an account of negotiations with the General Medical Council and the Ministry of Health. The Council had refused to deal with the matter on the grounds that it was outside its statutory function. The Ministry had received the formula under the usual pledge of secrecy and had also had an account of cases which had been treated. Dr. Hooker was understood to say that negotiations with the Ministry were still in progress. The discoverer of the remedy had only consented that the formula should be disclosed to the Ministry on condition that this was done through the medium of *John Bull.* Dr. Hooker said that he had supplied materials for the articles only on the pledge that the name of no doctor concerned should appear. His whole object had been to get the medical profession, and the profession only, to try the valuable remedy.

Mr. Freedman said that his client had obviously been animated throughout by a great enthusiasm and by a belief that he could benefit humanity. Mr. Hempson said that the pledges under which the formula was revealed to the Ministry had made it impossible to broadcast the good news—if it were good news—about tuberculosis to the profession. He could not accept the suggestion that Dr. Hooker's conduct had been disinterested. The Council considered the case in camera and the President announced that the charges had been proved to its satisfaction and that the Registrar had been directed to remove Dr. Hooker's name from the Register.

The Case of Sesi Kapo.—The last case before the Council was that of Mr. Kapo, registered as of 49, Broad-street, Lagos, Nigeria, M.B., Ch.B. Edin., who appeared on the charge—

> That, being a registered medical practitioner, you conspired with one Albert Taiwo, by supplying to him a fictitious account of £25 for professional services alleged to have been rendered by you to the wife and child of the said Albert Taiwo, in order to enable the said Albert Taiwo to withdraw money from the Provident Fund of the Nigerian Railway, which he was not entitled to withdraw and could not withdraw without a detailed account signed by a medical practitioner. That in respect of such offence, you were tried with the said Albert Taiwo in the District Court of Lagos, and were on March 6th, 1925, convicted of conspiracy and of forging the said account, and were fined £50 or six months' imprisonment, which conviction was upheld on your appeal to the Supreme Court of Nigeria. That, by an Order made on June 15th, 1925, as the result of the said conviction, under Section 13 of the Medical Practitioners' and Dentists' Ordinance, Chap. 46, the Officer Administering the Government in Council directed the Registrar of Medical Practitioners and Dentists to strike out your name from the Register. And that in relation thereto you have been guilty of infamous conduct in a professional respect.

The case was reported to the Council by the Colonial Office on information received from the officer administering the Government of Nigeria. Mr. Harper, solicitor to the Council, opened the case by quoting from the records of the trial held in Nigeria. Mr. A. Neilson, K.C., who appeared for Mr. Kapo, objected that it was impossible to bring as evidence an account of proceedings conducted elsewhere which were not in the knowledge of any member of the Council. Such an account was not evidence by itself unless witnesses were brought. It was unfair to read an account of a prosecution unless he, Mr. Neilson, had an opportunity to cross-examine the witnesses whose testimony had led to the conviction. The Council's solicitor replied that as the Council had no powers to summon witnesses or to swear them when they came, if the present objection were upheld it would be very difficult to try a case when the witnesses were outside the kingdom. Mr. Neilson said that the fact that the Council was a domestic forum, in which the Council was trying one of its professional brethren, did not make it permissible to try the case in a looser way than would be permitted in a court of law. The legal assessor to the Council said that it was proposed to prove that Mr. Kapo had been struck off the Nigerian Medical Register and convicted in Nigeria. On that evidence the Council would be entitled to strike the name off the Register, but an inquiry into the case was being made in order to discover whether there were extenuating circumstances. The fact that no witnesses appeared might affect the weight of the information, but did not render it inadmissible. Evidence of court-martials held abroad was accepted. The fact of conviction was itself evidence which should be considered. Mr. Neilson asked to see the certificate of conviction, but this could not be produced. Mr. Neilson objected that production of the certificate was an essential preliminary to any proceedings. The President said that the Council was not treating the case as a conviction but on its merits.

The Council's solicitor then read part of the account of the proceedings held at Lagos which led to Mr. Kapo's conviction. The prosecution had suggested that Mr. Kapo's account for professional attendance was wholly fictitious and had emphasised the fact that a police search had failed to find any wife of Albert Taiwo whom Mr. Kapo had attended. Mr. Neilson examined Mr. Kapo in the witness-box. He gave particulars of his attendance on a woman said to be Albert Taiwo's wife and of the bill he wrote out for professional services after delivering her of a child. Mr. Neilson asked for the production of the bill, which was an important document at the Lagos trial. The Council's solicitor admitted that he could not produce it, which Mr. Neilson considered very unfortunate. Mr. Kapo denied that he had ever conspired with Taiwo or anyone else and that he ever had any reason to do so, and a testimonial to his character was read. In closing his client's case Mr. Neilson said that this was by the President's definition a new inquiry. Yet the prosecution had produced no one who could be cross-examined nor any of the relevant documents which were produced at the trial. The trial itself did not seem to have taken the clear course that trials take in England. No one had even suggested a motive for Mr. Kapo's single straying from the straight path. Why should a man imperil his professional career and an income of £500 or £600 for the sake of a share in £25? Why, for the matter of that, should Albert Taiwo have bothered to conspire to obtain £25 from the provident fund seeing that he would have to pay it back out of his wages? As to the charge that the supposed wife of Taiwo was an imaginary person, the chief witness called by the prosecution—namely, Taiwo's "senior wife"—stated clearly that she had existed. The onus of proving the contrary—even if the prosecution had not accepted the evidence of its chief witness as it was bound to do—rested with the prosecution. The judge had admitted that it was just possible that Mr. Kapo had attended this woman, and if there was a doubt the accused should have had the benefit of it. The trial in Lagos, Mr. Neilson was sorry to say, appeared to have been hopelessly muddled. There were not materials before the Council to prove that Mr. Kapo had been properly convicted; there had been many remarkable features about the proceedings, and no motive had been suggested.

After the Council's solicitor had replied the case was considered in camera, and the President announced that the facts alleged against Mr. Kapo in paragraph 1 of the charge had not been proved to the Council's satisfaction. (His name therefore remains on the Register.)

Restorations to Medical Register.

On Nov. 26th it was announced that the Registrar had been instructed to restore the names of Haydn Brown, Patrick Joseph Honan, Trevor Owen Williams, and William Mortimer Sheen to the Medical Register.

EXECUTIVE COMMITTEE.

The report of this Committee contains an account of the negotiations for the re-establishment of reciprocity with Italy referred to in the presidential address on Nov. 24th. Inquiry on the practice of medicine in this country by holders of foreign degrees elicited the information that reciprocity can only be established with a country in regard to which the King has by Order in Council declared that Part II.

of the Medical Act, 1886, shall apply. When reciprocal relations are established it becomes the duty of the General Medical Council to consider which medical diplomas granted in the said country shall qualify their holders for registration by the Council. At present the only foreign countries with which reciprocity exists are Italy and Japan. In view of the overcrowding of the medical profession in Austria it has been suggested that the emigration of Austrian doctors to foreign countries is desirable. It is understood, however, that no foreigner can practise medicine in Austria unless he becomes an Austrian citizen, and this condition, of course, precludes reciprocity. In reply to inquiry the Council stated that the number of British registrations "during this year and for the past two years has been considerably greater than usual, and some time will probably be required before the practitioners newly qualified in this country are absorbed into private practice and vacancies in the public services. It is therefore probable that foreign doctors would have some difficulty in establishing themselves satisfactorily in this country."

Public Health Committee.

The report of this committee deals chiefly with the new regulations for the Diploma of Public Health, which require that candidates shall receive instruction over a period of not less than 12 months subsequently to gaining a medical qualification and lay down that the diploma shall not be granted until two years after such qualification. There has been correspondence with various licensing bodies on their interpretation of the new rules. It is noteworthy that the Council recognises for Part I. of the Diploma the courses of lectures and practical instruction given at the Staff College to officers of the Royal Army Medical Corps, and at the Naval Medical School, Greenwich, to medical officers of the Royal Navy. At a meeting of the committee held in May last a communication was received from the Society of Medical Officers of Health giving a considered opinion on the practical training required for the diploma. It was resolved, inter alia, that the committee would keep in mind the suggestions offered and would have regard to them in the interpretation of the rules. It is stated that the Diploma in Hygiene of the University of Cambridge is not recognised by the Council.

MEDICINE AND THE LAW.

The Time-Limit Upheld.

The Court of Appeal has promulgated an important decision upon the limitation of legal liability in the case of a medical practitioner discharging public duties. The Public Authorities Protection Act of 1893 contains, as was illustrated in a recent Edinburgh case,[1] a not unreasonable protection for persons acting in execution of statutory or other public duty. Proceedings do not lie, and are not to be instituted against such persons unless commenced "within six months next after the act, neglect, or default complained of, or, in case of a continuance of injury or damage, within six months next after the ceasing thereof." The wording of the statute is not very happily drafted, and has required legal explanation more than once. It is easy to reckon six months from an act which causes injury or damage. But the phrase "continuance of injury or damage" has been a stumbling-block. The facts on which the decision in the recent case of Freeborn *v.* Leeming is based are briefly these. A man was run over by a motor-car on Sept. 5th, 1923, and was taken into a workhouse infirmary next day. The doctor in charge had no direct contractual obligation towards the patient who was not one of his charges in the ordinary sense; but the law, of course, expects every practitioner to apply reasonably competent skill in the art which he professes. It was alleged that the doctor neglected to make an adequate examination, and that he failed to diagnose a dislocated hip. The plaintiff stayed on in the infirmary till Oct. 15th, and then went home at his own risk. The date is important, because it was the day on which he passed out of that doctor's care. Fresh medical opinion, it was alleged, subsequently diagnosed the dislocation, but found that it was now too late to reduce it; an operation had to be performed, and in consequence the patient has one leg permanently shorter than the other.

Six months and six days after the date on which he left the workhouse infirmary the plaintiff issued his writ, and began his action against the infirmary doctor. Prima facie his action was six days too late. Obviously, if the permanent shortening of his leg was a continuing injury or damage within the meaning of the Act of 1893, he could safely have sued the doctor without time-limit at any moment during the rest of his life. But there was solid legal authority against this view. In Carey *v.* Bermondsey Borough Council (1903) the Court of Appeal decided that the continuance of suffering is not a continuance of injury or damage within the meaning of the Act. Lord Halsbury, who delivered judgment to that effect, had a special gift for common-sense interpretation. Words, he said, must be reasonably interpreted. It was not unreasonable to say that if there was a continuance of an act causing damage, the injured person should have an action at any time within six months of the ceasing of the act complained of. But that was wholly inapplicable to a case where there was no such continuance of the act complained of and where the only suggestion was that, in consequence of the negligent act, the victim was not such a good man as he had been before. The county court before which the recent case was first heard tried hard to find a way round Lord Halsbury's decision. An ingenious argument by the plaintiff's counsel was accepted. The dislocated hip, it was argued, if properly diagnosed originally, would not have been cured, even with proper treatment till, say, eight or ten weeks after the accident. It was not until this prospective date of cure was reached that the plaintiff (being at that moment a still disabled man instead of a now quite cured man) had his full right of legal action. It was at this imaginary but guessable date that the plaintiff's damage arose. If the six months had been reckoned from that date, the plaintiff's action was begun in ample time. Taking this view the county court judge awarded him £1800 damages, but the Divisional Court upset the award on the ground that the action was not begun within the six months. This latter view the Court of Appeal has now confirmed.

The case may be carried to the House of Lords, but any other view than that expressed in the judgment of the Court of Appeal would be disastrous to medical practitioners who hold official positions and would make nonsense of the Act.

Mistaken Identity.

The reissue of Mr. Sully's brief study[2] in the psychology of identification is timely. Police methods were criticised in Major Sheppard's case, and, still more recently, the Lord Chief Justice has commented on the abuse of photographs as a preliminary to identification. The essayist takes the imaginary example of a passenger dashing hurriedly one night into the last up train leaving a local railway station. Jones, the porter, is subsequently asked to identify the man. The newspapers next day report a murder. The wanted man is rumoured to have got away by the last train to London; presently it is said that a young and well-dressed man who travelled by that train has been arrested. Jones attends the identification parade with a memory which blends genuine

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[1] Gorrie *v.* Smith, The Lancet, Nov. 7th, p. 990.

[2] Mistaken Identity. By Clifford Sully. London: Longmans, Green and Co. 1924. Pp. 15. 6d.

(and perhaps inaccurate) recollections with items read or heard. If confronted with the arrested man, Jones may be predisposed to believe that the man he remembers is the man he sees; else why would he be there? Even if photographs have not been displayed beforehand, other forces of suggestion are at work. Though himself smartly dressed, the man may be put up amongst a number of ill-dressed navvies (as was alleged in Stinie Morrison's case). An involuntary self-consciousness may betray the accused man, or some action of his companions may tell a tale. The essay under review makes various proposals. Since it is the first identification that counts (subsequent re-identification being merely formal), Jones might be put on oath to make him more consciously careful; or he might be specially warned of the difference between recognising a person previously seen and spotting a probable criminal. There might even be two or more identification parades, the arrested man being absent from the first or second. These and other observations in Mr. Sully's essay were well worth making. Official complacency has under-estimated the effect of suggestibility. It will be interesting to see (if they are not regarded as confidential) the new regulations which the Home Secretary has undertaken to make upon the subject of identifications.

AMERICAN PUBLIC HEALTH ASSOCIATION:

ANNUAL MEETING.

(FROM OUR OWN CORRESPONDENT.)

THE fifty-fourth annual meeting of the American Public Health Association, held in St. Louis, Mo., was probably the most successful in its history, the registered delegates numbering 911. The epidemic of typhoid fever last winter that was traced to polluted oysters resulted in several papers on

Oyster Sanitation.

These were read to a joint session of the Sections on Public Health Administration, Laboratories, Sanitary Engineering, and Food and Drugs. Drs. Charles Krumwiede and William H. Park, of the New York City laboratories, described observations with oysters that they had contaminated artificially (1) with cultures of typhoid, and (2) with stools from typhoid carriers. *B. typhosus* was found in the liquor and bodies after 40 days storage—the longest period tested, and in excess of the maximum period of storage that is found under actual trade conditions. The changing of oysters to fresh sea-water has a marked effect in diminishing the number of *B. typhosus*; three such changes eliminate 90 per cent. However, even after 18 changes during 24 days *B. typhosus* was isolated. When chlorinated water is used the effect is still more marked. Yet four successive treatments failed to eliminate all *B. typhosus* from the contaminated oysters. The conclusion drawn was that the safeguarding of the oyster-supply must rest on preventing contamination of the beds rather than on treatment of the oysters by existing methods of purification.

Bacteriophage in Surface Waters.

Prof. Lloyd Arnold, of the Loyola University School of Medicine, discussed the significance of bacteriophage in surface waters. Its concentration was found to vary directly with the degree of sewage pollution. Prof. Arnold agreed with other observers that since bacteria are not growing under these conditions there was no autolysis and no speeding-up of the process of purification due to bacteriophage. On the other hand, bacteriophage ingested with an infective dose of typhoid bacilli was liable to cause autolysis of the first cultures, and unless (or until) a resistant strain was developed the cultivation of the typhoid bacilli was prevented. Experimental evidence was presented in support of these conclusions.

In the Section on Epidemiology important papers were read by Prof. E. O. Jordan on influenza, and Dr. Abraham Zingher on the prevention, control, and specific treatment of diphtheria, scarlet fever, and measles.

Perhaps the most important item of business was the creation of a committee on dairy products. Milk control has still many controversial aspects, and it is hoped that a committee representing the sections of Public Health Administration, Sanitary Engineering, Food and Drugs, and Child Hygiene will be able to furnish an important consensus of opinion on some of the disputed doctrines.

A resolution was passed urging the more effective centralisation of federal health work under the direction of a competent trained official. The resolution is to be presented to President Coolidge by a committee of five.

Officers Elected.

As President for the ensuing year the governing council elected Prof. C. E. A. Winslow, of Yale, who was for some time in charge of the medical work of the League of Red Cross Societies at Geneva, Switzerland, and has been indefatigable both in teaching and research in this country. Dr. John A. Amyot, Deputy Minister of Health of the Dominion of Canada, was elected first vice-president. Next year the meeting is to be held in Buffalo, where the strength of the Canadian representation should be even more satisfactory that it has been this year at St. Louis.

BUCHAREST.

(FROM OUR OWN CORRESPONDENT.)

Campaign against Venereal Diseases.

ALTHOUGH State aid for the fight against venereal diseases in the new provinces of Roumania ceased on July 1st of this year, because the Ministry of Finance failed to appropriate the necessary funds, the campaign will continue with the vigour that has characterised the work during the last three years. As the Supreme Sanitary Board set aside a considerable sum for this important phase of public health service for the current biennium, the division of social hygiene will be able to carry on for a time. Owing to the uncertainty of continued financial aid, the eight venereal dispensaries and clinics now operating in Transilvania, Bukovina, and Bessarabia slowed up somewhat during the last few months. An agent of the department is making the round of these clinics with the good news that the usual funds will be forthcoming from the State. The message is proving very stimulating.

Proposed War on Rats in the Roumanian Ports.

A proposed amendment to the building orders, now pending before the Board of Public Sanitation, would make compulsory the rat-proofing of all buildings within 600 ft. of the water-front in all the port cities, such as Braila, Constanza, Galatz, and Giurgiu. According to the estimate of the port sanitary officers there are several million rats in these cities, the property loss caused by them annually runs into millions of lei, and the rats are a menace as carriers of bubonic plague. The new measure provides that no certificate for occupancy of any structure within 200 metres of the water-front shall be issued unless its foundation walls are constructed of concrete or similar material and covered with wire mesh. All windows and other openings must be protected with wire screens, and windows and doors must be arranged to permit fumigation with hydrocyanic gas.

Pregnancy in Tuberculous Women.

At a recent meeting of the Medical Society in Jasy Dr. Rosianu gave a summary of the views held at present on the question of pregnancy in tuberculous women. If pregnancy has taken place the woman should be kept under careful medical observation, and if the tuberculous disease grows worse, abortion should be strongly recommended. During the later months of pregnancy the induction of premature labour does not offer any advantage over labour at full term, and is fraught with risk for a tuberculous patient. Moreover, as a tuberculous mother may give birth to a healthy child with fair chances of good health later on, it would be unfair to sacrifice needlessly the life of an infant. Dr. Rosianu does not believe in making a routine of interrupting the pregnancy, as advocated by Maragliano and Hamburger.

Phototherapy in Rachitis.

Dr. Ramniceanu reports the results of ultra-violet treatment made with special arc lamps in 42 cases of rachitis. The patients ranged from 1 to 7 years of age. Every month comparative rontgenograms of the epiphyses of the right forearm were made on four children. In all cases that could be thus controlled there was an undoubted improvement in the clinical picture; in most cases a complete cure was effected. At first the treatment was applied every second day, but of late he has given daily treatments. He begins with five minutes each to the abdomen and back at one sitting. The time is lengthened by two minutes at each sitting until 15 minutes each is reached. No ill-effects following the treatment were noted. No changes in diet were ordered and no medication was employed. The number of sittings was usually from 40 to 60. The rontgenograms established the fact that the bones were becoming harder and firmer. The initial softness of the bones should, of course, be taken advantage of to straighten curvatures and correct deformities, while irradiation is continued, so that when the bones become firm they may be in the corrected position.

Gastro-intestinal Disorders in Albania.

There is an alarming increase of gastro-intestinal disorders in Albania; thousands of working men are unemployed, and are compelled to live on a semi-starvation diet. The sanitary conditions of the bakeries are very unsatisfactory; the bread is bitter and made of inferior flour (chiefly maize) in a primitive manner. Another great source of gastro-intestinal disease is the enormous consumption of decayed vegetables, raw or in a half-cooked condition, and dried fruit, chiefly prunes, in partly decomposed state. The cases of gastro-intestinal disorders are for the most part mild, and recovery takes place without complication; only a few fatal cases have as yet been reported.

DONATIONS AND BEQUESTS.—The Liverpool Hospital Sunday Fund this year—the fifty-fifth annual collection—amounted to £7752, being £113 more than the amount subscribed last year.—Princess Beatrice has given £105 to start a £15,000 fund for the renovation of the Royal Isle of Wight County Hospital.—Lady Violet Charlotte Julia Maria Watt, Brighton, left property of the value of £17,825. She left £500 each to the Royal Sussex County Hospital, the Alexandra Hospital for Sick Children, Brighton, the Throat and Ear Hospital, the Hospital for Women, Brighton, the Brighton, Hove, and Preston Dispensary, and £250 to Our Dumb Friends' League, and the residue of the property to her executor for such charitable purposes as he may select. —Mr. David Levy, Brixton, left £16,440. After various bequests he left the residue of the property in trust for his wife for life, and then to King Edward's Hospital Fund for London.—An anonymous donor has given £1000 to Crickhowell Memorial Hospital in commemoration of the visit of the Prince of Wales to Glanark Park, Crickhowell.—Mr. John David Miller, Clifton, Bristol, left £500 each to the Bristol Royal Infirmary and the Bristol General Hospital; £250 to Muller's Orphanages, Ashley Down, Bristol; and £150 each to the Bristol Eye Hospital and the Bristol Hospital for Sick Women and Children.

Correspondence.

"Audi alteram partem."

REPRESENTATION OF MEMBERS ON THE COUNCIL OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

To the Editor of THE LANCET.

SIR,—I gather from the President's remarks at the annual meeting of Fellows and Members, held last week, that the Council of the College is to consider further the question of the representation of members on that body. Since that meeting, I have had before me the information regarding the history of this movement, which was put before the President by a deputation of the Society of Members of the College, and I am astounded to find that the right of representation on the College Council originally existed and was taken away from them, as I understand, surreptitiously and illegally, about half a century ago by the then Fellows.

In these circumstances, it is amazing to think that a body of gentlemen of the calibre of those who form the Council, and among whom, at the present time, I am proud to reckon many friends, could refuse to rectify such a gross injustice to the Members of the College, and one which has continued for over such a long period. Although the Society of Members have been the movers in this matter, the responsibility of the Council exists to far beyond their limited membership. Though I am not a member of this Society, I consider that the Council owes a sacred duty to the body corporate of the College to put this matter right. I had the pleasure of hearing Dr. Haden Guest's address, and I think he made out a case which is beyond dispute. The Council now has the opportunity of rectifying the injustice of its predecessors, and I hope that it will proceed to do so quickly.

Should the Council of the College refuse to do this, it seems to me that the logical course for it to pursue, in seeking a new charter, would be to have the members of the College degraded into a body of licentiates, such as exists in the sister college. I do not suppose for a moment that it would be allowed to do that; but to my mind it is the only logical alternative to the retention of the status of membership. I am quite sure that it would be to the advantage of the College and, indirectly, of the public, whom it serves, that it should agree to receive one or two members on its Governing Board. It appears to me to be very unfair that I, as a member of a university, should have a voice in the government of that university and a Parliamentary vote for its Member, while thousands of members of the College should not even have one representative on its College Council.

I am, Sir, yours faithfully,

LEWIS G. GLOVER, M.D., M.R.C.S., L.R.C.P.

Nov. 26th, 1925.

*** The subject is dealt with in another column. —ED. L.

THE TROPHOBLASTIC HYPOTHESIS OF CANCER.

To the Editor of THE LANCET.

SIR,—It is surely unreasonable of anyone to expect to find historical references to other theories in an address summarising the work of many years. After what Dr. Murray has written, however, concerning my presumed want of knowledge on this matter, justice demands that I comment severely upon his own ignorance of the literature in respect of a previous publication of mine in THE LANCET[1] in which, when dealing with the importance of chorion epithelioma in relation to certain aspects of the ætiology of cancer, I acknowledged that, though I had arrived at a similar conclusion independently, I subsequently discovered that I had been anticipated in this matter by Dr. Adami in a discussion on Cancer at the Chelsea Clinical Society in March, 1902[1]—that is, prior to Dr. John Beard's publication[2] to which Dr. Murray has referred. Of Dr. Adami's paper Dr. Murray presumably is also ignorant.

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[1] THE LANCET, 1924, i., 267.

We owe to Marchand and a group of German workers, and not to Beard, the demonstration that chorion epithelioma is a malignant growth sui generis derived from the embryonic trophoblast. But all this is common knowledge, and it is hardly likely that anyone to-day would claim it as original! If Dr. Murray will read, and read carefully, my address he will see that I state very definitely that our working hypothesis is based on known facts, as it should be. The difference between our views and Beard's confused ideas is striking. Beard regarded the fertilised ovum as producing an alternate asexual generation; on it is developed an individual, which for clearness we may term the blastula. From this there was now unfolded and developed the sexual individual—the embryo. His theory was that the asexual part (the chorion) might continue to exist after the sexual product had been destroyed or removed, and from this it followed that secondary growths in the lungs and elsewhere were to be considered asexual generations. Beard sums up his hypothesis in the last paragraph of the paper mentioned in the following words:—

> Granted the facts of the origin, migrations, and history of the germ-cells of vertebrates, and assuming the course of the life-cycle to be that previously indicated, by hypothesis cancer is derived from vagrant primary germ-cells, which, instead of forming a more or less complete embryo or embryoma, skip this and give rise to a larva or phorozoon of indefinite unrestricted powers of growth.

Adami and I have had no such ideas. Our conception has been that the chorionic epithelium grows and penetrates the uterine tissue in performance of a special function—that is, to secure nourishment for itself and the growing embryo; that through it foodstuffs are absorbed from the maternal blood, and the other interchanges are made; that if the fœtus die or become aborted this normal function ceases to be required, and that now, to employ Adami's expression, the habit of work being interrupted, the habit of growth may continue, or as I expressed it, the embryonic restraint being removed the chorionic epithelium may multiply and become excessively malignant. This is totally different from John Beard's hypothesis, which I agree could not be fruitful.

With this statement, which should have been entirely unnecessary, I must leave your readers to judge Dr. Murray's letter. Speaking not only for myself but also for the whole staff of the Liverpool Cancer Research Fund, I wish to say that we most cordially invite criticism of our work on its scientific merits. We do not want opinions, pious or impious; we, like all other honest workers, want the truth.

I am, Sir, yours faithfully,
Liverpool, Nov. 30th, 1925. W. BLAIR BELL.

PS.—Will you allow me to say that the following paragraph was omitted by accident from my Toronto address in THE LANCET of Nov. 14th, but will appear in the reprints. It should follow the first paragraph in the left-hand column on p. 1005. Those interested will be able to read it into the rest of the argument:—

"Here it seems proper to call attention to a point of interest that affords considerable support to the explanations I have given of certain pathological phenomena; this obvious point appears to have escaped description, and even notice, at the hands of pathologists—at least, I am not aware of any statement on the matter. It is this: chorion epithelioma—the most malignant of malignant diseases—is not a dedifferentiated growth as is every other malignant neoplasm; it is a simple hyperplasia of the chorionic epithelial elements. Dedifferentiation cannot occur for the chorionic epithelium is normally malignant, and is itself the ancestral type."

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[1] Clinical Journal, June 18th, 1902.
[2] THE LANCET, 1902, i., 1753.

PROPHYLAXIS OF THE COMMON COLD.

To the Editor of THE LANCET.

SIR,—I have read Dr. Simey's address with great interest. I would like to put forward the suggestion that a common source of infection is the dangerous practice of compelling adolescents to spend an hour or more in all weathers watching matches. The idea that it is disloyal to the school not to appear to enjoy doing so compels many boys and girls to stand on wet ground in cold winds, thus lowering their vitality and resistance to infection. It is not necessary to go back to the classic experiment which produced anthrax in fowls to realise that it must be harmful in human beings. Would it be possible for medical officers of schools to arrange that only those who desire to watch matches should do so, and for the rest of the school to be occupied in keeping themselves warm, during the winter months, at any rate?

I am, Sir, yours faithfully,
STELLA CHURCHILL.
Chiswick, W., Nov. 24th, 1925.

MALARIA AS A THERAPEUTIC AGENT.

To the Editor of THE LANCET.

SIR,—In connexion with the malaria treatment of general paralysis, it is interesting to learn from a recent article by Dr. Cabanès[1] that in the Middle Ages it was believed that quartan ague cured epilepsy. Dr. Cabanès quotes Louis XI. as begging the Prior of Notre-Dame des Salles, at Bourges, to pray "incessamment Dieu et Notre-Dame des Salles pour moy, à ce que leur plaisir soit de m'envoyer la fièvre quarte, car j'ay une maladie dont les physiciens disent que je ne puis être guéry sans l'avoir." According to Dr. Cabanès, Louis XI. was an epileptic. It appears he also suffered from leprosy, and the fact throws light on the king's strange behaviour. Notwithstanding such drawbacks, he yet managed to weld a disunited country into a kingdom.

I am, Sir, yours faithfully,
London, W., Nov. 20th, 1925. GEORGE PERNET.

PRECANCEROUS STATES.

To the Editor of THE LANCET.

SIR,—My experience of tropical granulomata in Calcutta may throw light, however slight, on "precancerous" states in general. Tropical granulomata are frequently subjected to irritation to such degrees that it is remarkable they do not undergo malignant changes more often than they do. The histological changes observed during the transition of granulomata to malignancy are interesting. There is a varying degree of leucocytic infiltration with a relative preponderance of lymphocytes. This may be due to irritation caused by a specific virus or some changes produced in the invading epithelium. The epithelial cells proliferate and extend both in the longitudinal and vertical planes in the granulation tissue, its proliferation towards the periphery being at first slow. Side by side, there is connective tissue reaction. The perilymphatic and endolymphatic distribution of cells, the epithelial proliferation and invasion and cellular reaction vary according to the type of granuloma, the irritation, and the stage of transformation. In a few cases in which a malignantly transformed granuloma tends to revert to non-malignancy, the connective tissue proliferation seems to result in fibrosis which pervade the growth, the rate and extent of epithelial proliferation become reduced and the cells themselves become more and more normal in character.

I am, Sir, yours faithfully,
K. K. CHATTERJI, F.R.C.S.I.
Southwell-gardens, London, S.W., Nov. 30th, 1925.

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[1] Mercure de France, May 15th, 1925, p. 197.

POISONS IN THE HOME.

To the Editor of The Lancet.

Sir,—In reference to the useful annotation with this title which appeared in your issue of Nov. 7th may I ask on what grounds it is stated that many essential oils possessing extremely high carbolic acid coefficients are of relatively small toxicity to human beings? As examples, the writer mentions the oils of origanum and of thyme. I am aware that both of these have high carbolic acid coefficients, but where can I find the evidence that they are less poisonous than the higher homologues of phenol?

I am, Sir, yours faithfully,
Henry Kenwood,
Nov. 28th, 1925. M.O.H., Stoke Newington.

*** The relatively low toxicity of essential oils may be deduced partly from such direct evidence as that the B.P. gives the dose of sandal-wood oil as 0·3–1·8 g., and the U.S. Dispensatory that of thyme oil as 0·2–0·3 g., compared with phenol, 0·06–0·2 g., and partly from the absence of any records of accidental poisoning.—Ed. L.

A DISCLAIMER.

To the Editor of The Lancet.

Sir,—My attention has been called to the issuing of a leaflet announcing a lecture which I was recently invited to give to the members of the Young Men's Christian Association at their hall in Aldersgate-street. On hearing of it I at once telephoned to the secretary that no further distribution should take place. I need hardly say it was issued without my knowledge.

I am, Sir, yours faithfully,
James Dundas-Grant.
London, W., November, 1925.

POLYCYTHÆMIA RUBRA RELIEVED BY X RAY TREATMENT.

To the Editor of The Lancet.

Sir,—The case described by Dr. S. W. Patterson in The Lancet for Nov. 28th (p. 1112) is of especial interest both on account of the question of diagnosis and on account of the good result obtained by treatment. A good result of nine months' duration, like that described, seems to me almost incompatible with a diagnosis of true *splenomegalic* polycythæmia rubra, that is to say, the "Vaquez-Osler syndrome," or "erythræmia." I had the opportunity of seeing the patient twice myself before Dr. Patterson saw her and regarded the case as one of "hypertonia polycythæmica," such as those to which F. Geisböck drew attention in 1904, and as I have explained,[1] I believe that such cases are examples of secondary polycythæmia, connected in some way with the high blood pressure of early stages of granular kidney, or with primary hyperpiesia without definite signs of organic renal disease. On both occasions when I saw the patient the spleen could not be felt, and Dr. Patterson admits it was only just palpable when he first saw the case and soon was not palpable at all. Moreover, a high systolic blood pressure of 170–204 mm. Hg has scarcely ever been made out in a true case of splenomegalic polycythæmia. I have paid especial attention to this, as in 1904, with Dr. J. H. Watson,[2] I made out experimentally with the blood of horses that the so-called blood-viscosity (quite distinct from the *true* viscosity of the blood-plasma or blood-serum) depended almost entirely on the richness in erythrocytes. Since then I have been forced to admit that in splenomegalic polycythæmia there must be some compensatory dilatation of the capillaries which prevents the blood pressure rising[3]; indeed, in many typical cases with an erythrocyte count of about 10 millions to the cubic centimetre of blood, the brachial systolic blood pressure is only about 120–130 mm. Hg.

On the other hand, the syndrome "hypertonia polycythæmica" may, I believe, represent merely a phase or episode in the course of a case of high blood pressure, the polycythæmia disappearing after a time, though the high blood pressure persists or increases. The point on which Dr. Patterson is to be especially congratulated, seems to me that the high blood pressure in his case practically disappeared *as well as the polycythæmia.* I shall certainly endeavour to have similar X ray treatment cautiously tried in cases of hyperpiesia, at all events, in cases associated with polycythæmia. Amongst the Hebrews from the East End of London that come as out-patients or in-patients to the German Hospital are many typical examples of hyperpiesia.

I am, Sir, yours faithfully,
London, W., Nov. 30th, 1925. F. Parkes Weber.

NASAL LAVAGE AND MIDDLE-EAR INFLAMMATION.

To the Editor of The Lancet.

Sir,—I hope that Mr. Arthur Cheatle's timely communication (The Lancet, Nov. 28th, p. 1140) upon the dangers of indiscriminate nasal lavage will be assimilated both by the Ministry of Health and by practitioners generally. May I suggest that the employment of a suitable antiseptic powder as a "snuff" is at least harmless to the ears, and is efficacious in relieving obstruction in any case which does not require surgical interference. I am convinced from experience that the use of the fluid nasal douche results in a noticeable increase in secretion and in the progress to a chronic hypertrophic condition, especially so in the recurrent polypoid growths of everyday practice. Moreover, the treatment by a "snuff" is very conveniently carried out, and in the case of children it certainly helps in the teaching of correct nasal breathing.

I am, Sir, yours faithfully,
Manchester, Dec. 1st, 1925. William Wilson.

OPERATIONS ON GERM CARRIERS.

To the Editor of The Lancet.

Sir,—Something more might have been said in your leading article last week in regard to the proposal to render germ-carriers non-infectious by operation. There are two points wherein the case of a healthy carrier treated under compulsion or under strong moral pressure would differ from the normal case. When a practitioner operates ordinarily, the law gives him protection (except in the case of gross carelessness, ignorance, or inattention), first, because he is endeavouring to improve or conserve the bodily health of his patient; and, secondly, because the patient's consent has either been expressly given or can at any rate be tacitly implied. Operation upon a healthy carrier would be not so much for the improvement or conservation of his health as for the safety of the health of others. And if the operation were conducted as a statutory duty rather than at the express or implied invitation of the patient, there would be an absence of the professional protection which the tacit or explicit consent of the patient ordinarily creates. Distant though it may be, this is an aspect of the matter which should be borne in mind.

I am, Sir, yours faithfully,
Lex.

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[1] Proc. Roy. Soc. Med., Clin. Sect., 1925, xviii., 37.
[2] Folia Hæmatologica, 1904, i., 392.
[3] Brit. Med. Jour., 1925, ii., 1108.

Obituary.

RICHARD DENISON PEDLEY, F.R.C.S. EDIN., M.R.C.S. ENG., L.D.S.

Mr. Richard Denison Pedley, consulting dental surgeon to the Evelina Hospital for Children and to Dr. Barnardo's Homes, died on Nov. 25th at India House, Addiscombe, at the age of 68. He received his professional training at St. Thomas's Hospital, where he became demonstrator in dental surgery, and at the Dental Hospital where he later was assistant dental surgeon. In 1883 he obtained the M.R.C.S. Eng., and the following year the Licence in Dental Surgery. In 1887 he became F.R.C.S. Edin. by examination, and eight years later published his first book with the title of the "Diseases of Children's Teeth: their Prevention and Treatment." At this time he was dental surgeon to the Evelina Hospital for Sick Children, and the experience which he had gained by devoting his whole time to the subject of his specialty was embodied in the treatise and made available for medical practitioners and students. This supplied a want of the time, for it frequently happened that the doctor was called upon to take the place of a dentist without having had the necessary training. In 1898 and 1908, respectively, Mr. Pedley published "Hygiene of the Mouth," and jointly with Mr. F. Harrison, "Our Teeth," two books of a more general character. In 1904 he wrote for THE LANCET (1904, ii., 1207) an article designed to direct attention to the neglect by the medical profession of dental disease, predicting that public opinion among other outside forces would compel attention to be paid to this matter. His suggested remedy for this neglect was that medical students should be warned that in all final examinations an occasional question would be put on the causation, effects, and treatment of dental caries. If this were done, he said, "In ten years' time the 18,000 general practitioners who have registered will be well aware of the prevalence of dental disease, which, if they cannot cure, they will do much to prevent." We have travelled far since Mr. Pedley wrote these words. It must have been a gratification to him to have lived to a time when practitioners do attach importance to dental disease and to feel that his influence may have contributed largely to this change of attitude. Mr. Pedley was a past President of the School Dentists Society, a Fellow of the Royal Society of Medicine, and a Fellow of the Royal Society of Arts.

ELIJAH BAXTER FORMAN, M.D. BRUX., M.R.C.P. LOND., J.P.

Dr. E. B. Forman, who died on Nov. 25th at his residence, Chalfont St. Giles, had reached the advanced age of 86 years. He was for 20 years a member of the London County Council, representing North Hackney and South Kensington, and later becoming an alderman. Among the offices he had filled were the vice-chairmanship of the Education Committee and the chairmanship of the Public Health and Midwives Committees; in 1906 he was deputy chairman of the Council.

The son of Mr. E. Forman, of Derby, he was educated privately, entering Guy's Hospital where he gained scholarships in medicine and wrote a prize essay on Bright's disease. In 1863 he qualified with the M.R.C.S. Eng. and L.R.C.P. Lond., and after graduating at Brussels in 1877 obtained the M.R.C.P. in 1889. He started practice in Stoke Newington, moving after a few years to South Kensington, where his whole active professional life was spent. He took an interest from the first in municipal hygiene and had prevision of medical progress in the direction of prevention as distinct from cure. An address on "Medical London," which he delivered at the South Place Institute in 1899, and published in our columns, showed a wide grasp of Poor-law and sanitary administration. Everyone, he said, is concerned in a movement the object of which is to prevent disease and prolong life. He advocated simplification of health administration, and the adoption of a uniform coherent system which only centralisation could bring about. Happily he lived long enough to see the realisation of his ideal in the Ministry of Health.

JOHN ELSDALE MOLSON, M.D., B.CH. CAMB.

THE death took place on Nov. 28th at Goring Hall, Worthing, of John Elsdale Molson, who for some six years represented the Gainsborough division of Lincolnshire in the House of Commons. The son of Samuel Elsdale Molson, he was born on August 6th, 1863, at Montreal, and received his early education in England at Cheltenham College, afterwards entering Cambridge University and becoming a student at Middlesex Hospital Medical School. In 1889 he qualified with the L.S.A., and in the following year took the Conjoint diplomas of the Royal Colleges. After holding a house appointment at Middlesex Hospital, in 1891 he graduated in medicine and surgery at Cambridge University and proceeded to the M.D. degree four years later. While in practice at Chelmsford he was medical adviser to the Convent of the Holy Sepulchre. Later as Surgeon-Major in the 4th Batt. of the Royal Sussex Territorial Regiment he served during the war both in this country and in Egypt, and he entered Parliament in 1918. After retiring from practice he was a justice of the peace for West Sussex.

Dr. Molson married Mary, daughter of Dr. A. E. Leeson, by whom he had three sons and one daughter.

CHARLES EWBANK LANSDOWN, M.R.C.S. ENG., L.R.C.P. LOND.

Dr. Charles Ewbank Lansdown, one of the best-known medical practitioners in the Midlands, passed away with tragic suddenness on Nov. 24th at Cheltenham. The day before his death he attended his patients as usual and seemed in the best of health. Early on the day of his death he complained of pain, and suddenly fell down and expired. A native of Plymouth, he was a student at St. Mary's Hospital, London, and after qualifying in 1891 he was senior resident medical officer of the London Lock Hospital, honorary house surgeon at St. Mary's Hospital, and resident medical officer at Horton Infirmary, Banbury. He settled in Cheltenham and took over the practice of his deceased half-brother. He was surgeon to the Children's Hospital in Cheltenham. He was an enthusiastic Churchman and Freemason. He leaves a widow, a daughter of Dr. Thos. Savage, of Birmingham, one daughter, and two sons, to whom we extend our sympathy.

THE LATE DR. J. F. S. HAY.—A New Zealand correspondent states that the funeral of Dr. Joseph Frank Strong Hay, M.B., C.M. Aberd., formerly Inspector-General of Mental Hospitals in New Zealand, whose death was announced in THE LANCET of Sept. 19th (p. 590), took place in St. Paul's Pro-Cathedral, Wellington, where there was a large attendance of representatives from all sections of the community. Dr. Hay was born in Lucknow, India, and graduated in medicine at Aberdeen University. After some experience of mental work in Scotland he went to New Zealand in 1897, and on the death of Dr. Duncan McGregor in 1907 he was appointed Inspector-General of Mental Hospitals. In 1923 he married Mary Stuart, daughter of the late Right Hon. R. J. Seddon.

MANCHESTER EAR HOSPITAL.—This hospital draws its patients from an extraordinarily wide area, even from very distant towns, but the financial support from many of these, areas comprising 221 towns, is far from adequate and the financial year finishes with an adverse bank balance. During the past year there were 5580 outdoor patients and 525 in-patients. The number of operations was 995. There is a waiting-list of over 900 patients.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. (retd.) E. D. Rutherford to be Surg. Capt. (retd.).

ROYAL ARMY MEDICAL CORPS.

Capt. J. A. Nicholson retires, receiving a gratuity.

TERRITORIAL ARMY.

Capts. F. W. Goodbody and J. B. Foubister, having attained the age limit, are retired and retain their rank.

Capt. J. McCulloch (late R.A.M.C.) to be Capt.

Capt. J. W. Macfarlane resigns his commn. and retains his rank.

ROYAL AIR FORCE.

H. I. Clapperton (temp. Lt., Dental Surgeon, General List, Army) is granted a temporary commission as a Flying Officer on attachment to the R.A.F.

INDIA AND THE INDIAN MEDICAL SERVICE.

The King has approved the relinquishment of their temporary commissions by Capts. Manchar Lal Bhagat and Keshav Ganesh Mohile, who are permitted to retain the rank of Capt.

On return from leave the following officers are posted as indicated: Lt.-Col. R. F. Baird, Civil Surgeon, Allahabad; Lt.-Col. E. C. Hepper, Civil Surgeon, Bareilly; Lt.-Col. H. Ross (late Secretary, Indian Red Cross Society), Civil Surgeon, Aligarh; Lt.-Col. C. A. Sprawson, Principal and Professor of Medicine, King George's Medical College, University of Lucknow, in relief of Maj. G. T. Burke, who has been appointed Civil Surgeon, Saharanpur; and Maj. P. B. Mills, Civil Surgeon, Shahjahonpur. Lt.-Col. H. P. Cook has been transferred as Civil Surgeon from Allahabad to Fyzabad, and Maj. R. S. Townsend, Civil Surgeon, from Bareilly to Gorakpur. Maj. C. G. Howlett, Civil Surgeon of Champaran, has been granted leave.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 25TH.

Milk and Dairies Regulations.

Mr. BARNES asked the Minister of Health whether, having regard to the fact that the Milk and Dairies Act of 1915 had been in operation since Sept. 1st last, he was now able to state the date on which the regulations to be operated under this Act would be published; and whether in view of the scope of the sections of the Act under which it was proposed to issue regulations, he would arrange for a discussion in the House before putting the regulations into operation.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: My right hon. friend is at present consulting the associations of local authorities with regard to a draft Milk and Dairies Order which has been prepared under the Act of 1915 and he hopes that the draft will be ready for publication about the end of the year. When the Order has been made it will be laid before the House and an address may be presented to His Majesty praying that the Order be annulled. A discussion could therefore take place on the Order on a motion for such an address.

Deaths from Lead Poisoning.

Mr. DUCKWORTH asked the Home Secretary if he was aware of the statements that deaths from lead poisoning were on the increase among lead workers in the pottery trade, and that according to the latest statistics potters between the ages of 35 and 45 had the highest death-rate in Great Britain; and whether he had any information as to the effectiveness or otherwise of the new lead and dust regulations.—Mr. G. LOCKER-LAMPSON (Under Secretary for Home Affairs) replied: There has been a small increase during the last few years in the deaths from lead poisoning in the pottery trade, but this cannot be taken as any indication of the present conditions. The records show that in the great majority of cases the deceased had been employed in the industry for many years before the Regulations of 1913 came into force. There can be no doubt, I think, if one looks at the total number of cases, that the 1913 Regulations have been effective. Whereas during the six years 1907–1912 the average number of cases was 90, the average for the last six years 1919–1924 was just under 30. It is significant also that in the fatal cases there has been a substantial rise in the average age of the deceased. The statement that potters between the ages of 35 and 45 have the highest death-rate in Great Britain is, I believe, incorrect.

THURSDAY, NOV. 26TH.

Danger to School-children.

Mr. SCURR asked the Home Secretary whether his attention had been drawn to the danger to the public, especially children, of Vallance-road, Whitechapel, particularly where a school, a feeding centre, and a hospital converge; and whether he would take steps to arrange for better regulation of the heavy traffic by the police, especially when the children were going to and from the school and the feeding centre.—Mr. LOCKER-LAMPSON replied: I am informed by the Commissioner of Police that the traffic in this street, as elsewhere, has greatly increased in recent years. Arrangements are made to secure that, as far as possible, police officers shall be on duty to supervise dangerous crossings in the vicinity of schools when children are entering or leaving, but owing to the large number of schools it is not always possible to spare constables for this purpose, having regard to the other duties of the police. In a densely populated neighbourhood where there are numerous children, and very few places where they can play, except in the streets, it is impossible for the police to prevent accidents occurring, and it does not appear that the posting of a constable at the spot indicated would have prevented such accidents as have unfortunately occurred of late.

The Causes of Epithelioma.

Mr. ROBINSON asked the Home Secretary whether the Departmental Committee on the association of the occupation of the mule minder in the cotton trade with epithelioma had yet reported; and whether any action was proposed to minimise the incidence of this disease and protect the workers.—Mr. LOCKER-LAMPSON replied: The committee have not yet reported, but I am informed by the chairman that they hope to do so early in the New Year. As regards the latter part of the question, I cannot anticipate the report, but any recommendations of the committee will be taken into immediate consideration.

Deaths from Insect Bites.

Mr. HERBERT WILLIAMS asked the Minister of Health the number of deaths from insect bites in this country during the six months ending Sept. 30th this year, and also the corresponding figures for last year.—Mr. N. CHAMBERLAIN replied: There were nine deaths from insect bites in the six months ending on Sept. 30th, 1924. The corresponding figure for this year is not yet finally ascertainable.

Voluntary Hospitals Report.

Major GLYN asked the Minister of Health whether he had considered the Report of the Voluntary Hospitals Commission; and whether it was proposed to provide public funds for hospital extension on the lines recommended.—Mr. N. CHAMBERLAIN replied: Yes, Sir. While I fully appreciate the strength of the case of additional hospital beds I regret that in the present urgent need for public economy I could not find myself able to recommend the provision of public funds to assist even in so laudable an object.

Sanitation in Kentish Hopfields.

Colonel DAY asked the Minister of Health if he was aware of the confusion and consequent suffering of hop-pickers in Kent during the recent hopping season; and would he consider legislation on the lines of the Factory Acts in order to compel owners of hopfields to provide the accommodation required by modern ideas of humanity.—Mr. BRIANT asked the Minister of Health if he was aware that the sanitary condition of many of the hopfields during last season was deplorable; what steps his department was taking to obtain a permanent improvement in the general conditions; and would he appoint women inspectors to be on duty next season during the whole of the time that hop-picking continues. Mr. Briant also asked the Minister of Health if inspectors from his department had visited the hopfields during the past season; and, if so, if the report made could be issued for the information of the House.—Mr. N. CHAMBERLAIN replied: I am aware that the conditions in many camps in the Kent and Sussex hopfields are unsatisfactory, and my department is working in close coöperation with the Ministry of Agriculture and Fisheries with a view to securing improvement. The administration of the law and by-laws relating to this matter is a duty devolving in the first instance on the local authorities, and their efforts, supported by local voluntary workers, have already effected a noteworthy improvement, but I have in preparation new model by-laws which the local authorities will presently be asked to adopt. In the last two years numerous visits have been made by *inspectors, both of my department and that of my right* hon. friend, including a lady inspector of the Ministry of Agriculture, and I propose to circulate among the local authorities concerned a report recently prepared by one of my medical officers dealing with those hopfields in Kent and Sussex which have been inspected. I shall be happy to send a copy to the hon. Members.

Poor-law Reform.

Mr. GEOFFREY PETO asked the Minister of Health whether he would issue to Members the outline of his proposals on the subject of Poor-law reform, which had already been issued to the County Councils' Association.—Sir JOHN MARRIOTT asked the Minister of Health whether, as his provisional suggestions or proposals for the reform of the Poor-law had been confidentially communicated to the Association of Municipal Corporations and one or more similar bodies, he would say whether they had also been communicated to the Association of Poor Law Unions; and, if not, if he would state the ground for discrimination.—Lieut.-Colonel ACLAND-TROYTE asked the Minister of Health why, when issuing a statement as to his proposed reform of the Poor-law to certain associations, no copy was sent to the Association of Poor-law Unions; and would he issue copies of the statement to Members of Parliament.—Mr. N. CHAMBERLAIN replied: The proposals referred to were preliminary proposals devised as a basis for discussion with the representatives of the local authorities to whom it would be necessary to entrust the powers and duties of boards of guardians on abolition, and I thought that it would probably save time and trouble if I considered the proposals further in the light of such discussion before forwarding them to the Association. I am now advised that some time must elapse before the discussion can take place, and accordingly I propose to send the provisional proposals as they stand to the Association and to certain other bodies interested. In this way the proposals will no doubt become public, and it seems scarcely necessary to issue them specially to Members of Parliament.

Advertisements of Cancer Cures.

Sir JOHN MARRIOTT asked the Minister of Health whether he had received representations from responsible quarters urging him to introduce legislation to deal with advertisements for cancer cures; and what action he proposed to take in a matter which was regarded by the medical profession as urgent.—Mr. N. CHAMBERLAIN replied: I have not received any recent representations, but the matter was fully discussed in the report of the Select Committee on Patent Medicines. The question raised by my hon. friend shall be carefully considered in connexion with any legislation for the control of the traffic in secret remedies.

Vaccination and Sleepy Sickness.

Mr. COMPTON asked the Minister of Health whether he would give instructions to all medical officers receiving notifications of cases of sleepy sickness to inquire whether such cases had at any time undergone vaccination and, in those cases where the operation had been performed, to note the date and result of the last vaccination.—Mr. N. CHAMBERLAIN replied: I will consider this suggestion in connexion with other questions relating to sleepy sickness which are at present engaging my attention.

Research into Animal Diseases.

Mr. FOOT MITCHELL asked the Comptroller of the Household, as representing the Minister of Agriculture, what steps were being taken by his department at the present time in the direction of research into animal diseases.—Sir H. BARNSTON replied: Research into animal diseases in England and Wales is carried on at a number of research institutes and colleges maintained or aided by grants from the Ministry. These include the Institute of Animal Pathology at Cambridge, the Royal Veterinary College, the London School of Hygiene and Tropical Medicine, and the Ministry's Veterinary Laboratory. Advisers in veterinary science are maintained at the University Colleges at Bangor and Cardiff, and at Armstrong College, Newcastle. A special committee had been set up to conduct research into foot-and-mouth disease, and work is being carried on under the direction of this committee at a number of laboratories. The total estimated expenditure on the maintenance of this work in the present financial year is £17,000. In addition grants in aid of capital expenditure totalling £118,650 have recently been sanctioned by the Ministry in respect of the work. Reports on the research organisation set up by the Ministry and on the work of the various bodies concerned will be found in the report on the work of the Intelligence Department of the Ministry for 1921–24 and the First Progress Report of the Foot-and-Mouth Disease Research Committee. These reports are published by and obtainable from H.M. Stationery Office.

MONDAY, NOV. 30TH.

Colonial Medical Director.

Lieut.-Colonel ANGUS MCDONNELL asked the Secretary of State for the Colonies whether the Government had come to any decision as to the appointment of a medical director as a permanent member of the Colonial Office staff for the purpose of coördinating medical research work in the different Crown Colonies.—Mr. AMERY replied: The matter is still under consideration.

The Spahlinger Serum.

Captain BOWYER asked the Comptroller of the Household, as representing the Minister of Agriculture, what steps he was taking to test Mr. Spahlinger's reputed cure for bovine and human tuberculosis, or whether the Ministry was already satisfied as to the efficacy of Mr. Spahlinger's sera.—Sir H. BARNSTON replied: The Ministry has not itself made any test of Mr. Spahlinger's serum, or of any other specific of which the basis is kept secret and not submitted to scientific inquiry. It understands, however, that an investigation into bovine tuberculosis is being undertaken by a committee representative of certain agricultural and professional interests in Cheshire, where tests are being conducted with the coöperation of Mr. Spahlinger.

Infant Mortality at Market Drayton.

Sir CHARLES OMAN asked the Minister of Health what was the rate of infant mortality per 1000 births for Market Drayton (Salop) for the first three quarters of 1925, or, if these figures were not yet available, for the first half-year of 1925.—Mr. N. CHAMBERLAIN replied: In the first two quarters of 1925 there were in the Market Drayton Urban District 52 births and 5 deaths of infants under 1 year of age, equivalent to a rate of 96 per 1000 births. Figures for the third quarter are not yet available.

Deaths from Tuberculosis.

Mr. GROVES asked the Minister of Health the number of persons who died in England and Wales from tuberculosis (all forms) during the years 1914 to 1924.—Mr. N. CHAMBERLAIN replied: The figures asked for are as follows: year 1914, 50,208 deaths; 1915, 54,205; 1916, 53,858; 1917, 55,931; 1918, 58,073; 1919, 46,312; 1920, 42,545; 1921, 42,678; 1922, 42,777; 1923, 40,788; 1924, 41,103; total, 528,061.

Destruction of Condemned Meat.

Colonel DAY asked the Minister of Health whether he was aware that the Eaton Bray Rural District Council, at their meeting on Sept. 12th last, decided to allow the carcass of a cow, deemed to be suffering from tuberculosis, to be boiled; and would he consider legislation with a view to the destruction of all condemned carcasses.—Mr. N. CHAMBERLAIN replied: I am aware of the decision of the rural district council, but I have no reason to suppose that the boiled meat was sold for human consumption. Having regard to the economic value of unsound meat for such industrial purposes as soap-boiling or pig or poultry feeding I should not be prepared to introduce legislation requiring the destruction of all condemned carcasses.

Trained Nurses for National Emergency.

Colonel DAY asked the Minister of Health whether it was contemplated appealing to hospitals and Poor-law institutions to supply a corps of trained nurses from the trained staff of such hospitals and institutions which could be used in case of national emergency.—Mr. N. CHAMBERLAIN replied: No, Sir. Steps are, however, being taken to secure that the additional nursing staff required on mobilisation by the combatant services should be obtained with a minimum of disturbance of the voluntary and Poor-law hospitals.

Arm-to-Arm Vaccination.

Mr. GROVES asked the Minister of Health whether he was aware that it was still the practice of many medical practitioners to employ the arm-to-arm method of vaccination in private practice; and whether, in view of the serious risks attending such practice, he would consider the desirability of making representation to the medical profession on the matter.—Mr. N. CHAMBERLAIN replied: The answer to the first part of the question is in the negative. My information is that comparatively few medical practitioners now employ this method of vaccination and I scarcely think it necessary to make representations to the medical profession on the matter.

DONCASTER INFIRMARY.—The accommodation at this infirmary is so inadequate that patients have had to be temporarily "bedded-down" in the receiving ward, and two children have had to occupy one cot. An extension is being built which will provide 70 extra beds. This will be the third enlargement in 20 years.

Medical News.

UNIVERSITY OF CAMBRIDGE.—There are at present 464 medical students in the University, of whom 157 are in their first year, which is about 30 more than the second- or third-year men. There are 127 in their second year, 122 in their third year, and 58 in the fourth or later year.

UNIVERSITY OF LONDON.—At the examination for the Diploma in Psychological Medicine, held recently, the following two candidates passed, with special knowledge of psychiatry: Edward W. Anderson and George Brown.

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.—The next meetings will take place at 5, Old Palace Yard on Dec. 10th at 2 P.M., and 11th at 10.30 A.M.

OLD EPSOMIAN CLUB.—The annual general meeting of this club will be held on Thursday, Dec. 10th, at 6.30 P.M., at the Trocadero Restaurant. It will be followed by the annual dinner at 7.30 P.M.

TUBERCULOSIS SOCIETY.—A meeting of this society will be held at 1, Upper Montague-street, Russell-square, London, on Friday, Dec. 11th, when Dr. Otto May, principal medical officer of the Prudential Assurance Company, will speak on Life Assurance and Tuberculosis.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.—Owing to the death of Queen Alexandra the dinner in aid of the National Association for the Prevention of Tuberculosis, which had been arranged for Dec. 9th, has been indefinitely postponed.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society will be held at the Miller General Hospital, Greenwich, S.E., on Friday, Dec. 11th, at 8.15 P.M., when Mr. Wilfred Trotter will deliver the Purvis Oration on the Surgery of Malignant Disease of the Pharynx.

NEW HEALTH SOCIETY.—A luncheon will be given on Friday, Dec. 11th, at 1 P.M., by the Aldwych Club, at the Connaught Rooms, Great Queen-street, London, W.C., to the founders of this society, when Lord Oxford and Asquith, one of the founders, will deliver an address on National Prosperity and the Nation's Health.

CHILD-STUDY SOCIETY, LONDON.—A meeting of this society will be held at the Royal Sanitary Institute, 90, Buckingham Palace-road, S.W., on Dec. 10th, at 6 P.M., when Dr. R. Langdon-Down will speak on the Teaching of Shorthand as Part of a General Education. Chairman, Dr. A. F. Tredgold.

ROYAL SOCIETY.—The anniversary meeting was held on Nov. 30th when the officers proposed by the Council (see THE LANCET, 1925, ii., 1042) were duly elected. Sir Charles Sherrington, the retiring president, called attention to the receipt last year of a generous anonymous bequest of £10,000 which had been used in the investigation of kala-azar in Northern China by Major Patten and Dr. Hindle. A further bequest from the same source had been received this year, amounting to over £28,000. From the fund accruing to the society in 1921 by the bequest of Miss Foulerton, a further research professor had been appointed in the person of Prof. A. V. Hill.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Sir Charles Gordon-Watson will lecture for the Fellowship of Medicine on the Prevention and Correction of Deformity in Tuberculous Joints in the Lecture Hall of the Medical Society of London, 11, Chandos-street, W., on Monday, Dec. 7th, at 5.30 P.M. The lecture is free to members of the medical profession.—The Hampstead General Hospital will hold a 4.30 to 6 P.M. course for the convenience of the general practitioner from Dec. 7th to 19th covering all branches of medicine and surgery.—Beginning also on Dec. 7th is a two weeks' afternoon course in Dermatology at the Hospital for Diseases of the Skin, Blackfriars. Instruction will be given in the out-patient department and venereal clinics will be held twice weekly.—The following are the special courses for January: Medicine, Surgery, and the Specialties at the Prince of Wales's General Hospital; Cardiology at the National Hospital for Diseases of the Heart; Diseases of Children at the Queen's Hospital; Infectious Fevers at the North-Eastern Hospital; Neurology at the West End Hospital for Nervous Diseases; and Psychological Medicine at the Bethlem Royal Hospital.—A copy of each syllabus and the Fellowship general course programme will be forwarded on application to the Secretary to the Fellowship of Medicine, 1, Wimpole-street, London, W.C. 1.

HARVEIAN SOCIETY OF LONDON.—A meeting will be held at the Paddington Town Hall, Paddington Green, London, W., at 8.30 P.M., on Dec. 10th, when a paper on the Relationship of Certain Diseases of Animals to Mankind will be read by Prof. F. Hobday.

CENTENARIAN LIFE GOVERNOR.—Mrs. Raby, of Bath, who recently sent a donation to Charing Cross Hospital on her 106th birthday, has, in recognition, been appointed a life governor of the hospital.

EAST LONDON CHILDREN'S HOSPITAL.—Recently Sir Joseph Burn, the general manager and actuary of the Prudential Assurance Company, opened the new pathological laboratory which has been equipped at the expense of the company. The "Prudential" is also endowing six beds. The new electrical department for ultra-violet and X ray treatment was opened at the same time.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL.—The following post-graduate lectures will be given during January and February, at 5 P.M., at the hospital, Marylebone-road, N.W. Jan. 14th, Mr. A. W. Bourne: Maternal Mortality; 21st, Mr. J. B. Banister: Late Manifestations of Puerperal Sepsis; 28th, Mr. T. B. Davies: Ante-partum Hæmorrhage; Feb. 4th, Mr. L. C. Rivett: Infant Feeding; 11th, Mr. L. G. Phillips: Management of Contracted Pelvis; 18th, Mr. C. S. Lane-Roberts: Ectopic Pregnancy; 28th, Mr. L. H. W. Williams: Acute Abdominal Pain in Pregnancy.

PROVISION FOR INFECTIOUS DISEASE IN SHROPSHIRE.—Salop County Council is considering a suggestion by Dr. James Wheatley, the county medical officer, that the best method of making provision for infectious diseases would be the erection of a central hospital. At present there is no provision of this kind in districts with a total population of 146,000. Dr. Wheatley recommends the erection of a hospital, to be provided and managed by the county council, on a site near Hadley belonging to the East Shropshire Joint Hospital Board, where there is already good sewerage and water-supply.

ROYAL INSTITUTE OF PUBLIC HEALTH. — The Harben lectures will be delivered in the Lecture Theatre of the Institute, 37, Russell-square, London, W.C., by Prof. J. C. G. Ledingham, F.R.S., on Current Problems in Bacteriology and Immunology, and their Bearing on Public Health Effort, as follows: Lect. I.: Some Problems of Natural Immunity and Prophylaxis, Dec. 9th; Lect. II.: The Carrier Problem in Relation to Enteric Fever and Diphtheria, Dec. 10th; Lect. III.: Studies on Variola, Vaccinia, and Avian Molluscum, Dec. 11th, at 5 P.M. on each day. No tickets of admission are required.

AN X RAY VICTIM.—Mr. Reginald G. Blackall, one of the early X ray workers at the London Hospital, who has suffered from X ray dermatitis for many years, died on Nov. 29th at the age of 44 years. He joined the staff of the London Hospital in 1902, at a time when the dangers of X rays to the operator were little realised, and has shared the fate of his colleague Mr. E. Wilson, who died, and Mr. E. Harnack, who lost both arms. Mr. Blackall had both his hands amputated in consequence of carcinoma. He continued to work after he knew of the danger, but was compelled to retire in 1920. Three years later the Carnegie Hero Fund Trustees awarded him an honorary certificate and a grant of £75 a year. Soon after, at a quarterly court of the London Hospital, Lord Knutsford presented him with the framed testimonial of the Hero Fund, and announced an award by the hospital of a pension of £285 a year and of a substantial life insurance for his wife and family.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The meeting of this society at the Medical Institute, Newcastle-on-Tyne, will be held on Friday, Dec. 11th, and not on the date previously announced The President, Dr. G. F. Buchan, will be in the chair, and there will be a discussion on Industrial Hygiene from the point of view of: (a) Public Health Administration, by Prof. Harold Kerr, M.O.H., Newcastle-on-Tyne; (b) The Physician, by Sir Thomas Oliver; (c) The Works Director, by Mr. Angus Watson, chairman of Messrs. Angus Watson and Co., Ltd.; (d) The Welfare Supervisor, by Mr. B. L. Lelliott, welfare supervisor, Messrs. Sir Jas. Laing and Sons, Ltd., Sunderland. The dinner of the Northern branch will be held at the close of the meeting, and members of other branches are invited to notify Prof. H. Kerr, Town Hall, Newcastle-on-Tyne, if they are able to attend. As branches have often expressed the wish that meetings of the whole society should be held from time to time in the provinces, it is hoped that there will be a large attendance, especially of members from the North of England and Scotland, at the Newcastle meeting.

REOPENING OF GOLDEN-SQUARE HOSPITAL.—Mr. Lionel de Rothschild last week reopened the in-patient department at the Hospital for Diseases of the Throat, Golden-square, which has been closed for two years during rebuilding and extension. The opening ceremony of the extension now reopened was performed by the Dowager Lady Rothschild in 1899. The cost of building and equipment has been £35,000, £1750 of which has been contributed by the King's Fund, in addition to £10,000 when amalgamation with the London Throat Hospital took place. The wards will now accommodate 75 patients, and there are two operating theatres. The late Queen Alexandra sent £50 to the building fund unsolicited.

ROYAL MEDICAL BENEVOLENT FUND OF IRELAND. The annual report of the Royal Medical Benevolent Fund Society of Ireland for the year ending April 30th, 1925, published a few days ago, shows an income from all sources of £2007. In this is included a sum of £122, the amount of income-tax refunded for two years. Of the remainder a sum of £1012 is from dividends and interest. It appears, therefore, omitting small items, that the income directly from subscriptions and donations is some £661. It must be admitted that this is a small sum for the practitioners of the whole of Ireland to contribute. There are some 3000 or more registered medical men practising in Ireland, and an average of 10s. each would not be an extravagant estimate of what they might be expected to contribute. In spite of its limited income the Committee appears to have done a great deal of charitable work during the year. Over 80 applications for assistance were granted and only five refused. Among those who were relieved were five medical men, most of the remainder being widows of medical men.

LIVERPOOL'S OPEN-AIR SCHOOL.—A contract for the erection at a cost of £41,600 of an open-air school, the first in Liverpool, has been sanctioned by the Liverpool Education Committee. The school will accommodate 1200 children and will be situated in Walton Hall Avenue. It will include three assembly rooms and domestic science rooms. There will be 12 square feet of floor space for each child over 12 years of age, which meant a considerable increase of cost. The cost worked out at £31 per child, or at least £10 per child higher than in other parts of the country. The school was strongly recommended by the medical profession and is an experiment in open-air teaching.

DAVID LEWIS EPILEPTIC COLONY, MANCHESTER.—At the annual meeting held at Manchester on Nov. 24th Dr. Alan McDougall, the director, emphasised the contrast between the indirect method of cure practised at the colony and the danger of the direct method practised at home. Dr. McDougall said, "Our experience confirms the faith always held at the colonies, but apparently unrecognised still, after 50 years, outside them, that you get better results and at the very least as high a proportion of 'cures,' if, instead of waging a violent war on fits with inadequate weapons, you act as though the fits were only a thing of secondary importance, and make your chief aim the moral and physical welfare of the patient. The direct method of treating epilepsy has been a steadfast failure for 2000 years. It insists on the patient being an invalid, and it produces, unless it is very quickly successful, appalling results. The broader visioning plan adopted at the colonies recognises that human beings who are prevented from being useful to the world degenerate morally; it recognises that the nature of the epileptic patient is ordinary human nature, and it gives him in addition to medicine an outlet for his human activities. A great obstacle to its use is found in the patient's friends." He pointed out that nearly 2000 patients had been admitted to the colony and most of these had benefited in health and happiness. A number had become free from fits and had returned to the ordinary world—a gratifying result, as nearly all the patients had been under treatment several years before admission to the colony. The daily average of colonists during the past year was 308, the highest on record. A new house for 32 children is being erected at a cost of £13,000.

LANCASHIRE AND SPAHLINGER TREATMENT OF TUBERCULOSIS.—On Nov. 27th about 250 representatives of insurance committees, health authorities, approved societies, along with the medical officers of health, tuberculosis officers, drawn from nearly every town and district in Lancashire, attended a meeting at Preston, called by the Lancashire Insurance Committee to hear addresses by medical men who have investigated this treatment. The chairman of the Lancashire Insurance Committee, Mr. J. W. Rawstron, presided. He said no resolution would be submitted, but the individual delegates would be left to convey the impressions they gathered to the bodies they represented, and he sincerely trusted some good would result. In a letter expressing his regret at his inability to be present Sir Alfred Mond wrote that he was heartily in support of the campaign to raise funds to purchase the Spahlinger Institute. Dr. Thomas Watts, M.P. (Withington), said that he and his colleagues who went to Geneva traced a definite 80 per cent. absolute recoveries, which was very different from 11 per 1000 in this country, and the cost would be something like one-fiftieth of our sanatorium treatment. A remarkable fact was that the results were being obtained by partial sera. Dr. Vernon Davies, M.P., said that after investigation the medical M.P.'s came to the conclusion that the results they had seen could only be described as marvellous, while if the records produced were genuine then the cases could only be described as miraculous. Dr. Leonard Williams said if Spahlinger could not go on and finish his work something of the utmost value would be lost to the world. Dr. Harry Jones, president of the Monmouth division of the British Medical Association, said a meeting of 83 doctors in his division had decided in favour of Spahlinger.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Dec. 8th.

THERAPEUTICS AND PHARMACOLOGY: at 5.30 P.M.
Paper:
Dr. H. Gardiner-Hill: The Feeding of Anterior Lobe Pituitary Extract to Under-Developed Children.

PSYCHIATRY: at 4.30 P.M.
Clinical Meeting at the Bethlem Royal Hospital, S.E.

Thursday, Dec. 10th.

TROPICAL DISEASES AND PARASITOLOGY: at 5.30 P.M.
Papers:
Col. Sir Leonard Rogers: Small-pox and Meteorology in India: Forecasting Epidemics.
Dr. E. A. O. Travers: The Treatment of Leprosy at Kuala Lumpur, Federated Malay States (illustrated with lantern slides and photographs).

EPIDEMIOLOGY AND STATE MEDICINE: Members of this Section are cordially invited to be present.

NEUROLOGY: at 5.30 P.M.
Paper:
Prof. T. Graham Brown: The Physiology of Stepping and its Bearing on the Physiology of the Nerve Centre.

Friday, Dec. 11th.

CLINICAL: at St. Thomas's Hospital, S.E., at 5 P.M.
Demonstration:
Prof. MacLean: The Methods of Determining Renal Efficiency.
Cases:
Cases will be shown illustrating various endocrine disturbances, especially in relation to pituitary diseases.
Dr. Bernard Myers: Case of Splenectomy in a Child for Purpura Hæmorrhagica.

OPHTHALMOLOGY: at 5 P.M.
Clinical Meeting at St. Thomas's Hospital, S.E.

BIOCHEMICAL SOCIETY.
MONDAY, Dec. 7th.—5 P.M. (in the Biochemical Laboratory, Imperial College of Science and Technology, South Kensington). *Communications:*—H. W. Buston and S. B. Schryver: The Isolation of some further Undescribed Products of the Hydrolysis of Proteins. H. Martin and S. B. Schryver: The Action of an Electric Field on Egg Albumin. H. Chick: Sources of Error in the Biological Method of Investigating Fat-Soluble Vitamins. W. V. Thorpe: The Action of Enzymes on the Oxytocic Principle of the Pituitary. R. K. Cannan: Potentiometric Studies in Biological Oxidation Reductions. D. T. Harris: The Action of Light on Blood.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.
MONDAY, Dec. 7th, to SATURDAY, Dec. 12th. Fellowship of Medicine lecture, Medical Society, 11, Chandos-street, W. Monday, 5.30 P.M., Sir Charles Gordon-Watson: The Prevention and Correction of Deformity in Tuberculous Joints (illustrated by lantern slides).—INFANTS HOSPITAL, Vincent-square, S.W. Special Course, Lectures, and Demonstrations every afternoon. Friday, "Round Table" Consultation. Saturday, Visit to Blind Babies' Home, Chorley Wood.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special Course in Medicine, Surgery, and Gynæcology. Lectures, Demonstrations, &c., will take place in the Out-Patient Department and Wards.—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street, W. Lecture-demonstrations, illustrated by cases daily at 5 P.M.—HAMPSTEAD GENERAL HOSPITAL, Haverstock-hill, N.W. 4.30–6 P.M., General Practitioners Course dealing with Medicine, Surgery, and the Specialties.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars-road, S.E. Afternoon course. Tuesday and Friday, 5.30 P.M., V.D. Clinic. All information as to fees, &c., from the Secretary.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Thursday, Dec. 10th.—3 p.m., Dr. A. J. Whiting: Physical Diagnosis as illustrated by Cases in the Medical Wards. 4.30 p.m., Mr. N. Fleming: Iritis and Glaucoma.

Daily: In-patient and Out-patient Clinics in General and Special Departments, Operations, &c.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

Tuesday, Dec. 8th.—5 p.m., Dr. W. Griffith: Eczema.

Thursday.—5 p.m. (lecture concluded).

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone-road, N.W.

Thursday, Dec. 10th.—5 p.m., Mr. L. Phillips: The Failed Forceps Case.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

Friday, Dec. 11th.—4 p.m., Mr. Harold Kisch: Cancer of the Larynx.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

Wednesday, Dec. 9th.—4 p.m., Mr. Percy Hall: The Rôle of Light in the Prevention and Arrest of Disease.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

Tuesday, Dec. 8th.—4.15 p.m., Mr. J. P. Buckley: The Significance of the Pathological Mesenteric Glands.

Friday.—4.15 p.m., Sir William Milligan: Modern Technique in the Diagnosis and Treatment of Foreign Bodies Impacted in the Food Passages.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, St. Andrews.

Tuesday, Dec. 8th.—4 p.m., Principal Sir James Irvine: An address. Prof. Herring to open a discussion.

CHADWICK PUBLIC LECTURES.

Wednesday, Dec. 9th.—5.15 p.m. (in the Barnes Hall, Royal Society of Medicine, 1, Wimpole-street, W.), Dr. A. S. MacNalty: Encephalitis Lethargica (Sleepy Sickness) in England.

Appointments.

Blair, D., M.D. Glasg., has been appointed Superintendent of Prestwich County Mental Hospital by the Lancashire Asylums Board.

McFadzean, J., M.B., Ch.B. Glasg., Assistant Medical Officer, Colney Hatch Asylum.

Odgers, P. N. B., B.M., M.Ch. Oxf., Demonstrator in the Department of Anatomy, University of Oxford.

Williams, J. W., M.R.C.S., L.R.C.P. Lond., Medical Officer of the Penarth District of the Cardiff Union.

Medical Referees under the Workmen's Compensation Act (Additional): Miller, H., M.B., B.Ch. Glasg., and Stockman, R., M.D. Edin., for the Sheriffdom of Lanark.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary, Treatment Centre.—Jun. M.O. £500.

Accrington, Victoria Hospital.—H.S. £150.

All Saints' Hospital, 49/57, Vauxhall Bridge-road, S.W.—Res. H.S. At rate of £200.

Birmingham Corporation Infectious Diseases Hospitals.—Sen. Asst. M.O. £500.

Birmingham, Queen's Hospital.—Anæsthetist. Obst. and Ophth. H.S. Also Cas. H.S. All at £70 to £100.

Bombay, Gokuldas Tejpal Hospital.—Hon. P. and two Hon. S.'s.

Bradford Royal Eye and Ear Hospital.—Res. H.S. £120.

Bristol, Southmead Hospital.—Second Asst. M.O. £200.

Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.

Chester Royal Infirmary.—H.S. and Asst. H.S. £175 and £125 respectively.

City of London Hospital for Dis. of Heart, &c., Victoria Park, E.—P. to Out-patients.

Colchester, Essex County Hospital.—Asst. H.S. and Reg. £150.

Dreadnought Hospital, Greenwich, S.E.—H.P. and H.S. Each at rate of £110.

Dumfries and Galloway Royal Infirmary.—Sen. and Jun. Res. M.O.'s. At rate of £150 and £100 respectively.

Essex County Council and U.D.C.'s of Grays Thurrock and Tilbury.—M.O.H. for U.D. of Grays Thurrock. £200. M.O.H. for U.D. of Tilbury. £200. And Asst. County M.O. for U.D. of Grays Thurrock, &c. £400.

Fulham Parish.—M.O. of South District. About £250.

Great Yarmouth General Hospital.—H.S. £150.

Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—H.S. and Cas. Surg. O. Each at rate of £100.

Kensington, Fulham, and Chelsea General Hospital, Richmond-road, Earl's Court, S.W.—Jun. Res. M.O. At rate of £75.

London Hospital, E.—Asst. Obstet. and Gynæcological S.

Metropolitan Asylums Board, Mental Hospitals Service.—Jun. Asst. M.O. £500. Also Second Assist. M.O. £560.

North Middlesex Hospital, Edmonton, N.—S. in charge of Ear Dept. Three guineas per session.

Nottingham General Hospital.—Res. Cas. O. At rate of £200.

Queen Mary's Hospital for the East End, Stratford, E.—Res. M.O., H.P. Two H.S.'s. Obstet. H.S. H.P. And Cas. O.

Royal Free Hospital, Gray's Inn-road, W.C.—Surg. Reg. £200. Also Med. and Gynæcological Reg. £100.

St. Andrew's Hospital, Dollis Hill, N.W.—Hon. Asst. P. an Hon. Asst. Gynæcologist.

St. Peter's Hospital for Stone, &c., Henrietta-street, Covent-garden, W.C.—Clin. Asst.

Salisbury General Infirmary.—Hon. Ophth. S.

Scarborough Hospital and Dispensary.—Two H.S.'s. Each £120.

Sheffield Royal Infirmary.—Ophth. H.S. £80.

Sheffield Union Hospital.—Res. Asst. M.O.'s. £250.

Stepney Union, St. Peter's Hospital, Vallance-road, Whitechapel, E.—Med. Supt. £900. Also First Asst. M.O. £600. And Second Asst. M.O. £450.

Talgarth, Breconshire, Mid-Wales Counties Mental Hospital.—Asst. M.O. £350.

Tipton Urban District Council.—M.O.H. and Sch. M.O. £800.

Wigan Infirmary.—Third H.S. At rate of £150.

The Chief Inspector of Factories, Home Office, London, S.W., announces vacant appointments for Certifying Factory Surgeons at Kirkwall, Orkney, Stanmore (Middlesex), and Whitehaven (Cumberland).

Births, Marriages, and Deaths.

MARRIAGES.

Joynt—Warnock.—On Oct. 12th, at All Saints' Church, Srinagar, Kashmir, Major Herbert Fletcher Joynt, R.A.M.C., to Florence May, daughter of Mrs. Warnock and late Mr. Warnock, of Wallasey.

O'Byrne—Vigors.—On Nov. 25th, at St. Mary's Church, Hyson Green, Nottingham, Dr. Michael Dermod O'Byrne, to Kate Mary Vigors, widow of Captain C. H. Vigors, M.C., Croix de Guerre.

DEATHS.

Brown.—On Nov. 23rd, at Winckley-square, Preston, Lancashire, Sir Robert Charles Brown, Kt., M.B., F.R.C.P., F.R.C.S., aged 89 years.

Forman.—On Nov. 25th, at "Newmount," Chalfont St. Giles, Buckingham, Elijah Baxter Forman, M.D., J.P., formerly Alderman of the London County Council, aged 86.

Keith.—On Nov. 24th, at a nursing home, Southsea, after operation, Mrs. Caroline Keith, L.R.C.P. and S. No flowers by request.

Leventon.—On Nov. 25th, at Finchley-road, N.W., Julius Leventon, L.D.S. R.C.S.I., aged 50.

Molson.—On Nov. 28th, at Goring Hall, Worthing, suddenly, John Elsdale Molson, M.D., Major, R.A.M.C., T.D., late M.P. for the Gainsborough Division of Lincolnshire, aged 62.

Pedley.—On Nov. 25th, at India House, Addiscombe, Richard Denison Pedley, F.R.C.S. Edin., L.D.S., of Railway Approach, London Bridge, aged 68.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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Notes, Comments, and Abstracts.

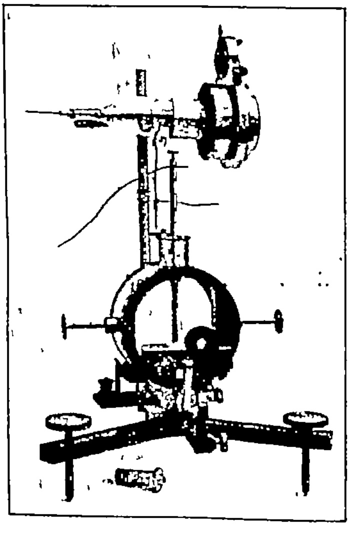
THE PHOTOMETRY OF THERAPEUTIC LAMPS.

AN INSTRUMENT FOR MEASURING ULTRA-VIOLET RADIATION, AND SOME APPLICATIONS OF THERAPEUTIC INTEREST.

BY HARRY D. GRIFFITH, B.A. CAMB.,
ASSISTANT IN NATURAL PHILOSOPHY AND CARNEGIE TEACHING FELLOW IN THE UNIVERSITY OF ABERDEEN;
AND
JOHN S. TAYLOR, M.B., CH. B., D.P.H. ABERD.,
ASSISTANT MEDICAL OFFICER OF HEALTH, CITY OF ABERDEEN.

THE instrument and methods herein described have been developed in order to provide a straightforward means of comparing the intensity of the ultra-violet radiation of lamps used for purposes of artificial sunlight treatment. Somewhat similar instruments have been devised by other investigators[1][2] for meteorological purposes, but the technique given below is believed to be especially suitable for measuring the radiation of therapeutic lamps.

FIG. 1.

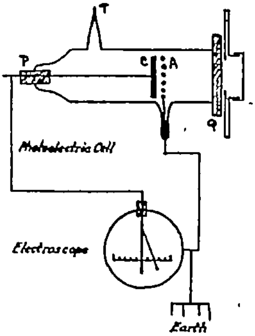


General View of Instrument for measuring Ultra-violet Radiation.

The essential principle of the method is the photo-electric effect discovered by Hertz and Hallwachs, on which a great body of physical research has subsequently been done. The results which emerge are that a metal plate, when illuminated by radiation of wave-length less than a certain critical value, emits electrons, so that if the metal be given a negative charge before illumination this charge is gradually lost during illumination. The "threshold" wave-length depends on the particular metal concerned. The loss of charge can be detected conveniently by means of a gold-leaf electroscope with its leaf connected to the metal plate. If the electroscope and the plate are charged to a negative pressure of, say, 200 volts, relative to the earth, the leaf will diverge. Then on illumination with light of any wave-length less than the threshold wave-length for the metal of the plate, the divergence gradually decreases till all the charge has leaked away. The rate at which the leaf falls is controlled by the rate at which leakage of electricity takes place from the illuminated plate, and this is dependent on the intensity of illumination. Detection of the small leakage current is also possible by means of a galvanometer, but this method is less convenient.

The results obtained tend to be variable unless the active plate (cathode) is protected from chemical change such as oxidation, and it is desirable therefore to enclose the plate in a vessel either evacuated or filled with some indifferent gas, preferably at reduced pressure. A second earthed electrode acting as an anode is provided to give the ejected electrons a definite route out of the cell.

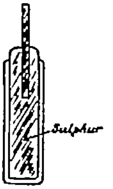
FIG. 2.



In the application of these facts to the work under consideration, advantage is taken of the photo-electric properties of cadmium, which is insensitive to radiation of wave-length greater than 350 μμ, and of the fact that quartz absorbs waves shorter than about 200 μμ. A photo-electric cell with a cadmium cathode is employed, the cathode being illuminated through a quartz window. In this way a device is obtained actuated only by radiation of wave-length between 350 μμ and 200 μμ—that is, by the region of the spectrum comprising those radiations which are of greatest biological interest. (Figs. 1 and 2.)

The electrodes of the photo-electric cell are mounted in a gas-tight manner in a glass vessel closed at one end with a flat quartz plate Q, through which the active radiation enters the instrument. The cadmium electrode C takes the form of a thin disc of the metal, 22 mm. in diameter, fixed to a copper support. This forms one of the electrodes, and since it is necessary to have it insulated from the glass of the cell in the most rigorous manner, it passes out through the quartz bush P. The anode A is a wide-mesh grid of fine wire placed 2 or 3 mm. from the cathode, and the incident radiation shines through the meshes of this grid on to the cadmium cathode. The seals are made with vacuum waxes of the usual type. After cleaning and fixing the electrodes the cell is evacuated as far as possible (to 0·001 mm. in this case) and tested for leaks over a period of several days. It is then filled with hydrogen or argon to a pressure of about 3 mm. mercury and sealed off at T.

FIG. 3.



Charging rod.

The auxiliary gold-leaf electroscope is one of ordinary type in which the position of the leaf can be read off against a scale. The one used in these experiments has leaves 5 cm. long by 2 mm. wide, and gives a deflection of 12 mm. when the pressure between the leaf and the case is 220 volts. Very rigorous insulation of the support of the leaf is again necessary. Sulphur quartz or amber is required. The "natural leak" of the electroscope and cell together is less than 1 scale division per hour. A diaphragm of adjustable size is mounted in front of the cell and can be set so that the opening is of diameter 10, 8, or 4 mm., allowing the sensitivity to be controlled. It also carries a cap to cover the opening of the diaphragm when the cell is not in use.

The instrument can be charged by touching the rod of the electroscope with the negative wire of the 220-volt direct current-supply, a safety resistance of 50,000 ohms being included to prevent risk of short circuits. Another method is by the charging rod shown in Fig. 3. This consists of a short piece of brass rod with a glass handle, insulation being obtained by means of a sulphur plug. Friction of the rod on the hair of the head electrifies it negatively, leakage of the charge being prevented by the sulphur. On touching the stem of the electroscope with the charged rod the leaves diverge with the necessary negative charge. This is a very convenient and reliable process if the sulphur be kept clean and not handled.

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[1] Elster and Geitel, Physikalische Zeitschrift, 1914, xv., 1, 1915, xvi., 405.

[2] Dorno: Ibid., 1917, xviii., 391.

Experimental Procedure.

When in use the instrument is set up facing the lamp to be studied, and the diaphragm closed to its smallest aperture. A spot of light coming through the diaphragm will appear on the cadmium plate and the cell can be lined up till this is central. With the cap in position and the diaphragm opened to one of the standard sizes, the negative charge is given to the cell. On removing the cap the gold leaf will be seen to fall steadily if active radiation is present. Two suitable points on the scale are chosen within the travel of the gold leaf (in the instrument in use here, division 11 and division 7). A stop-watch is started by the observer when the leaf crosses division 11, and is stopped when it crosses division 7. This is equivalent to measuring the time which the active light takes to cause the leakage of a definite quantity of electricity from the cadmium plate. Several readings are taken as in the examples given later, and the average of these is used for computation.

Results Obtained with Instrument.

At the outset it may be said that when the research was started it was suspected that photo-electric cells of this description would probably deteriorate quickly with use, through "fatigue," contamination of vacuum, and other causes. These doubts have been found to be groundless. It seems that in the measurement of powerful ultra-violet sources to the accuracy aimed at (an error not in excess of 5 per cent.) these bogies of ordinary photo-electric photometry cause no trouble.

Inverse Square Law.

Other things being equal, the cell should give a leak proportional to the total energy of radiation between $350\mu\mu$ and $200\mu\mu$ entering it—that is to say, using a constant source and keeping the diaphragm to one size, the time of discharge through the standard range should be proportional to the square of the distance from the source. Measurements were made which verified the fact that this relation holds good for cells of the type described, so long as the time of discharge is greater than a certain small value.

Arbitrary Unit of Ultra-violet Intensity.

For the comparison of similar lamps, an arbitrary unit is used which depends on the dimensions of the particular cell used. The unit chosen was a lamp which, when placed 30 in. from the cell, causes the standard leak (division 11 to division 7 on the scale) to take place in nine seconds, the full aperture being used (22 mm.). When a lamp studied, D inches from the cell, discharges the standard amount of electricity in T seconds, the diaphragm opening being A, its power will be given by—

$$P = \frac{1}{100} \times \frac{D^2}{T} \times \left(\frac{22}{A}\right)^2$$

Thus, for the measurement of the power of a lamp, three quantities have to be known—the distance from lamp to cell, the size of aperture used, and a fair average value of the time of discharge.

Constancy of Cell.

The power, calculated by this formula, of a certain quartz-mercury arc as measured on different dates extending over a month was found to be satisfactorily constant: Sept. 27th, 18 units; Oct. 11th, 21 units; Oct. 18th, 23 units; Oct. 20th, 22 units; Oct. 22nd, 22 units. The simplicity of this technique compared with that involved in performing similar measurements with a spectrometer and bolometer or thermopile, or by a photographic method involving measurement of the density of a silver image, is apparent, though admittedly a more rigorous method of radiometry is necessary for the absolute calibration of the cell.

An important advantage of the instrument described here is that it is self-contained, robust, and portable.

Measurements on Carbon Arcs.—Solid Carbons.

The outstanding result which emerges from measurements made on carbon arcs is that the great bulk of ultra-violet radiation given out comes from the flame of the arc and not from the poles. Thus, in working with 75 ampère arcs, which have a tendency to flare, whenever a flare occurred an observer at the instrument some 40 ft. away saw the gold leaf *jump* downwards, sometimes a big flare making it drop as much as half a scale division.

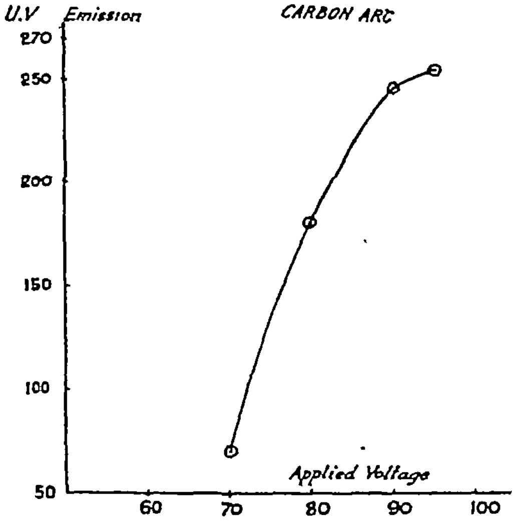
The emission with the carbon arc is, of course, not nearly so constant as that of the mercury arc. The crater tends to move round and round the carbons more or less rhythmically, with the result that the readings of the instrument go through corresponding cycles of maxima and minima. In the estimates of power given below regular readings during at least one complete cycle were obtained, so that the results given are considered to be fair average values of the effective power during an actual irradiation of patients. They were taken at the level of the arc at distances varying according to local conditions of some 20 to 40 ft. away.

The instrument is being adapted to make the averaging for fluctuations of intensity automatic by adding a condenser to it; the standard leak will then take 20 minutes or so to occur instead of 30 seconds, and the result obtained will represent the average power of the arc during the 20 minutes. It has to be noted that the fall of the leaf through the standard range means that a definite amount of ultra-violet energy has been delivered by the arc. It is anticipated that in this form the instrument will give a useful means of controlling dosage.

Variation of Ultra-violet Emission with Voltage.

The power of the 75 ampère arcs, having carbons of diameter 23 mm. and 30 mm., at the City Hospital, Aberdeen, has been measured, and its variations with varying input voltage have been determined. The results quoted below (see also Graph, Fig. 4) show that there is very great decrease of ultra-violet emission if the running voltage is allowed to drop some 10 or 15 volts.

FIG. 4.



Voltage.	Power.	Voltage.	Power.
70	70 units.	90	245 units.
80	180 „	95	253 „

This variation probably arises from the fact that a stable arc is shorter at low voltages than at high. There will thus be less flame, and what there is will be more shielded by the carbons if the applied voltage drops. Relative measurements of the emission of various types of carbon arcs have been made, and the emission has been found to depend largely on the construction and running conditions, a question which is being made the subject of further investigation. The results given below afford a rough guide to the power that may be expected, and refer in each case to arcs taking solid carbons. The effect of impregnation is to be studied later.

15 amp. type	Power,	12 units.
25 „ „	„	60 „
75 „ „	„	156 „

These results are in general agreement with those obtained by Lindemann[*] working with smaller arcs under carefully controlled laboratory conditions.

A set of typical readings are given below.

75 Ampère Carbon Arc.

Distance from arc to cell .. .. .. 420 in.
Diameter of diaphragm .. .. .. 15 mm.
Running voltage .. .. 77 volts.
Time of discharge (secs.) .. .. Div. 11 to div. 7.

15·0	Effect of a flare
38·0	Arc feeding itself
21·8	
22·0	
21·2	
25·0	
22·6	
18·2	Effect of a flare
27·4	
29·2	
28·8	

Average time, 24·5 secs.

$$\text{Power of arc} = \frac{1}{100} \times \frac{D^2}{T} \times \left(\frac{22}{A}\right)^2 = \frac{1}{100} \times \frac{420^2}{24\cdot5} \times \left(\frac{22}{15}\right)^2 = 156 \text{ units.}$$

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[*] Lindemann: Annalen der Physik, 1906, xix., 807.

The relative steadiness of the mercury arc is shown by the following readings :—

3 Ampère Mercury Arc, Type A.

Distance from arc to cell .. .. 80 in.
Diameter of diaphragm .. .. 8 mm.
Time of discharge (secs.) :—

26·2	26·2	Average time, 26·5 secs.
25·8	26·5	
26·2	26·6	
26·6	26·6	
26·8	26·2	
27·0	26·4	

Hence power of lamp, 22 units.

Measurements on Mercury Arcs.

Two types of mercury arcs have been investigated, an "atmospheric" type with tube length 5 cm., diameter 14 mm., taking 2·2 amps. at 100 volts across the tube; it has a hemispherical white enamel bowl above it. This will be referred to as lamp A.

Lamp B is a vacuum type lamp, tube length 8 cm., diameter 15 mm., taking 2·8 amps. at 150 volts across the tube. It has a hemispherical polished metal bowl behind it.

Measurements have been made of the powers of both lamps. A typical series of measurements for lamp A has been given above. The small variations are assigned to slight alteration of arc length or supply voltage. They are even less in the case of lamp B.

Power of mercury lamp A	20·0 units.
" " B	57 "

These measurements were made with the cell on a horizontal line from the lamp perpendicular to the tube length, the bowls being tilted to expose the quartz tubes completely. Thus the ultra-violet emission of B was about three times that of A.

Measurements have also been made of the distribution of ultra-violet energy round lamp A.

Along horizontal line perpendicular to tube length	20·9 units.
Along horizontal line at 45, perpendicular to tube length	14·7 "
Along line sloping downwards at 45, perpendicular to tube length	10·8 "
Vertically under lamp	32 "

Measurements are in progress of the effect of the bowl-shaped reflector in focusing the ultra-violet energy, and of the effect of voltage variation on the ultra-violet output.

General Considerations.

Another fact which requires consideration is that the instrument gives a directly valid comparison of the powers of sources of a similar nature—e.g., of two different sizes of carbon arcs, or of two types of mercury arcs. In comparing a carbon arc with a mercury arc, however, one other factor has to be taken into account, since the mercury arc is relatively richer in short waves than the carbon arc, in the region to which the instrument is sensitive. This is the usual difficulty of heterochromatic photometry, exactly analogous to the difficulty of comparing a lamp of bluish tint with a yellowish one; to settle this point it is necessary to know how the sensitivity of the measuring instrument varies with the wave length. Preliminary tests have shown that the sensitivity of the instrument to different wave lengths in the band of the spectrum to which it responds (350 μμ to 200 μμ) is not far from uniformity. This detail is being investigated at present, but meanwhile it is not considered to be of great practical importance, at any rate until the problem has been solved as to what are the relative biological effects of the same amounts of ultra-violet energy applied in the form of mercury arc radiation, and of carbon arc radiation respectively.

It is interesting to note that a sheet of window glass held in front of the diaphragm stops all leak as completely as does the cardboard cap of the instrument, thus showing conclusively that only waves shorter than about 350 μμ actuate the instrument.

A further form of the apparatus is in use, in which the photo-electric leak across the cell is balanced by adjusting a resistance which allows current to flow in, so as just to neutralise the leak. The variable resistance, which must be of the order of 10 million megohms, takes the form of a thermionic valve with a very small quartz-insulated anode. In using this type, all that is required is simply to set the resistance till the gold leaf is stationary. Then the intensity of ultra-violet illumination is read off directly from the setting of the instrument, instead of indirectly from observation of the fall of the leaf, as in the first type described.

The work described above has been done by collaboration between the Natural Philosophy Department of the University of Aberdeen and the Health Department of the City of Aberdeen. The authors desire to express their indebtedness to Prof. Thomson for giving the use of the facilities of his research department, and for advice and criticism during the course of the work.

COLONIAL HEALTH REPORTS.

UNFEDERATED MALAY STATES.

Johore.—Mr. H. Marriott, General Adviser, in his report on this State for 1924 states that on an estimated population of 317,317 the birth-rate was 38·75 per mille and the death-rate 26·07 per mille. The infantile mortality for the year was 182·00 per mille, compared with 106·28 in 1923. The territory was again entirely free from cholera. There were 3 cases of plague and 2 of cerebro-spinal meningitis, all fatal; 20 cases of chicken-pox and 205 of measles (including German measles) were reported; there was 1 death from measles. Of small-pox there were 8 cases, all of which recovered; and of influenzal pneumonia 6 cases, with 4 deaths; 58 cases of enteric fever were recorded, with 10 deaths. There were 1708 cases of ankylostomiasis, with 68 deaths; 677 cases of beri-beri, with 63 deaths; 3 cases of blackwater fever (1 death), and 1810 of dysentery and diarrhœa (215 deaths). 12,514 cases of malarial fever were treated in Government and estate hospitals, and the percentage of deaths to total treated was 2·85, against 3·28 in 1923. 440 deaths were registered as being due to phthisis. The number of patients in the mental hospital at the end of the year was 170. Lepers in the Johore Leper Asylum numbered 70. All female lepers are transferred to the leper camp at Singapore. Admissions to the Government hospitals during the year were 15,987, and the number of attendances on out-patients at the various stations was 93,421. Johore Bahru showed the highest rainfall for Government stations, 126·72 inches, and the lowest was 70·74 at Batu Pahat. Temperature variations were not so great as during the previous year, there being a difference of 24 degrees between the highest maximum, 91 (Tangkuk), and lowest minimum, 67 (Kukub). Dr. R. D. Fitzgerald was confirmed as principal medical officer.

Kelantan.—The report for 1924 is signed by Mr. H. C. Eckhardt, Acting British Adviser. The total population at the 1921 census was 309,300, of whom 286,363 were Malays, mostly born in Kelantan. Of 12,000 Chinese, half were born in Kelantan, as were practically all of the 9000 odd Siamese. There were 31 admissions to the European hospital, and 2 deaths. In the native hospital at Kota Bharu there were 88 patients on Jan. 1st, 1924; 2050 patients were admitted during the year, and there were 35 deaths. The main ailments treated were malaria (274 cases), syphilis (103), yaws (346), ulcers (181), ankylostomiasis (123), beri-beri (4), and phthisis (69). In the cases of yaws very satisfactory results were obtained by the use of novarsenobenzol. The isolation camp at Kota Bharu was used for the isolation and treatment of phthisis and chronic bowel complaints; there were 94 admissions and 36 deaths. There were 6 lepers in the leper camp at Kota Bharu at the beginning of 1924; 7 were admitted during the year, and 3 absconded. Treatment with sodium hydnocarpate and Heiser's Philippine formula, and the internal administration of cod-liver oil were actively carried out. As a result 2 cases were discharged with no outward signs of the disease and no microscopical findings of *Bacillus lepræ*. The new hospital at Kuala Krai was completed with accommodation for 60 patients. The number of out-patients treated at Kota Bharu was 24,153, at Kuala Krai 9384, at Tumpat 3928, at Pasir Puteh 9165, and at the Federated Malay States railways hospitals 9063. Travelling dispensers visited market-places and various kampongs at regular intervals, and treated 7057 children. A special hookworm campaign was carried out in Ulu Kelantan. It was well organised and most successful; 7030 cases were treated with carbon tetrachloride. Twenty-three sporadic cases of choleraic diarrhœa, with 12 deaths, were reported from various villages. There was 1 fatal case of cholera. The health on estates was good. The routine medical inspection of estates was thoroughly carried out by Dr. W. J. Geale, medical officer at Ulu Kelantan. Dr. J. R. McVail was in charge of the medical department during the whole of the year, and Dr. Lim Shin Thwin assisted when necessary in Kota Bharu.

COLLOIDAL GOLD IN THE TREATMENT OF ALCOHOLISM.

To the Editor of THE LANCET.

SIR,—I note with interest in your issue of Nov. 28th that Dr. Bousfield confirms the value of colloidal gold in the treatment of alcoholism. I have used colloidal gold for six years (THE LANCET, 1922, i., 691, and 1924, ii., 401) and the longer I use it the more certain I am of its value. Dr. Bousfield uses atropine, a drug which I seldom found of use; generally, in fact, the reverse, and I stopped using it several years ago. Why colloidal gold should be of such value in these cases one does not at the present know.

I am, Sir, yours faithfully,
STANFORD PARK,
Resident Medical Superintendent, Bay Mount,
Paignton, S. Devon.
Nov. 28th, 1925.

THE SHIPPING EXHIBITION AT OLYMPIA.

THE Shipping, Engineering and Machinery Exhibition held during the past fortnight at Olympia illustrated in a hundred ways the improvements being made on the material side of the business, but few devices to help the personnel were in evidence. One might look in vain for models of improved forecastles, or for examples of baths, lavatories, or water-closets, and there were surprisingly few ventilation exhibits. It appears that it pays a man to instal an expensive centrifugal extractor to recover oil from oily rags, but that to make it easier for the man who makes the rags oily to get the oil off himself is not a business proposition. In the long run, that is a mistaken view. One promising ventilating system is shown, the "Kelvite," with a quiet fan in each cabin regulated by a four-way switch: on, cold air; on, low heat; on, full heat; off. The indriven air is warmed as and if required, and the heating coils only function when the fan is running. It is claimed that air trunking is not needed, only a single shoot to the deck, and if that is found true in practice, ventilation of ships will become easier. The same firm (Kelvin, Bottomley, and Baird) exhibited an ingenious piece of apparatus, the size of a large thermos, for estimating the carbonic acid in furnace gases, giving the required figure (in percentage or parts per 10,000) in two minutes by a direct reading. The cost (£17) may put it out of reach of enthusiastic surgeons on ships. There was one beautiful instrument which, it is hoped, may abolish sea-sickness. This gyroscope, manufactured by the Sperry Company, has already performed feats almost as miraculous as that of keeping the ship on an even keel, and we wish it all success.

RADIANT HEAT IN OCULAR INFLAMMATION.

Dr. A. P. Schultz, of Brooklyn, sends us a reprint from *Solidarity* describing the relief afforded by intense dry radiant heat in his own case when he was suffering from iritis-keratitis. Before he tried this physical remedy he had obtained some mitigation of his pain from atophan in daily doses of 15 gr. combined with local treatment by dionin and thiosinamin; but from the moment of its application radiant heat relieved pain and later, he is sure, helped to clear up corneal infiltration. There is, we might add, nothing very new in this use of dry radiant heat; the late Mr. R. W. Doyne wrote a paper describing the treatment in the Transactions of the Ophthalmological Society for 1900. But Dr. Schultz's testimony is striking confirmation.

THE GREAT PLAGUE IN LONDON.

IN the *Journal of the London Society* for November is an account of the Great Plague of London in 1665, by Mr. W. G. Bell, F.S.A. The map accompanying the paper shows how the mortality varied from district to district, but was less in the walled city, concentrating on the poorer inhabitants of the jerry-built slums outside the walls, Aldgate, Bishopsgate, and Moorgate. Mortality was also high about Westminster Abbey. The outbreak began in the ward of St. Giles-in-the-Fields (about the spot where New Oxford-street and Charing Cross-road now join). It was intense in the west in July, gradually spread east, and reached its peak there in September. Burial was a difficulty, some churchyards became so overcrowded as to raise their level two or three feet above that of the neighbouring streets—as may still be seen—and plague pits were opened, the nearest in Aldgate. Infection was supposed to spread through the air or from the soil, hence people stuffed the keyholes of their doors to exclude the outer air, and they killed cats and dogs which might have helped to keep infection at a distance. The Great Fire in the next year burned out the walled city, but did good to the slums outside, by making way for better buildings and better sanitation in the areas which it cleared.

DRUG SMUGGLING.

IMPORTANT seizures of illicit drugs in the Straits Settlements, totalling nearly 300 lb. of morphine hydrochloride, have been reported to the League of Nations by the British Government. The drugs were shipped from Antwerp to the Far East, but were intercepted at Singapore. The following is a typical story:—

On the arrival of the ss. *Haruna Maru* from Europe on May 25th, a party of revenue officers went on board and examined a consignment of seven casks which were declared to contain carbolic acid. Six of the casks were standing on end with the marks downwards, but the seventh, which was right end up, was opened first and found to contain 63 lb. of morphine hydrochloride. The other six casks contained carbolic acid as declared. The casks were similar to beer casks and held about 50 gallons each. On examination it was found that inside each cask was a smaller rough wooden cask containing a large tin packed in sawdust. In the case of the six genuine casks, these tins, which were cylindrical, had circular soldered lids at the side of the upper plane surface, as in kerosene oil tins, and were filled with solidified carbolic acid. In the case of the seventh cask, the tin was larger and the "lid" was not soldered down but could be prized open. When this lid was removed it appeared that this tin also was filled with carbolic acid. Further examination, however, showed that the acid was confined in a small compartment about 7 in. in diameter, soldered to the upper surface round the "lid." The outer tin was then cut open and found to contain a smaller tin packed around with sawdust and about 150 lb. of sheet lead, evidently put in to make up weight, and its contents were 63 lb. of pure morphine hydrochloride. The master of the ship was fined $1000 and the seven casks confiscated.

The Secretary-General of the League has sent to the Powers having extra-territorial rights in China a copy of a resolution adopted by the League's Advisory Committee in August last and approved by the Council, to the effect that those Powers "should, if they have not already done so, make regulations, the breach of which shall be punishable by adequate penalties, to control the carrying on by their nationals in China of any trade in the drugs to which Chapter III. of the Opium Convention applies."

DIRECT INJECTION OF ADRENALIN INTO THE HEART FOR ARREST DURING ANÆSTHESIA.

To the Editor of THE LANCET.

SIR,—In the following case the heart and respirations ceased and revived again after the injection of adrenalin into the heart. The case shows some variation from the two reported in THE LANCET (1924, ii., 746).

The patient was a healthy young woman suffering from sterility, and I was about to dilate the cervix and curette her. The assistant had some difficulty in giving the chloroform, and must have dropped too much on the mask, for while I was waiting to begin I discovered that the patient had stopped breathing. Her pulse could not be felt, and no heart sounds were heard. I immediately started artificial respiration, and gave hypodermics of strychnine, pituitrin, and camphor in oil. There was no reaction, and the cornea looked glazed. I then injected adrenalin through the fourth space into the heart, and heart and lungs responded at once; there must have been at least five minutes interval since they had ceased acting. After waiting a few minutes, during which the patient vomited slightly, I quickly did the operation, and before it was over she began to show some signs of feeling pain. Within half an hour she was round, and able to speak, and she had no trouble of any kind afterwards. When I saw her several hours later in the evening she was very bright and had already taken food.

In the cases previously reported the patients did not recover consciousness for a long time, but my patient came round just in the same manner as any ordinary operation case does.—I am, Sir, yours faithfully,

Quetta. E. G. STUART, M.B. Lond.

PATHOLOGICAL AND BACTERIOLOGICAL LABORATORY ASSISTANTS' ASSOCIATION.

THIS Association was founded in 1912 with the object of improving the status of the laboratory assistant by raising the standard of technical knowledge through the medium of an educational programme culminating in examinations for certificates of proficiency in laboratory technique.

The Association consists of: (*a*) life members; (*b*) honorary members, limited to 20; (*c*) registered members who possess one of the Association's certificates of proficiency; (*d*) ordinary members 21 years of age and over with three years' training in a recognised pathological or bacteriological laboratory; and (*e*) junior members under 21 years or with less than three years' experience. There are at present 102 registered, 158 ordinary, and 97 junior members, who are organised in branches throughout Great Britain. The governing Council of the Association consists of the president, who must be a member of the Pathological Society of Great Britain and Ireland, the vice-president, certain officers and divisional representatives elected by the members.

The ordinary meetings of members are arranged by the branches and are largely educational in character. To encourage the systematic teaching of the junior members, lectures and classes in the technique of pathology and bacteriology are conducted by members of laboratory staffs and by senior members of the Association. General meetings are held from time to time; a congress lasting five days for the discussion of papers and exhibition of methods and specimens was held in Edinburgh in 1924, and another will be held in Cambridge in 1927. An official organ—*The Laboratory Journal*—is issued to members quarterly; in addition to Association news it contains original articles and abstracts of technical interest to laboratory workers. There is an employment bureau and notices of vacancies are sent to members who register. The examinations are held annually in July in London and other convenient centres. The Secretary of the Association is Mr. H. P. Hudson, Panama Villa, Trumpington, Cambs., and the Overseas Corresponding Secretary is Mr. W. J. Muggleton, 82, Chapter-road, London, N.W.2.

Schorstein Memorial Lecture
ON
LYMPHADENOMA
(HODGKIN'S LYMPHOGRANULOMA).

Delivered at the London Hospital on Dec. 4th, 1925,

BY SIR HUMPHRY ROLLESTON, BART.,
K.C.B., M.D. CAMB.,
REGIUS PROFESSOR OF PHYSIC IN THE UNIVERSITY OF CAMBRIDGE; PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

THE honour of giving the Schorstein lecture is a welcome opportunity of paying a brief tribute to a contemporary of peculiar charm and broad culture whom I first met at a small class in the late 'eighties, held by the late E. E. Klein, on the then recently recognised subject of bacteriology.

HISTORY AND NOMENCLATURE.

Morgagni (1769) briefly noted the condition, and no doubt there are other early records of the morbid change, but Thomas Hodgkin (1798–1866), demonstrator of morbid anatomy at Guy's Hospital (1825–37), is usually regarded as its sponsor. In 1832 he described "Some Morbid Appearances of the absorbent Glands and Spleen," recording six cases of his own and one of Sir Robert Carswell's. How many of these can be accepted as definitely examples of the disease now called after him it is rather difficult to decide; Samuel Wilks excluded two of the six original cases, but later critics have been more drastic; for example, Dorothy Reed and Symmers accepted two only of the seven. Except for a reference in Bright's lectures on Abdominal Tumours, Hodgkin's paper did not attract any attention, and probably would have remained unnoticed but for the loyal action of his junior, Samuel Wilks, who, in the course of a paper "On Cases of Lardaceous Disease and Some Allied Conditions," in 1856 included an account of a "Peculiar Enlargement of the Lymphatic Glands," which, though not lardaceous, was described because it is either a variety of it or closely akin to it. This is interesting as amyloid disease occasionally complicates Hodgkin's lymphogranuloma, though not so commonly as does tuberculosis which several writers have regarded as its underlying cause. After this paper was completed, but before it was finally printed, Wilks found that Hodgkin had described some of the cases actually in his series, and being one of the editors of *Guy's Hospital Reports* added a paragraph to say that had he been aware of this some of the statements pointing to the originality of his observations would not have appeared. In 1865 he collected 15 cases and perpetuated Hodgkin's name by calling them after him; this was just before Hodgkin's death from dysentery at Jaffa in 1866 and long after he had ceased to be connected with the hospital.

In the meanwhile, Virchow (1864) had described the disease from a pathological point of view as lymphosarcoma, an unfortunate name, as it is often used for a special form of an undoubtedly malignant growth. Cohnheim, in 1865, used the term pseudo-leukæmia for cases in which the glands showed the histological picture of leukæmia without the corresponding blood change, or as it would now be called aleukæmic leukæmia or aleukæmic lymphadenosis. The names lymphosarcoma and pseudo-leukæmia have caused much confusion, but at this long interval of time it is not difficult to be wise. In the same year (1865) Trousseau gave one of his famous clinical lectures on *adénie*, a name which in the following year was expanded into lymphadenoma by Wunderlich, the title of whose paper is worth quoting in full as an epitome of the foregoing sentences—"Pseudo-leukämie, Hodgkin's Krankheit oder multiple Lymphadenome ohne Leukämie." Cornil and Ranvier (1869) adopted lymphadenoma, and apparently it thus came to the notice of Murchison, who introduced it at the Pathological Society in 1870. But recently Agasse-Lafont has drawn a distinction between Trousseau's adénie and Hodgkin's disease or lymphogranulomatosis.

From its familiarity and recognised meaning in this country the term lymphadenoma is the most convenient, but etymologically it is a little ambiguous, as it is not clear whether it implies a tumour of lymphadenoid tissue (lymphaden-oma) or, on the analogy of other adenomas, an innocent growth (lymph-adenoma), and also because it quite definitely suggests that it is a neoplasm, just as the alternative names, recently in vogue, lymphogranulomatosis, lymphomatosis granulomatosa, and granulomatosis, which some prefer, as the lesion is not necessarily confined to lymphadenoid tissues, declare it to be an infectious granuloma. From an international point of view, however, "lymphadenoma" has the drawback of being used by some writers, especially the French and by Ewing (1923), and Fox and Farley in America, for conditions, such as lymphoma and hyperplastic lymphadenitis, different from Hodgkin's disease; lymphogranulomatosis benigna has been applied to Boeck's sarcoid of the skin and allied conditions (Schaumann), and malignant lymphadenoma and lymphogranulomatosis maligna or perniciosa has been used as a synonym for Hodgkin's disease.

The eponymous title, Hodgkin's disease, has the advantage of avoiding any hypothesis as to its nature, but it might be thought that as Sir Samuel Wilks was really instrumental in its recognition, it should in justice be called Hodgkin-Wilks disease. The name Hodgkin's lymphogranuloma, used for 17 years by Prof. H. M. Turnbull and also employed by Ewing, has much to recommend it as leaving no doubt as to what is meant. In what follows the names lymphadenoma, Hodgkin's disease, and Hodgkin's lymphogranuloma will be used as synonymous.

The *history of the histology of lymphadenoma* is of some interest. The credit of first describing the lymphadenoma cells and the other features in the glands has been variously ascribed in different countries to native workers on account of want of familiarity with the work of foreign observers. In 1864, the year before Sir Samuel Wilks made Hodgkin's name immortal by attaching his name to the disease, Virchow described the large multinuclear or "lymphadenoma cells" which subsequent observers, among them Langerhans (1872) and C. Sternberg (1898), also noted, so that the cells are sometimes called after these later pathologists.

In 1878, in the course of a debate on lymphadenoma and allied conditions, W. S. Greenfield described "a large number of multinuclear cells containing from 4 to 8 or 12 nuclei," with a drawing which, though quite forgotten, was recognised in 1902 by Butlin as quite characteristic; though he never published any further account, Greenfield had fully worked out the histological appearances and had been accustomed to give them in detail to his Edinburgh students (S. MacDonald). In 1892 Goldmann pointed out the local eosinophilia in lymphadenomatous glands. But the characteristic microscopic appearances of lymphadenoma were not generally recognised until F. W. Andrewes gave a full account of the histological appearances independently of and practically synchronously with Dorothy Reed's similar description.

NATURE OF HODGKIN'S LYMPHOGRANULOMA.

Four views as to the nature of Hodgkin's lymphogranuloma may be mentioned—namely, that it is (1) an atypical form of tuberculosis, (2) a specific infective granuloma of unknown nature, (3) a new growth, and (4) a transition between a granuloma and a new growth.

(1) *The relationship of lymphadenoma and tuberculosis* has long been discussed. Some of Hodgkin's original cases were almost certainly tuberculous, and even now to the naked eye the large-celled tuberculous hyperplasia of the lymphatic glands is often indistinguishable from lymphadenoma. In 1898 Carl Sternberg, of Vienna, considered that lymphadenoma was a special form of tuberculosis, just as lupus is of cutaneous tuberculosis, and hyperplastic tuberculosis of the cæcum and appendix a peculiar form of intestinal tuberculosis; he obtained evidence of tuberculosis in 10 out of 15 cases; but this was opposed on the ground, dimly foreshadowed by W. H. Dickinson in 1878, that the tuberculous invasion was a secondary process which the existing lymphadenomatous lesion favoured. Inoculation experiments were found to give varying results, sometimes positive, sometimes negative (Andrewes; Reed; Longcope), and it appears that the positive results were due to a mixed infection, and the negative to uncomplicated lymphogranuloma. This interpretation seems convincing, but it has not been accepted universally; Ewing, with the weight of special experience, considers the evidence in favour of tuberculosis somewhat formidable.

In 1910 Fraenkel and Much, using the antiformin method, described a granular form of the tubercle bacillus which they found in 11 out of 12 lymphadenomatous glands free from the structural changes characteristic of tuberculous adenitis, and considered that in addition to this organism some special constitutional anomaly was necessary to account for the lesions. Dr. Negri and Mieremet, in 1913, described a similar organism, and in 1923 Fraenkel and Much, employing a special technique, found their form of the tubercle bacillus in nearly all the cases they examined. Almost simultaneously Kuczynski and Hauck described a mycelial form in the multinuclear cells, an observation which appeared to fit in with the tuberculous origin, but this has not been confirmed by Sternberg. In 1924 Grumbach obtained a bacillus resembling Fraenkel and Much's by blood culture from a patient with the relapsing fever of Pel-Ebstein. Lukes and Jelinck, however, found Much's granules in three out of 11 persons without either tuberculosis or Hodgkin's lymphogranuloma.

It has been urged in favour of the tuberculous nature of Hodgkin's disease that the cases may terminate in generalised tuberculosis; this had not been common in my experience, but its occurrence might be explained by the view that the presence of Hodgkin's lymphogranuloma favours tuberculous infection, or activates it when latent.

(2) *A Specific Infection.*—Various organisms have been described as responsible for Hodgkin's lymphogranuloma, but none of them can be regarded as proved. The most attractive is a protozoal (Löwit) or *spirochætal* (White and Proescher) origin on account of the eosinophilia in the glands, the occasional hæmic eosinophilia, and the well-marked reaction, in the early stages at least, to arsenic. Dreschfeld, in 1892, and Delbet, in 1895, described a bacillus, as did Ford Robertson and Young, in a case reported by Byrom Bramwell. But the most persistent effort in this direction is that of Bunting and Yates, who found a Gram-positive pleomorphic diphtheroid bacillus which Bunting states can be found in every case and by experimental inoculation made to produce the early histological changes seen in man; but the last two statements have not been confirmed.

(3) The view that Hodgkin's lymphogranuloma is a *new growth, allied to sarcoma or endothelioma*, is probably derived from the impression that this follows from its extension beyond the limits of lymphoid tissues and its infiltration of tissues, such as muscle and bone, which do not contain any lymphadenoid tissue; but in this extension there is nothing incompatible with the behaviour of the infective granulomas, tuberculosis, syphilis, and actinomycosis. On the other hand, Gye and Barnard's discovery of an ultramicroscopic virus and a specific factor for new growths, and the existence of infective sarcomas make discussion of the pros and cons of the neoplastic nature of Hodgkin's lymphogranuloma rather an academic exercise than one of practical utility.

(4) *The compromise* that Hodgkin's disease is a transition between an inflammatory formation and a neoplasm and shares characters with both of these processes has been supported by Symmers,[84] who classes it with mycosis fungoides, Cohnheim's pseudoleukæmia, Sternberg's leukosarcoma, and Gaucher's disease. This view is expressed in Dietrich's title granuloma-like sarcoma of lymphatic glands, and by "granulation tissue tumour."

It has been stated by Symmers [83] that Hodgkin's lymphogranuloma is a systemic disease which simultaneously attacks the lymphadenoid tissues widely in the body. In the light of ordinary clinical experience this pathological conception can only pass muster if it be assumed that the simultaneous involvement remains latent in many parts while it advances in one focus.

As the cause of Hodgkin's lymphogranuloma has not been established it is premature to divide it into different forms on the analogy of enteric fever which includes infections with *B. typhosus, paratyphoid* A, and *paratyphoid* B. But it is tempting to imagine that there are several allied forms of a disease characterised by much the same histological appearances but differing in their virulence, in their tendency to sarcomatous transformation, and so in their clinical manifestations. Symmers [84] definitely describes two forms of the disease, one confined to the lymphadenoid tissues, the other mechanically infiltrating other structures, skeletal muscles, blood-vessels, and so forth. The differences in the histological pictures as regards the presence of eosinophile cells and the puzzling variations in the blood picture are at least compatible with this view. But, on the other hand, the factor of the resistance of the individual's body must, of course, be taken into account in explaining the differences in the course and manifestations of this as of other diseases.

NATURE OF MALIGNANCY IN HODGKIN'S LYMPHOGRANULOMA.

That Hodgkin's lymphogranuloma is malignant in the sense that it leads to death is undoubted, and it differs from tuberculosis, which in many respects it closely resembles, in being constantly fatal and not becoming obsolete.

It generalises like tuberculosis, and may appear in situations such as the liver and kidney, where the amount of lymphoid tissue is small, and in muscle (vide Figs. 1 and 2) in which there is none. But mere generalisation is in keeping with the characters of an infective granuloma. Even if it be held that true Hodgkin's disease is confined to lymphadenoid tissue, the occurrence of lymphogranulomatous masses in the liver and kidneys might be explained on the hypothesis that there is a compensatory hyperplasia of the lymphoid tissue around the vessels, and that subsequently this becomes infected with the virus of the granuloma (Longcope). But further evidence suggesting malignant characters, such as invasion of adjacent bone and the histological characters of sarcoma, described years ago by Yamasaki and by Karsner, are now established, and Ewing considers this transformation into sarcoma ("Hodgkin's sarcoma") as a tumour *sui generis* and as by no means rare. He describes the new cells as endothelial in origin, but losing this character and appearing as large round cells, so that the term endothelioma is hardly applicable. Such a transformation as the result of long-continued irritation is, of course, well recognised, and Ewing[30] has described it in lymphatic glands affected with chronic granulomatous infection. The occurrence of Hodgkin's sarcoma as a late result of Hodgkin's lymphogranuloma is rather remarkable, as it is very seldom recognised in the other infective granulomas.

The development of sarcoma in Hodgkin's lymphogranuloma might be explained in one of two ways: (1) that some of the constituent cells of the lymphogranuloma proliferate so vigorously as to become a sarcoma, or (2) that the tissues surrounding a mass of lymphogranuloma are excited by the chronic irritation to a proliferation which eventually becomes sarcoma; this process Ewing compared with the occurrence of cutaneous squamous-celled carcinoma in the site of lupus.

Prof. H. M. Turnbull, while fully recognising the existence of the condition which Ewing [31] terms Hodgkin's sarcoma, *regards it as the "lymphosarcomatoid"* form of Hodgkin's lymphogranuloma and as inflammatory rather than neoplastic. Lymphosarcoma—*the form of growth* concerned in the malignant transformation of Hodgkin's disease—he considers as closely allied to it, and like it an inflammatory and not a neoplasm.

The Blood.

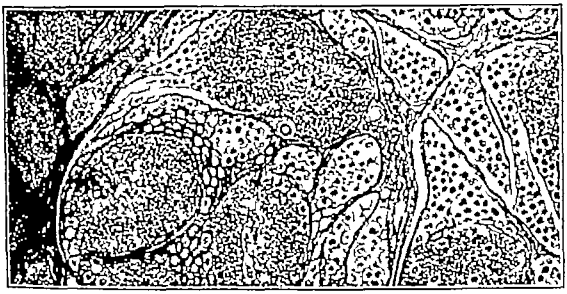
As the bone marrow, lymphatic glands, spleen, liver, and the reticulo-endothelial system regulate the formation and destruction of the blood-cells, it is obvious that, as these organs are the chief sites of Hodgkin's lymphogranuloma, the blood counts should be correspondingly affected.

If the lesion was one of the reticulo-endothelial system in particular and *at times affected these phagocytic cells* to the exclusion of the others, it might be expected that in the early stages of proliferation there would be increased hæmolysis, later followed, as the result of destruction and fibrosis, by a diminished hæmolysis with a rise in the red blood count and even a polycythæmia; but, unless the early increase in the platelets described by Bunting be regarded *in the light of a* hæmolytic process, and not as evidence of marrow stimulation, nothing of this kind occurs, even in the few instances of the splenic form of Hodgkin's lymphogranuloma. On *the other hand, this last argument is not* supported by the blood picture in fibrotic conditions of the spleen, such as chronic splenic anæmia in which polycythæmia is not seen; and *there are only most exceptional* instances of massive tuberculosis of the spleen in which it has been recorded (vide Weber [91]). Sooner or later there is a secondary anæmia which eventually may become so grave as to demand transfusion. How far in individual cases this is due to one or more of several causes it is difficult to say; toxæmia, infiltration of the erythroblastic bone-marrow, exhaustion after compensatory or arsenical stimulation of the bone-marrow, or the long-continued treatment by X ray exposures may each play a part.

The white count does not show any constant or characteristic change. Usually leucocytosis is absent and there may be a leucopenia with a relative lymphocyte increase, especially, I believe, when the spleen is predominantly affected, a view shared by Weber.[44] Bunting described the blood picture in two stages: in cases under a year's duration, no leucocytosis, a relative lymphocytosis, diminished eosinophiles, and increase in the transitional cells. In more advanced cases when the disease is spreading widely there is a leucocytosis with a raised polymorphonuclear count (75–90), and later from exhaustion of the bone-marrow absence of blood platelets. Stewart lays most diagnostic reliance on a relative increase of large mononuclear cells—not lymphocytes—especially of the transitional type (10–33 per cent.); and also attaches importance to an absolute and relative neutrophile leucocytosis and to a relative and absolute eosinophilia. The rather exceptional occurrence of eosinophilia, which is specially seen in the rare acute cases, is interesting in connexion with the characteristic though not absolutely constant presence of eosinophile cells in the glands. These cells are probably not produced locally, but are embolic immigrations from the bone-marrow (Goldmann; D. Reed; Symmers[44]; Turnbull). In a case of acute lymphadenoma Lincoln found 68 per cent. of eosinophiles and in his collection of previously recorded cases found that the highest count was 24.5 per cent. A percentage of 88 eosinophiles in a differential count of 83,000 leucocytes was recorded by Desjardins and Ford. Among 20 cases of the disease Pepper found it in 4 or 5 per cent. The relation of eosinophilia to pruritus has attracted much attention; the almost constant relation has been insisted on by Favre and Mariani, and the former drew an analogy between adénie éosinophilique prurigène and hydatid pruritus. No doubt eosinophilia and pruritus may be associated in lymphadenoma, but they may also occur independently. In a case without pruritus seen in 1910 there was 20 per cent. of eosinophiles, and in an advanced case under Dr. E. Bellingham Smith in St. George's Hospital the count was 60 per cent., but pruritus was then absent, though present at an earlier stage when the eosinophile percentage was 30. Megacaryocytes on their way from the bone-marrow to form the "lymphadenoma cells" in the lymphatic glands have been found in the blood-stream (Symmers[44]).

It would be interesting to correlate the blood picture with the contemporary changes in the structure of the lymphatic glands. But the complicated cellular changes in the lymphogranulomatous tissue and the variations in the blood picture make this a difficult problem. A lymphocytosis would correspond with a proliferation of the lymphoid cells; but that the leucopenia in the early stage would be more easily correlated with inhibition of the bone-marrow than with its destruction is rendered probable by the occurrence of a polymorphonuclear leucocytosis in the later generalisation of the disease.

FIG. 1.

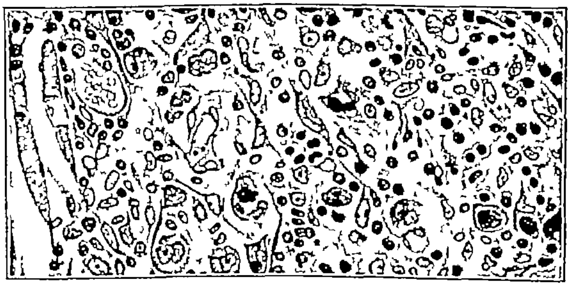


Iliacus muscle showing infiltration by Hodgkin's lymphogranuloma, small cellular and fibro-cellular nodules to the right of a larger more fibrotic nodule. Obj. 1 in., oc. Zeiss 4. (By the courtesy of Prof. H. M. Turnbull.)

The question whether lymphadenoma is primarily a proliferation of the lymphoid cells or of the reticulum has a bearing on the condition of the blood. If with Symmers[44] the primary change is regarded as a proliferation of the lymphoid cells, their escape into the blood and a lymphocytosis would be expected. Whereas if the first and essential change is proliferation of the endothelial cells and framework of lymphadenoid structures (Turnbull; Ewing; Webster), and proliferation of the lymphoid cells, when it occurs, a secondary process compensatory for destruction of lymphoid cells elsewhere (Longcope), the absence of any characteristic blood picture is more satisfactorily explained. Acceptance of the view that the process is primarily a proliferation of the endothelial and reticular cells (the distinction between them being difficult) has been followed by the suggestion that it is, like Gaucher's disease and xanthoma (Krumbhaar), a disease of the reticulo-endothelial system—a reticulo-endotheliosis (Piney); but if it were, the Kupffer's cells in the spleen and liver should be constantly and predominantly affected, and this is not the case.

In the past, when blood counts were less minute, leukæmia was stated sometimes to supervene on Hodgkin's disease. This sequence is not supported by modern evidence, but the discovery of leukæmic blood changes would probably rule out a previous diagnosis of Hodgkin's disease. There may well be an analogy between the two questions of (1) the occurrence of Hodgkin's sarcoma or lymphosarcoma (in Turnbull's interpretation), and (2) leukæmic or proliferative changes in the blood picture. That stimulation of the bone-marrow may occur in cases of widespread generalisation of Hodgkin's disease is shown by the occurrence of a polymorphonuclear

FIG. 2.



Iliacus muscle showing Hodgkin's lymphogranuloma. High magnification of a cellular nodule. Obj. ⅙ in., oc. Zeiss K 6. (By the courtesy of Prof. Turnbull.)

leucocytosis, and it is at least conceivable that riotous proliferation of the bone-marrow, analogous to sarcoma and leukæmia, might follow.

THE RELAPSING FEVER OF LYMPHADENOMA.

The *relapsing fever*, first recorded in 1870 by Murchison, but often called Pel-Ebstein after the descriptions by these two writers in 1885 and 1887, has attracted much attention, as shown by the papers of H. B. Shaw, F. Taylor, McNalty, Weber,[20] A. J. Hall and Douglas, and Galloway. Hall and Douglas estimate that less than 50 cases have been recorded; but it is probable that it is comparatively seldom reported rather than that it is as rare as is often stated, and Hall and Douglas appear to share this view, for they write, "in looking over old records of these cases it is surprising to find how many of them show a definite tendency to recurrent pyrexia." I am much indebted to Dr. A. S. MacNalty, who has given me the opportunity of seeing his notes of 11 cases additional to the 32 on which his paper in 1911 was based; among his new cases is one in a boy aged 3 years, the youngest on record. In a recent thesis for the M.B. degree at Cambridge, Mr. H. F. Brewer collected from St. Bartholomew's Hospital in four years, 1921–5, 62 (42 confirmed microscopically) cases of Hodgkin's lymphogranuloma, among which there were nine cases of relapsing fever.

This periodic fever is comparable with a protozoan infection such as malaria, relapsing fever, and rat-bite fever, but has a longer span of 15 to 25 or even 36 days (Hall and Douglas). Although bacteria have sometimes been obtained by blood cultures, negative results are the rule, and there is not any convincing evidence of a secondary infection, probable as it would seem. But some change must occur, otherwise every case of Hodgkin's lymphogranuloma would show the relapsing type of fever. Symmers's view that the fever is due to absorption from areas of focal necrosis, especially in the spleen, which he finds are always present in enormous numbers in the chronic relapsing fever, has much to recommend it, and had been present to my mind before I read his paper in which he compares the sequence of events with the fever in cases of necrotic hypernephromas.

Dr. MacNalty has generously put at my disposal an analysis of 40 collected cases of this relapsing fever; 30 were males and 10 females, and half the cases occurred between the ages of 10 and 30 years, the oldest being a woman of 54 and the youngest a boy aged 8 years. He divides the cases into three clinical groups, the first, far the commonest, in which the external glands are moderately enlarged and may become soft, tender, painful, and, but not constantly, enlarge during the pyrexial periods. In the second, a rare form, the glands, small in the apyrexial intervals, with the onset of fever rapidly swell up, becoming extremely large, tender, hot, and painful, the skin over them becoming red or purple and sometimes œdematous. With the end of the febrile attack the glands and spleen shrink to an extreme degree. In the third form, of which he collected eight cases, the only glands affected are the internal, though the spleen may be palpable. As regards the duration of the relapsing type the extremes were five weeks and five years, the disease being more rapid when the enlargement was confined to the deep glands. When the internal glands alone are affected the differential diagnosis, of course, covers a large field, such as enteric fever, malignant endocarditis, and other conditions which need not be discussed. But reference should be made to the simulation of the Pel-Ebstein fever by tuberculosis. Among 500 cases of pulmonary tuberculosis at the Brompton Hospital MacNalty found six with a recurrent fever; in such cases splenic enlargement may be a clue. He also insists on the close clinical resemblance to Hodgkin's disease of widespread tuberculous adenitis.

The *primary site of Hodgkin's lymphogranuloma* is a subject of some practical importance, for enlargement of the superficial lymphatic glands, being usually the first indication of lymphadenoma, has accordingly been generally regarded as the starting-point of the disease. But it does not follow that the glands first palpably enlarged are necessarily those first attacked. Symmers,[24] from pathological experience, contends that this conception is erroneous, and that primary enlargement of the abdominal or of the abdominal and thoracic glands combined is ten times commoner than primary enlargement of the cervical glands. With this Ewing[21] agrees, and adds that the enlarged superficial glands which first attract attention are merely the outlying portions of an internal lesion. The idea that the glandular enlargement on the neck may in any given case be secondary rather than primary, and, indeed, be analogous to the glandular metastases in malignant disease inside the chest and abdomen, should be more constantly in our minds, and, being based on post-mortem observations, demands clinical confirmation by systematic X ray examination of the chest in every early case; for if intrathoracic or abdominal involvement is present this should obviously be treated by deep radiation. The unsuspected existence of intrathoracic lymphogranuloma may help to explain some apparently hyperacute cases, such as Brunner's patient, a woman aged 27 years, who died with two weeks' symptoms suggesting acute cardiac failure, the necropsy revealing extensive Hodgkin's disease.

Enlargement of the superficial lymphatic glands may disappear under treatment, either entirely or partially, while insidious implication of the deep abdominal and thoracic glands progresses, and the patient becomes anæmic, emaciated, and eventually dies. Intercurrent infections, such as erysipelas, appendicitis, and lobar or influenzal pneumonia, may be followed by diminution in size or disappearance altogether of the glands which, however, subsequently reappear. The same temporary improvement, especially in the blood count, may occur in leukæmia, an event which is of interest in connexion with Symmers's[24] contention that Hodgkin's lymphogranuloma and myeloid leukæmia "are probably different quantitative responses to the same type of provocative agent." Further, this reaction is of interest in connexion with W. B. Coley's treatment of Hodgkin's lymphogranuloma by the mixed toxins of erysipelas and *Bacillus prodigiosus* and radium.

The variations in its distribution are on much the same plane as those in the infective granulomata, such as tuberculosis and syphilis, and it may be suggested that its localisation is determined by two factors: (1) the variations in the resistance of the different parts of the body, (2) the accident of a large dose of the virus at any one site. When generalisation occurs, the spleen is more often invaded than the liver, according to Longcope and McAlpine in the percentages of 57 and 48.

Intrathoracic Form.

The intrathoracic form is probably more frequent and primarily responsible for palpable glandular enlargement in the neck than is generally recognised. For a considerable time pressure symptoms may be absent, although a skiagram shows well-marked invasion of the mediastinum. The thymus may be predominantly affected and from this focus the disease may spread over the pericardium and even to the myocardium; fatal effusion into the pericardium may follow, and I have seen a chylous effusion. In 1924 Symmers collected five cases of predominant thymus localisation; but probably it is much more frequent than these figures would suggest, and the question arises what proportion of mediastinal sarcomas should be regarded as Hodgkin's sarcoma, for there seems to be a special tendency to sarcomatous change in these mediastinal lymphogranulomas (Ewing [21]). The bronchial glands are often enlarged and from them the disease may creep along the bronchi into the lungs. The first clinical manifestation may be acute pleurisy, and palpable enlargement of glands may follow later. Pleural effusion, which requires repeated tappings, is a feature of some cases. In one case the effusion caused sudden death, and in another it was chylous. In the presence of a comparatively small effusion the dyspnœa may be out of proportion to the amount of fluid; in some cases this is obviously due to pressure exerted by enlarged glands on the bronchi, as shown by stridor and skiagraphy. Symmers[24] has recorded two cases with remarkable thickening of the pleura with Hodgkin's lymphogranuloma. Pressure symptoms resulting from compression of the trachea, bronchi, veins, and nerves make this the most distressing form of lymphadenoma, as the patient may eventually become strangled, deeply cyanotic, and terribly distressed. Before this stridor may be noticeable on exertion only; I have seen attacks of dyspnœa terminating in the expulsion of fibrinous casts. The fever of the Pel-Ebstein type may suggest pneumonia, and Weber considers that patients taking arsenic are prone to pneumonia, which, however, usually runs a favourable course

In Dr. C. H. Miller's case, from which the sections showing Hodgkin's disease in muscle were taken, there was a large mediastinal growth, involving the root of the right lung and causing racemous lymphogranulomatous bronchitis, peribronchitis, and peribronchial pneumonia, with catarrhal, fibrinous, and fibroblastic pneumonia in the intervening pulmonary tissue of the upper and middle lobes of the right lung (H. M. Turnbull). Paracentesis of the right pleura, giving exit to three pints of clear yellow fluid (97 per cent. lymphocytes) was followed by pneumothorax. Death was due to the intrathoracic condition.

Pressure on the superior vena cava and innominate veins may induce cyanosis, distension of veins, œdema of the face and conjunctivæ, and an œdematous boggy condition in the supraclavicular fossæ. Clubbing of the fingers (Turnbull) and chronic pulmonary osteo-arthropathy (Weber and Ledingham) have been reported. Dysphagia may occur, but is seldom prominent. Pressure on the recurrent laryngeal nerves may lead to abductor paralysis. The oculo-cardiac reflex may be exaggerated (Jacob).

ABDOMINAL MANIFESTATIONS.

The abdominal manifestations of Hodgkin's lymphogranuloma may be divided into (1) the peritoneal, (2) retroperitoneal, (3) gastro-intestinal, (4) splenic, (5) hepatic, and (6) renal forms. The last three are extremely rare in a predominant form.

(1) The *peritoneal form*, due to affection of the mesenteric glands, may imitate tuberculous peritonitis and give rise to ascites, which is usually serous, but in rare instances has been chylous or pseudo-chylous; among 40 cases Schreiner and Mattick had two with chylous ascites, and Schölberg and Wallis in their collections of 102 cases of chylous and 71 cases of pseudo-chylous found two in each group due to Hodgkin's disease. Ascites, which may be the first physical evidence of the disease, is occasionally associated with jaundice due to pressure on the bile-ducts by enlarged glands in the portal fissure. This jaundice may intermit; I have twice seen the jaundice appear and disappear with the periodic onset and resolution of the Pel-Ebstein fever. Enlargement of the glands in the neighbourhood of the liver and fever may imitate cholecystitis or hepatic abscess, as in a case I saw after laparotomy had revealed the true state of affairs.

(2) In the *retroperitoneal form* the glands may be involved alone or together with the mesenteric glands and the spleen, and from the greater enlargement of the retroperitoneal glands it may appear that the splenic enlargement is secondary. The special symptoms due to lymphadenomatous glands in the retroperitoneal space are those of pressure on adjacent structures, such as the inferior cava causing œdema of the feet and abdominal wall and albuminuria, on the bile-ducts causing jaundice, which in a case mentioned by MacDonald came on early in the course of the disease, on the spinal nerves causing pain, and on the sympathetic plexuses leading to dyspepsia, vomiting, and colic. Pressure exerted on the bowel has been associated with obstinate constipation; and periodic increase in the size of the glands, which may correspond with the bouts of fever, may account for attacks of pain in the back or the lower limbs. Pain associated with irregular fever and resistance in the upper abdomen suggested a leaking gastric ulcer, but at laparotomy the glands showed acute Hodgkin's disease (MacDonald).

The lymphogranulomatous change, when thus hidden at the back of the abdomen and impalpable, may be responsible for obscure fever, and when its character is that of the relapsing fever type the absence of enlarged glands does not justify the diagnostic exclusion of the disease (Horder[49]), but the diagnosis is very difficult, as shown in Whittington's case, in which an acute onset first suggested peritonitis, then appendicitis, enteric fever, splenic anæmia, tuberculous peritonitis, and obscure malignant disease.

Cutaneous pigmentation has been reported in association with a mass of lymphadenomatous glands around the adrenals (Nieczkowski; Fowler; B. Bramwell; Symmers), and may be due to irritation of the sympathetic or with less probability to interference with the adrenals. Lymphogranulomatous glands around the aorta may invade the dorsal vertebræ and pass through the intervertebral foramina into the spinal canal, and even lead to compression of the spinal cord and paraplegia. It is possible that some cases of herpes zoster are due to irritation of the ganglia on the posterior nerve-roots.

(3) *Gastro-intestinal lymphogranulomatosis* is a difficult subject; more cases were recorded in the days before the histological characters were established in 1902. Among Desjardins and Ford's 135 cases there was no instance of gastric or intestinal implication, but Prof. Turnbull found one case with extensive implication of the intestine among his 47 necropsies, and Steindl has recently reported nodular lymphadenoma of the gastric mucosa, the glands in the mesentery being the only other site involved. In 1904 Salaman denied that the alimentary canal was ever affected, and, indeed, that Hodgkin's disease is a pathological entity. Although it would be natural to expect that Peyer's patches and the solitary follicles would be affected, especially in cases in which the abdomen bears the brunt of the disease, and is presumably the portal of entry, this is evidently very rare now.

The cases formerly described as lymphadenoma of the stomach and intestines, such as Pitt's collection of 25 cases divided into two groups of (1) seven cases in which the lesion began in the mucous and submucous coats of the stomach and intestine and projected into the lumen, and (2) the 18 cases in which it spread from the mesenteric glands to form diffuse sheaths in the subserous coat, would now be regarded as allied to, if not examples of, infective lymphosarcoma, or lymphoblastoma, a tumour of lymphocytes, of which Graves has collected 249 examples of the intestine.

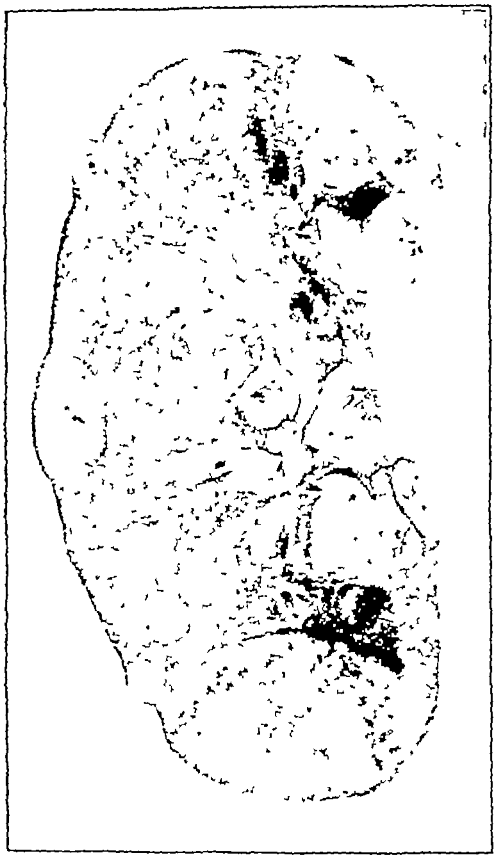
In addition to dyspepsia due to irritation of the sympathetic and abdominal distension caused by ascites and glandular enlargement, the effect of treatment by arsenic and irradiations must not be left out of account in considering the causation of gastro-intestinal symptoms. I have seen melæna six weeks after the application of radium to the abdomen, as if from a duodenal ulcer; McAlpine and von Glahn record perforation of the transverse colon in a woman aged 28 years, who had during six years been treated by X rays on 95 occasions; and Sir Thomas Horder allows me to mention a patient in whom perforation of the ileum occurred after two courses of X ray treatment to the abdomen.

(4) *Splenic form.*—The spleen is nearly always affected in cases which run their full course; Prof. Turnbull found the spleen invaded in all his 47 necropsies, and regards this as an important point in the diagnosis. Massive infiltration of the spleen by Hodgkin's lymphogranuloma with insignificant enlargement only of the lymphatic glands is infrequent, and it is very rare to find the disease entirely confined to the spleen.

Symmers described two cases; in the first[43] no glandular enlargement was detected in life, and the spleen showed the microscopic appearances of Hodgkin's lymphogranuloma, but there was no necropsy. In his second case[44] there were some palpable glands. In Wade's case no enlarged glands were detected clinically or at operation, but here again there was no necropsy. In Mellon's case there was slight enlargement of the inguinal glands. Cornwall reported a case without any disease in any glands. Dr. Krumbhaar has kindly sent me the notes of a necropsy showing lymphogranuloma of the spleen and bone-marrow, but not of the lymphatic glands. L'Esperance reported an enormous spleen, simulating a ventral hernia, with slight infection of the retroperitoneal, but not of the superficial lymphatic glands; the liver also showed invasion. Although Donhauser regarded his case of splenomegaly with sclerosed bone-marrow as a compensatory hæmatopoietic process, some later writers (Ewing) have referred to it as the splenic form of Hodgkin's lymphogranuloma. Ewing also quotes a case recorded by Kummel. In several of these cases there has been a special tendency to relapsing fever.

In some other instances after enlargement of the superficial lymphatic glands has subsided or even disappeared the spleen and liver have enlarged, and at this late stage the condition has imitated chronic splenic anæmia or the further stage with secondary hepatic cirrhosis or Banti's disease. Poynton, Thursfield, and Paterson record a case of a boy at first with some enlargement of the cervical glands, which had disappeared at the necropsy when the spleen (25 oz.) and the liver (44 oz.) were both found to be invaded.

FIG. 3.



Massive infiltration of the kidney by Hodgkin's lymphogranuloma. (By the courtesy of Dr. Carslaw and Prof. Muir.)

(5) *Hepatic form.*—The liver is affected in 50 or more per cent. of all cases of the disease, but usually this is a post-mortem, not a clinical, observation. Reference has been made to jaundice from pressure on the bile-ducts by the glands in the portal fissure, and to the possibility of mistaking an enlarged liver or apparent enlargement from glands in the neighbourhood when associated with relapsing fever for hepatic abscess. Limitation of Hodgkin's lymphogranuloma to the liver is unknown, but I have seen the organ greatly enlarged secondary to lymphadenomatous glands in the groin in one case, and at the elbow in another instance. Symmers[84] reported a case in which the liver was enormously and, except for the spleen and abdominal lymphatic glands, exclusively invaded.

(6) *The renal form.*—The kidneys occasionally show nodules of white lymphadenomatous growth, usually small in size, and in rare instances the perirenal lymphatic glands are much enlarged.

By the kindness of Prof. R. Muir and Dr. J. Carslaw, of Glasgow, I have been provided with the notes of a man, aged 20, with extensive lymphadenoma (vide Fig. 3) of the right kidney (17 oz.), which was studded throughout with whitish nodules of soft cellular tissue resembling to the naked eye secondary sarcoma, the largest being ¾ inch in diameter. The left kidney (8 oz.), apparently small congenitally, contained one or two nodules of the same growth. Microscopically the liver (47 oz.) showed diffuse lymphadenomatous infiltration of the portal canals, thus contrasting with massive invasion of the right kidney. The spleen (15 oz.) contained nodules and the retroperitoneal glands were markedly involved. The bodies of the first four dorsal vertebræ and the dura mater were invaded, and the spinal cord softened; before death the patient had become paraplegic.

Apart from a trace of albumin clinical manifestations associated with renal invasion have not attracted attention, but J. Galloway recorded the case of a man with polyuria and a protein resembling in some respects, but differing in others from, Bence-Jones's protein. The kidneys contained cysts and microscopically showed small areas of lymphadenoma.

CUTANEOUS MANIFESTATIONS.

The cutaneous manifestations of Hodgkin's lymphogranuloma are of various kinds, and raise some questions of interest. It has been estimated that 25 (Ziegler) to 39 (Cole) per cent. of the cases exhibit them in one form or another.

Pigmentation may be due to the local action of X rays, the administration of arsenic, the scratching induced by pruritus, or to nerve irritation by affected retroperitoneal glands, or possibly to adrenal disorder. Symmers's patient with acanthosis nigricans had lymphogranulomatous invasion of the cœliac plexus without any implication of the adrenals. The pigmentation may suggest Addison's disease.

The *hair* may become altered in colour; in Byrom Bramwell's patient it became lighter, finer, and more silky. Pruritus and itching may lead to perifollicular inflammation and loss of hair, but in Porter's account of a patient with almost universal alopecia no mention was made of pruritus.

Perspiration may naturally accompany the swinging temperature in the Pel-Ebstein syndrome, but it may also be associated with pruritus. The parchment-like condition due to continued scratching has been noted to cause diminution in the sweat. (Nanta and Baubru.)

Œdema of the skin may be mechanical; areas of atrophy may depend on impaired nutrition, and in rare instances hæmorrhages have been recorded; it is tempting to associate recurrent purpura, as in Weber's[84] case, with the diminution in the platelet count known to occur in the later stages; but I do not know that thrombocytopenia has been found in purpura in Hodgkin's disease.

Ætiologically the cutaneous manifestations fall into two groups, (1) the toxic, and (2) those due to invasion of the skin by the lymphogranulomatous tissue characteristic of Hodgkin's disease.

The reported incidence of *pruritus* varies; Favre considers it constant, but apparently it is a diagnostic factor of his adénie éosinophilique prurigène; his pupil Colrat found it in 11 out of 13 cases, and no doubt inquiry from the patient would increase the number of recorded instances. In Longcope's 86 histologically proved cases it was noted in 3 only; Desjardins and Ford found it in 9 per cent. of 135 similarly established cases. It is the commonest of the skin manifestations and is responsible for the next most frequent, namely, prurigo. When present it is usually an early symptom, often months before there is any glandular enlargement, and so may be regarded as scabies or analogous to the premycotic stage dermatosis of mycosis fungoides (Weber and Dove), and herein a clinical resemblance of these two conditions may be shown.

It may, however, occur after the diagnosis has become clear from the ordinary clinical picture, and then come and go, or in rare instances appear only in the terminal stage. It may be excited by stimulation of the skin by changes of temperature, X rays, or arsenic (Galloway). Its pathogeny leaves room for much speculation; on analogy it has been regarded as anaphylactic or to be toxic. Though irritation of the terminations of the sensory cerebro-spinal nerves would appear an obvious explanation, it has been regarded as due to spinal radiculitis (Milian *and Blum) and analogous to tabetic pruritus, and* even to irritation of the sympathetic (Golay). The easy explanation that pruritus may be toxic, does not perhaps carry great weight in the light of the inconstancy of its incidence and its occasional appearance long before there are any palpably enlarged glands. But it may be that deep-seated lymphadenomatous glands provide the pruritogenic poison long before the more outlying and superficial glands are affected. The occasional occurrence of amyloid disease in Hodgkin's lymphogranuloma, of which Fabian collected 22 examples, *points to the action of a powerful* toxin, but there is no reason to believe that the occurrence of amyloidosis and pruritus are associated. Abnormal sensitiveness of the nervous system might be thought to play a part in the occurrence of pruritus, and Galloway's observation that arsenic, which is a nerve tonic, sometimes excites pruritus, might be mentioned to support the view that an inherent or acquired susceptibility of the central nervous system plays a part.

Pruritus is far commoner in Hodgkin's lymphogranuloma than in leukæmia, in which it is *generally* stated to occur. I have never seen it, and of 12 recorded examples of leukæmic pruritus it is noteworthy that 0 are cases of universal leukæmia of the skin collected by Ketron and Gay. It would be interesting to correlate the incidence of pruritus with the structural changes in the two conditions, especially whether the presence of small areas of necrosis, which are common in Hodgkin's lymphogranuloma, account by a resulting anaphylactic mechanism for the pruritus. The pruriginous papules are small-celled collections, and would appear to be purely inflammatory, and so to be distinct from lymphadenomatous invasion of the skin; but this differentiation may be far from easy in the early stage of the latter. Difficulty may also arise in distinguishing these pruriginous papules from the cutaneous infiltrations in aleukæmic leukæmia.

Among other cutaneous manifestations presumably of a toxic nature are eruptions of an erythematous, morbilliform (Webster), urticarial (MacNalty), bullous character, and universal exfoliative dermatitis. The occurrence of these different forms may perhaps be explained by differences in the resistance and susceptibility of the skin.

Infiltration of the skin by Hodgkin's lymphogranuloma, apart from extension from immediately underlying lymphadenomatous glands, is much rarer than the skin changes of prurigo. In 1924 I could collect 12 cases only. It thus contrasts with mycosis fungoides, which, indeed, has been thought by Ranvier (1800) and K. Ziegler (1011) to be the cutaneous form of Hodgkin's disease, a view difficult to harmonise with the histological appearances. The cutaneous tumours in Hodgkin's *lymphogranuloma* may be small or large and flat; they grow slowly and seldom, as in Langley and Cole's cases, ulcerate. As a rule, the presence of the tumours has not been associated with pruritus. As they are usually part of the generalisation of the disease they are a late phenomenon in its course.

HERPES ZOSTER.

Herpes zoster is probably more frequent in lymphadenoma than in any other disease, though it is not at all common. The questions arise, is it always due to arsenical treatment, does arsenic only render the patient more susceptible to the responsible virus, or may it in some instances be due to irritation of the *posterior root ganglia by enlarged glands close to the* spine? Weber's conclusion that patients taking arsenic are disposed to acute pneumonia, which is so often associated with febrile herpes labialis, is perhaps of interest in this connexion. Weber[43] has never seen herpes in Hodgkin's lymphogranuloma apart from arsenical treatment; but this has probably occurred in some recorded instances (O'Flynn; Pancoast and Pendergrass). It may appear early or late in the course of the disease, and may even recur; in a boy seen in consultation there had been three attacks. I *have seen it generalise like varicella.* The scars left by an attack of herpes may show up as leucodermic patches against the skin of the trunk rendered pigmented by arsenical treatment.

SYNOVITIS.

Very little attention has been paid to arthritic manifestations in Hodgkin's lymphogranuloma, and no doubt they are rare. From the two cases I have seen they would appear to be transient and not well-marked.

In a man in St. George's Hospital with generalised lymphogranuloma there was œdema of the left thigh and leg from pressure and at one time evidence of considerable effusion into the corresponding knee-joint, but this had disappeared at the necropsy. A boy, aged 11 years, seen in consultation in 1023, had recurrent attacks of synovitis with considerable effusion in the left wrist and elbow, knee and ankle, and right temporomaxillary joint, followed by darkening of the skin suggesting hæmorrhage. Some of the attacks were febrile, others afebrile; they subsided spontaneously; as salicylates were employed in one attack only and the heart was normal, there was no reason to regard them as rheumatic. It may be *noted that he also had* three attacks of zona on the right side of the chest, pruritus, and a rash. The question arises whether toxæmia due to liberation of a protein from X ray exposures, which had been freely employed, were responsible for the synovitis.

As Hodgkin's lymphogranuloma appears to invade the bone-marrow in about half the cases, it might, on the analogy of tuberculosis, have been expected that the joints would be prone to invasion. On the other hand, it may be pointed out that myeloid leukæmia, which, according to Symmers,[44] is fundamentally related to Hodgkin's disease, does not cause arthritic manifestations.

SKELETAL INVASION.

Lymphadenoma in bone was described by Weber[45] some years before the histological features of lymphadenoma were established; his case would appear to be one of multiple myeloma. Invasion of bone by lymphadenoma is now generally recognised.

Among 14 cases Symmers found it in seven, or 50 per cent., and describes two changes which may be present at the same time, (*a*) hyperplastic compensation in response to demand for more blood corpuscles, which he regards as identical with that in chronic myeloid leukæmia, and (*b*) invasion by lymphogranulomatous tissue. Among 80 necropsies at the London Hospital Prof. Turnbull found the bone-marrow invaded in 10, or 40 per cent., the femur and the lumbar vertebræ being the parts of the skeleton most often affected; from comparison of the sites of the glandular groups most enlarged, and therefore presumably primarily affected, on the one hand, and the bones affected on the other hand, he obtained results which suggest that the femur is invaded through the blood-stream, and that the lumbar vertebræ are involved as a result of direct spread from the retroperitoneal glands.

On the question whether the changes in the bone-marrow are part of a widespread reaction to the stimulus of the unknown virus or whether they are secondary, in the same way as generalised tuberculosis is, to infection from a primary focus, there may be room for discussion. Prof. Turnbull concludes that they are secondary. It is noteworthy that spontaneous fracture of bones, which may occur in secondary carcinoma and in endosteal sarcoma, is not known in invasion of bone by Hodgkin's lymphogranuloma. Bence-Jones's proteinuria, which is a feature of multiple myeloma, appears to have been recorded in one case only of Hodgkin's disease (Galloway).

Paraplegia.

In rare cases paraplegia occurs in the course of Hodgkin's disease; Weber[82] refers to 12 examples, in six of which a necropsy was performed. The paraplegia may apparently be due to: (1) Pressure on the spinal cord by lymphogranulomatous growth gaining entrance into the vertebral canal either through the *intervertebral foramina* or from the infiltrated vertebræ; this form of pressure paraplegia appears to have occurred in five of Weber's cases. These cases would probably be those with retroperitoneal localisation of the disease, in which sarcomatous change has supervened. (2) Pressure on the nerve roots; in a case of W. Hale-White[83] this was exerted inside the vertebral canal. (3) Myelitis and acute meningitis without any evidence that the spine or dura mater had been invaded by the lymphogranuloma (Allan and Blacklock); in view of the rarity of paraplegia in Hodgkin's disease the myelitis may well have been independent of that disease except in so far as it reduced the patient's power of resistance and so favoured the infective cause of the lesion in the central nervous system. (4) It would be natural to expect that arsenical neuritis might be responsible for paraplegia; I have seen one case, recorded by Carlill, which might bear this interpretation.

Diagnosis.

The distinction from other forms of glandular enlargement, tuberculous, leukæmic, chronic inflammatory, and sarcomatous, and from other pyrexial states would, if systematically considered, occupy much space, and a few points only will be touched on.

The Value and Fallacies of Biopsies.—From the difficulties of clinical diagnosis a dogmatic opinion is uncertain and often unwise until a gland has been removed and found to show the characteristic histological changes. Unfortunately a gland excised from a case of Hodgkin's lymphogranuloma does not always show the lesions; its enlargement may be due to simple non-specific inflammation or to compensatory hyperplasia. According to Prof. Turnbull the histological changes are best seen in glands which are very hard and from contraction not necessarily enlarged, and not very infrequently the microscopical report cannot go further than "lymphogranuloma, possibly Hodgkin's, but histological characters are not definite." In contrasting the value of microscopic examination of excised glands Webster found that it gave much more correct diagnostic results in Hodgkin's lymphogranuloma than in cases finally shown to be lymphosarcoma.

Diagnosis from Sarcomatous Lymphomas.—The greatest difficulty is the clinical differentiation of Hodgkin's lymphogranuloma from lymphosarcoma and the closely allied malignant lymphocytoma composed of small lymphocytes, and from endothelial sarcoma. I have seen cases apparently running the clinical course of Hodgkin's lymphogranuloma show these histological appearances finally; the question arises whether, as probably most would consider, these conditions have existed from the start, or whether they have supervened as the result of Hodgkin's lymphogranuloma. Is there any evidence of this change, such as a biopsy early in the course of the disease showing the appearances of Hodgkin's disease, and later a necropsy proving the sarcomatous nature? It does not appear to me that the therapeutic test of X ray exposures helps in distinguishing them. I have personal knowledge of what appeared to be Hodgkin's disease, but turned out to be malignant lymphocytoma reacting in a wonderful manner, life being prolonged for three years after an early termination seemed inevitable, to Dr. W. B. Coley's personal treatment by the mixed toxins of erysipelas and *Bacillus prodigiosus* and massive doses of radium.

Undetermined forms of glandular enlargement, such as those spoken of as infectious mononucleosis and glandular fever, may, though of comparatively short duration, give rise to difficulty in diagnosis. Infectious mononucleosis according to Sprunt and Evans presents a slight leucocytosis with some increase in the large mononuclear-transitional cells and many pathological lymphoid forms.

Cases of aleukæmic leukæmia—namely, leukæmia in an aleukæmic phase, and cases which come under Bunting's heading of lymphoblastic aleukæmia, can hardly be differentiated from Hodgkin's disease except by histological examination of an affected gland.

Under the heading of *splenomegalia lymphatica hyperplastica* Brill, Baehr, and Rosenthal describe a generalised lymph follicle hyperplasia of the lymphatic glands and the spleen with a normal blood count and readily curable by X rays. The spleen is enormously enlarged and shows giant Malpighian bodies the size of a barley grain ¼ in. in diameter, and almost entirely composed of endothelioid or reticular cells. The follicles of the lymphatic glands are greatly enlarged due to cells of an endothelioid or reticular type, like those seen in the germinal centres of lymph follicles, especially in children. The appearance is said to be quite different from that of ordinary follicular hypertrophy and of lymphatism. Before the curative effect of X rays was found out, splenectomy was performed in two out of three cases recorded; in one it weighed 56 oz. (1600 g.). The cause of this condition was not determined, whether from toxic influence within or without the body; they quote Kusczinski as having produced generalised lymphoid hyperplasia in mice by special diets. How often cases of this kind come to hospital, and after being diagnosed as Hodgkin's lymphogranuloma are treated with X rays and arsenic and are then lost sight of it is impossible to say; a case of general hyperplasia of all the lymphoid tissues except the thymus with a leucocyte count of 23,235 (polymorphonuclears 82 per cent.) was reported by O. H. Miller.

I have twice seen a symptom-group which may imitate lymphadenoma—namely, a "hypernephroma" of the left kidney or adrenal body producing a tumour imitating splenomegaly and glandular metastases above the left clavicle; from the fever described in necrotic hypernephromas (Symmers[84]) the resemblance might be increased.

Prognosis and Treatment.

The universal fatality of this disease, which in other respects has many resemblances to tuberculosis, may perhaps be correlated with the much less marked tendency of the lesions to undergo necrosis and fibrosis, as if the unknown cause were more persistent, though not necessarily more virulent, and the resisting powers of the body less able to bring the disease to an end. The absence of extensive necrosis and of caseation might suggest that the process is less acutely virulent.

The duration of symptoms varies; acute cases lasting a few weeks are rare, and the suspicion may arise that from the presence of internal glandular disease they are not so acute as the duration of obvious signs, due to generalisation, would suggest. When the primary site is in the thorax or abdomen and extension later occurs to superficial glands, the course may, when calculated from their detection, be very short; the primary enlargement, especially in the chest, may, owing to the adaptability of the viscera, remain latent for a long time and be detected by skiagraphy only.

Prognosis as to duration of life depends on treatment by arsenical preparations and irradiations, for there is not any evidence that, as in tuberculosis, a spontaneous cure occurs. The effect of arsenical preparations is at first most successful; but relapses occur, and eventually the drug fails to control the disease, as if the unknown virus became arsenic-fast or the morbid process underwent some change. The same appears to be true with regard to the radiations of X rays and radium; but in most exceptional instances this does not hold good; Schniffner recorded the case of a woman who for 11 years was benefited by X rays. It has even been suggested that X rays may lead to generalisation of the disease (Weber[85]), just as it has sometimes appeared to do in carcinoma. Simmonds and Benet prefer radium to X ray treatment, and urge that it should be applied on all the lymphatic areas in the body and not only on those obviously affected.

Vaccines of the diphtheroid organism have not proved successful, but Bunting mentions trials with an immune serum (to this organism). Success has attended the treatment, by Dr. W. B. Coley, of New York, of Hodgkin's disease by repeated injections of the mixed toxins of erysipelas and *Bacillus prodigiosus* and of massive doses of radium; of this I have had much recent information from him.

Surgical opinion has long been adverse to removal of lymphadenomatous glands on account of the difficulty of complete extirpation and of the frequency of similar intrathoracic disease. Symmers[84] throws out a warning of the danger of secondary infection as a result of excision of the inguinal glands. Removal of infective foci, such as the tonsils, and free surgical extirpation of the disease in an early stage has been advocated by Bunting and Yates on the lines of the Halstead and Crile operations for the lymphatic glands in mammary carcinoma. But the cases are not necessarily analogous, for the primary growth in the mamma is removed, whereas in lymphadenomatous glands in the supraclavicular fossæ and neck the thorax or abdomen may be the primary focus.

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BIRMINGHAM HOSPITAL SATURDAY FUND.—This fund has just distributed £25,000 from this year's collection to the voluntary hospitals and nursing societies of the city. The grant to the General Hospital amounts to £7500; to the Queen's Hospital, £5650; to the Children's Hospital, £2100; to the General Dispensary, £1700; and to the Women's Hospital, £1600.

WESTERN OPHTHALMIC HOSPITAL.—It is reported that the condition of this hospital, which is situated in the Marylebone-road, is growing steadily worse. It is housed in an old building known to date back more than a century and a half, which, notwithstanding struts and tie-rods, continues to crack, and occasionally a ceiling falls. The house, moreover, is extremely crowded and inconvenient. The staircase from the men's ward to the operating theatre is so "narrow, rickety, and crooked" that an ambulance cannot be taken up or down, and patients have to climb the stairs; upon occasion operations upon men have to be performed on a screened bed in the women's ward. The pathological laboratory is a small underground apartment, and there is only one bathroom for women patients, nurses, maids, and matron. A new building will cost £10,000, towards which £14,000 has been accumulated. As regards current expenditure the hospital pays its way.

An Address

ON THE

CASE FOR THE UNBORN CHILD.

Being the David Lloyd Roberts Lecture delivered at St. Mary's Hospital, Manchester, on Nov. 17th, 1925,

By THOMAS WATTS EDEN, F.R.C.S. Edin., F.R.C.P. Lond.,
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(*Concluded from p. 1168.*)

The Effects of Alcohol on the Fœtus.

I do not wish to raise the vexed question as to whether or not alcohol is really a dietetic substance. There are, however, some considerations in regard to it which cannot be ignored in any review of the possible effects of maternal diet on the fœtus. There is a very ancient belief that children begotten during drunkenness are liable to be deformed. This belief found its expression in pagan mythology, for Vulcan, the deformed son of Jupiter and Juno, was begotten when both parents were intoxicated; his deformed condition so angered his mother that she cast him into the volcano, where he laboured for ever at the forges of the gods. The tradition has survived, and, unlike the great majority of such myths, it appears to have a very good chance of being eventually established as a scientific fact. Already, in the opinion of several authorities, the point has been proved as nearly as such a point ever can be proved by clinical observation.

In considering the effects of alcohol, the first point to bear in mind is its great diffusibility. It becomes rapidly absorbed directly from the stomach and soon becomes equally diffused throughout the fluid and solid tissues of the body. It passes readily through the placenta and can be detected in the umbilical blood. Further, though readily diffusible, alcohol is not quickly eliminated; strictly speaking it is not eliminated at all, but gradually destroyed by oxidation in the tissues of the body. Mellanby showed that after only a small dose of alcohol had been drunk it could be detected in the blood for 10 hours. I do not think it can be disputed that alcohol drunk by the mother will pass into the fœtal circulation, that it will be present at any given moment in approximately the same degree of concentration in both mother and child, and that the child will be subjected to its influence for a comparatively long time, owing to the tardiness of its disappearance from the tissues.

It would not be right to deduce from this that a pregnant woman who takes alcohol as a beverage is thereby doing harm to her child. Physiologists are still uncertain whether it can truly be said that the action of occasional doses of alcohol is in any degree deleterious. They are unanimous that the frequent taking of alcohol, so that the tissues never get the chance of completely freeing themselves from it, is harmful in certain definite respects. But if the dose is not too closely repeated, so that the first is disposed of before the second is taken, the tissues can completely recover from its effects and suffer no harm. The habit of frequent "nipping" during pregnancy cannot fail to bring the fœtal organ and tissues under the sustained influence of alcohol, from which they never get the chance of freeing themselves by completely oxidising it.

It is notorious that a very high infant mortality occurs among the children of alcoholic parents. This is in great part due to the unfavourable home conditions under which these children are reared; poverty, neglect, bad feeding, and insanitary surroundings all tend to swell the number of deaths in infancy. It is, however, probable that the children of alcoholic parents are handicapped from the start by birth deficiency in respect of vigour and of powers of resistance. It is notorious that the chronic alcoholic adult is not a "good subject" either for surgical operation or for acute illness. If the child of a chronic alcoholic mother has been subjected to the constant influence of alcohol throughout the whole period of intra-uterine development, it is hardly conceivable that it can escape without some degree of damage.

Up to this point what has been said had reference mainly to the alcoholic mother and the injury she may do to the child she is carrying. There is, however, a further aspect of the matter to which attention should be drawn. A good deal of experimental work has been done in recent years to determine the effect upon their offspring of subjecting animals, both male and female, before mating, to the effects of the fumes of alcohol, continued for a long period. As so often happens, the results obtained with different animals are widely divergent. Pearl,[14] an American observer, worked with fowls, subjecting them to the fumes of alcohol before laying, and also their eggs to the same fumes during incubation. In order to save time and avoid confusion I shall not quote his results, for the reason that reproduction in birds (oviparous) is so widely different from that which obtains in man, that the greatest caution should be observed in applying them. Stockard[15] has carried out a series of experiments with guinea-pigs which have been continued for 12 years, and cover many generations of animals. His method was to expose the guinea-pigs to a daily inhalation of alcohol fumes up to the point of intoxication. He found that very marked results were observed in the young of the alcoholised animals. He found, in brief: (1) that the fertility of the animals was diminished; (2) that the young were deficient in vigour and in power of survival after birth; (3) that a high proportion of developmental defects occurred; (4) that these defects were practically confined to the central nervous system and the organs of special sense; and (5) the defects were transmitted, in some instances, to the third generation, although only the original grandparents had been subjected to the influence of alcohol.

As regards the vitality of the young of alcoholised parents he found that only 46 per cent. survived, the survival rate for normal animals kept under identical cage conditions being 78·5 per cent. In the alcoholised animals deformities were found in 5·23 per cent. of the young, while they never occurred in control animals, unless they were closely inbred. In addition to the developmental deformities, considerable numbers of dwarfish, undersized young were found in the litters of alcoholised animals, while they were very rare with normal animals. The effects of alcohol on the male are much more marked than on the female; a certain number of normal females, after mating with normal males, were subjected during pregnancy to the influence of alcohol without any injurious effect on the young. Stockard opined, however, that evil results would have manifested themselves if the treatment with alcohol had been more prolonged.

Stockard attributed the results he obtained to a toxic effect of alcohol on the germ-plasm, producing structural alterations capable of transmission through several generations. This effect is much more marked upon the male than on the female. He did not think that alcoholisation of the fœtal environment had much to do with the effects produced upon the young.

How far these results can be held to be applicable to man cannot at present be settled. It is obvious that where alcohol is given by the method of inhalation its degree of concentration in the blood of the animal is never so high as when alcohol is given by the mouth. In these respects the experiments do not reproduce the ordinary conditions of alcoholism in man, yet the effects produced upon the nervous system of the young resemble in many respects those seen in man.

That alcoholism in the parents is one of the most important predisposing causes of mental deficiency (amentia) and epilepsy all the authorities on this subject are agreed. The percentage of cases of amentia in which an alcoholic history can be obtained is put by different observers at rates varying from 4 per cent. to 40 per cent., which I think sufficiently indicates the difficulties of such an inquiry. We have no precise observations as to the difference, if any, between the children of alcoholic and non-alcoholic parents as regards birth weight and general vitality. The information we do possess, however, is, I think, sufficient to lay upon us the duty of advising abstinence from alcohol during pregnancy, and of pointing out clearly the possible deleterious effects on the child of over-indulgence.

EFFECTS OF MATERNAL DISEASE.

When we come to consider the case of the fœtus in utero which is subjected to the influence of maternal disease, a field is opened up which is so wide that it will only be possible to glance at the subject. There are no national statistics of the causes of antenatal death, and such information as we can gather about it is gleaned from the very valuable reports which most of our lying-in hospitals now publish. There are also some foreign statistics of which we can make use.

Couvelaire[14] has recently published data taken from the records of the Clinique Baudelocque in Paris, over a series of 20 years, 1890 to 1910 inclusive. During this period out of 57,642 births, there were 1760 cases in which the fœtus had perished before the onset of labour, equivalent to a stillbirth-rate of 3·0 per 100 births. The causes of death were stated as follows:—

Syphilis	653	Various	175
Toxæmias	346	No cause discovered ..	572

Syphilis.—It appears, therefore, that in this series more than 50 per cent. of the fœtal mortality could be traced to syphilis and to pregnancy toxæmias taken together. The number of syphilitics was probably in excess of the figure given, for a proportion of those classed as "undetermined" should in all probability be included. Couvelaire further states that since the rule has been introduced at the Clinique to practise the Wassermann test in all cases systematically, the proportion of syphilitics has risen to over 50 per cent. of the whole. It must be recollected that these are statistics of fœtuses which died in utero before the onset of labour. Unfortunately the English lying-in hospitals furnish no comparable figures regarding the proportion of fœtal deaths due to syphilis. Probably many cases are overlooked in this country because the Wassermann reaction is not in routine use. Apart from the incomplete returns of the hospitals, the only English data that we have bearing on the frequency of syphilis in the fœtus are those furnished by Eardley Holland in his recent work on the Causation of Fœtal Death, carried out under the auspices of the Ministry of Health. In his examination of 300 dead-born fœtuses only 42 cases of "proven" and six of "probable" syphilis were found, making together—i.e., including the "probables"—16 per cent. of the whole as due to syphilis. These figures are not really comparable to Couvelaire's, because in the latter the diagnosis was established not only by examination of the fœtus and placenta, but also by clinical examination of the parents, including the Wassermann reaction. Even when allowance is made for these divergences, it would appear than in the practice of lying-in hospitals syphilis is less common in London than in Paris. Probably a large proportion of our syphilitic mothers go to the Poor-law infirmary for their confinement rather than the lying-in hospitals.

At the same time it may be pointed out that our lying-in hospitals, and especially the antenatal clinics, have the opportunity of rendering a great public service by instituting a strict search for latent syphilis in women with a bad obstetric history. Modern methods of antisyphilitic treatment have in no department achieved more striking successes than in the prevention and cure of congenital syphilis. If all syphilitic mothers could be adequately treated during pregnancy the congenital syphilitic child would disappear, and the part which obstetricians could play in this work is clearly a most important one, for even if the hospitals have not facilities for treatment they could make the diagnosis and see that the patient was treated elsewhere. Couvelaire has published his results of antisyphilitic treatment at the Clinique Baudelocque during the years 1920–22. In 250 cases treatment was applied to the mothers as follows:—

1. Only during the later months; these women had a fœtal mortality of 30 per cent.
2. Throughout pregnancy; these had a fœtal mortality of 15 per cent.
3. Before and during pregnancy; these had a fœtal mortality of 3 per cent.

In contrast there were 218 untreated cases of recent syphilis which gave a fœtal mortality of from 65 per cent. to 70 per cent.

Results almost as striking as these have been obtained in London by Mr. John Adams at the V.D. Clinic for Syphilitic Mothers, established under the auspices of the Metropolitan Asylums Board.

INTRANATAL PERIOD.

Let us turn now to the causes of stillbirth as shown in the lying-in hospitals, and in dealing with these data we must first exclude miscarriages altogether; some of the hospitals do not admit these cases at all, and none give details bearing upon the causation of miscarriages, so that they are of no use for our present purpose. Next we must exclude cases in which the fœtus died in utero before the onset of labour (antenatal death), for in these circumstances the fœtus could not have been saved except possibly by antenatal treatment. There will then remain only those deaths which occurred during the birth process (intranatal death). We shall also, in connexion with certain points, have to include deaths in the neonatal period.

Antenatal death is the result of pathological processes, and can generally be recognised by the macerated condition of the *fœtus* when born; a few may escape recognition and be included in the intranatal class if death occurred too recently to allow of the occurrence of maceration. Intranatal death is in the main attributable to what we may call, using the term in a broad sense, birth-traumatism. Birth-traumatism is also responsible for a considerable number of neonatal deaths, the injury received in the birth process not being immediately fatal. The figures quoted from the Clinique Baudelocque include apparently only the first class; we have no information as to the number of deaths which occurred during birth—i.e., intranatal death.

In considering the number of fœtal deaths during labour in our own lying-in hospitals we must further take account of the fact that these hospitals receive a disproportionately large number of serious maternal complications in which the risks to the child are very high. Such conditions as ante-partum hæmorrhage and eclampsia figure largely in the hospital returns as causes of fœtal death. Further, a certain number of dead infants are delivered by craniotomy. I propose, therefore, to give first of all the gross rate, A, including all cases of dead-born children; then a corrected rate, which we may call B, obtained after deducting all cases returned as macerated; then a third rate, C, which has been obtained by deducting cases of craniotomy, of ante-partum hæmorrhage, and of eclampsia from rate B. (vide infra). The addition to rate C of neonatal deaths, directly traceable to injury, will give us the true intranatal death-rate. It will be recollected that the stillbirth-rate for the whole country is 3·3 per cent., and the dimensions of rate A, in most of the hospitals, is unexpectedly high. The rate is not much reduced by the exclusion of macerated fœtuses, except in the case of one hospital, and it will be seen that rate B is, on the average, less than 10 per cent. below rate A. The exclusion of the various maternal complications, however, cuts rate B down to little more than one-half in the case of all the hospitals alike. The figures shown in the table have been calculated for an average of five years in all but No. 6, for which *only* three years were available.

Fœtal Death-rate.

Hospital: 5 years' average.	Gross rate.	Corrected rate.		Hospital: 5 years' average.	Gross rate.	Corrected rate.	
	A.	B.	C.		A.	B.	C.
	%	%	%		%	%	%
1	15·7	14·7	8·9	4	12·0	9·9	5·3
2	12·2	11·5	5·7	5	5·9	5·4	3·1
3	12·9	11·7	5·6	6	5·38	—	—

The difference between the fœtal mortality-rate of the first and last hospitals on the list is surprising. Hospitals 1 to 4 are all situated in great industrial centres; Nos. 5 and 6 are in London and their patients are drawn from a class which is engaged almost entirely in domestic work and business, or light factory occupations. There are no heavy industries in the parts of London served by these hospitals. The rate A figures for hospitals 2, 3, and 4 are so nearly identical that they carry conviction of their reliablity, and I think we may take it that they indicate that the loss of fœtal life is considerably higher in an industrial population than in what, for contrast, we may call a non-industrial population. We cannot enter into any consideration of what these causes may be, but the point is deserving of further inquiry.

Rate C is that obtained when all possible allowance has been made for the special difficulties of hospital work by the exclusion of all the graver complications of labour. Except in the case of one hospital, the rate is far above the national stillbirth-rate, in which all these complications are, of course, included. In the case of hospital 1 the national rate is nearly trebled. This is a result which I had not anticipated, and I would ask you to note that in regard to rate C, as well as rate B, hospitals 2, 3, and 4 give an almost identical figure, while hospital 1 is more than 50 per cent. higher than any of them, and nearly three times as high as hospital 5. Does this imply that the infants of parents living in great *industrial* centres show a diminished vitality as compared with those born in non-industrial centres, which renders them less able to bear the stress of *labour?* No answer can be given to this question either, but one or two points may be cleared up by looking into the recorded causes of death in Group C. They fall into three main groups: (1) birth-traumatism, (2) prematurity, and (3) congenital defects and diseases. A certain number remain which are difficult to classify.

Not all the hospitals furnish information sufficiently detailed for our purpose, but I have been able to examine an aggregate of 561 stillbirths falling into rate C, with the result shown as follows:—

Of 561 stillbirths falling under rate C—

48·7 per cent. were due to trauma.
8·3 per cent. were due to prematurity.
4·9 per cent. were due to defects and diseases.

The remainder, amounting to a little more than one-third, were unexplained, or due to a variety of conditions which do not lend themselves to classification.

It appears, then, that if we exclude cases in which labour was complicated by serious maternal complications, nearly half the fœtal mortality in the lying-in hospitals whose reports were examined is due to birth-traumatism. Of course, not all the cases included under this heading showed recognisable signs of injury; in a small proportion death was returned as due to "stress of labour" or some equivalent term. There is no doubt that some infants appear to suffer severely from the effects of what we should clinically call a normal labour; the transit of the child through the maternal passages will no doubt always carry with it risks the extent of which depends in part upon that incalculable factor the endurance of the child.

A large number of deaths from traumatism occurred in premature children whose power of resistance to shock is very low in comparison with the mature child. The two causes of injury and prematurity are closely related and it will be interesting to look a little more closely into the question of premature births.

The accompanying table brings out two or three points which are of some importance. The second column gives the proportion of births, which were premature in three different hospitals.

Premature Births.

Hospital.	Premature birth-rate.	Stillbirth-rate.		Neonatal death-rate.	
		Premature.	Mature.	Premature.	Mature.
	%	%	%	%	%
3	32·9	21·21	4·30	15·29	1·10
5	10·76	25·29	3·66	17·46	3·47
6	12·24	20·80	3·17	13·50	0·55

In hospital 3 nearly one-third of the children born in the hospital were premature; this hospital, as I have said, serves a large industrial centre. In the case of hospitals 5 and 6 the proportion is 10 per cent. and 12 per cent. respectively. All the hospitals serving industrial districts show about the same premature birth-rate as hospital 3. This table certainly suggests that women engaged in industrial work are unable to carry their children to term in anything like the same proportion as those engaged in lighter occupations. You will recollect that a somewhat similar observation was made by Pinard many years ago in Paris. It is impossible to pursue this point any further, but it also appears to be deserving of more extended inquiry.

Column 3 of this table shows the comparison between the proportion of premature and mature babies which are stillborn, and it is not surprising to find that the premature stillbirth-rate is from five to seven times higher than the stillbirth-rate for mature babies. This is partly accounted for by the fact that the greater number of fœtuses born macerated are premature; from the hospital reports I should judge the proportion to be about 60 per cent. The most important factors, however, are that *maternal complications* are more frequent in premature labour, and that even in their absence the premature fœtus is less able to endure the stress of labour than is the mature one.

Column 4 compares the chances of survival of premature and mature babies under the same hospital *conditions.* Here the comparison is enormously to the disadvantage of the premature baby. The neonatal death-rate of the prematures does not vary greatly in the three hospitals, and may be put at 15 per cent. The death-rate of the mature infants varies widely from one-fifth to one-twelfth of the premature rate. The figure of 3·47 for hospital 5 was due to exceptional circumstances which prevailed during two of the five years under review, and does not truly represent the average for that hospital. But between hospital 3 and hospital 6 there is a difference of 100 per cent. in favour of the latter. I must not comment on these figures for mature babies, except to suggest that the neonatal death-rate of some of our lying-in hospitals appears to be capable of improvement. I should like further to point out that we badly need a follow-up system for our premature infants; it is important that we should know how many of those who leave the hospital alive actually survive the first three months of life. We ought to know this because to estimate the results of induction of premature labour at the end of the first month is in all probability to present the results in an unduly favourable light.

I think I have said enough to show that from the point of view of life insurance the premature baby is a bad risk. In view of this fact we must recollect that a certain proportion of premature labours are deliberately provoked by the obstetrician for one reason or another. Only those are suitable for examination which appear in the hospital reports as cases of pelvic contraction or of "disproportion," and I have collected the results of this procedure from three hospitals, which give full data. These results comprise 384 cases of induction, and show an average combined intranatal and neonatal mortality of 14·3 per cent.; in the individual hospitals the rate varied from 15·5 per cent. to 9 per cent. It is to be recollected that these are picked cases in which the general condition of the mother and the child was ascertained to be good before induction. The infant deaths are due in practically every case to some form of trauma, and the only thing that can be said about it is that if induction for disproportion cannot be carried out without an infant mortality of 14 to 15 per cent., it is time that it disappeared from obstetric practice. There is much truth in Ballantyne's contention that the premature infant is "partly a fœtus and partly a new-born child . . . in it we see neonatal physiology hampered in its action by persistent fœtal conditions." It is therefore only right that we should not make ourselves responsible for bringing infants into the world in this unfit condition unless there are sound reasons for so doing.

It will be, of course, admitted that the number of induced labours is relatively small, and that the bulk of premature births are due to the maternal complications of pregnancy which we have referred to. There is also, as we have seen, some evidence that social and industrial conditions may also be concerned, and this evidence may be shortly summarised thus:—

(a) Pinard showed that women admitted to hospital during the latter part of pregnancy carried to term in larger proportion than those who continued at work.

(b) Darwall Smith showed that premature births were four times as frequent in women with bad nutritional conditions than in those of average nutritional conditions.

(c) The English lying-in hospitals serving industrial districts with a large factory population show a proportion of premature births three times as high as London hospitals serving districts with a relatively small factory population.

BIRTH TRAUMATA.

We must now go back for a moment to the matter of birth injuries; you will recollect that we saw that traumatism and prematurity were the two chief causes of death in class C of our fœtal mortality table. We now want to see what direct evidence we have of the occurrence of birth traumata. The premature infant suffers severely because its vitality is low. On the other hand, the postmature or oversized infant may suffer severely because its bulk increases the mechanical difficulties of expulsion. Many normal-sized infants delivered by the natural forces alone arrive in a condition of profound shock from which, however, it is true, they practically always recover; their condition is, however, clearly the result of trauma. And further, a certain number of healthy infants die during the birth process without subsequently showing any injury to which death could be attributed. These deaths are probably occasioned by the infant's inability to withstand the stress of labour. The great proportion of intranatal deaths, however, are due to injury inflicted upon vital organs during birth. It is impossible to enter at all fully into this matter, but I want to try to form some idea of the extent to which fœtal deaths can be traced to this cause.

Herbert Spencer, in 1891, drew attention to the occurrence of visceral hæmorrhage in stillborn children, and Eardley Holland in his recent well-known work found evidence of intracranial trauma in 5 per cent. of the stillbirths he examined. Not all the lying-in hospitals give details from which an estimate can be formed, but, from the records of two hospitals, I have collated a series of 561 deaths under corrected rate C—i.e., after deduction of macerated cases, cases of craniotomy, ante-partum hæmorrhage, and eclampsia—and in 272 cases death was attributable in whole or in part to injuries received during labour. In addition 37 infants which were born alive died in hospital from similar injuries. The total loss of infant life from birth injuries was, therefore, 309, which exceeds 50 per cent. of the stillbirths and corresponds to a rate of about 4 per cent. of the total infants born in the hospital. When it is remembered that we are speaking now of infants born under conditions presenting no special difficulty, I think it must be admitted that the death-rate from injury is high enough to give us a good deal of concern.

With a view to tracking the causes of this heavy mortality from birth trauma, I have looked into the results attending delivery by forceps in the hospitals. It is to be expected that the great proportion of deaths from head injuries would occur in forceps cases, although this is not shown in the reports. The forceps results from three hospitals have been taken out for five years in each case, and all cases of craniotomy, of eclampsia, and of ante-partum hæmorrhage have been excluded.

Hospital.	Total cases.	Total fœtal and neonatal deaths.	Rate per cent.
X	940	116	12·3
Y	291	36	12·3
Z	516	155	30·0

The mean rate for the three hospitals is therefore 17·5 per cent., on a total of 1747 cases.

The forceps rates for each hospital—i.e., the percentage of cases in which forceps was applied—showed no great differences, for they were respectively 10·4 per cent., 8·6 per cent., and 9·7 per cent.

There is one further consideration which should not be overlooked—viz., that in a proportion of the cases unsuccessful attempts to deliver with forceps had been made previous to admission, sometimes in the hospital district, sometimes by independent medical practitioners. In such cases injury may have been sustained by the child before admission to hospital. In the case of hospital Y, the records permit of such cases being deducted, and the result is to reduce the number of deaths to 31 and the death-rate to 10·8 per cent. The other two hospitals do not make any mention of such cases.

It is not only in forceps cases that these injuries occur; they may, of course, occur in breech labour, and sometimes in clinically normal labours.

The low maternal mortality-rate of our lying-in hospitals is a source of great gratification to us all, but our methods of delivery have not yielded equally satisfactory results from the point of view of the safety and interests of the child. The loss of infant life is high, and we should like to feel that not in one particular but in all respects our lying-in hospitals are a model and an example of British obstetric practice. Where improvement is called for we look to the hospitals to take the lead.

I have now come to the end of what I am conscious is but a very imperfect review of the conditions which affect the fœtus during intrauterine development, and the risks to which it is exposed from maternal disease, from maternal hardship and privation, and from the rough usage of the birth process. I had hoped when I began to consider the subject that I might, in addition, lay before you a few suggestions as to the lines upon which we might strive to diminish our heavy fœtal mortality, and to ensure the arrival of our new-born in a condition of full development, uninjured by the birth process, and with an unobscured prospect of survival. The task was, however, too great for me, and I shall have to await another opportunity of ventilating this important question.

References.

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THE BEHAVIOUR OF THE DIABETIC TOWARDS CIRCULATING GLUCOSE.

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THE relationship existing between glucose in flowing blood and glucose in the tissues is largely an expression of the variations in the factors of supply and demand. In the diabetic other factors appear to present themselves, and so much have we been impressed by the altered relationship which occurs in the diabetic that we have attempted to study some aspects of diabetic metabolism—together with the action of insulin—entirely from this point of view.

The simplest method of studying this relationship—in so far as blood and muscle are concerned—appears to lie in the simultaneous determination of glucose values in arterial and venous blood. The earliest work of this nature seems to have been done by Claude Bernard [1] (1877), MacLeod and Fulk [2] (1917), and subsequently by Henriques and Ege [3] (1921), by McCormick and others [4] (1923), by Cori, Cori, and Goltz [5] (1923), by G. E. Foster [6] (1923), by Pemberton and Cunningham [7] (1924), by Lawrence [8] (1924), and by Koopman [9] (1924).

In our work arterial blood was obtained from the radial artery, from the finger tip (for serial investigations), and from arteries bleeding during surgical operations; radial and finger blood have been shown by Foster [6] to possess identical amounts of glucose under all conditions, an observation which we have confirmed. Venous blood was obtained from the median basilic vein. Both procedures were carried out as nearly as possible together, the samples were oxalated, and estimations were made at once by the method of Folin and Wu.[10] Values of glucose and of substances chosen for controls are expressed in milligrammes per 100 c.cm. of blood. Emotion arising from pain, fright, &c., appeared to have no influence on either arterial or venous values.

TABLE I.

No.	Date in 1924.	Conditions.	Urea.		Glucose.		Chloride.		Phosphate	
			A.	V.	A.	V.	A.	V.	A.	V.
1	7/2	Ether 15 min., fasting.	13	12	110	100	487	463	—	—
2	8/2	Ether 40 min., fasting.	8	7	171	150	—	—	—	—
3	15/2	50 min. p.c.	10	11	86	79	425	412	4·3	4·2
4	18/2	½ hr. after 50 gr. glucose.	12	12	260	177	460	460	5·62	5·6
5	21/2	Diabetic fasting 5 hr.	22	20	300	214	—	—	—	—
6	22/2	2½ hr. p.c.	45	46	120	120	494	502	11·7	10·5
7	26/2	30 min. after adrenalin and glucose.	13	12	231	200	450	440	5·0	5·0
8	3/3	Glucose and 6 units of insulin.	12	12	222	177	518	530	3·8	3·6
9	21/3	Diabetic 3 hr. p.c.	—	—	300	288	490	496	6·0	5·9

As it might be supposed on a priori grounds that such factors as circulation through the lungs and velocity of flow might themselves determine the difference between arterial and venous concentration of glucose, and might thus invalidate deductions drawn from presumably specific causes, we found it necessary to use controls. As will be shown in Table I., controls indicate that these constant physico-chemical factors exert little or no influence, contrary to the expectation of MacLeod.[11] The substances used as controls and estimated together with glucose were: urea by the method of Van Slyke,[12] chloride by Bang's [13] method, and inorganic phosphate by the method of Bell and Doisy.[14]

The values for glucose differ, whereas those for the controls do not; observations of these differences, in both diabetics and non-diabetics, in four separate conditions are set out in Table I. These four conditions are (*a*) fasting at rest, (*b*) with a glucose meal, (*c*) under the influence of ether, (*d*) under the influence of insulin both fasting and with food. In the fasting state the results obtained from both diabetic and non-diabetic are given side by side in Table II.

TABLE II.—*Fasting at Rest.*

Non-diabetic.					Diabetic.					
No.	Date.	Hours p.c.	A.	V.	No.	Date.	Hours p.c.	A.	V.	G.*
	1923.					1923.				
1	29/10	3	84	87	1	16/10	3	387	428	+
2	8/11	4½	60	58	2	11/12	3½	494	428	+
	1924.				3	16/12	5	294	315	+
3	7/1	2	90	71			5¼	281	301	+
4	14/1	3½	70	70	4	28/1	3¾	133	126	–
5	16/1	5½	88	88						
		6	87	90		1924.				
		6½	79	80	5	21/2	6	300	214	+
6	23/1	3¼	70	70	6	13/3	4	250	285	+
7	30/1	2¾	86	77	7	21/3	3	300	288	+
8	12/3	6¼	86	86						
9	17/3	8	93	87						

*G = Glycosuria.

From these results it would appear that in the non-diabetic fasting tends to produce identical values; therein confirming the work of Henriques and Ege,[3] and of Foster [6]; very short or very long periods after the meal, as in Nos. 3, 7, and 9, show a relatively higher arterial value. In the case of the diabetic it would appear that there is nearly always a fasting difference between arterial and venous levels. In severe untreated cases the difference is largest, and in some cases the venous value may be greater than the arterial.

Influence of Glucose.

The ingestion of carbohydrates causes a greater rise in the arterial value, as shown in Fig. 1. Fig. 2 shows the effect of carbohydrate ingestion two hours after a meal, when the arterial and venous values have not yet resumed their normal fasting relationship; it will be noted that the rise in neither is so great as in Fig. 3.

Exhibition of glucose to diabetics under therapeutic control produced the same type of difference as with normals—i.e., arterial values were higher than venous. We have not considered experiments on diabetics not under control to be entirely justifiable, but we imagine that the arterial-venous relationship would be similar to that obtained under the influence of ether anæsthesia in the diabetic (vide Fig. 4).

Influence of Ether.

The anæsthetic administration of ether to normal subjects also causes a hyperglycæmic effect, comparable with that which follows the exhibition of glucose and adrenalin. Arterial values are also again higher than venous.

Non-diabetic.

Subject.	Duration.	Arterial.	Venous.
(1) A. B.	15 min., ether	110 mg.	100 mg.
(2) J. C.	40 min., ether	171 mg.	150 mg.

Arterial and venous values were studied in a diabetic of moderate severity and under control, on whom a major operation was necessary; he entered the theatre with a venous concentration of 99 mg. glucose and a CO_2 combining power of 57 vols. per cent.—he was under ether anæsthesia for 40 min.; during the first period the arterial concentration was higher than the venous, but later, as his uncontrolled diabetic condition manifested itself, the venous

FIG. 1.—*Non-diabetic.*

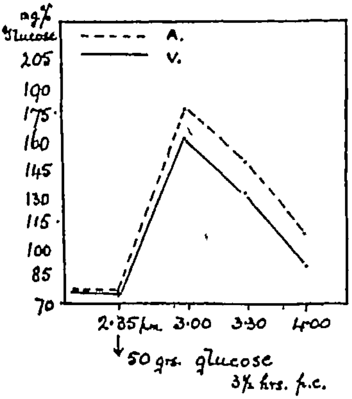


FIG. 2.—*Non-diabetic.*

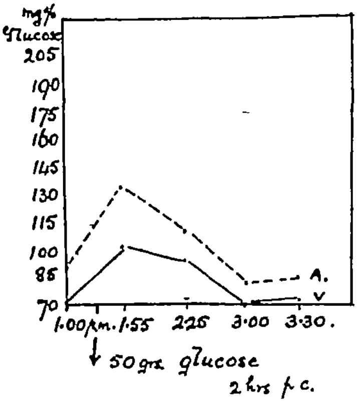


FIG. 3.—*Diabetic.*

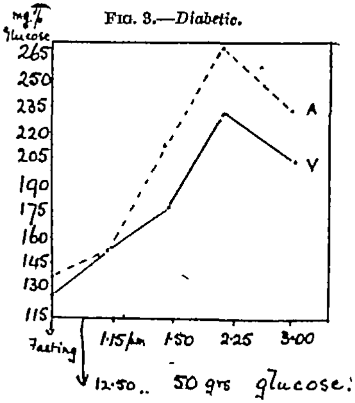


FIG. 4.—*Diabetic.*

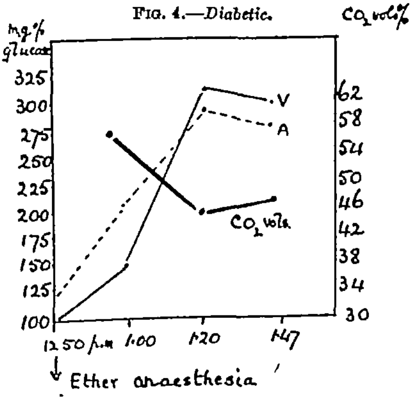


FIG. 5.—*Non-diabetic (with glucose).*

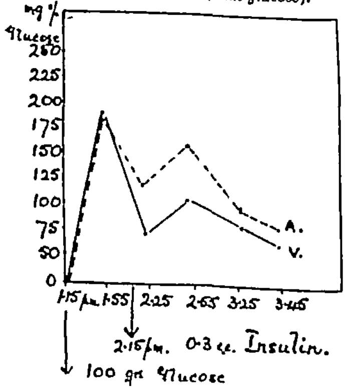
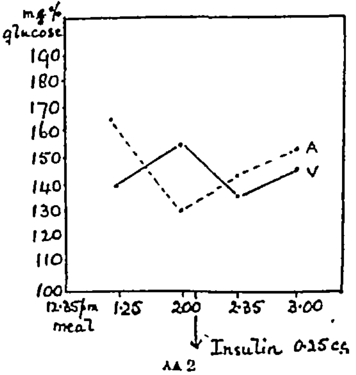


FIG. 6.—*Diabetic (with glucose).*



value became higher, glycosuria occurred and depletion of alkali reserve (Table III.). The behaviour of the diabetic during ether anæsthesia has been more fully studied by us in a recent communication.[15]

TABLE III.—*Influence of Insulin when Fasting.*

Non-diabetic.					Diabetic.						
No.	Date.	Conditions.	A.	V.	No.	Date.	Before insulin.		After insulin.		Dose in units.
							A.	V.	A.	V.	
1	1924. 4/3	4 hr. p.c. ..	124	116	1	1923. 15/10	—	—	266	132	10
		25 min. after 2 units* ..	93	93	2	19/10	387	428	188	165	10
2	12/3	6 hr. p.c. ..	86	86	3	12/12	129	165	141	133†	5
		30 min. after 4 units* ..	86	77	4	16/12	294	315	153	146	10
3	17/3	8 hr. p.c. ..	93	87	5	1924. 21/2	277	461	390	214	20
		30 min. after 4 units ..	86	80	6	13/3	250	285	—	—	—
4	18/3	4 hr. p.c. ..	89	90	7	21/3	300	288	184	150	20
		30 min. after 8 units* ..	91	86	8	10/4	396	396	120	98	30

* Units of insulin. † Glucose administered.

In fasting normals small doses of insulin have little effect on the glucose level and the arterial venous relationship. In diabetics, on the other hand, insulin not only reduces both arterial and venous values, but, when the venous value is higher than the arterial, a reversal occurs.

In the normal, insulin, given after the ingestion of glucose, exerts a specific depressing action on the value of blood-sugar; the typical glucose curve is cut short, and, as shown in Fig. 5, the difference already existing between arterial and venous values is still further increased by the relatively greater fall in venous concentration. We would draw attention to this result, as, apparently, a specific effect of insulin. Using anæsthetised animals, this effect was not obtained by McCormick and others.

In the diabetic, as in normals, a general reduction takes place; in the case of serial investigations, the apex of the curve is removed (Fig. 6). After the exhibition of insulin the venous value, if previously higher, always appears to fall below the arterial.

Conclusions.

From the results which we have recorded above it is clear that the diabetic differs from the non-diabetic in his behaviour towards circulating glucose. These differences are: (1) Fasting and without insulin—the arterial value differs quite widely from the venous. (2) With glucose and ether and without insulin—there is a greater increase in both arterial and venous values, and in the fasting state the venous value may rise higher than the arterial. (3) With insulin—either fasting or with food—the relationships between arterial and venous values tend to approach those of the non-diabetic.

The tissue which is here at fault appears to be muscle. In order to explain these observations, it must be assumed that diabetic muscle tissue cannot take up glucose, or cannot hold glucose, or is giving rise to glucose; all these abnormalities are removed in some measure by insulin. Upon what mechanism does this depend? There are several factors which tend to establish the diabetic type of metabolism. They may be summarised in their probable effect on arterial and venous glucose levels: (1) Tending to raise *arterial* content—glycogenolysis in liver; decreased power of glycogen formation. (2) Tending to lower arterial content—excretion of glucose by the kidney. (3) Tending to raise venous content—glycogenolysis in muscle; breakdown of tissue protein into its potential 54 per cent. content of carbohydrates; muscle saturated with glucose yielding up its excess; possible synthesis of glucose from fat.

All or some of these factors are responsible for the differences observed between arterial and venous blood in the diabetic; but when, under the influence of insulin, the diabetic tends to approach the non-diabetic type in such relationships, which of these factors ceases to operate? From our results, it is, we think, strongly suggested that insulin so influences the behaviour of the diabetic that he can take up glucose from arterial blood and, by holding it in his muscles, in some form exhibit those lower levels with an arterial superiority over venous content which is characteristic of the non-diabetic.

This may be attributed to several causes, such as diminution of glycosuria, sparing of endogenous protein, increased glycogen formation, or increased carbohydrate metabolism. Both the latter are known to occur; increased glycogen *formation* has been shown to take place in the liver of depancreatised dogs fed with carbohydrate *and insulin* by Banting and Best[16]; the respiratory quotient has been shown to rise in diabetics by Banting, Campbell, and Fletcher.[17] From this investigation we would submit that the behaviour of the diabetic and the characteristic alteration obtained with insulin turns upon the factor of glycogen formation, as foreshadowed by Langfeldt,[18] although we are aware that Dudley and Mariam[19] did *not* obtain increased glycogen formation in the muscles of normal animals in whom insulin convulsions had been produced.

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A CASE OF
CALCIFICATION OF THE PLEURA
OF AN UNUSUAL TYPE.

BY F. H. YOUNG, M.B. CAMB., M.R.C.P. LOND.,
MEDICAL REGISTRAR, CHARING CROSS HOSPITAL.

CALCIFICATION of the pleura and lung stones have attracted the attention of physicians from the time of Aristotle and Galen, and reports of cases can be found in their records.[1]

Until the advent of radiography the reports were those of cases discovered post mortem or at operation, but since radiography has become general in lung conditions, a considerable number of cases of various types of calcification of the pleura have been reported.

A general review of the subject was published by Pritchard,[2] and his conclusion, based on reports from literature and eight cases reported by himself, was that the origin of the condition was usually not tuberculous. The analysis of his cases shows that of the eight, three followed pneumonia, two pleurisy (cause doubtful), one probably tuberculosis of the lung, one trauma, and for one no cause was discovered. This case showed merely an isolated calcified plaque. In no case were tubercle bacilli found in the sputum. Respiratory symptoms were complained of at the time of examination in all cases except the last, and it is into the same class as this that the case described here apparently falls:—

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[1] Aristotle and Galen, quoted by Flozzi, F., Gazz. med. di Roma, 1912, xxxviii., 562.

[2] Pritchard: Arch. Int. Med., 1923, xxxii., 279.

A. H., female, aged 51, was seen on account of pains in the legs and hips running downwards to the calves, worse on movement and relieved by rest. Six months previous to the date of examination she had been absolutely well, and denied any history of respiratory symptoms or disease. When seen she had no cough, sputum, or loss of weight, but she was slightly dyspnœic on severe exertion. There was no family history of tuberculosis. This history was confirmed by relatives. On examination she had signs of slight hypothyroidism. T., 97·4° F.; P., 80; R., 20. No enlargement of glands. Some evidence of osteo-arthritis of the hip-joints and some tenderness over both great sciatic nerves; C.N.S. otherwise normal. No abnormality detected in abdomen or in the urine. Pulses equal. Artery slightly thickened; B.P., 100/110. Chest well covered; antero-posterior diameter increased; movement poor, especially at the left base. Shrinkage of the bony cage on the left side. Heart not enlarged or displaced; sounds normal, but distant. Lungs—*Left*: note markedly impaired over the whole lung, especially in front, and in the axilla, except at the extreme apex and base. Vocal fremitus and resonance diminished in the left axilla, normal elsewhere; breath sounds diminished throughout and bronchial in character from the third rib in front downwards, and broncho-vesicular over the whole of the back; coarse râles, increased by coughing, throughout the lung. *Right*: normal, except breath sounds somewhat exaggerated and expiration prolonged. The radiograms reproduced here show a dense shadow outlining the left lung, and also the heart, in a lesser degree. There is some collapse of the lung at the extreme apex and also at the base.

Radiograms of a Case of Calcification of the Pleura.

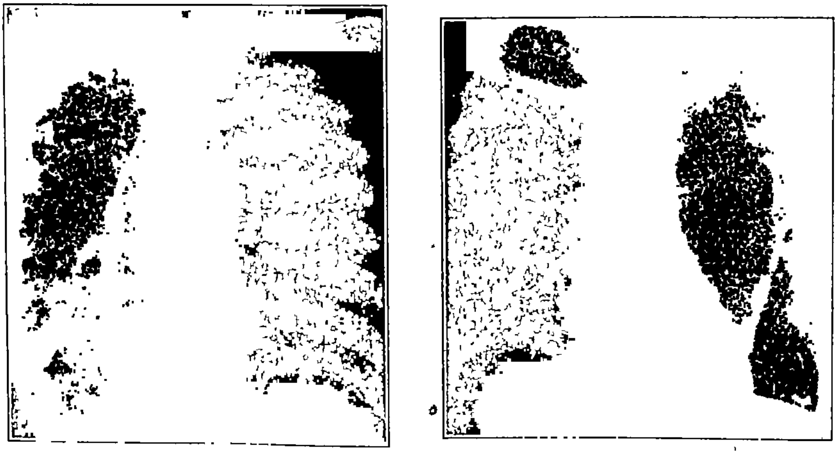

Plate in front.

Plate behind.

The points of interest about the case are: (1) the extent and the diffuseness of the calcification; (2) the absence of any respiratory symptoms at the time of examination; (3) the absence of any history of respiratory disease.

I am greatly indebted to Mr. G. Loughborough for the radiograms.

CULTIVATION OF THE SPIRILLUM OF RAT-BITE FEVER.

BY TH. JOEKES, M.B. LEIDEN, M.R.C.S. ENG.,
LATE SENIOR DEMONSTRATOR IN PATHOLOGY, ST. BARTHOLOMEW'S HOSPITAL; CONSULTING PATHOLOGIST TO CHILDREN'S CLINIC, MARYLEBONE, N.W.

SINCE the discovery of the spirillum of rat-bite fever by Futaki, Takaki, Taniguchi, and Osumi [1] in 1915, numerous attempts have been made to cultivate this organism. Futaki and his co-workers claimed to have been successful with Shmamine's [2] medium, the cultures showing the organisms in great variety of shape and size from 1·2 up to 10 µ in length; they were, however, unable to grow them in subculture. These culture experiments have been repeated by many other workers as well as by myself. Using this medium at different pH concentrations, and incubating them at different temperatures, one nearly always obtains the "spirochæte" described by Futaki, but there is little doubt that one is dealing with "artificial spirochætes" as described by many workers. In 1922 Sangiorgi [3] records successful cultivations, but as no description of his medium has been given, and as repeated inquiries of the author have as yet elicited no reply, I have not been able to repeat his experiments.

During the course of my investigations with regard to the presence of the *Spirillum morsus muris* in the wild rats of London, over 25 per cent. of the rats were found to be infected. With a view to establishing whether all the strains found were identical, or whether they could be grouped in different types, cultures were made in the original Noguchi's medium and its numerous modifications, in most of the media used for the cultivation of the spirochæta icterohæmorrhagica as well as in the more commonly used media, under varying conditions as to reaction, temperature, and aerobiosis. All the cultures gave negative results.

In 1923 Vervoort,[4] in Sumatra, examined 258 patients with febrile attacks of unknown origin, and, using a medium composed of 1 g. peptone and 3 c.cm. normal phosphoric acid dissolved in 900 c.cm. distilled water, he succeeded in growing spirochætes in 25 per cent. of the cases. Extensive experiments with the medium again proved unsuccessful until, in analogy with Boeck and Drbohlaw's[5] method of cultivating amœbæ, media were tried consisting of Vervoort's medium poured on the top of a solid medium. At last, on trying a medium composed of an ordinary inspissated horse-serum-slope (as commonly used for the cultivation of the Klebs-Löffler bacillus) covered by 10 c.cm. of Vervoort's medium with a pH of 7·2 inoculated with blood of an infected guinea-pig, I obtained positive results. The cultures were positive after 24 hours' incubation at 37° C. aerobically. Incubation at lower temperature or under anaerobic conditions gave less satisfactory results. Of six primary cultures made from the blood of six different guinea-pigs three were successful, and have now been carried on until the thirty-fourth subculture.

The reaction found to be most suitable for the growth of these spirilla is pH 7·2 to 7·6. In this connexion it should be remembered that the serum-slope acts as a potent "regulator" or "buffer." It was found that the reaction of Vervoort's fluid, which is originally 6·6, had altered to pH 7 to 7·2, after having been warmed for 15 minutes to 37° C. in contact with the serum-slope. From this it is evident that the reaction of the Vervoort's medium should not be readjusted to pH 7·2 before adding it to the serum-slope, as if this were done it would become too alkaline on incubation. In some of the cultures the spirilla were still found alive and actively motile after three weeks, and it seemed to make little difference whether they were kept at room temperature or at 37° C. Once the primary cultures were obtained it was just as easy to make subcultures in 1 per cent. glucose broth—preferably with the addition of some defibrinated rabbit's blood—as in the original medium. In both the primary cultures, as well as in the subsequent subcultures, mainly short forms were found after 24 hours' incubation, and only comparatively few long forms, whereas after further incubation the longer forms became predominant. So far I have not succeeded in infecting mice with the cultures, neither have I been able to obtain cultures from infected mice, but only from guinea-pigs.

A few interesting facts have been observed with regard to these cultures—viz., all the cultures, although made under the most strictly aseptic conditions, showed a motile coliform bacillus as well as the spirilla. Experiments are still being carried out to determine whether this is a matter of obligatory symbiosis, as in the case of Kermorgant's[6] spirochæte of mumps, or whether the bacilli are simply a chance contamination.

With a view to separating the spirilla from these bacilli, cultures were filtered through Chamberland's L.2 filters. Although actively motile spirilla could be observed in this filtrate, but never any bacilli, subsequent subcultures from the filtrate were still found to contain the bacilli. These filtration experiments are being repeated with L.3 filters, and it will be interesting to compare the results with those of Salimbeni, Kermorgant, and Garcin.[7] These authors, working with mice infected with rat-bite fever, failed to find spirilla in the spleen, but a filtrate through L.3 of an emulsion of the spleen was found to be highly infective for mice. As a matter of fact, they found that mice inoculated with such a filtered emulsion became as quickly and as strongly infected as those which had been inoculated with strongly infected blood. Another interesting point of minor importance is the discovery that the presence of yeast in the cultures apparently killed the spirilla within 24 hours.

A further and more detailed report of the work done is to be published shortly. This work has been carried out partly at the Wellcome Bureau for Scientific Research, under a grant from the Medical Research Council, and partly at the National Institute for Medical Research at Mount Vernon. I should like to record my thanks to Dr. Andrew Balfour and Dr. C. M. Wenyon—past and present directors of the former Institute—and to Capt. S. R. Douglas and Mr. C. Dobell, of the latter, for all the kindly interest they have taken in the work and their many valuable suggestions. Last, but not least, I want to thank Dr. P. O. Ellison for his untiring assistance and collaboration throughout.

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A CASE OF PSORIASIS.

ISOLATION OF MONILIA FROM THE SKIN SCALES, MOUTH, AND SPUTUM.

BY GERALD G. SANDERS, M.B., CH.B. EDIN.

THIS case of chronic skin disease, diagnosed in London and in India as psoriasis, is of interest on account of the isolation from the skin lesions, mouth, and sputum of a monilia, a member of a group found in thrush and allied infections and believed to be ætiological factors in disease in man.

Clinical Record.

Up to five years ago the patient, a married woman aged 36, was in good health. Her mother died with cancer in the stomach and secondary nodules in the liver. When travelling in India in 1920 the patient's foot was injured by accidental contact with the heel of a boot worn by another person. The skin on the dorsum was cut and she lost some blood. The cut did not heal, and in a day or two the skin around became discoloured, and a lesion similar to that shown at Fig. I (B) formed there. This lesion did not yield to treatment. Six weeks later she was alarmed to find on the external surface of both legs, around the knee-joint, similar lesions which became confluent; the disease then spread until the surface of both legs was partially covered. These lesions spread to various parts of the body, starting as small patches which rapidly became confluent. The skin condition has been described by more than one authority whom she has seen since 1920 as "typical of psoriasis," and in 1924 was again diagnosed as such. I saw the patient first on June 4th, 1925.

Condition on Examination.—On the skin on the lateral surfaces of both knee-joints large scaly lesions were seen; these were found also on the skin around the left hip-joint, on the back, on the left elbow, and also, to a lesser degree, on the face and scalp. In the sublingual region of the mouth an extensive white film seemed to cover the mucous membrane, and this film was seen also around an ulcer on the left margin of the tongue, an ulcer which had been present for a year and a half and which the patient associated with the friction of a dental plate. It was from one of my swabs from this ulcer that moniliæ were cultured; moniliæ were also found in the sputum, but they were not found in a special swab I took from the pharyngeal region. In the perineal region a number of short papillomatous tumours were seen, grouped together on quite a small area of the skin.

Organisms Described.—1. From scales of the skin lesion without culture; smear preparation Gram stain: (*a*) many Gram-negative coccidia; (*b*) streptococci and staphylococci.

2. From scales of skin lesion after culture in bouillon, 48 hours at 37° C.: (*a*) moniliæ and Gram-negative coccidia; (*b*) branching mycelial threads; (*c*) streptococci and staphylococci.

3. *From sputum*; smear preparation Gram stain: (*a*) Gram-positive cocci; (*b*) Gram-positive short chain streptococci; (*c*) Gram-positive diphtheroid bacilli; (*d*) Gram negative cocci.

4. From sputum after culture at 37° C. for 48 hours: (*a*) a few colonies of monilia; (*b*) *Streptococcus brevis*; (*c*) *Staphylococcus aureus.*

5. From region of ulcer in left side of tongue, special swab, smear preparation Gram stain: (*a*) monilia; (*b*) streptococci.

6. From mucous membrane sublingual region; special swab, smear preparation Gram stain: (*a*) monilia; (*b*) streptococci.

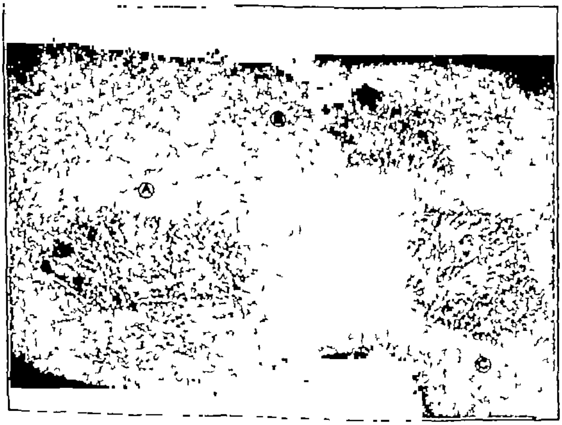
7. From nasopharynx; special swab: (*a*) cultures sterile.

8. From *urine and fæces* no *moniliæ* were *obtained*; but many Gram-negative bacilli and Gram-positive streptococci.

The following are fermentation tests of moniliæ isolated on agar slope:—(1) Glucose: acid and gas. (2) Lævulose: acid and gas. (3) Maltose: acid and gas. (4) Saccharose: acid and gas. (5) Lactose: acid, mostly gas. (6) Raffinose: alkaline, no gas. (7) Adonite: slightly alkaline, gas. (8) Sorbite: strong alkaline. (9) Galactose: acid. (10) Mannite: acid, slow gas. (11) Dulcite: no reaction. (12) Insulin: no reaction. (13) Litmus milk: alkaline. (14) Neutral red: gas.

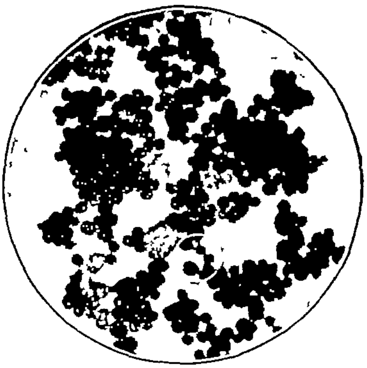
Monilia.—Macroscopic characteristics: *on glucose agar* the colonies of moniliæ appear as white, creamy colonies, about a quarter of an inch in diameter in many cases. Microscopic characteristics: the moniliæ appear as large Gram-positive cells (Fig 2) frequently producing buds and mycelial threads. In this and other microphotographs from this film a sort of fine reticulum forms a bridge connecting each monilia. The word monilia means "necklace," the reticulum suggesting the "string" of the necklace In Fig. 2 attention may be drawn to cells which take the Gram stain only in part of their substance; the remainder of their substance is stained with the counterstain. The Gram-negative coccidia are not included in this photograph, though they are cleary visible at this power in many of the films.

FIG 1.



Photograph on panchromatic plate of lesions on the outer surface of the left leg in the region of the knee The patch B is untreated; that at C has been treated with copper sulphate lotion (1 to 100), and that at A with tinct. iodi (10 per cent *in* 90 per cent. alcohol). In both cases two days before the photograph was taken

FIG 2.



Photograph (× 1000) of moniliæ stained by Gram method. Four cells have only partly taken up the Gram stain. Within the circle can be seen the fine reticulum connecting the *moniliæ*.

Summary

These analyses and the information they give have an important bearing on treatment. They show that in the skin lesions and the mouth the streptococcus and the monilia are closely associated; the streptococcus is shown to be the more widely distributed organism as it was found in alimentary tract and urine, in the latter situation with *Bacillus coli.* The *hæmoglobin* was shown to be 60 per cent., but full count of the blood cells showed that otherwise there was no change from the normal. The patient appeared toxic, and had painful rheumatic symptoms in the left shoulder region as well as pain in the suprapubic region These *symptoms* disappeared later, at which time the urine was shown to be sterile after 20 days treatment with urotropine. Antistreptococcic serum (Parke, Davis *and* Co.), *polyvalent*, was given subcutaneously to the extent of 30 c.cm. in all; the first dose was given in divided quantity, 6 c cm. two hours after a preliminary injection of 1 c.cm. The right ankle became tender during the following few days, and there was a reaction throughout most of the skin surface; much redness and a sort of nettle-rash and itching. The serum was undoubtedly beneficial and later, after six detoxicated vaccines, made from the streptococci isolated from the skin lesions, all the painful back symptoms were removed. I propose to give another six of these vaccines. It is not possible here to go into the condition of the teeth, which were probably responsible for much of the streptococcus infection. I suggested ultra-violet light treatment for the skin condition and hope this may be applied to the mucous membrane of the mouth.

The patient is now having ultra-violet light treatment at one of the London hospitals.

Acknowledgments are due to the Associated Clinical and Analytical Laboratories, Ltd , London, for laboratory assistance. I have availed myself of the opportunity to submit these organisms to the Curator, National Collection of Type Cultures, Lister Institute of Preventive Medicine, Chelsea, London, S.W., so that they may be preserved. Further research by fermentation and other experiments, and animal inoculation *tests is very desirable.*

(Continued at foot of next page)

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

A meeting of this Section was held on Dec. 3rd, Mr. T. G. Stevens, the President, occupying the chair.

Exhibition of Specimens.

Dr. Everard Williams sent descriptions and slides of two specimens. The first was that of a Fallopian tube containing a loose fragment of menstruating endometrium associated with endometrioma of the ovaries. The patient had had for some time dysmenorrhœa, and this had been getting worse. The specimen consisted of both ovaries and tubes, and the uterus was covered with numerous dense adhesions, while there were cysts containing tarry material, these cysts having ruptured during the removal. Adhesions had bound the ovaries to the back of the broad ligaments, so that removal of the Fallopian tubes became necessary. These tubes, however, were seen to be free, and were normal in appearance. Both ovaries contained abundant endometrium in a non-menstruating phase. The right ovary was exhibited on the screen, showing on one side endometrioma, on the other side ovarian tissue containing an early developing Graafian follicle. A similar condition was present in the left ovary. In the right tube, in the region of the fimbriated extremity, were two fragments of tissue lying free and separate from the tubal mucosa. Those fragments proved to consist of endometrial tissue not in a menstrual phase of the cycle. The specimen, it was contended, confirmed the view of J. A. Sampson, of New York, as to the causation of this condition.

The President said he regarded this specimen as the missing link in the pathology of endometrioma. Many observers had been trying for some time to find endometrium in the Fallopian tube, and now it was forthcoming. He had always believed that Sampson's view would prove the correct one.

Dr. Cuthbert Lockyer said this was the most convincing proof which had been seen up to the present. Several observers had found fragments of endometrium in the menstrual blood in the pouch of Douglas, but this to-night was the most convincing evidence of the transference along the tube of necrobiotic endometrium. But in accepting the implantation theory as one explanation of endometrioma, one must be careful not to push it too far. What the profession was awaiting was information as to a common genesis for all these and similar conditions.

Dr. W. W. King said he thought such a fragment would have difficulty in getting through the uterine end of the tube. He did not see why it should not have grown there. He found acceptance of Sampson's view difficult, as for damaged tissue to implant itself on undamaged tissue was unique in pathology.

The second specimen shown by Dr. Williams was a uterus showing multiple polypi of the cervix. The uterus was removed by vaginal hysterectomy. Examination showed nothing abnormal except that the cervix felt rough and irregular, and there was no bleeding on examination. A more complete examination under an anæsthetic showed that the cervical condition extended far up the canal, and that the roughness previously felt was due to large numbers of polypi. The specimen showed an unusual condition of the cervix; the endometrium was replaced by a diffuse growth of polypi, and the condition ceased abruptly at the level of the internal ostium. There was no evidence of chronic inflammation, therefore it was thought the condition was new growth.

(*Continued from previous page.*)

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Gliosarcoma in a Still-born Fœtus.—Ruptured Acute Pyosalpinx.

Mr. D. J. Malan gave a short communication on a case of gliosarcoma in a full-time still-born fœtus. There was nothing abnormal in the placenta nor in the amount of liquor amnii. No abnormality in the fœtal head was suspected, but when the fœtal head was opened it showed bilateral internal hydrocephalus. There was some tearing of the tentorium cerebri, but no signs of hæmorrhage. In the cerebral hemisphere was found a round lump, and enclosing it was a very much flattened cerebral cortex, ½ cm. thick, covered by smooth lepto-meninges. Another, smaller, gliosarcoma was found in the other side of the cerebrum. The doctor in this case had been blamed for causing the state of affairs by putting on forceps prematurely and damaging the baby. The real cause of the baby's death was the tumour. He advocated more routine examination of fœtuses, when it would probably be found that such occurrences were not so rare as they were supposed to be. He also gave a description of a ruptured acute pyosalpinx which occurred in the third month of pregnancy, the patient being 37 years of age. There was abdominal pain, great nausea, and some vomiting, with a blood-stained, offensive vaginal discharge. The temperature was 101° F., the pulse 96, tongue moist and furred, and the abdomen very tender. The uterus was enlarged to the size of a two-months' pregnancy. On doing a laparotomy free pus was found in the peritoneal cavity. The left Fallopian tube had a perforation 4 cm. wide, and pus was oozing from this rent.—Several members discussed the communications.

Puerperal Sepsis.

Papers on puerperal infection were read by Dr. H. J. Phillips (Monsall Hospital, Manchester) and Dr. L. Colebrook (London).

Dr. H. J. Phillips spoke on Rational Treatment of Puerperal Infection, and said his intention was to deal mainly with the results obtained from the treatment of a series of cases along certain constant lines. The work was done at the Monsall Hospital, which was Manchester's infectious hospital. Here 22 beds were set apart for puerperal cases, and the admissions during a year varied between 90 and 120. Every encouragement was given to send cases as soon as possible, and none was refused, yet still many were too advanced and serious when received. In his experience of puerperal infection he had been much impressed by the great amount of extra-uterine injuries suffered by these patients, and the gravely septic nature of the region when patients were brought. He was not now speaking of tearing of the perineum. On exposing the vagina, remains of a lacerated cervix covered with foul sloughs, teeming with micro-organisms, were frequently found. The uterus of such a patient could easily become infected, and if the local defences failed, the infective process could become widespread. Though the acid secretions of the vagina might keep micro-organisms inert, in the alkaline lochia and the body tissues they might rapidly show pathogenic properties. Merely to drain the cavity or attack the endometrium was not likely to produce good results; therefore he had hoped for some means of helping the uterine wall to drain itself by promoting a flow of lymph through it into the cavity. Some time ago he had the opportunity of seeing glycerine used in the uterus for this purpose, and it seemed to him it might solve the problem, as it was a powerful tissue dehydrant, and its viscidity enabled it to remain for a long time in contact with the tissues, while at the same time there was no danger to the patient. The mixture he used was a 10 per cent. solution of tincture of iodine in glycerine, the iodine promoting the flow of lymph into the cavity of the uterus. Most of the patients were drained in this way once daily, the more severe cases twice a day. In the first 100 cases the average number of applications was seven, the treatment being continued until all active inflammation had subsided. In this method the local condition was well exposed and could be thoroughly cleaned, and there had been a rapid healing of the lesions. The chief source of trouble was the para-vaginal abscess associated with a badly torn vagina. Pus was found in the uterus in half the severe cases, usually only in small quantity, though in one case it amounted to 6 drachms. Often the doctor had assumed from the presence of a profuse purulent vaginal discharge that the uterus was draining well, the fact being that none was coming from it, the suppuration being high up in the vagina. The introduction of the iodine and glycerine tended to produce uterine contractions. In 180 cases in which he had employed lymph drainage (glycerine drainage) he had never explored the uterus, except for primary hæmorrhage; fragments of membrane, placenta, or decidua had come away in the manner spoken of.

Comparison of Results.

Dr. Phillips, for purposes of comparison, gave two series of cases and the results achieved. The first consisted of 87 cases which were treated by lymph drainage, and the second of 110 cases which immediately preceded the first named. In both the cases were of the same type and drawn from the same district. Before lymph drainage was done at the institution the treatment of these cases had been carried out on three main lines. The milder cases were dealt with expectantly—i.e., with vaginal douching, Fowler's solution, quinine, &c.; the more severe with anti-streptococcal serum or curetting. Of the 110 cases, 20 per cent. developed complications, 11 developing pus and needing operation; while of the 87 cases treated by lymph drainage, only 14 per cent. developed complications and only one developed pus. Dealing next with the mortality in the two series, that in the first 100 cases was 13 per cent., the lowest in the institution for many years; and all died of some condition which was already established when the patients entered the hospital. Also, since this method was inaugurated the average stay in the hospital had been greatly reduced, from 41·5 days to 26·2 days.

Acute Blood Infections: Laboratory Investigations.

Acting on Dr. Colebrook's suggestion, he had adopted two lines of treatment in cases with acute blood infections—namely, the intravenous injection of arsenical drugs, and the transfusion of immunised blood to help the patient's own defensive mechanism. The drug chosen was novarsenobillon. Disappointing results followed the use of small doses of arsenical preparation, large ones were followed by clinical improvement. He exhibited lists of cases giving many details.

Dr. L. Colebrook spoke of laboratory investigations which he had been carrying out on the same subject. He said that in considering what was the chief microbic agent of puerperal sepsis it was not necessary to go further than the hæmolytic streptococcus, which was probably the cause of 90 per cent. of the troubles of septicæmic cases and localised infections. There was no reason for supposing that puerperal sepsis was due to a special streptococcus. As to how the streptococcus usually gained entrance into the genital tract, it was generally taught that it was not normally present in the vagina, nor in the rectum, and he thought infection from both those sources must be rare. The problem here did not differ from that of surgical wounds generally. Ordinary non-hæmolytic streptococci were more easily killed by leucocytes than were the hæmolytic form. Was there any evidence that a woman's resistance to the streptococcus was lowered during the process of pregnancy and labour? There were now available means of knowing how efficient a person's blood was in killing streptococci, and it was found that there was no general tendency for the killing power of a woman's blood to be lowered during pregnancy and labour. He believed that blood invasions from the genital tract were more common than they were generally supposed to be. Blood in the capillaries had great power of killing off streptococci, and if a few of these organisms got through in the first few days of labour, if the woman's blood was normal, there was but little chance of those microbes surviving in the capillaries. But the woman's blood might not be normal, and in septicæmia the killing power of the blood was greatly reduced; it might be only 40 per cent. of the normal. The real reason was that in septicæmia the leucocytes were not normal ones; probably the microbes produced a toxin which was disabling to them. Then the microbes getting through would be able to survive. When a blood culture was done on a doubtful case of septicæmia, the bacteriologist should be asked to state how many microbes he found to the cubic centimetre; that gave important prognostic information. He had only seen one woman recover who had more than 100 streptococci per c.cm. in her blood.

With regard to local treatment, this, it would be agreed, was not at the moment all that could be desired. Two lessons learned in the war experiences were: that wounds infected with hæmolytic streptococci and containing damaged tissue and blood clot could not safely be left to themselves. Hæmolytic streptococci, as Sir Almroth Wright showed, could grow comfortably in damaged bloodless tissues and in blood clot. As the streptococci grew, the containing fluid lost all its bactericidal power, and at the same time the leucocytes were held back. Something of that kind must occur in the case of an infected wound of the genital tract. The worst cases of puerperal fever were those in which the lochia were suppressed and those in which instruments had been used and caused bruising of the tissues. And the war's second great lesson in this regard was the efficacy of fluid drainage, which Dr. Phillips had demonstrated in his series of cases.

Concerning general treatment Dr. Colebrook said that in septicæmia there were often millions of streptococci in the circulation, and the defensive mechanism of the patient was largely out of action. It was necessary either to have an agent which would kill off many streptococci and so give the leucocytes a chance to recover, or there must be an agent which would neutralise the toxins which were damaging and inhibiting the leucocytes. Antistreptococcic serum appeared to have no strong place; to do any effective killing of the bacilli, a pint of it would have to be given. With regard to drugs, the most hopeful of those he had worked with was neosalvarsan, and the killing power of that was pronounced in a strength of 1 in 100,000, reducing 520 streptococci per c.cm. to 8 in five hours. Concerning transfusion, one could not hope to save a patient by this alone. Reasons for this probably were that by defibrinating blood one deprived it of about 30 per cent. of its corpuscles and mixed it when transfusing with nine times the quantity of the patient's own blood. Still, he thought it was right to go on working at drugs and transfusions.

Prof. Louise McIlroy said the results she had had from carrying out Dr. R. Hobbs's treatment (injection of glycerine) had been extraordinarily good, drainage having been done for seven days. Most of the cases of puerperal sepsis were due to laceration. Recently she had been raising the patient's immunity by giving antistreptococcus serum and quinine before clearing out the uterus, and the results had been such that she intended to continue the practice. Results from blood transfusion seemed to last only four or five days.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

A MEETING of this Society was held at 11, Chandos-street, W., on Nov. 27th, Dr. WILFRID S. FOX, the President, occupying the chair.

Medico-legal Problems in Relation to Venereal Disease.

Dr. F. G. CROOKSHANK read a paper on medico-legal problems in relation to venereal disease, which, he said, touched on the provinces of ethics, politics, sociology, religion, and jurisprudence, and could hardly be appreciated without some acquaintance with history and with human nature. The crux of the question was that, however loudly some might say that venereal diseases were not different from other diseases, human nature would never permit these diseases to be dealt with by the *ordinary* routine of notification and sanitary administration. Venereal disease was fundamentally one of the consequences of breaking the social-sexual code, and the occurrence of venereal disease in a population always seemed to be associated with the breaking of a social code, no matter what that code had been. He thought it might be taken as axiomatic that however the social or moral code might change, and whatever degree of promiscuity or liberality in sexual matters might be allowed—and, of course, the sexual and moral code had changed in an extraordinary way during the last ten years—yet the imputation against a person that he had venereal disease would always be actionable. To say of anyone that he or she was unchaste might at one time have induced social avoidance, though it by no means necessarily followed that it would always do so, but the presence of venereal disease would continue to make a person shunned by even the most degraded. He did not see how the lawyers could draft any Bill which, merely by making the communication of that disease to another person an offence, would be effective in the prevention of venereal disease unless doctors could definitely say, *in more than a few cases, that the suspected person must* have known himself or herself to be in an infective condition. If it was desired to constitute a new kind of offence it would have to be proved that there was guilty intention, and that the person knew what he was about. This meant that it would be necessary to prove warning. Could warning be proved unless communication had been made to some third person?

Mr. EWART WORT, Barrister-at-Law, pointed out that while in respect to some sexual offences the law usually required corroboration, a conviction in such a case as Dr. Crookshank had instanced would depend upon whether the doctor was to be believed when he said he had given warning, or the accused person was to be believed when he denied it, and from his own experience at the Bar the doctor's evidence would be accepted.

Dr. CROOKSHANK said that, at any rate, it would be impossible to induce lawyers to recognise as an offence an act of this nature unless it could be shown that the person who committed the act really understood his state and had been warned in respect of his infectivity. Germany and Sweden appeared to have adopted legislation in respect to the communication of venereal disease, and their experience must be valuable. While, no doubt, a medical examination before marriage would be an ideal arrangement, he could not help feeling that one could not go safely beyond the requirement of a statement on oath by the parties made at the very last moment. He recalled a case within his own experience of a man who only on his very wedding day discovered that he was suffering from venereal disease, the last illicit connexion having dated from three months previously. The very fact that some such declaration was required at the last moment might go some way to induce a feeling of responsibility. It seemed necessary, however, to fall back upon the continuation of the present state of affairs, even if there was occasional occurrence of the position so often alleged to be frequent, wherein Dr. A was aware that Mr. B had venereal disease and intended, in spite of all expostulation, to marry Miss C. In England a breach of professional confidence was not an offence in itself and so punishable, as was the case in some countries abroad. If a medical man broke professional confidence by saying that a certain person was syphilitic and so injured him, it was possible for that person to bring an action against him for slander or libel, but not for breach of professional confidence. The doctor (granted, of course, that he was sure of his ground) should, however, be prepared to take the consequences, which the speaker did not believe would be serious to himself under such circumstances, and to warn Miss C or her parents. In such difficult cases members of the profession should have the courage of their convictions. If they technically broke the law and uttered slander in order to prevent the marriage of a syphilitic to an innocent person he did not think that in the long run the law would punish them very severely, while there was nothing in the oath of Hippocrates to prevent any man conscientiously breaking professional confidence in such circumstances.

Mr. WORT dealt principally with the compulsion upon witnesses to give evidence in courts of law. There were certain exceptions to such compulsion. On the grounds of public policy, no husband or wife was compelled to make a statement which was the result of communication by the other. No person was compelled to give evidence in a court of law when the evidence would incriminate himself. And there was the third exception, the privilege which a member of the legal profession enjoyed in regard to communications made to him in the course of his professional activities. This last was an anomaly, but it was absolutely necessary by reason of the fact that without that privilege the administration of justice could not be carried on. It might be asked, why the distinction between the medical and the legal professions in this respect? But the point was that of all the information obtained by the medical man in the course of his profession, not one-thousandth part would ever be the subject-matter of litigation, while in regard to the communications made to a lawyer, every such communication carried the potentiality of litigation. This privilege of lawyers was not the privilege of a profession as such; it was the privilege attaching to a particular kind of communication. Dr. Crookshank had referred to the law in other countries. It was part of the penal code in France that any communication made by a doctor in breach of his professional oath was a criminal offence, but there was an exception—namely, when he was compelled to give evidence in a court of law. If further legislation was necessary in order to get to closer grips with the social problem put forward by Dr. Crookshank, it was for the medical profession above everybody else to educate the public up to the point of such legislation. Any legislation making it a penal offence to communicate this disease to an innocent person must take into account the state of knowledge of the person indicted. An analogous class of case in this respect was the receiving of stolen property, which was extraordinarily difficult to prove. The law had surmounted the difficulty by putting certain tests which the jury were instructed to apply to the particular case. One such test was whether the person had purchased the property at a very low price; if he had done so it might be justifiable to suppose that he knew it to have been stolen. Whether some similar tests could be applied to persons suffering from this disease was for the medical profession to state. In the case cited by Dr. Crookshank of Dr. A, Mr. B, and Miss C, the only possible action would be an action for slander, and to such an action justification was a complete defence. But there would be a further defence in the shape of what lawyers called qualified privilege. The difficulty with medical evidence, however, was that occasionally Dr. A went into the box and said one thing, and Dr. Z another.

Discussion.

In the course of the discussion Colonel L. W. HARRISON spoke of the need for circumspection in relation to venereal diseases clinics. It would have a most disastrous effect if the public were deterred from coming freely to get treatment by the fear that there might under certain circumstances be a disclosure of their condition.—Dr. D. N. NABARRO put the case for legislation to compel parents to have their children who were congenital syphilitics treated.—Mr. WORT said that there was no specific legislation in this matter, but, of course, a parent could be prosecuted where it was proved by a medical man that a child was being wilfully neglected through not receiving treatment.

Exhibition of Clinical Cases.

Dr. H. McC. HANSCHELL showed two clinical cases, one a case of ulcerating granuloma in a Chinaman, which he had already shown eight months previously before the Society; and the other a case of congenital syphilis in a boy, which, in addition to the characteristic facies, showed necrosis of the maxilla.

Dr. P. H. MANSON-BAHR, in alluding to the first of these cases, said that it was a very interesting condition and occurred in definite geographical areas in the tropics, being very common in New Guinea. It was also found in Chinese treaty ports, in South Africa, and in the West Indies. Dr. Hanschell's case was the sixth consecutive one he had treated during the last four years. There was no doubt whatever that antimony tartrate was specific for this disease, among others. The substance must be given by the intravenous route, and must be persisted in for months. It should be given in 1 or 2 per cent. solution, commencing with ¼ gr. dissolved in 5 c.cm. of distilled water, and gradually increasing to the maximum tolerated dose. The maximum dose one could give was 5 gr. a week. Intolerance was usually shown by acute muscular pain. Local measures were of the utmost importance. Ulcerating granuloma had the peculiarity of spreading in one direction while retreating in another. It might burrow underneath the pubic region and extend in the scrotum. More recently he had used antimony tartrate in paraffin ointment; this was spread on the ulcerating surface, and left on for about two and a half hours, care being taken that it did not impinge upon the healthy surrounding skin. Antimony tartrate appeared to cause a considerable degree of local reaction and sloughing. In these cases one should never give up hope. A point to emphasise was the inadvisability of surgery. In one case in which the healing by medical treatment was successfully accomplished after three and a half years, surgery was practised at one point, and immediately expansion took place at the edges of the wound.

Dr. NABARRO referred to the second case shown by Dr. Hanschell. In all the cases he had had under his care at Great Ormond-street, numbering over 500 now, he had only in one instance seen necrosis occur in the position shown in the case exhibited that evening. There was no doubt that the boy had had also some gummatous necrosis of the bones of the skull. In a case of this kind he would advise that the cerebrospinal fluid be examined, and if it proved to be positive, salvarsan serum should be given.

LIVERPOOL MEDICAL INSTITUTION.

AT a meeting of this Institution on Nov. 26th Dr. JOHN HAY and Dr. PHŒBE INCE communicated a short paper dealing with the uses of

Diathermy in Cardiovascular Disease,

more particularly in patients with angina, major and minor, in cases of high blood pressure with various manifestations of distress, and in one case of intermittent claudication. Some of the patients had been kept under observation over a long period and the effects of the diathermy had been noted for the last two years. Weekly records had been kept of the variations in blood pressure, both systolic and diastolic, in the heart rate, and in the clinical findings, showing the response to treatment. In most instances there was definite improvement, in some cases dramatic improvement. Not only were the pressures reduced as the immediate result of treatment, but when the course of treatment terminated the improvement was maintained. In nearly every instance, whatever the variations in blood pressure, there was marked subjective improvement. The response to treatment was much more satisfactory in the males than in the females. In considering these results there appeared to be no doubt as to the benefit derived from this line of treatment.

Mr. R. E. KELLY read a paper on

Grafts and Grafting.

After a brief historical survey he considered the various methods of skin grafting. He said that the essential features in a successful Thiersch graft on a granulating area were as follows: 1. The area must have a flat instead of a heaped-up edge. This could be obtained by Beck's method of protecting the growing epithelial margin by strips of half-inch Z.O. eye strapping for a few days. By this means the exuberant granulations were flattened out and the marginal cranny of sepsis obliterated. Further, it saved the delicate new epithelial edge from being pulled off with the dressing. The last dressing should consist of 50 per cent. alcohol. 2. The granulating area must neither bleed nor weep. It should show neither sloughs nor bruises. 3. The operation should be done with absolute dryness. As Ochsner showed, there were disadvantages in moistening the razor with saline, glycerine, or antiseptics. No dressing was needed. Around the area a nest of gauze was placed and on top of this, but not touching the grafts, a piece of celluloid was fastened down with strapping. In immediate grafting Mr. Kelly spoke of the value of a stent or dental wax cast over the graft so as to apply even pressure and prevent the exudation of serum between the bed and the graft. He then spoke of the inlay grafts of Esser, Gillies, and Pickerill, and showed examples of eyelid grafting for ectropion and whole skin grafts for the deformity following lupus of the nose. Photographs of the tubed or jug-handle graft were shown illustrating the restoration of a lower lip lost by cancrum oris in infancy. Mr. Kelly spoke of Gallie's work on the tensor fasciæ femoris and its multifarious uses as a grafting material. He showed cases in which he had used it for uniting a fractured patella, for repairing an extensive post-operative hernia, and even repairing an inch gap in the extensor secundi internodii pollicis tendon. In the last case the result after a year was complete and strong movement of the terminal phalanx in complete contrast with a similar operation done for the flexor tendons of the palm. Despite primary union the palmar operations had failed. There appeared to be too much fibrosis and the grafts had stuck to the palmar fascia. Cartilage grafts for nasal deformities were next considered. They were extremely useful in accidental depressions, but were apt to be disappointing for cases of congenital syphilis. Finally, Mr. Kelly described his method of wedge-shaped bone grafts. He had used this for the fibula to prevent the slipping of the peroneal tendons and in the tibia to bridge a gap of an inch or so. The paper was illustrated by lantern slides and the result shown in a preliminary exhibition of patients.

IMPROVEMENTS AT THE METROPOLITAN HOSPITAL.—With the approval and help of King Edward's Fund the Metropolitan Hospital in the Kingsland-road, which serves the poor and densely populated districts of Shoreditch, Haggerston, Hoxton, Hackney, Bethnal Green, and Stoke Newington, is about to make improvements which will cost £51,000, of which nearly one-half has still to be raised. The principal work is the erection of a home for the nurses, who at present are scattered over "a jumble of broken-down property," most inconveniently situated, with passages so dark that gas has to be kept burning continually, but there will also be two new accident wards.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, ST. ANDREWS.

AT a meeting of the Institute on Nov. 24th Dr. IVY MACKENZIE gave an address on

Insulin in the Treatment of Toxic Delirium.

He explained that by toxic delirium he meant the condition recognised in psychiatric practice as "exhaustion psychosis," and sometimes referred to as toxic confusional insanity or amentia. The condition itself might be readily recognised by those who had an opportunity of seeing a large number of mental or nervous cases. It supervened on the basis of chronic nervous disorders of a hysterical or neurasthenic character; it sometimes occurred in the puerperium and also after the production of an artificial menopause. It began suddenly with excitement, sometimes of a violent character; the excitement passed into delirium, and if this stage were survived it was followed by a period of confusion which tended to clear up after a time. This form of illness he had seen only in women, and during the last year there were 18 cases among the 350 women who had passed under his notice in the mental observation wards in the Eastern District Hospital, Glasgow.

Hitherto he had treated such cases with chloral with some success. A year ago, following a discussion with Dr. J. H. Burn on the action of insulin and its relation to other internal secretions, he employed that drug in three cases. The beneficial effect was beyond doubt and compared favourably with its influence in diabetes mellitus. Treatment was begun with 5 units thrice daily, and this was gradually increased to 7, 10, 12, and sometimes to 15 units thrice daily. Chloral was employed, but mostly at night only. In some cases the patients appeared to be more susceptible to the poisoning action of chloral when insulin was given. One death occurred, and that in a woman who had also chronic renal disease and arterial degeneration; 14 had been discharged recovered, although some of these exhibited signs of what was probably their "nervous state" prior to the acute illness; three were convalescing; no patient suffering from this condition had been certified for asylum care since the treatment was initiated. Referring further to the clinical aspects of the cases, it was pointed out that fever was sometimes present, and that a leucocytosis of 10,000 to 20,000 was present in all except two. The blood-sugar curve was abnormal at some time in every case. It was frequently of the diabetic type, but occasionally there was an abnormally low curve, as, for example, in one case where the estimation was 0·05 per cent. on the fasting stomach, 0·09 per cent. at the height of the curve after 50 g. of glucose, 0·075 per cent. after an hour, and 0·06 per cent. after two hours. Notwithstanding the low estimate insulin was given, and after a week, when the patient had made considerable progress toward recovery, the curve had risen and showed the diabetic features with 0·135 per cent. on the fasting stomach, rising to 0·21, 0·25, 0·18, and 0·165 at half-hourly intervals. A striking feature of the metabolic abnormality was the presence in some cases of a blood-sugar content of 0·3 per cent. with no sugar in the urine, and no evidence of renal disease. The participation of the endocrine system in the upset of metabolic equilibrium which characterised the illness was probable. Reference was made to the experimental and clinical evidence of the relation of the ductless glands in diabetes, and in the case of toxic delirium it was pointed out that the abnormality of the ovarian system in all likelihood played a part. It was likely that the therapeutic use of insulin would be extended beyond the limits of diabetes mellitus, and that it would afford a means of approaching a solution of the problems not only of the ductless glands, but of a whole series of syndromes in which disordered metabolism played a part.

Reviews and Notices of Books.

MODERN MEDICINE, ITS THEORY AND PRACTICE. An original contribution by American and Foreign Authors. Edited by Sir WILLIAM OSLER, M.D., F.R.S. Third edition, thoroughly revised. Re-edited by THOMAS MCCRAE, M.D., Professor of Medicine in the Jefferson Medical College, Philadelphia, assisted by ELMER H. FUNK, M.D., Assistant Professor of Medicine, Jefferson Medical College, Philadelphia. Vol. I.: Bacterial Diseases; Non-bacterial Fungus Infections; the Mycoses. London: Henry Kimpton. 1925. Pp. 845. £12 12s. per set of six volumes.

IN his preface to the first volume of the new edition of this monumental system of medicine Dr. McCrae states that at about the time of the onset of Sir William Osler's last illness (some six years ago) correspondence was taking place as to the possibility of a third edition. It was a gratification to him to feel that this was being called for. Dr. McCrae adds some interesting personal notes as to the origin of the work which was to bring such widespread fame to its editor. At the first consideration of the possibility of his bringing out a system of medicine, Sir William Osler felt apprehensive that it might be too great an additional burden in his busy life, but finally consented to undertake it. With the work once started he became much interested and the success of the first and second editions pleased him greatly. His conception of the right article for a system was a discussion of a subject at a length between the brevity in a text-book and the extensive consideration possible in a monograph, with the needs of the general practitioner kept well in mind. For the most part he was able to inspire his contributors with his own ideals, and the result was a well-balanced work which merited the popularity it received.

In the 12 years that have elapsed since the first volume of the second edition appeared many changes have occurred in our knowledge of disease, and new diseases, such as botulism and epidemic encephalitis, have come into prominence. The discovery of the ætiological agent or further study as to the cause has altered many points in the control and treatment of some diseases, such as scarlet fever and bronchial asthma. A new therapeutic aid has come into prominence, altering the whole aspect of the treatment of diabetes mellitus. In the present edition the discussion of the pathology of tuberculosis by Dr. A. K. Krause is a departure from the traditional method. Dr. Du Bois gives a clear and comprehensive concept of the modern problems in metabolism. As to the subject-matter of this first volume, it has been to some extent rearranged. With the exception of the short section on fungus infections, the whole book is devoted to bacterial diseases. Scarlet fever has been placed among these, but the other exanthemata and fevers of doubtful causation, including rheumatic fever, are no longer included. The articles on typhoid fever, lobar pneumonia, and tuberculosis occupy more than half of the volume; the first two of these retain their old form, but have undergone revision and enlargement. As already stated, the section dealing with the pathology of tuberculosis has been rewritten, and a large amount of new material has been incorporated in the sections on other aspects of that disease. The shorter articles contained in the second half of the book have received numerous additions embodying the advances of the last 12 years.

Dr. McCrae has rendered great service to the medical profession in keeping up to date so valuable a work and in perpetuating the memory of its first editor. The essay on the Evolution of Internal Medicine, written by Osler in 1907 as an introductory chapter to the first edition, and omitted from the second, has been restored, and may claim a high place as a classic in the literature of the history of medicine.

THE MODERN PRACTICE OF TOOTH EXTRACTION.

By LESTER RICHARD CAHN, D.D.S. New York: The Macmillan Company. 1924. Pp. 182.

THE fundamental principles of tooth extraction are based on the application of mechanics to the anatomy of the teeth and jaws. The different methods of leverage utilised in extraction by forceps vary according to the nature of the roots and to the resistance offered by the alveolar bone. Thus the operation of tooth extraction must be to some extent stereotyped. Yet in practice we find that there is perhaps no part of dentistry in which there is such a wide variation of method on the part of individual dentists. Manual dexterity and the ease of constant practice count for much; one operator using methods to all appearance heterodox may be far more successful than another who uses the orthodox method. Manuals on tooth extraction, of which there are many, usually represent the practice of the individuals who write them, and since these are generally dentists of large experience, their books have a personal interest often lacking in more academical publications.

This volume may be taken to represent the American methods, which differ from those current among the majority of British dentists. The actual technique employed does not appear always to be the most efficient mechanically, though doubtless, in the author's hands, it yields excellent results. Some of the forceps recommended by Mr. Cahn appear clumsy when contrasted with English forceps. He advises the use of bayonet-pattern forceps for extracting upper incisors. But the straight forceps commonly used in this country, being applied in a straight line with the long axis of the tooth, surely represent the maximum efficiency of force with the minimum risk of fracture, whereas the bayonet type, though admirably adapted for extracting upper third molars, are less mechanically efficient for front teeth. It is curious to find no reference to the use of the straight elevator for the removal of lower wisdom teeth, in the use of which the backward curve of the roots, which offers so formidable an obstacle to the use of forceps, is utilised to facilitate extraction. The statement that no tooth should be extracted unless previously radiographed is surely a counsel of perfection and probably not feasible even in America, where an X ray outfit is much more often possessed by the dentist in general practice than in this country. The use of an elevator for extracting upper third molars appears to us as too dangerous a procedure to be commended for general use. The advice to pack a socket *tightly* for the treatment of hæmorrhage is unsound. It invariably leads to infection of the socket with the risk of secondary bleeding. Packing a socket for hæmorrhage, unless as a last resort, is to be deprecated. The statement that "whole *blood* taken from a parent, or in urgent necessity, from the operator himself, injected into the patient will stop the hæmorrhage in some cases" lacks the important proviso that the donor must be of the same blood group as the recipient. There is a chapter on blood pressure which contains useful information not generally included in a dental text-book.

THE SPHENOIDAL SINUS.

Le Sinus Sphénoïdal. Par GEORGES CANUYT, Professeur de Clinique Oto-Rhino-Laryngologique, et JEAN TERRACOL, Chef de Clinique Oto-Rhino-Laryngologique à la Faculté de Médecine de Strasbourg. Paris: Masson et Cie. 1925. Pp. 276. Fr.25.

THE introduction to this book contains the surprising statement that the sphenoidal sinus has been neglected in recent years, "secluded in the depths of the nasal fossæ, it has likewise been secluded in the *folds of forgetfulness.*" The authors admit that the anatomy of the posterior sinuses has been thoroughly studied and mention the famous anatomical collection of Onodi, which has been acquired for London, but say that exploration and surgery of the sinus have scarcely entered into the region of current practice. That, at any rate, can hardly be said to be the position in this country, and the authors pay adequate tribute to the work of Dr. P. Watson-Williams, whose method of exploration they have adopted. The anatomy of the sphenoidal sinuses is dealt with very fully, together with their variations in size and shape, and the relations with neighbouring structures; this section is illustrated by numerous diagrams, some of which would be easier to interpret if the plane of section were indicated. Methods of examination and exploration are discussed in the next section; the importance of thorough shrinkage of the mucosa with cocaine and adrenalin is insisted on. The authors would have done well to have given an account of their technique of producing local anæsthesia of the soft palate for posterior rhinoscopy, instead of merely giving a reference to a communication in the *Archives Oto-Rhino-Laryngologiques*; they appear to employ a palate retractor, but do not describe it.

A short description is given of a method of transillumination of the sphenoidal sinus by means of a long light-carrier and a pharyngoscope, but it is rightly stated not to be very reliable. The chapter on radiography of the sinus is among the best in the book and includes details of many different methods and angles of approach; some radiographs are illustrated, taken in the chin-vertex line, which show good definition of the cavities, and the intrabuccal film is also well described and illustrated. Of the surgery of the sphenoidal sinus, two methods of approach are mentioned and fully discussed, the "turbinal" and the "septal" routes; the authors consider that the septal route is the easier and the more surgically precise, but that it has the disadvantage of not giving access to the posterior ethmoidal cells, which often need to be opened with the sphenoidal sinus. No mention is made of the simple opening through the ordinary nasal passages, and the authors do not apparently consider this an efficient method of treatment. There is a good table of contents, but no index; a full and useful bibliography is appended.

TUBERCULOSIS.

Development of Our Knowledge of Tuberculosis. By LAWRENCE F. FLICK, M.D., LL.D., Co-Founder of the Rush Hospital for Diseases of the Chest, &c., Philadelphia. Published by the author at 738, Pine-street, Philadelphia. 1925. Pp. 783. *$7.50.*

Dr. Flick has produced a monumental volume on the history of tuberculosis, beginning with the Code of Hammurabi written 2250 B.C., and ending with the work of the British and German Royal *Commissions* on Tuberculosis at the beginning of this century. The amount of material amassed is large, and as tuberculosis meant a different thing to the physician in different epochs of history, the value of the material collected together must obviously vary a good deal. Dr. Flick suggests that the Hebrew race was one of the first to become immunised to tuberculosis and that this racial immunisation gradually extended westward through the Greek race to the Romans. References to tuberculosis in the Hippocratic writings are dealt with fully, as also is the work of Galen. Between *Galen and Sylvius there was little real advance* in our knowledge of this disease, but from the days of Sylvius onwards the amount of writing on the subject has been truly prodigious. Dr. Flick gives extensive quotations from Morton's "Phthisiologia," and devotes chapters to Sydenham, Boerhaave, Mead, Reid, Stark, and others of the eighteenth century. The latter part of the eighteenth century produced new schools in the work of Baillie, the Hunter brothers, and the early morbid anatomists on the *one hand*, and in the work of Auenbrugger, the inventor of percussion, on the other, thus creating a new conception of tuberculosis. Throughout the early part of the nineteenth century this work, helped greatly by Laënnec, went steadily on, culminating in the introduction of the compound microscope which made possible the work of Virchow and cellular pathologists, and subsequently that of Pasteur, Koch, and the bacteriologists.

The book has little to say about the statistical side of the development of our knowledge of tuberculosis, and we note with regret the absence of references to the bills of mortality which cast such illuminating light on the study of disease in the early nineteenth century. Nor can we find mention of the work of Pott, Addison, Bodington, and Cornet, all of whom made no mean contribution to the study of tuberculosis. The real difficulty in such a history is that of assimilating and sorting the mass of information, tracing the development of men's minds, and the influence of the various great schools of medical learning through the centuries. The author has not always been quite successful in this respect. The book is, however, a most laborious production and contains much important matter, including long quotations from standard texts.

Midwifery.

Third edition. By Ten Teachers. Under the direction of COMYNS BERKELEY, M.D., M.C. Camb., F.R.C.P. Lond. Edited by H. RUSSELL ANDREWS, COMYNS BERKELEY, and J. S. FAIRBAIRN. London: Edward Arnold and Co. 1925. Illustrated. Pp. 778. 24*s.*

"Ten Teachers" has already made itself so familiar and welcome a text-book of midwifery that it is not surprising to receive a third edition within eight years of the first. No introduction of the book is needed. It belongs to the increasing group of joint compilations, and the greatest pains have been taken to reap the benefits and avoid the disadvantages of this method of book-production. The present edition has been thoroughly revised and the illustrations enriched by a number of new skiagrams. So much work has been done recently on metabolism that the chapters on toxæmias of pregnancy have been largely rewritten and preceded by a brief but very clearly expressed review of normal protein and fat metabolism. Since the last edition the Section of Obstetrics and Gynæcology of the Royal Society of Medicine have investigated the subjects of eclampsia and Cæsarean section and their results are incorporated. The chapters on infant feeding have been remodelled and constitute a clear and concise exposition of the most up-to-date views on this difficult subject.

The whole work is written from the point of view of the student and practitioner and provides just those practical details that the latter needs in his everyday practice. To those who do not already know it the book can be cordially recommended.

The Changing School.

By PHILIP BOSWOOD BALLARD, M.A., D.Litt., Author of "Mental Tests," &c. London: Hodder and Stoughton. 1925. Pp. 332. 6*s.*

IN Dr. Ballard's survey of evolution in educational methods one finds the product of long experience and a progressive spirit, with a humour that possesses the essential quality of unexpectedness. A chapter on Floggers, Ancient and Modern, is not without sympathy for the difficulties of the flogger, and draws a satisfactory picture of the change that has taken place since both parent and pupil felt and showed hostility to the work of the London elementary school teacher. Such live questions as the theories of punishment, the utility of formal training, and the teaching of the classics are handled with ample discussion on all sides. Among many fresh points of view is the admission that scholars of to-day are less accurate than those of the 'eighties, with the defence that accuracy in the past was gained at the expense of other useful qualities. Certain chapters indicate that Dr. Ballard writes primarily for teachers, but the book is not pedantic, and provides useful reading for those of us who note, perhaps with misgiving, the disappearance from the school curriculum of such honoured acquaintances as the works of Euclid, or who find that in some other study the young folk of to-day no longer follow paths that we once regarded as hallowed by tradition.

JOURNALS.

Annals of Medical History. September, 1925. New York: Paul B. Hoeber. Pp. 205–318. $2.50.—This, the third number of Vol. VII., contains many interesting articles. The first, by Sir Humphry Rolleston, deals with the life and works of Caleb Hillier Parry, the well-known physician of Bath, distinguished not only by his scientific knowledge, but also by his having been the father of William Edward Parry, the famous Arctic explorer. Caleb Parry received his medical education in Edinburgh, graduating as M.D. in 1777, his thesis being a dissertation upon hydrophobia. In 1778 he married, and in the following year settled in Bath. He soon became successful, and some ten years later was making from £300 to £600 a month. One of his most remarkable pieces of work was a description, published after his death, of eight cases of exophthalmic goitre under the heading "Enlargement of the Thyroid Gland in Connexion with Enlargement or Palpitation of the Heart." For the last six years of his life he was crippled by the effects of a cerebral hæmorrhage, but although his speech was much affected his mind remained clear.—Of other papers, Dr. W. G. A. Robertson contributes one upon the "receipts" of that odd personality Sir Kenelm Digby, privateer, courtier, an original member of the Royal Society, and writer on medicines.—Dr. D'Irsay and Dr. H. B. Allyn write respectively upon the Black Death and the Mediæval Universities, and the Social and Economic Results of the Black Death. As regards the first paper we think that Dr. D'Irsay is in error when he says that the "Universities of Latin Christendom were, in the middle of the fourteenth century, in possession of the Hippocratic Corpus . . . ." There is but little evidence to show that works of Hippocrates other than the Aphorisms and the other treatises commented upon by Galen, De Prognosticis and De Regimine Acutorum, were known at the universities, even at so medical a university as Montpellier circa 1350. Incidentally, the quotation from Hippocrates given at No. 15 of Dr. D'Irsay's bibliography is so full of misprints as to be unintelligible.—Dr. Allyn's paper is interesting, but it would seem that FitzRalph's statement that there were 30,000 scholars at Oxford in his time, and that the numbers fell to 6000, must in spite of Cardinal Gasquet's apparent endorsement be disbelieved, in view of Rashdall's statements in his Universities of Europe in the Middle Ages.—Dr. J. M. Ball writes upon Ether Tragedies in reference to Morton and Wells, and above all to Dr. C. T. Jackson. Jackson suggested ether as an anæsthetic in 1846, and when he found that he had been anticipated by a then unknown country doctor, Crawford Long—who, in 1842, removed a tumour under ether—he gave Long the credit which was his due.—Mrs. Long Tayler, a daughter of Crawford Long, writes a charming account of her father.—Dr. J. M. Hayman gives the text and translation of Malpighi's treatise on the structure of the kidneys.—Among the reviews is an appreciation, well deserved, of three works by Dr. W. H. S. Jones—namely, his edition of two volumes of Hippocrates in the Loeb Library, Malaria and Greek History, and the Doctor's Oath.

Revue d'Actinologie. Paris.—The growing importance of actinology as a branch of medical therapeutics is ample justification for the new French *Revue d'Actinologie*, the second number of which has just been issued. It is appearing at present every three months and is published by L'Expansion Scientifique, 23, Rue du Cherche-Midi, Paris VI. In addition to numerous original articles on the technical, biological, therapeutic, and hygienic aspects of the subject, the editors contemplate including an analysis of all important publications dealing with radiation.

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THE LANCET.

LONDON: SATURDAY, DECEMBER 12, 1925.

CRITICISM OF THE GENERAL MEDICAL COUNCIL.

CRITICISM of the General Medical Council has been the inspiration of articles and letters in many journals of varying status and aim during the past week. We notice appeals in the press, and we have received them at this office, that we should contribute something in the nature of a reply from this journal to the charges which have been levelled at the Council for this offence or that default, and especially for removing certain practitioners from the roll of the medical profession. If only we were allowed to submit the case of a particular practitioner to scrutiny, it would not be hard to collate the facts, as they were laid before the General Medical Council, with the wording of the relevant Acts of Parliament, and then to come to an honest decision, right or wrong, as to the justice of what the Council had done. But unfortunately those who explicitly ask for our views do not confine themselves to the alleged wrongs of a particular practitioner, or even to the exercise, harmfully in their opinion, of any specific function of the Council; nor are the concrete offences or groups of offences which may bring a practitioner under the disciplinary attention of the Council made the subject of a definite complaint. The various articles, like the letters which we have received, are not possibly susceptible of reply, because they start such a multitude of different subjects. In one article fault will be found not only with the actions or attitudes of the Council, but with its constitution and its mode of election; in another the blindness of medical leaders to the virtues of the general mass of practitioners is deplored, and a recipe is given for the production of leaders of a better sort; in another the need of advertisement is dwelt upon in the interests of the public as well as of the doctor. Some ask that the General Medical Council should be composed, to various proportions, of laymen; some that medical members of the Council should be elected by laymen; some that lay members of the Council should be nominated by different lay authorities; and some that all the Council should be elected by the general vote of the various medical activities represented and not by the governing bodies of university faculties, colleges, and corporations. The avowedly hostile critics of the Council are so little unanimous that certain of them can be considered to have answered the accusations of others; but one abstention they display in common—they make little or no reference to the possible spread of abuses which are prevented by the statutory actions of the Council. The Council is described as a "trades-union," a "tyranny," or an "anachronism," but the fact is unacknowledged that without the procedures which the Council has adopted unconscientious doctors might either impose on the public with unwarranted claims, or provide the public with the ministrations of unqualified men, while taking fees for medical services. These procedures are of the highest public value, and in our opinion the fair and fearless way in which the necessary duties have been discharged should have earned the Council public gratitude.

The case of Dr. W. LLOYD has determined most of the recent attacks upon the Council. The case, as presumably all our readers know, is that of a qualified medical man who is held to have secured professional advantages through an article in the lay press, not, however, written by himself. A statement of the case was made in the House of Commons by Mr. NEVILLE CHAMBERLAIN last week (see p. 1259) and can be compared with the summaries of the proceedings before the General Medical Council in our own columns and in those of the *British Medical Journal*, when it will be seen that the charge presented certain characteristics, novel in themselves, making it inevitable that a decision against the practitioner would be received with surprise by many. Now there is no action of the General Medical Council which more, and more regularly, excites adverse comment in the press than the exercise of a power which appears to make for suppression of information. This is perfectly intelligible, and this is why all the penal cases, heard by the Council, which have been or have appeared to be on all fours with the case of Dr. LLOYD, have received similar publicity, and to some extent have drawn upon the Council similar opprobrium. There are limits to the criticism of the Council, and it has not been said by anyone that there is no need, in the interests of the public, for any authority to watch over the dissemination of medical information; but when the medical profession, through the Council, supplies that authority its employment is always resented. The critics of the Council seem to consider either that the Council possesses no right to prevent any medical man from communicating any sort of article to the lay press; or that, if the Council has such a right, the right should be withdrawn until the Council is reconstituted, so that the exercise of its authority should have some public endorsement. These deductions are forcible but not logical. In the public interest there must be some way of preventing men who happen to possess medical qualifications, and therefore to be able to speak as doctors, from assuming the position of medical experts and thrusting on public attention details of new treatments, whether devised by themselves or by others. Such proceedings must do, and indeed have done, great harm, while the medical profession, as the only body able to judge of what is new and valuable, should be expected to prevent the raising of false hopes, the exploitation of methods doomed to failure, and even the undue enhancement of individual reputations. And every responsible editor on receiving a communication from a doctor to say that he has discovered a cure acts on these identical principles: he asks a medical man whom he trusts what chances the alleged cure holds out and what professional standing the contributor enjoys. There should be no doubt about the offence committed in cases where a practitioner assumes in the lay press the position of being able to serve the public in some way better than his fellows can. This form of advertisement is a public danger and must be stopped by the Council. But there is another sort of medical article which, when it is published in the lay press, appears to fall under the ban of the General Medical Council, and we admit that we regret the fact. We mean general pronouncements on topics of health, couched in such language that the public is helped practically by reading them, and can understand the directions in which medicine can help them further. Such articles gain in value if responsible signatures are attached to them, and it is the signed medical article from the best sources which the lay press desires, quite naturally, to be able to put before readers. It is thus at one and the same time a good thing and a bad thing that medical articles should appear in the lay press with medical signatures attached, and much of the resentment which has been excited against the disciplinary decisions of the General Medical Council has been due to the non-existence of any methods of discrimination. Ought the Council to be able to exercise a discretion, ensuring that the appearance of articles of public value should not be made the subject of disciplinary supervision, while trusting both the editors and the contributors to be inspired in the circumstances by the wish to benefit the public and not to exploit the individual ?

The "Warning Notice" adopted by the Council in 1923 may be held to be abused when the spread of useful information is confused with the arts of the advertiser. That is patently true ; but so is it true that, if the Council should attempt to draw up rules indicating that certain articles signed by medical men can be published in the lay press without offence, while other articles, so signed, cannot receive similar treatment, charges of partiality would be immediately made, would be extremely difficult to refute, and would endanger the reputation of the Council for fearlessness—that exact fearlessness which we consider is the quality in the Council which has given rise to so much irritation. It has been indicated that the kind of medical article which might well be published for the general benefit would naturally be written by a leader of the medical profession, and that is obviously the kind of article which the better lay journals require for their readers. Any rules under which these articles should appear to be exempt from the adverse attitude of the Council would be interpreted as ensuring for well-known members of the medical profession a measure of publicity and a security from reproach which are denied to less prominent people. For this reason we cannot believe that any alteration in the practice of the Council could meet the dilemma satisfactorily ; while no rules will ever try out the hearts of men. Nor do we see that the appointment by Parliament of any committee of inquiry would assist either the public or the medical profession in the particular circumstances we have been dwelling upon. But the convenience of such an inquiry would be the public ventilation of the circumstances that have led to so much public heart-stirring. If some committee possessing the public confidence, and with a definite category of references, were to make a pronouncement, the disciplinary functions of the General Medical Council might cease to provide regularly an outburst of criticism, which is not confined to the Council, but includes practically the whole medical profession in charges of intolerance.

VETERINARY RESEARCH AND HUMAN MEDICINE.

The story of a South African farm could, it is said, have been told in three words—drought and locusts. But this is by no means the whole of the story ; the stock-raiser of experience could add many more chapters on the vegetable and animal pests which used to render his calling such a precarious one. Indeed, most of the minor horrors of farming seem to be rife in South Africa ; and yet on the whole the farmers prosper, and the amount of land under cultivation and of stock being raised increases every year. The explanation lies in the help in combating pests and diseases given to the farmer by the Department of Agriculture of the Union through its Division of Veterinary Education and Research. The main laboratories and experimental farms of the Division are at Onderstepoort, near Pretoria, and we give elsewhere in this issue some account of the manner in which a triple function of routine, research, and education is there fulfilled. Anyone who notes the scope of the activities of the Division must be impressed with the important part played by veterinary science in the life of the subcontinent ; but however great the needs of the community, it is hardly likely that the institute for veterinary research at Onderstepoort would have been expanded to such a scale had it not been for the fortunate coincidence of the man capable of developing it and the Government capable of appreciating the man. PAUL KRUGER recognised the genius of ARNOLD THEILER and gave it full play ; later, MILNER, BOTHA, SMUTS, and HERZOG pursued the self-same policy. The result is an institute of comparative pathology where is being carried out research of importance not only to veterinary but also to every other branch of scientific medicine.

The extraordinary value that work under these conditions may have is easy to perceive. The student of human diseases sooner or later turns to the experimental method. It is inevitable that this should be so. The time must come when the question arises, What would happen if such a reaction were modified in such a way ? and the experimenter seeks to produce infection of a laboratory animal. But he is then met with the very reasonable criticism that he is no longer dealing with disease as it naturally occurs. The infections produced in his laboratory animals differ fundamentally from their very inception from those occurring in human beings ; the whole course of the disease is different, and the fallacies inherent in this method of investigation may be so great as to render it worthless. It is for this reason that the necessity for the closer study of diseases occurring naturally in animals is so urgent. The elucidation and cure of such diseases as horse-sickness, lamziekte, quarter evil, and the like is of immediate practical importance, but it is still more important for the veterinary scientist to study by the experimental method disease as it occurs naturally. If he wishes to produce active immunity he can work with attenuated living viruses. If he wishes to investigate that enormously important subject the infections of mucous membranes, he has unimpeachable material at hand ; he is not reduced to swabbing a rabbit's throat with pure cultures of streptococci, or feeding the creature with bile and typhoid bacilli.

It is thus from a broader point of view than the merely utilitarian that the development of a living science of comparative pathology is so desirable, and it is Sir ARNOLD THEILER'S peculiar merit that he has had the vision to appreciate this. Onderstepoort was founded to meet the needs of the farmers, and nothing is allowed to interfere with the routine duties of the institute. But always the ideal of research has been upheld by the director. To him no routine investigation is so dull and hackneyed that it ceases to ask a question ; no problem is either too difficult or too elementary to merit consideration. The whole institute is permeated with his controlled enthusiasm, and it is a research centre of which any country would be proud.

EPSOM COLLEGE.

DR. RAYMOND CRAWFURD, as Chairman of the Council of Epsom College, addresses our readers with eloquent pertinacity on another page. In dealing with the progress of the College during the past year he acknowledges the support of many additional annual subscribers, and hopes that in the year to follow a still larger number of new supporters may present themselves. We share his hope, for the College does splendid work, and a large subscription list must be always the backbone of the resources necessary to maintain institutions of which it is a fine example. Good fortune in legacies and benefactions is to be welcomed as implying public confidence, but legacies necessarily are accompanied with the loss of good friends, while benefactions when they arrive, though they possess the charm of unexpectedness, have the drawback, from a treasurer's point of view, that they cannot be counted upon. A large and regular income from subscriptions is the ideal of every treasurer, so that plans for improvement and development can be entered upon with the surety that implies not only a successful but an economical carrying-out. Dr. CRAWFURD indicates many directions in which Epsom College is developing and in which provision should be made for further material improvements, but of these none can appeal more directly to medical men than the proposal to build a new infirmary for the school. The present infirmary is not constructed according to the requirements either of modern medicine or up-to-date nursing, and, moreover, is not economical to run. The provision of a new infirmary would cost from £15,000 to £20,000, a serious sum for the contemplation of the College authorities, but one which wider support from the medical profession would soon render available. The best provision for the sick in a population like that of Epsom College, which is increasing under steady success, is a responsibility upon the medical profession which will be recognised readily. It is a point worth noting, moreover, that the present infirmary when vacated would give accommodation to 45 more boys, an addition to the total number of the school which would be a financial economy, bringing in more money and entailing no commensurate cost; admission would also be provided for some 10 per cent. of a gratifying but over-large waiting list.

We may be repeating words which we have written in substance on previous occasions, when bringing before our readers the claims of Epsom College, but it should never be forgotten that the greatest anxiety which the medical man may have is in regard to the education of his children. He pursues a profession which even after an extended period of practice may not enable him to make large savings; further when success arrives, outgoings maintain a proportion which renders wealth a rare occurrence; and any physical incapacity may remove all chances of practice. Everything should be done to ensure education for the children of our colleagues, and that provided at Epsom need fear no comparisons with the work of other big public schools.

ORDER OF ST. JOHN OF JERUSALEM AND THE BRITISH RED CROSS SOCIETY.—At the last meeting of the Joint Council the resignation of Dr. F. N. Kay Menzies as Director of the Council's Hospital and Medical Services Department, in consequence of his appointment as Medical Officer of Health for the County of London, was accepted. At the same meeting Mr. R. H. P. Orde, B.A., was appointed Acting Director of the Hospital and Medical Services Department.

Annotations.

"Ne quid nimis."

CONSOLIDATION OF WORKMEN'S COMPENSATION ACTS.

THERE is good ground for hope that a Bill to consolidate the Workmen's Compensation Acts will pass through Parliament before Christmas. Anyone who tries to work at present with the original Act of 1906, overlaid and interwritten with its many subsequent amendments, has a difficult palimpsest to decipher. Moreover, the whole subject has now emerged from the tentative and experimental state and has been shaped by experience into something recognised as workable and reasonably permanent. It was time, therefore, to restate the law in a convenient form. The new Bill clears away the 1906 Act, the two Silicosis Extensions of 1918 and 1924, the Illegal Employment Act of 1918, and most of the amending statute of 1923. The principal surviving passages of the last-named enactment which the Bill does not propose to repeal are the provisions for amendment (by the Registrar of Friendly Societies) of the scales of compensation under certified schemes, certain provisions as to notification of accidents, and those as to first-aid and ambulance arrangements—these last being matters which belong less to the law of workmen's compensation than to the law of factories and workshops whereof the amendment and consolidation are long overdue. So far as we have been able to check it, the Bill appears to reproduce the existing law with fidelity and to add nothing that is new. Only one minute alteration is discoverable. The Workmen's Compensation (Silicosis) Act of 1918 empowered the Home Office to set up schemes for the payment of compensation by employers of workmen in specified industries involving exposure to silica dust, and added that the Rules Publication Act should not apply to such schemes. The exclusion of the Act as a whole appears to have been an oversight. What was presumably intended was merely that Section 1 of the Rules Publication Act (prior publication of proposed schemes) should not apply. Section 3 (printing and official publication of schemes) was not meant to be ruled out; at any rate, the Home Office has always complied with its provisions. This alteration in the Bill is trivial and technical; we cite it only to show that apparently the sole change in the Bill is the correction of a minute error. The Bill will not pass through Parliament at this crowded period of the session unless it is treated as a non-contentious measure. It will not be so treated unless the fact is known that it merely repeats the law and neither introduces nor immediately invites any substantial change.

SCIENCE AND RELIGION.

THE difficulties between science and religion are no longer of the sort which led self-confident mechanists and those who believed in the verbal truth of Genesis into a hopeless impasse, and no one is much concerned nowadays about the Flood, nor indeed about a good many other things which have from time to time been supposed to constitute the fundaments of sound religion. To some it even seems that there is now no substantial disagreement in outlook. Organised religion has given up most of its dogmas which came to be at flat variance with ascertained fact, and there is little or no practical difficulty in any man being a sincere physicist and a sincere churchwarden. Easy minds can satisfy themselves with the reflection that religion and science deal with different and discrete compartments of human experience, and that there is no need to mix them up. But this simple pragmatism is shirking what is still a real difficulty. Religion and science both claim, and must needs claim, to be in the end a complete explanation of the world. No dualism will satisfy, and the discussion has developed now into the question whether a spiritual or a physical conception more nearly expresses reality; it progresses into the question whether the two conceptions are necessarily different and, most significant of all, those who take part in it are nearly always trying to find a basis of unification and common agreement rather than to emphasise points of dialectical divergence. At the moment, indeed, there seems to be less disagreement among those who try to cross the border in either direction than among those of either persuasion who keep to their own side of the line; neither science nor religion are harmonious wholes. Their relations to human experience are dealt with from a variety of aspects and with some differences of opinion in a volume[1] recently published. Earl Balfour says little more than that the truth is very uncertain, but the rest of the essays are all solid and provocative reading, and the general summary and discussion with which the Dean of St. Paul's concludes is most helpful. Dr. Charles Singer provides an interesting historical discussion, and the editor, Mr. Joseph Needham, contributes an amusing claim for the supremacy of biochemistry. We are inclined to regard Prof. Eddington's article on the Domain of Physical Science as the hub of the whole discussion; it cannot be followed in detail here, but the pith of it is the suggestion that the mind is more important than has been supposed in prescribing the nature and laws of the physical world, and that by its selection of values the mind may create its physical environment. It looks as if we shall soon progress to a more adequate conception of the inanimate, animate, and spiritual worlds as forming a coherent and consistent whole. Mr. E. Haigh, who has for many years been a teacher of physical science, has written a much slighter, more elementary book[2] on the same theme and indicating the same conclusions. A good deal of the book is made up of quotations from such a variety of writers as testifies to the width of the author's reading, but the method is irritatingly discontinuous to the reader, and Mr. Haigh would have done better to state his argument in his own words. His thesis is that there is no disharmony between religion and science, and that any attempt sharply to separate the physical and psychical fields of experience is unsatisfactory.

LANOLIN IN THE TREATMENT OF EXTENSIVE BURNS.

THAT "lanolin is the application which gives best results in the treatment of extensive and deep burns" is the opinion of Dr. Bellet,[3] médecin-en-chef in the French Navy. Serving in the great Saint-Mandrier Hospital at Toulon, he has had much experience of burns, especially in 1924, when he had under his care the 13 victims of a cartridge explosion in a casemate of *Patrie* in May and 10 men scalded when a steam-pipe burst on board *Courbet* in August. Other forms of treatment he considers unsatisfactory. Picric acid sometimes causes irritation and gives pain later, though it soothes at the first dressing. "Gomenolised" oil, the French equivalent for eucalyptised oil, drains away and leaves adherent dressings. Ambrine is good, but dressing takes a long time and healing does not occur so soon as with lanolin. Pure lanolin is a little irritating in summer, and about 20 per cent. of vaseline should then be added. Its use for the treatment of burns has long been recommended by French surgeons and was fathered by Inspector Girard, who advised Dr. Bellet in the cases reported. The results recorded were satisfactory. Of the ten men from *Courbet* who were scalded by super-heated steam, three succumbed (on the first, second, and tenth days), but the remainder were cured in six weeks, and discharged without contractions, awkward adhesions, scars or limitation of movements. The pain usually involved in dressings was noticeably absent and lesions on the head, face, and hands were sometimes cured within 20 days. Dr. Bellet gives the following account of his procedure: At the first dressing the burnt surfaces and a wide area around must be disinfected. The skin is always dirty, and compresses of spirit-soap will clean it. These are surprisingly well borne at first, and when they have done their work the burns are washed with much boiled water or weak permanganate solution. Blisters are opened, dead tissue is cut away—saving all the epidermis possible—and the wound is washed with normal saline and dried with sterile gauze. Finally, compresses soaked in sterilised lanolin with 20 per cent. of vaseline kept fluid in a water-bath, are adjusted over the burns, and over them is placed gauze and absorbent cotton. Large dressings should be prepared beforehand, to save time and shock to the patient. Gloves, instruments, and dressings must all be sterilised as if for a surgical operation, and this must, of course, be done also at subsequent dressing. At first the applications are changed daily, but there is no pain or bleeding, for they do not stick. After the dressing is removed, and any sloughs taken away, a washing with weak permanganate is followed by another with normal saline; the area around is cleaned with alcohol or ether; the whole is dried, and the dressing is re-applied. If all has been done well, the wounds are dry. The improvement under lanolin is said to be rapid; there is little discharge, and sloughs are quickly cast off. The wounds soon have rosy granulations and in a week bluish islands of epithelium begin to appear and a healing edge to form. And there is generally no surrounding inflammation nor pus.

TUBERCULOSIS IN CHILDREN.

THE statistical work of Mr. Godias J. Drolet is well known in this country, and his recent review[1] of the mortality in childhood during the past quarter of a century in New York City deserves attention. Mr. Drolet states that in 1868 1191 infants died of tuberculosis per 100,000 children under 1 year of age in New York City. Thirty years later, in 1898, this mortality-rate was already down to one-half, or 609, and by 1923 it had been reduced to 94 per 100,000. Taking the deaths from tuberculosis among children up to the age of 15 years, it is shown that the mortality-rate of 136 per 100,000 in 1898 had been reduced to 33 per 100,000 in 1923—in other words, a reduction of 76 per cent. Tuberculous meningitis causes half of these deaths, and pulmonary tuberculosis comes next in the list. Another fact emphasised in the statistics is that abdominal tuberculosis in childhood has not been responsible for such a high mortality as in Great Britain. During the past two years there have been no deaths from tuberculous peritonitis in childhood in New York, which is striking in view of the fact that 98 per cent. of New York milk is pasteurised. Mr.. Drolet attributes the more effective prevention of tuberculosis in childhood in America first to the spread of knowledge about contagion, and, secondly, to the improvement in preventive measures, such as increased hospital accommodation, systematic disinfection, and the pasteurisation of the milk-supply, all of which have diminished the risk of massive infection of children with *B. tuberculosis*.

In the same journal[2] Dr. B. S. Herben and Dr. M. A. Asserson make a statistical study of tuberculous meningitis from birth to the age of 15 years, touching first on the vexed question of the portal of entry in tuberculous meningitis. In the series of 115 cases dealt with the authors obtained definite history of contact in 56 per cent., a history of probable contact in 18 per cent. and suspicious history in 10 per cent., and no history in 16 per cent. They consider the theory of milk infection to be untenable in these cases because in New York City 98 per cent. of the milk-supply is pasteurised. The influence of tenement houses, of diseases such as measles and whooping-cough, and of sex and of age are all discussed as ætiological factors. The fact that about 9 per cent. of the cases were preceded by tonsillectomy unassociated with any other disease leads the authors to the conclusion that further research on this line is necessary. The greatest number of cases of tuberculous meningitis in any single age-period was found in children between 1 and 2 years of age, whilst, in terms of absolute numbers only, outside of the American stock there were more cases of tuberculous meningitis amongst the Italians than in any other racial groups comprised in the series. One of the most interesting sections of this study is that which deals with the investigation of housing conditions as an ætiological factor. This lays emphasis on a very valuable point. The part played by zymotic diseases as a predisposing cause is, of course, well recognised, but the connexion with operation for tonsillectomy is an isolated factor in the inquiry which certainly needs further investigation.

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[1] Science, Reality, and Religion. Essays by the Earl of Balfour, B. Malinowski, C. Singer, A. Aliotta, A. S. Eddington, J. Needham, J. W. Oman, W. Brown, C. C. J. Webb, and W. R. Inge. Edited by Joseph Needham. London: Sheldon Press. 1925. Pp. 396. 12s. 6*d*.

[2] Religion and Natural Science. By E. Haigh, M.A., B.Sc. London: Student Christian Movement. 1925. Pp. 170. 3s.

[3] Arch. de Médecine Navale, 1925, iii., 109.

[1] American Review of Tuberculosis, 1925, xi., No. 4.

[2] Ibid., 1925, xi., No. 3.

At the moment it would appear to be useless to speculate on this point without further data, and especially without controls. That the mortality-rate in tuberculosis in childhood has fallen with such marked rapidity during the last quarter of a century is a demonstration of the value of the antituberculosis campaign in New York.

PERMANENT CARE OF THE FEEBLE-MINDED.

IN the history of social progress in the twentieth century the Lancashire and Cheshire Society for the Permanent Care of the Feeble-minded[1] occupy an honourable position. They were pioneers in obtaining recognition for the fact that inborn mental defect is a permanent condition requiring life-long care, and their colony at Sandlebridge was the first of such establishments founded in England to meet a need even now inadequately supplied. On the occasion of the opening of a new recreation hall in the earlier part of this year reference was made to the remarkable beginnings of a work which is still incomplete. Twenty-eight years ago Miss Mary Dendy, now President of the society, set out to collect evidence which would induce the School Board for Manchester to adopt the then tentative experiment of special schools. First working single-handed, and later with the help of the late Dr. Henry Ashby, she discovered 500 defective children actually in the class-rooms. A further series were so grossly afflicted that school attendance had been excused. "Most of these cases were very severe, and many were pitifully neglected. One lad we found tied up in a cellar naked and howling."

By the time the survey was completed it was realised that special schools were not going to solve the problem. A permanent home was needed and protective legislation to keep the children safe and so to safeguard society from them. The statement of these aims seems obvious to the point of triteness to-day, but in 1897 the opposition aroused was fierce and almost universal. Even mental specialists considered that it was unjustifiable to put a stigma on any child by saying that he could not become normal, even if this was the obvious truth. From discouraging beginnings, however, indomitable pluck and hard work have built up the flourishing colony of to-day. Sandlebridge now shelters 212 inmates over 16 and 108 children. Over 200 adults have been there from an early age, some of them over 20 years. As all who have visited the colony know, they live under admirable conditions. A large farm and market gardens not only supply the older men and boys with a healthy and satisfying occupation, but provided produce for the institution to the value of over £2000 in 1924. Both males and females are trained in a variety of skilled trades which utilise the gifts of all, and make the colony almost self-contained as regards labour, if not financially self-supporting. The school has been extended during the year, but the pressure in places is very great, and speaks eloquently of the need for similar institutions elsewhere. It is disappointing that local authorities should still refuse to exercise their right of maintaining defectives after the age of 16, even though, as in two cases quoted in this report, the lads are of proved criminal tendencies. The instinct of the ordinary man, who revolts against the idea of permanent confinement and demands that the experts should prove their case in every instance, is none the less a sound one. The appeal of Sandlebridge and other colonies will be all the stronger when it is realised that they are required for selected cases only out of the feeble-minded population, and that special schools and home supervision will suffice for the majority. In view of the high reputation of this colony and the indispensable work it is doing, a fall in subscriptions of over £265 for the current year is regrettable. A suggestion that the debt of £3000 incurred for a much-needed recreation room and additional beds should be paid off in commemoration of Miss Dendy's long years of service is worthy of wide support.

ENCEPHALITIS FOLLOWING VACCINATION.

AT a recent meeting of the Académie de Médecine of Paris Dr. F. S. van Bouwdyk Bastiaanse[1] and Dr. Terburgh, of The Hague, in collaboration with Dr. Byl, of Utrecht, and Dr. Levaditi, of Paris, made an important communication dealing with the occurrence in Holland of encephalitis following vaccination. During the course of 18 months there had been 34 cases of which 14 were fatal. The first case developed in March, 1924, and was followed by the second in April, the third in July, and five more in September. The next two occurred in February, 1925, the largest number in one month—viz., 10—being notified in March, followed by seven in April, and the last at the end of June. The clinical course was as follows. After a period ranging from 9 to 15 days after vaccination, the interval in the great majority being 10 or 11 days, an acute and violent cerebral condition developed. The first symptoms were vomiting and headache followed by increasing drowsiness. The following days convulsions appeared affecting one side or one extremity only. Babinski's sign was present in all cases in which it could be investigated. In only one case which ended fatally was there any paralysis—viz., hemiparesis accompanied by paresis of the frontal branch of the facial nerve. In the cases which recovered the acute stage lasted from 7 to 15 days. There were no sequelæ. The condition was obviously one of encephalitis, as meningitis could be excluded by the normal condition of the cerebro-spinal fluid, poliomyelitis by the absence of paralysis, and tetanus by the absence of trismus, convulsions, and the characteristic facies. The disease differed from epidemic encephalitis and the ordinary encephalitis of children in the following respects. The great uniformity of the symptoms as contrasted with the variable picture of epidemic encephalitis. The shortness of the acute stage, the absence of paralysis, particularly of the eye muscles, the presence of Babinski's sign, and the absence of sequelæ were distinctive. In two cases in which the brain was examined histologically the lesions were chiefly localised in the white substance, whereas in epidemic encephalitis they are mainly situated in the grey substance with a predilection for the mesencephalon. In some cases the vaccination pustules were very pronounced, but as a general rule the vaccinal reaction was normal. The lymph employed in the 31 cases did not come from the same calf but from ten different animals, and the lymph used for vaccinating these animals was derived from five different sources, two strains being of Dutch origin, one from Berne, one from Hamburg, and one from the Dutch Indies. In discussing the nature of the encephalitis the writers regard the possibility of a vaccinal encephalomyelitis as unlikely, as the vaccine did not show any exceptional neurotropic affinity, and numerous inoculations of rabbits with the patients' cerebro-spinal fluid remained negative. A more likely hypothesis appeared to be the activation of a dormant virus in children who were carriers of epidemic encephalitis. This view was supported by the following facts: (1) Most of the cases occurred at a season of the year when a recrudescence of epidemic encephalitis was to be expected. (2) Attempts to transmit the disease to animals failed, which is the rule in epidemic encephalitis. There was a further possibility of the affection in question being caused by some unknown virus which was capable of producing a particular form of encephalitis under special conditions.

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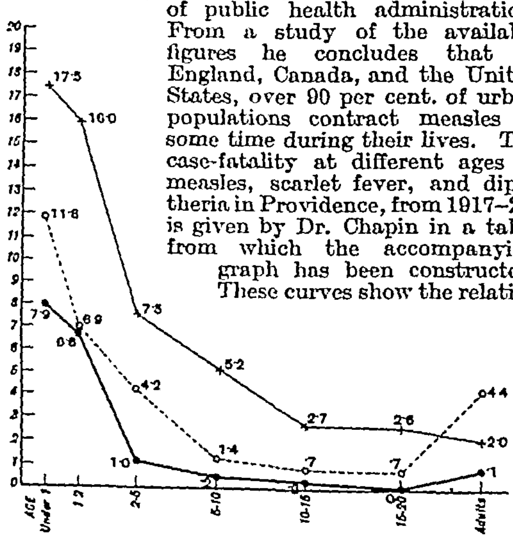
[1] See Twenty-sixth Annual Report for 1925 of the Society, 12, Bridge-street, Manchester.

[1] Bulletin de l'Académie de Médecine, 1925, xciv., 315.

SOME EPIDEMIOLOGICAL STUDIES.

RECENT issues of the *American Journal of Hygiene* contain valuable contributions to epidemiology. In the September number Dr. C. V. Chapin, the distinguished veteran health officer of Providence, R.I., reviews the incidence of measles in that city, 1858–1923. Recently there has been a periodicity of a little over two years, but longer intervals were experienced in the earlier period. Dr. Chapin's comparison between sickness and mortality curves since 1907 clearly shows the inutility of mortality statistics for purposes of public health administration. From a study of the available figures he concludes that in England, Canada, and the United States, over 90 per cent. of urban populations contract measles at some time during their lives. The case-fatality at different ages of measles, scarlet fever, and diphtheria in Providence, from 1917–24, is given by Dr. Chapin in a table from which the accompanying graph has been constructed. These curves show the relative importance as causes of death at different ages of measles, scarlet fever, and diphtheria, and, when checked by a separate statement of the actual number attacked by each disease, indicate the scope of preventive medicine in respect of each disease.



Experience in Providence, R.I., of case-fatality of three chief children's infections.

Diphtheria: upper (continuous) line. Scarlet fever: middle (dotted) line. Measles: lower (continuous) line.

In the same number of the journal is an account of an outbreak of 116 cases of scarlet fever due to ice-cream, traced to a person engaged in the process of manufacture, who was suffering from scarlet fever at the time. A filtrate prepared from a culture of hæmolytic streptococci, isolated from this ice-cream maker, gave typical reactions on persons known to be Dick-positive.

The November issue contains a study of multiple cases of infantile paralysis in 253 families. A large proportion of the so-called secondary cases were found to arise from a source common to them and to the respective primary cases, while a much smaller proportion of secondary paralysed cases in the same family, which occurred within 10 to 18 days after the primary cases, can be regarded as probable true secondary cases. It is inferred that the period of incubation of the disease varies between 10 and 18 days, and that the search for the source of infection should centre round about the fourteenth day before the onset of acute symptoms. It would appear also that the period of greatest infectiousness is within the first three or four days of the acute stage of the disease. The investigators, Dr. W. L. Aycode and Dr. Paul Eaton, make a comparison of multiple cases in households of measles, scarlet fever, and infantile paralysis.

MYOMECTOMY FOR FIBROIDS.

IN an article recently published in our columns[1] Mr. Victor Bonney described myomectomy as the treatment of election for fibroids. By his definition this means that he considers conservation of the uterus the ideal to be aimed at whenever the organ, apart from the tumours, is reasonably healthy. Such an ideal is probably present in the mind of most gynæcologists confronted with a case of fibroids in the child-bearing period; but technical difficulties, uncertainty about the risk of death, and a doubt whether a functionally useful organ may be preserved without risk of recurrence of the growths often sway the mind in favour of hysterectomy. Myomectomy is very frequently done, of course, where there are only one or two fibroids discovered, and these are submucous; but its exponents are not satisfied with this limited use. In the hands of Mr. Bonney good results are undoubtedly obtained, and his contributions to the literature of the subject and the excellent technique and instruments he has evolved will do much to make the operation popular. In a paper read at a meeting of the North of England Obstetrical and Gynæcological Society on Oct. 16th, Dr. Leith Murray, of Liverpool, also gave an encouraging account of 60 cases treated by myomectomy, and deplored the fact that so large a number of women suffer removal of their uterus when it might be saved. It may be objected, however, that the very expert operator who has developed a special technique may get exceptional results, and that the procedure is not one for everyday use. The question of mortality-rate is somewhat vexed at present. In Mr. Bonney's series of 220 cases the rate was nearly 2·1 per cent., which, he considers, compares favourably with that for hysterectomy. Dr. Arthur Giles, however, disputes this view, and states that although he has done 203 myomectomy operations (mainly in women under 40) with but three deaths, his death-rate for the last 1000 hysterectomies has been only 0·6 per cent. Taking also into consideration the possibility of recurrence, he thinks that hysterectomy is certainly the better operation after the child-bearing age is over. At the discussion following the reading of Mr. Bonney's paper at the Royal Society of Medicine, London, at which Dr. Giles made these comments, Lady Barrett said that she had commonly found microscopic myomata in uteri which contained multiple seedling tumours, especially in women of from 30–36 years of age, and that an attempt to remove the seedling tumours would leave the microscopic ones to grow later. But Mr. Bonney considers the fear of recurrence an unsubstantial bogy. The seedling tumour is, he thinks, probably formed much earlier in life than has hitherto been believed—probably in the 'twenties—and the formative agent, whatever that may be, ceases to act after a period. There is at any rate this to be said, that seedling fibroids may not interfere with the physiological functions of the uterus, and myomectomy, which is not effectual in removing all the growths, may tide the patient over till she has passed the child-bearing age, after which the radical operation may be performed. Dr. Murray is convinced that a uterus much mutilated at the operation may undergo involution and heal with a negligible risk of weakness in any future pregnancy, whilst the sentimental value of the conserved uterus and its effect on the later history of the patient is certainly very considerable. All the authorities are agreed that extensive myomectomy may be followed by pregnancy, and that the operation can be done without producing abortion in pregnancy. Dr. Giles has done myomectomy in 18 pregnant women, all but one of whom went to term. But the comment of Mr. Gordon Luker that rest and sedatives are nearly always effective in relieving the symptoms of fibroids in pregnancy may well be borne in mind. Many women do not want children, and until it is proved that no extra risk is incurred by the extended operation the point of view of the patient is obviously very important.

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[1] THE LANCET, Nov. 21st, 1925, p. 1060.

UNIFICATION OF POWERFUL MEDICAMENTS.

THE Second International Conference on the Unification of the Formulæ of Powerful Medicaments was held at Brussels from Sept. 21st to 26th last, when Sir Nestor Tirard represented the General Medical Council, Mr. Edmund White the Pharmaceutical Society of Great Britain, and Dr. G. F. McCleary the Ministry of Health. Prior to the Conference the British delegates held several meetings to discuss the programme submitted, and to draft a document representing their views. The Conference was attended by some 50 delegates sent from 27 powers, several of whom had forwarded reports upon the programme. These were circulated and were reported upon by special committees, and were then discussed at full meetings of the Conference. Of the ten questions in the programme to be considered, one relating to international regulations for the sale of narcotic drugs was withdrawn, as this subject had already been dealt with at a conference of the League of Nations. The other questions were discussed, with results which were embodied in a series of resolutions, of which the more important were these. The Conference advised the recognition of biological methods of standardisation which have been or may be recommended by the Health Section of the League of Nations. It approved of the formation of an International Secretariat for the unification of pharmacopœias, while recognising that the conditions of its establishment must be determined by the League of Nations. Similar reservations applied to the proposed formation of two other international committees for the investigation of assay processes and of methods for making galenical preparations. The British delegates, while in general agreement with the recommendations of the Conference, have notified certain reservations in their report to the Government. These reservations deal with methods of estimation of fluid preparations, with some of the proposed standards, and with some of the proposed alterations in nomenclature. The proposals remain inoperative until officially accepted by the several Governments. It may be said, however, that the nomenclature proposed by the Conference for international adoption does not differ materially from that of the First International Conference and follows closely that of the British Pharmacopœia.

PUBLIC HEALTH ADMINISTRATION.

THE whole question of the Poor-law was considered by a Royal Commission appointed in 1905, which reported in 1909. Majority and minority reports were made, differing on important points, and in 1917 a committee known as the Maclean Committee was appointed "to consider and report upon the steps to be taken to secure the better coördination of public assistance in England and Wales and upon such other matters affecting the system of local government as may from time to time be referred to it." This committee succeeded to a great extent in reconciling the majority and minority reports of the Royal Commission. It recommended the abolition of the boards of guardians and the transfer of their functions to local authorities—normally county and county borough councils—on certain stated lines. The Maclean Report was accepted by the Government in 1919, and last May the House of Commons accepted without a division a resolution to the effect that legislation on the lines of the Maclean Report should be passed, including "a complete absorption of the existing Poor-law authorities and their functions in the county, borough, and district councils." On that occasion the Minister of Health made it clear that, while he accepted the principle of the resolution, he must not be understood as accepting the whole of the proposals of the Maclean Report. He added that it was the intention of the Government to consider the whole question anew, and, following the precedent set in rating and valuation, to discuss it fully with all the local authorities concerned.

Certain provisional proposals have now been circulated from the Ministry of Health to associations of local authorities, the L.C.C., and others concerned as the first step in this process of discussion. Generally they have been drawn up on the lines proposed by the Maclean Committee, but greater freedom is given to local authorities in arranging for the performance of the transferred functions, while new provisions are included with respect to the financial relations between the Ministry of Health and local authorities. These provisional proposals should enable local authorities to offer constructive suggestions of a definite and concrete kind, while it should be clearly understood that the Minister holds himself at liberty to modify or vary them in any particular in the light of the comments or suggestions to which they may give rise.

EXANTHEMA MILIARIFORME.

UNDER this title Prof. M. Manicatide,[1] director of the Pædiatric Clinic at Bucharest, and his assistant, Dr. A. Schiler, report five cases in children, aged from 6 weeks to 4 years, of a new acute exanthem, which was first seen in a creche at Bucharest in 1918, and ten years later in another creche in the same city, when it formed the subject of a communication by Dr. M. Danila and Dr. Stroe to the Société de Biologie of Paris. The incubation period is probably five to eight days, and usually escapes notice altogether, as the only symptom at this time is a slight cough. The invasion, which lasts one to three days, sets in abruptly with fever, profuse sweating, and catarrh of the buccal, pharyngeal, nasal, bronchial, and occasionally conjunctival mucous membranes, though the intensity of the catarrh is never very great. The eruption lasts three to four days and consists of two stages. The first or scarlatiniform stage is characterised by a general or local erythema, and the second by a vesicular or miliariform eruption. The disappearance of the vesicles is immediately followed by desquamation, which is fine and branny in character, sometimes being hardly apparent. When there is only a single crop of rash, the disease is of short duration, but it may assume a prolonged course when the eruption appears in several crops which are either separated from one another by a short interval, or subintrant with coexistence of a scarlatiniform eruption, miliaria, and desquamation. Examination of the blood during the scarlatiniform stage almost invariably shows a predominance of the mononuclear leucocytes. During the vesicular stage the blood returns to its normal condition. General enlargement of the lymphatic glands and increase in size of the spleen are the rule. Exanthema miliariforme must be distinguished from the eruption described by American writers under the name of exanthema subitum, which it resembles by its short invasion and catarrh of the mucous membranes, but the critical fall of temperature coinciding with the appearance of a morbilliform eruption is distinctive of exanthema subitum. The disease which exanthema miliariforme most closely resembles is sweating sickness. The latter, however, is a grave contagious disorder which affects adults, whereas exanthema miliariforme is a mild disease which attacks children only, especially infants, and never their mother or nurse. The prognosis is invariably favourable and the treatment symptomatic.

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[1] Bulletins et Mémoires de la Société Médicale des Hôpitaux de Bucarest, 1925, vii., 146.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CLI.—THE TREATMENT OF SPASMOPHILIA.

Spasmophilia is a term which includes infantile tetany, both in its obvious spasmodic forms of carpopedal spasms, convulsions, or laryngismus, and also in its latent forms. In the latter recognition rests on the appearance of Chvostek's facial sign, Trousseau's sign (muscular spasm on pressure over large arteries or nerves), or Erb's sign of increased excitability to the galvanic current. The condition being a symptom-complex rather than a disease the treatment must be directed towards a correction of the underlying error of metabolism or nutrition, as well as towards an alleviation of the more urgent spasmodic symptoms.

The many advances during the past seven years in our knowledge of the factors concerned in the production of spasmophilia are due directly to researches into the chemistry of the blood, made possible by recent developments of micro-chemical methods of analysis. Prior to these but little advance had been made for a hundred years. The treatment advocated in the text-books of 1920 (and even later) differs very little from the sedative, purgative, and hot-bath treatment of the text-books of 1820. It had long been known that there was a close association between infantile tetany and rickets; that tetany was peculiarly prevalent during the winter and spring months; that digestive disorders were a strong predisposing factor. But now we can add to these clinical observations certain facts gathered from experimental and chemical investigations which point us more directly towards the exact nature and causation of the condition. A preliminary re-statement of some of these will make clearer the principles of treatment to be detailed later.

Biochemical Considerations.

1. Measures which lead to an alkalosis increase the spasmophilic symptoms, while the administration of acids has a contrary effect. An example of this is the not uncommon occurrence of a case of mild latent tetany being thrown into active carpopedal spasms by the administration of large doses of alkalies, either by the mouth or in the process of blood transfusion.

2. The rôle of an alkalosis in the production of tetany is confirmed by a study of the examples of tetany in adults which may follow forced expiration and excessive vomiting. In each case the body is being depleted of acid radicles, CO_2 being washed out of the blood in "hyperpnœa tetany" and HCl being lost in the vomited stomach contents in "gastric tetany."

3. The most constant chemical fault in infantile tetany is a diminution of the calcium content of the blood. The normal level is about 10 mg. per 100 c.cm. of blood. If for any reason it falls to a level of about 8 mg. per 100 c.cm. spasmophilic symptoms will result.

4. The calcium content of the blood may be reduced under any of the following conditions: (*a*) Deficiency of calcium in the diet—e.g., use of a too dilute sweetened condensed milk. (*b*) Deficient absorption of calcium from the bowel—e.g., in intestinal indigestion where there is an excessive loss of calcium in the stools. (*c*) Lack of exposure to sunlight—e.g., a seasonal fall of calcium in the winter months has been demonstrated. (*d*) Diseases of the parathyroids.

5. Where a sufficient calcium is available for absorption a restoration of a lowered blood calcium can be brought about or helped by: (*a*) Administration of acids, especially in the form of hydrochloric acid or ammonium chloride. (*b*) Exposure to direct sunlight, or artificial ultra-violet rays. (*c*) Administration of cod-liver oil, when a diet deficient in vitamin-containing fats has been a factor. Treatment based on these points is being found by clinicians to yield satisfactory results. Readers wishing to go more deeply into the subject should consult the writings in recent years of Howland and Marriott, J. B. S. Haldane, Casparis and Kramer, Scheer and Salomon, Adlersberg and Porges, Paton and Findlay, Burns, Gyorgy, and others.

Management of a Case.

Management includes (*a*) general measures devoted to a correction of errors likely to affect calcium utilisation or produce alkalosis; (*b*) emergency measures directed towards a relief of the urgent spasmodic symptoms such as laryngospasm, convulsions, &c. In a mild or latent case general measures will suffice, and should be continued until all evidence of spasmophilia disappears. In a severe case with spasmodic symptoms the general treatment must be promptly instituted and eagerly pursued, and reinforced by some method of local and symptomatic treatment.

General Measures.—In the child's diet and digestion lies the fault in the majority of cases of idiopathic infantile tetany occurring in the winter months, the lack of sunlight acting as an "accessory after the fact." An ample supply of calcium must be provided and any errors of digestion corrected to ensure efficient absorption. After a few hours' starvation, while a purge is being given, a suitable diet of cows' milk should be prescribed or, when possible, breast milk should be given. Additions should be made to the diet of foods relatively rich in calcium—for example, cabbage, turnip, and oatmeal—given in the form of vegetable purée, with the addition of oatmeal gruel. If there is any doubt about the supply of calcium in the diet calcium chloride in doses of 10 to 15 gr. two or three times a day should be added. Intestinal indigestion should be treated on the traditional lines of cutting down the intake of fat and excess of carbohydrates and giving an increased amount of protein. Skimmed cows' milk or protein milk serves as a suitable basis of such a diet. Potatoes, bread, and rice, containing relatively little calcium, should be replaced by vegetable purée, oatmeal, junket, and meat. An initial dose of castor oil should be followed by a daily powder containing calomel, rhubarb, and ginger suitable for the age of the child. Cod-liver oil plays a part in the absorption or utilisation of calcium and should be given in all cases. A teaspoonful of a 50 per cent. emulsion twice a day suffices.

The chief hygienic measure is to have the child nursed as much as possible in the open air and sunlight. The modern fashion of withdrawing children from out-of-doors sunlight to indoor artificial light treatment is to be deplored; but at certain seasons, and in large industrial towns, a daily exposure to mercury-vapour lamp will serve as a useful supplementary method.

Most important, however, of the measures of general treatment is the systematic administration of acids, best given as hydrochloric acid or ammonium chloride. A child of 12 months should have up to half a drachm of acid hydrochlor. dil. (B.P.) diluted in 10 oz. of water in the 24 hours. The acid solution can be suitably given as a diluent to the milk, care being taken not to exceed the proportion of acid to milk which will produce clotting—roughly 1 pint of acid solution to 2 pints of milk. Ammonium chloride is just as efficacious. After absorption the ammonium is converted to urea and HCl liberated. A suitable dose is a drachm, dissolved in 10 oz. of water, to be taken during each 24 hours, or added to the milk.

Symptomatic Treatment.

The chief urgent symptoms of spasmophilia are convulsions, laryngospasm, and carpopedal spasm; success in their relief will be but temporary unless general treatment has been instituted. When called to see a child who has had a convulsion, the first step is to decide that it was spasmophilic in origin. Chvostek's sign (a sudden spasm on tapping one side of the face) will usually decide the diagnosis, but meningitis, polio-encephalitis, pyelitis, pneumonia, and other diseases should be excluded. A hot bath with cold compresses to the head is a valuable therapeutic measure which will almost certainly have been resorted to by the nurse or mother. In the presence of an actual spasmophilic convulsion, preparations should be made for a rectal wash-out and the rectal administration of chloral hydrate while the hot bath is being given. Chloral hydrate is remarkably effective and safe in these cases. For a child of 12 months a dose of 10 to 15 gr. dissolved in water should be left in the rectum after a preliminary washing out. If the child is able to swallow, 3 gr. chloral hydrate should be given by the mouth instead. In refractory cases an inhalation of chloroform should be used. A practitioner called to such a case should take a rubber catheter, a solution of chloral hydrate, and chloroform.

Laryngospasm, or *laryngismus stridulus*, is an urgent spasmophilic symptom; though improbable, it is yet possible that the condition *may* be fatal, the spasmodic closure of the glottis going on to produce cyanosis, convulsions, and death. The child should not be moved until the urgent symptoms have been controlled, since exposure to chill and fright, such as might occur in a cab on the way to a hospital, exercise a deleterious effect. Hot sponges should be applied to the larynx, while chloral hydrate and rectal wash-outs are used. While awaiting the effect of treatment it is wise to confirm the diagnosis, excluding laryngeal diphtheria or impacted foreign body.

The symptoms of *carpopedal spasm* are not necessarily urgent, but usually require active special treatment, leading after a few hours to much pain and discomfort. The child is usually miserable and crying. Successions of hot baths with chloral hydrate or antipyrin should be tried, until the general measures of treatment have produced their effect.

Chronic and Refractory Cases. Parathyroid Treatment.

Almost every case of spasmophilia—i.e., of idiopathic infantile tetany, or "spring" tetany—yields readily to treatment on these lines. In the rare case of persistent or recurrent tetany which resists treatment there is commonly some chronic bowel condition, such as cœliac disease or idiopathic dilatation of the colon, which demands treatment. If, however, there is no chronic intestinal disease to account for it, a disease of the parathyroids may be suspected. I am in no position, however, to say how this can be proved, for in those cases of persistent and recurrent tetany in a child in which I have been forced to this diagnosis, various samples of parathyroid gland had no effect. The whole question of parathyroid therapy in tetany is centred in the problem of the preparation of an active extract. No doubt there will be great scope for its use when this problem is solved, and the recent experiments of Collip and Clarke[1] appear to mark a definite advance. Nevertheless, it is improbable that spasmophilia in infants is due to a parathyroid lesion. If it were so we would not expect it to be so readily curable as it is without the aid of parathyroid treatment.

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[1] Collip, J. B., and Clarke, E. P.: Journal of Biological Chemistry, 1925, lxiv., 485.

Special Articles.

AN INSTITUTE OF COMPARATIVE PATHOLOGY IN SOUTH AFRICA.

THE scientific quality of communications emanating from the laboratories of Veterinary Education and Research of the Union of South Africa, and of the reports issued from time to time by its director, is well known. The investigations carried out into the causal agencies of diseases affecting animals in the subcontinent, and the large measure of success achieved in eradication and control are of recognised importance to veterinarians and stock farmers throughout the world. With the generous support of successive governments before and since the Union, the Department of Agriculture has been enabled to expand its laboratories from an emergency shed, whence the rinderpest epizootic of 1896 was studied, into a main institute at Onderstepoort, near Pretoria, with daughter institutes at Grahamstown and Pietermaritzburg, Vryburg, Bestersput, and Ermelo. An account of the detailed organisation of this unrivalled institute of comparative pathology, developed by Sir Arnold Theiler, K.C.M.G., would seem timely, in view of the efforts made within the last few years to foster the systematic study of this branch of science.

The Routine Department.

The buildings of the main institute alone cover some five acres, and the annual budget of the laboratories is over £90,000. Of this sum nearly half is recovered every year by the activities of the Routine Department, under the general direction of Dr. P. R. Viljoen, laboratory products being manufactured on a large scale for sale to farmers at practically cost price. The sale last year of 15,000,000 doses indicates sufficiently the farmers' confidence in the efficacy of the prophylactic and curative medicaments supplied. This confidence is fostered by addresses given by workers in the institutes, who are ready to discuss with farmers any difficulties or complications that may follow the use of laboratory products.

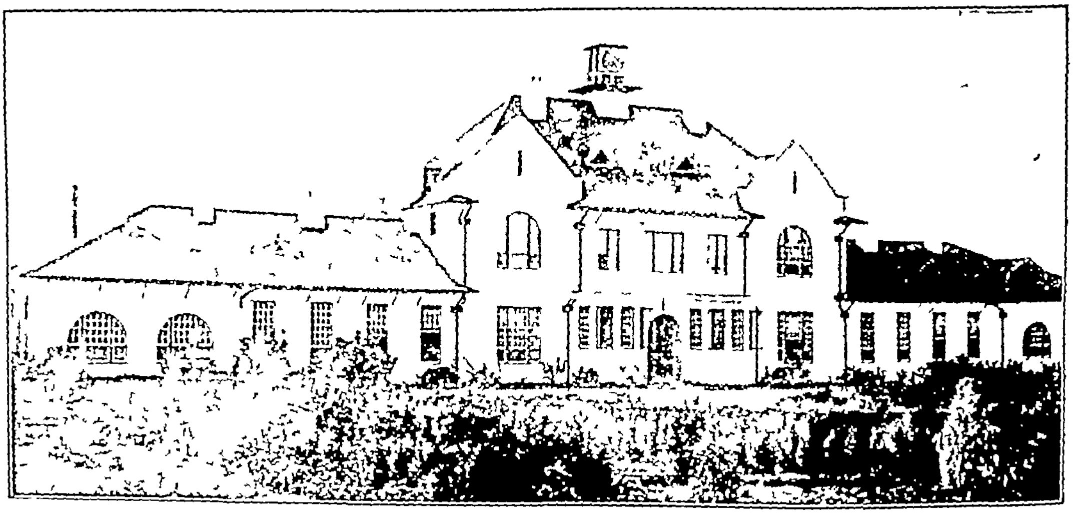
The total accommodation available at Onderstepoort for the various activities connected with the preparation of laboratory products consists of seven laboratories, seven kitchens, four store rooms, two incubating rooms, four packing rooms, and one cold storage room. The number of horses, mules, cattle, sheep, and goats kept in the stables and kraals on the laboratory site for various purposes averages 1500 at a time. These animals are mostly first utilised for the routine production and testing of vaccines and sera, and they then become available for experimental and research work. At the branch laboratories the numbers of animals on hand average 40 at Maritzburg, 550 at Vryburg, 1500 at Bestersput, 600 at Ermelo. Strict control of the movement of all animals is carried out so that intercurrent infectious diseases are immediately detected and steps promptly taken to check their spread. A staff of four officers devote their whole time to the recording of experimental data, commencing with the arrival of an animal at the station, its registered number, every experiment in which the animal is subjected for treatment, every result and clinical symptom, and, where necessary, full post-mortem report being entered on its own chart; thus it is possible, at a moment's notice, to obtain full particulars of every experiment that has been undertaken into any diseased condition. The records include notification of movements of animals from one stable to another, and cross reference given to any farmers' correspondence that may have led up to the initiation of an experiment.

Methods of Conferring Immunity.

Any attempt on a large scale to confer on animals immunity to specific diseases demands considerable ingenuity, even when ætiology is established. The methods used vary from the comparatively simple preparation and distribution of vaccine where the causal organism of a disease is known, to the devising of means whereby immunity may be conferred against a disease, such as horse-sickness, thought to be due to a filterable virus transmitted by an insect.

Vaccines against Diseases of Known Causation.—Where an organism has been isolated the vaccines supplied are for the most part made up of live strains of attenuated virulence. For example, the live spore vaccine prepared from attenuated cultures of *anthrax* on the Pasteur principle, by a method recently worked out in the research department of the institute, gives almost absolute protection for a period of 12 months; indeed, so successful has this product proved that the Union Government last year decided on its free issue to farmers, in spite of the great loss of revenue entailed. The vaccine against quarter evil (caused by a sporulating bacterium) consists in the artificial aggressin produced by cultures; the immunity conferred is not absolute, but protection is afforded for 9 to 12 months. It should be noted, incidentally, that every batch of vaccine prepared at this institute is tested as to potency and value as an immunising agent before being passed for sale. This system of immunity control is one of the features of the organisation. Red water (*Piroplasma bigeminum*) in cattle is due to a protozoon in the blood, which remains there in some latent form after the animal has recovered. The strength of this residual virus fortunately varies in different cases, and the milder strains have been found suitable for use as vaccines without attenuation. On a similar principle is based the vaccine against anaplasmosis (gall-sickness), a disease caused by *Anaplasma marginale.* A strain was found (later called *Anaplasma centrale*) which produces a milder though still typical form of the disease, and immunity derived from *A. centrale* protects against the more severe diseases due to *A. marginale.* The two types of parasite are easily differentiated under the microscope.

FIG. 1.



Front view of the main building at Onderstepoort, near Pretoria.

Filterable and Ultra-microscopic Viruses.—In diseases of unknown ætiology, the virulence of infective material derived from a sick animal can sometimes be modified by passage through other animals of the same species. This principle is adopted in the preparation of blue tongue vaccine.

Horse-sickness.—Much more complicated is the system whereby horses, and to a lesser extent mules, are protected against the prevalent disease of horse-sickness. The horse that has recovered naturally from an attack of horse-sickness is called "salted" in South Africa; such animals are rare and are valued highly, since they show a considerable amount of immunity. The immunity is not, however, absolute, breakdowns occurring in seasons when the epidemic takes a severe form; but sufficient immunity can be conveyed to protect most animals against this disease.

Mules and horses differ in susceptibility to this disease and require different methods of conveying immunity. In mules a simultaneous inoculation of serum and virus brings about a fever reaction, and sometimes typical symptoms of horse-sickness. About 3000 mules are inoculated every year, 95 per cent. being subsequently immune; the mortality is 2–3 per cent. In horses two inoculations have to be made with a few days' interval between them, utilising similar serum on both occasions but different strains of virus. Several thousand horses have been inoculated, about 85 per cent. being protected. The scarcity of technical operators has prevented inoculation on a very large scale, but this difficulty is being overcome. Inoculated horses obtain an immunity at least equal to that obtained by "salted" horses, and are in great demand by farmers. In the preparation of serum precautions have to be taken against hæmolysis and against the transmission of infectious anæmia. This is a disease due to an ultra-visible virus easily communicated to horses either by blood or by serum, but experience has shown that if serum is kept for 12 months before use the infective agent is destroyed.

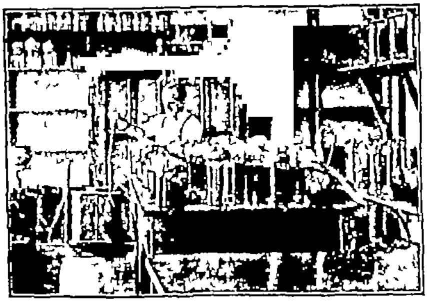
The preventive side of work carried out in the routine department is not confined to the production of vaccines and sera, but is concerned also with the giving of personal expert advice when required, and with distribution of pamphlets offering suggestions as to how by dipping, protection from insects, and by hygiene on farms infection may be further avoided. Knowledge gained from researches in this and other institutes is made available to farmers as soon as possible, and the rationale and limitations of any treatment advised carefully explained to them.

Curative Treatment.—On the curative side less success has been achieved, excepting in regard to the wireworm infection of sheep, for which over 11,000,000 doses of powder (sodium arsenite and copper sulphate) were sold last year. The use of a parasiticide for ticks has been attended with considerable success against the *Trichostrongylus* and *Œsophagostomum columbianum.*

Sufficient dip-testing requisites for about 60,000 tests per year are issued for use with a cheap dip-testing instrument, which enables the farmer to control the strength of dips used for the eradication of ticks.

Diagnosis.—A special staff is available to investigate outbreaks of obscure diseases occurring on farms, however remote. In any case of sudden collapse farmers are urged to send to the laboratories blood smears taken immediately after death, slides being supplied free. To ensure speedy communication a post and telegraph office has been installed actually in the building of the institute; between 50,000 and 60,000 letters, wires, and parcels are received every year and the same amount despatched from the central institute alone. The number of specimens examined approximate to 25,000 every year, and this applies only to microscopical, pathological, and serological specimens, leaving out of account chemical analyses. In addition about 1000 samples each year are received for chemical analysis, partly from farmers in relation to cases such as stock poisoning, partly from other sections of the division requiring chemical assistance, and partly in connexion with the Government Regulations controlling the sale of stock dips and stock remedies. Technical advisory work under these regulations is also carried out. Incidentally in South Africa a curious legal anomaly obtains. There are no antivivisection laws. Any unqualified person may practise veterinary surgery, and anæsthetics are not compulsory for any animal operations. On the other hand, no manufacturer is allowed to sell as a dip or as an internal remedy for any animal disease a mixture which is not accepted by the *Government* as corresponding to the claims made for it. Patent veterinary remedies are subject to rigid investigation in this institute. No such regulation is applied to patent medicines designed for human consumption.

FIG. 3.



Decanting horse serum.

Farmers are encouraged to forward for tests on experimental animals plants which they suspect of being poisonous. Those which are incriminated are subjected to detailed study in the botanical section of the biochemical department, where a museum of poisonous botanical specimens is arranged for inspection.

Research Activities.

Special blocks are allocated to the study of infectious diseases, pathology, biochemistry, bacteriology, entomology, and helminthology, under the direction respectively of Dr. P. J. du Toit, D.Ph., Zurich, Dr. Med. Vet., Berlin (deputy director of Veterinary Education and Research); Prof. Wall de Rock, Dr. Med. Vet., Berne; Prof. H. H. Greene, D.Sc. Glasgow; Dr. E. M. Robinson, Dr. Med. Vet., Berne; Mr. G. A. Bedford, F.E.S.; Dr. Frank Veglier, Dr. Med. Vet. Turin. Results are published from time to time in the scientific reports of the director,[1] in the *Journal of Agriculture* of the Union of South Africa, and in the appropriate special journals of Europe and America. The following notes do no more than call attention to a few of the problems now being attacked. On the pharmacological side of the biochemical department systematic research is only now commencing, but will mainly concern the investigation of plants directly poisonous to live stock, or responsible for stock disease (e.g., *Cotyledon wallichii, Geigeria passerinoides*). On the botanical side studies of the relationship between distribution of plants and occurrence of disease are undertaken. Problems in plant physiology related to nutritive value of natural veld have also formed the subject of laborious investigations by Dr. Marguerite Henrici, Ph.D. Basle, who has recently been appointed research officer in plant physiology. This work includes studies of the chlorophyll content of plants growing under arid conditions, the osmotic behaviour of wilting grasses, plant transpiration during drought, the carbohydrate metabolism of grasses under extreme meteorological conditions, the occurrence of hydrocyanic acid in edible grasses as a phenomenon of wilting, the mineral metabolism of grasses growing in phosphorus-deficient soils. On the more general biochemical side research work has ranged over chemical investigation of poisonous plants; the utility of various compounds for the eradication of external and internal parasites; the fate of ingested arsenicals in the animal body; the chemical changes brought about by bacteria in dipping tanks and the isolation on the non-pathogenic organisms concerned —e.g., *B. arsenoxydans* and *B. arsenreducens*; changes in eggs during cold storage; chemical aspects of deficiency diseases in stock; and a variety of other lines indicated by publications in the reports of the division. The most important work from an economic point of view at present in progress concerns the mineral metabolism of stock, particularly in relation to the "aphosphoriosis in cattle," so widespread over the Union of South Africa. Studies of soil and vegetation are combined with direct nutrition experiments upon the animal itself, both at laboratory headquarters and in the areas over which mineral deficiencies are reflected adversely by the animals, either in the form of specific disease (e.g., styfsiekte), or osteophagia, or generalised malnutrition (stunted growth). In some cases correction of the mineral deficiencies of natural veld has resulted in trebling the growth-rate of calves reared upon it. Results from laboratory experiments on mineral metabolism incidentally yield information upon vitamin factors in stock nutrition; the most interesting fact being that cattle are apparently not susceptible to avitaminoses, but can grow well on rations notably deficient in A, B, and C.

In the helminthological department two officers with their assistants devote all their time to the study of worm diseases. The life-histories of the commoner worms of sheep have been worked out accurately, and methods of combating the diseases are attempted on the basis of the knowledge so obtained. In the bacteriological department, where cultures of bacteria and of trypanosomes are maintained, particular attention is devoted to the study of anaerobes. In the entomological department a good collection of ticks, mosquitoes, flies, and other insects of economic importance is available and their life-histories are being studied.

The Investigation of Specific Diseases.

Nagana.—During the year 1922–23 an agreement was made with the Bayer Company in Germany to test their new remedy, "Bayer 205" on cases of nagana (sleeping sickness of cattle) in Zululand. The company undertook to supply sufficient quantities of the substance and to send their own veterinary surgeon to supervise the experiments. The institute, on the other hand, agreed to supply all the experimental animals and to place the entire staff and equipment of the Nagana Research Laboratory near Empangeni in Zululand at the disposal of this work. The experiments were designed to determine both the prophylactic and the curative action of the drug on infections with *Trypanosoma congolense*, *Trypanosoma brucei*, and *Trypanosoma vivax*. The results obtained do not appear to have been altogether satisfactory,[2] especially in regard to the curative effect of "Bayer 205." However, from the prophylactic point of view fairly encouraging results were obtained. It was further found that by combining treatment by "Bayer 205" with tartar emetic animals could be protected against the bite of infected flies, even though exposed to a very severe infection. It is found troublesome in practice to carry out a series of injections into the jugular vein of cattle, and it is hoped to find a method of treatment which can be given subcutaneously.

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[1] Ninth and tenth reports of the Director of Veterinary Education and Research, Government Printing and Stationery Office, Pretoria, 1921, pp. 823, 10s.

Lamziekte.—Sir Arnold Theiler's own researches into diseases caused by piroplasms (*Theileria parva*, *Gonderia mutans*, *Anaplasma marginale*, &c.) and into the diseases of ultra-visible origin (horse-sickness, blue tongue, and heartwater) are classical. More recently the complete elucidation under his direction of the causation, prevention, and cure of the mysterious disease of cattle known as *Lamziekte*, as a typical instance of the fine work accomplished in this institute, may be considered in some detail. The chain of causation as unravelled by the director and his colleagues is shown clearly in the Fig. 3, which is largely self-explanatory. Low phosphorus content is a feature of South African soil; over wide areas of the Union the level of phosphorus reached in the natural vegetation is below the physiological optimum of cattle. Cattle attempt to supplement the deficiency by eating dead animal carcasses, often infected by specific saprophytic bacteria which produce a toxin causing the disease known as lamziekte. The deficiency not only leads indirectly to disease, through the pica induced in animals reared on such soil, but also limits their growth, damages their general condition, and diminishes their milk yield. Further experiments are in progress on the mineral metabolism of stock, and it is expected that considerable light will be thrown on other obscure nutritional disorders encountered in practice.

FIG. 3.

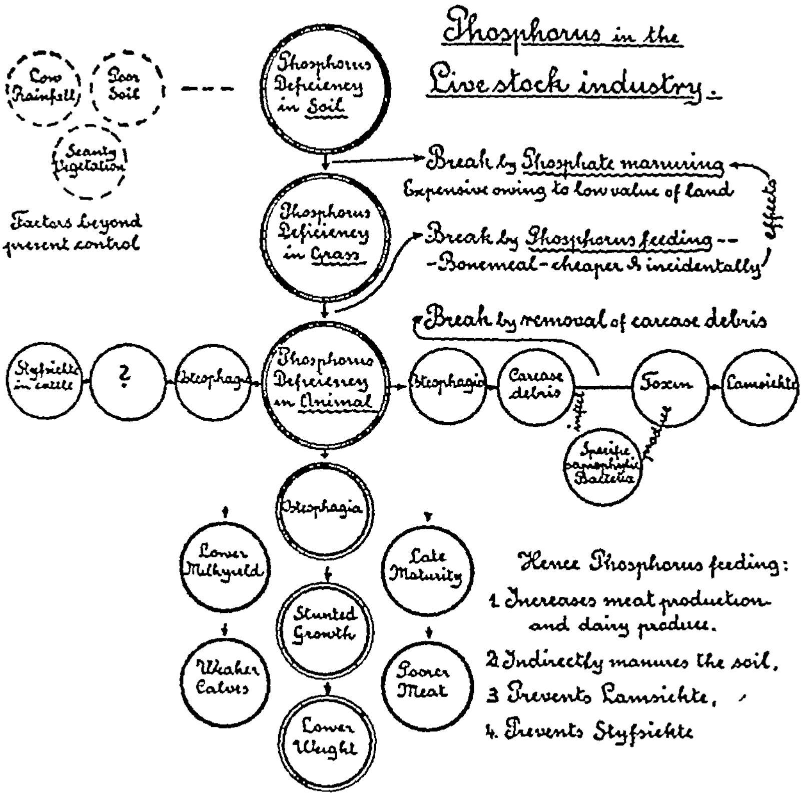
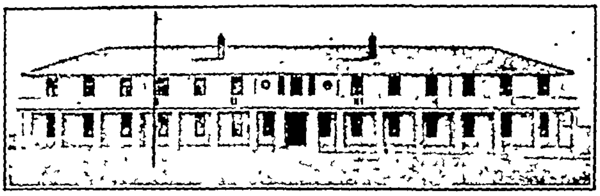

Phosphorus in the Live stock industry.
Low Rainfall
Poor Soil
Scanty Vegetation
Factors beyond present control
Phosphorus Deficiency in Soil
Break by Phosphate manuring
Expensive owing to low value of land
effects
Phosphorus Deficiency in Grass
Break by Phosphorus feeding -- -Bonemeal- cheaper & incidentally
Break by removal of carcase debris
Styfsiekte in cattle
?
Osteophagia
Phosphorus Deficiency in Animal
Osteophagia
Carcase debris
Toxin
Lamsiekte
infect
produce
Specific saprophytic Bacteria
Osteophagia
Lower Milkyield
Late Maturity
Stunted Growth
Weaker Calves
Poorer Meat
Lower Weight
Hence Phosphorus feeding:
1 Increases meat production and dairy produce.
2 Indirectly manures the soil.
3 Prevents Lamsiekte.
4. Prevents Styfsiekte

Diagram showing effects on animals of phosphorus deficiency.

FIG. 4.



The Students' Hostel.

Heartwater.—In 1923 the director of the Rockefeller Institute suggested that one of his staff should visit the institute for the purpose of comparing pathological conditions of animals found in other parts of the world with those prevalent in South Africa; accordingly Dr. E. V. Cowdry arrived at Onderstepoort in June, 1924, and left early in 1925, for the purpose of studying heartwater. The results of the investigations led to the discovery of rickettsia as the cause of heartwater, thus relating the South African disease to the Rocky Mountain fever of America. It is hoped that his visit will lead to an interchange of officers between South Africa and the United States, an arrangement which should react beneficially on the progress of comparative pathology in both countries.

Veterinary Education.

In 1920 educational duties were undertaken for the first time and blocks of buildings, including students' laboratories, lecture theatres, and a students' hostel (Fig. 4), were opened. The course extends over five years leading up to the degree of Bachelor of Veterinary Science (B.V.Sc.) in the University of South Africa. The Doctorate (D.V.Sc.) is attainable not less than two years after qualification by those engaged in research work, and not less than four years after qualification by practising veterinary surgeons on submission of a suitable original thesis. The first two years of preliminary scientific studies are taken at one of the colleges of the University of South Africa or at the Witwatersrand University, while the three vocational years are spent at Onderstepoort.

It is stated that, partly owing to the fact that B.V.Sc. graduates in Government service are now graded on a scale commensurate with the length, severity, and expense of the curriculum, the class of students attracted is very good; this enables a high teaching standard to be maintained. Inquiries are constantly being received from various sources concerning the facilities offered to foreign graduates who desire to specialise in subtropical veterinary science, and the question of running a special postgraduate course for overseas veterinarians is under consideration. An advantage to students is that all the professors and lecturers are primarily research officers with ordinary official duties cognate to the subjects they profess. Preparation for tutorial duties is made outside official hours; teaching officers are graded £100 per annum higher than ordinary officers if of lecturer rank, and £200 higher if of professorial rank. In this way the five professors and eight lecturers are provided at the cost of only two full professorships at any of the Colleges of the University; at the same time teaching is conducted by specialists who, in turn, benefit by the need of keeping themselves up to date over the whole range of their particular subject.

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[2] Journal of the Department of Agriculture of the Union of South Africa, December, 1924, p. 530.

The system is obviously economical and appears to be working well; indeed, it is held that the advantages of grafting the Veterinary Faculty of the University of South Africa on to the pre-existing division of veterinary research are becoming more apparent every year. Most of the required post-mortem material, embryological material, clinical cases, and the like, are obtained as by-products of the research and routine activities of the division; medical and surgical wards for domestic pets and operating theatres are provided for the benefit of students. Inasmuch as the staff, equipment, and material are already necessary for official work irrespective of the veterinary faculty, the resources for the training of students and post-graduates are exceptional in a new school. This institute should secure recognition as one of the primary centres in the British Empire for the teaching of tropical and subtropical veterinary science, and for post-graduate research work in comparative pathology.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p 1134)

Official Evidence (Q. 23880–24024).

Mr. Brock and Dr. Smith Whitaker continued their evidence and were asked whether they would favour the provision of the services of doctor and midwife as a first charge on the money available for maternity benefit. Mr. Brock said:—

> The present cash benefit is popular, and any change which made the provision of midwives or doctors a first charge on the money available would not be readily accepted by the insured population, unless it left at least a substantial balance in cash in addition to the services in kind.

In general, with regard to this benefit and the question of linking-up the various arrangements for maternity services, the witness said that there was a great deal of overlapping and probably a good deal of waste, and it would be most desirable, if it could be arranged, to have a scheme that brought the family doctor, the midwife, the specialist, if necessary, and all the services that are available at the maternity centre under a common scheme and a common control, so that they each played their proper part and were brought into proper relation with one another, helping one another instead of acting at a distance as they do now. The difficulty was how the finance could be arranged.

Dental Services.

Mr. Brock agreed that dental treatment as a statutory benefit was most desirable if the money could be found. Something like three-quarters of the industrial population were suffering from dental defects, and the experience of societies giving dental treatment as an additional benefit gave ground for hoping that systematic dental treatment would lead ultimately to a reduction of sickness benefit claims. As from the beginning of this year schemes were in operation under which societies allowed free choice of dentist.

With regard to the scale of fees which would be in force for a national scheme, Mr. Brock said:—

> Unless the scale is sufficiently generous to attract the men of better standing, you will not get the level of work which is really desirable. It would be unfortunate if insurance dentistry came to be looked upon as the cheapest and nastiest form of dentistry.

The cost of a complete service could not be very closely estimated because it depends not only on the extent of the need, but on the extent of the demand. It was thought, however, that 6s. per insured person per annum would be the lowest figure at which it would be safe to estimate the cost of a comprehensive dental benefit which did not provide for any contribution on the part of the insured person.

On the question of contributions towards the cost by the patients, the witness said:—

> Any contribution by the insured person is always open to the objection that it will have the effect of ruling out the most necessitous class. Probably the great majority of insured people could afford to find £2 towards the cost of dentures, and the experience of the dental hospitals where they generally require a contribution to the denture cost is that in nearly all cases the money is ultimately forthcoming.

Cases of hardship might be met by the application of the surplus funds of societies to this purpose as an additional benefit.

With regard to dental clinics, the witness said that the economic advantages could only be secured in urban areas; if any system of consultant centres were established, it might be possible to combine dental centres with them. On other aspects of a dental service Mr. Brock said that the service would not lend itself to payment on a capitation basis, and that negotiations in regard to such a service could best be carried on with a joint committee (if one were set up) of the British Dental Association and the Public Dental Services Association.

Optical Treatment.

On the question of the conflicting evidence on the subject of sight testing from representatives of the medical profession and opticians respectively, Dr. Smith Whitaker said that the Ministry had themselves found on an independent examination of the question that the evidence was very conflicting. There were difficult cases of errors of refraction without any other disease of the eye, or disease of the body generally, which required the use of methods of examination which should only be carried out by people who have had a complete medical training.

> On the other hand, there is a general impression, certainly among layman, shared, I think, by some members of the medical profession, that quite a considerable proportion of cases of visual defects, particularly in elderly people, can be, and in fact are, being treated without any obvious injury to the patient by people who have had no medical training, and in some cases even by people who have not had the special training in the measurement of refractive errors that some sight-testing opticians have received.

The difficulty was to measure the amount of risk that really arises through such cases being treated by people who have not had a medical training.

The Board of Education have had to consider this question in connexion with the inspection and treatment of school children, and they have adopted from the beginning the policy of employing, for the diagnosis and treatment of errors of refraction, medical practitioners only who have had a special training in sight testing. If the responsibility were assumed by the State or by any public authority of providing a public system, the question would be whether they could safely adopt any other policy than that which the Board of Education has adopted.

The question of qualification in eye work for men who have any kind of surgical aptitude at all is mainly a question of their being able to get the requisite amount of experience.

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* References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 60," and references to the oral evidence thus—Q. 1880.

Most doctors . . . are potentially qualified, and if the work were there to be done, they would soon become really qualified. You do not need for the testing of errors of refraction the special skill of an ophthalmic surgeon who undertakes all kinds of delicate operations on the eye.

Asked whether ophthalmic benefit, including the provision of glasses, could only be included amongst the normal benefits available to all insured persons as part of a large scheme for the extension of medical benefit to include a specialist service, the witness said that that would doubtless be so if the benefit were to provide for the treatment by specialists of all diseases and injuries of the eye, but it was thought that—

An ophthalmic benefit that was restricted to the treatment of errors of refraction, including the provision of glasses, might be brought within the scope of medical benefit independently of any general inclusion of specialist services, and it would be worth providing if the money were available, even although other specialist services were *not* at the same time made available.

The cost on the basis of 6*d.* an insured person would be under £400,000 a year.

Nursing Service.—Massage.

With regard to a domiciliary nursing service, the witnesses expressed doubt whether a service could be provided of sufficient value to justify the application of funds which might be applied in other directions where at present there was no organised service. In the case of nursing, the district nursing associations already covered the ground to a very considerable extent. The societies had shown little disposition to apply their surpluses in the recent valuation towards schemes for nursing services.

Dr. Smith Whitaker said there could be no doubt as to the value of massage and electrical treatment, particularly for cases of after-effects of injuries and rheumatic conditions by which a large amount of prolonged incapacity for work is produced. If funds would permit of such a service it would be more economically and efficiently provided as a part of statutory medical benefit rather than as a separate service given by the Approved Societies.

Insurance Committees.

With regard to the criticism of the Insurance Committee system, Mr. Brock said that this seemed to be well founded. The representatives of Approved Societies on the Committees, to a large extent, are lacking in experience of public administration, and the effective work of committees had become so limited in range as to offer little inducement to public-spirited people to serve.

If you give them more work to do, say an extension of their general health duties, you bring them into competition with the other local health authorities, and you also tempt them to undertake work in which they really need the guidance of the sort of expert medical staff that the local authority has and which the Insurance Committee has not.

Mr. Brock made it quite clear that the work of the Insurance Committee staffs was in a different category.

The Insurance Committees' staffs have done their work exceedingly well, and I want to make it quite clear that, while I cannot dissent from the general criticism of Insurance Committees, I do want to pay my tribute to the efficiency of the work of their staffs.

With regard to the future of the Insurance Medical Service, Mr. Brock said :—

We think a transfer of the powers and duties of Insurance Committees to the appropriate committees of the county and county borough councils would have the great advantage of being a step towards the coördination of all local health functions which is generally recognised as the logical corollary of the coördination of central health functions in the Ministry of Health. It would certainly facilitate coördination between insurance and other public health services, and it would secure the independent expert advice of the medical officer of health and other medical officers of the councils. We should agree that if the functions of Insurance Committees are to be transferred to the councils, then, whatever committee is charged with these duties, it is desirable that it should contain a strong co-opted element, including adequate representation of the doctors.

Other Points relating to Medical Benefit.

The present capitation fee is 9*s.*, and it was not thought that any further inquiry would be likely to lead to a different result. The cost of drugs for the insured population was rising, and the biggest factor in the rise was increased frequency in prescribing in which undoubtedly there was some element of waste.

As to the distribution amongst doctors of that part of the medical pool which related to insured persons who have not selected a doctor, it was pointed out that the great bulk of these were new entrants who very often postpone their choice until they find themselves in actual need of treatment.

As to limitation of numbers on doctors' lists, Mr. Brock said :—

Our experience does not suggest that there would be any danger in reverting to the previous limit of 3000 for a practitioner working single-handed, but we see no reason for revising the present figure, which was arrived at by agreement between both parties. . . . We do attach importance to a strict limitation of the number of assistants to be employed in order to prevent the farming out of insurance practice.

The unrestricted right of any qualified medical practitioner to be admitted to the panel ought, in the opinion of the Ministry, to continue. Objection to a doctor's inclusion on the ground of his bad record might bring the Committee into conflict with the General Medical Council.

It is perfectly true that doctors are from time to time removed from the medical list for offences which the General Medical Council may not regard as justifying removal from the register, but these are definite acts in relation to insured persons which have to be established before a competent committee of inquiry. This is quite a different thing from objecting to a doctor on the general ground of his conduct at some time in the past when he was not subject to any disciplinary control apart from that of the General Medical Council.

The suggestion which had been put forward that a doctor's admission to the list should be conditional on the provision of satisfactory surgery accommodation was not well advised, because the standard of adequacy must depend upon the number of patients for whom the doctor accepts responsibility. Until he has come on the list he can have no insured patients, and the adequacy of his surgery accommodation cannot in fairness be considered except in relation to his actual obligations.

THE MEDICAL INSURANCE AGENCY.

A MEETING of the Committee of Management of the Medical Insurance Agency was held at the House of the British Medical Association, Tavistock-square, W.C., on Dec. 2nd, Sir Humphry Rolleston, the Chairman, presiding. A report of the work of the Agency during the year ending Dec. 31st, 1924, to which a financial statement was appended, was read by the Chairman, and showed that during the year under review the Agency maintained its regular progress; the high standard of former years in new life business transactions was repeated, while in motor-car insurance there was a steady increase, principally due to the special policy which the Agency has been able to secure on behalf of medical men. There was a substantial increase in rebates in all branches except that of Employers Liability, the figures showing a direct benefit to medical men and women insuring through the Agency. After the payment of income-tax, a claim for which was settled under protest, there remained for the year 1924 considerable increase in surplus to be carried to the Medical Benefit Account.

An interim report was received from the Secretary covering the first nine months of the current year, and during this period the rate of progress was more than maintained. The Agency introduced during the first nine months of 1925 no less than £134,400 in insurance, spreading the insurances over first-class companies.

Other business of the Committee consisted in the election to its body of Dr. R. A. Bolam and Mr. Bishop Harman, and the appointment of two useful subcommittees. The first of these, the members being Dr. H. A. Des Voeux, Dr. R. A. Gibbons, and Mr. Bishop Harman, was authorised to consider the future of the Agency and to draw up a scheme, if found advisable, for its incorporation into a Limited Liability Company; the members were empowered to take the necessary legal advice. The second subcommittee, composed of Sir Humphry Rolleston, Dr. R. A. Gibbons, and Mrs. Arthur Ormond, was appointed to consider and report upon the best use of the Girls Education Fund, and it was decided that for the ensuing year one member of this subcommittee should be elected from among the members of the Committee of the Royal Medical Benevolent Fund Guild.

The result of two full years' working of the Scheme for Technical Advice on the purchase of motor-cars, existing between Messrs. Mann Egerton and Co. and the Agency, can now be seen, and in the report the thanks of the Agency were expressed to their consulting engineers for the able manner in which so many difficult questions had been handled.

Grants to Medical Charities.

The Committee resolved that out of the balance standing to the credit of the Medical Benevolent Account, the following grants should be made:—

	£	s.
Royal Medical Benevolent Fund	525	0
Royal Medical Benevolent Fund Guild ..	525	0
Epsom College Benevolent Fund	525	0
(This grant was divided by the Committee in such a way as to leave a grant in the name of Sir Dawson Williams of £105, and a similar grant in the name of Sir Squire Sprigge)		
Educational Grants (Girls Subcommittee) ..	210	0
B.M.A. Charities Fund	157	10
Royal Medical Benevolent Fund Christmas Appeal..	52	10
Royal Home for Incurables, Putney	52	10
Birmingham Medical Benevolent Society ..	26	5
THE LANCET, Editor's Discretionary Fund ..	26	5
Total..	2100	0

As a result of this distribution the total sum subscribed to medical charities by this Agency since 1910 has exceeded £14,000.

Special Grant to Agent.

A grant of £105 was made to Mr. P. N. Adamthwaite to mark the Committee's pleasure at the success of the Scheme for Technical Advice.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

The Dublin Hospitals and Workmen's Compensation.

THE Dublin hospitals have been forced by circumstances in the past few years to look carefully into the possibility of recovering the expenses of patients' treatment if anyone can be made responsible for such expenses. A special problem is presented by the case of workmen to whom accidents occur in the course of their employment. These patients receive free treatment, often extending over weeks or months, and, eventually, many of them recover damages from their employers. The award is supposed to cover expenses of treatment, but the hospital bill is rarely paid. Dr. Horace Law, on behalf of the Board of Associated Clinical Hospitals of Dublin, put this case before the Committee on Workmen's Compensation last week. He pointed out that the main provision of medical and surgical treatment for cases coming under the Workmen's Compensation Acts had for many years been made by the voluntary hospitals, and that there was no provision for hospital expenses in the case of accident or illness in the course of employment unless (1) the worker had arranged for it by previous payment in trade-unions or guilds; (2) paid himself for his maintenance in the hospital; or (3) the employer had subscribed to the hospital. There was no power to compel the employer or the insurance companies who had insured the employer to pay direct to the hospital or to contribute to the payment for the maintenance of the patient in hospital.

Regius Professor of Physic in Dublin University.

Dr. T. G. Moorhead, King's professor of materia medica in the School of Physic, has been elected Regius Professor of Physic in the University of Dublin, in place of Dr. J. M. Purser, resigned. Dr. Moorhead had a brilliant course in the school, winning exhibitions and scholarships and the Medical Travelling Prize. Having taken his degrees in 1901, he spent a year as chief demonstrator of anatomy in the school, and in 1902 was appointed assistant physician to Sir P. Dun's Hospital. In 1903 he became physician to the Royal City of Dublin Hospital, and in 1921 he was elected King's professor of materia medica. He has long been recognised as one of the leading teachers and clinicians in the Dublin school. He is still a young man and may be expected to bring energy and vision to the duties of his new post.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Formal Opening of the University of Paris.

ALL faculties of the University of Paris assisted at the formal annual opening of the University on Nov. 28th. It is the custom at such openings to announce the University's awards of honorary degrees. At the opening for this year those receiving the doctorate, *honoris causâ*, were Sir Ernest Rutherford, Mr. de la Vallée-Poussin, Prof. Edwin R. Seligman, Sir Paul Vinogradof, Signor Ettore Pais, Sir Edmund Gosse, Dr. Noguchi, and Prof. Pavlov. The work of Rutherford in radioactivity, that of Noguchi, of the Rockefeller Institute, New York, in yellow fever, vaccinotherapy, and serotherapy, and that of Pavlov in gastric physiology are well known in the field of medicine. The other names represent mathematics, economics, jurisprudence, archæology, and literature. As usual, the university ceremonies presented a mediæval setting of gorgeous gowns, hoods, and caps, and armoured men-at-arms.

The Entry into the Medical Profession.

During the academic year 1924–25 there was a slight diminution from the preceding year in the number of diplomas of doctor of medicine granted by the Medical Faculties of France—namely, 1047, as compared with 1128. The distribution over the various medical schools was as follows: Paris 481, Lyons 139, Bordeaux 123, Montpellier 103, Toulouse 53, Strasbourg 41, Lille 33, Algiers 31, Beirut 22, and Nancy 21. These numbers represent only the State diplomas, and do not include 93 university diplomas granted to foreigners, which do not entitle the holder to practise in France.

Poisoning by Carbon Monoxide.

As winter has brought with it the necessity for the use of coke stoves, several cases of poisoning by carbon monoxide have occurred. In one case-group three persons died from such poisoning, induced by defective ventilation in a chimney. In a second example, a man and wife were found dead in bed, the poisoning having apparently been produced by a worn-out stove, the carbon monoxide pouring into the room through cracks and holes in the casing. The two deaths of the second case-group .constituted the subject of a striking demonstration made by Prof. Balthazard, who conducted the autopsies at the Institute of Legal Medicine, which replaces the former Morgue of literary and historic fame.

Annual Meeting of the Grancher Clinic.

The annual meeting of the Grancher antituberculosis clinic was held on Nov. 28th. This clinic has become known internationally in the field of tuberculosis. Madame Pasteur was formerly the president of this endeavour. Her daughter, Madame Vallery-Radot, is now president, thus continuing the noble traditions of the Pasteurs. At the meeting Dr. Calmette delivered an eloquent address, in which he emphasised the economic value of preventing, rather than treating, tuberculosis.

The sale of stamps for raising money to aid the antituberculosis campaign has been launched for the first time in France. It will be tried out by the National Committee of Defence against Tuberculosis in the Département of Meurthe-et-Moselle.

Insulin and Pregnancy.

Pregnancy is not welcome to diabetic women. Obstetricians have often counselled abortion in such cases, as the evolution of the ovum may be abnormal, hydramnios is frequent, and the size of the products of conception often excessive. As a rule, the fœtus succumbs either in the course of gestation, during labour, or shortly after birth. The effect of pregnancy on the diabetic subject herself is often bad; the disease tends to become aggravated after the sixth month, and death in the puerperium or soon after is not rare. Prof. Marcel Labbé and Prof. Couvelaire have reported to the Academy of Medicine a case which demonstrates how completely the exhibition of insulin has changed the outlook. With insulin a diabetic woman, who would otherwise have aborted or died of acidosis, may go on to term and give birth to a healthy child. Women with diabetes should avoid conception if they can, but should pregnancy occur a strict dietary and the skilful administration of insulin may bring about a happy issue.

Death of Prof. Wallich.

Prof. Victor Wallich, of the Faculté and Académie de Médecine, died on Nov. 29th at the age of 62. Dr. Wallich made many valuable contributions in pathology, obstetrics, physiology, and serotherapy, and was especially active in the field of puericulture, where he served as a pupil of Pinard. In his teaching he utilised cinematographic films. His death leaves a vacancy which will not be easily filled.

Male Responsibility in Infanticide.

In consequence of a recent trial at Paris, in which a young woman, seduced and deserted, had killed her new-born infant, and the legal penalties were abrogated, a movement was initiated for legislation designed to extend to the male responsibility in such cases. The new movement has taken the form of a resolution which, it is hoped, will pave the way for formal legal action.

Increasing Pensions in War Disability.

As now exercised, the French veteran pension laws do not fully provide appraisement of 100 per cent. disability for certain cases in which, nevertheless, the disability is total. The cases referred to are those of tremor and other neuropathies. A movement is now progressing to permit such cases to be assessed at the full disability of 100 per cent., and thus to receive adequate monetary allowance. The new movement does not extend to cases where re-education is possible.

" 12 bis."

In the official list of notifiable infectious diseases puerperal fever and ophthalmia neonatorum are at present included under the same number—" 12." This grouping has been found to stand in the way of trustworthy statistics being compiled, and hence of proper prophylactic measures. For this reason, on the representation of the Medico-Chirurgical Society of Bordeaux, the Academy of Medicine has decided to urge the Minister of Hygiene to make ophthalmia neonatorum notifiable under the number " 12 bis."

Dr. Jacques Forestier, of Aix-les-Bains, well known for his work in radiology in collaboration with Prof. Sicard, has been invited by the American Radiological Association to visit the United States, where he will deliver a series of lectures on recent advances in radiology.

In a thesis on drug addiction, presented to the Academy of Medicine, Dr. Tardieu mentions a case of suicide due to veronal ingested in *coquetels*, the term applied to a beverage in common use in the neighbourhood of Bordeaux. French papers are claiming priority in the " cocktail " for the Bordelais.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following table gives some of the 1924 statistics for a group, composed of one city, one borough, and seven county boroughs. The low birth-rates and high neonatal mortalities in the " mill " towns attract attention, especially when compared with towns in mining areas like Sunderland and Wigan, where the total infant mortality-rate is not low.

Name of town.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Cardiff C.	226,400	21·6	12·1	1·52	1·13	2·6	28	78	5·3
Sunderland C.B.	165,100	25·9	15·0	1·42	1·06	4·2	34	101	4·4
Bolton C.B. ..	181,100	17·6	14·0	1·12	1·34	3·3	36	92	7·8
Oldham C.B. ..	147,300	16·3	13·7	1·20	1·41	3·3	51	111	2·9
Bury C.B... ..	56,830	15·5	14·7	0·93	1·72	3·4	38	71	4·5
Wigan C.B. ..	91,180	21·9	14·3	0·92	0·76	3·9	31	107	6·0
Derby C.B. ..	133,700	19·2	11·3	1·03	1·29	2·0	25	62	1·9
West Bromwich C.B.	78,730	23·6	12·2	0·86	0·99	3·6	40	80	2·2
Nuneaton B. ..	44,620	21·6	9·7	1·03	0·98	1·6	36	59	7·2

C. = City. B. = Borough. C.B. = County Borough.

Cardiff.

Dr. Ralph M. F. Picken reports that the increased prevalence of encephalitis lethargica has not yet affected Cardiff. Only ten cases came to the knowledge of the health department, and cases appear to have been equally scarce in Swansea, Newport, and Merthyr.

Last year a chart was included in the report showing the upward tendency of the mortality from pulmonary tuberculosis in Cardiff, a tendency which Dr. Picken has not traced in any other large city. Although the mortality was a little lower in 1924, the rate is high compared with other large towns. Thus among the 17 largest towns of England and Wales during 1924 Liverpool heads the list with a rate of 1300 per million from pulmonary tuberculosis, and Cardiff comes second with a rate of 1276, Sheffield being lowest with a rate of 821. For all forms of tuberculosis Cardiff was worse than Liverpool and was highest of all those towns with populations exceeding 200,000. Up to now Dr. Picken has been unable to account for this by any cause relating to the nationality or origin of the population, or their age-distribution or any climatic or environmental factor operating in the city. The occupational table, however, of newly notified cases of tuberculosis, which is given for the first time in the report, shows a very high proportion of seafaring men. Thus out of 221 males notified for pulmonary tuberculosis 47 were seamen. The only other occupations which reached double figures were clerks, typists, &c., 19, and labourers, 30. Of the 63 notified male cases of non-pulmonary tuberculosis the occupation of seamen furnished 9, while there were 13 children of school age and 14 children under school age. The figures somewhat confirm the remarks of Dr. Howard Jones in his report to the Newport Port Sanitary Authority. Dr. Picken reports a decline in the number of new cases at the V.D. clinics at the Royal Infirmary and the Seamen's Hospital. The figures have shown for some time that these centres do not attract the innocently acquired cases among women and children. To meet this difficulty special clinics are to be held at least twice a week in connexion with the maternity and child welfare scheme.

The Cancer Local Advisory Committee met towards the end of 1924 and drew up a plan of campaign. With the coöperation of the management of the infirmary it is hoped shortly to complete a statement showing the remote results of operations for cancer of the breast over a number of years. Voluntary notification has been adopted and a leaflet on cancer of the breast has been issued, pointing out to women the importance of consulting a doctor at once if any swelling or lump in the breast is noticed. The antenatal clinic, conducted jointly by the local authority and the Royal Infirmary, was opened on Dec. 18th, 1924, and at the time of writing bids fair to justify the hopes entertained as to its value. A room at the new clinic at 50, Park-place has been set apart and equipped for dealing with crippled children of all ages. A specially qualified nurse has been appointed to follow up such cases, to keep them in touch with the Prince of Wales's Hospital, and to administer massage, electricity, and postural treatment. Of the 286 cripples known to the department on August 31st, 1925, 93 were under the age of 5, 66 of whom were crippled by poliomyelitis and 12 by rickets. Of 188 cripples, aged from 5 to 16 years, 75 were the victims of poliomyelitis, 25 of tuberculosis, and 13 of rickets. The fact that there are only 5 known cases of rippling over the age of 16 shows that the registration for later ages is quite incomplete.

Dr. Picken thinks that the maternity and child welfare organisation would be improved if it were found administratively convenient to amalgamate the school medical nursing staff and the health visitors on lines similar to the amalgamation of the medical staff.

Sunderland.

Dr. Henry Renney reports that of 100 samples of milk examined for tubercle, 11 gave a positive result. In all cases the milks came from farms outside the borough, and in the majority of cases the veterinary surgeon on visiting found cows suffering from tuberculosis of the udder. The usual procedure adopted was to obtain an undertaking in writing from the farmer that he would not send milk from the infected cow into the borough. The antenatal centre at the maternity home has been given up, but the centrally situated antenatal centre has become "exceedingly popular" and an extension of its hours is necessary to meet the demand. Of the 115 cases of ophthalmia neonatorum notified, 94 were treated at the Eye Infirmary. Midwives attended 73·6 per cent. of the total births. There being no further need of a municipal midwife at the East End of the town, the office was terminated in December. There was only one case of puerperal fever notified during the year and no case occurred in the practice of a midwife. About 50 voluntary workers attend every week at the 11 infant welfare centres.

For the first time in 50 years there were no deaths from scarlet fever in the borough. The notifications of encephalitis lethargica, which numbered 4 in 1923, were 37 in 1924. There were only 2 deaths and no mention is made of steps taken to verify the diagnosis.

Bolton.

Dr. C. W. Paget Moffatt reports that the opening of the Moss-street baths and washhouses in October has conferred a great boon on the inhabitants. The building contains swimming baths for men and women, 18 slipper baths, and 24 washhouse stalls. The washhouses have so obviously supplied a very urgent want that it is hoped the same provision may be made before long in other quarters of the town. Dr. Moffatt presses the need for reasonably accessible playing fields for the younger members of the community. For non-pulmonary tuberculosis in children Bolton has a call on six beds at the Liverpool Children's Hospital, Heswall. This is not enough, and proposals are under consideration for a complete scheme for the treatment and care of cripples, including surgical tuberculosis.

Dr. Moffatt refers to the stationary position of the maternal and neonatal death-rates during the last 20 years. Thus for 1905–14 the neonatal rate was 41·7, and for 1915–24 it was 40·8. As regards prenatal work, Dr. Moffatt says it is essential that this work should now be extended by the establishment of a prenatal clinic in charge of a competent obstetrician. The Haslam Maternity Home admitted 220 cases during 1924. There were no maternal deaths during the year. In eight cases the baby was not entirely breast-fed while in the institution, in six cases because the milk was insufficient, in one case because the milk was not suitable, and in one case because the infant was premature. Six cases of insufficiency out of 220 cases is a high percentage. Notifications of encephalitis lethargica showed an increase. There were 40 cases with 17 deaths. All the notifying doctors were asked to supply particulars as to the present (i.e., May, 1925) condition. Of 23 survivors, 13 were reported to have recovered completely, six to be improving, and the remainder to be suffering from various forms of paralysis and mental and nervous symptoms. One case notified on April 5th committed suicide on Nov. 12th. In five cases certified to have died from this disease there had been no notification. The analyst's report shows that the percentage of cereal in shredded suet samples varied from 11 to 21. Ten per cent. of cereal is considered adequate to make a marketable product and any excess over this limit is added solely for extra profit.

Oldham.

Dr. James B. Wilkinson reports as the principal item in the year's work the Ministry's inquiry *re* the clearance of the Smethurst-street unsanitary area, which has been under consideration for over 14 years. The area covers 4·9 acres, contains 259 houses, and has a population of 1425 persons. The Coldhurst ward, in which the area is situated, had an infant mortality of 205 during 1924. There has been very little addition made to the house accommodation for the working classes during the year. The results from the treatment of a few marasmic and rickety babies at Westhulme Hospital have been so satisfactory that a small baby's hospital has been sanctioned by the Ministry of Health. Dr. Wilkinson draws attention to the fact that the only two wards which have a birth-rate of over 20 have low infantile mortality-rates. The damage done by ophthalmia neonatorum was one blinded baby, one with vision severely impaired, and one with vision slightly impaired. 13s. to 15s. per week for a single room containing a minimum amount of bedding and dilapidated furniture is a very usual charge, and shows that owing to the scarcity of houses "furnished rooms" can obtain just as high a rental as ever.

Bury.

Dr. G. Granville Buckley reports that the infant mortality-rate of 71 is by far the lowest ever recorded in the borough and compares with 101 for the year 1923. The Bury sanitary authority arrange with the Bury Infirmary for the treatment of complicated cases of labour and of non-pulmonary tuberculosis, and with the Manchester and Salford Hospital for Skin Diseases for patients suffering from tuberculosis of the skin. During 1924 eight cases of complicated labour and ten skin cases were treated under these arrangements. The tuberculosis dispensary, which was presented to the town by the Earl of Derby, is used jointly by the borough and the county council.

Wigan.

Dr. Henry Whitehead reports that there was a severe epidemic of measles during the latter part of the year. There were 78 deaths from this disease, making the unusually high death-rate of 0·85. In October two nurses from the Infectious Diseases Hospital were detailed to visit the cases and nurse the worst ones, and a third nurse began work in November. An up-to-date milk pasteurising plant has been established in the town, and in June the health committee decided to purchase pasteurised milk in bottles for the maternity and child welfare scheme and pasteurised milk in sealed kits for the supply of the borough hospitals. Dr. Whitehead records a small milk-borne outbreak of paratyphoid B. Eight cases were notified within ten days and were found to be supplied by two milkmen, who obtained their milk from the same farm outside the borough. A visit to the farm showed that the farmer had suffered from typhoid fever five years previously, and that his three daughters were out of health, one being convalescent and the other two ill with "influenza." Blood tests showed that all four were strongly positive to paratyphoid B. It seemed probable that the farmer was a carrier and had been the means of infecting his three daughters and the eight patients within the borough. Dr. Whitehead points out that pasteurisation would have prevented this outbreak. The scheme for the conversion of all privies and pail-closets to water-closets is going on very satisfactorily. Additional water-closets are also provided, when necessary, to enable each house to have its own convenience. Although more houses were built in 1924 than in 1923—namely, 74 compared with 23—the housing shortage is becoming more and more acute, and in consequence no definite progress can be made in dealing effectually with unsanitary areas or unsanitary dwellings.

Derby.

Dr. Albert E. Brindley reports an increase of encephalitis lethargica, there being 18 notifications and nine deaths. Small-pox became epidemic in April and continued throughout the year, 210 cases being notified with no deaths. The shortage of houses still prevents the demolition of unsanitary dwellings. From August, 1919, to the end of June, 1925, 940 new houses were built under the corporation scheme. At June 30th, 1925, 174 houses were in course of erection and 675 are to be begun in the near future. The natural increase of the population during the three years 1922–24 would absorb 750 houses. The mayor has put forward an urgent plea for the more rapid provision of houses, even if the construction is more or less of a temporary nature, and Dr. Brindley supports this view. Other needs of Derby are the increase of accommodation for patients and nurses at the isolation hospital, the extension of the dental service for expectant and nursing mothers, facilities for the dental treatment of tuberculous patients, and of patients in the isolation hospital, and the provision of an X ray installation.

West Bromwich.

Dr. R. Woolsey Stocks notes an increase in the attendances at infant welfare centres, but stresses the importance of extension of the work amongst toddlers and expectant mothers. He points out that the four maternal deaths from childbirth might have been prevented by antenatal attention, and that one can only hope to deal effectively with the high neonatal mortality by systematic antenatal examination. The number of mothers attending the antenatal clinic has increased to 150 from 51 in the previous years, and the number of mothers who submitted themselves for examination by the doctor was 94, as compared with 16 in the previous year. As the births numbered 1862 it will be seen that the antenatal work is on a very small scale. There is an improvement as regards the coöperation of the midwives, but there are still a number of midwives who never advise their prospective patients to come to the antenatal clinic, and "it is through the midwives that the greatest advance can be looked for in this work."

Nuneaton.

Dr. K. E. Tapper presents his third and last report before taking up his new duties at Bromley. He expresses his satisfaction that the infant mortality-rate has reached a figure below 60 for the first time, and in his report he indicates how further reduction may be obtained. Thus nearly half the infant deaths occurred in the first week, and 105 of the babies had been partially taken off the breast before the first visit of the health visitor. The total births numbered 971; antenatal sessions had only just been started at the end of the current year. The housing and living conditions of a portion of the population "are nothing less than deplorable." They are not wholly remediable by adequate housing conditions, as the "deplorable tenants" must be shown the error of their ways. A routine veterinary inspection of the milk cows in the borough has been begun. Thirty-five cases of small-pox were notified with no deaths. The deaths from encephalitis lethargica numbered five, the notifications 13. Dr. Tapper puts in a plea for a maternity home with accommodation for ailing babies. He sums up the housing needs of the borough as 500 new houses for 1925 and 300 for each of the next nine years. Thirty-four houses were erected under the municipal scheme for 1924.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 28TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 105 (as under); scarlet fever, 2195; diphtheria, 1091; enteric fever, 54; pneumonia, 1531 (as compared with 1186 and 889 in previous weeks); puerperal fever, 52; cerebro-spinal fever, 7; acute poliomyelitis, 7; acute polio-encephalitis, 2; encephalitis lethargica, 41; dysentery, 2; ophthalmia neonatorum, 91. There were no cases of cholera, plague, or typhus fever notified during the week.

The cases of small-pox were reported from the following counties:—Derby, 11 (Derby C.B.); Durham, 71 (Gateshead C.B., 2; Blaydon, 26; Chester-le-Street, 1; Ryton, 1; Whickham, 4; Chester-le-Street R.D., 7; Easington R.D., 7; Houghton-le-Spring R.D., 7; Lanchester R.D., 8; Sunderland R.D., 8); Northumberland, 8 (Newcastle-upon-Tyne C.B., 7; Castle Ward R.D., 1); Nottingham, 5 (Nottingham C.B., 1; Hucknall, 2; Huthwaite, 1; Basford R.D., 1); Yorks, East Riding, 4 (Kingston-upon-Hull); Yorks, West Riding, 6 (Sheffield C.B., 5; Rawmarsh, 1).

Deaths.—In the aggregate of great towns, including London, there were 3 deaths from enteric fever (1 in London); 50 from measles, 11 from scarlet fever, 40 from whooping-cough, 54 from diphtheria, and 73 from influenza. In London itself there were 15 deaths from diphtheria and 25 deaths of infants under 2 years of age from diarrhœa and enteritis.

VETERINARY RESEARCH.—The Council of the Royal College of Veterinary Surgeons has awarded the Steel Medal for Veterinary Research to Prof. S. H. Gaiger, F.R.C.V.S. Under the John Henry Steel Trust the Council of R.C.V.S. has power to award a medal once in three years as a reward for scientific or literary work of merit connected with the veterinary profession. Prof. Gaiger was until recently director of research in the Animal Diseases Research Association, Glasgow. He has done good work in connexion with several sheep diseases and has carried out some investigations into "grass disease" of horses. He has recently been appointed to the "William Prescott" Chair of the Care of Animals—Causation and Prevention of Disease, in the University of Liverpool.

The Services.

ROYAL ARMY MEDICAL CORPS.

Capt. G. O. F. Alley relinquishes the temp. rank of Maj. on ceasing to be empld. as a Dept. Asst. Dir. of Hygiene and Pathology.

Capt. F. C. Tibbs is granted the temp. rank of Maj. whilst empld. as a Dep. Asst. Dir. of Hygiene and Pathology.

Capt. H. Jacques to be Temp. Capt., and temporarily relinquishes the rank of Capt.

Capt. W. O. Tobias retires, receiving a gratuity.

TERRITORIAL ARMY.

Capt. J. A. Stenhouse to be Maj. (Prov.).

Lt. N. Braithwaite to be Capt., and Lt. J. C. MacKay to be Capt. (Prov.).

Lt. H. Miller (late R.A., T.A.), to be Lt.

ROYAL AIR FORCE.

Flight Lt. W. F. Wilson is promoted to the rank of Squadron Leader.

MEDICAL SERVICES IN INDIA.

The King has approved the relinquishment of their temporary commissions by Capt. Ramchander Kaushash and Lt. Shanker Ramchandra Joglekar.

The undermentioned, the relinquishment of whose temporary commission has been notified, is granted the rank of Capt: Nur Ahmed Qureishi, late temp. Capt.

Maj.-Gen. D. J. Collins, C.B., C.M.G., who has been officiating for Maj.-Gen. Robinson as D.M.S. India, has resumed his permanent appointment of D.D.M.S. Southern Command. Lt.-Col. A. K. Lauddie has handed over the charge of the District Jail, Ferozepore, to Dr. Jamna Das. Lt.-Col. H. W. Pierpoint, late residency surgeon, Bushire, has been appointed Superintendent of the X Ray Institute at Dehra Dun. Lt.-Col. G. McPherson has been appointed Civil Surgeon, Ahmednagar. Maj. O. Holroyd, on return from leave, is appointed Superintendent, Central Prison, Bareilly. Dr. A. Souza, Assistant Director of Public Health, United Provinces, has been deputed to Japan to participate in the tour of Health Officers in Japan organised by the League of Nations. Capt. G. D. Malhoutra officiates as O.C., Indian Station Hospital, and as Officer in Charge, Brigade Laboratory, Allahabad, during the absence on leave of Capt. M. L. Dhawan. Maj. J. L. Sen is appointed Civil Surgeon, Cachar, Assam. Maj.-Gen. R. Heard, C.I.E., is appointed President of the Bengal Council of Medical Registration, vice Col. R. P. Wilson resigned. Maj. C. H. P. Allen has been appointed Civil Surgeon, Sadiya. Dr. P. Gupta has been appointed Assistant Director of Public Health, Assam. Lt.-Col. J. H. Murray has been confirmed as I.G. of Prisons, Bombay Presidency, vice Lt.-Col. F. O. M. Mell retired. He has proceeded on leave, and Maj. E. E. Doyle, D.S.O., Superintendent, Central Prison, Yerrowda, officiates for him. Maj. W. E. Rees Williams, D.A.D.M.S., Southern Command, proceeds on a year's leave; Maj. A. C. Wood acts for him. Rao Bahadur Dr. P. V. Shikhare, Bombay Medical Service, who represented the Bombay Government at the International Congress on Child Welfare in Switzerland last July, has returned to India and taken over the appointment of Civil Surgeon of Thana. Col. H. Ainsworth, Inspector-General of Civil Hospitals, Bihar and Orissa, has returned from leave and resumed his substantive appointment.

Jail Reform.—A conference of I.M.S. officers, acting as I.G.'s of Jail, was held in Madras last month to consider jail reforms in India.

DEATHS IN THE SERVICES.

Lt.-Col. Robert Evans Stuart Davis, I.M.S. (retd.), who died on Nov. 25th in Belfast, received his first commission in the Indian Medical Service in 1882. He served with the Burmese Expedition 1885-87 (mentioned in despatches, medal with clasp), and was for some time a civil surgeon at Rangoon. He retired in 1910.

Lt.-Col. James Comeford Sullivan Green, late R.A.M.C., died at Airhill, Glanworth, Co. Cork, at the age of 61 on Dec. 1st. He graduated in medicine and surgery at Dublin University in 1883. Having previously served in the army as surgeon, he was appointed Major, R.A.M.C., in 1897. He accompanied the expedition to Manipur in 1891 (medal with clasp), served in Burma during the two following years, and afterwards took part in the operations of the Irrawaddy Column. In the South African War, 1899–1902, he took part in the actions at Elandslaagte, Rietfontein, and Lombards Kop. He was present at the defence of Ladysmith and served in the operations in the Transvaal, Orange River Colony, and Cape Colony (Queen's medal with five clasps and King's medal with two clasps).

Correspondence.

"Audi alteram partem."

EPSOM COLLEGE:

ROYAL MEDICAL FOUNDATION.

To the Editor of THE LANCET.

SIR,—Last Christmas I humbly approached your readers on a note of entreaty; this Christmas I approach them again on a note of gratitude, not unmixed with a hope of further favours to come. We have won the support of many additional annual subscribers but, like Oliver, I am still handing up my plate for more. A most gratifying response has come from the Panel Committees throughout the country; without any question of a *quid pro quo* they have just done what they could, and certainly one boy owed his success in the election last June to their activities. We are deeply indebted also to our many honorary local secretaries, some of whom have sent us most substantial returns, and to the great medical institutions—to the British Medical Association and its journal, to THE LANCET, and to the Medical Insurance Agency. So sedulously did the Pathological Society, under the leadership of Profs. Dean and Boycott, canvass new subscribers that they secured at the first attempt a high place on the list of successful candidates for the son of a recently deceased pathologist. The increased subscription list has enabled us to do many things a little better, and to give materially greater advantages to our 50 foundation scholars. In the school department substantial improvements in the salaries of some of our masters have been made, a very important step, for good teaching is a basic requirement.

In the matter of legacies and benefactions we have been very fortunate too; it is on these that we depend almost entirely for the immediate provision of the more costly improvements that we effect. The rebuilt chapel—a war memorial mainly provided by old Epsomians—was dedicated last February; a well-known old Epsomian has beautified it with a gift of handsome silver-plated candlesticks, vases, and an alms-dish, and has also been instrumental in securing a contribution of £1000, which by his wish is being spent on Gothic oak panelling for the chapel. Four generous donors contributed a total sum of £1800, which has permitted a complete transformation of the library and a good equipment of new books. We have promises of the bequest of parts of two valuable libraries, but let me hasten to say that we welcome suitable books from the living as well as from the dead. If each medical man were to give one well-bound book, what a library we should have!

Carefully husbanded legacies have enabled us to lay the foundation-stone of a new chemistry block by the hand of our President, Lord Rosebery, and we intend to open it next midsummer on Founder's Day; this is costing rather more than £10,000. At the same time we are taking in hand the concentration of a scattered, wasteful, and nearly worn out heating installation at a cost of some £5000, and we can see our way also to much-needed additions to the accommodation for washing and drying for the boys in the lower school—another £2000 or more. There we reach the bottom of our pocket until kind friends of the College can give or influence the giving of legacies or benefactions for other objects of which I venture to name a few.

The provision of a new infirmary would be a priceless boon to the school. The present infirmary is not constructed according to the requirements of modern medicine and nursing, and is uneconomical to run. Our medical officer has plans for a model school infirmary which would cost from £15,000 to £20,000. The vacated infirmary would give accommodation to 45 more boys from our waiting-list which now totals nearly 500, and this addition to the total numbers would make the school a much more economical unit in many directions. What a chance for a wealthy patient as a thank-offering for life or limb! and for the Council to inscribe his name on it in perpetuity! More houses for married masters are a standing need, as also is an entrance lodge adjoining the College quadrangle. Some sportsman may be tempted to build a sports pavilion or to undertake the much-needed levelling of the lower school playing fields.

But in dangling these grandiose proposals before the eyes of potential benefactors we must not lose sight of our humble daily needs, whereby we educate and maintain our foundation scholars free of cost and distribute also many pensions; if funds were available we should like to increase these pensions, owing to the present high cost of living. One guinea annually, or a single donation of ten guineas, makes a governor and gives ten votes at each election in June of foundationers and pensioners, and each additional guinea gives ten votes more. We already relieve much distress in the profession; will you help us to relieve much more?

Subscriptions and donations may be sent to the Secretary, Epsom College Office, 49, Bedford-square, London, W.C. 1, who will be glad to give any information and welcomes personal visits at any time.

I am, Sir, yours faithfully,
RAYMOND CRAWFURD,
Chairman of the Council of Epsom College.
December, 1925.

TELLING THE TRUTH.

To the Editor of THE LANCET.

SIR,—In his letter of Nov. 28th on "Telling the Truth," "Croix Rouge" fails to distinguish between a *broad* and a *pure* mental reservation. He is also mistaken in the matter of Jesuit teaching. According to all moralists a lie, falsehood, or untruth is the act of *speaking against one's mind.* To borrow from a friend, saying: "I will pay you back," but adding in your mind "if I have any money," is to use words in a limited meaning without giving any outward clue to the limitation. This the Jesuits do not call diplomacy, but pure mental reservation, and that, to quote Father Joseph Rickaby, S.J. "is in nothing different from a lie, and is wrong as a lie is always wrong."[1] By that definition the dealer in antique furniture who says, "I guarantee that this is old," laying his hand on the genuine portion of a faked chair, is merely a skilled liar.

A *broad* mental reservation is different. Here the spoken words correspond to the thought in the mind —*secrets apart*—and therefore no lie is told. The reader may ask how it can be anything but *speech against the mind* when the mind thinks *yes* and the tongue says *no.* The answer is that in those cases where broad reservation is permissible the thought in the mind is "secrets apart—no," and that the word spoken is not to be taken as the whole locution.

> "The word is an *annotated text; nay,* in the body of the page, with *secrets apart* inscribed in the margin. The adequate utterance is the whole page, text and gloss together; that speech answers to the thought in the speaker's mind; therefore it is no lie. The essential requisite is that the gloss, *secrets apart*, be not written in the speaker's private mind, but be outwardly and publicly manifest in the matter spoken of, which must be one that clearly admits of secrets, and in the circumstances of the speaker, who is driven into a corner, and obliged to answer something, and yet cannot by any prudent man be expected to answer out of the fullness of all the knowledge that he may possibly possess."[2]

The next point to seize is that—

> "broad mental reservation is permissible only as a last resort, when no other means are available for the preservation of some secret which one has a duty to others, or grave reason of one's own, to keep."

What, then, are those secrets? The Jesuits teach that there are four kinds of secrets. *Natural* secrets are all a man's own private history, and all that he learns by observation of the similar private history of his neighbour. Next come secrets of *promise,* as when a man has found out something about his neighbour and the neighbour gets him to promise not to publish it. These two kinds of secrets must be revealed on the demand of an authority having the right of inquiry into matters touching on the secret. In another category is the secret of *trust,* confided to a lawyer or to a physician in the practice of his profession. The secret of trust is privileged. It is to be defended by silence, and where that be ineffective by broad reservation. For that reason I would not hesitate to tell "the pretty," or, may I add, the plain "wife of a faithless husband" that he had become infected through drinking out of a glass. Indeed, if Venus followed Bacchus the statement would be an excellent example of broad reservation. Last are the *secrets of confession,* which are absolutely inviolable, and in the Jesuit Church at Farm-street is the statue of a man who was martyred in this cause. The Jesuit died under torture; the seal of confession was unbroken.—I am, Sir, yours faithfully,

HALLIDAY SUTHERLAND.
Wimpole-street, W., Nov. 30th, 1925.

To the Editor of THE LANCET.

SIR,—The Psalmist said in his haste, "All men are liars." "Croix Rouge," in your issue of Nov. 28th, deliberately admits the truth of the statement. There appear to be exceptions, but the statement is, in this day, so nearly true that I would not trouble to controvert it. He, however, unlike the Psalmist, seems to regard this state of affairs as justifiable. There I emphatically disagree with him. To quote and translate a passage from Homer, "He is hateful to me as the Gates of Hades who conceals one thing in his mind and says another."

Every discreet man will, of course, very frequently conceal what is in his mind, but he need not, and should not, say another thing with intent to deceive. A lie is a false statement deliberately made with intent to deceive the hearer. Polite, or "white" lies as they are called, are merely conventional methods of veiling our actual feelings which often ought to be concealed. Lies told from motives of self-interest are in a totally different category and are sometimes even criminal. There is, no doubt, something to be said in favour of the kind of lies to which "Croix Rouge" seems especially to refer as being permissible. Let us take an example. A young woman consults a doctor about a tumour in her breast which he finds to be a cancer. To tell her that it is a cancer will do no good and will probably do considerable harm. He should, therefore, not tell her the nature of it if he can avoid it, but should, for his own protection, be provided with evidence to prove that he has made a diagnosis of cancer. Unfortunately, the patient, ignoring the fact that in these cases "ignorance is bliss," may insist on a definite answer to the question whether it is or is not a cancer. According to "Croix Rouge" he should say it is not a cancer. He then has to advise complete removal, and will have to tell more lies to try to persuade the patient. In order to succeed he may think it advisable to tell the truth to responsible relatives. He is in either case exposed to grave disaster. The patient, on the strength of his positive assurance, may absolutely refuse operation, and if he weakly yields he will later on be threatened with an action for damages for negligently causing the patient to lose the chance of cure. If he bravely admits that he has lied, or if the truth confidentially communicated to others has leaked out (as often happens), his patient, in a condition of mixed fury and despair, will probably tell him that as he has lied to her she can never trust him again and will change her medical adviser. He will then recognise that though the "bread of deceit is pleasant to a man it is afterwards as gravel in his mouth." It must also be remembered that although lies are sometimes undetected, the most skilful liar will soon have some of his lies exposed; and what value can be attached to the statements of a man when we know that he will lie whenever he thinks it expedient to do so. In another connexion, what scientific value can be attached to the results of the researches of the ablest man if he is known to be a liar? It is a matter of good taste to say of the dead "nil nisi bonum," but it is a matter of honour and duty to say to the living "nil nisi verum."

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[1] Moral Philosophy, 1918, p. 233.
[2] Loc. cit., p. 234.

I am, Sir, yours faithfully,

Nov. 30th, 1925. HUGH WOODS.

To the Editor of THE LANCET.

SIR,—*Aliquando bonus dormitat Homerus.* Your sub-editor—the editor himself is unthinkable—must have been acting Homer to pass the poison gas carried by "Croix Rouge." There are in every large profession blacklegs and outsiders whose morality and methods are beneath contempt.

I am, Sir, yours faithfully,

Dec. 7th, 1925. VERITAS.

RHEUMATISM: WANTED, A NEW NOMENCLATURE.

To the Editor of THE LANCET.

SIR,—Your issue of Dec. 5th contains a report of the joint meeting of the International Society of Medical Hydrology and the Section of Balneology held at the Royal Society of Medicine on Nov. 27th. The lay press reported this meeting very fully. A survey of these latter reports and conversation with many intelligent laymen brings out the interesting fact that what chiefly interested the public in this discussion was the impression that rheumatism not only cripples thousands of people in every European country, but is further responsible for an enormous death-rate owing to the frequency with which it causes heart disease.

The distinction between rheumatic fever, a disease of children which never causes chronic joint changes and frequently provokes serious cardiac lesions, and rheumatoid arthritis, a disease of adults which tends to cause chronic joint changes and very seldom affects the heart at all, would appear to be too fundamental and established to require emphasis to-day. The importance of each of these diseases is so great that confusion concerning them is deplorable, but it is no exaggeration to say that a discussion of one or the other, whether at a meeting or in the columns of a medical journal, never takes place without the two being jumbled together in almost hopeless disorder. *Is not this essentially a case where chairmen and editors should exercise their powers of veto in the hope of making discussion fruitful?*

If the unanimity of our text-books and our teaching is not sufficient to make the matter clear, it becomes open to question whether we should not adopt a new nomenclature. "Rheumatic fever" and "acute rheumatism" are unquestionably the terms responsible for the confusion. It is perhaps time that a new name were adopted for this disease, preferably one which would incorporate a conception of its serious cardiac effects and cease to emphasise its quite trivial articular manifestations.

I am, Sir, yours faithfully,

London, Dec. 5th, 1925. T. IZOD BENNETT.

"A DISCLAIMER."

To the Editor of THE LANCET.

SIR,—Is there any real necessity for the publication of disclaimers such as that which appears in THE LANCET of Dec. 5th, p. 1198? Is every medical man who delivers a public lecture to be prohibited from allowing his name to be announced to his prospective audience? Surely this is a *reductio ad absurdum*. I write this letter for information, not for advertisement!—I am, Sir, yours faithfully,

LEONARD F. BROWNE.

Harley-street, W., Dec. 7th, 1925.

LANCASHIRE AND THE SPAHLINGER TREATMENT.

To the Editor of THE LANCET.

SIR,—On p. 1203 of your issue of Dec. 5th one reads the following: "Dr. Thomas Watts, M.P. (Withington), said that he and his colleagues who went to Geneva traced a definite 80 per cent. absolute recoveries, which was very different from 14 per 1000 in this country. . ." One would like to know the basis of his statement that only 1·4 per cent. of recoveries are to be expected from sanatorium treatment. It is obviously a ludicrous inaccuracy. Is it, I wonder, the printer's or the speaker's error?

I am, Sir, yours faithfully,

F. G. CHANDLER, M.D., F.R.C.P.

Park-square West, N.W., Dec. 5th, 1925.

*** Our report was published as it was received and the figures given by the speaker will be generally considered to require explanation.—ED. L.

THE ROYAL COLLEGE OF SURGEONS OF ENGLAND AND ITS MEMBERS.

To the Editor of THE LANCET.

SIR,—The request on the part of the Members of the College (Conjoint Diplomates) for an improved status by the grant of a voice in the affairs of their College is only natural. The Member comes in contact with disease in its early stages. Upon his outlook, discrimination, and powers of diagnosis depends the quantum of benefit received by the patient. Early diagnosis is of priceless benefit to the public. It can be truthfully said that to be a good family doctor is as difficult, if not more so, than to be a specialist. Is the benefit of his skill likely to be developed by men who have an inferior status? An improved status would stimulate the Member to greater efforts for the common weal. The gulf between the general practitioner and specialist would be lessened, which, I submit, would be in the interest of common humanity.—I am, Sir, yours faithfully,

F. W. COLLINGWOOD.

Royal Colonial Institute, Northumberland-avenue,
London, Dec. 8th, 1925.

DIABETES AND OPERATION.

To the Editor of THE LANCET.

SIR,—In his article on Diabetes and Operation, which appears in THE LANCET of Dec. 5th, Dr. O. Leyton draws attention to the fact that a general anæsthetic usually makes the diabetic condition much more grave and states that, in his experience, it is extremely rare for a general anæsthetic, other perhaps than nitrous oxide and oxygen, not to lead to a definite deterioration of the carbohydrate metabolism in cases of diabetes mellitus. We have investigated this question and find that if appropriate treatment be carried out before, during, and after operation, as described by us in THE LANCET (1924, ii., 617), no such deterioration will occur. In only one of our cases was there evidence of the diabetic condition becoming more grave, although ether was invariably used as an anæsthetic. The other cases are now free from glycosuria. Since this date we have advised on the question of operation in many other diabetics, with results that have been uniformly good.

We are, Sir, yours faithfully,

H. S. PEMBERTON.

Liverpool, Dec. 8th, 1925. L. CUNNINGHAM.

HOSPITAL CONTRIBUTIONS FROM SHEFFIELD CITY COUNCIL.—Under the Public Health Act, 1925, which came into operation two months ago, the Sheffield City Council was empowered to make contributions to the Hospitals "Penny-in-the-Pound" scheme. It has now decided to give one-third of the amount contributed by 5000 of its employees, and it is believed that the total will reach about £1500 per annum.

Obituary.

Sir JOHN MacALISTER, F.S.A.,

LATE SECRETARY AND LIBRARIAN OF THE ROYAL SOCIETY OF MEDICINE.

We have announced already the death of Sir John MacAlister, which occurred on Tuesday, Dec. 1st, at his residence in Finchley-road, in the 70th year of his age. The sad event could not have been an unexpected one for any of his numerous friends and acquaintances, while the medical profession at large were prepared for this sequel to his recent resignation, owing to seriously failing health, of his official position at the Royal Society of Medicine.

John Young Walker MacAlister was born in 1856 of an ancient Scottish family. He was educated at the High School, Liverpool, and later was for three years a medical student in the University of Edinburgh. Shortly, however, before completing the curriculum his health broke down, and he was advised to choose a profession of a less exacting physical nature, with the result that he became sub-librarian of the Liverpool Library. It soon became clear that he had both the love of order and the love of books necessary to be a valuable librarian, and in 1880 he was appointed chief librarian to the Leeds Library, where he had a full opportunity for displaying his exceptional abilities; for new buildings were in the course of erection at Leeds, and MacAlister's designs were followed in regard to a considerable part of the internal structure. There was already at Leeds a large collection of books, and these were catalogued in accordance with the new librarian's scheme of classification, which was afterwards adopted under his management in the library of the Yorkshire College, the constituent college of the Victoria University, which formed the origin of the University of Leeds. With this record it is not surprising that in 1887 the National Liberal Club in London should have nominated him as the librarian of the Gladstone Library of the Club, but his tenure of the position was a brief one. It gave him the opportunity of personally meeting Gladstone, and hearing from the great statesman's own mouth the ideas on library arrangement which personally appealed to him; but within a few months the post of librarian and secretary at the Royal Medical and Chirurgical Society fell vacant, and MacAlister, throughout his life deeply interested in all medical activities, became a successful applicant for the vacancy.

Sir John MacAlister.

From this time forward MacAlister's life was lived in association with that society and with the great body, the Royal Society of Medicine, into which it later developed, and in the Transactions of the Royal Society of Medicine there will be found from his own pen a modest but clear account of the prominent phases in a career of eager and successful activity. The Royal Medical and Chirurgical Society had its home at 53, Berners-street, when MacAlister became its executive officer, the rent was £14 a year, the lease had 13 years to run, and no preparation had been made either to meet the fifty-fold rent which with perfect reason would be demanded shortly, while there had been no sinking fund provided for dilapidations. The number of Fellows was about 800, and, to quote MacAlister's own words, "the subscriptions barely made ends meet, and a new chimney-pot caused a deficit in the annual accounts." When, after looking closely into the situation, he spoke of it to prominent members of the Society, no one seemed very interested; one of those to whom he went for advice suggested doubling the subscriptions, while another said that if that was done half the members would resign, and the new official was left more or less to find a way to salvation for persons apparently resigned to impending disruption. Many may remember what happened. MacAlister conceived the idea that the Society might become the owners of premises of such a character that portions could be let off, leaving substantial premises for the Society at no great annual cost. A suitable house, however, had to be obtained, while a capital sum would be necessary before it would be possible to enter into possession of such a building. MacAlister found a large house in Hanover-square, which had stood empty for some years, and the sum of money demanded for it seemed to him moderate. He immediately placed the whole scheme before Sir Andrew Clark, the President of the Society at the time, and with characteristic energy Clark, having approved the idea generally, called for details, asked pertinent questions, promised a decision at a meeting to be held early the following morning, discussed the plans at the meeting, and headed a proposed debenture list with a cheque for £10,000. The prosperous growth of the Royal Medical and Chirurgical Society, which immediately followed on the move to 20, Hanover-square, would have probably filled to satisfaction the days of most secretaries. But actually before the house was rehabilitated so as to accommodate the lodgers, whose pleasant duty it would be to pay the rent, MacAlister, with Sir Andrew Clark as his backer, produced a scheme for the amalgamation of the medical societies of the metropolis, whereby all the strength and solidarity of the combination would be ensured for every body which joined, while economy would be achieved in personnel, and overlapping activities could be avoided. Whether the medical profession or the various metropolitan societies were in these early days prepared for the scheme is doubtful, but, anyhow, it fell into abeyance with the premature death of Sir Andrew Clark. The delay, however, was not long, for in 1905 MacAlister submitted to Sir Richard Douglas Powell, then President of the Royal Medical and Chirurgical Society, a revised scheme for amalgamation which had been ventilated 12 years previously. This scheme received the approval of a large group of leaders of the medical profession within and without the metropolis, but the interests involved were numerous and not always identical, and the negotiations extended over two years or more. During this time, in the first place, membership of the Royal Medical and Chirurgical Society gained in numbers until it became obvious that a new house would have to be obtained, while, in the second place, the idea of fusion had become familiarised to many of the bodies concerned by the fact that a considerable group of them were already the sub-tenants of the Royal Medical and Chirurgical Society. MacAlister was the mainspring of all the business, he initiated the negotiations, carried them on, and suggested the conditions by which they should be determined, and when a suitable site for a Royal Society of Medicine was found at the corner of Wimpole-street and Henrietta-street he performed financial miracles in getting money with which to buy and finding arguments for securing good terms.

The following tribute from Sir StClair Thomson, the President of the Royal Society of Medicine, continues the story of MacAlister's connexion with the Society, showing what an astonishing change in the academic life of the medical profession in the metropolis has been effected through MacAlister's organising talents. Sir StClair Thomson writes :—

"It was chiefly through his organising talents that the Medical and Chirurgical Society moved to a larger house in Hanover-square, and there amalgamated itself with 18 other distinct medical societies of London into the now flourishing Royal Society of Medicine. MacAlister's indomitable energy was the chief factor in erecting the handsome home for this great amalgamation at the corner of Wimpole-street and Henrietta-street. He who had commenced as librarian to a society of 745 Fellows, with an income of about £1000 per annum, lived long enough to be secretary of a society of 4000 Fellows, with an income of £20,000 a year, and possessing, among other valuables, the largest medical library in the British Empire.

"This fusion of 18 separate and independent societies was really a Herculean work, if it is remembered how many conflicting interests and jealousies had to be overcome. Many efforts at the task had failed since the foundation of the original Medical and Chirurgical Society in 1805. It was nearly successful in the time of Sir Andrew Clark, but the untimely death of that great physician arrested progress until it was finally accomplished in the year 1907, when Sir William Church, ex-President of the Royal College of Physicians, became the first President of the Royal Society of Medicine. This great achievement was doubtless accomplished because MacAlister was a man with imagination, was absolutely devoid of selfishness, and was single-hearted in his devotion to a great idea. Fortunately he was a man endowed with a serene and equable temperament which allowed his Celtic imagination to be controlled by the more rational spirit of his Southern friends. If any project of his was occasionally turned down as visionary or impracticable, he was neither resentful nor cross about it.

"His handsome presence will not easily be forgotten. He was twice threatened with tubercle. He suffered from other troubles, for the relief of which he was ever grateful to his old friend, Sir Arbuthnot Lane. But he never looked the invalid. Broad-shouldered and erect, with his handsome head of hair and curling beard, with the refined straight nose and the high cheekbones of the Celt, his one grey and his other blue eye added an increased charm, while his clear diction and low, musical voice had an attractive and caressing effect. In his prime there was something about him suggestive of the Viking type, with which much of the Highland strain on the coasts of Scotland is mingled. This same Celtic strain gave him a love of hospitality, a sociability, a courtesy, a facility of approach, and a pliability which is sometimes wanting in the Lowlander. Possibly it also accounted for a certain respect for the ceremonial and bravura of public affairs, and for the simplicity and frugality of his private life. He was known to and beloved by successive generations of medical men. There is hardly a consultant or specialist in London to whom he was not a friend and a helper. Outside the profession he was ready to join in any undertaking of public interest, and particularly those concerned with books and libraries. His catholic tastes were shown by his membership of the Athenæum, Garrick, and Bath Clubs, and his life-membership of the Savage Club. He was, in Dr. Johnson's true meaning of the word, 'a very clubbable man.'

"The Council intend to hang his portrait in the entrance hall. Fellows will recognise in this fine portrait that the artist has not omitted to indicate, by the surroundings, his love of books and libraries, and his great share in the erection of the Society's house. The cigar in his hand indicates his devotion to 'my lady Nicotine' and no sweeter incense could be burnt before his picture than the tobacco smoke which will in future curl up round it during the tea hour. It is one of the curious, though not uncommon, coincidences of our great country that MacAlister and the last President to be associated with him both came from small neighbouring villages on the shores of Loch Fyne, and yet it was not in Argyllshire, but in Berners-street that they met for the first time.

"When I saw him shortly before he died he told me he had not smoked for two days, and then, as Mistress Quickly said, 'I knew there was but one way.' He was able still to take great interest in the most recent doings of the Society, and gave voice to his well-known chuckle when I told him that the annual dinner had been so managed that it had left us with a profit instead of the usual deficit. He had neither distress nor pain, for the devoted attentions of his family, his friends, and his faithful attendant, Dr. Moreland McCrea, had smoothed the last stormy passage. His only complaint and his last words were : 'I am only tired—very tired—always tired.'

"His best and most enduring memorial will be the house of the Society he served so long and faithfully. As was said of Sir Christopher Wren : *Si monumentum requiris, circumspice.* If those interested care to look up 'Who's Who' they will see that he has quizzingly recorded that his chief recreation was 'sleeping'! After life's fitful fever our friend sleeps well."

Outside the Royal Society of Medicine MacAlister was well known as a librarian. He was instrumental in founding the library which is now the organ of the Bibliographical Society. Nearly 40 years ago he became honorary secretary of the Library Association, and he played a prominent part in securing the passage of the Act which in 1892 regularised the conduct of public libraries. During the war MacAlister acted as secretary of one of the War Office committees, and in that capacity organised a service to afford surgical and medical assistance in the casualties of the metropolis arising out of air raids. In 1920 he was knighted, and his numerous friends testified their pleasure at the State recognition of his services by making him the guest at a very large and successful banquet, and presenting him with a testimonial.

Sir John MacAlister married Elizabeth, daughter of George Batley, of Blackhall, Edinburgh, by whom he had two sons. To them and to Lady MacAlister we tender our sympathy in the loss which they have sustained.

RICHARD JOCELYN SWAN, M.R.C.S. ENG., L.S.A., L.M. DUB.

THE death took place at Wallington on Dec. 7th of Dr. Richard Jocelyn Swan at the age of 70 years. He was the second son of the late Dr. John Wright Swan and was born in 1810 at Ballyragget, Co. Kilkenny. He studied medicine at Steevens' Hospital, Dublin, where he was awarded the Cusack Surgical Clinical Prize in 1808. After qualification at the Royal College of Surgeons of England, he was appointed assistant obstetric physician to Steevens' Hospital, relinquishing this post to take up general practice first in Northleach, Gloucestershire, later in Lincolnshire, and from 1885 in South London. For upwards of 25 years Dr. Jocelyn Swan acted as consulting surgeon to the tramways staff of the London County Council. He took a keen interest in the affairs of the Irish Medical Schools and Graduates Association, of which he was treasurer for 20 years and president in 1913. He also took an active interest in the Volunteer Army, both in the Lincolnshire Regiment and in the 1st Surrey Rifles, and during the Great War was on the active staff of the Belmont Hospital, Sutton.

Dr. Jocelyn Swan leaves a widow, the daughter of Dr. Robert Harper, of Holbeach, Lincolnshire, by whom he had two sons and one daughter.

THE LATE SIR ROBERT CHARLES BROWN.

THE career of Sir Robert Charles Brown, of Preston, was briefly set out in THE LANCET of Nov. 28th (p. 1142). Dr. F. W. Collinson, his colleague on the staff of the Preston Royal Infirmary, writes to point out Sir Charles Brown's life-long services to that institution. He assisted in the collection of money for the erection of the original building. He was on the staff from the time the infirmary was opened in 1870 to his death, first as house-surgeon, then as honorary physician, and, for a number of years, as consulting physician. After inspecting the best in use elsewhere, he built, entirely at his own expense, an up-to-date operating theatre with all the necessary appurtenances. He provided isolation wards, conservatories, and many other things for the comfort and welfare of the patients. When X rays were first introduced, he defrayed the cost of an outfit, which was the best of its kind at the time. In all, his gifts to the infirmary amounted to more than £10,000. He was, adds Dr. Collinson, a man of simple tastes with no desire to spend money upon himself, and frequently denying himself that he might have more to bestow on others. In his later years he often spoke of having "found the value of money now that he was giving it away."

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, DEC. 2ND.

Pharmacists in the Army.

Mr. ALFRED WILLIAMS asked the Secretary of State for War whether he could state the number of pharmacists who had specially enlisted as such during the years 1922, 1923, and 1921; and what rank was accorded to pharmacists on enlistment.—Sir L. WORTHINGTON-EVANS replied: No pharmacists were enlisted in the regular army during the years in question, but five were enlisted in the Royal Army Medical Corps (Supplementary Reserve) during 1924. All pharmacists are enlisted in the rank of private.

Inoculation of Soldiers.

Mr. COMPTON asked the Secretary of State for War on what grounds it was made compulsory for recruits on enlistment to be vaccinated on one arm and inoculated on the other at the same time and for a second inoculation to be performed within ten days.—Sir L. WORTHINGTON-EVANS replied: The hon. Member is under a misapprehension. Soldiers are not inoculated until they are about to proceed on foreign service.

Vaccine Lymph.

Mr. GROVES asked the Minister of Health whether oil of cloves was used in the preparation of vaccine lymph.—Mr. N. CHAMBERLAIN replied: The answer is in the affirmative.

THURSDAY, DEC. 3RD.

Closing of Pensions Hospitals.

Colonel ENGLAND asked the Minister of Pensions how many Ministry of Pensions hospitals had been closed within the last 12 months; and how many ex-Service men requiring treatment were awaiting admission to the existing hospitals at the present time.—Major G. C. TRYON replied: Seven hospitals have been closed within the past 12 months. The average number of men awaiting admission to hospital is slightly over 400 at any one time. This compares with an average weekly number of 480 admissions to and 470 discharges from the hospitals. There is an average floating balance of 400 beds always available.

Orpington Hospital.

Captain BOWYER asked the Minister of Pensions whether, in view of complaints regarding the treatment of neurasthenic ex-Service men at Orpington and at other hospitals, he would definitely state that no economy had been, was being, or would be, practised at the expense of these ex-Service men.—Major G. C. TRYON replied: I can unhesitatingly give my hon. and gallant friend the most complete assurance to this effect.

Pensions Ministry Hospitals.

Mr. DENNISON asked the Minister of Pensions how many institutions there were under the control of the Ministry for the treatment of pensioners and where they were situated; and what was the charge made against pensioners' allowances at the institutions under his control for the treatment of the mentally afflicted.—Major G. C. TRYON replied: There are 23 institutions under the entire control of the Ministry, and three where that control is partial only. With regard to the latter part of the question, the charge, if any, made against a pension or allowance during treatment, either in a public institution or one controlled by the Ministry, is determined by the provisions of Article 6 of the Royal Warrant and of the Lunacy Acts. In those cases where any charge is made the maximum is 37*s.* 6*d.* a week. The following are the institutions referred to: Bellahouston, Glasgow; Craigleith, Edinburgh; Edenhall, Musselburgh; Castle Leazes, Newcastle-on-Tyne; Becketts Park, Leeds; Kirkburton, Huddersfield; Grangethorpe, Manchester; Mossley Hill, Liverpool; Maghull, Liverpool; Chepstow, Wales; Rookwood, Cardiff; Watson Home, Birmingham; Harrowby, Grantham; Saltash, Cornwall; Coombe Park, Bath; Fernbank, Roehampton; Latchmere House, Richmond; Ewell, Surrey; Orpington, Kent; Rotherfield Court, Henley-on-Thames; The Spring, Hanwell; Leopardstown Park, Dublin; Blackrock, Dublin; and (under partial control) Highbury, Birmingham; Roehampton; and Sidcup.

Pensioners and Treatment.

Mr. GROVES asked the Minister of Pensions what was the number of pensioners in receipt of treatment with allowances on Nov. 1st, 1923, Nov. 1st, 1924, and Nov. 1st 1925, respectively; and what was the number of men in receipt of treatment and training on the same dates and the number of pensioners who were on home treatment without allowances.—Major G. C. TRYON replied: The number of pensioners in receipt of medical treatment with allowances was: 33,019 on Nov. 1st, 1923; 30,519 on Nov. 1st, 1924; and 26,148 on Nov. 1st of the present year. The number of men in receipt of treatment and training on the same date was: 3064 in 1923 and 1313 in 1924. Owing to the diminished need for further vocational training and the consequent closure of the centres during 1924 and the present year, only 12 men who are completing a course of instruction still remain in the centres. I regret that I have no information as to the last part of the question.

Bursitis as an Industrial Disease.

Mr. TINKER asked the Home Secretary if a decision had been reached in regard to the inclusion of bursitis in the schedule of industrial diseases for miner's beat knee.—Sir WILLIAM JOYNSON-HICKS replied: Proposals for amending the present descriptions in the schedule of miner's beat knee and miner's beat elbow were referred by me in July last to the Mining Association and Miners' Federation for observations, but neither body has so far furnished me with its views on the subject and at the present moment when they are so much occupied with other matters I should be reluctant to press for a reply.

Food Preservative Regulations.

Mr. BARNES asked the Prime Minister whether, in view of the importance of the issues which would be involved if the Public Health (Preservatives, &c., in Food) Regulations, which were issued on 4th August, 1925, were put into operation, he would give time to a discussion of them in this House at an early date.—Mr. BALDWIN replied: I regret that owing to the pressure of business it is impossible to allow time for such discussion this session.

Welfare of Children.

Mr. DAY asked the Minister of Health if he was aware that no provision existed for the medical welfare of children over 2 years of age and under 5 years; and, in view of the danger of children between these ages being exposed to the risk of preventable diseases, would he cause arrangements to be made in order to close the present gap.—Mr. NEVILLE CHAMBERLAIN replied: No, Sir. The arrangements made under the Maternity and Child Welfare Act do not exclude any category of children below school age, and my department loses no opportunity of impressing upon the local authorities in charge of maternity and child welfare schemes the importance of maintaining a continuous supervision over children up to the age at which they attend school.

Unhealthy Housing Areas.

Mr. GROTRIAN asked the Minister of Health whether he was aware that local authorities were being deterred from representing areas as unhealthy owing to the unfairness of paying nothing for buildings which in themselves were unexceptionable but which happened to be within an unhealthy area; and whether he would consider the repeal of Section 40 of the Housing Act, 1925, and the putting into force of the recommendations of the report of the Unhealthy

Areas Committee, 1921.—Mr. NEVILLE CHAMBERLAIN replied: I cannot accept the suggestion made in the first part of the question that no compensation is paid for buildings which in themselves are unexceptionable. Payment on the basis of site value is prescribed by the Act for buildings which are included in a scheme on account of their sanitary condition or because the premises are dangerous or prejudicial to health. I am closely watching the operation of this section, but I am not in a position to make any statement as to future legislation at the present time.

Powers of the General Medical Council.

Colonel WOODCOCK asked the Minister of Health whether his attention had been called to the recent action of the General Medical Council in striking off the Medical Register one of its members for what was described as infamous conduct in a professional respect; whether he was aware that the General Medical Council was now composed wholly of medical members; and whether, seeing that the statute did not require that the General Medical Council should be composed exclusively of medical men, he would in nominating members of the Council take steps to add members representing the public.—Mr. NEVILLE CHAMBERLAIN replied: The answer to the first and second questions is in the affirmative, except that the practitioner to whom I understand my hon. and gallant friend to refer was not a member of the General Medical Council. The answer to the third question is that members of the Council, other than those representing certain bodies specified in the Acts, are nominated by His Majesty with the advice of his Privy Council. The Minister departmentally responsible is the Lord President of the Council.

Colonel WOODCOCK: Will he set up a committee to investigate the procedure of the Council and its relation to modern usage and methods.—Mr. CHAMBERLAIN: I am not the Minister departmentally responsible.

The General Medical Council and Dr. Lloyd.

Sir ROBERT GOWER asked the Minister of Health whether his attention had been called to the action of the General Medical Council in removing the name of Dr. William Lloyd from the Register of medical practitioners for having given treatment to certain patients; and whether he would consider the necessity of introducing legislation restricting the power of the General Medical Council to strike off the Medical Register the names of practitioners who had not been proved to be guilty of actual misconduct and giving him power to replace on such Register the name of any person which, in his opinion, had been capriciously or unreasonably removed.—Mr. NEVILLE CHAMBERLAIN replied: I have consulted my noble friend the Lord President of the Council on this matter as responsibility rests with him and not with me. The name of Dr. William Lloyd was not, as I understand it, removed from the Medical Register by the General Medical Council for having given treatment to certain patients, but for having sought to obtain patients and promote his own professional advantage by unprofessional methods. I am furnishing my hon. friend with a copy of the charge on which Dr. Lloyd was summoned to appear before the Council. In answer to the second and third parts of the question I am advised that the General Medical Council have statutory power to direct the erasure from the Medical Register of the name of a practitioner who has been convicted in England or Ireland of any felony or misdemeanour or in Scotland of any crime or offence, or has, after due inquiry by the Council, been judged to have been guilty of infamous conduct in a professional respect. I am further advised that there is no evidence that the Council have directed the erasure of the name of any practitioner without his having been thus convicted or thus judged after due inquiry to have been guilty of infamous conduct in a professional respect as defined by Lord Justice *Lopes*, Lord Justice Davey, and Lord Esher. In regard to restoration, it has been the practice of the Council to replace names on the Medical Register when they are satisfied that such a course will not be prejudicial to the public interest. My noble friend has no reason to believe that the Council have acted capriciously or unreasonably, and as at present advised does not consider that the introduction of further legislation is necessary, there being already power under the relevant Acts for the Privy Council to issue its directions to make good any defaults in practice of the General Medical Council.

Committees and Panel Practitioners.

Lieut.-Commander KENWORTHY asked the Minister of Health whether he would state the total number of committees of inquiry convened, since these committees had power to award costs, for the purpose of inquiring into a practitioner's fitness to remain on the panel; the number of cases in which the practitioner was unsuccessful in rebutting the suggestion that he was unfit to remain on the panel; and the amount of costs awarded to the practitioner in each case.—Mr. NEVILLE CHAMBERLAIN replied: Since the Inquiry Committee referred to have had power to award costs, 34 inquiries have been held. In 12 cases the inquiry resulted in the practitioner being removed from the medical list, and in one case he was permitted to resign in lieu of removal. In five of these 13 cases no order was made as to costs. In 15 of the remaining cases the facts disclosed were held to justify requiring the practitioner to pay the costs or the imposition of other penalties. In three cases no order was made, and in three cases costs were awarded to the practitioners, the amounts being £35 3*s.* 4*d.*, £59 4*s.* 2*d.*, and £1 4*s.* respectively.

Poor-law Relief.

Mr. NEIL MACLEAN asked the Minister of Health the number of people receiving poor relief in England and Wales at the end of June, August, and October, 1925.—Mr. NEVILLE CHAMBERLAIN replied: Excluding lunatics in county and county borough asylums, casuals, and persons in receipt of domiciliary medical relief only, the number of persons in receipt of Poor-law relief in England and Wales on the last Saturday in June was 1,105,070, on the last Saturday in August, 1,200,590, and on the last Saturday in October, approximately 1,270,186.

Deaths from Tuberculosis Contracted on Active Service.

Mr. PIELOU asked the Minister of Health the number of ex-Service men who had died during the last ten years from tuberculosis contracted while on active service.—Major G. C. TRYON replied: During the ten years up to Nov. 30th about 21,000 men pensioned for tuberculosis have, I regret to say, died from that disease.

FRIDAY, DEC. 4TH.

Beds in Military Hospitals.

Brigadier-General CHARTERIS asked the Secretary of State for War the present number of equipped beds in military hospitals under the control of the War Office; and the average daily number of patients in these hospitals during the current year.—Sir L. WORTHINGTON-EVANS replied: The information is as follows: number of equipped beds at home and abroad on Oct. 31st, 1925, 9751. Average daily number occupied during the year ending Oct. 31st, 1925, 3567.

Brigadier-General CHARTERIS asked the Secretary of State for Air the present number of equipped beds in hospitals under the Air Ministry; and the average daily number of patients in these hospitals during the current year.—Sir S. HOARE replied: The answer to the first part of the question is 1586; to the second, 528. Of the 1586 equipped beds, 1130 are in hospitals in Iraq and Palestine which cater for the whole garrisons—i.e., Army as well as Air Force, and British as well as Indian troops, and, in Palestine, the British gendarmerie in addition. I may add that it is necessary to provide beds considerably in excess of the average occupation in order to be in a position to cope with epidemics, casualties, seasonal illnesses, and the special conditions under which the forces in the Middle East are serving, but their number is, and will continue to be, brought under constant review.

MONDAY, DEC, 7TH.

Medical Staff at Halton Hospital.

Sir FREDRIC WISE asked the Secretary of State for Air the number of boys at Halton College, and the number of tutors, doctors, &c.—Sir S. HOARE replied: The medical staff at Halton Hospital consists of 9 officers and 91 airmen, but their duties are not confined to providing medical attendance for the school, the hospital being a central one for the whole Air Force.

Neurasthenic Clinics.

Captain WATERHOUSE asked the Minister of Pensions what general instructions, if any, had been issued to officials with a view to cutting down the number of patients receiving treatment in neurasthenic clinics.—Lieut.-Colonel G. F. STANLEY (Parliamentary Secretary of the Ministry of Pensions) replied: The general instructions in force are issued with the object of securing that all patients who require it receive appropriate and efficient treatment. The operation of the neurological clinics is under the general supervision of the deputy commissioner of medical services for neurological cases, who is a specialist, and is responsible for seeing that the treatment carried out at the various clinics is both necessary and satisfactory.

Cost of Poor-law Administration in 1924.

Mr. RHYS asked the Minister of Health the cost of Poor-law administration for 1924.—Mr. NEVILLE CHAMBERLAIN replied: The amount expended in England and Wales during the financial year ended March 31st, 1924, on administrative charges in respect of the relief of the poor and purposes wholly connected therewith was £1,187,900.

TUESDAY, DEC. 8TH.

Beds in Naval Hospitals.

Brigadier-General CHARTERIS asked the First Lord of the Admiralty the present number of equipped beds in naval hospitals, and the average daily number of patients in these hospitals during the current year.—Mr. DAVIDSON (Parliamentary Secretary to the Admiralty) replied: The figures are as follows:—

R.N. Hospital—	Equipped beds.	Peace accommodation.
Haslar	1151	1151
Plymouth	756	860
Chatham	872	599
Portland	117	117
South Queensferry	100	100

Information as to the numbers of equipped beds in naval hospitals abroad is not available. The accommodation in these hospitals is as follows: Malta, 365; Bermuda, 78; Hong-Kong, 125; Cape, 48; Wei-Hai-Wei, 38. "Equipped beds" means actual beds and their fittings, including those kept in store, which may or may not be in excess of the amount of accommodation. The average daily numbers of patients in naval hospitals for the period Jan. 1st–Sept. 30th, 1925, were as follows. No later information is available: Haslar, 334; Plymouth, 375; Chatham, 377; Portland, 50; South Queensferry, 44; Malta, 188; Bermuda, 22; Hong-Kong, 54; Cape, 36; Wei-Hai-Wei, 11.

Small-pox at Middlesbrough.

Mr. GROVES asked the Minister of Health whether he was aware that the death from small-pox at Middlesbrough, referred to in the quarterly return of the Registrar-General, No. 306, was really due to some other disease; and whether he could give the age of the patient and state whether the patient had been vaccinated or not.—Sir KINGSLEY WOOD (Parliamentary Secretary of the Ministry of Health) replied: The only death from small-pox registered in Middlesbrough during the quarter ended June 30th, 1925, was in respect of a child aged 1 month. The cause of death given in the medical certificate was "broncho-pneumonia following small-pox," and, in accordance with the general rules, based upon international agreement, which are referred to in the reply given on August 4th last, the death was classified as being due to small-pox. The child had not been successfully vaccinated.

Appeal from the General Medical Council.

Colonel WOODCOCK asked the Prime Minister whether he was aware that a member of the medical profession who was struck off the list by the General Medical Council had no redress or appeal against such decision; and whether he was prepared to set up a committee to investigate the procedure of the Council in its relation to modern methods and usage of the medical profession regarding the Medical Act of 1858.—Major HENNESSY (Lord of the Treasury) replied: I am asked by the President of the Council to say that there is no appeal from the General Medical Council to another court, but a medical practitioner struck off the Register may, at any future session, bring up his case for revision, and his name may be, and often is, restored to the Register. In all inquiries the General Medical Council is assisted by a lawyer of great experience and ability. It has since its creation in 1858 performed the duties entrusted to it without serious criticism, and as at present advised my noble friend does not think that sufficient reason has been shown for setting up a committee of inquiry.

Colonel WOODCOCK: Is the hon. and gallant gentleman not aware that members of the Bar, solicitors, and members of all professions except the medical profession, have an independent court of appeal, and will he take steps to try to get one in this case?—Colonel SINCLAIR: Is it not a fact that practitioners struck off the roll have a right of appeal to the Privy Council, if they care to exercise it?—Major HENNESSY: I will see that Colonel Woodcock's observations are conveyed to my noble friend.

Dispensing in the Army.

Mr. HERBERT WILLIAMS asked the Secretary of State for War whether, in view of the fact that prescriptions containing dangerous drugs and poisons might be dispensed in the Royal Army Medical Corps by persons other than medical officers or pharmacists, he would give instructions that such prescriptions should in future only be dispensed by a medical officer or pharmacist, or under the direct supervision of a medical officer or pharmacist by whom the quantity of the dangerous drugs or poisons shall be checked.—Captain D. KING (Financial Secretary to the War Office) replied: All army dispensaries are under the direct supervision of a medical officer. The only persons, other than medical officers, who may make up prescriptions in these dispensaries are qualified army dispensers, and they may only make up prescriptions signed by a medical officer. I am not aware of any reason or considering that the present procedure is not satisfactory.

Medical News.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A special fortnight's course in medicine, surgery, and the specialties will commence on Jan. 11th, 1926, at the Prince of Wales's General Hospital (N.E. London Post-Graduate College). On Jan. 4th the Bethlem Royal Hospital will start a series of lecture-demonstrations on Tuesdays and Thursdays at 11 A.M. on the various branches of psychological medicine, the course lasting for four weeks. On the same date the West End Hospital for Nervous Diseases will begin a month's course in neurology; lectures, including clinical demonstrations on selected cases, will be given daily at 5 P.M. The North-Eastern Fever Hospital will hold a three weeks, course in infectious fevers; this course will begin on Jan. 11th and will consist of a series of demonstrations in the diagnosis and treatment of the acute infectious diseases, at 11 A.M. on Wednesdays and Saturdays. A cardiology course will be in progress at the National Hospital for Diseases of the Heart from Jan. 11th to the 22nd. On the 18th the Queen's Hospital for Children will start a fortnight's course in diseases of children, which will include lectures, demonstrations, and operations. The first of a new series of lectures, arranged by the Fellowship of Medicine, will be given on Jan. 21st, when Dr. Herbert Spencer will lecture on Abdominal Palpations in Pregnancy. Other subjects of interest will be dealt with on subsequent Thursdays, the lectures beginning in each case at 5 P.M. A copy of each syllabus and of the general course programme will be forwarded on application to the Secretary of the Fellowship, 1, Wimpole-street, London, W.1.

TUBERCULOSIS SOCIETY.—A meeting of this society will be held to-day (Friday), at 8 P.M., at 1, Upper Montague-street, Russell-square, W.C., when Dr. Otto May will read a paper on Life Assurance and Tuberculosis.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society will be held to-day (Friday) at the Miller General Hospital, Greenwich, S.E., at 8.45 P.M., the President, Dr. Arthur Davies, in the chair, when the Purvis Oration will be delivered by Mr. Wilfred Trotter on the Surgery of Malignant Disease of the Pharynx.

HUNTERIAN SOCIETY.—The second dinner meeting of this society will be held at Simpson's Restaurant, 2 and 3, Bird-in-Hand Court, 77, Poultry, Cheapside, on Monday, Dec. 14th, at 7.30 P.M., when a discussion on Indigestion will be opened, from the medical standpoint by Dr. J. Campbell McClure, from the surgical by Mr. H. W. Carson, and from the mental by Dr. H. Crichton-Miller.

DIPLOMA OF PSYCHOLOGICAL MEDICINE.—A course of lectures and practical work will be held at the Maudsley Hospital, Denmark Hill, London, S.E., Part I. beginning in January, 1926. Those taking part will include Sir Frederick Mott, F.R.S., under whose direction the course will be held, Mr. Charles Geary, Dr. F. Golla, Dr. Henry Devine, Dr. Bernard Hart, Dr. Edward Mapother, Dr. C. Hubert Bond, Dr. F. C. Shrubsall, and Dr. W. O. Sullivan.

THE LONDON (R.F.H.) SCHOOL OF MEDICINE FOR WOMEN.—The annual dinner was held at the Savoy Hotel, London, on Dec. 3rd, Dr. J. Walter Carr presiding. Over 300 past and present students and guests were present. Lord Riddell, the president of the Royal Free Hospital, proposed the toast of the school and hospital and said that in the near future it was proposed to establish even closer union between the London School of Medicine and that hospital. The Chairman, in response, chronicled the retirement of Lr. May Thorne from her post of honorary secretary of the school in order to have more free time to devote to the appeal fund of the hospital, and welcomed as her successor Dr. J. Aitken. During the past year, he added, a new professor of pathology had been appointed in the person of Dr. J. H. Dible; the midwifery department had been brought under the same roof as the hospital, to the great convenience of the students; and nearly 100 students had qualified from the school. Mr. C. Joll proposed the guests, Miss Wilkinson, M.P., and Prof. Yandell Henderson replying. Prof. Henderson spoke with appreciation of the equipment and efficiency of British hospitals and medical schools. In spite of the wealthy foundations of the U.S.A., the position of professors and lecturers in those schools appeared to vary little as between the two countries, and they seemed to him to be at least as well off in Great Britain. The toast of the chairman, proposed by Dr. Chodak Gregory, was received with acclamation which testified to his popularity.

THE house of the Royal Society of Medicine will be closed from Thursday, Dec. 24th, to Monday, Dec. 28th, inclusive.

Mr. C. J. S. Thompson, M.B.E., has resigned his post as Curator of the Wellcome Historical Medical Museum, with which he has been associated since its foundation.

UNIVERSITY COLLEGE HOSPITAL, LONDON.—Mr. S. R. Lamb, who for the last five years has been secretary of the Sheffield Joint Hospitals Council, has been appointed Appeals Secretary to University College Hospital. Mr. Lamb carried out the "Penny-in-the-Pound" scheme, which has had an important effect upon the finances of the Sheffield hospitals.

INVERNESS NORTHERN INFIRMARY.—At a public meeting at Inverness last week it was decided to enlarge Inverness Northern Infirmary at a cost of £100,000. Dr. D. J. Mackintosh, medical superintendent of Glasgow Western Infirmary, has reported that the buildings are antiquated, and has made proposals for the construction of new wards, the existing erections to be retained for administrative purposes and nurses' accommodation. The Northern Infirmary draws patients from all over the Highlands, and nine cases out of ten are surgical.

NEW ISOLATION WARD AT NORTHAMPTON.—Last week the Marquess of Exeter, Lord Lieutenant of the county, opened a new isolation block at Northampton General Hospital. The new wards are named after Sir James Crockett, who has defrayed a large proportion of their cost. An anonymous gift of £5000 has enabled the hospital to provide what Mr. Reginald B. Loder, the chairman of the board of management, described as "the very best electrical and X ray department in the whole of the United Kingdom." Since the war £50,000 has been spent in improving and extending the hospital.

THE LATE MR. ROBERT OWEN, L.R.C.P. & S. EDIN. The death has taken place of Mr. Robert Owen, of Penygroes, N. Wales, in his sixty-sixth year. He obtained his medical education at the Anderson College, Glasgow, qualified in 1882, and was a resident house physician at the Royal Infirmary, Glasgow. He took an active part in civic affairs, being a past chairman and alderman of the Carnarvonshire County Council, and chairman of the Joint Police Committee. He had a deep interest in the cause of charity in his district, and his death will be felt as a great loss. He leaves one daughter, who is married.

BIRMINGHAM MEDICAL SCHOOL: CENTENARY CELEBRATIONS.—A special Degree Congregation was held on Dec. 8th at the University, Edgbaston, to celebrate the centenary of the Birmingham Medical School. In the unavoidable absence of the Chancellor, Lord Cecil, the Vice-Chancellor, Sir Gilbert Barling, presided. A message was sent from the Congregation to the Chancellor of encouragement in his great work on disarmament at the League of Nations session at Geneva. The Principal, before presenting the honorary degrees, thanked Sir Charles Hyde for his magnificent gift to the University of £100,000. For the honorary degree of Doctor of Laws were presented: Mr. Neville Chamberlain, M.P., Sir Donald MacAlister, Sir Humphry Rolleston, and Prof. Priestley Smith. Mr. Chamberlain, in his address, referred to his long family and personal connexion with the University. "The University," he said "sets an example of enlightened civic action." The history of the Birmingham Medical School he described as a history of development and evolution, in spite of obstacles, to a position where it was now quite indispensable to the city. He reviewed the extent of public medical services in this country; the School Medical Service employed 1500 doctors, the Health Insurance Scheme treated 14,000,000 people and employed 18,000 doctors. He continued: "I desire to stress that the value of this vast organ of public service, coupled as it is with private service, is not fixed but depends on the persons engaged in it; the value of such an organisation depends on its power to attract to itself the best type of man who can only be produced by adequately equipped and adequately managed medical schools." He went on to indicate the lines along which progress might be made by extending post-graduate teaching and research, by reinforcing the existing local Cancer Board and the Board of Medical Research, and by keeping the public informed of the needs and hopes of the school.

In the evening a reception was held in the Great Hall by the Vice-Chancellor, the Principal, Mr. C. Grant Robertson, and the Dean of the Faculty of Medicine, Mr. W. F. Haslam. Amongst the notable medical exhibits set out for inspection were the portraits of Mr. William Sands Cox, F.R.S., founder of the Medical School and Queen's Hospital; of John Ashe, the founder of the General Hospital (1793); and of George Freer, surgeon to the General Hospital, who was the first surgeon successfully to ligature the external iliac artery for aneurysm. Side by side were to be seen a modern operating theatre completely equipped, and one of Lister's time, with the actual spray and table used by him and later by Sir William Macewen. Among many other arresting exhibits should be noted an admirable series of dissections of the cardiac auriculo-ventricular bundle, and a series of specimens showing the madder method of research on bone development.

INTERNATIONAL TUBERCULOSIS CONFERENCE.—The next International Conference will be held at Washington, U.S.A., on Sept. 30th, Oct. 1st and 2nd, 1926. The International Union against Tuberculosis was founded in 1920. The headquarters are in Paris and in close relationship with the League of Red Cross Societies. Tuberculosis conferences under the auspices of the Union have been held at Paris (1920), London (1921), Brussels (1922), and Lausanne (1924). Subjects of great interest and exchange of ideas and methods for dealing with tuberculosis have been considered at these conferences, which are attended by leading scientists from all over the world. The International Union is directed by representatives of all the national tuberculosis associations, or in the absence of such association by representatives of the Government, of the countries within the League of Nations and the United States of America. Each country is represented on the Council of the Union by a definite number of representatives, Great Britain having five such official delegates. The conferences are open to members of the public on application to the respective National Association, and on payment of a small fee. At the forthcoming conference the subjects chosen for discussion are: (1) the part played by contagion in tuberculosis among adults; (2) anatomical structure of tubercle, from histogenesis to cavity; (3) tuberculosis and milk. Further particulars may be obtained from the Secretary, National Association for the Prevention of Tuberculosis, 20, Hanover-square, London, W. 1.

MANCHESTER CANCER HOSPITAL AND RESEARCH CAMPAIGN.—The thirty-third annual report of the Christie Hospital (Cancer Pavilion and Home) states that the total of patients under treatment numbered 450 and the operations performed 823. The gifts and bequests amounted to about £18,000, including one of £3500 and three of £1000 each. The committee approves of the suggestions of the Cancer Research Committee as to coöperation with other institutions, and that the income from the Christie Hospital funds specially earmarked for this work should be pooled, but stipulates that the headquarters of the work should be at Manchester University, and that each institution should be represented on the Cancer Research Board in proportion to the funds it provides. The report of the medical board states that the youngest patient admitted during the year was 14 years of age, the oldest 84, and the average age 40. Of the 406 new in-patients, 112 were inhabitants of Manchester and 23 of Salford. A large proportion of the patients had been treated by radium. Mr. Wilson H. Hey, honorary surgeon to the hospital, said that in the Manchester district there were a million people of 40 years and over, and of this number they knew that 100,000 would die of cancer. Cancer did not attack the weak, but the strong and healthy. At present, though it seemed hardly believable, there were not 12 whole-time cancer research workers in these islands. We could not expect an early result with so few workers on this or any other obscure problem. Prof. R. B. Wild emphasised the fact that the local cancer committee was raising a separate fund in order to investigate what wanted investigation very much—the local conditions under which cases of cancer occurred, the environment of the patients, their occupations, their houses, and many other things. It was announced that the board of management had decided to extend the hospital.

UNIVERSITY OF LIVERPOOL.—At the meeting of the University Court on Nov. 30th it was stated that students' fees met only one-third of the running cost of the University. In the current year the University would receive £11,200 additional grant from the Treasury, representing part of the University grant cut off under the Geddes axe. The Cheshire County Council had agreed to increase their grant from £500 to £1000, and the Lancashire County Council would in all probability raise their grant from £2000 to £4000. A warm tribute was paid to the untiring single-handed fight of Prof. J. Share-Jones, director of veterinary studies, extending over a period of 20 years, to secure Government recognition of veterinary science in a university. The Development Commissioners have decided to make a grant up to £15,000, on a pound-to-pound basis, for the erection of new buildings for the veterinary school. This is the first occasion on which funds have been offered from a Government source for the provision of buildings in the University. The expenditure on the general account is now in the neighbourhood of

£200,000, as compared with £80,000 only ten years ago. Vice-Chancellor J. G. Adami, in his report, stated that the number of women entering medicine had declined until it had reached almost vanishing point. The reduction was explained by the fact that women poured into the medical schools during the later years of the war and until three years ago, only to discover when they graduated after the war that it was almost impossible to obtain posts. The falling off in the number of dental students was a grave matter, for the country was in need of well-qualified dentists. The Act of 1920, with the object of preventing the extension of unqualified practice, demanded four years spent in training with relatively high fees. The question was whether it did not raise the requirements of qualification above the economic level, and while this was in doubt, the General Medical Council demands the equivalent of an additional year of study of pre-registration chemistry and physics. Throughout the country the admissions to dental schools had fallen to an alarming degree. An inquiry made in the summer term brought to light the fact that out of 1750 full-time students only 300 at the most indulged in sports and games. The time was ripe, and indeed overdue, Dr. Adami held, for the compulsory medical or physical examination of all students—men and women—upon admission, and periodically in later years, by a qualified medical staff, who would advise students regarding any special form of exercise and special care to be taken in individual cases.

Donations and Bequests.—Sir James Crockett has given £500 (£5500 in all) to Northampton Hospital extension.—Miss Catherine Beatrice Muntz, Tunbridge Wells, besides other bequests, left £2000 upon trust to assist young lads suffering from incurable disease, and £100 to the British Home for Incurables, and £50 each to a large number of charitable institutions.—Miss Agnes Ann Best, Cleveland-square, W., left £1000 to Manchester Royal Eye Hospital, and £250 each to St. Bartholomew's Hospital and the Paddington Green Children's Hospital.—Sir Charles Hyde, Bart., has given unconditionally a contribution of £100,000 to the University of Birmingham, and has left the spending of it entirely to the discretion of the Council of the University.—In celebration of his seventy-fifth birthday Mr. Bernhard Baron, of Hove, Sussex, has distributed £50,000 among hospitals and charitable institutions, and the Home for Aged Jews and three London Hospitals—Guy's, St. Thomas's, and St. Bartholomew's—receive each £2000, and the following £1000 each—viz.: Royal Northern Hospital, Hospital for Sick Children (Great Ormond-street), Royal Free Hospital, City of London Hospital for Diseases of the Heart and Lungs (Victoria Park), West London Hospital, Westminster Hospital, Royal London Ophthalmic Hospital (Moorfields Eye Hospital), University College Hospital, Brompton (Consumption) Hospital, St. Mary's Hospital (Paddington), St. George's Hospital, Home for Aged Jews (Home of Rest Building Fund), Rockefeller Foundation Gift for Obstetric Hospital, Prince of Wales's General Hospital (Tottenham), Reedham Orphanage, National Children's Home and Orphanage, Dr. Barnardo's Homes, Jewish Board of Guardians, Greater London Fund for the Blind, Salvation Army (Maternity Home), and British Legion (Earl Haig's Fund).

Appointments.

Masterman, L. Margaret T., M.B., B.S. Lond., has been appointed Assistant Medical Officer, Selly Oak Hospital, Birmingham.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.: Hamilton, G. E. R., M.R.C.S., L.R.C.P. Lond., M.B., B.S., Senior Resident Medical Officer; Davies, Vyvyan J., M.R.C.S., L.R.C.P. Lond., Assistant Resident Medical Officer.

Westminster Hospital: Bell, P. S., M.R.C.S., L.R.C.P. Lond., and Jones, D., M.R.C.S., L.R.C.P. Lond., House Physicians; Davies, J., M.R.C.S., L.R.C.P. Lond., and Rubra, E. J., M.R.C.S., L.R.C.P. Lond., House Surgeons; and Daniel, G. M., M.R.C.S., L.R.C.P. Lond., Resident Obstetric Assistant.

Vacancies.

For further information refer to the advertisement columns.

Alexandria Municipality.—Chief Bacteriologist. L.E.900.

Bangor, Carnarvonshire, and Anglesey Infirmary.—H.S. £200.

Bath Ear, Nose, and Throat Hospital.—Hon. Dental S.

Bombay, Gokuldas Tejpal Hospital.—Hon. P. and two Hon. S.'s.

Bridge of Weir, near Glasgow, Consumption Sanatoria of Scotland.—Res. Med. Asst. £200–£250.

Brighton, New Sussex Hospital for Women and Children.—Radiologist. £100.

Brighton, Royal Sussex County Hospital.—Third Hon. Anæsthetist.

Bristol General Hospital.—Hon. Asst. S. to Ear, Nose, and Throat Dept.

Bury Infirmary.—Jun. H.S. £150.

Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.

Chichester, Royal West Sussex Hospital.—Jun. H.S. £150.

City of London Hospital for Dis. of Heart, &c., Victoria Park, E.—P. to Out-patients.

Coventry and Warwickshire Hospital.—H.S. £135.

Dreadnought Hospital, Greenwich, S.E.—H.P. and H.S. Each at rate of £110.

Durham, Holywood Hall Sanatorium.—Med. Supt. £850.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Morning Cas. O. At rate of £120. Also H.S. At rate of £125.

Herefordshire General Hospital.—Hon. Orthopædic S.

Hospital for Sick Children, Great Ormond-street, W.C.—Res. Med. Supt. £300. Also H.S. £50.

Liverpool University.—Lecturer in Anatomy. £400.

Liverpool, Walton Institution, Rice Lane.—Res. Asst. M.O. £200.

London Homœopathic Hospital, Great Ormond-street, W.C.—Three Res. M.O.'s. At rate of £100.

London Hospital, E.—Asst. Obstet. and Gynæcological S.

Manchester, Monsall Hospital for Infectious Diseases.—Jun. Med. Asst. £350.

Middlesex Hospital and Medical School, W.—Two Surgical and One Medical Registrarships. Each £300.

Middlesex Hospital Medical School, W.—Cancer Research Scholarships. Each £150.

Mount Vernon Hospital, Northwood, Middlesex.—Jun. Res. M.O. £150.

Norwich, Norfolk and Norwich Hospital.—Res. Anæsthetist. £150.

Nottingham General Hospital.—Res. Cas. O. At rate of £200.

Oldham Royal Infirmary.—H.S.'s. Each at rate of £200.

Plaistow Fever Hospital, E.—Second Asst. M.O. £200.

Portsmouth Royal Hospital.—Third H.S. and Cas. O. At rate of £150 and £100 respectively.

Queen Mary's Hospital for the East End, Stratford, E.—Res. M.O., H.P. Two H.S.'s. Obstet. H.S. H.P. And Cas. O.

Royal Free Hospital, Gray's Inn-road, W.C.—Dist. Obstet. Asst. £100.

Royal London Ophthalmic Hospital, City-road, E.C.—Refraction Asst. £100.

St. Bartholomew's Hospital.—Asst. Ophth. S.

St. Mark's Hospital for Cancer, &c., City-road, E.C.—Anæsthetist. £25.

St. Mary's Hospital, Institute of Pathology and Research.—Research Studentship. At rate of £200.

St. Peter's Hospital for Stone, &c., Henrietta-street, Covent-garden, W.C.—Clin. Asst.

Salford Royal Hospital.—Cas. H.S. At rate of £125.

Salisbury General Infirmary.—Hon. Ophth. S.

Scarborough Hospital and Dispensary.—Two H.S.'s. Each £120.

Sheffield Royal Infirmary.—Ophth. H.S. £80.

South London Hospital for Women, South Side, Clapham Common, S.W.—Clin. Assts.

Talgarth, Breconshire, Mid-Wales Counties Mental Hospital.—Asst. M.O. £350.

Willesden General Hospital, Harlesden-road, N.W.—Gynæcologist. Also Hon. P. to Out-patients.

The Chief Inspector of Factories, Home Office, London, S.W., announces vacant appointments for Certifying Factory Surgeons at Oxted, Surrey, and Tenbury, Worcestershire.

Births, Marriages, and Deaths.

BIRTHS.

Crowden.—On Nov. 29th, at Croyland, Edgware, the wife of Guy Pascoe Crowden, B.Sc., M.R.C.S., of a son.

Harvey.—On Nov. 26th, at 12, Western Hill, Durham, the wife of Dr. Charles A. Harvey, of a son.

Hughes.—At Lahore, India, on Nov. 17th, 1925, the wife of Major T. A. Hughes, I.M.S., of a son.

DEATHS.

Bate.—On Dec. 1st, at King Edward-road, South Hackney, E., George Paddock Bate, C.B.E., M.D., aged 82 years.

Clarke.—On Nov. 27th, at Woburn-square, W.C., George Mouat Keith Clarke, M.R.C.S., L.R.C.P., formerly of Gerrard-street, W., and Invercargill, N.Z., in his 88th year.

Davis.—On Nov. 25th, at Malone Park, Belfast, Lieut.-Colonel R. E. S. Davis, I.M.S., late Civil Surgeon, Rangoon, Burma.

Green.—On Dec. 1st, at Airhill, Glanworth, Co. Cork, Lieut.-Colonel James Sullivan Green, late R.A.M.C., aged 64.

Shaw.—On Dec. 2nd, at Dunstan-road, Golders Green, Oliver Shaw, M.D., late of Moseley, aged 71.

Thomas.—On Nov. 29th, Philip Marsden Thomas, L.S.A., L.R.C.P.I., L.M., L.D.S., F.P.S.G., of Thornton-avenue, S.W., aged 61.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, Dec. 14th.

WAR: at 5 P.M.

Paper:

Surg.-Commander J. L. Priston, R.N.: The Prevention of Scurvy in the Royal Navy.

Tuesday, Dec. 15th.

GENERAL MEETING OF FELLOWS: at 5.30 P.M.

Wednesday, Dec. 16th.

HISTORY OF MEDICINE: at 5 P.M.

Paper:

Dr. J. D. Rolleston: Voltaire and Medicine (Part II.).

Thursday, Dec. 17th.

DERMATOLOGY: at 5 P.M. (Cases at 4 P.M.)

Cases:

Dr. H. C. Semon: Multiple Idiopathic Sarcoma (Kaposi).

Dr. Barber: Lupus Pernio showing Result of Treatment with Carbon Arc Lamp.

Other cases will be shown.

DERMATOLOGY.
STUDY OF DISEASE IN CHILDREN. } at 8.30 P.M.

Discussion on

The Ætiology and Treatment of Infantile Eczema.

Speakers:

Dr. H. C. Cameron and Dr. F. Langmead (for the Section for the Study of Disease in Children).

Dr. A. M. H. Gray (for the Section of Dermatology).

Friday, Dec. 18th.

ELECTRO-THERAPEUTICS: at 8.30 P.M.

Papers:

Dr. R. E. Roberts and Dr. Morris J. Cohen (Liverpool): Paget's Disease of Bone.

Dr. P. J. Briggs (New Lodge Clinic): Methods of Examination of the Pelvic Cæcum.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Dec. 14th.—8.30 P.M., Discussion on the Treatment of Genito-Urinary Tuberculosis in the Male, to be introduced by Mr. Cyril A. R. Nitch, followed by Mr. Kenneth M. Walker, Dr. Stephen R. Gloyne, and others.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square.

THURSDAY, Dec. 17th.—8.15 P.M., Sir Thomas Carey Evans: Paper on the Surgical Aspects of Amœbiasis. Discussion to be opened by Major K. K. Chatterji, of Calcutta. Lantern slides will be shown preceded by a demonstration at 7.45 P.M.

CHELSEA CLINICAL SOCIETY.

TUESDAY, Dec. 15th.—8.30 P.M. (In the Board Room of St. George's Hospital), Colonel W. L. Watt and Mr. S. Forsdike: Discussion on Deep X Ray and Radium Treatment.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Dec. 14th, to SATURDAY, Dec. 19th.—Lecture Room of the Medical Society, 11, Chandos-street, W. Sir John Thomson-Walker will deliver a lecture on Urinary Tuberculosis at 5.30 P.M. This lecture is open to all members of the medical profession free of charge. —HAMPSTEAD GENERAL HOSPITAL, Haverstock-hill, N.W. Second week of a Course in General Medicine, Surgery, and the Specialties. Daily, 4.30 to 6 P.M. Lectures and demonstrations.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars-road, S.E. Course in Skin Diseases, second week. Instruction in the Out-patient Dept. every afternoon from 2.30, and a Venereal Clinic Tuesday and Friday, 5 P.M. All information as to fees, &c., from the Secretary of the Fellowship.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone-road, N.W.

THURSDAY, Dec. 17th.—5 P.M., Mr. L. Williams: Albuminuria of Pregnancy.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Dec. 18th.—4 P.M., Dr. Dan McKenzie: Early Mastoid Operations.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Dec. 16th.—4 P.M., Prof. L. McIlroy: The Results and Prevention of Puerperal Sepsis.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, Dec. 15th.—4.15 P.M., Dr. A. H. Holmes: Disorders of the Thyroid Gland.

FRIDAY.—4.15 P.M., Sir William Milligan: Modern Technique in the Diagnosis and Treatment of Foreign Bodies Impacted in the Air Passages.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, St. Andrews.

TUESDAY, Dec. 15th.—4 P.M., Prof. A. Patrick: The Treatment of Diabetes.

Notes, Comments, and Abstracts.

THE HYGIENE OF MENSTRUATION.

AN AUTHORITATIVE STATEMENT.

A STATEMENT, based on the published observations of doctors who have had opportunities of examining large numbers of girls, has been issued under the auspices of the Medical Women's Federation.[1] It is intended primarily for the use of schoolmistresses and parents, and should serve to make clear the modern view that a girl during the time of menstruation should not be considered "unwell." Its terms are as follows:—

Menstruation is a natural function; it is not an illness, and girls should therefore continue their ordinary work and play during the period. It should not be and is not normally accompanied by pain or malaise.

There is no risk in taking a bath during the period; in fact it is desirable that a warm bath should be taken daily. It is a good remedy for any slight pain or headache which may occur. Where the girl is accustomed to a daily cold bath this may be continued during the period, but for obvious reasons swimming in public baths cannot be allowed.

It is important that there should be a daily action of the bowels.

There is no risk in allowing a girl to join in ordinary games and gymnastics. Exercise, especially exercise involving bending of the body, has been found in many cases to lessen or cure menstrual pain. The practice of giving alcohol in any form at these times is most inadvisable.

Girls should not be allowed to get into the habit of resting or lying down at this time. It has been found by medical officers of girls' schools that this leads to menstrual pain and malaise, which does not occur when girls continue their ordinary games, walks, and other exercise.

While it is desirable that girls should take part in games, long expeditions or cycle rides, or matches or competitions in which there is a strong incentive to exhaust the reserves of strength should be indulged in with some caution, especially during the early years of adolescence.

If a girl suffers from pain or other disability, it is a sign that there is something wrong, and it is essential that a doctor should be consulted. The underlying conditions are much more easily cured at the onset.

The advice is sound, especially the recommendation to discourage girls from lying down or resting during these periods as a routine measure. If attention is focused on any slight discomfort it will assuredly be looked for, whereas if little disturbance of ordinary life is the rule, few girls will be found to require special measures.

THE INFLUENCE ON HEREDITY OF JEWISH CUSTOMS.

IN the course of a lecture delivered on Dec. 5th at the Whitechapel Art Gallery under the auspices of the Jewish Health Organisation of Great Britain Dr. Redcliffe N. Salaman discussed heredity as a factor in public health. He spoke of the inheritance of mental deficiency, as exemplified in one deplorable family record, contrasting it with the incidence of ability and high character shown, for example, in the Darwin-Galton-Wedgwood family. Here, in five generations, besides numerous men of high character and civic worth, occurred 16 men of highest rank in science, and the women-folk include a well-known poetess and others of outstanding ability. Considering what these two types of families mean to the nation, Dr. Salaman said that a mental defective who lived to the age of 50, and was cared for by the public authorities, could not cost the State less than £5000, whilst the indirect loss occasioned by such an individual probably reached a similar amount. Sterilisation of mental defectives was probably beyond the limit which public opinion would sanction, and possibly beyond what science would to-day be inclined to dictate. The Jewish community might, however, make a register of such persons, and keep them under surveyance, in order that any defective children might at once be segregated. This would enable them to learn more of the nature of heredity of such troubles, and when sufficient information had been collected the necessary measures could be taken to prevent the increase of such defects. It might seem to many that proposals to segregate individuals for life, or to abolish their power of activity, was too drastic a remedy. If any who thought this would but inquire what it already costs the nation to maintain these unfortunates in careful segregation till the age of 16, only to allow them to propagate their kind when they regained freedom, they would see good reason to alter their views. But even without legislation much could be done. Parents of children who are epileptic or are deficient in any way should do their utmost to prevent their children from marrying. In Jewish circles marriage had been considered with such veneration that even degenerates had been forced into the marriage state. It was to this practice that they owed the lamentable fact that their community contained such a large proportion of mentally unfit. It was, however, right to point out that the fact that the percentage of highly gifted was also abnormally high in their midst, was also due to heredity, and to their anxious pursuit of the marriage state. The old custom of marrying the rich man's daughter to the most promising student of the Yeshibah was one of the most successful and illuminating eugenic experiments ever conceived. The time had now come when, whilst adhering to all that was sound in the old, they must advocate new methods in order to promote the betterment, moral and physical, of mankind.

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[1] Medical Women's Federation News Letter, November, 1925, p. 53. Obtainable from the office of the Federation, 9, Clifford-street, Bond-street, London, W., in leaflet form. 1s. per 100 copies.

ESKIMOS AND THEIR HEALTH.

IN a description[1] of the health of the Eskimos, Dr. S. K. Hutton, who has spent seven years in Northern Labrador, first outlines the climate, the food, and habits of life. The climate is comparatively regular; the excessive cold of winter only giving place for a few short weeks to summer. The only break in the regularity is the sudden occurrence for three or four days of a period of thaw in either February or March. Eskimo dietary is mainly flesh and fish; vegetable foods are decidedly scanty. They cultivate no plants, but obtain in autumn a small black watery berry which is stored in barrels and allowed to freeze for winter store. Of flesh that of seal is the most important, and is eaten raw and full of blood; fish also, in the warmer part of the year, is obtained in plenty and is eaten fresh, often raw or dried, without salt. Cod-liver oil is used considerably; dried fish is dipped in it. The dietary is rich in vitamins, with the exception of the anti-scorbutic vitamins. The Eskimo lives a life of activity and strain. He has great power of withstanding fatigue, and is inured to exposure to the weather. His house is small, ill-ventilated, dirty, and ill-smelling—a dark and noisome den. Refuse is simply thrown out of the door where, fortunately, it freezes—but in summer it thaws. Promiscuous consanguinity prevails.

The Eskimo possesses a low resisting power to disease; few live beyond 60, those few are aged and feeble. They possess a tendency to hæmorrhage, of which epistaxis, menorrhagia, and hæmoptysis are the most common form, the latter quite distinct from that of pulmonary tuberculosis. These hæmorrhages indicate a scorbutic condition, and lime juice is the most effective remedy. Although the Eskimos will run far and fast without affecting their pulse-rate, and endure laborious toil, when they are seized with illness cardiac debility becomes pronounced. Similar debility occurs during confinement, but only prolongs the process, which is usually simple and uneventful. Typical scurvy is rare, but the scorbutic tendency is common, particularly if the berry crop fails, as it did in 1904–5. Then "kallak," a pustular skin eruption, broke out, but it gave way to anti-scorbutic treatment. The tendency to suppuration is pronounced; nearly all cases of mumps end in suppuration, as do many ordinary bruises. Typhus appeared once, but was fortunately quickly eradicated, for lice are common in Eskimo huts. Tuberculosis is not widespread, but attacks certain families, who are carried off with "galloping consumption"; it is a very fatal disease, and death may result in about six weeks from onset. Diseases of the nervous system are not common, with the one exception of paralysis of the facial nerve due to cold winds. Occasionally drunkenness occurs, but chronic alcoholism is unknown. Epilepsy occurs among the Eskimos, but insanity is uncommon, even though the mental balance is unstable. Inguinal hernia is uncommon, but a form of small epigastric hernia occurs in males. The commonest eye disease is pterygium, attributable to the irritating effect of strong light; it occurs more frequently in women than in men, since the man wears glasses to protect him from snow-glare, while the woman often just goes out of the dark hut into the bright light without glasses. Snow-blindness is common among children, but it always ends in recovery. Dr. Hutton never saw a case of malignant new growth, nor of rickets. Babies suckle often for two years, and any mother feeds any child. For the most part Eskimos are very sensitive to drugs, normal doses being poisonous to them. Mercury is an exception. Influenza is endemic, and does not appear to have been introduced from without. It arises annually in February with the short seasonal thaw, and again in August. Its origin is ascribed to the method of refuse disposal; specially interesting instances of outbreaks are given. The disease may be bronchial, gastric, or meningitic, varying in epidemics; the gastric form is the most fatal.

A disease which is causing great damage to the Eskimos is syphilis, which was brought back by a party of Eskimos who had been exported for exhibition purposes. Although its introduction is recent, the ravages it is causing do not compare in severity with those which followed its introduction in Europe. Primary symptoms tend to be somewhat indefinite; but the secondary manifestations are clear, except that a secondary rash is rare. The disease is so recent that tertiary manifestations have not, it is said, yet had time to develop. The full-blooded meat-eating Eskimos seem to have a natural protection against it. Child mortality is excessive, and is no new thing, since the ancient burying places are full of children's graves; but it appears to be getting worse. Even those that survive the first year run serious risk during the ages 3 to 5. The main causes of this great mortality among Eskimo children lie in constitutional debility and lack of resisting power to disease. Dr. Hutton discusses the future of the Eskimos, and feels uncertain whether, as Europeanisation spreads, the race will survive.

This monograph contains much valuable material presented as the result of first-hand observation. Illustrations are lacking, but these can be found by consulting an excellent article[2] recently published on the MacMillan Arctic Expedition.

THE HEALTH OF AN ARMY IN THE FIELD.

HEALTH was well represented in the wireless programmes on Dec. 4th, with "Hygiene in the Kitchen" from Oslo, "Hygiene" from Paris, and, above all, Sir W. B. Leishman, in London, on the "Health of an Army in the Field." Diseases, said the Director-General, were more dangerous to soldiers than were wounds. Wellington lost 400,000 men in the Peninsular campaigns, only 60,000 of them from wounds. To keep an army healthy is a laborious and never-ending toil. Formerly there were five who died of disease to each one killed by the enemy; but in the Great War, of the 739,000 who were killed or died, only 84,000 died of disease, 8 in battle to 1 of disease, a triumph for the medical service. Recruits when taken in were carefully trained physically, made thoroughly healthy and tough; surely they would remain healthy? Far from it. Dangers are greater than before; so many more men are engaged. Freedom of communication allows exotic disease to disseminate more freely; there were 14 theatres of war, in many of which troops of various races were employed. To what was the medical victory due? To five particular lines of policy. (1) Food. By the self-sacrifice of those at home the army had in plenty, but as the usual foodstuffs became unattainable the difficult adjustments needed to keep the ration balanced were made possible by research. (2) Water was often difficult to obtain, but safe supplies were ensured from dangerous sources by filtration and chlorination. (3) Hygiene and sanitation were carefully watched, on the march, in villages, in the trenches, with ever-increasing warfare against flies. Our army had advantage over others in that the responsibility for the sanitation of units is, with us, shared by the commanding officer and the medical officer. Our men had good clothing and baths, and their vermin were destroyed. (4) Disease was detected early by pathologists at every hospital, and in mobile laboratories up almost to the fighting line. Quick detection of epidemic diseases is of the first importance to prevent spread, whether by infection, by food, or by bad water. (5) Inoculation. Vaccination prevented small-pox; typhoid, the disease we most feared, was held in check by inoculation. The French, who did not at first inoculate, had in the first nine months 7030 deaths from typhoid, while England had but 208 in the whole war. But that we had so well devised methods for preventing disease, the losses of the war would have been infinitely worse.

GIFTS TO MIDDLESEX HOSPITAL.—A "Rejected lover who has no more use for them" has sent to the Middlesex Hospital two gold and platinum brooches to be sold for the benefit of the rebuilding fund.

A HOSPITAL SCHOOL.—At the Northcourt Hospital for Sick Children in College-crescent, Hampstead, the London County Council conducts a handicraft school for children between 4 and 15 years of age. There are at present 34 children in the school, who are taught needlework, basket-making, knitting, and similar crafts during their convalescence. The hospital was established half a century ago for the treatment of children suffering from chronic or incurable diseases of an aggravated character.

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[1] Health Conditions and Disease Incidence Among the Eskimos of Labrador. By S. K. Hutton, M.D. Pp. 74. 1925. J. Looker, Ltd., The Wessex Press, 82, High-street, Poole. 6s.

[2] The MacMillan Arctic Expedition Returns. By D. B. MacMillan. The Nation. Geograph. Mag., xlviii., November, 1925, pp. 477–518.

Two Lectures
ON THE
EFFICIENCY OF THE HEART
AND ITS MEASUREMENT.

University of London Advanced Lectures in Physiology,
delivered at University College, Nov. 30th
and Dec. 1st, 1925,

BY YANDELL HENDERSON,
PROFESSOR OF APPLIED PHYSIOLOGY, YALE UNIVERSITY.

LECTURE I.*—THE MEANING AND CONDITIONS OF EFFICIENCY.

THE conception of the efficiency of the heart which is now current in clinical medicine falls far short of being as definite as is desirable. It is essentially qualitative. None of the tests now available, or employed by physicians, approach a real measurement of the supremely important function of the power of the heart. The physician applies his stethoscope at various points on the chest and listens. He percusses and thus outlines roughly an area of dulness. He has the subject change from the recumbent to the erect position. He has him step up and down on a chair, or climb a flight of stairs, and he notes the alteration of pulse-rate and arterial pressure. He notes also—and this is really a more significant test than any other—whether the patient is out of breath on moderate exertion. But all these tests, valuable as they are in the absence of any means of estimation more precise, do not constitute an adequate measurement of the efficiency of the heart.

The heart is a pump. As with any other pump there is only one form of measurement that is direct and absolute—viz., measurement of the volume discharged by each stroke of the pump, or taking the rate of beat into account, the volume pumped per minute. Hitherto there has been no method available, except for quite special laboratory purposes, for measuring in litres a minute the volume of blood that the heart of a man, woman, or child, sick or well, resting or working, actually pumps in a minute. Fortunately, a method[1] has recently become available by which this measurement can be made quickly, easily, and on anyone; a method suitable alike to the laboratory or to clinical purposes.

In the second lecture we shall consider some of the results already obtained with this method. But first, what should we understand by the term "efficiency of the heart"? What is it that the heart has to do? Evidently the heart does not exist and act simply for itself. It is not only a pump. It is also the chief respiratory organ of the body. It determines the supply of oxygen to the body and thus fixes the maximal amount of energy available for the body's use.

RELATION OF THE CIRCULATION TO RESPIRATORY METABOLISM.

Modern physics, which only a little while ago drew a hard-and-fast distinction between matter and energy, now tells us that, fundamentally, matter is energy. In the living body there is one sort of matter, one element, which to all intents and purposes is energy. That element is oxygen. Each litre of oxygen absorbed in the lungs becomes for the use of the body almost exactly 4·8 large calories. The maximum theoretical variation is only from 4·7 calories, when the litre of oxygen is used to burn fat, up to 5·05 calories per litre, when it burns sugar. For all physiological purposes, therefore, the most convenient unit of energy is the litre of oxygen. Thus the power supplied to the body by an athlete's heart is about four litres of oxygen a minute, or in ordinary units of energy, 20 large calories a minute. This seems to be about the maximum quantity that can be withdrawn from the air of the lungs and transmitted to the labouring muscles.

Both in clinical medicine and in physiology there are two subjects which now are studied quite independently. The heart is one. The other is the energetics and gaseous exchange of the body, especially in the procedure of basal metabolism. Neither in clinic nor laboratory are these two subjects now associated except in a vague and hypothetical fashion. This is the greatest gap and defect now existing in both fields. Neither data nor methods have been available for the quantitative correlation of the volume of blood pumped by the heart, in all sorts of people, well or ill, with the respiratory exchange and energy expenditure. The object of these two lectures is, now that data and a method are available, to present a conception of the circulation and the heart based quantitatively on respiratory metabolism.

EFFICIENCY OF THE LUNGS.

The pumping power of the heart is, indeed, not the only element or stage in the passage of oxygen from the air to the tissues at which the flow of oxygen might be limited. It might be asked whether a man can breathe in and out of his lungs in one minute a sufficient volume of air to ventilate fully the maximum amount of blood that the heart can pump through the lungs. The figures for the volume of blood pumped by the heart, as determined by the new method above referred to, are 5 to 7 litres per minute during bodily rest, and 25 to 30 litres of blood flowing through the lungs in a minute during vigorous muscular work. The figures for respiration are 6 to 8 litres of air breathed during rest and 60 to 80 or even 100 or more as the actually observed volumes inhaled and exhaled by a vigorous man doing hard work. Evidently a man can breathe far more air than the amount corresponding to even the largest increase in the rate of circulation of the blood. Thus, when a man is out of breath, as we call it, from running, his trouble is not fundamentally in the inability of his chest muscles and the diaphragm, working on his lungs, to draw in and exhale enough air. The real limitation is in his circulation, that is, in the pumping power of his heart, and in the transportation of oxygen and CO_2 by the blood. Similarly, the patient with cardiac disease usually has no sensations that he refers to his heart, but reports that he is "short of breath," although it is essentially his blood pump, not his air pump, that is defective.

Air might be drawn into the lungs in sufficient amount and yet the diffusion of gases through the membranes of the lungs into the blood might be so slow that, during hard work, the blood rushing through in a torrent four or five times as fast as during bodily rest would be incompletely oxygenated. Space forbids dealing here with the literature of this topic. I have for some years past been engaged in investigations on the absorption and elimination of volatile substances through the lungs. The evidence convinces me that, at least during full normal breathing, diffusion between the air and the blood in the lungs is virtually instantaneous. With any volatile substance the equilibrium of pressure in the gaseous phase in the air and in the dissolved phase in the arterial blood flowing from the lungs is at all times virtually complete. A. and M. Krogh have, indeed, reached a somewhat different conclusion on the basis of a method devised originally by Bohr for measuring the "diffusion constant" of the lung by the diffusion of carbon monoxide; but Dr. J. S. Haldane tells me, and I mention it by his permission, that, in work not yet published, he finds that the diffusion of carbon monoxide is so rapid and complete that he also is led to estimate diffusion through the lung membranes as normally affording an almost instantaneous equilibrium between the air and the blood in the lungs.

Of course this condition does not hold when the lungs have been rendered oedematous by an irritant gas; and practically it ceases to apply in shallow breathing, as, for example, in pneumonia. But the practical point is whether or not the power of an athlete or a normal working man is ever limited by the slowness of the diffusion of oxygen through his lungs. That this is not the case we can infer with certainty from an observation which everyone has made or can easily verify. It is that, even during the most intense physical exertion, the lips, ears, and cheeks of a normal man never show the faintest trace of cyanosis. A fact like this, one that can be observed and verified in everyday life, outweighs as evidence any amount of experimental laboratory demonstration that it ought not to be so.

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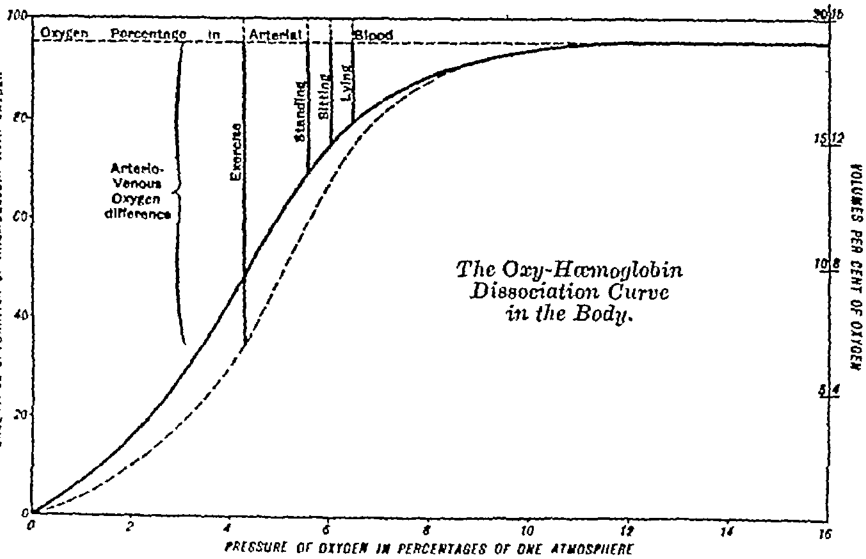
* Lecture II. will appear in a coming issue of THE LANCET.

[1] Henderson and Haggard: Amer. Jour. Phys., 1925, xxiii., 103.

Oxygen Transportation by the Blood.

The amount of oxygen that the heart can send to the tissues is limited by the oxygen capacity of the blood. According to the Haldane standard 18·5 c.cm. of oxygen is the maximum in 100 c.cm. of normal blood. It would be truer to say that the normal range is between 16 and 20 c.cm. of oxygen in 100 c.cm. of blood. But 100 c.cm. of blood pumped by the heart do not represent 18·5 c.cm. (or 16 or 20) of oxygen available for the work of the tissues. Some of it, ranging from a sixth to a quarter, we may call high pressure oxygen, and this is all that is used during bodily rest. During heavy and continuous muscular work (such as digging with pickaxe and shovel) a much larger percentage is used, and we may call this medium pressure oxygen, because the larger the utilisation the lower falls the pressure. Finally, during extreme exertions such as an athlete makes in a contest, 60 or 70 per cent. may be utilised—that is, 12 or 14 c.cm. of oxygen may be consumed by the tissues from each 100 c.cm. of blood; and this we may call low pressure oxygen.

Fig. 1.



In Fig. 1 are reproduced the oxyhæmoglobin dissociation curve in the body (after Christiansen, Douglas, and Haldane) with some additions to illustrate its application in this connexion. The broken line is approximately the probable form of the curve during vigorous muscular exertion. The upright lines show approximately the amount of oxygen withdrawn in the tissues—that is, the arterio-venous oxygen difference. With the new method of measuring the circulation we find that approximately, during bodily rest, lying down, the amount is 3 volumes per cent.; sitting it is 4; standing it is 5 or more; during heavy work it is 7 or 8; and with intense exertion it is 12 volumes per cent. or more. The pressures corresponding to these amounts of oxygen are to be read from the scale below the abscissa.

From this figure we see that, if in a patient with heart disease the total consumption of oxygen by the body remains normal at the usual basal metabolism for his size and age, and if the efficiency of his heart is so reduced that it pumps only two-thirds of the normal volume per minute, then the arterio-venous oxygen difference will be 50 per cent. greater than in a normal man, and the patient will experience a marked decrease in his capacity for muscular exertion. In fact, we find in ambulant but easily winded cardiac patients that measurements of the circulation in sitting rest show about two-thirds of the normal blood-stream. Thus the large blood flow supplied by the normal heart is important because it affords an ample supply of high pressure oxygen in the tissue capillaries. In fact, the arterio-venous oxygen difference is the best possible index and measure of functional efficiency of the heart.

It is, however, probable that each tissue has a specific oxygen difference of its own. That of muscle is large, as L. Hill and Nabarro have shown. Thus the increase of the general arterio-venous oxygen difference for the body as a whole during work is apparently due in large part to the relatively greater proportion of blood flowing through the muscles.

The Arterio-Venous Oxygen Difference.

Unfortunately, this is a figure which can only be calculated when every other factor has been measured. To determine it directly on a man would require that some blood should be drawn direct from an artery and its content of oxygen determined by analysis; and also that a long needle of a hypodermic syringe should be thrust through the chest wall into the right side of the heart so as to withdraw for analysis a sample of the mixed venous blood which it contains. The difference in the oxygen contents of these two samples would show the relation of the blood flow and oxygen transportation to the body's oxygen consumption. Blood from a peripheral vein, such as one in the arm, does not serve the purpose, because it comes from only a limited and special area and not from the body as a whole. Blood can be withdrawn from the heart of an animal without causing any pain or injury, and I have a friend in America, an enthusiastic young investigator, who is willing and anxious to have cardiac puncture done on himself, but his associates decline. Fortunately, the figure for the arterio-venous oxygen difference can now be calculated for a man on the basis of a determination of his oxygen consumption and of his circulation. The one divided by the other gives the arterio-venous oxygen difference.

The last stage in the passage of oxygen to the tissues is its diffusion from the blood in the capillaries into the working cells and especially into the muscle-fibres. As Krogh has pointed out, the force which causes diffusion from the blood into the tissues is the difference in the pressure of oxygen. The higher the pressure of oxygen the more rapid the diffusion. But the pressure of oxygen in the capillary blood is dependent upon the volume of the blood flow; a relatively large flow means a relatively large supply of oxygen and hence a relatively high oxygen pressure. When, on the contrary, the volume of blood flowing through the tissues is small in relation to the oxygen there consumed, its pressure falls far down on the oxyhæmoglobin dissociation curve. Thus, the volume of blood pumped by the heart is the fundamental factor in the pressure of oxygen in the capillaries.

The normal value or amount of the arterio-venous oxygen difference in all vigorous mammals, such as dogs, men, and horses, is closely correlated with the intense metabolism required in warm-blooded animals. The value is probably nearly the same throughout the range of mammals of all sizes. Determinations in my laboratory have shown that this is certainly the case for dogs and men, from very small dogs up to very large men. The value is of the order of 3 or 4 volumes per cent. For inactive species of animals—e.g., the goat—it is probably larger. It is not dependent upon the animal's size, that is, its weight, nor upon its skin area, total metabolism, and energy expenditure, but is probably a fundamental mammalian constant. It is one of the vital constants, like the osmotic pressure and hydrogen-ion concentration of the blood, and its sugar-content, or body temperature, arterial pressure, and so on. Physiologically, health may be defined as the maintenance of all such "vital constants" within the range of their normal variations. A single figure for any one of them is quite unjustifiable and misleading. They vary within a normal range. Disease is the perversion of one or more of them to a value beyond the normal range.

THE VOLUME OF THE CIRCULATION.

The approximate uniformity of the arterio-venous oxygen difference affords an absolute arithmetical proof of another important fact—namely, that the circulation in all vigorous active mammals of all sizes during rest is about 25 to 30 litres of blood pumped by the heart for each litre of oxygen consumed in the body's metabolism.

This conclusion in turn leads to another, for if the basal metabolism, normal for a man or animal, determines the amount of blood flowing through the lungs during bodily rest, we next ask the question: What determines the individual's basal metabolism? The answer to this question is afforded by Rubner's law that all mammals have approximately (i.e., within a certain range) the same amount of heat production, and therefore the same oxygen consumption, per unit of skin surface. On this account small animals have a very high metabolism for their body-weight. Mice have many times as great a skin surface, exposed to the cooling action of the atmosphere per gramme of weight, as men have. So a mouse eats his own weight of food in about as many days as a man does months. The volumes of air that are breathed by mice and men, and the volumes of oxygen that they consume, are in the same proportion. Even for human beings of various sizes, men, women, and children, it has been shown by Benedict, and particularly by Du Bois, that it is not body-weight that underlies the basal metabolic rate and therefore the resting oxygen consumption; but that the main factor is skin surface.

So we arrive inevitably at the conclusion that the rapidity of the circulation, that is, the pumping activity of the heart in healthy men and animals, is not proportional to their body-weights, but in general (for animals corresponding in other respects, especially activity and vigour) to their surfaces, that is, their skin areas. And we see that small mammals and small people must have relatively large circulations and relatively active hearts per kilo of body-weight. The circulation index, as we term it, for man, and probably for all vigorous active mammals of all sizes, is of the general magnitude of 3 or 4 litres of blood per minute per square metre of skin. For lethargic, but non-hibernating, mammals of all sizes it is probably about a third less per square metre.

The next question is: How does the heart of a small mammal or a small *person* accomplish this relatively greater pumping action? How in larger subjects is the pumping relatively less? The volume of blood that the heart drives to the lungs each minute in any individual is the arithmetical product of two factors: (1) The number of heart-beats in a minute, that is, the pulse-rate; and (2) the volume of blood discharged by each beat, that is, the so-called stroke volume. But for animals of different sizes, for people of different weights, and for both people and animals during the variations of activity of sleep and work, and extreme muscular activity, we wish to know whether and to what extent each of these factors is varied. The pulse, fortunately, is easily counted. But the stroke volume is less easily obtained. Indeed, what we want to know is: (1) How the stroke volume varies in animals and especially in people of different weights; and (2) how it varies in an individual when he passes from rest into various degrees of muscular activity. These are separate problems and must be discussed separately.

The resting or basal stroke volume in large and small animals and in large and small people, is it determined by body-weight or by body surface? Of course, the larger the stroke volume that a heart makes, the larger that heart has to be. If, then, small and large animals had hearts proportional in size to their skins, the hearts of such animals as men and horses would be quite small organs in relation to the size of the thorax, while the hearts of mice and rats would be so large as to fill the entire chest cavity. In fact, however, if the cross section of the thorax of a small mammal is projected by means of a stereoptical lantern on the screen and beside it is thrown the cross section of the thorax of a large mammal of corresponding vigour, the hearts are seen to be approximately of the same size. Thus the size of the heart is in general correlated with an animal's body-weight (subject to the proviso of corresponding vigour) and not with its surface. The ratio of heart-weight to body-weight (as I am informed by Prof. A. J. Clark, who is preparing a review of this subject in the Cambridge Comparative Physiology series) is nearly the same in the rat, cat, pig, sheep, ox, and elephant. All of these are animals incapable of prolonged rapid running, and have therefore smaller hearts than such vigorous animals as dogs, men, and horses. On the physiological side the relation between the stroke volume of the heart and the body-weight for vigorous mammals, from small dogs up to large men, has been worked out in my laboratory. We find that, in all healthy, vigorous individuals during bodily rest, the heart throws out at each beat approximately 1·4 to 1·8 c.cm. of blood for each kilo of body-weight. This quantity needs a name, so we call it the resting or basal "stroke index." Vigorous, active men and animals have larger stroke indices than those which are lethargic. The relatively slow animals (rat to elephant) probably have a stroke index about a third smaller.

So we conclude that: (1) the basal circulations of vigorous mammals of all sizes are proportional to their surfaces; and that (2) the stroke volumes are proportional, not to their surfaces, but to their body-weights; or, more precisely expressed, the stroke index for all vigorous men and animals of all sizes is probably about the same—namely, 1·4 to 1·8 c.cm.

Evidently the basal or resting pulse-rates for men and animals of corresponding vigour must be functions, not of body-weight, but of the ratio of body surface to weight. In general the data available verify this deduction. The resting pulse-rate for a horse is about 40 per minute, for a vigorous man about 60, for medium-sized dogs about 110, for cats considerably more, and for quite small animals many hundred beats per minute. In general, as Miss Buchanan[1] found some years ago and as Prof. A. J. Clark shows in the review which he has kindly allowed me to see in manuscript, when the vigour and activity of the species and individual are allowed for, the pulse-rate is found in accord with the surface weight ratio.

THREE RESERVES OF THE CIRCULATION.

The variations in the circulation of an individual, for example an athlete, when he is at rest or exercising moderately or making a maximum exertion in a contest, is a more difficult problem to estimate. The circulation has three possible reserves: (1) the pulse-rate may be accelerated; (2) the arterio-venous oxygen difference may be increased; and (3) the stroke volume of the beats may be augmented.

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[1] Buchanan, F.: Science Progress, July, 1910, No. 17, p. 60.

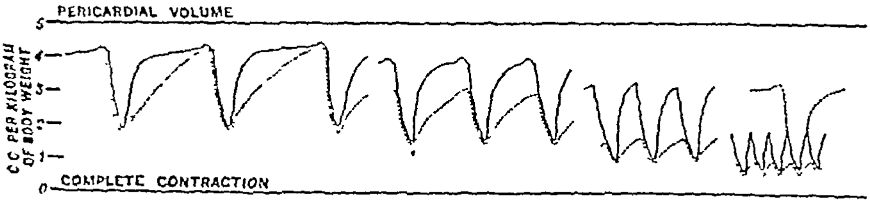
The pulse is accelerated by even the slightest muscular exertion, even in the most vigorous men. This acceleration is usually roughly, apart from the factor of mental excitement, proportional to the oxygen consumed for degrees of activity from a state of complete rest up to that of quietly moving about one's room or office or laboratory. With increased exertion, such as walking at a fair pace, and still more for considerable muscular efforts, the evidence from a number of lines of observation makes it certain that the second factor, the arterio-venous oxygen difference, is drawn on. The venous blood contains less oxygen during work than during rest. The character of the variations in the third reserve of the heart, the stroke volume, has long been the most important and most difficult problem of the circulation. Does the heart not only *beat* faster but also discharge a larger volume at each stroke when the individual is working, in comparison to the stroke volume when he is resting?

As this topic will have to be considered rather fully in the second lecture, we may leave it until then. Indeed, before we attempt to consider the answer and its significance we must first take into account certain mechanical conditions which affect the stroke of the heart.

LIMITS OF THE STROKE VOLUME.

One of these conditions is the capacity of the pericardial sac. It amounts to about 7 to 10 c.cm. per kilo body-weight, or a maximum stroke for each side of the heart of 3·5 to 5 c.cm. per *kilo body-weight*. The ventricles never, during normal activity, contract down to the obliteration of their cavities, but some blood remains in them. It is probable that during diastole they never expand to such an extent that the pericardial sac is brought taut, except possibly coincidentally with heart strain. The normal relations are shown in Fig. 2.

FIG. 2.



Measurement of the circulation and of the stroke volume was one of the chief objects of one of the greatest of the schools of physiology, that of Ludwig and his pupils and their many followers in all lands where physiology is studied. The direct results of all the work of all these investigators are, however, in respect to this particular topic, extremely meagre and misleading. If we examine critically all their data (as I had occasion to do recently in preparing a review[3] upon which I am drawing in this lecture) we find that the stroke index of the resting *mammal* would be of the magnitude of 0·5 c.cm. or even 0·3 c.cm. But if we calculate the volume of circulation that this would give a man of moderate size it comes to only 1 or 2 litres a minute; and if we take into account the oxygen consumed by such a person even under basal conditions in bed at complete rest, we find that such a circulation would barely carry enough oxygen, or at a stroke index of 0·3 c.cm. would not carry enough oxygen to keep him alive.

Although the results of classical physiology are thus seen to be of no validity on the great problem to which they were primarily directed, they are of immense value for the light they throw on another matter of scarcely less importance—namely, how the vital mechanism runs down to its final standstill; in other words, the process by which the great majority of men and animals die what we call "natural deaths." It is by a progressive decrease of the circulation and particularly by decrease of the stroke volume of the heart. This is the way that patients die after surgical operations—the process of shock; it is also usually the termination of acute disease. Arterial pressure is not the element of primary failure, for its controlling mechanism, the vasomotor nervous system, is functionally capable until near the end. Nor is it the contractile power of the heart that fails; for in animals under experiment and in patients nearing death, the infusion of fluid into a vein, in quantity sufficient to supply the right heart momentarily with a nearly normal volume, is responded to by the heart with beats of nearly normal amplitude. It is thus in the venous return to the heart that we find the factor that fails progressively. The heart can pump into the arterial system no more than the volume of blood that the venous return from the body supplies.

THE VENO-PRESSOR MECHANISM.

The veno-pressor mechanism is a topic at once important and difficult. Apparently the blood vascular system consists of two main parts: (1) the arteries and arterioles whose tonus is controlled by the vaso-motor nervous system, essentially as Claude Bernard defined it; and (2) the capillaries and veins. Failure of the first of these is manifested as syncope or *fainting*; failure of the second is what is loosely termed shock of the *traumatic*, *toxæmic*, *acapnial*, *histamine*, and other varieties.

The mechanism controlling the venous return is still obscure, but during health its activity is obviously correlated with the gaseous exchange in the tissues. When a man exercises, the production of carbon dioxide in his tissues is increased, and so also the venous pressure and the venous return are augmented. Moderate exercise, while breathing air containing 4 to 6 per cent. of carbon dioxide, induces an enormous dilatation of the veins and a very high venous pressure. Contrariwise in patients after a prolonged surgical operation under open ether anæsthesia with over-ventilation of the blood and consequent acapnia, the skin is pallid, the veins imperceptible, and the circulation much decreased. In patients in this condition inhalation of carbon dioxide in air or oxygen restores a pink colour to the skin; the veins, such as the jugular, again become visible and a full pulse and normal arterial pressure soon return.

THE METER OF THE CIRCULATION.

For our present purpose the important relation is that between venous pressure and the extent to which the right ventricle is filled and distended in diastole. It is the right ventricle which acts as the meter of the circulation, while the left ventricle serves as a force pump to drive against arterial pressure whatever quantity the right measures off to it. It is probable that, whenever the left ventricle fails to pump onward easily as large a volume as the right heart sends to it, pulmonary congestion results. In fact, the relative diastolic distensibility of the two ventricles is probably the principal condition controlling and regulating the volume of blood in the lungs.

It is always necessary to be cautious and critical regarding evidence from experiments on animals under operative conditions, and particularly those on excised organs and tissues, like the perfused heart and in general toward what Haldane terms "fragments of frogs and other animals." Observations on such fragments have not the direct validity of observations on an organ or tissue when functioning normally in the whole live animal or man under real conditions. But as regards a preparation of the heart outside the body, we now have criteria for estimating whether it is acting approximately normally; it must make effective strokes of 1·5 to 2·0 c.cm. per kilo body-weight of the animal from which the heart was taken, and it must do this when supplied with blood under venous pressures no greater than those which occur in the body. The amount of carbon dioxide in the blood is an important factor in determining the diastolic distensibility of the heart.

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[3] Henderson, Physiological Reviews, 1923, iii., 165.

In perfused hearts which fulfilled these requirements, Prince and I[4] succeeded in measuring the stroke volumes of the two ventricles separately under various venous distending pressures. From zero up to slightly more than a normal resting venous pressure, the stroke volume of the right ventricle varied in proportion to the pressure. Above that pressure there was no appreciable increase of stroke volume. The left ventricle behaved quite differently. From zero pressure up to a moderate afferent pressure the cavity was not distended at all, and no blood was pumped. With further rise of the pressure (corresponding to that in the pulmonary veins) the strokes increased progressively, until at fairly high pressures the left ventricle made much larger strokes than any of which the right ventricle was at all capable. This behaviour of the left ventricle seemed to us to afford an explanation of why the lungs are never drained of all blood by an excessive activity of the left ventricle, and never in health over-distended and congested by relatively insufficient activity by the left ventricle. It adjusts its strokes automatically to the pulmonary blood pressure and thus takes no more nor less than the right heart measures to it.

Many years ago I obtained on dogs volume curves of the two ventricles together. The chest had been opened so as to allow the adjustment of a plethysmograph or cardiometer connected with a large, light, loosely-covered tambour. In Fig. 2 are shown types of such volume curves and their graduation in cubic centimetres per beat per kilo body-weight. The solid lines show the strokes at various rates of beat when the volume and pressure of the venous return were adequate and normal. The dotted lines (except the large stroke at the right) show the slow filling and decreased amplitude of beat under subnormal venous pressure.

SIZE OF THE HEART IN DIASTOLE.

It would, indeed, be a case of "bringing coals to Newcastle" for me to discuss this topic further here (at University College), where Prof. Starling, his associates, and pupils have made such extensive and valuable contributions to this very topic by means of the heart-lung preparation. As summarised by Starling in his Linacre lecture, the law of the heart defining the relation of the amplitude of stroke to the pressure and volume of the venous return to the heart is as follows: Within physiological limits the larger the stroke volume of the heart the greater are the energy of its contractions and the amount of chemical change at each contraction. In other words, the energy of contraction, however measured, is dependent upon the length of the muscle-fibres. Any increase in the extent of active surface increases the energy of change, exactly as in striated muscle. Thus the uniformity of stroke volume against varying arterial pressures, which all investigators have found, depends upon the fact that, while the first few heart-beats after a rise of pressure are slightly subnormal in amount, the consequent increase of the volume of blood in the heart calls into play greater power of contraction. In a similar way this law explains the capacity of the heart to accept widely varying amounts of blood from the venous system, and to increase the amplitude of its stroke so as to pump the whole increased volume from the venous side over into the arteries.

As it applies to the heart of a normal animal or man passing from rest into muscular activity, this general principle will need to be reconciled, as it doubtless will be, with evidence from an entirely different line of investigation—namely, observations by means of the X ray.[5] According to Bruns, in Germany, and Meek and Eyster, in America, the heart shadow is not larger during physical exercise, although the venous pressure is certainly increased over its resting value. If, then, the shadow is a reliable index of changes in the volume of the heart, we must suppose that an increase of stroke volume during physical work is effected by the ventricles contracting more completely in systole; a response for which the law of the heart also provides, although not so directly as it would if the size of the heart were increased in diastole by the increased venous pressure during muscular work.

There is another point which must be considered—namely, that the heart during its systolic contraction and diastolic expansion does not obey the law of the cube, as is usually assumed. If its shape during all phases of its activity were the same, its volume would vary as the cube, and its shadow as the square, of any linear dimension. The volume curve of the ventricles would then differ widely from the form of curve expressing the shortening of the cardiac muscle-fibres. In fact, however, it is well known that the volume curve of the ventricle (as in Fig. 2) has almost exactly the same form as the isotonic contraction curves of striated and of cardiac muscle. This fact seems to indicate that the heart does not contract and expand symmetrically in all diameters. If this interpretation is correct it adds considerably to the already difficult quantitative interpretation of the heart's X ray shadow as a measure of volume in three dimensions, from observation of the shadow which has only two dimensions.

In the volume curves of the heart (as in Fig. 2) both the systolic and the diastolic volumes are decreased, coincidently with increased tonus, during rapid rates of beat.

CONCLUSIONS.

The only adequate expression of the efficiency of the heart is one based on accurate measurement of the volume of blood that the heart pumps and upon the amount of oxygen consumed by the body. The relation between these two functions determines the arterio-venous oxygen difference, and thus determines the amount, and particularly the pressure of the oxygen-supply to the working tissues of the body. In vigorous mammals of all sizes the arterio-venous oxygen difference during bodily rest is about 3 or 4 volumes per cent.

The volume of the circulation in vigorous men and animals at rest is about 3 to 4 litres of blood per minute per square metre of skin surface. The stroke volume for animals and men of corresponding activity is a function of their body-weights not their surfaces. For all vigorous mammals, including man, the stroke index during rest is about 1·4 to 1·8 c.cm. per kilo per beat. The pulse-rate is in general proportional to to surface weight ratio and is thus in general an index of the intensity of respiratory metabolism.

The mechanical conditions of the heart's activity and its own behaviour make the right ventricle the meter of the circulation. The size of the stroke of this meter depends on the volume and pressure of the venous return. The veno-pressor mechanism is adjusted to act in relation to the intensity of the gaseous exchange of the tissues.

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[4] Henderson and Prince: Heart, 1913, v., 217.

[5] For literature see Henderson, Physiological Reviews, 1923, iii., 105.

SOCIAL INSURANCE CONFERENCE.—This conference, organised by the League of Nations Union, was held on Nov. 23rd to 26th. An average of 800 people attended the sessions. Among the speakers were Sir William Beveridge, Sir Kingsley Wood, M.P., Miss Ellen Wilkinson, M.P., Sir Lynden Macassey, Sir Thomas Neill, Dr. Marion Phillips, Sir Henry Slesser, M.P., Sir Arthur Newsholme, Mr. Arthur Hayday, M.P., Sir Alfred Mond, M.P., and Lady Astor, M.P. Distinguished foreigners included Mr. Oudegeest, Secretary of the International Federation of Trades Unions, Signor Foscolo Bargoni, Director of Social Insurance at Rome, and Dr. Stephen Bauer, Secretary of the International Association for Labour Legislation. The proceedings and speeches have been published in book form and are on sale at the League of Nations Union, 15, Grosvenor-crescent, London, S.W. 1.

THE CLINICAL ASPECTS OF ISCHÆMIC NECROSIS OF THE HEART MUSCLE.*

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ISCHÆMIC NECROSIS, or, as named by Ziegler, myomalacia cordis, is the result of blockage of the circulation in the artery supplying the part affected. Only within comparatively modern times has it been referred to disease or obstruction in the coronary arteries; Jenner was the first to point out the connexion between angina pectoris and disease of the coronary arteries. Steven (Glasgow), writing in THE LANCET of 1887, was one of the first, if not the first, to make the association of coronary disease and ischæmic necrosis. Occlusion of the coronary arteries may occur from embolism, or thrombosis, from calcification or fibrosis of the wall. If the occlusion is sudden and the patient lives long enough, the coronary arteries being functional end arteries, the area affected becomes a pale infarct, which by gradual absorption becomes a fibrous scar, and then remains a contracted or depressed portion of the cardiac wall. If the occlusion be slow it is probable that fibrous tissue replaces the muscular tissue gradually without the intervention of a stage of necrosis that could be recognised by the naked eye. Two other important events may happen in the process: first, the formation of clot on the inner aspect of the necrosis, which by normal or vigorous cardiac action may become detached, forming emboli; secondly, the heart wall may be so weakened as to induce rupture. A series of well-authenticated and adequately described cases have been collected and are set down in the accompanying table.

The cases include those in which blockage of arteries is implied by the anatomical appearances, by whatever cause; but it has been my endeavour to exclude all cases in which other lesions or processes coincident with the primary one of blockage of a coronary artery might interfere with the symptoms due to the local condition in the heart, such as septic embolism, syphilis, fibrosis from causes not clearly due to arterial ischæmia, such as rheumatic. Though an extensive survey of the literature has been made the cases here set down are samples rather than an exhaustive collection. Also all consideration is omitted of occlusion of the very small arteries which may give rise to minute patches of fibrosis.

In so far as blockage of arteries may be the result of many causes, ischæmic necrosis is not confined to one period of life; the youngest case I have found was a man of 23 reported by Osler[1] in 1891. In one of my own series of post-mortems, a female aged 25, who showed hysterical symptoms following an attack of influenza, died suddenly, and was found to have thrombosis of her pelvic veins and an embolus of a coronary artery with typical ischæmic necrosis. But the larger number of cases met with are the result of the arteriosclerotic lesions, and it really therefore becomes a study of the senile heart.

The branches of the right and left coronary arteries are relatively constant in their distribution, and seeing that different parts of the heart have a different function, it might be thought that diagnosis of lesions of the various branches might be possible during life. Deductions of the site of the lesion in the heart from the symptoms are very unreliable.

There have been many attempts to classify the effects of occlusion of the coronary arteries or their branches, whether such be identified from actual blockage discovered in the artery, or from its effects—ischæmic necrosis or fibrosis. Sudden death was one of the first effects to be recognised by Wilks and Hale-White; then was added chronic cardiac failure, and if we exclude the work of Jenner and of Allan Burns, angina pectoris. But this classification by no means exhausts the possibilities, and in the list of cases abstracted a few extra groups are added, but this obviously does not complete the symptom groups which may appear.

Pathology and Symptomatology.

It is evident from these cases that there is no constancy in the effect of occlusion of various branches. In one case *occlusion* of the *anterior branch* of the left coronary produces *sudden death*, in another *angina*, in another *chronic* cardiac failure, in another no symptoms at all; in one of these latent cases in which ischæmic necrosis was discovered after death, a careful inquiry into the history of the patient revealed no hint of any illness or temporary disability in which occlusion might have taken place, nor any evidence of cardiac failure. If we omit Mackenzie's Case 7 of angina pectoris with pain in the abdomen, all the other cases of angina were the result of blockage of the anterior branch of the left coronary. Most of the cases of sudden death will be seen to show cardiac fibrosis without other evidence for acute cardiac failure. Very recent ischæmic necrosis is liable to be missed in the presence of a large fibrous lesion. If ischæmic necrosis has occurred in one artery it is likely to occur in another, and in one case I have observed there was fibrosis and very recent ischæmic necrosis in the neighbourhood. Other changes might also be present, such as a sudden implication of the bundle system. There appears to be no relation between the size of the lesion and the severity of the symptoms.

One case, No. 38 in the table, deserves a more extended description in so far as he was attended by me for several years, and the symptoms of the patient during life could be referred to the cardiac lesions found.

He was a clergyman, and had led a very strenuous, athletic though healthy life as a schoolmaster. In December, 1915, when aged 64, he was seen following a fainting attack; there were then no signs of disease and after a few days' rest he was about again. These recurred at long intervals. In January, 1917, he took ether well for the removal of a rodent ulcer of the pinna. In June, 1918, when aged 67, he had a fainting attack while riding a bicycle and had to be brought home in a cab. Seen immediately he was pale, collapsed, slightly hyperpnœic, and restless, with a pulse that was irregular in rhythm, tension, and volume. I made the diagnosis of coronary artery disease, took a serious view of the outlook, and suggested a very careful life with strict limitation of exercise. Sir William Osler saw him with me, and with greater clinical wisdom, as he appeared to be recovering, suggested exercise in moderation and discontinuance of his usual morning run. He made a rapid recovery and was about his work in ten days. From that time he suffered from no serious illness until in May, 1923, having breakfasted in his usual health, he was found dead in the afternoon, having died suddenly.

The heart showed a large patch of fibrosis, obviously the result of ischæmic necrosis, in the posterior part of the interventricular septum and the posterior ventricular wall in the field of the right coronary artery, and a very recent patch of ischæmic necrosis, in the same arterial field, in the septum. The main coronary arteries were patent but atheromatous, and there was marked atheroma of the aorta. There was no evidence of syphilis. It can scarcely be doubted that the old healed cardiac lesion is the evidence of the cardiac attack in 1918 which kept him in bed for over a week, and, this being granted, the subsequent history is evidence of complete restoration of cardiac function after the attack.

Only three of the cases in the table show evidence of embolism elsewhere; when, however, we see the deposition of clot on the inner aspect of the heart wall, we cannot be in doubt as to the frequency in these cases of embolism. Embolism of a cerebral artery causing hemiplegia might be very misleading if it were the first symptom of ischæmic necrosis. The same is true in my case (No. 30) of embolism of a mesenteric artery that was sent to a surgical ward. I would go so far as to say that an affection of the heart in elderly persons with cerebral symptoms is presumptive evidence of ischæmic necrosis. The following case will illustrate what I mean, but unfortunately I have no post-mortem evidence.

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* This paper embodies a discussion introduced by the writer at a recent meeting of the Cardiac Club, together with certain case reports which have been kindly supplied by some of its members—viz., Dr. John Cowan, Prof. F. R. Fraser, and Dr. K. D. Wilkinson. The cases contributed by Dr. Carey Coombs will appear later in a separate paper.

[1] Trans. Path. Soc., Philadelphia, 1891, xiv., 125.

A farmer of 70, previously healthy and busy in his work, one morning on going into the bathroom to wash, felt faint and a pain came on in the left groin. His doctor found a lump there and sent him to a surgeon. Two days after the left leg was very much swollen, blue, colder than the right leg, and there was some rigidity in the left iliac fossa. There was marked pulsation in the lower part of the abdomen below the umbilicus, but no pulsation in the arteries of the left foot. The heart was overacting, causing at each systole movement of the whole chest and part of the abdomen. There was some dilatation; no murmurs were heard over the heart, but a systolic murmur and the second sound was heard over the whole of the abdomen. Two days after this there was some difficulty in passing urine, and he died suddenly after an epileptic seizure affecting the left side of the body, probably an embolism.

In a recent paper[1] McNee has drawn attention to several features of ischæmic necrosis and reports two cases. The pain when present is constant and of long duration; it may be præcordial, behind the xiphisternum or in the right or left quadrant of the abdomen; it may simulate perforated gastric or duodenal ulcer, gall-stone colic or acute pancreatitis. He describes the facies of the patient during the attacks of abdominal pain as that of anxiety, of an earthy colour with some cyanosis, comparable to shock, but persisting long after the pain and distress have subsided. Pericardial friction is an important physical sign: and there is frequently a polymorph leucocytosis.

Diagnosis.

How are we to detect this lesion? The first requisite is a clear knowledge of the *anatomical process*, and to have it in mind in approaching a cardiac case in any person over 40. We ought, I think, to be secretly ashamed if we are reduced to diagnose mitral regurgitation or cardiac dilatation or even auricular fibrillation without a hint of ætiology. We are most likely to be right in a diagnosis of ischæmic necrosis in angina if we take care to exclude certain obvious possibilities such as aneurysm. *Chronic cardiac failure in old people* in the absence of syphilis, old rheumatic affections of the heart, and pernicious anæmia is almost certainly due to ischæmic necrosis. *Chronic cardiac failure plus evidence of aseptic embolism* makes the diagnosis of ischæmic necrosis practically certain.

The pulse gives help occasionally. Mackenzie has noticed in two of his cases pulsus alternans; one of my cases had fibrillation, another, at the time of the initial lesion, irregularity in rhythm and volume probably due to fibrillation. The pulse has been recorded both fast and slow. The pulse, therefore, may give some import of cardiac failure, but can give nothing else.

The first sound of the heart is frequently poor in quality or even absent. The electrocardiogram has been explored as a means of getting greater accuracy. Carter drew attention to the direction of the notched R waves, which were found to be opposite in leads 1 and 3, and to the T wave being in a direction opposite to the initial peaks, giving it the name arborisation block. The very careful report with electrocardiograms of Drury in *Heart* has proved that these results of Carter are not invariable, and in this Drury's results are in keeping with experiments on the dog's heart. A current paper by Cowan and Bramwell[2] is highly suggestive that bundle branch block is frequently present in these lesions.

Though much work has been done and many excellent cases are on record, I venture to think that there is an enormous field still for the study of cardiac symptoms and their correlation with anatomical lesions.

Clinical Records: Dr. John Cowan's Cases.

CASE A.—J. S., male, aged 51 (10/7/24–24/7/24). Gradual and increasing cardiac failure, pain in the lower chest and upper abdomen at first. Aneurysm of left ventricle involving apex, inter-ventricular septum, and anterior wall. Fibrosis, thrombosis, pericarditis.

His ill-health only dated back to December, 1923, when he first began to suffer from pains in the upper part of the abdomen and discomfort over the chest. He stopped work for a week and then continued at work until the end of the year. In January a cough ensued and he was not able to resume work after the holidays, as he was short of breath. In February he had a double pneumonia. In March his feet became swollen and all his symptoms were exaggerated.

On admission he was very ill, with œdema extending as high up as the chest, the right leg being more swollen than the other parts. The swelling ceased at Poupart's ligament, and its appearance suggested an inflammatory condition superimposed upon œdema. He was very short of breath, and orthopnœic. Cheyne-Stokes breathing was present at night. There were râles at the bases. The heart was slightly dilated, the sounds weak but apparently pure. The arteries were notably sclerosed, but the fundus of the eye seemed normal. The urine contained albumin in large amount. The blood pressure was about 150 max., 105 min. Pulse, quite regular, about 100. There were old scars on the left tibia which was thickened, sepsis having obtained for many years in early life. Death ensued five days after admission.

Post-mortem examination showed an aneurysm of the left ventricle involving the apex, the interventricular septum, and a portion of the anterior wall, with extensive deposits of recent and mixed thrombus in the interior. The ventricular wall round the aneurysm was notably fibrous. The apex and the adjacent part of the anterior wall were definitely bulging, and over this was subacute pericarditis. The aortic valves showed some diffuse thickening, the other valves were normal. The aorta showed a few patches of atheroma and marked arteriosclerotic changes. The coronary arteries showed extreme atheromatous changes, and the left was plugged with a recent thrombus. Interstitial nephritis was present. A firm cicatrix involved the right iliac artery and vein at the point where the ureter crosses them. The artery above this was dilated. The vein was filled with old and recent clot up to this point.

CASE B.—G. T., male, aged 30 (9/9/19). No cardiac symptoms, sudden cerebral hæmorrhage; recent ischæmic necrosis of anterior wall of left ventricle.

A history of a weak heart, but he was working regularly, and apparently in his usual health. He suddenly dropped down unconscious, and was admitted into hospital with a hemiplegia and in coma. He died a few hours afterwards.

Post-mortem examination showed a ruptured aneurysm of the left middle cerebral artery, a small grey tumour close to the septum lucidum on the left side, congenital cystic kidneys with a tuberculous mass in one, tubercle of lungs and the heart. This was slightly enlarged chiefly on the left side, with a very early softening involving a large area of the anterior wall of the left ventricle. No cause for this was apparent. There was only slight atheroma of the aorta and the large vessels in the abdomen. Another unruptured aneurysm in the anterior communicating vessels in the circle of Willis.

CASE C.—R. A., male (11/8/15). Chronic cardiac failure; area of extreme fibrosis in anterior wall of left ventricle related to a branch of right coronary artery.

In good health till the December preceding admission. He then became short of breath and his feet became swollen. Admitted with great dyspnœa and œdema. Pulse 120, of poor quality and irregular. Cardiac sounds were distant but probably pure. Ascites and pleural fluid. Albuminuria marked.

Post-mortem.—A large heart, the right ventricle being markedly hypertrophied. There was a large area of extreme fibrosis of the front of the left ventricle with great thinning of the area from which the papillary muscles sprung, with marked atrophy of the papillary muscles. This was related to extreme patchy atheroma of the *right* coronary artery. The aorta was almost completely free from atheroma save around the orifice of the coronary arteries. Valves normal. Subacute parenchymatous nephritis.

CASE D.—J. H., aged 63 (27/7/13). Sudden, followed by chronic, cardiac failure; infarction of lower two-thirds of left ventricle; local adherence of pericardium, occlusion of left coronary.

On June 5th, 1913, when climbing up a gangway into a ship he suddenly became very breathless and had to stop. His fellow workmen pulled him up to the deck and he soon felt better, but he went home and stayed in the house for four days. As he then felt quite well he resumed his work, but at once became short of breath and was only able to continue at work for a couple of days. He went to bed, as his feet and legs were now swollen. The breathlessness became worse and he had to sit up in bed. He was restless and slept but little. A few days later he began to experience pain in the region of the heart, and all his symptoms increased in severity. On June 25th he spat up a considerable amount of blood, and the hæmoptysis continued.

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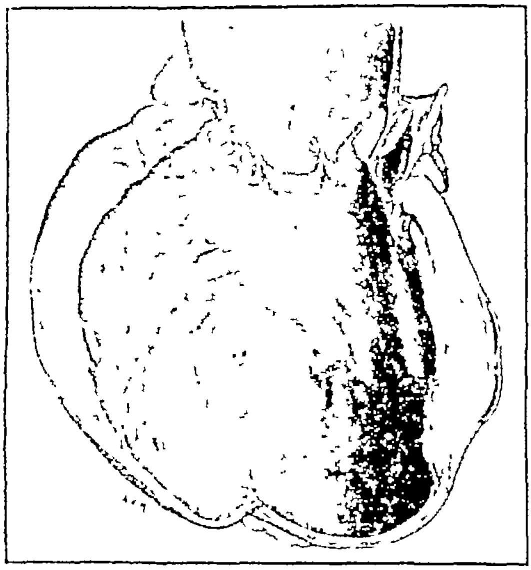
[1] Quart. Jour. Med., Oxford, 1925.

[2] Ibid.



CASE D.—Aneurysmal dilatation of left ventricle involving septum and posterior wall.

On admission he was collapsed, cyanosed and cold, and semi-conscious with shallow breathing which came in gasps. His pulse, 75, was regular and of moderate pressure. Next morning he was rather better, but the extremities were still blue and cold. The breathing was regular and more full but noisy. Pulse 60, small, and of moderate pressure. Apex in fifth space underneath the nipple. Cardiac sounds distant and indistinct. Œdema extended on to the trunk. Liver enlarged and tender. Dullness and râles at the bases. Emphysema. Next day he had rallied to some extent, but he was still very breathless and the hæmoptysis continued. No notable change occurred, but on July 7th he was rather restless and died suddenly.

Post-mortem (see figure).—The lower two-thirds of the left ventricle was softened from an infarction, the edges of which were pale. At the leftmost part of the apex the wall was only about ¼ in. thick, but there was no perforation. The area involved bulged slightly, and the pericardium was adherent, with fibrinous exudate at the edges. Valves normal. Slight superficial atheroma in patches on the aorta. The left coronary artery was occluded by a dense, thick, atheromatous patch ¾ in. in extent, situated about 1 in. from the orifice and extending down to the infarct.

CASE E.—W. B., male, aged 61 (31/5/21–9/6/21). Angina pectoris. Numerous small infarcts in lower two-thirds of left ventricle, including septum. Syphilitic aortitis.

His illness commenced about the spring of 1917, when he first began to experience pain in his chest when on the way to work in the morning. It had usually ceased when he started work and he paid little attention to it, as he thought that it was due to indigestion. In September, 1917, it became more acute, and he had to seek admission into hospital. The pain at first was situated low down in the chest, but subsequently extended upwards and into the left armpit and left arm. At first the attacks were of short duration, a minute or two, but they were so severe that he had to stop dead until they passed away. In February,

CLINICAL TYPES OF ISCHÆMIC NECROSIS.

Sudden Death.

No.	Author and reference.	Sex.	Age.	Symptoms.	Heart.
1	Fagge.[1]	M.	85	Sudden death.	Fibroid apex and anterior part of septum.
2	Do.	M.	61	Dyspnœa, giddiness. Sudden death.	Fibrosis of field of anterior branch of left coronary. Local dilatation.
3	Hale-White.[2]	M.	40	Sudden death.	Large fibrous mass in posterior wall of ventricle.
4	Do.	M.	43	Large heart. Sudden death.	Septum of ventricles white and fibrous.
5	Do.	M.	—	Dilated heart. Sudden death.	Apical half of left ventricle fibrous; also elsewhere.
6	Butlin.[3]	—	—	Sudden death.	Fibrous patch of interventricular septum; thrombosis of brachial, hepatic and superior mesenteric arteries; gangrene of duodenum.
7	Green.[4]	M.	52	Sudden death.	Fibrosis of interventricular septum.
				Angina.	
8	Herrick.[5]	M.	55	Pain in lower chest; vomiting; rapid heart failure; lived 52 hours.	Thrombosis of descending branch of left coronary.
9	Do.	M.	65	Præcordial pain; falling B.P. Later dyspnœa and dropsy; lived 2 weeks.	Thrombus of descending branch of left coronary.
10	Do.	M.	42	Sudden violent pain lower sternal region, arms, and epigastrium. Collapse. About again in 10 days. Dyspnœa and cyanosis. Sudden death.	Area of descending branch of left coronary fibrosed, and descending branch of left circumflex.
11	Peacock.[6]	M.	60–70	Dyspnœa and substernal pain some weeks.	Fibrosis of anterior wall of left ventricle more marked below.
12	Obrastzow and Straschesko.[7]	M.	49	Substernal pain, cyanosis, feeble heart. Sudden pain sternum, neck, and head.	Thrombosis of left coronary.
13	Do.	M.	57	Substernal pain, cyanosis, Cheyne-Stokes breathing.	Thrombosis of left coronary.
14	Do.	M.	57	Substernal pain and down left arm, Cheyne-Stokes breathing.	Thrombosis of left coronary.
15	S. West.[8]	—	40	Extreme spasmodic pain in præcordium.	Fibrosis of base of left ventricle.
16	Mackenzie.[9]	F.	57	Increasing pain in chest, at first paroxysmal: slight breathlessness might precede pain.	Ischæmic necrosis and fibrosis in field of descending branch of left coronary.
17	Do. Case 2.	M.	64	Angina of effort. Breathlessness. Sudden death.	Ischæmic necrosis in field of septal branch of anterior branch of left coronary artery.
18	Do. Case 4.	F.	60	Angina of effort. Pain in left forearm.	Fibrous changes in muscle of left ventricle; calcification of coronary arteries.
19	Do. Case 6.	M.	48	Angina of effort. Pain chest, neck, and jaw—sometimes arm.	Small aneurysm of left ventricle. Rupture of heart.
20	Do. Case 7.	M.	52	Breathlessness on walking and pain in stomach.	Aneurysmal dilatation of right ventricle containing clot.
21	Do. Case 10.	M.	46	Shortness of breath 2 years and pain 1 year before death on walking. Pulsus alternans 1 week before death.	Fibrosis in field of anterior branch of left coronary artery.
22	Do. Case 11.	M.	48	Pain in præcordium and left arm, with breathlessness brought on by effort. Irregular rhythm.	Fibrosis in field and obliteration of anterior branch of left coronary artery, septum, and left ventricular wall.
23	Do. Case 21.	M.	57	Weakness and breathlessness on exertion. Later attacks of angina. Pulsus alternans.	Apical half of left ventricle dilated and fibrosed.

1918, he was able to resume work, at which he continued till April, 1921, when the pain became more severe and more constant, preventing him from sleeping, and even awakening him from sleep at times.

The pain at the time of admission was dull and heavy, and commenced in the axilla and shot inwards to the lower end of the sternum. At first the pain *commenced in the thorax* and spread to the arm. An attack might last for three hours. It did not invariably involve the arm. The attacks occurred every day and even several times in the day. During his residence many attacks were observed. His breathing became frequent, and he became restless and sat up in bed, with his shoulders bent forwards. The pain did not appear to be very severe. During these attacks the abdomen was always distended and tight, and relief followed the movement of the bowels or the passage of flatus. We formed the impression that the attacks were abdominal in origin though he said that the pain was thoracic. He was not talkative during these attacks, but sighed frequently and perspired freely. Well-marked paralysis agitans. A mitral systolic murmur was present and a diastolic aortic murmur. Blood pressure 115–60 mm. Hg. Temporal, brachial, left facial, dorsalis pedis, femoral arteries were all palpable and tortuous. Retinal arteries narrowed and thickened. There was some œdema. After admission the attacks continued. On June 7th his temperature rose to 101° F., the pulse to 100, and the respirations to 32. He was sick on several occasions. *The pain at this time was constant*, and his general condition rapidly deteriorated. He died from cardiac failure.

Post-mortem examination showed numerous small infarcts *over lower two-thirds of left ventricle and adjacent septum.* Recent pericarditis. Advanced syphilitic aortitis, nipping the orifice of the left coronary artery, the lumen of which was obstructed a few millimetres below. The branches showed gross lesions. The right artery was pervious though notably atheromatous. The renal and mesenteric arteries showed numerous thickened patches, and the kidneys many arteriosclerotic scars. Mitral valve normal; aortic thickened.

A very instructive case. The diagnosis of angina seemed clear and its gastro-intestinal origin, but the patient's neurotic tendencies and his excessive complaints made the real question difficult to solve. The appearance of *constant* pain and friction made the whole thing clear.

CASE F.—Mrs. B., aged 45 (30/1/22–8/2/22). Acute abdominal symptoms with collapse, localised infarct of left ventricle with ball thrombus.

Admitted on account of severe pain in the abdomen on the left side with collapse. Multipara. Her last baby was born

CLINICAL TYPES OF ISCHÆMIC NECROSIS—(*Continued*).

Chronic Heart Failure.

No.	Author and reference.	Sex.	Age.	Symptoms.	Heart.
24	Fagge.[10]	M.	60	Dyspnœa and dropsy for 7 weeks.	Posterior wall of left ventricle very thin; replaced by fibrous tissue.
25	Do.	M.	42	Dyspnœa and dropsy; rheumatic fever 19 years previous.	Posterior wall of left ventricle completely fibrous.
26	Do.	M.	43	Dyspnœa 2 months after cholera; dropsy 10 months after. Death 14 days after onset of dropsy. Sudden death.	Septum and adjacent anterior parts of left and right ventricles converted into fibrous tissue.
27	Writer's observation.	M.	49	Dyspnœa 5 months. Dropsy 1 month, fibrillation.	Fibrosis of tip of left ventricle and recent ischæmic necrosis of posterior papillary muscle.
28	Bristowe.[11]	F.	39	Dyspnœa and some dropsy; irregular pulse.	Extensive fibrosis lower anterior portion of heart including part of septum.
29	Mackenzie.[12]	M.	72	Hemiplegia followed by hæmaturia, shortness of breath, pulsus alternans, cardiac asthma, dropsy.	Intense fibrosis, with ante-mortem clot internally, at apex of left ventricle.

Abdominal Symptoms and Collapse.

No.	Author and reference.	Sex.	Age.	Symptoms.	Heart.
30	Writer's observation.	M.	61	Abdominal pain and vomiting 5 days, followed by 2 days of absolute constipation.	Old fibrosis in area of anterior branch of left coronary; embolism of superior mesenteric artery.
31	Writer's observation.	M.	46	Angina of effort some months; 24 hours diarrhœa, vomiting, and collapse.	Fibrosis of field of anterior branch of left coronary artery, calcification and occlusion.
32	Samuelson.[13]	M.	47	Diarrhœa, vomiting, and collapse. Pulse 35.	Sclerotic narrowing of both coronaries.
33	Hammer.[14]	—	—	Collapse. Pulse 40.	Right coronary thrombosed.
34	Gallavardin et Dufour.[15]	—	—	Collapse. Very slow pulse.	Embolism of coronary artery.
35	Faulkner, Marble, and White.[16]	M.	60	Repeated attacks of severe pain upper abdomen.	Occlusion of a branch of descending left coronary artery with infarct of left ventricular wall.
36	Do.	F.	55	Severe pain in right lower chest and right upper abdomen. Operation for gallstones proposed.	Occlusion of right coronary artery and partial of descending branch of left.
37	Hardt.[17]	M.	66	Pain lower chest, intermittent nausea, and vomiting followed by fibrillation.	Old thrombosis of left coronary artery with myomalacia cordis, aneurysm, and mural thrombosis.

Fainting Attacks

No.	Author and reference.	Sex.	Age.	Symptoms.	Heart.
38	Writer's observation.	M.	72	Fainting attacks at rare intervals, one with collapse and irregular pulse. Sudden death.	Old fibrosis in field of right coronary artery. Recent ischæmic necrosis of septum, also in field of right coronary artery.

Delirium and Failing Pulse.

No.	Author and reference.	Sex.	Age.	Symptoms.	Heart.
39	Writer's observation.	M.	83	Sudden delirium; dyspnœa, failing pulse. Three days' illness.	Obliteration of anterior branch of left coronary.

No Cardiac Symptoms.

No.	Author and reference.	Sex.	Age.	Symptoms.	Heart.
40	Fagge.[18]	M.	66	No cardiac symptoms. Renal cancer.	Fibrosis of posterior wall of heart.
41	Do.	M.	55	No cardiac symptoms. Gangrene of foot; gradual asthenia.	Fibrosis of posterior wall of left ventricle. Local pericarditis over softening.
42	Writer's observation.	M.	76	Had undergone prostatectomy 3 weeks before death from strangulated hernia.	Healed patch of fibrosis near apex of left ventricle; anterior branch of left coronary was completely obstructed.
43	Writer's observation.	M.	—	Carcinoma of rectum. Colostomy. Sudden death.	Calcification of both coronaries; ischæmic necrosis of left ventricular tip; aneurysmal dilatation rupture into pericardium.

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[1] Tr. Path. Soc. Lond., 1874, xxv., 61.
[2] Ibid., 1884, xxxv., 114.
[3] Ibid., 1880, xxxi., 76.
[4] Ibid., 1874, xxv., 47.
[5] Jour. Amer. Med. Assoc., Chicago, 1919, l., 387.
[6] Tr. Path. Soc. Lond., 1854, v., 96.
[7] Ztsch. f. Klin. Med. Berlin, 1910, lxxi., 116.
[8] Tr. Path. Soc. Lond., 1884, xxxv., 119.
[9] Angina Pectoris, Lond., 1923, Case 1.
[10] Tr. Path. Soc. Lond., 1874, xxv., 61.
[11] Ibid., 1855, vi., 148.
[12] Angina Pectoris, London, 1923, Case 22.
[13] *Wiener med. Wchnschr.*, 1878, No. 5.
[14] Ibid., 1878, xxviii., 98.
[15] Lyon Méd., 1913; Abstract in Arch. des Maladies du Cœur, 1914, vii., 406.
[16] Jour. Amer. Med. Assoc., Chicago, 1924, lxxxiii., 2080.
[17] Ibid., 1924, lxxxii., 692.
[18] Tr. Path. Soc. Lond., 1874, xxv., 64

eight months before, and since then she had had symptoms of renal and cardiac disease. General œdema, &c., bronchitis, emphysema. Cardiac sounds pure but weak and distant. Steady deterioration. Infarct of lungs on Feb. 4th.

Post-mortem. — Hypertrophy and dilatation of left ventricle. A ball-shaped clot at the apex probably related to a myocardial infarct which, however, did not extend through the whole depth of the muscle. Right heart much dilated, with clots in auricle. Infarcts in spleen and lungs. Interstitial nephritis. Thoracic aorta was fairly normal, but the abdominal aorta and the splenic artery were grossly diseased. The valves were very slightly thickened.

CASE G. — Mrs. P., aged 65 (21/10/07–27/10/07). Gradual cardiac failure; obliteration of right coronary artery, aneurysm of posterior wall of left ventricle.

A history of palpitation for some years. Œdema of the feet occurring about 12 months before admission, with shortness of breath, and becoming marked three weeks before admission. The œdema became excessive and the legs burst, with numerous small sores on the left leg which had become septic.

On admission anasarca marked, with great dyspnœa and cyanosis. Slightly delirious. Albumin abundant. A mitral murmur was present, and the pulse was irregular. On Oct. 27th, 1907, the patient died in a sudden syncope.

Post-mortem examination showed a large heart weighing 23 oz. The main branch of the right coronary artery was practically obliterated, and an aneurysm had formed on the posterior wall of the left ventricle about the junction of the upper and middle third. The wall was fibrosed, and no muscle cells were visible to the naked eye on section. The endocardium was much thickened. The aortic valves were thickened, with an acute endocarditis superimposed. The mitral was thickened The splenic and renal arteries were sclerosed. Interstitial nephritis. The acute endocarditis was probably secondary to the sepsis in the legs.

CASE H.—J. M., male, aged 62 (30/9/24–2/10/24). Gradual cardiac failure: diffuse early fibrosis of myocardium.

About 18 months before admission he began to feel short of breath and unfit, and had to give up his work. On July 24th his feet became swollen. On Sept. 30th, 1924, he collapsed with Cheyne-Stokes breathing. The heart was large with a mitral systolic murmur and distant poor sounds elsewhere. Pulse about 100, regular, and of fair volume, with blood pressure 147 max., 100 min. The chest was practically clear. No improvement ensued and he died suddenly.

Post-mortem examination showed a large heart, 32 oz., with a few patches of old pericarditis on the surface. The aortic valves were slightly thickened. The other valves were normal. The myocardium showed diffuse early fibrosis, the aorta and the coronary arteries showing arterio-sclerotic changes.

Prof. F. R. Fraser's Cases.

CASE I.—W. C., aged 65 (7/7/24–7/9/24). Abdominal angina; ischæmic necrosis of a large portion of the left ventricle and a portion of the right.

History.—Increasing shortness of breath for preceding two years. Attack of dyspepsia three months previously. On morning of July 5th woke up with acute pain in epigastrium and upper abdomen. Very short of breath, increasing cough and cyanosis. During the 6th pain and dyspnœa increasing and restlessness marked.

On examination: A short, stout man, cyanosed and in pain, giving a muddy complexion, very great difficulty in breathing. Temperature 98·6° F., pulse 130, respirations 40. Thorax moving very poorly and jerkily; air entry poor, breath sounds vesicular with prolonged expiration; rhonchi, sibili, and râles at both bases, especially right. Position and size of heart could not be made out with any accuracy because of emphysema and the noisy respiration. Heart sounds judged to be both very feeble. No irregularity. No œdema of subcutaneous tissues. Abdomen distended but moving well, no localised rigidity or tenderness. Liver enlarged, edge felt 2 in. below costal margin. Urine: Sp. gr. 1020, trace of albumin and of acetone. Nervous system: Nothing abnormal found except that left ankle-jerk could not be elicited.

July 8th: In early morning noticed to be not moving right arm and right leg, and on examination it was found that there was a weakness of right face also. The arm-jerks were present and equal; the right knee-jerk and right ankle-jerk were brisker than the left, and the plantar response on the right was extensor. No improvement occurred with administration of oxygen. Morphine and adrenalin were given hypodermically without improvement. Temperature rose to 104·8°, pulse 160, and death occurred in morning of the 9th.

Post-mortem Examination. — Lungs congested and œdematous. Gastric ulcer, chronic, 2 in. above pylorus. Embolus of branch of left middle cerebral artery and subcortical area of softening. Cardio-vascular system: A small amount of turbid fluid was present in the pericardium, and some recent lymph present on anterior surface of heart. Subpericardial hæmorrhage over the left auricle. Right auricle considerably dilated and hypertrophied. Tricuspid orifice admitted four fingers. Valve was slightly opaque and a hæmorrhage present on anterior cusp. Left auricle hypertrophied. Mitral orifice admitted three fingers, valve thickened, but no stenosis. Left ventricle markedly dilated and somewhat hypertrophied. Pulmonary veins appeared normal. Aortic valve somewhat thickened, and ascending part of aorta showed some fatty changes. Remainder of thoracic aorta was involved extensively in an ulcerative atheroma. Coronary arteries thickened and the posterior interventricular branch was filled with an embolus. Musculature of the left ventricle almost entirely involved in acute softening, with the presence of small hæmorrhages into the substance of the muscle. On the inner surface the appearance was of a yellowish necrotic change. A considerable but much smaller portion of right ventricle showed the same change.

Histological Examination by Sir Bernard Spilsbury.—Heart muscle teased in osmic acid—large irregular deposits blackened with osmic acid in most of the muscle cells. These deposits resemble lipoids developing in putrefaction. They are probably due to myomalacia. Ordinary preparations show numerous areas of recent myomalacia scattered throughout the myocardium. In these areas the muscle cells have partly lost their nuclear staining properties, but the cells are not distinguished. These areas are markedly infiltrated by polynuclear cells, and in some parts there are also hæmorrhages. The endocardium over these areas is infiltrated with polynuclear cells, and thrombi adhere to the inner surface of the heart. The thrombi are laminated, the laminæ being chiefly fibrinous with layers of red clot; some of the laminæ are markedly infiltrated with polynuclear cells. There is also some polynuclear cell infiltration of the epicardial fat adjacent to areas of myomalacia, and there are hæmorrhages in this tissue. No organisms seen. No changes in blood-vessels of heart to account for myomalacia.

Dr. K. D. Wilkinson's Cases.

CASE J.—A. C., aged 50 (3/11/24–6/11/24), under Dr. W. H. Wynn. Angina pectoris, occlusion of left coronary, infarction of left ventricle.

He was admitted complaining of burning stabbing over præcordium. He had severe attack of angina on admission. Accentuated second sound aortic area. Apex beat sixth space, 4 in. from mid-line. Friction rub heard over left lower lobe anteriorly, probably pleural in origin. Pain radiated but little and was confined to præcordium. He was an elderly, powerfully-built man of the ruddy type, obviously older than his years, but at a first glance did not look very ill. He was sitting in a chair, leaning slightly forward, and rather pale. A closer inspection showed that he was slightly cyanotic. The striking thing about him was his immobility; he would hardly move a limb, and in talking spoke very quietly and slowly. He moved his eyes rather than his head.

He said that he had had attacks of præcordial pain for some months, but these had never been very severe, and had always passed off pretty soon; but this attack had come on two days previously and had remained severe ever since the beginning. There were times when the pain was easier, and times when it was of the greatest intensity, but it was so bad all the time that he was unwilling to talk, dared not move, and had hardly had anything to eat since it began. Amyl nitrite hardly had any effect in the out-patient room, and during the three days he lived after admission he had a great deal of pain and died in an exacerbation. Morphine seemed the most effective drug, but was never able to abolish the pain. The pulse was steady, rather slow, poor in volume, and the vessel wall was thickened. There was no palpable pressure abnormality (he was obviously too ill for the pressure bag).

Post-mortem.—A muscular well-nourished body. Pericardial sac: Adhesions, old standing, were present towards the base of the heart and at the apex of the right ventricle. The præcordium covering the front of the right ventricle was thickened and opaque.

A delicate layer of recent fibrinous exudate covered practically the whole of the left ventricle. The left ventricle was somewhat dilated. There was a large mass of pale thrombus entangled amongst the columnæ carneæ at the apex. Practically the whole of the lower two-thirds of the left ventricle was infarcted, the muscle having a dull, opaque, greyish-white appearance with irregular areas of congestion. The aortic valve segments were slightly thickened and there was a delicate layer of recent thrombus along the lines of contact of the cusps. The first part of the aorta was considerably dilated and showed an extreme degree of atheromatous thickening and was narrowed to an extreme degree, so that it only admitted the point of a dissecting needle. A small plug of pale thrombus completely occluded this greatly narrowed orifice. The artery itself showed only a few patches of atheroma. No gross lesion was found in the auricles or right ventricle. The dilatation of the aorta extended as far as the beginning of the descending portion, and in addition to the atheromatous changes described there were many areas of pearly white thickening of the intima and scarring of the endothelium, the appearances being those of a syphilitic mesaortitis. The rest of the aorta showed irregular patches of atheroma. Both lungs showed hypostatic congestion and extreme generalised œdema. Peritoneum: normal. Liver: 2200 g.; showed early chronic venous congestion and some fatty infiltration. Spleen: 125 g.; rather atrophied, and the pulp was distinctly fibrous. Kidneys: 430 g.; showed some recent œdema and congestion; the vessels were somewhat thickened.

CASE K.—W. G., aged 61 (7/6/25–11/6/25), under Dr. L. G. Parsons. Acute attacks of collapse, angina. Thrombosis of the main trunk of the left coronary. Infarction of the apical portion of the left ventricle. Pneumonia—right apex. Chronic venous congestion of all organs.

The illness began with a sudden sharp attack of collapse, but he did not lose consciousness; was breathless. There were previous attacks many years ago. No recent illnesses. Bowels free. He was admitted cyanosed, pulse-rate 62, poor in volume. Pain at left base anteriorly, pleuritic rub at right base posteriorly. Otherwise no physical signs. On June 10th, 1925, the patient had an attack of palpitation with a feeling of suffocation. Diagnosis: Angina pectoris.

Post-mortem.—The body was that of a well-built, elderly man. The lungs were prominent, due to hypertrophic emphysema. To a large extent they obscured the cardiac area. The peritoneal cavity was normal. Heart (500 g.) and pericardium. On opening the pericardium a little turbid fluid was seen, and fibrinous adhesions attached the pericardium to the apex and anterior aspect of the left ventricle. These were easily broken down, and the heart muscle underneath them was very firm in consistence and presented a mottled appearance of infarction. On opening the left ventricle (which was hypertrophied and dilated), the area of infarction could be distinctly seen extending right through the heart muscle, and to the internal surface of this area a quantity of antemortem thrombus was adherent. The interventricular septum did not appear involved in the infarction, although it was of wide extent, involving the whole of the apical portion of the heart. Some areas of the infarct showed the condition of "myomalacia cordis." There was some fibrosis of the papillary muscles. The left coronary, which showed advanced atheroma with much narrowing of its lumen, contained a mass of thrombus about 1½ in. from its origin. This was formed upon a calcified patch. The right coronary was very atheromatous but was not thrombosed. The orifices of the coronaries were somewhat narrow. The aorta was very atheromatous. The orifices of the intercostals were narrowed and there were two patches of atheromatous ulceration, over one of which the intima had given way completely so as to produce a commencing dissecting aneurysm. Lungs: Left upper lobe was consolidated and completely airless. The left base was œdematous. Right: Upper lobe partly consolidated. Liver: 1700 g.; chronic venous congestion. Kidneys: 380 g.; chronic venous congestion. Spleen: 160 g.; chronic venous congestion. Radial artery was almost normal in appearance and the vessels of the kidneys were the same.

NATIONAL MEMORIAL TO QUEEN ALEXANDRA.—This memorial is, with the sanction of the King and Queen, to take the form of an augmentation of the resources of Queen Victoria's Jubilee Institute for Nurses, of which Queen Alexandra was the patron. Under the charter of the Institute the Queen succeeds to that position. All the affiliated nursing institutions will be given the opportunity of participating, and the *Long Service* Fund for England Irish and Wales will benefit. It is hoped, moreover, that the and Scottish organisations will be able to proceed on similar lines. Over 1200 associations are affiliated to the Institute.

THE NEW WHITEHAVEN INFIRMARY.—Some four years ago Whitehaven Castle, the Cumberland residence of Lord Lonsdale, was purchased and presented by an anonymous donor, together with £20,000, for conversion into a new Whitehaven and West Cumberland Infirmary. The alterations have now been completed. The ground floor, consisting of a long range of low rooms, is used for administrative purposes, the dispensary, X ray, electrical, out-patients' and casualty departments. The first floor has been turned into wards for men, women, and children, and the total accommodation is 80 beds—there were formerly 60—with 47 staff bedrooms.

LUPUS OF THE NOSE AND UPPER AIR PASSAGES TREATED BY RADIUM.

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Ætiology.

LUPUS, contrary to the usual belief, is a disease that affects the mucous lining of the nose, mouth, and upper air passages quite as much as the skin of the face and neck. In fact, in almost all cases the granulations start in the nose at the junction of the skin of the vestibule with the mucous membrane, or just on the mucous side of that junction, and spread to the skin of the face, as well as the inside of the nose.

Lupus affects young adults of both sexes, and in our experience male sufferers are as numerous as female; but this is not the opinion of some authorities. It is not often seen before the age of 15, and, in its active stage, rarely above the age of 40, though the disfigurement caused by its ravages lasts until the death of the patient. By far the greater number of cases are about the age of 20, and of the lower middle class.

Pathology.

Lupus is caused by a mild form of tubercle bacillus and spreads very slowly. On the skin the lesions are of the "apple-jelly nodule" type, with peripheral spread. As the disease makes headway there is ulceration just within the periphery of its area, while in the centre scarring takes place spontaneously. The scarring is of a rough and very disfiguring nature, with irregular contractions of the white scar tissue, and red patches between.

Several types are recognised by skin specialists. In the upper air passages four definite macroscopical types are recognisable.

(*a*) *Granulations.*—This is the most common and most typical form. The granulations are often spread evenly over the surface of the mucous membrane, and may extend from the vestibule of the nose as far as, and even to a little below, the larynx. They are soft and velvety in appearance and to the touch; and have occasionally a greyish surface, which bleeds on touching with a probe or other instrument.

(*b*) *Vegetations or Proliferations.*—These occur, as a rule, only in the vestibule of the nose, and resemble a branching sessile papilloma. They may protrude at the nostril. They occur in conjunction with other types of the disease in the same patient.

(*c*) *Tumours.*—It is difficult to explain the formation of these lumps or to say of what they consist. They occur in the choanæ and on the superior surface of the soft palate, and can be seen with a post-nasal mirror. They have no connexion with the posterior ends of the turbinated bones. They are also found in the interarytenoid region of the larynx, and cause obstruction to the vocal processes of the arytenoid cartilages, preventing full approximation of the vocal cords. They must not be confused with tuberculous tumours or pachydermia of this region. They disappear on the application of radium.

(*d*) *Ulceration.*—This is a very troublesome variety, which is found most commonly in the mouth, on the under surface of the lip, and on the hard and soft palate. It is very resistant to all forms of treatment, and consists of a heaped-up and thickened mucous membrane, in which are small, deep, punched-out serpiginous ulcers or pits. This form of the disease bears a superficial resemblance to some forms of syphilis and is often mistaken for it.

Reaction of the Four Types Described to Radium Treatment.—Of the types of lupus described, the first three may be considered to be particularly favourable in their yielding to treatment by radium. These three types are: (*a*) Granulations, (*b*) vegetations, and (*c*) tumour formation. The last type (*d*) ulceration is much less readily dealt with, but can be arrested and held in check in a satisfactory manner. As will be seen later, where the action of radium is described, the reason for this less favourable reaction to treatment is most probably due to the fact that less granulation tissue is formed in this type of the disease than in the others.

Modes of Spread.

Starting in the Nose.—Although the following modes of spread are described separately they may be found in conjunction with one another. The granulations may start just inside the nose, at the junction of the skin of the vestibule with the mucous membrane, and may be found either on the septum, the inside of either of the alæ nasi, or on the floor of the nasal fossæ. From this starting point they may spread in three directions: (1) To the outside of the nose, with apple-jelly nodules on the skin, and ulceration and gradual destruction of the alæ nasi. This is accompanied by much thickening of the structures of the nose, both cartilaginous and soft; and the vestibule is blocked and often widely stretched by masses of hard crusts, which can be picked off, leaving a bleeding surface, but which re-form again in a very short time. This type leaves behind it the facial disfigurement with which everyone is familiar, and which is very unsightly and distressing to a female patient. Once having reached the skin, the disease may spread widely over the face if not checked by suitable treatment. (2) Along the nasal fossæ to the rest of the upper air passages. The common mode of spread is along the inferior turbinated bone, but the septum may be affected and even perforated. The posterior ends of both inferior and middle turbinates may be covered with granulations. The superior surface of the soft palate is next affected, and tumours may form in this position where they rest against and are attached to the vomerine part of the nasal septum. The whole post-nasal space may be covered, including the Eustachian cushions and posterior pharyngeal wall. From the superior or naso-pharyngeal surface of the soft palate the disease spreads over the uvula and buccal surface, and so on to the hard palate. Tracking down the anterior and posterior pillars of the fauces and over the tonsils or tonsil beds, it then gains the epiglottis and eventually covers the whole of the larynx. The epiglottis becomes swollen, covered with granulations, and eventually either permanently thickened or else eaten away. The vocal cords are often completely covered, with loss of voice, which may be permanent if not rightly treated. Tumours may form in the interarytenoid region. In addition to the larynx the posterior third of the tongue may be invaded, with much heaping up of granulations, and stiffness and soreness of the organ itself. (3) Starting in the floor of the vestibule, the disease may track through into the angle between the lip and the alveolus of the upper jaw, and so gain the buccal cavity, where it spreads along the gums and on to the hard and soft palate.

Starting on the Lip or Gums.—The granulations may first appear on the lip and spread over the gums and hard and soft palate and so to the pharynx and larynx. Or they may miss the palate altogether, and leap straight from the lip to the pharynx or larynx.

Clinical Manifestations.

The chief thing noticeable about these patients is that though they may be suffering from a very extensive lesion, they are not definitely ill; although they are usually in a poor state of health, and are found on questioning to live an indoor life under conditions which are not conducive to general physical fitness. Apart from this the symptoms of the disease are those which it produces according to the actual organ affected.

(1) *In the Nose.*—Nasal obstruction is produced by granulations or proliferations of the papillomatous type on the anterior part of the septum and the inner surfaces of the opposing alæ nasi. The obstruction invariably persists, and is maintained later by the thickening of the soft parts, and the piling up of granulations and thick crusts, which form so unpleasant a feature of the disease. This obstruction often lasts for year, and may be permanent if unwisely treated. Nasal discharge is one of the earliest signs. It is very scanty and thin, sometimes tinged with blood, and arises from the granulations. It rarely persists for more than a year, after which the nose becomes dry. Bleeding is not common, but occurs from the granulating surface when a crust is removed. It is not profuse.

(2) *In the Post-nasal Space.*—The condition here is one of dryness and scarring which spreads down the posterior pharyngeal wall. There may also be nasal obstruction made more pronounced by the formation of tumours in the posterior choanæ.

(3) *Soft Palate and Fauces.*—Both surfaces of the soft palate and all the pillars of the fauces are frequently attacked together. The result is a thickening, stiffening, and immobility of these parts, occasioned not only by the active disease itself, but by the scarring left by it, when eventually, after the passage of years, it becomes healed. This condition leads to a nasal intonation of the voice, and, on rare occasions, to regurgitation of fluids into the nose when swallowing.

(4) *Mouth and Tongue.*—There is thickening, stiffness, and deformity of the lips where they are affected, and a general dryness and soreness of the mouth, especially where there is widespread thickening of the mucous membrane with the deep, indolent, serpiginous ulceration already described. The tongue may be rendered slightly immobile and the taste impaired.

(5) *Larynx.*—The most serious effects are seen in this part. Huskiness is a common symptom when the epiglottis and parts of one or both vocal cords or the interarytenoid region are affected. But the disease soon overwhelms the whole larynx with total loss of voice, which persists for many years, and may be permanent if allowed to progress until the larynx becomes a mass of scar tissue, or if it is unwisely treated. In such cases, not only is the voice irretrievably lost, but the glottis sometimes becomes inadequate, and tracheotomy has to be performed, a result which can only be described as disastrous. When there is loss of voice the whisper is often very feeble owing to the larynx becoming stiff, and being held widely and rigidly open, so that a forcible stream of air cannot be expelled through it, as through a narrower orifice. The result is that the whispered speech can only be heard by placing the ear close to the patient's mouth.

Prognosis.

Considerable divergence of opinion in certain details is to be observed among authorities of long experience. In certain favourable cases there is a definite tendency to heal under conditions which, as is aimed at in frank tuberculosis, promote the general health and resistance. On the other hand, in the great majority of patients the disease goes on for many years, and eventually leaves its victim hideously disfigured, with permanent nasal obstruction, permanent loss of voice, and sometimes even with a tracheotomy.

While Sir StClair Thomson in England emphasises this tendency to heal, in America Wendel Christopher Phillips in his standard text-book dismisses the subject in the following words: "Laryngeal lupus is practically never cured. It may be arrested for a time, but it will finally reappear and cause a fatal termination." The authors' own experience is that in the majority of cases a definite disappearance of the disease can be obtained by suitable measures of treatment; and that if in certain small areas there is a tendency to recur, the local recurrence can again be dealt with by a repetition of the same treatment. Even in those cases of the "ulcerative" type, which most obstinately resist treatment, a great mitigation and relief of symptoms can be obtained within a short time.

Treatment.

(1) *General.*—All possible means must be taken to improve the general health—i.e., an open-air life, a generous diet, and tonics containing iron and arsenic, or cod-liver oil and malt.

(2) *Local.*—The unsatisfactory nature of previous methods of local treatment can be estimated by their large number, and by the fact that only one method has any enthusiastic adherents. This method is the destruction of the disease by galvano-cautery. But even this is not applicable to cases where the disease is very extensive and, as may readily be understood, to a large extent inaccessible to its application; as, for example, when the seat of the disease is the post-nasal space. The authors can recommend the following methods of treatment:—

In Slight Cases.—When the disease is in the neighbourhood of the vestibule of the nose, or in parts of the mouth which are readily accessible, the galvano-cautery is a rapid and easy method of exterminating very small patches. The burning causes replacement of the affected area by strong white scar tissue, which has, however, the effect of immobilising the part so treated.

In Severe and Extensive Cases.—In the authors' experience the majority of cases, when first seen, have reached a stage which puts them in this category, for which they can confidently recommend treatment by radium.

Clinical Aspect: The Present Situation of Radium Therapy for Lupus of the Upper Air Passages.

(*a*) This method of treatment, as is mentioned later, is not new. But very few cases have previously been published, and so its advantages have not come into prominence. But, having closely observed the progress of a series of fresh cases for a period extending over two years, the authors feel that the results have been so happy that further delay in publishing them is unnecessary. They realise that time alone can give the ultimate scientific verdict on the questions of complete cure and possible recurrence. But during the years that must elapse before such a verdict can be given many sufferers might be condemned to years of speechlessness and a lifetime of disfigurement which could quite well be avoided. The authors are convinced that the aphonia is in the majority of cases curable and the facial disfigurement avoidable. They would therefore urge that the disease should be treated before it has exceeded the limits which allow of a satisfactory result being obtained—i.e., before the larynx has been partially destroyed and before facial disfigurement has actually occurred.

Further experience in radium therapy of lupus of the upper air passages is necessary to enable an authoritative announcement to be made; but it may reasonably be hoped that, in dealing with the obstinate ulcerative type of lupus, a method of reducing it more rapidly may soon be found.

(*b*) *Coöperation between Laryngologist and Radio-therapeutist.*—This ensures the correct dosage of radium being given and also its accurate application to the affected area. We regard this as the fundamental condition of success in treatment, and feel justified in doing so because of satisfactory results which have attended this collaboration. The laryngologist should always point out the particular parts requiring radium applications, and when necessary should manipulate the tubes into position and apply cocaine as occasion requires. This is especially necessary deep in the nose, the post-nasal space, and on the soft palate.

(*c*) *Advantages of Treatment by Radium.*—In addition to the successful alleviation of the complaint this treatment has much to recommend it. The treatment consists of short courses of four to five hours on three, four, or five consecutive days. These short courses are repeated at intervals of six weeks to two months, for a year or even longer until the disease is eliminated. At each session the tubes or plates are placed in position, with or without the application of cocaine, and kept there for the requisite time. This involves no pain and little inconvenience or discomfort. The treatment should be continued for a period extending from a few months in slight cases to about a year or more in extensive cases—i.e., about six short courses at two monthly intervals in serious cases. By this time a serious though favourable case is apparently cured, the slight cases in a very much shorter time.

(*d*) *Methods of Application of Radium.*—In the nose radium may be applied in the form of plates to the outer surface, and in tubes, fastened at the end to a silver wire, to the interior. The tubes can be pushed to any distance into the nasal fossæ, which can if necessary be cocainised previously. In the post-nasal space and on the upper surface of the soft palate the radium is applied by means of similar tubes passed through the nose. In the mouth application is by tube or plates of suitable size; the fauces and soft palate should be cocainised before application. The larynx is treated by external plating.

(*e*) *Action of Radium.*—Broadly speaking, radium has two forms of action. In lethal doses it is a destroyer of living tissue and is used to destroy new growths. But in stimulating doses it has the effect of accelerating the formation of fibroblasts, and so assists the maturing of granulation tissue. When these doses are applied to chronic granulations, such as are found in tuberculous and lupus lesions, they stimulate them to fulfil their function in replacing the disease by scar tissue, and so perform their duties as a natural defence against disease. In chronic lesions caused by the tubercle bacillus, where the spontaneous cure is by fibrosis, radium acts as a powerful ally of Nature. Moreover, its action is selective, and fibrous tissue is laid down only where the presence of the tubercle bacillus has elicited the inevitable tissue reaction, so that just enough and no more scar tissue is laid down to get rid of the disease. This scar tissue is soft and pliable, and no unnecessary rigidity of mobile parts, such as the larynx and soft palate, is produced.

Again, some small patches of lupus are so faint that they cannot be seen by the naked eye. But the radium searches them out, and when the swelling takes place, which marks the reactionary stage of treatment, the presence of minute patches of the disease becomes apparent. The action of radium is therefore more thorough than any treatment dependent upon exact identification by the surgeon. In addition, there is the action of the rays upon the tubercle bacilli themselves.

Many experiments have been made by Mr. A. E. Hayward Pinch regarding the action of radium rays on cultures of the tubercle bacillus, and it has been found that an exposure of at least 100 hours with a full strength unscreened apparatus is necessary to produce a lethal effect. Owing to the tremendous reaction which such a dose would have on the human tissues, radium cannot be used for the purpose of actually killing the tubercle bacillus. It has been noted, however, that cultures of tubercle bacilli which receive a fairly short radiation have their vitality inhibited, and subcultures made from them grow much more slowly than the controls and exhibit numerous involution forms. It is probable, therefore, that the radiation of a lupus patch for a moderate length of time weakens the vitality of the tubercle bacilli, and so enables their ingestion by phagocytes to be more easily accomplished.[1]

(*f*) *Macroscopical Appearances of Healing.*—(1) The reactionary stage. This is at its height in ten days to a fortnight after the application of radium. During this stage any crusts come off of their own accord, leaving a smooth surface. The affected area becomes swollen from œdema and covered with a thin layer of sticky secretion. (2) The healing stage. In another fortnight the same area will be seen to be shrunk below its original diseased condition, and part of it will be covered with fresh mucous membrane over a partial layer of finely striated scar tissue, which, however, is not immediately visible, but can be seen at the end of treatment. This healing process, starting at the edge of the affected area and progressing to its centre, takes place in stages after each course of applications until all the lupus has disappeared. Sometimes the disease is eliminated without any visible formation of scar tissue—a matter of considerable importance in dealing with mobile parts of the throat.

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[1] Radium Institute Reports.

(*g*) *Restoration of Function.*—This is one of the greatest attributes of radium treatment and is dependent upon its selective and economical action in the laying down of scar tissue. The disease is eliminated and the function of the part restored.

(1) The greatest blessing of this is found in the larynx. Young adults, who have for three and four years been condemned to the life of a recluse owing to their complete aphonia, have within a few weeks been restored to normal and happy human beings and are able to enjoy the usual amenities of life. This has occurred without exception in all the laryngeal cases treated. These cases are in marked contrast to some which are left to themselves, or treated by cautery or scraping, in which thick scar tissue forms, causing incurable aphonia and sometimes necessitating tracheotomy. In contrast to the treatment adopted in tuberculosis of the larynx, where complete rest for the throat is enjoined, the patient suffering from lupus should be encouraged to use the voice as much as possible while under treatment with radium so as to regain whatever suppleness is possible in the scarred muscle tissue and mucous membrane.

(2) In the nose the results are equally satisfactory if less dramatic. The swelling and crusting completely subside, leaving a free airway and often a healthy secreting surface.

(3) The soft palate and fauces, although occasionally scarred, are left in a freely mobile condition, thus assisting the normal return of the voice. In one case where there was more scarring than usual, massage was applied to the part under local cocaine anæsthesia and free mobility restored.

Technical Aspect of Radium Therapy.

1. *Rays.*—For the sake of those who *are not* conversant with the elementary therapeutics of radium, it may be well to give a very brief account of the rays emitted by its salts. They are of three types: (1) Alpha rays, whose therapeutic power is practically nil, as they are unable to pass through the walls of their containers, and in the case of varnished applicators only a few rays can escape; they are absorbed very quickly, normally at a depth of 0·01 mm. from the surface of the skin.

(2) Beta rays, which are much more penetrating than the above. They are divided into: (*a*) Soft, which cannot pass through 0·2 mm. of aluminium: (*b*) medium, which can pass through 0·2 mm. of aluminium, but not through 0·2 mm. of silver; (*c*) hard, which can pass through 0·2 mm. of silver.

The soft beta rays are rapidly absorbed, but the hard beta rays are only reduced to about 6 per cent. of their initial value in their passage through 1 cm. of body tissue.

(3) Gamma rays—these are very penetrating; the radiation which will pass through 2 mm. of lead consists only of gamma rays; so penetrating is their power that it requires a thickness of 11·1 cm. of blood, or 7·6 of muscle tissue to reduce them to 50 per cent.

For the purpose of this paper it may be stated that: A screen of lead, 0·1 mm., allows 23·6 per cent. beta and 99·5 per cent. gamma rays to pass; a screen of silver, 1·0 mm., allows 1·18 per cent. beta and 95·5 per cent. gamma rays to pass: a screen of lead, 2·0 mm., allows 0·37 per cent. beta and 92·8 per cent. gamma rays to pass. To put it shortly, the beta rays are destructive and cause a surface reaction comparable to cauterisation, burns from the first to the fourth degree resulting from an unscreened application, according to the strength and duration of the variation. These changes, however, take place slowly, the summit of the reaction not being reached for about 14 days; the associated gamma rays meanwhile stimulate the growth of fibroblasts and so aid the process of repair, complete healing eventually taking place. By suitable screening this destructive action of the hard beta rays can be modified to the degree required.

2. *Apparatus and its Application.*—The strength of all apparatus described below is expressed in terms of hydrated radium bromide, a salt the radium element content of which is 53·6 per cent. As this salt is deliquescent and unstable, it is always converted into the insoluble sulphate before being fixed in apparatus.

The following methods of treating lupus of the nose and upper air passages were elaborated by Mr. Hayward Pinch in 1911, and have been used at the Radium Institute ever since.

(*a*) When treating the more accessible parts, such as the nares, post-nasal space, fauces, uvula, tongue, and buccal mucous membranes, glass tubes (varying from 1·5 cm. to 4 cm. in length, and from 0·2 cm. to 0·3 cm. in diameter) containing 25 mg. of the salt are used. These are screened with 1 mm. of silver and are covered with rubber, being kept in the desired position by means of either a flexible wire attached, a stout piece of silk threaded through an eyelet at the proximal end, or by using dental wax. As stated above, this screening (silver, 1 mm.) only allows 1·18 per cent. of the beta rays to pass which causes a much modified destructive reaction, the associated gamma rays aiding the process of repair. These tubes are usually retained in position for from two to six hours (not more than two hours at one sitting).

(*b*) Early cases of lupus of the palate are treated with full strength (i.e., 10 mg. to the square cm.) unscreened applicators, covered only with rubber sheeting, for one hour.

(*c*) Chronic cases of lupus of the palate, and also those which have already been radiated, are treated with half strength (i.e., 5 mg. to the square cm.) plates, screened with lead, 0·1 mm., and covered with rubber sheeting; these applicators are retained in position for from one to one and a half hours. Lesions of the gums and buccal mucous membranes are treated in the same way.

(*d*) In treating the larynx, half strength (see above) plates screened with lead, 2 mm., and covered with rubber sheeting are used. These usually contain 40 to 80 mg. of the salt, two or three being applied externally over a thin layer of cotton-wool and fixed in position by strapping and bandages. In this way a purely gamma radiation is obtained, and there is no danger of damaging the skin or intervening tissues. It has been sometimes stated that radium may cause necrosis of the laryngeal cartilages, but no case of this nature has ever been observed at the Radium Institute. From 100 to 200 mg. are used at each sitting of five hours, and this is usually repeated for from three to five days, according to the severity of the lesion.

It will be seen from the above that in a case of average severity a patient will receive about 100 mg. hours (salt) with silver, 1 mm., to each of the more accessible areas, detailed above (*a*), and about 3750 (150 × 25) mg. hours (salt) with lead, 2 mm., to the larynx externally. This treatment is generally repeated at intervals of six weeks to two months, according to progress ascertained by the laryngologist.

In the above description no mention has been made of the "emergent" secondary rays which have such an irritating effect on the tissues; these rays are eliminated by interposing aluminium, 0·2 mm., or several sheets of black paper between the leaden screen and the rubber sheeting.

Appendix of Cases Recently Treated.

Patients suffering from small lupus patches, which have readily healed after radium applications, are not included in this appendix, which contains only the more extensive cases.

The cases have been divided according to the organ principally affected in each case.

1. *Laryngeal cases*—i.e., cases in which the disease affected the larynx as well as other parts of the upper air passages. These are the most extensive and serious cases as far as the upper air passages are concerned. Owing to the patient's aphonia, the condition of the larynx has been the principal consideration in treatment, apart from actual cure.

CASE 1.—Types (A) granulations and (C) tumour formation are exemplified. An unmarried woman aged 24.

History.—Tuberculosis of apex of right lung which had been quiescent for some years. 1918: Developed nasal obstruction due to lupus. Wassermann reaction negative. 1919: Her voice became husky and disappeared altogether. For four years she lived the life of a recluse for fear of infecting others, and also owing to being unable to speak to anyone.

Examination (June, 1923).—General condition good. Tuberculosis of lungs quiescent. Nose: Cartilaginous part bulging as if from large polypi, but in this case caused by extensive crusting within the vestibule. Posterior edges of the vestibule and the anterior ends of the inferior turbinates were covered with large crusts, which also surrounded a perforation of the septum about the size of a threepenny-bit. The nose was almost completely obstructed by the crusts. On removing one of the crusts a swollen and bleeding surface was revealed. Post-nasal space: In the right choana and resting against and attached to the septum was a rounded white tumour about the size of a hazel-nut. Pharynx and fauces: The uvula was rigid and much swollen, with a granular surface. Granulations extended down the posterior left faucial pillar and tonsil bed and both the right pillars and right tonsil bed. The pharynx was heavily scarred from healed lupus. Larynx: Epiglottis scarred, deformed, and apparently healed. Both ventricular bands and vocal cords were thickly covered with granulations, and there was swelling of the interarytenoid region with granular surface. Phonation: The whole larynx was stiff and the cords did not approximate. Voice: Nil. Whisper very feeble and only faintly audible.

Treatment.—Starting from Nov. 5th, 1923, she received short courses of radium treatment at two monthly intervals. These continued for a year.

Result.—After the first application of radium the crusting disappeared from her nose and she was able to breathe through it. Also, within six weeks she found herself able to speak for the first time after a silence of four years. The whole condition has since completely cleared up. Her soft palate was a little stiff, but to this mobility was restored with massage under cocaine anæsthesia by Miss Curling. The voice is still somewhat husky, but is loud and the words clearly audible, and she can speak for any ordinary length of time without increased huskiness of voice or tiredness of the throat.

CASE 2.—Types (A) granulations, (B) vegetations, and (C) tumour formation. The patient, a girl aged 18 years, had for three years suffered from nasal obstruction and complete loss of voice.

Examination.—Nose: Lupus of the vegetating type (B) was protruding from the left nostril. Granulations (Type A) extended through the left nasal fossa as far as the post-nasal space. The posterior half of the right nasal fossa was also covered. Post-nasal space: The posterior ends of both middle and inferior turbinates were affected, also the posterior pharyngeal wall and the superior surface of the soft palate. Pharynx and fauces: The pharynx was much scarred, and the uvula, fauces, and tonsil beds covered with granulations. Larynx: Epiglottis, ventricular bands, and vocal cords were all thickly covered. In the interarytenoid region was a fair-sized lupus tumour (Type C). Voice: Completely absent. Whisper only faintly heard. We had the greatest difficulty in persuading this patient or her mother that she would regain her voice. She had been to the Radium Institute two years previously and been told that the disease was too deep-seated to be attacked by radium.

Treatment.—Courses of radium at two monthly intervals.

Result.—The whole condition has cleared up. There is no nasal obstruction and no scarring except in the posterior pharyngeal wall and epiglottis. The voice returned in four months and is now quite normal, and the patient is able to sing. The palate and fauces are freely mobile and show no scarring.

CASE 3.—Types (A) granulations and (D) ulceration. The patient, a woman aged 35, had for some years suffered from soreness and induration of the lip, and more recently from huskiness of voice, which for the last year had become complete aphonia.

Examination.—Lip: The under surface of the upper lip was covered by old-standing indurated lupus of the ulcerative type. Pharynx: There was a patch of lupus about the size of half-a-crown in the posterior pharyngeal wall. Larynx: The epiglottis was destroyed. Both vocal cords were affected, but the left vocal cord and ventricular band were very thickly covered. Voice: Absent.

Treatment.—Short courses of radium at intervals of two months.

Result.—The voice returned in a few weeks and is now quite normal. The whole condition has made good progress and is nearly healed.

CASE 4.—Types (A) granulations and (D) ulceration. A man, aged 18, had for two years suffered from nasal obstruction and loss of voice, with soreness and stiffness of the back of the tongue.

Examination.—Nose: Lupus granulations over the right inferior turbinate. Post-nasal space: Some scarring of the posterior wall. Palate and fauces: Some ulceration in small scattered patches. Tongue: The whole of the posterior half was covered with massive piled-up granulations. Larynx: The epiglottis very much thickened and swollen. The posterior parts of the vocal cords and the interarytenoid region were affected, and also, to a certain extent, the subglottic space. Voice was almost gone, but the patient could cough and occasionally say some words.

Treatment.—This was carried out according to the usual principles.

Result.—The voice returned and became quite strong though still a little husky. The larynx is healed except for the epiglottis, which is still thickened. The nose and tongue are healed. But the patches in the palate and fauces being of the "ulcerative" type, resisted treatment for some time, *but have been arrested and held in check.* They have since healed.

2. *Nasal Cases.*—These are cases in which the nasal condition has been predominant, and in which the avoidance of its destruction and disfigurement has been the first consideration in treatment.

CASE 1.—Shows apple-jelly nodules on nose and lip and Type (A) granulations in the nose and pharynx. Patient is a man, aged 18. Had for several years suffered from nasal obstruction, and for one year had noticed spots on his nose and lips, with swelling and crusting of the right nostril.

Examination.—Nose: In the right nasal fossa the granulations extend back to the nasopharynx. In the left nasal fossa there is some slight granulation. Nasopharynx and pharynx: Granulations extend downward behind both posterior pillars of the fauces, which are themselves slightly affected. Larynx unaffected. Neck: Both tonsillar glands are swollen.

Treatment.—The usual line of treatment has been followed.

Result.—The whole condition has made very satisfactory progress. There is now no danger of destruction of the right alar cartilage, and most of the disfigurement already apparent has disappeared. It has since healed.

CASE 2.—Shows apple-jelly nodules on the nose and Type (A) ulceration. The patient, a man aged 21, had for three years suffered from swelling and disfigurement of the nose, with nasal obstruction, and much crust formation in the nostrils. His throat also had been sore and his voice husky for a year.

Examination.—Nose: The whole end of the nose was much swollen and covered with apple-jelly nodules, which also covered the alæ. The vestibule on each side was widely dilated with crusts and granulations extended far into the nose. There was complete nasal obstruction. Post-nasal space: Some scarring and granulations in the superior aspect of the soft palate. Palate and fauces: The whole of the soft palate and fauces and most of the hard palate were covered with a uniform raised red mass of granulations. Larynx: The epiglottis was thickened with granulations and the anterior end of the left vocal cord slightly affected. The voice was husky but not markedly so.

Treatment.—As in the previous cases.

Result.—The case is still under treatment. The nose is now nearly normal and all risk of breaking down and disfiguration has gone. The patient can breathe well through both sides of the nose. The condition of the palate and fauces is rapidly disappearing. The epiglottis is still thickened, but the voice has returned to normal.

CASE 3.—Types (A) granulations and (D) ulceration. The patient is a girl aged 16.

History.—For several years she had suffered from "sore on the nose."

Examination.—These sores were extensive and consisted of red granulating patches on the end of the nose and on the alæ. There was also much crusting in both vestibules, with distension of the nostrils. It was impossible to see any distance into the nose. Mouth: The whole of the soft and hard palate, the fauces, tonsil beds, and the gums of the upper jaw were smothered with lupus of the ulcerative variety. Larynx: The epiglottis and superior surface of the arytenoids were diseased.

Treatment.—Short courses of radium therapy at two monthly intervals.

Result.—Nose: This has much improved. The nose, although not quite normal in appearance, is now free from lupus on the outside. The edges of the alæ, however, are rather irregular. Mouth: The extensive area affected entailed prolonged treatment, but satisfactory progress has been made and the parts involved are now nearly healed. Larynx: Satisfactory progress has been made.

Several other cases have been, and are still, under treatment, but they have not been long enough as yet to justify a report being made.

For the opportunity of treating three of the reported cases the authors are indebted to the courtesy of Mr. Herbert Tilley, Dr. A. M. H. Gray, and Mr. Michael Vlasto.

RECORD OF A BLOOD CRISIS.*

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THE significance of a blood crisis lies in the fact that there is a tremendous over-activity of the bone-marrow, by which young immature red cells, some embryonic in type, are thrown into the general circulation in order to counteract the effects of blood loss due to hæmolysis. Though such a crisis is usually of good prognostic significance the efforts of the bone-marrow may be unavailing, as in this case.

E. B., a married woman, aged 42, was admitted to the Royal Infirmary, Manchester, under Dr. E. M. Brockbank's care on June 26th, 1923.

A blood count was taken on the same date with this result: red cells, 1,120,000 per c.mm.; leucocytes, 3000 per c.mm.; hæmoglobin, 22 per cent.; colour-index, 1·0; normoblasts, 57 per c.mm.; megaloblasts, 43 per c.mm.

Differential leucocyte count (per cent.): Polymorphs, 44; lymphocytes, 52·8; large mononuclears, 1·6; eosinophiles, 1·6; mast cells, 0.

The red cells showed a marked degree of anisocytosis, poikilocytosis, and macrocytosis. Punctate basophiles and polychromatophiles were not found, and blood platelets were apparently absent. Though the colour-index was somewhat low, the clinical findings and other features of the blood count were in accordance with the diagnosis of pernicious anæmia which was made.

Further blood counts were made on July 3rd and 10th, and owing to the large numbers of nucleated red cells found on the latter date counts were performed daily until the crisis had subsided.

Date in 1923.	Red cells.	Hæmoglobin.	Leucocytes.	Colour-index.
	per c.mm.	%	per c.mm.	
3/7	1,184,000	21	3600	1·04
10/7	1,408,000	24	6600	0·86
11/7	1,528,000	24	6800	0·80
12/7	1,480,000	24	6600	0·82
13/7	1,416,000	22	6600	0·75
14/7	1,248,000	20	5800	0·80
15/7	1,336,000	20	5000	0·72
16/7	1,352,000	20	4200	0·70
17/7	1,240,000	20	3600	0·83

Date in 1923.	Megaloblasts.	Normoblasts.	Erythroblasts.	Free nuclei.	Punctate basophiles	Platelets.
	per c.mm.					
3/7	100	72	0	0	0	0
10/7	3142	5544	52	0	0	0
11/7	3508	6065	108	897	136	Few
12/7	1768	4382	0	910	66	0
13/7	976	2877	26	871	330	Few
14/7	739	1513	0	690	0	Few
15/7	240	440	0	140	100	0
16/7	33	168	0	151	84	0
17/7	29	72	0	111	0	0

The differential leucocyte counts have been omitted as there was little of interest beyond an increase in eosinophile polynuclears from 0·8 per cent. on July 3rd to 4·4 per cent. on July 12th and 4·8 per cent. on July 14th, after which date the percentage rapidly fell. A relative lymphocytosis of about 60 per cent. was maintained throughout the crisis. Film preparations showed well-marked polychromasia and punctate basophilia. Moreover, there was great variety in the type of nucleated erythrocyte seen. A few cells showed mitotic figures, and in a few apparent extrusion of the nucleus was taking place.

In addition to normoblasts and megaloblasts a more primitive cell, the erythroblast, was observed, a large cell with an intense basophile protoplasm and an oval or round structureless nucleus, stained purple with Leishman's stain. Included in the counts among the megaloblasts were the metrocytes, which cells possess a megaloblastic nucleus with only a narrow fringe of polychromatophilic protoplasm. Cells with oak leaf nuclei were also numerous; they resemble the normoblasts (with which they were classed in the counts) but the protoplasm is usually polychromatophilic and their nucleus is serrated, resembling an oak leaf. Free nuclei are pyknotic in character, and are small oval or round bodies. In some erythrocytes there were small round bodies which took up the nuclear stain and sometimes formed a complete ring surrounding the nucleus. These are known as Howell-Jolly bodies.

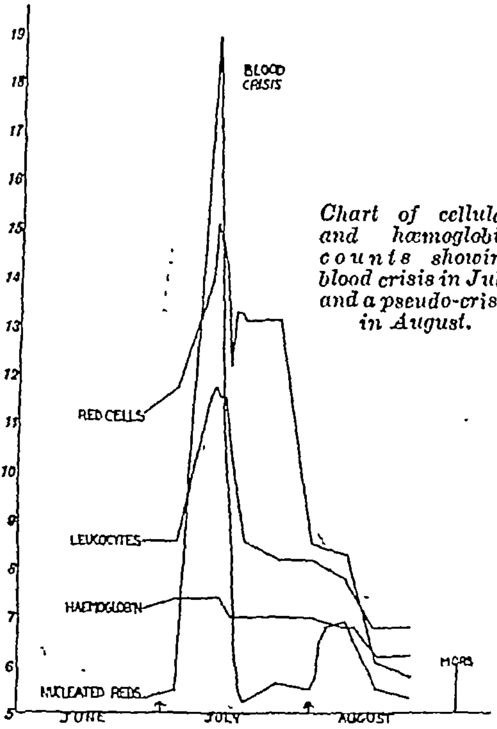
Chart of cellular and hæmoglobin counts showing blood crisis in July and a pseudo-crisis in August.

Blood counts were taken on July 24th and 31st with these results:—

	24/7/23.	31/7/23.
Red cells (per c.mm.)	1,236,000	856,000
Leucocytes (per c.mm.)	3,200	3,200
Hæmoglobin (per cent.)	20	16
Colour-index	0·89	1·05
Normoblasts (per c.mm.)	134	102
Megaloblasts (per c.mm.)	64	64
Erythroblasts..	0	0
Free nuclei	0	0
Blood platelets..	0	0
Punctate basophiles	0	0

On August 2nd the patient asserted that she felt extremely well, and as this sense of well-being had been the prelude to the crisis, the possibility of a second crisis was entertained and daily blood counts were made for three days.

The following table shows that there was a definite rise in the number of nucleated red cells though not of sufficient magnitude to warrant a full daily examination:—

	2/8/23.	3/8/23.	4/8/23.
	per c.mm.	per c.mm.	per c.mm.
Megaloblasts	96	240	216
Normoblasts	120	216	264
Erythroblasts ..	0	0	0
Free nuclei	48	144	94

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* Part of a thesis submitted for the degree of M.D. Manch.

From this date the blood value steadily decreased in spite of energetic treatment, and a count taken on August 21st (the day before her discharge home) gave this result: red cells, 570,000 per c.mm.; leucocytes, 1800 per c.mm.; hæmoglobin, 12 per cent.; colour-index, 1·1; normoblasts, 43 per c.mm.; megaloblasts, 14 per c.mm.; other abnormal erythrocytes, 0; platelets, 0.

Differential leucocyte count (per cent.): polymorphs, 28·0; lymphocytes, 67·0; large mononuclears, 2·0; eosinophiles, 2·1; mast cells, 0.

She died on August 31st, 1923, and no post-mortem examination was obtainable.

The chart gives a graphic representation of the occurrence, and it shows also the less-marked increase which might be termed a "pseudo-crisis." The accompanying increase in red cells and leucocytes is also demonstrated, but it will be noted that there was no corresponding increase in hæmoglobin percentage, thus accounting for the low colour-index.

Erythroblasts and megaloblasts are representatives of embryonic regeneration, normoblasts of extra-uterine function, and polychromasia and punctate basophilic cells are evidence of immaturity. Naegeli[1] considered that "free nuclei" were artefacts, and Kölliker that they were normoblasts with an extremely narrow band of protoplasm. They are of interest in so far that, if they represent normoblasts, an increase in their numbers indicates a return of the bone-marrow to its normal function.

I desire to thank Dr. Brockbank for his kind permission to publish the data of this case and for his interest and most helpful criticism.

THE ESTIMATION OF SMALL QUANTITIES OF BISMUTH IN THE URINE.

BY CHARLES ALFRED HILL,

SUPERINTENDENT ANALYST, BOOTS PURE DRUG CO.

THE modern therapeutic use of bismuth and its compounds has rendered the estimation of small quantities of bismuth, especially in urine, a subject of interest, and among the fundamental reactions which are available, the conversion of bismuth into an alkaloidal bismuth iodide, which is also the reaction used in Dragendorff's test for alkaloids, appears to be the most promising. The reagent for the detection of bismuth suggested by Léger[2] consisted of 1 g. of cinchonine and 2 g. of potassium iodide dissolved in 100 c.cm. of water. Excess of this reagent added to a solution containing free nitric acid, but not free hydrochloric or sulphuric acid, gave a reddish bismuth cinchonine iodide precipitate in the case of appreciable quantities of bismuth, but giving a red colour with traces. An attempt to make this method quantitative resulted in failure, and unless the conditions were very carefully adjusted one could not be sure of getting the red bismuth cinchonine iodide rather than the greenish-yellow of bismuth iodide, slight differences in dilution, excess of reagents, &c., making a very marked difference in colour. Also, the cinchonine itself lends a fluorescence which interferes. It was found that by dividing the reagent into two parts, adding the cinchonine in excess, followed by the addition of potassium iodide in small amounts, the concentration being kept as high as possible, the reaction resulted in the formation of a fairly constant and maximum red colour. Caille and Viel[3] recommend as a reagent for the detection of bismuth in biological fluids a solution consisting of 1 g. antipyrin and 2 g. potassium iodide in 30 c.cm. of water. Their method was to destroy the organic matter by ignition and subsequently to dissolve the ash in nitric acid and evaporate. The ash was then dissolved in hydrochloric acid and the reagent added. This method failed to give consistent results, not only because the yellowish-green colour masked the red compound, but, as Léger had pointed out, the hydrochloric acid should be eliminated and not introduced. Also, the addition of hydrochloric acid to the residue after treatment with nitric acid would tend to produce chlorine, which would liberate iodine and spoil the results. The possibility of the production of nitrous acid seems to have been entirely ignored, though unless its presence is guarded against, the results would be quite useless owing to the continued formation of iodine. A further difficulty was encountered in the destruction of the organic matter in substances such as urine. It was found that unless the ignition was complete, the bismuth would be retained by the undestroyed organic matter, while if the temperature on ignition was too high some of the bismuth was converted into an insoluble form which could not be taken up by nitric acid and, after considerable experiments, the following method was devised, more particularly for the estimation of urine.

To Destroy the Organic Matter.

As the amount of bismuth is usually unknown, and as it is desirable to carry out the final colorimetric matching in a solution containing about 0·05 mg., in 50 c.cm. three separate quantities of 5, 20, 50 c.cm. each of the urine should be measured into separate silica beakers of 100 c.cm. capacity and evaporated on an asbestos board over a bunsen flame to about 5 c.cm.; the beakers are removed and 5 c.cm. of S.G. 1·1 nitric acid added, the basins replaced on the asbestos and evaporated to dryness and heated at the lowest possible temperature, so that the organic matter is oxidised but not charred; it is important to stop the ignition when all the nitric acid is driven off and then to remove, cool, and moisten with more nitric acid; again, the evaporation and heating are repeated with previously mentioned precautions and if necessary the procedure repeated with further small quantities of nitric acid until a white residue remains. After cooling, two drops of nitric acid and 25 c.cm. of distilled water are added and the solution boiled for a few minutes and transferred to a Nessler cylinder; if the lowest temperature for the destruction of the organic matter has been maintained, it will be unnecessary to filter the solution which should be perfectly clear and colourless. After rinsing out the beaker with further quantities of boiling water, the volume is made up to 50 c.cm. and cooled.

To Determine the Bismuth.

To the solution in the Nessler cylinder add 0·3 g. of urea, dissolve, and mix thoroughly, then add 0·5 g. phenazone, agitate to dissolve, and while still shaking add potassium iodide in very small crystals (average weight 0·05 g.) one at a time until a red colour appears; it will be readily seen when the maximum colour develops, then add one crystal in excess. The colour is quite easily imitated with a standard solution of bismuth made by dissolving 0·62 g. of bismuth carbonate B.P. in 10 c.cm. nitric acid (S.G. 1·1) adding water to 1000 c.cm., and further diluting 10 c.cm. of this to 1 litre. The best results in the control experiment are obtained by taking 10 c.cm. of this solution (equivalent to 0·05 mg. of bismuth, Bi) and 1 drop HNO_3 (S.G. 1·1), adjusting to 50 c.cm. in the Nessler cylinder and adding the reagents as the method specifies, and the comparison is made with the solution giving the most suitable depth of colour.

Test results to show the accuracy of the method were made by adding known amounts of bismuth to varying quantities from different samples of urine and treating as described. In every experiment the colour obtained was equably comparable with the blank containing the same amount of bismuth. Four individually different samples of urine into which no bismuth was introduced failed to produce any colour when similarly treated.

I wish to express my thanks to Messrs. Boots Pure Drug Co., in whose laboratory the work was carried out, and to Mr. H. Droop Richmond, F.I.C., for his interest and advice, and to Mr. J. A. Egglestone, B.Sc., for assistance in the experimental work.

MARGARINE IN MENTAL HOSPITALS.—The West Riding Mental Hospitals Board have rejected the recommendation of the Board of Control that 25 per cent. of the patients' allowance of margarine should be substituted by butter, on the ground that the diet already contains an adequate amount of fat. It was stated that butter would cost £2142 a year more than margarine.

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[1] O. Naegeli: Blutkrankheiten und Blutdiagnostik.

[2] Bull. Soc. Chem., i, 91–93, and Year Book Pharm., 1889, p. 116.

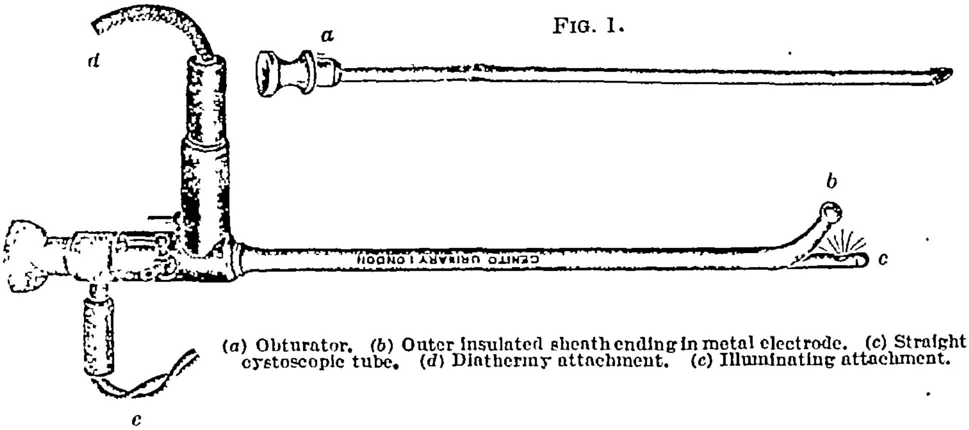
[3] Jour. Chem. Soc., 1923, ii, 443.

NOTE ON A
CYSTOSCOPE OF NEW TYPE
DESIGNED FOR THE APPLICATION OF DIATHERMY TO BLADDER TUMOURS.

By FRANK KIDD, M.CH. CAMB., F.R.C.S. ENG.,
FORMERLY SURGEON TO THE LONDON HOSPITAL.

NOTHING can give more satisfaction to the surgeon than the ability to destroy a papilloma of the bladder without opening the bladder by means of diathermy applied with the catheterising cystoscope, a method we owe to the genius of Edwin Beer. By this means I have destroyed 48 cases of simple and malignant papilloma out of 72 cases treated. Nevertheless, it has long seemed to me that there was room for improvement in the technique. Through the ordinary catheterising cystoscope only a small electrode can be employed, with the result that it takes on an average at least three sittings to destroy a papilloma of ordinary dimensions. For a long time I have been thinking how I might devise a technique whereby a large electrode could be applied cystoscopically, so that I could hope to attain the destruction of a tumour at a single sitting, as is quite feasible if the bladder is opened by an incision and an electrode of large dimensions employed.

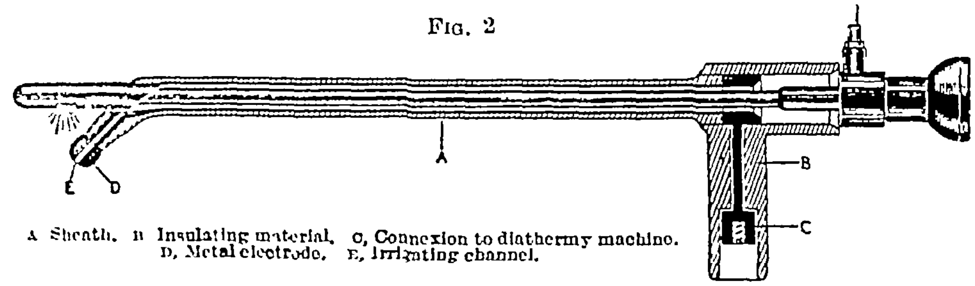
FIG. 1.



(*a*) Obturator. (*b*) Outer insulated sheath ending in metal electrode. (*c*) Straight cystoscopic tube. (*d*) Diathermy attachment. (*c*) Illuminating attachment.

At length this idea has been made a practical reality by the invention of "bakelite," a material which is capable of sterilisation in boiling water, and which is a perfect insulating material. When this substance was brought to my notice by Mr. Schranz, of the Genito-Urinary Manufacturing Company, London, I told him of my idea and suggested a means whereby the problem could be solved. The result is the cystoscope which I am now bringing forward. I believe that this cystoscope is a new departure, and that it is likely to give quick results which have hitherto been quite impossible of attainment with the ordinary catheterising cystoscope. The idea is to use the cystoscope itself as the diathermy electrode, a large electrode as compared with the tiny electrode so far used through the catheterising cystoscope of the Nitze-Albarran type.

FIG. 2



A Sheath. B Insulating material. C, Connexion to diathermy machine. D, Metal electrode. E, Irrigating channel.

The cystoscope consists of an inner tube of metal which is connected at its proximal end to one pole of a powerful diathermy machine, and which terminates at the distal end in a large metal ball perforated by a hole to permit of the circulation of irrigating fluid. This metal tube or electrode is insulated with "bakelite" except at its terminations, and is passed into the bladder armed with a metal obturator, the whole instrument being of a size No. 24 Charrière. The instrument is passed into the bladder, the obturator withdrawn, and the bladder washed clear and distended for inspection. Through the lumen of the tube is then inserted a straight lens-holding tube or cystoscope. This is insulated at its distal end by a sheath of "bakelite." The lenses are arranged in such a manner that a large field of bladder can be seen, and when the cystoscopic tube is rotated to a suitable angle, the rounded metal end of the cystoscope can be seen as it projects at an angle to the main body of the instrument. Nothing then remains but to apply this large electrode under the sight of the eye to the tumour in the bladder and to destroy it completely at one sitting by means of diathermy. The largest and most powerful diathermy machine can be used with this electrode and the tumour be destroyed just as if it were exposed at an open operation. As the field becomes clouded with detritus, the bladder can be washed clear through the cystoscope without any need for the withdrawal of the sheath from the bladder. It is advisable to employ a cold lotion of oxycyanide of mercury 1 part in 4000, and to empty and refill the bladder frequently as one proceeds, otherwise the lotion may rapidly become heated to an excessive degree by the heat generated at the electrode.

I believe that this instrument presents an advance in the treatment of papilloma of the bladder. Some surgeons appear to have lost patience with diathermy and are inclined to open the bladder for papilloma. Open operation has a definite mortality, and it is always liable to risk of recurrence in the scar. Diathermy applied through the cystoscope has no mortality and leads to no risk of implanting fresh tumours elsewhere in the bladder.

As an example of what it is possible to effect by means of this instrument I can quote the following case:—

A woman was sent to me in April, 1925, by Dr. H. Fraser, of Harpenden. She had an ulcerating carcinoma some two inches in diameter lying between the right ureter and the internal meatus extending on to the right lateral wall. She was suffering from severe painful cystitis and hæmaturia. Under anæsthesia I burnt over the whole floor of the ulcer with the new diathermy cystoscope, and then implanted 12 radium emanation seeds through another cystoscope into the charred base. For some months there followed increasing pain accompanied by the passage of large sloughs through the urethra. I examined her in November, 1925. She had no pain, no hæmaturia, no increased frequency, and the urine was as clear as crystal. On inspecting the bladder with the cystoscope I could see that the malignant ulcer had completely disappeared.

This was a case that was quite inoperable by any of the older methods and might have been condemned to an early and painful death. The treatment applied has caused the ulcer to disappear and the bladder to take on the appearances and sensations of complete health.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

A CLINICAL meeting of this Section took place on Dec. 11th at St. Thomas's Hospital under the presidency of Sir ARNOLD LAWSON.

Inflammatory Deposit in Cloquet's Canal.

Mr. MALCOLM HEPBURN showed a woman, aged 33, who had a metastatic inflammatory deposit in Cloquet's canal in both eyes. A mass could be seen to be filling up the central part of the vitreous, and around this the fundus, apparently normal, was visible. He had watched the eyes for two years, but had seen no sign of inflammation. Had the appearance been due to hæmorrhage he thought it would not have been stationary, and it would not have lasted so long. He feared that there would be some shrinking of the vitreous in the future.

Central Retinitis.—Band-shaped Opacity of Cornea.

Mr. A. C. HUDSON exhibited two cases of central retinitis, showing the condition in two stages. The more advanced one he brought forward three years ago, when it was at the stage that the more recent one illustrated now. There was apparently a calcification of the retina in the macular region and some disturbance of retinal pigment. In addition, there were a number of minute bright dots scattered over the foveal region. Usually the condition was unilateral, but he had had at least one case in which a very similar state was present in both eyes. In many of these cases the vision was certainly not very seriously impaired. In several, however, the patients complained not only of defective vision, but of seeing through a violet haze or mist. One of the two patients shown to-day said he seemed to look through a green veil; both of them had a central scotoma for red. Wassermann in both was continuously negative. He suspected some form of toxic absorption, perhaps from the air-cells (ethmoid, sphenoid, or frontal sinus). After weeks, even months, of treatment the sight remained much the same. Mr. Hudson also showed a patient with a primary band-shaped opacity of the cornea, whom he exhibited first two years ago. Scraping in such case produced a good result, and there was but little reaction following the procedure. Before the operation vision was 6/18 (partly), and it was now 6/9.

Ichthyosis of the Skin with Ectropion.

This patient, also demonstrated by Mr. Hudson, had congenital ichthyosis and very severe ectropion in each eye. The right eye had been quite destroyed. In the left eye was an extensive chronic keratitis in a very irritable stage, and apparently threatening to extend. Under the circumstances it seemed unlikely that much good would follow tarsorrhaphy, as there was so much tension on the skin, and union did not seem probable. But Thiersch grafting seemed advisable, if a suitable graft could be found. He decided on taking a graft from the outer surface of the patient's arm. Instead of being supple, however, this had the consistency of parchment. Still, as a bleeding surface was left behind, it was clear that living cells had been cut through. The graft took well, and the eye was now satisfactorily closed during sleep.

"Black Cataract" and other Cases.

Mr. Hudson next showed two cases of black cataract. The woman patient was at once seen to have very widely dilated pupils, and was obviously nearly blind. With the light from the window a grey pearly reflex was seen, apparently coming from behind the lens. She said she had a severe blow on that eye, and that she lost the sight of it two years afterwards. The pupil was now inactive and the projection very bad. From the better eye he extracted a cataract. There was an enormous lens, almost the colour of a prune. Vision was now 6/18 without glasses. The man with the black cataract had a healthy fundus, and with a sphere the vision was 6/9. Usually some fundus disease was present in these cases.

Mr. Hudson showed a man with buphthalmos and neurofibromatosis of fifth nerve. Mr. Treacher Collins had suggested that the buphthalmos depended on a defective development of the angle of the anterior chamber, and not upon any peculiarity of the nerves of the eye. This man's eye was so injected and irritable that Mr. Hudson thought it ought to be removed.

Mr. Hudson demonstrated a case, shown by Mr. K. G. W. SAUNDERS, of double leukoma adherens which appeared to be unique. Curiously, the tension of the eye was not raised, for with the iris applied to the back of the cornea over practically its whole extent some increase of tension was to be expected.

Ectodermal Cyst of Iris.

Mr. P. G. DOYNE showed a woman, aged 40, who had a cyst of the iris. She attended hospital and asked for an operation to be done. Vision was full in both eyes. On dilating the eye, a dark cystic condition became apparent in the lower and outer third of the iris. It was somewhat translucent, and the eye transilluminated readily from the limbus. The tension of the eye was normal.

SECTION OF ANÆSTHETICS.

A MEETING of this Section was held on Dec. 4th, Dr. F. W. SHIPWAY, the President, in the chair, when Prof. M. S. PEMBREY, F.R.S., read a paper on

Apnœa, Dyspnœa, and Cyanosis in Relation to Anæsthesia,

supplemented by clinical remarks from the President. Prof. Pembrey described apnœa as the absence of respiratory movements. In the fœtus there is prolonged apnœa, but the fœtus born before full term is capable of breathing. This appears an exception to the rule that muscular work needs progressive training. It is not really so, for Ahlfeld has shown that muscular contractions of a rhythmic nature occur within the uterus and appear to be respiratory and due to stimulation of the medulla from gaseous interchange in the blood. A fœtal sheep was removed from the uterus without damage to the placental circulation, and stimulation of the skin did not cause respiratory movement; but the animal began to breathe directly the umbilical cord was tied. The effective stimuli result from changes in blood composition, and cutaneous stimuli are only an accessory influence on the respiratory centre whose excitability is low in the fœtus and the infant, as they can stand deprivation of oxygen and accumulation of carbon dioxide better than the adult. The young mammal retains characteristics of its cold-blooded ancestors. Apnœa is not due to oxygen excess, as has been demonstrated by observations on hibernating animals. In infants Cheyne-Stokes breathing is common and physiological. In the old, also, this type of breathing may have no relation to disease. Air containing more than 2 per cent. of CO_2 abolishes apnœa by maintaining the tension of that gas at its stimulating value. Prof. Pembrey described the postural apnœa of diving birds, reflex inhibition of respiration in drowning, and the apnœa of forced breathing. Dyspnœa, he said, is the counterpart of apnœa. The former is evidence of vigorous respiratory stimulation, the latter denotes its absence.

The PRESIDENT deplored the instruction to patients to "breathe deeply." Rapid induction of anæsthesia cannot be obtained without a sense of discomfort. Acapnia may occur during prolonged gas-oxygen anæsthesia, and can be abolished by rebreathing. A condition may arise clinically in which, although the patient is fully oxygenated, he suffers from anoxæmia, oxygen having facilitated escape of CO_2 to too great an extent. Apnœa is seldom seen during "open" ether, the administration being really a "semi-open" one. The President referred to various muscular movements and forms of rigidity due not to insufficient anæsthesia, but in reality to anoxæmia, and he related a case showing the enormous importance of the presence of mucus in the lower air passages.

The papers were discussed by Dr. S. R. WILSON, Mr. G. R. PHILLIPS, Mr. LANGTON HEWER, and others.

MEDICAL SOCIETY OF LONDON.

TREATMENT OF GENITO-URINARY TUBERCULOSIS.

AT a meeting of this Society on Dec. 14th, with Sir HOLBURT WARING, the President, in the chair, a discussion took place on the treatment of genito-urinary tuberculosis in the male.

Renal and Vesical Disease.

Mr. CYRIL A. R. NITCH, in opening, spoke first on renal tuberculosis. Bacilli, he said, reached the kidney from some other focus in the body, either a quiescent and obscure lesion such as a tuberculous mediastinal gland, or an active and obvious source such as pulmonary, articular, or osseous tuberculosis. These two sources of infection, generally speaking, gave rise to two distinct clinical types of renal tuberculosis, respectively surgical and medical. As surgical renal tuberculosis was primarily unilateral, and as spontaneous cure was practically unknown, the treatment was by early nephrectomy. Before an operation was performed the function and condition of the opposite kidney must be carefully investigated. This having been done, in an ordinary case of unilateral disease the kidney should be removed with its capsule and any adherent perinephric fat by the lumbar route. Nephrectomy was contra-indicated when the function of the opposite kidney was defective (unless the deficiency was solely due to accompanying toxic nephritis) in advanced bilateral tuberculosis, and when the disease was secondary to pulmonary or other gross tuberculous lesions. With regard to treatment of the ureter, Mr. Nitch's own practice was to remove the entire ureter whenever it was obviously diseased, with a view to preventing further infection of the bladder, and also to accelerating its recovery. In 22 cases there had not been any operative mortality, and he considered that the results justified the operation, which he described in detail with the aid of drawings. Though ureterectomy might not be considered necessary in every case, it was definitely indicated as a primary operation when the ureter was much enlarged and dilated. He spoke of 60 per cent. of cures.

Vesical tuberculosis was twice as frequent in men as in women, and was always secondary to renal or genital tuberculosis, or, rarely, to tuberculous salpingitis by direct extension from an adherent tube. The disease extended in a downward direction to the prostate, the urethra, the seminal vesicle, and the epididymis. The immediate treatment, therefore, consisted in removing either the affected kidney or the affected portion of the genital tract. When the diesase was complicated by both renal and genital tuberculosis, the kidney must be removed first and the lesion of the genital tract at a later date. The results of such drastic treatment were often so remarkably good that extension of the disease to the genital tract after nephrectomy should not deter the surgeon from a second radical operation. In many cases the bladder eventually recovered without further treatment, but in a considerable proportion pollakiuria and pyuria persisted and required both general and local treatment. General treatment consisted of rest in healthy surroundings, bladder sedatives, cod-liver oil when tolerated, and tuberculin. In his experience the best form of local treatment was surgical diathermy at intervals of a fortnight or three weeks, but the operator should aim at singeing rather than coagulating the surface. He added a few words with regard to genital tuberculosis, leaving this subject chiefly to the following speaker. In tuberculous epididymitis he found the operation of epididymo-vaso-vesiculectomy devised by Loughnane to give excellent results, and removal of a portion or the whole of the prostate was only necessary in advanced cases.

Genital Disease.

Mr. KENNETH M. WALKER said that it was impossible to discuss the treatment of genital tuberculosis without referring to its pathology. Pathology taught that genito-urinary tuberculosis was never primary, it was always the result of a focus elsewhere in the body, and most commonly in the lungs, the bones, or lymphatic glands. The post-mortem room demonstrated the frequent association of tuberculosis of the genitalia with similar lesions of the urinary system, but he was inclined to think that it was only in about 45 per cent. of cases that the urinary system was attacked in conjunction with the genital. As a rule the disease appeared first in the urinary system and then spread to the genitalia. No figures were available as to how often the disease took the reverse course, appearing first in the genitalia and afterwards involving the urinary system. Such figures would be of extreme value, for by their means one would be able to gauge the success of various forms of treatment that might be employed in cases which appeared to be pure genital tuberculosis, since it was the risk of spread to the urinary system that constituted the chief danger. His own feeling was that when a genital tuberculosis spread to the urinary system it was the bladder that became infected through the prostate and seminal vesicles, and that the appearance of a renal lesion almost always meant that the infection started primarily in the kidney. With regard to the direction taken by the disease in the genitalia, he felt strongly that the path was the same as that taken by the gonococcus or any other organism that was known to attack the urethra primarily and the epididymis by secondary spread down the cord. Blood-borne infections of the testicle almost invariably affected the testis first, but in tuberculosis, as in gonorrhœa, the lower pole of the epididymis was the site at which a lesion first appeared. Personally he regarded the prostate and vesicles as playing a very sinister part in the spread of tuberculosis from the urinary to the genital system. If it were not for these structures a tuberculous testicle would be as rare as a tuberculous ovary. He gave figures which furnished evidence in favour of the descending route of infection; the spread of the disease was, he believed, from the prostate or vesicles to the epididymis rather than in the reverse direction.

A rational treatment based on this pathology must recognise two important points. The first was that reliance could not be placed entirely on surgery, but that general constitutional treatment was as important as local extirpation by the knife. Indeed, in many cases surgery was entirely supplementary to treatment by means of open air, cod-liver oil, tuberculin, "artificial sunlight," &c. If the case was one of pure genital tuberculosis the tendency was towards encapsulation and cure. Genital tuberculosis was on the whole a benign disease. It was genito-urinary tuberculosis rather than pure genital disease that did badly. In the presence of urinary disease constitutional treatment alone failed utterly. The spontaneous healing of a focus in the kidney was a rare event, and the only hope of salvation was in surgery. The first step, therefore, in the treatment of a patient suffering from genital tuberculosis was to make sure that no disease existed in the urinary system. Should a focus be found in the urinary tract surgical measures must be adopted, and once the urinary condition had been satisfactorily dealt with an improvement would take place in the genital disease and constitutional measures would begin to have effect. The second lesson to be drawn from the pathology was that if the theory were accepted that the disease started in the prostate and vesicles and spread to the epididymis, even such a wholesale measure as castration must fail to eradicate the disease. Should it be the aim of the surgeon to remove entirely the infected tissue, he could only do so by means of a complete extirpation of the genital tract. Whatever might be thought of Mr. Hampton Young's radical operation, it was the only logical one from the point of view of complete removal of infected tissues. To remove the testicle and vas as far as the internal ring and to leave behind an infected prostate and vesicle was an incomplete operation; it might be justifiable provided it was recognised that all that had been done had been to remove grossly infected tissues in order to assist the body in overcoming the infection that still remained. The speaker was in favour, whenever possible, of performing an epididymectomy rather than an orchidectomy. It was surprising how little the patient appeared affected by epididymectomy, and should the opposite epididymis become infected later the patient gladly submitted to what he regarded as a very trifling operation. But epididymectomy or even orchidectomy generally left behind central lesions in the prostate and vesicles, and the only logical operation if it was the intention of the surgeon to extirpate the disease by means of the knife was the complete excision of the genital tract. This was so severe a measure that it should be reserved for exceptional cases, in which other measures had failed, and the patient was obviously going downhill. In the majority of cases the only surgical measures required were epididymectomy, orchidectomy, the opening of abscesses, and the scraping of sinuses.

The Pathological View.

Dr. S. R. GLOYNE pointed out that his experience of renal tuberculosis was chiefly confined to the medical form frequently associated with pulmonary tuberculosis. This form generally showed small tubercles in the cortex and beneath the capsule, and was almost certainly a blood infection of an embolic nature. He also dealt with a number of points with regard to laboratory examination of urine, &c. He suggested that there was probably more than one species of smegma bacillus and that various workers appeared to differ considerably in their technique of differentiating this bacillus from *B. tuberculosis* by decolorisation with alcohol. The only safe way of differentiation appeared to be by making careful controls with different amounts of decolorisation, by comparing with known cultures of *B. tuberculosis* and by taking care in obtaining clean specimens by catheter. There seemed to be definite evidence that true tubercle bacilli could be excreted by the kidneys without lesions in renal tissue. Cases were also occasionally recorded in which there were tubercle bacilli present in the urine without casts or pus cells, but it was generally possible to find pus cells if adequate centrifugation was employed. In doubtful cases it was important to collect and sediment the whole of the urine passed during 24 hours. The animal inoculation test was not entirely satisfactory. Cases of renal tuberculosis were sometimes found in which guinea-pig inoculation failed, and there was always the difficulty of having to wait two or three weeks or even longer for a result. Secondary infections in renal tuberculosis were probably commoner than was generally supposed. With regard to treatment, it was difficult to estimate the value of tuberculin in all chronic forms of tuberculosis, and renal tuberculosis was a good example of this difficulty. To give very small doses was the only safe rule. Sanocrysin and other chemotherapeutic remedies derived from th heavy metals were liable to produce toxic nephriti and were not likely to offer much scope in renal tuberculosis. There occasionally appeared to be som evidence of spontaneous healing of small tuberculou lesions in the kidney and from time to time cases o cure were reported, but the speaker considered tha in his experience the 2 per cent. of clinical healin given by Keyes in his recent text-book was excessive In conclusion, not only was early diagnosis of rena tuberculosis essential, but also a careful search fo other foci of disease. The complement-fixation tes might be relied upon when it was positive, bu negative reaction was of no value.

Discussion.

The PRESIDENT mentioned a case which had com within his experience of apparently spontaneou healing of renal tuberculosis, verified by surgica discovery of a calcareous nodule in the kidney.

Mr. JOCELYN SWAN agreed with Mr. Nitch tha a patient with a bad tuberculous kidney, even wit tuberculous infiltration in the vesicle and prostate, wa a perfectly good surgical risk, and could be cure He would raise Mr. Nitch's estimate of 60 per cen of cures to 75 per cent. His own operation, whic he described in detail, varied a little from tha described by Mr. Nitch, but he agreed that the whol length of the ureter should be removed at the sam time as the kidney was removed, because other wise the operation would be incomplete, leavin virtually a test-tube of tuberculous material in th ureter. In the case of the bladder the post-operativ treatment was just as important as the operative Generally speaking, vesicular tuberculosis wa secondary to renal or genital tuberculosis, but h had seen one case which was undoubtedly primar tuberculosis of the bladder. The less one did in th way of local treatment of the bladder the better once the primary focus in the kidney was removed, i was astonishing how the bladder condition cleared up

Dr. NATHAN RAW said that in cases of primar pulmonary tuberculosis it was remarkably rare fo the kidney to be affected. On the other hand, in case of primary genito-urinary tuberculosis the number o subsequent infections of the lung was larger. O the question of tuberculin he had come to the conclusion that although this was an extremely valuabl remedy it ought not to be prepared from toxic cultures He would strongly urge that cultures which ha been attenuated should be used.

Mr. J. E. H. ROBERTS mentioned the rarity of genita tuberculosis among patients who were the subject of the pulmonary condition. In operating he had as a rule, removed the testis, epididymis, and cor as far as the internal ring. In most of the cases ther was tuberculosis also in at least the vesicle on th same side, and also definite nodules in the prostate After the operation he treated by means of therapeutic X rays applied to the vesicle and prostat and to the course of the vas between the interna ring and the vesicle. In every case the rapid disappearance of the lesion after X ray treatmen had been surprising. A necessary preliminary, o course, was to remove surgically any large masses o tuberculous disease present.

Dr. ROLF CREASY said that every speaker had rightfully emphasised the necessity for beginning with very small doses of tuberculin, but it was not until the big doses were gradually worked up to that the beneficial effects would be felt.

Sir HENRY GAUVAIN remarked on the rarity of the condition amongst children. Out of some 4000 cases which had passed through his hands at Alton, he could recall only two of renal tuberculosis.

Mr. NITCH, in replying, said that in assessing his figure of 60 per cent. cures after ureterectomy he had included only those cases in which 24 hours' specimens of the urine had been obtained and showed no pus, and, of course, no tubercle bacilli.

Reviews and Notices of Books.

Manipulative Surgery.

Principles and Practice. By A. G. Timbrell Fisher, *M.C.*, F.R.C.S. Eng., late Hunterian Professor, Royal College of Surgeons of England; Surgeon, Seamen's (Dreadnought) Hospital, Greenwich. London: H. K. Lewis and Co., Ltd. 1925. Pp. 168. *7s. 6d.*

The astonishing advances which have taken place during the last 40 years in the more scientific aspects of surgery have had one unfortunate result—they have tended to obscure the importance of those simpler methods of manipulation upon which our fathers had so largely to depend. They have, indeed, aroused a positive antagonism between those who are trained in the surgeon's art and those who depend for their results on the skill of their hands and the quickness of their wits. In the present volume an attempt has been made to explain the means by which the bonesetter has sometimes succeeded in confounding the man of knowledge, and to reduce manipulative surgery to something approaching a scientific basis. Commencing with a short discussion of the pathology and diagnosis of the minor disabilities of the joints, Mr. Fisher proceeds at once to a detailed description of their manipulative treatment. Taking first the knee-joint, upon which he himself has done a great deal of original work, he discusses various joints and their disabilities in great detail, illustrating his remarks by descriptions of typical cases and with photographs which make his meaning abundantly clear. The book should be of value to all who have to deal with injuries of the joints, and it may help to remove from surgery a not entirely unmerited reproach.

Gynæcological and Obstetrical Monographs.

Appendix (1925). London and New York: D. Appleton and Company. 1925. Pp. 224. *12s. 6d.*

These monographs were published in America in 1922. Each of the 15 volumes was written by a recognised authority on the subject and the whole series then constituted an excellent survey of this important branch of medicine. During the past two or three years many important contributions to the literature have been made, and the authors of the various articles have at the request of the publishers furnished the material which has brought the subject-matter of each volume up to date. This material is now incorporated in one volume as an appendix and forms an exhaustive review of recent work both in America and on this side of the Atlantic. An extensive bibliography with numbered references is appended and should prove valuable to the student and the research worker. We can recommend this book not only to those who possess the original set of monographs but also to those who are interested in recent advances in obstetrics and gynæcology.

Physics.

The Spectroscopy of X Rays. By Manne Siegbahn, Professor in the University of Upsala. Translated with the Author's additions by George A. Lindsay, Assistant Professor of Physics in the University of Michigan. London: Humphrey Milford, Oxford University Press. 1925. Pp. 287. 20s.

No book could better exemplify the readiness of the scientific world to make use of a discovery than this one by Prof. Siegbahn. In 1912 Laue discovered the way to measure the wave-lengths of X rays. In spite of the war years, investigation was pursued on the subject, and to-day the spectroscopy of X rays is of such importance as to warrant a text-book to itself. Here we have an excellent one, of which the scope may be inferred from the titles of the chapters. Following a summary of our knowledge of X rays up to the time of Laue's discovery, there are chapters on the Interference of X Rays, Technique of X Ray Spectroscopy, Emission and Absorption Spectra, Theories of X Ray Spectra, the Continuous X Ray Spectrum, and a chapter on the Inner Energy Levels of the Atoms. There is, of course, abundance of material here far beyond the ordinary needs of the medical radiologist, but for purposes of reference he will find the book worthy of a place beside Rutherford's "Radioactivity" on his shelf. The section dealing with spectroscopic apparatus is, however, of special interest, for medical men have often wished to avail themselves of some type of instrument which would give them ocular demonstration of the radiations they are using, and, in this book, they will find the various types well described and their particular merits differentiated.

The translation has been done by Prof. G. A. Lindsay and, on the whole, deserves warm praise. The book is a very valuable one; it is written by one who has contributed largely to the elucidation of the subject and meets a want which has been felt for some years.

Photo-Electricity, the Liberation of Electrons by Light. With chapters on Fluorescence and Phosphorescence, Photo-Chemical Actions, and Photography. Second edition. By H. Stanley Allen, M.A., D.Sc., F.Inst.P., F.R.S.E., Professor of Natural Philosophy in the University of St. Andrews; sometime Senior Lecturer in Physics at University of London, King's College. London: Longmans, Green and Co. 1925. Pp. 320. 18*s.*

Prof. Allen's Photo-Electricity now appears in a somewhat enlarged form, not too cumbrous, however, for easy reading. The subject-matter is not restricted to photo-electricity—i.e., the liberation of electricity by light—but includes chapters on Fluorescence, Phosphorescence, Photo-Chemical Actions, and Physiological Effects. Perhaps the last named is the section, brief as it is, which will appeal particularly to medical readers. Among the various physiological reactions discussed in this connexion is that of vision. The author says: "It is sufficient to suppose that photo-electric action takes place in the chemical substance (or substances) contained in the rods or cones, such separation of electrons resulting in electrification of the nerve-cells which sets up the nervous impulse to the sensorium. The changes in the retina on this view are identical with those in a phosphorescent substance or in the formation of a latent image on the photographic plate. The after-images seen in the dark after viewing a brightly illuminated object are analogous to phosphorescence, the excitation of the retina being due to the separation of electrons, the after-image to their return." While there is little escape from the probability of photo-electric action of the retina under appropriate stimulus, its mere recognition can hardly, we feel, be put forward as a theory of vision. The book is furnished with a bibliography of scientific papers, published from 1913–24, relating to photo-electricity, which should prove of considerable use to readers.

La Physique des Rayons X, à l'Usage des Médecins. Par Loisel, Préparateur de Physique à la Faculté de Médecine; et Lomon, Radiologiste des Hôpitaux, Chef des Travaux pratiques de Physique à la Faculté de Médecine. Préface du P. André Broca. Paris: Masson et Cie. 1925. Pp. 150. 10*s.*

This book on the physics of X rays for the use of doctors will prove useful to them, though they may think that the facts of gaseous ionisation are more easily grasped unassociated with mathematical treatment. The book is divided into three parts: the first is devoted to a description of the means of production of X rays; the second is upon the nature and properties of the rays; and the third contains very useful information upon gas tubes and Coolidge tubes. Perhaps in a future edition the author will amplify this outline. There is such an accumulation of radiological data to which medical men may want to turn that we think more categorical information could usefully be introduced into this excellent little book.

High Frequency in Oto-Rhino-Laryngology.

La Haute Fréquence en Oto-Rhino-Laryngologie. By Leroux-Robert, late Assistant in Oto-Rhino-Laryngology at the Salpêtrière. With a Preface by Professeur D'Arsonval. Paris: Masson et Cie. 1925. Pp. 100. Fr.15.

The results of surgical diathermy, or diathermo-coagulation, are well known to laryngologists in this country; indeed, of its effects in cancer of the pharynx, Dr. Leroux-Robert remarks that "the English authors are very convinced, the French authors more reserved." Of this use of high-frequency currents the author of this little book gives a good description; he lays stress on the absence of cicatricial contraction, and recommends employment of this method for many conditions beside malignant growths, and especially for stenosis and contracted cicatrices. Thus, he considers it a particularly suitable method for the treatment of synechiæ in the nasal fossæ, for stenosis of the anterior nares, congenital occlusion of the choana, and for cicatricial contraction of the palate and fauces. Far less convincing is his recommendation of the method in the treatment of obstruction of the Eustachian tube, of stenosis of the larynx, and of multiple laryngeal papilloma after thyrotomy. There is a short account of the use of sparking currents, or fulguration, but the greater part of the remainder of the book deals with medical or diffuse diathermy, and the application of high-frequency discharge from vacuum electrodes, the so-called "effluve" or "violet ray" applications. The author uses the former for chronic and tuberculous laryngitis, and for middle-ear catarrh; and the latter for a large variety of affections, including lupus, eczema, and cutaneous nasal troubles, hypertrophic rhinitis, and ozæna, migraine and sinusitis, tonsillitis, middle-ear catarrh, oto-sclerosis, tinnitus, and vertigo. The use of this form of high-frequency current is obviously only on its trial, and it may be said with certainty that it will not be found to cure or relieve all these conditions. Dr. Leroux-Roberts would doubtless agree to this, and he deserves credit for experimenting in a method which may prove fruitful in some directions. But it would have been better if he had been more exact in the statement of results in this new field, and had given statistics of all cases treated instead of merely describing a few selected cases. He is most enthusiastic on the treatment by "effluve" of ozæna, of which he states that the fœtor disappears, and that no other treatment appears to be so efficacious; and of tinnitus he concludes that "darsonvalisation ought to be tried in all cases with a very great prospect of improvement or cure."

The book includes observations of other workers, the references being given in footnotes; it is written with the enthusiasm of a pioneer, and will be of interest and assistance to those wishing to experiment with the application of the different forms of high-frequency currents to various diseases of the nose, throat, and ear.

Epithelioma of the Superior Maxilla.

Traitement des Épithéliomas du Maxillaire Supérieur par l'Association Chirurgie-Curiethérapie. Par le Dr. G. Verger, ancien interne des Hôpitaux de Paris. Paris: Gaston Doin et Cie. 1925. Pp. 204. Fr.22.

This monograph deals entirely with epitheliomatous tumours involving the superior maxilla, and with their treatment by a combination of surgery and radium. A description of the pathological anatomy of these tumours is followed by a discussion of their treatment by pure surgery and by radium without operation, and the conclusion is reached that neither method is effective when used alone. The author then describes in detail the surgical technique of A. Hautant and O. Monod, followed by their method of applying radium to the cavity which has been left. This method has been followed in all cases treated at the *Institut Curie.* In eight cases where the growth was limited to the superior maxilla and the ethmoid, five remained well after periods varying between two and four and a half years. Where a growth is more extensive such good results cannot, of course, be expected, but the author still regards them as encouraging. The author concludes with a description of 43 cases of various types, the value of which is enhanced by the fact that in every instance they have been followed up for considerable periods after operation.

Design and Composition in Line Form and Mass.

By Frederick J. Glass. London: University of London Press, Ltd. 1925. Pp. 175. 10*s.* 6*d.*

This is a very interesting book; while, incidentally, it is full of exact instruction for craftsmen, the author's general conclusions are wide, constituting almost a philosophy of æsthetics. There is nothing perhaps in one of the most important chapters, that on landscape composition, which is new, but what may be termed the laws of picture-making, as applied to landscape, are thoroughly well expressed, and their practical value can be apprehended. It is, as the author says, dangerous to formulate rules in art, but despite this there are certain rules of which all those who practise the art of landscape painting ought to be aware. Certainly let those rules be broken for good reasons, and the more sincere and more experienced the painter the more often will he be able to disregard the very existence of rules; but lawless pictures from fervent and learned hands are the finished expression of composition, and not to be confused with the anarchistic messes of those who break rules out of ignorance or insolence. We recommend this book to those of our readers who have found in drawing not only a pleasant recreation but more than occasionally a useful adjuvant to medical studies.

Babies.

By A. G. G. Thompson, M.A., M.D., D.P.H. London: Humphrey Milford, Oxford University Press. 1925. Pp. 32. 1*s.*

Advice offered to those untrained in precise or accurate thinking should, above all things, be definite. In this respect Dr. Thompson's little book for the young mother is one of the best we have seen. His style is racy and original and his conclusions are clear-cut. Regularity for both mother and child is emphasised as the keynote of good management, and some sound advice is included as to the advantages of proper organisation in running the home. For the expectant mother good food is broadly described as being fresh food as opposed to that which is tinned, bottled, or preserved. As to the food and clothing of the baby, Dr. Thompson lays the greatest stress upon the infant's own behaviour, which will indicate both how much food and how much clothing are required; he holds that the infant may be relied upon to point out clearly any errors in these matters, but it cannot always be easy to understand the infant's diagnosis or interpretation of symptoms. Dr. Thompson has a particular dislike to the use of biscuits and cakes, which he forbids alike to the expectant mother, the baby, and the older child; milk puddings, he considers, should be postponed until the child is 2 years old, though suet puddings are well liked and digested at 18 months. More than once in the book mothers are warned against resorting to medicine as a cure for the ills of infancy. In cases of digestive trouble, "medicines should come last, not first"; for guarding against colds, "fresh air is the only real chest strengthener and lung tonic"; in connexion with constipation, "the practice of giving a dose of castor oil or any other form of aperient regularly once a week, whether there is any bowel irregularity or not, has nothing whatever to recommend it." A specially useful paragraph is one giving careful directions as to the proper way of blowing the nose, and the damage to the ear-drum which may result from careless nose-blowing of a little child with a cold. The instruction on care of the ears is also valuable. Not all doctors will agree with the statement that a baby's mouth should be cleaned out with a piece of soft, clean rag dipped in warm water; but this is an isolated piece of controversial advice amongst a wealth of orthodox wisdom.

The book may be recommended to mothers as a guide to keeping their babies healthy.

JOURNALS.

QUARTERLY JOURNAL OF MEDICINE.—The October number contains the following articles: Intestinal Diverticula, by E. I. Spriggs and O. A. Marxer. The appearances of intestinal diverticula, as shown by X ray photographs after an opaque meal, are illustrated by a series of nine plates. In 1000 consecutive X ray examinations on the alimentary tract, intestinal diverticula were found in 143 patients. They are more common in the large than in the small intestine, but may occur in any portion of the latter. Treatment is usually efficacious if directed to the lubrication and efficient action of the bowels, and to improvement in the general health of the patient.—The Relative Prevalence of So-called Endocarditis Lenta Before and After the War: A Survey of 195 Cases, by Gladys C. Wauchope. The conclusions drawn from this article are based on a study of the incidence of endocarditis lenta amongst patients at the London Hospital during the years 1907 to 1924. 195 such cases were recorded, of which 125 came to autopsy. There was found to be a considerable increase in the incidence of this disease in males after the war, the maximum number being observed in the year 1922. In females such a post-war rise was not noted, and the increased rate in the male sex was due to cases occurring amongst ex-soldiers.—The Clinical Syndrome of Thrombosis of the Coronary Arteries, by J. W. McNee. Thrombosis of a large branch of the coronary arteries is not necessarily immediately fatal: in fact, the patient may survive for many years. The author observed three cases of this nature in Baltimore, and a clinical description is given of the main features of the disease. Various references to the American literature dealing with coronary thrombosis are included, and the article is illustrated by two plates showing the macroscopic and microscopic appearances of the heart.—The Excretion of Chlorides by the Healthy and Diseased Kidney, by O. L. V. de Wesselow. The capacity of the kidney for chloride concentration was investigated in a series of healthy individuals and in certain cases of nephritis. It is suggested that there are two groups of cases of nephritis with œdema. In one, the typical parenchymatous nephritis, the chloride plasma content is low, but the œdema fluid is rich in chlorides. The water and chloride pass quickly from the blood to the tissues owing to abnormal capillary permeability, and the œdema is of extra-renal origin. In the other group, which includes acute nephritis, pre-eclampsia, and some cases of prolonged nephritis in which there is œdema without effusion into the serous sacs, the œdema is of renal origin and secondary to failure of water excretion.—Some Observations on the Action of Belladonna and Neutral Fats on the Acidity of the Stomach Contents, by W. Morrell Roberts. By means of the fractional method of gastric analysis it was found that the chief effect of the administration of atropine and belladonna in cases of hypersecretion is to lower acidity by relaxing the pylorus and increasing the normal duodenal regurgitation and rate of stomach emptying. Oil appears to have an opposite effect, delaying the rate of stomach emptying and inhibiting duodenal regurgitation. There is, therefore, a tendency for gastric acidity to rise, and some evidence was also obtained of increased gastric secretion. These changes were not usually found until late in digestion, and after the period at which the one hour test-meal would be withdrawn.—On Sulphæmoglobinæmia, by Lawrence P. Garrod. Two cases of this disease are described, in both of which Mackenzie Wallis's nitroso-bacillus was obtained in culture from the stools. Treatment by large doses of an autogenous vaccine resulted in recovery in each instance, after which the organism could no longer be found in the stools.—The Clinical Aspect of Bundle Branch Block, by John Cowan and J. Crighton Bramwell. A series of 24 cases of bundle branch block are recorded, in all but one of which the right branch of the bundle was affected. The lesion is comparatively rare before the age of 40, and the onset is usually insidious with symptoms of heart failure. Once established it is generally permanent, although it has been noted as a transitory phenomenon. Bundle branch block can only be recognised by means of an electrocardiogram. Post mortem the lesion usually found is a fibrosis resulting from a diminished blood-supply. More rarely it follows an infective process, and the relative preponderance of lesions affecting the right bundle may be due to differences in the blood-supply on the two sides. The right branch of the bundle is supplied by a specific branch of the left coronary artery, which is frequently degenerate, whereas the left branch receives vessels from both of the coronary arteries. The article is illustrated by a series of electrocardiograms.

BIOCHEMICAL JOURNAL. Vol. XIX., No. 5. 1925.—Among the articles in this issue are many papers of interest to the general medical reader. In a Note on the Presence of Glutathione in the Corpuscles of Mammalian Blood, H. F. Holden has demonstrated the presence of this body in concentrated protein-free filtrates of mammalian blood. He brings strong evidence to show that the lævorotatory powers of this substance probably account for the experimental observations of L. B. Winter and W. Smith. Holden states that the cause of the difference between the rotatory and reducing powers of blood is probably not due to the presence of an unstable sugar, but to this body.—J. A. Milroy has described a method for estimating the blood-sugar by a simple technique involving the use of one of the nitro-anthraquinonesulphonic acids.—The effects of X rays upon normal rats and rats immune to Jensen's rat sarcoma has been studied by E. C. Dodds, W. Lawson, and J. C. Mottram. It was found that there were very marked differences in the response of these two groups of animals.—O. Rosenheim and J. C. Drummond describe further developments of their work upon the colour secretions of cod-liver oil. They state that if the oil be shaken up with arsenic chloride a blue colour results. The chromogenic substance is intimately associated with the vitamin A content, since inactive oils do not give the reaction.—An ingenious apparatus for grinding tissues anaerobically is described by W. A. Roach.—Sir Frederick Gowland Hopkins has written a very complete summary of the influence of glutathione in the oxidation of fats and proteins. The author states that his article must be regarded as a "prolegomenon to publications from this laboratory which will appear in the near future"; his communication is of the utmost importance to workers in this field.—C. P. Stewart and A. C. White call attention to the unsatisfactory position of the subject of blood fat from an experimental point of view. They have elaborated certain modifications of methods of estimation which they claim to overcome most difficulties.—F. Dickens, E. C. Dodds, and S. Wright have reopened the question of the ovarian hormone. As they state, very little advance upon methods of preparation has been made since Hermann and Frankel published their work in 1915. In the present paper a workable method of preparation is described, together with observations on the properties of the hormone. It has been shown that the hormone has an inhibiting action upon the effect of insulin.

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[See also p. 31.

THE LANCET.

LONDON: SATURDAY, DECEMBER 19, 1925.

REMOVAL OF NAMES FROM THE MEDICAL REGISTER: THE LEGAL POSITION.

CLASSICAL scholars have written their theses on the civic effect and meaning of *infamia* in Roman times. Doubtless, after another 2000 years some antiquary will be writing of the professional meaning of "infamous conduct" in our Medical Acts to-day. Meanwhile, it may be convenient to recapitulate the legal authorities which bear upon the action of the General Medical Council in erasing names from the Register under the provisions of Section 29 of the Act of 1858, for it is clear that many who have been criticising the action of the Council recently have done so without information. The language of Section 29 is familiar and so is the dependent course of events. If a registered medical practitioner is convicted of felony or misdemeanour, "or shall after due inquiry be judged by the General Council to have been guilty of infamous conduct in any professional respect," the Council may, "if they see fit," direct the erasure of his name.

The first remark to be made is that the Medical Act sets up a special statutory tribunal which is not part of the ordinary judicial system of the country, but which is to apply professional standards of the nature of which it is aware and the law courts are not. The tribunal is quasi-judicial. Provided that there has been due inquiry of a bona-fide kind, the law courts have no jurisdiction to review its decisions. Thus, in 1863, in the case of S. La'Mert,[1] a name was removed from the Register after an inquiry into charges connected with the publication of a treatise on venereal disease, and the courts refused to interfere. The Council had formulated its accusation, had communicated it to La'Mert, had received his explanation, and had given him an opportunity to be heard in his defence, though not by counsel. La'Mert moved the Court of Queen's Bench for a rule calling on the Council to show cause why a mandamus should not issue to command them to restore his name to the Register. This was the occasion on which Chief Justice Cockburn laid down the principle that under Section 29 the Medical Council are sole judges of whether a practitioner has been guilty of infamous conduct or not. "This Court," he said, "has no more power to review that decision than they would have (in the present mode of proceeding) of determining whether the facts had justified a conviction for felony or misdemeanour under the first branch of the section. The Council have found the applicant guilty after due inquiry, and, *whether the facts justified the finding or not*, the Council is the tribunal to whom the Legislature has left the decision as being the best judges in the matter. This Court cannot interfere." That was definite enough, but the same decision was enunciated afresh in 1889 in the case of Henry Arthur Allbutt (23 Q.B.D. 400), who similarly sought a mandamus to compel the restoration of his name after erasure. Allbutt fitted a second string to his bow. He sued the Council for libel over the publication of their findings in his case. Baron Pollock said the Council had sole jurisdiction under the Act and his Court was powerless to review the decision. The Court of Appeal agreed and reaffirmed what Chief Justice Cockburn had said in La'Mert's case. The claim for libel was equally unsuccessful. "It was admitted," said Lord Justice Lopes, "that the report of the finding was truthful, accurate, and honestly published bona fide and without malice, not an ex parte report, but a report of facts which had been finally ascertained and adjudicated upon." If the mere fact of erasure had been stated, it would clearly have been privileged; the privilege could not be lost merely because the reason for the erasure was given. Thus, in 1889 the finality of the Council's decisions under Section 29 was completely established; it has never since been judicially questioned.

Has a practitioner whose name has been erased no remedy then? The answer is "No, not unless there has been bias on the part of the tribunal or some irregularity of procedure," as for example, if the Council omitted to frame charges, or to inform the practitioner of what was alleged against him, or to give him a chance to reply. As to bias, a person who has a pecuniary interest in the result of an accusation cannot adjudicate upon it, and it is a well-founded legal principle that public policy and natural justice forbid an accuser to be also a judge. Light was thrown upon this point in J. F. Leeson's case (1889, 43 Ch. D. 366), where Lord Justice Bowen said the crucial question was whether in substance or in fact one of the judges has actually been an accuser. This dictum has since been interpreted by Lord Esher ([1894] 1 Q.B. p. 750) as meaning that a judge's position must be such that in substance and fact he cannot be suspected. Not that any perversely-minded person cannot suspect him, but that he must bear such a relation to the matter that he cannot reasonably be suspected of being biased. This was not quite the same view as Lord Justice Fry had taken in Leeson's case, that learned judge having never lost an opportunity of advancing impeccable moral standards. The principle has been more broadly stated: "It is highly desirable that justice should be administered by persons who cannot be suspected of improper motives" (Mellor, J., in Regina *v.* Allan, 4 B. & S. at p. 926). Or as Lord Reading, and more recently Lord Hewart, put it, it is not enough that justice should be done; it is essential that it should seem to be done. The question of bias in members of the tribunal arose in Leeson's case from the membership by two of the Council of the Medical Defence Union and this was the main point in Allinson *v.* General Council of Medical Education and Registration ([1894] 1 Q.B. 750). T. R. Allinson advertised himself in a flagrant manner. He inserted in newspapers answers to real or imaginary correspondents as to the treatment of complaints and he gave his own name and address, his fees, his writings, and their prices. He also systematically vilified his own profession—"professional poisoners, for I can call doctors by no truer name." Here is a sample of Allinson's announcements: "Send a postal order for 5*s.* with a stamped directed envelope, and I will send you private postal advice that will benefit you." The Council very properly resolved to remove him from the Register. He applied for an injunction to prevent this, and, when his application failed, went to the Court of Appeal where he failed again. His material ground was bias on the part of the tribunal. The late Sir George Philipson, who represented Durham University on the General Medical Council, and who had been one of those who adjudicated in the case, had also been a vice-president of the Medical Defence Union which had instituted the proceedings against Allinson. Sir George Philipson, as a vice-president, was an ex-officio member of the committee of the Union, but did not attend its meetings and was unaware of the proceedings. He had actually resigned from the Union at the material date in the case, though technically his resignation did not take effect till afterwards. The Court of Appeal held that he was not disqualified as an adjudicator, though in Leeson's case Lord Justice Bowen had said it was undesirable that members of the Council who adjudicated should be subscribers to the society which instituted and conducted the proceedings.

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[1] Law Journal Reports, xxxiii., Q.B. 69.

If a practitioner whose name has been removed from the Register has any grounds for alleging that the tribunal was biased or the proceedings irregular, his legal remedy is to apply for an injunction to stay the hands of the General Medical Council or for a mandamus to compel the restoration of his name. In this connexion it may be observed that the Council has no express statutory power to restore a name (except in one particular contingency under Section 14 of the 1858 Act). But it is assumed—no doubt rightly—that any body which exercises functions such as those assigned to the Council can vary or rescind its own decisions. The Council will restore a name in a proper case, but this is not a matter of legal compulsion. Indeed, even if a name has been erased for felony and the conviction is afterwards shown to have been erroneous, there is no power to compel what the Council would doubtless concede, and has in fact conceded.

As is well known, the Privy Council has a general power of supervision over the General Medical Council. But it is not to be supposed that a man whose name has been removed from the Register can appeal with any prospect of success to the Privy Council either in its executive capacity or in its judicial capacity. The Judicial Committee of the Privy Council has high authority as an appellate tribunal, and His Majesty under an Act of 1833 has a general power to refer to the Judicial Committee any issue which he may think fit. But it may be taken for granted that, while the Supreme Court refuses to review the decisions of the General Medical Council, the Judicial Committee will never be called upon to act as a Court of Appeal in this respect. The supervisory power which the Privy Council wields over the General Medical Council is to be found in Section 19 of the Medical Act of 1886. That section runs as follows:—

> "If at any time it appears to the Privy Council that the General Council has failed . . . . to exercise any power or perform any duty or do any act or thing vested in or imposed on or authorised to be done by the General Council under the Medical Acts . . . . , the Privy Council may notify their opinion to the General Council; and if the General Council fail to comply with any directions of the Privy Council relating to such notification, the Privy Council may themselves give effect to such directions, and for that purpose may exercise any power or do any act or thing vested in or authorised to be done by the General Council. . . . ."

This means that, supposing the General Medical Council did not maintain its Register and did not strike off it the names of practitioners who are convicted of felony or are guilty of infamous conduct in a professional respect, the Privy Council might conceivably take over the Register and the power of inquiring into professional misconduct and of removing the names of the guilty. But it does not mean that the Privy Council can meanwhile intervene to say "You shall not inquire into A's case, or you shall re-try B's case, or you shall restore C's name to the Register." The Privy Council might influence the general policy and outlook of the Medical Council by appointing to the latter body from time to time representatives who are known to favour a fresh policy. Or the Government might set up a Committee or a Royal Commission to consider whether the present constitution of the Medical Council is sufficiently elastic or too institutional, and whether the statutory provisions as to maintenance of the Register require modification. But any change would necessitate fresh legislation, and no Government is likely to legislate on such a matter without the full assent of the profession.

Finally, we come to the vexed question "What is 'infamous conduct in any professional respect?'" Historically, the word infamy has, in English law, meant the condition of being deprived of the rights of citizenship in consequence of conviction for certain crimes. Persons who were in this sense infamous were, until they had served their sentence or been pardoned, disqualified for public appointments or public pensions, and incapable of serving as jurors or sitting in Parliament or giving evidence in a court of law. This last incapacity was removed by the Evidence Act of 1843, and the expression "infamous crime" survived as a sort of synonym for the crime specially known as abominable. The expression can be seen as late as 1861 in Section 46 of the Larceny Act of that year (extortion under threat to accuse of crime). But when that section was superseded by the Larceny Act of 1916, the words were dropped. The historical associations of the word "infamous" are irrelevant when it is used in Section 29 of the Medical Act, because of that significant addition "in any professional respect" on which the law courts have laid so much stress. Just as under the ancient laws of England, if a citizen committed some anti-social offence he was placed outside the pale of society, so now under the Medical Act, if a registered practitioner commits a grave offence against the rules of his profession he may be placed outside the body of professional men who agree to be bound by those rules. Nor let it be forgotten that it is the British tradition to rely upon each trade or calling or service to maintain its own standards. The Army Act punishes with cashiering officers who behave "in a scandalous manner unbecoming the character of an officer and a gentleman"; the Naval Discipline Act punishes with dismissal from the service any officer who is guilty of "conduct unbecoming the character of an officer." These robust phrases, deliberately vague, depend for their interpretation not upon the law courts, but upon courts martial consisting of the accused man's brother-officers. The law courts have, as Sir Donald MacAlister reminded us, given help in interpreting "infamous conduct in any professional respect." Lord Justice Lopes, in Allinson's case ([1894] 1 Q.B. at p. 763), recalls how he, Lord Esher, and Lord Justice Davey prepared what is now the classic definition: "If it is shown that a medical man in the pursuit of his profession has done something with regard to it which would be reasonably regarded as disgraceful or dishonourable by his professional brethren of good repute and competency," then the Council can say he has been guilty of infamous conduct in a professional respect. The question, as Lord Esher said earlier in the same case, is not whether what a doctor has done would be infamous for anyone else to do, but whether it is infamous for a medical man to do. An act done by a medical man may be infamous, though the same act done by anyone else would not be infamous; on the other hand, an act not done "in any professional respect" is not within the section.

Times change and standards alter with them. The Council can, if it likes, decide that methods of advertisement hitherto considered objectionable shall in future go unpunished or shall even be regarded as consistent with the traditions of an honourable profession. If this position is desired by members of the profession which the Council represents, it will eventually be attained. Pressure may come from within or from without, but the official reply on behalf of the Lord President of the Privy Council to a question in the House of Commons on Dec. 8th does not indicate official dissatisfaction. That reply ran—"The Medical Council, since its creation in 1858, has performed the duties entrusted to it without serious criticism, and as at present advised my noble friend does not think that sufficient reason has been shown for setting up a committee of inquiry." We believe that any clear-headed and unprejudiced member of the public, who should follow, as we have done, the actual proceedings in the disciplinary cases, would agree that the recent outcry against the Council's use of its powers has been unjustifiable. Most of the offenders have not been unduly punished, and the minority, convicted of less serious infractions, have been restored to the Register in generous measure.

PENSIONS FOR SALARIED HOSPITAL STAFFS.

A COMPREHENSIVE and generally acceptable scheme of pensions for the salaried officers of voluntary hospitals is long overdue. King Edward's Fund has been giving serious, if more or less intermittent, attention to the subject ever since 1914, and had it not been for the disturbing effects of the war there might have been some definite outcome of the pains it has devoted to the subject. The growing need for action is emphasised by the publication last week of a memorandum, summarised on another page, setting out a draft scheme of pensions prepared by a conference representing the King's Fund, the British Hospitals Association, the Incorporated Association of Hospital Officers, and the College of Nursing. Generally speaking, the scheme follows the lines laid down by the committee of the King's Fund, over which Mr. W. J. H. WHITTALL, F.A.I., presided, but the conference carefully guards itself from any expression of opinion upon the merits of the proposals. It is naturally sympathetic to the principle of a pension scheme, but leaves the details to the consideration and criticism of the hospitals. For many reasons it has hitherto been found difficult to induce English hospitals to take concerted action on matters of general moment to them, and it would be unduly sanguine to expect immediate action upon these revived proposals. Every year, however, the subject presses more urgently, and the growing scarcity of nurses makes it more than ever important that a settlement should be reached without serious further delay.

The existing situation is at once unbusinesslike and chaotic. An official may be pensioned comparatively early or decidedly late; the amount of the pension is dependent upon the views of some committee or board of governors, and an official who leaves one hospital for another loses all claim upon his late employers and may not live long enough to establish one upon the new. What is needed is a system which attaches pension rights to the vocation and not to the service of a given institution. To nurses this is of almost vital importance, since most of those who begin their careers in hospitals end them in some other milieu. The pay of nurses, although somewhat improved, is still, and is, unhappily, likely to remain, inadequate to the provision of any real protection in old age. It is unreasonable to expect a constant flow of the right type of probationer in response to no better prospect than poverty when hard work is no longer possible. To talk to her about the sacredness of her calling and the glory of self-sacrifice in such circumstances is a mockery. Under the scheme now set out the nurse would take her policy with her, as would the secretary or the accountant or any other hospital official. The Federated Superannuation Scheme for Universities is taken as the model, and under it the hospitals would contribute 10 per cent. of salary and emoluments and the beneficiaries 5 per cent. The whole of the salaried staff, administrative, clerical, and dispensing, as well as the nurses, would be included, though the probationer nurses would not come in until the end of their first year. There would be a choice among three types of policy —a fixed rate of annuity at the retiring age or a sum of money at previous death; deferred annuities with return of premiums on premature withdrawal or death; and deferred annuities without return of premiums. Nurses would become pensionable at 55, which may be a reasonable age for the purpose, though we are not certain of this. But would it be equally reasonable to pension secretaries and other officers at 60 as the scheme proposes? That is earlier than the Civil Service limit, and in these days the number of men who remain active and full of work and initiative at long after 60 is far greater than ever it was. To put back the age three or even five years would not be unfair to the beneficiaries, would substantially strengthen the plan, and would ensure a larger yield. The extent to which operative effect is given to the proposals depends upon the hospitals —not so much upon the goodwill of the governors, which may be taken for granted, as upon their finances. An addition of 10 per cent. to the amount paid in salaries would often be serious, but sooner or later it will have to be done, and we are not entitled to exploit long and willing service of a type in which there is nearly always a basis of altruism. But it would be of little use for a hospital here and there to come in. What is needed is the all-round adoption of this or some closely similar scheme after it has undergone the criticism of hospital authorities generally.

FATIGUE AND INFECTION.

THERE is a general impression that resistance to infection is associated with the bodily state which comes from a good intake of food combined with a moderate amount of muscular work, and Dr. LEONARD HILL has preached pretty convincingly that the beneficial effects of fresh air are due to, or at least connected with, the increase of general metabolism which is produced. Whether this is really so is one of the most important problems which the economics of dietetics has to solve, though the smallness of the quantities of food and activity which have to be measured makes it unlikely that an answer will easily be found to the question whether it pays people to eat the little excess over their minimum requirements which they generally do on an unrestricted diet. Less food and less exercise cost less; the habits of mankind suggest that they are more expensive in the long run. Similarly common opinion reckons that excessive fatigue and a sedentary life both favour infection, and the latter idea, at least if it is practised without a correspondingly meagre diet, is backed by the practice of some insurance companies whose experience has taught them to look with suspicion on those who are too heavy for their height. Some experimental observations made by the late Dr. R. A. SPAETH[1] do something to elucidate these problems. He and his colleagues had previously obtained the seemingly paradoxical result that rats and guinea-pigs, forced to take exercise to exhaustion, were more resistant to pneumococcal infection than normal animals. He now shows that rats which are kept "in the pink" by living in cages where they can and do take spontaneous daily exercise for their own enjoyment are rather less resistant than the controls despite their apparently splendid physical condition. He then points out that guinea-pigs which are starved till they have lost about as much weight as they would if exercised to exhaustion are more resistant than normal, and suggests that the influence of exhausting exercise on infection is related to the anabolic restoration of weight rather than to the fatigue itself or to any products of fatigue. This is supported by the observation that fatigue does not increase resistance unless the animal is allowed to eat immediately afterwards; this it does voraciously. The experiments as a whole afford an interesting commentary on the proposition that using the body promotes resistance to infection. They need repetition and amplification, and the eating habits of the experimental animals make it difficult to transfer the experience to man who, under civilised conditions at any rate, generally finds that a hearty meal is a mistake when he is very tired. The fact that starvation helps resistance under the conditions of the experiments finds a parallel in the observations[2] of Dr. J. A. ARKWRIGHT and Dr. S. S. ZILVA that similarly reduced animals give a small local inflammatory response to irritants, for infection is dependent on the response of the body as well as on the presence of the parasite. There is something in asceticism which wants analysis.

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[1] Amer. Jour. of Hyg., 1925, v., 839.
[2] Jour. of Path. and Bact., 1924, xxvii., 346.

LONDON COUNTY COUNCIL: DEBATE ON ASSESSMENT FOR TUBERCULOSIS TREATMENT.—Dr. Stella Churchill was last week responsible for initiating a prolonged debate at the meeting of the London County Council on the assessment of contributions in respect of residential treatment of tuberculosis. In the course of the debate, it was freely asserted that the Council had no legal right to exact contributions from patients or those legally responsible for them, that only poor and ignorant people consented to payment, and that even where payment was point-blank refused the Council had no power to withhold treatment. The whole subject of assessment has been under review by the Public Health Committee of the Council, who tabled a recommendation that no change be made in the present methods. Dr. Churchill moved *as an amendment that* "no contributions be required by the Council in respect of residential treatment of tuberculosis under the Council's scheme whether for children or adults," and quoted details of several cases where, she alleged, the assessment had inflicted great hardship on the families concerned. Dr. Alan Randle, in supporting the amendment, declared that the money exacted by the Council might well be left with the families, in order to tide over the difficult period when the breadwinner was in a sanatorium, to relieve the patient of anxiety while undergoing treatment, or to be accumulated for the purchase of nourishment when the patient was discharged and temporarily unable to work. Many patients, he said, insisted on discharging themselves from sanatoriums, against the wishes of the authorities, purely because of anxiety as to their home conditions during their absence. From the Labour benches the threat was made that, unless the Public Health Committee agreed to modify or abolish assessments, the greatest possible publicity would be given to the fact that the Council was powerless to enforce payment. Dr. Churchill's amendment was defeated on a division and the recommendation of the Committee was carried. The present method of assessment will, therefore, continue unchanged.

Annotations.

"Ne quid nimis."

VOLTAIRE AND MEDICINE.

IN a paper on this subject, of which he read the second part before the Section of the History of Medicine of the Royal Society of Medicine last Wednesday, Dr. J. D. Rolleston, the President, discussed Voltaire's relations to individual doctors and the medical profession as a whole, and gave some account of Voltaire's illnesses. Apart from small-pox, influenza, and pneumonia, Voltaire did not appear to have had any acute infectious disease. He was subject to chronic dyspepsia from an early age, and frequently suffered from catarrhal bronchitis, often associated with deafness. His death at the age of 84 was probably due to uræmia following cystitis due to enlargement of the prostate. Throughout his life Voltaire was brought into contact with medical men on many occasions, both professionally and socially, the best known of his medical attendants being Silva. physician to Louis XIV., Boerhaave, and Tronchin, Dr. Rolleston pointed out that the passages in which Voltaire indulged his satirical humour at the expense of the medical profession were few in comparison with those in which he expressed admiration and gratitude, and apart from his stories were mainly to be found in his correspondence where they were not to be taken too seriously. In striking contrast with Molière's works, in none of Voltaire's plays did a doctor figure as one of the *dramatis personæ*, nor were there more than one or two vague references to medical matters in any of them. Voltaire was scathing in his denunciation of quacks and quack remedies, such as "potable gold," the "balm of life," and Arnould's sachets for epilepsy, and vented his ridicule on many superstitions and erroneous doctrines connected with normal and morbid processes. Dr. Rolleston quoted numerous passages from Voltaire's works illustrating his advocacy of inoculation for small-pox, his interest in the history and ravages of syphilis, his attention to other matters connected with public health, his acquaintance with medical jurisprudence, and particularly his sceptical attitude towards historical cases of poisoning and his description of various disease of social importance, such as mental disease, convulsive hysteria at the tombs of saints and ecclesiastics, alcoholism, and the king's evil. His interest in public health was shown not only by his desire to control contagious diseases, such as small-pox by inoculation and syphilis by the formation of an international league—a project not realised till the foundation of the "Union internationale contre le peril vénérien" 150 years later—but also by his allusions to other epidemic diseases, especially plague, typhus, and malaria, his condemnation of the insanitary condition of the Paris hospitals, the abuses connected with the administration of military hospitals, the crowded state of the Paris cemeteries, and the practice of burial in churches, as well as by his proposal to found maternity hospitals for unmarried women. In conclusion, Dr. Rolleston maintained that Voltaire, the founder of modern history and the most representative figure of the eighteenth century, deserved the attention of the medical reader in that he was a powerful advocate of the profession and an uncompromising foe of quackery, and by reason of his keen intellect and wide humanitarianism was well in advance of his time in matters connected with public health, medical jurisprudence, and social medicine.

MALARIA AND PARTURITION.

TWO workers attached to the Sir Alfred Lewis Jones Research Laboratory at Freetown, Sierra Leone, have made the interesting observation[1] that the placental blood of parturient native women is frequently the site of an intense infection with the subtertian malaria parasite—*Plasmodium falciparum.* Dr. Blacklock and Dr. Gordon examined in the course of this study 150 parturient women aged from 15 to 42, and of these 55 proved to be infected; of these only ten showed infection of both peripheral and placental blood; of the remaining 45 the placenta alone was infected. It is probable that in these cases the parasites remain localised to the placenta, but it is a curious and important point that in no child born of a malaria-infected mother were parasites found either in the cord or peripheral blood. The difference between the placental and peripheral incidence of malaria infection is ascribed, in all probability, to a peripheral blood immunity, and therefore, as a source of infection to others, these intensely infected women can be disregarded as a danger. Of the 144 children who were born alive in the series under consideration, 51 were born of malaria-infected mothers, and 13, or 25·5 per cent., died within seven days of birth, a very much higher percentage than of the children born of non-malarious mothers. In spite of this, it is a remarkable fact that no evidence of infection of the children with malaria parasites derived from their mothers could be adduced; a statement which appears to be in opposition to the views of Liemann and Swellengrebel, who record a large number of cases of congenital malaria, and attribute a high proportion of infantile deaths to it. Dr. Blacklock and Dr. Gordon, on the other hand, attribute the ill-effects, undoubtedly produced in the child, to toxic substances absorbed from the intensely infected placenta of the mother and to the interference with the proper nutrition of the fœtus brought about by this parasite. There is no evidence, they think, that there exists any tolerance to malaria on the part of the child, but the absence of parasites in the peripheral blood may be ascribed to freedom from infection, for after the first month of life parasites may be found when the child has had the opportunity of developing fever as the result of bites by infected anophelines.

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[1] Malaria Infection as it Occurs in Late Pregnancy: its Relationship to Labour and Early Infancy. By D. B. Blacklock and R. M. Gordon. Annals of Tropical Medicine and Parasitology, vol. xix., No. 3, Sept. 30th, 1925.

THE MEDICAL STAFF OF THE PUBLIC HEALTH SERVICE.

PUBLIC health administration leaves a good deal of room for local initiative. In his annual report for 1924 Dr. Ralph M. F. Picken, medical officer of health for Cardiff, points out that the problem of the most effective use of the medical staff in the diverse functions of a modern health department is becoming more and more complicated. He goes on to say that the easiest administrative arrangement is to allocate one or more medical officers to a particular section of the work, but that the effect of such a method is to create water-tight compartments in which the staff are apt to lose the wider outlook. "The more varied the work, the more stimulating and interesting it is." With a view to attaining the highest ultimate efficiency the staff of the Cardiff health department are each employed in as many branches of the work as it is possible to arrange, even at considerable administrative inconvenience. Dr. Picken suggests that the practice of sanitary authorities farming out some of the most important and interesting sections of the clinical work has a paralysing influence on the mental development of the whole-time medical staff, but that at the same time such farming out puts the highest specialist's skill at the disposal of the sanitary authority. In order to remove the drawback mentioned and to retain the interest of the whole-time medical staff, arrangements have been made at Cardiff to associate the assistant medical officers with that part of the clinical work of the institutions which is financed by the corporation. A similar problem crops up with regard to the nursing staff. For example, the tuberculosis officer likes to employ his own nurses and to have as few changes as possible; the school medical officer and the maternity and child welfare medical officer have a similar bent. It must be better, however, for the mental development of the public health nurse (and ultimately for the service) if she has the opportunity of becoming familiar with the work of every department. Many people will therefore agree with Dr. Picken when he says that "the organisation would be improved if it were found administratively convenient to amalgamate the school medical staff and the health visitors as has already been done in the case of the medical staff." In a paper on Coöperation between Public Health Officers and the General Practitioners by Dr. Picken,[1] which appears as an appendix to his report, the opinion is expressed that a bold and comprehensive scheme of coördination is needed to bring these two sections of medical practice into working contact, and that any such scheme should make it as easy as possible for men to transfer themselves from the public health service to general practice, and vice versa, if they find they have chosen the type of work which is not their vocation. Obviously there will always be more heads of departments than there are administrative chiefs, but the arrangements made at Cardiff should enable a man with administrative ability to obtain the experience necessary to qualify him as a medical officer of health of the front rank.

THE DEATH-RATE FROM DIABETES.

IT is still too early in the period of insulin therapy to attempt to predict in any detail what the effect of the use of this substance will have on the death-rate from diabetes. The fact that diabetic coma so far from being inevitably a fatal complication is now so brilliantly treated by insulin will obviously have the immediate effect of reducing the number of deaths reported from diabetes, but it is possible that another effect will be the postponement of the end of a certain number of patients, so that in a few years' time the actual number of deaths from diabetes will show an increase. These and other considerations must therefore be borne in mind in any discussion of this subject, but even so the present death-rates from diabetes in different countries show very marked differences, and in a recent paper[2] Dr. E. P. Joslin has analysed the death-rate from this disease and its complications in Massachusetts, and compared these with corresponding figures for London with very interesting results. He finds, for example, that in 1923 the death-rate from diabetes in London per 100,000 was 9·51 and in Massachusetts 21·4, and, further, the increase in the diabetic death-rate from 1880 to 1923 in London was really threefold, while in Massachusetts it was fourfold. He therefore maintains that in that State there is an acute diabetic problem which must be solved along the lines of preventive medicine. Further analysis of the figures for these two population groups shows that the increase in Massachusetts is particularly found in the older decades, and Dr. Joslin urges that one of the principal prophylactic measures is to get patients to eat less and take more exercise in order to avoid obesity. The State Department of Health for Massachusetts has definitely entered upon a campaign to eradicate diabetes, which is of great interest, since here it is dealing both with a non-infectious disease and with one which is not particularly concerned with the young. One of the measures adopted has been the distribution of a bottle of "doctor's emergency insulin" for the doctor's bag, made possible by the generosity of Mr. John D. Rockefeller, jun. With this bottle is sent careful instructions for the treatment of diabetic coma which is still the chief cause of death in diabetes, and an interesting feature of these instructions is the scheme suggested for estimating the amount of insulin required in any particular case. This is based upon the probable duration of life without insulin as estimated by full clinical considerations. If this is in the neighbourhood of 24 hours, 20 units of insulin are given, and repeated every hour until the clinical improvement and sugar in the urine and blood is approaching normal. If the patient's expectation is 12 hours, 40 units would be used, and if death appears to be imminent, 40 units of insulin can be given every 15 minutes. The other complications of diabetes which must be attacked—for it is a well-known clinical fact that very few diabetics die of uncomplicated diabetes—include cardio-renal affections, gangrene, tuberculosis, and carbuncles, and in all of these cases Dr. Joslin hopes for a reduction of the death-rate when accurate dietetic treatment and the necessary medical and surgical coöperation in certain of the conditions are satisfactorily established, which state of affairs, he hints, has not yet been attained.

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[1] Medical World, Feb. 20th, 1925.

[2] The Boston Medical and Surgical Journal, Oct. 15th, 1925, p. 707.

RESIDENCE AND DISEASE.

AN inquiry of some interest carried on among University students in America has just been published.[1] It was undertaken to obtain some measure of the value of urban health practices. The measure used is the past history of diseases among the students, classified according to the size of the community in which childhood was spent. Every care was taken to ensure that the information gathered was as accurate as possible. The communities were grouped as (*a*) rural, (*b*) villages of 50 to 1000 population, (*c*) small towns of 1000 to 5000, (*d*) small cities of 10,000 to 50,000, and (*e*) large cities of 50,000 and over. In a previous communication[2] the authors reported finding physical defects high in (*a*), (*b*) and (*d*), low in (*c*), but lowest in (*e*). Apparently classification of mortality and morbidity records may be vitiated if all populations below 25,000 are considered rural and all above as urban. Records were obtained of 5031 students, of whom 3478 were men and 1553 were women. Seventeen diseases, including all the infectious fevers of childhood, were prevalent enough to classify in the table here reproduced:—

Table showing Percentages, according to Residence Groups, of 3478 University Men, giving Histories of Certain Diseases.

Past diseases.	Rural (358)*	Villages (299)*	Towns (605)*	Cities.		Total (3478)*
				Small (379)*	Large (1837)*	
Measles.. ..	62·9	*83·0*	62·0	69·1	55·8	61·8
Mumps ..	46·4	*65·2*	47·6	53·8	45·4	48·5
Diphtheria ..	4·5	6·7	5·1	*10·8*	9·6	8·2
Scarlet fever..	12·6	14·1	*15·0*	10·6	14·5	13·9
Chicken-pox..	21·0	*45·8*	38·2	40·1	39·6	38·4
Small-pox ..	*11·2*	10·7	10·1	8·7	7·3	8·6
Whooping-cough ..	31·3	*39·1*	34·4	32·7	32·8	33·5
Influenza ..	35·5	*42·2*	35·1	34·1	21·1	28·2
Pneumonia ..	*12·6*	9·7	11·2	10·3	12·1	11·6
Pleurisy ..	*5·9*	3·7	3·6	4·8	3·2	3·7
Tuberculosis	*1·7*	0·7	0·8	1·3	1·4	1·2
Typhoid fever	2·2	*4·7*	3·5	4·5	3·0	3·3
Appendicitis	8·4	*10·1*	7·8	10·0	6·3	7·5
Tonsillitis ..	18·2	20·1	21·2	*29·8*	20·8	21·5
Rheumatism	*7·6*	5·7	4·6	4·8	4·8	5·2
Chorea	0·3	0·0	0·5	0·5	*0·9*	0·6
Nervous breakdown.. ..	1·7	*2·0*	1·0	0·5	0·6	0·9
Total ..	287·0	368·5	301·7	320·4	279·1	296·6

* The figures in brackets indicate the number of students in each group.

The figures in italic represent the highest percentage for each disease.

The female records, although rather few for analysis, support the tendencies of the male records. The order for all diseases, or for the infectious diseases alone, is the same: cities best, followed by rural, towns, and small cities, with villages worst. Thus cities stand out favourably both for histories of diseases and physical defects, and small cities come out unfavourably by both measures. The order of importance of the diseases is interesting with measles leading easily, and mumps a good second. In this country typhoid and small-pox would probably not appear in such histories. The percentage which is highest for each disease is italicised in the table. Pneumonia is curiously high in rural, with great cities a close second. Villages claim far too many firsts, but are lowest for pneumonia. Some evidence may be found in these studies to support the thought that, at any rate in America, modern hygiene is capable of making the populations of great cities the most healthy and vigorous part of the community, even in advance of the oft and frequently extolled rural yeoman class. The records, however, on which the evidence is based, refer only to a favoured portion of the population in each residence group, and not to the total populations; they are evidence of what might be done for the whole, rather than of what is being done.

THE MEDICAL DIRECTORY.

THE eighty-second annual issue of the Medical Directory, which has just appeared,[1] does not differ materially from its predecessor except that it has been brought scrupulously up to date. A single misprint of a Swiss health resort has escaped the watchful eye of the press-reader on both occasions—that is the only blemish we have noticed. The numerical summary of the medical profession shows an increase of 1802 on the previous year in the total number of names contained in the Directory, being an addition of 3·6 per cent., well in excess of the annual increment in the population of the British Isles. This increase is distributed fairly evenly over six sections of the Directory, only the Services showing a small diminution. In the section of useful information preceding the Directory appears a monograph on the spas and climatic health resorts of Great Britain and Ireland. The whole section has been recast and partly rewritten, and is accompanied by a number of illustrations. The list of certified masseurs belonging to the British Association, introduced last year, has increased in length, and the lists of personnel of the Ministry of Health, Medical Research Council, and Central Midwives Board have been shifted into the middle of the volume between London and the Provinces. The new issue will take its place on the shelf as an indispensable book of reference.

MASSAGE IN THE TREATMENT OF MIDDLE-EAR DEAFNESS.

IT would seem reasonable to expect good results from massage in certain diseases of the middle ear, especially in cases of recent exudation and of chronic adhesions and thickening of the drum membrane and even, it might be, in the earliest stages of otosclerosis. Many years ago Delstanche, of Brussels, designed an apparatus for this purpose, consisting of a small hand pump with a length of flexible tubing attached to a terminal fitting into the external auditory meatus; by alternately rarefying and compressing the air in the meatus the membrana tympani is moved outwards and inwards. For this work he was awarded the Lenval Prize for having designed the best instrument for the relief of deafness. This method, called pneumomassage, has been modified by attaching the pump to an electric motor, or to a geared-up machine worked by hand, so that the rapidity of the movement may be greatly increased and, judging by the numerous instruments of this kind on the market, this form of treatment has been very extensively used. But, unfortunately, the movement may only affect the more mobile portions of the drum membrane, while having no effect on adhesions, and there is no proof that any motion is conveyed to the chain of ossicles, especially when unduly rigid or fixed by pathological changes. Sometimes tinnitus is diminished, the sense of weight or oppression relieved, and even the hearing temporarily improved; but this form of massage cannot be said to have added much to our power of treating chronic deafness. Manual massage of the side of the neck and the upper cervical spine has also been used, and the Swedish exponents of massage have employed their methods for the relief of aural disease. In Vienna Dr. Michael Braun[1] is enthusiastic on the treatment of progressive deafness by a method of manual massage which he has designed; this consists in massage of the nares, nasopharynx, and Eustachian tubes with wool-tipped probes, and of the auricle, tragus, and external meatus with the fingers. His method of Eustachian massage has received the endorsement of Prof. E. Urbantschitsch, and he claims to have obtained improvement of hearing and relief of tinnitus in some very advanced cases of middle-ear deafness.

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[1] A Comparison of Past Diseases in University Students. By W. P. Shepard and H. S. Diehl. Journal of Industrial Hygiene, November, 1925. See THE LANCET, Dec. 5th, 1925, p. 1176.

[2] A Comparison of Physical Defects in University Students. By the same authors. Jour. Amer. Med. Assn., 1924, lxxxiii., 1117.

[1] London: J. and A. Churchill. 1926. 30s.

ARSENIC IN APPLES.

IN 1892 Miss Eleanor Ormerod ("Text-Book of Agricultural Entomology") referred to "the method of spraying caterpillar-infected leafage with Paris green which has long been found serviceable in the United States and Canada," adding that it "should never be applied to fruit or to vegetables that are used for food." The Ministry of Agriculture and Fisheries (Leaflet 352) advises the use of "lead arsenate either just before or just after the blossoming period (on no account when the flowers are open)." That such compounds well distributed over foliage would discourage the hardiest leaf-eating insect seems hardly open to discussion, but the use of such very poisonous substances in the preparation of potential food-products must introduce grave risks when the spraying is done after the blossoming period. To depend upon wind and rain for the removal from the surface of apples of the arsenical compound is surely light hearted, and there is the further danger of diffusion into the substance of the fruit. The recent prosecutions of Hampstead tradesmen for selling Jonathan apples containing from 1/30 to 1/15 gr. of arsenic in a pound show that the risk is a real one. Out of 16 or 17 samples purchased five contained 1/100 gr. or upwards of arsenic. It appears that the prosecutions were undertaken as the result of a complaint of illness after eating apples and not because the medical officer or public analyst were seeking new activities. These cases raise again in an acute form the ever-recurring question of the "doping" of foods. A normal sounding meal may easily contain quite considerable doses of boric, benzoic, salicylic, and sulphurous acids and synthetic dyes in the earlier courses and the drinks, and now the dessert may contribute its quota of arsenic. It is urged in the case of arsenical apples, as in all such cases, that the amount is small—well below the maximum dose. Further, it is pointed out that by peeling the apples all danger is avoided. There are many people who believe that the full flavour of an apple is not to be obtained when it is peeled, and there are many boys and even adults who, given opportunity, might easily take, if not a lethal dose, sufficient to cause serious illness, as, in fact, people in Hampstead appear to have done. Two other aspects of the case are worthy of consideration. The unhappy family doctor will have new perplexities in diagnosis and the poisoner will be able more effectively to raise the defence of arsenic in apples than was a well-known advocate 80 years ago who attempted to prove that his client's victim had been killed by natural poison in apple pips. On all grounds the presence of arsenic in apples is to be discouraged, and it is to be hoped that the appropriate Ministries in apple-growing and exporting countries will take measures to reassure the public. The apple is a delightful and important article of food, and the fruit trade between this country and the United States is large. The Minister of Agriculture and Fisheries has stated in the House of Commons that the danger of poisoning arising from the spraying of apple trees is negligible. It may be so in English apples.

THE IRISH CENSUSES OF 1926.

AN Irish census, writes our Dublin correspondent, was due to have been taken in 1921, but on account of the disturbed state of the country at the time it was thought wise to postpone the attempt to take it. With the boundary of the Free State jurisdiction unsettled, no step was taken by either the Free State Government or the Government of Northern Ireland until recently. Both Governments have now decided to take censuses next April, and it is stated that the officials in charge of the census in the two areas have agreed to proceed on similar lines. If this intention is carried out, then the joint result will practically be a census of all Ireland. At a recent meeting of the Statistical and Social Inquiry Society of Ireland, Prof. C. H. Oldham, President, delivered an address on Reform of the Irish Census of Population. He pleaded for a simplification of the census, and suggested that some of the information heretofore collected in the census returns should be obtained otherwise. Statistics in regard to agriculture and land might more properly be collected by the Department of Agriculture, and those in regard to education by the Department of Education. He urged also that the census of religious professions should also be omitted or the enumeration left to the several churches. It is to be noted that neither the English nor the Scottish census has, in the past, collected any of these three classes of figures. Prof. Oldham thought also that the informative value of the census would be much increased if comparisons with other countries were widely given. In the discussion which followed Prof. Oldham's paper it was pointed out that the statistics collected in previous censuses as to the number of sick on census night were so fallacious as to be worse than useless. Moreover, the grouping of diseases was meaningless. The Department of Local Government and Public Health, which is charged with the duty of carrying out the census in the Free State, has invited suggestions from learned bodies and from persons interested in statistics.

KING EDWARD'S HOSPITAL FUND.

AT a meeting of the President and Council of this Fund it was announced by the Prince of Wales that the amount of the ordinary distribution had been raised from £235,000 to £245,000, apart from the grants out of the Wells legacies, which accounted for an additional £57,000 this year. The area covered by the Fund is now 380 square miles, and the number of hospitals helped is now 183. The fact that the hospitals as a whole show an annual surplus instead of the large deficit which caused such anxiety five years ago, is a cause for legitimate satisfaction. Continuous effort is, however, essential, inasmuch as every important advance in medical science and every additional bed involves increased expenditure.

WE regret to announce the death at his London home in his eighty-fourth year of Sir Richard Douglas Powell, Physician-in-Ordinary to the King and consulting physician to the Middlesex and Brompton Hospitals.

COLONEL Percy S. Lelean, R.A.M.C. (retd.), Home Office Inspector under the Cruelty to Animals Act, and lately professor of hygiene in the R.A.M. College, has been appointed professor of public health in the University of Edinburgh.

UNIVERSITY OF CAMBRIDGE.—Upon the recommendation of the Special Board of Biology and with the sanction of the Financial Board, the Senate have agreed that the income from the benefaction of the late Mr. Grant and the corresponding benefaction of the trustees of the *Rockefeller Foundation*, should be made available for the general purposes of the Department of Pathology during the current academic year.

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[1] Wiener Medizinische Wochenschrift, 1925, No. 48.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CLII.—THE TREATMENT OF IMPETIGO CONTAGIOSA.

Impetigo contagiosa has the distinction of being the commonest of all skin diseases, the preponderance being even more obvious in hospital than in general practice. Fortunately, in most cases its treatment presents no great difficulty.

Routine Method.

The principle upon which successful management of the condition is based consists in a frequent removal of the characteristic "stuck on" scabs by bathing, followed by the use of almost any weak antiseptic ointment. The most popular and most satisfactory application is an ointment of ammoniated mercury, 10 gr. to the ounce of vaseline. The routine of treatment has become so stereotyped that in many out-patient departments printed leaflets with the necessary directions are kept for distribution to the out-patients. The scabs are to be bathed off with warm water thrice daily and the ointment applied immediately. It is not advisable to cover the affected part (unless necessary to protect it against rubbing) with a dressing or bandage. Healing seems to take more quickly if the sores can be allowed to remain exposed to the air. Possibly this is because the streptococcus, the causal organism, grows best anaerobically. The essence of the treatment, then, lies in the frequent removal of the scabs by bathing, and this measure alone without any application of ointment would be sufficient to bring about healing in most cases, although perhaps more slowly than when assisted by the use of ointment. In any case the procedure indicated above is invariably successful in an ordinary attack such as is commonly seen on a child's face, the most typical situation of the disease. But in special circumstances and situations the method may be modified with advantage.

Modified Methods Suited to Special Conditions.

Pemphigus Neonatorum.—For example, in very young infants I am inclined to think that boric ointment is preferable to a mercurial ointment, even if very weak, because it is less likely to be irritating to the tender skin. In the newly born there sometimes occurs a condition known as pemphigus neonatorum. In this, as the name suggests, the tiny transitory vesicles of impetigo are replaced by large blisters. Unlike ordinary impetigo, although apparently caused by the identical streptococcus, this is a very dangerous disease and often ends fatally. Here boric baths are useful and it is sometimes possible to prepare and use an autogenous vaccine with good effect. But in bad cases this disease runs a very rapid course and the issue may be decided before the vaccine can be got ready.

Impetigo of the Scalp.—On the other hand, in impetigo of the scalp, the skin of which is less easily irritated than that of the glabrous regions, it is advisable to use a stronger ointment than usual—e.g., the ordinary unguentum hydrargyri *ammoniati* of the British Pharmacopœia, the strength of which is 25 gr. to the ounce. Moreover, it is to be remembered that impetigo of the scalp is very often secondary to pediculosis, and by using a fairly powerful mercurial ointment the primary disease may be cured at the same time.

Impetigo of the beard region is often awkward to deal with. On the one hand it is inclined to be aggravated by the daily shave, and any slight abrasion of the skin facilitates the spread of the eruption, while if the beard be allowed to grow the dried and encrusted discharge clings round the stubby hairs and makes it very difficult to keep the surface clean. Perhaps the best course is to compromise and to instruct the patient to shave on alternate days and to be careful to use a weak antiseptic solution (e.g., biniodide of mercury solution in a strength of 1 in 4000) both before and after shaving to lessen the chance of auto-inoculation. For the same reason it is wise not to attempt too close a shave, but the razor should always be very sharp as nothing irritates a tender skin so much as the pulling of a dull blade. Most men refuse to put ointment on their faces during the daytime, but they should be encouraged to bathe the face frequently with boric lotion to remove the quickly forming crusts, and they can at any rate employ ointment at night. Impetigo of the beard region is especially important because if neglected or unwisely handled it can easily become complicated by the advent of a secondary staphylococcic infection resulting in the production of furuncles, while simultaneously the whole surface of the skin becomes inflamed and erythematous. In short, we then have presented to us the clinical picture known as *sycosis*, a condition notoriously difficult to treat successfully. In cases of impetigo of the beard region the help of the pathologist and the early preparation of a vaccine may be extremely useful in preventing this untoward development.

Cracks and Fissures.—Another troublesome and sometimes obstinate development of impetigo is the formation of painful cracks or fissures, either at the corner of the mouth, in the vestibule or at the angle of the nose, or behind the ears. They sometimes seem to arise quite apart from any obvious impetiginous eruption, but bacteriological investigation shows that they are caused by the same type of streptococcus as is associated with frank impetigo and consequently can be considered as of like nature. Sometimes they heal up with simple ointments, but are prone to recur. I have known fissures resistant to the weak ammoniated mercury ointment which yield to it when 10 gr. of resorcin are added to each ounce. The stick of lunar caustic is often useful, especially if the fissure is bordered by rather exuberant granulations. This, as a rule, only happens when the crack is situated at the corner of the mouth and extends on to the mucous membrane. In more obstinate cases I have almost always found that one or two small doses (half a pastille) of X rays will promote sound healing and I have also had good results from ionisation with zinc.

Impetigo Secondary to Other Complaints.

A word of warning is necessary as to the treatment of impetigo when secondary to other complaints, such as eczema or scabies. When eczema is complicated by impetigo, which frequently happens in occupational eczema of the hands, the treatment of the impetigo, which is an integral part of the management of the case, must be conducted so as not to aggravate the primary disease. It is advisable in such cases to remove the scabs by soaking them off with olive oil or liquid paraffin rather than by bathing with water or watery solutions of antiseptics. In such cases, too, boric ointment is usually found to be more easily tolerated than a mercurial preparation.

When impetigo is grafted upon scabies, the primary disease is often effectually masked. It is important to be on the watch for this combination of eruptions as it is useless to treat the impetigo while neglecting the scabies. On the other hand, if the usual method of treating scabies be employed the impetigo will often disappear pari passu, and in any case will be favourably modified. Any widespread impetiginous eruption, in which the buttocks, groins, and axillæ are implicated, should put the practitioner on his guard, and any septic and pustular eruption on the hands is exceedingly likely to be secondary to scabies.

In babies and young children widespread impetigo may also be secondary to that common eruption which causes so many sleepless nights to children between the ages of 2 and 6 years, and to their parents, and which rejoices in so many names—e.g., gum-rash, strophilus, urticaria infantum, lichen urticatus,

&c. Here the secondary impetigo is very important because it forms part of a vicious circle. It aggravates the original disease, and consequently causes increased irritation and scratching, leading to more impetigo. The treatment of urticaria infantum itself, often a difficult problem, lies outside the scope of the present article; boric baths and boric ointment form the best method of attacking the impetigo, and when this has been subdued the little sufferers are often greatly relieved even as regards their urticaria.

H. HALDIN-DAVIS, M.D. Oxon., F.R.C.S. Eng.,
Dermatologist to the Royal Free Hospital.

Special Articles.

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.

(*Continued from p. 1088.*)

THE Commission resumed its sittings at Old Palace Yard, Westminster, on Dec. 10th, Mr. H. P. Macmillan, K.C., presiding.

SUPPLEMENTARY EVIDENCE OF THE BOARD OF CONTROL.

The witnesses attending were Sir Frederick Willis, Dr. Hubert Bond, and Mr. S. J. F. Macleod, all representing the Board of Control. The Chairman explained that these gentlemen had been asked to attend for the purpose of giving their views on certain general questions on which the Commission had been taking evidence, in supplement of the submissions which that Board made at a much earlier stage of the proceedings. He added that it might be necessary for the Commission to make some novel recommendations. The chief spokesman was Sir Frederick Willis. Asked specially about the incipient and the voluntary classes of case, Sir Frederick Willis said that the matters and views he was about to express had been very fully discussed by his colleagues on the Board, and they represented the views of the Board. It was desirable that patients suffering from mental illness should be divided into the *following* three classes: (1) voluntary, (2) non-volitional but passive, (3) resistant. This classification was based on an immense amount of experience in dealing with mental disorders. The Board thought the voluntary case might be received for treatment on his own written application (*if under 18 years, on that of a parent or* guardian), accompanied by one medical *recommendation*, into any mental hospital or nursing home, or into private care, subject to certain conditions.

Voluntary Cases.

The Chairman said that patients in the first of these classes realised the situation concerning themselves, but those in the second category were in a somewhat peculiar position as to the exercise of any restraint, for such restraint in their case would be illegal. It would really be treating a patient who had no volition without authority. Sir Frederick Willis replied that it was suggested that authority should be given by Act of Parliament. He said that the *conditions* suggested by the Board for these voluntary cases were: (*a*) notification of the admission of the case, with a copy of the medical recommendation, should be sent to the Board; (*b*) a medical report on the case should be sent to the Board within seven days of the admission, and thereafter at six-monthly *periods*; (*c*) should the Board have the right to inspect the place where the patient was being treated; (*d*) should it have the right to order the discharge of a patient from the voluntary class if their judgment warranted it; (*e*) if at any time the patient ceased to possess real volition and this defect continued, he should be, within a month, either dealt with under the provisions relating to the passive or resistant cases, or should be discharged; (*f*) that the patient should have the right to leave the treatment place at any time on giving in writing 72 hours' notice (the parent or guardian giving this notice in the case of a minor). Asked by the Chairman whether it was not sometimes difficult to draw the line in a voluntary patient between a mental and a physical case, the witness agreed, but said that the medical attendant would be able to say, and he could suggest a particular nursing home to the patient.

Sir David Drummond said that the need for notification of mental illness would militate largely against patients seeking early treatment. The witness replied that there would be no public intimation of what had occurred. As to the nursing homes, he thought the duty of saying what were physical and what were mental cases should be imposed on the medical man sending the cases. The essence of the Board's recommendations was that for these voluntary cases there should be no detention. Sir David Drummond asked if it was the view of the Board that all cases of neurasthenia should be notified.

Dr. Bond said he would rather not answer the question in that form. He would prefer to say that where the medical man considered a patient to have mental symptoms, or he thought the case a mental one, he should use these provisions, mainly with the object of protecting himself against the event of the case turning out differently. It was fear of the provisions of the present Lunacy Act which prevented and detracted from early treatment of mental conditions. This fear could be wiped away by the simple provisions now suggested. But how one was to lay down exactly to which cases this could be applied passed the wit of man. It was a question of diagnosis and medical opinion, and he would be sorry to see any attempt made to schedule exact symptoms, or to try strictly to demarcate them.

Sir David Drummond asked, in that case, how could the general practitioner be expected to do *it?*

Lord Russell said it was a question of degree. In the early stages of mental disorder it was difficult to know which cases required notification, but it was a long step from that doubtful stage to the stage in which it was necessary to institute legal proceedings.

The Chairman asked the witness, concerning clause (c) dealing with the right of the Board to inspect the place where the patient was being treated, whether, in the event of the Board being dissatisfied with the place, there should be power on the part of the Board to order the removal of the patient from it. Sir Frederick Willis replied in the affirmative. Asked whether it was proposed that the patient should be seen, he said this was not set down, but they would wish to be satisfied on the matter. The Board were anxious not to do anything which would interfere with this class of patient. The Chairman said it seemed difficult to know at what stage a voluntary patient would cease to be such, as the volition varied from day to day. Sir Frederick Willis agreed that there was no sharp dividing line.

Mr. Macleod instanced the case of a man admitted for voluntary treatment who, when asked at a later stage why he was there, replied that he did not need treatment, but was there because he was being persecuted. Such a case, at that stage, must either be discharged or certified.

Dr. Bond said there certainly were oscillatory cases in which the periods of insanity were evanescent, and one of the worst outrages which could be perpetrated on such a patient would be ordinary certification.

Passive Cases.

Dealing next with the non-volitional, passive case, the Chairman asked where the witness considered such should be received.

Sir Frederick Willis said this type of case might be received for treatment in any mental hospital or registered hospital, and if the institution or *place* had previously been approved by the Board for the reception of such cases, in any licensed house, general hospital, nursing home, or into private care, but subject to the following conditions: (*a*) that an application is made by a relative or friend, or by a public official for the reception of the case, accompanied by two medical recommendations; (*b*) that admission of the case is immediately notified to the Board, and copies of the two medical recommendations furnished to them; (*c*) that a medical report on the case is sent to the Board within seven days of admission; (*d*) that the institution is open to the inspection of the Board; (*e*) that the Board has the right to order the discharge of a patient from the "passive" class should they consider him unsuitable to remain on that footing; (*f*) that the person on whose application the patient was received for treatment should at any time have the right to remove the case on giving 24 hours' notice; (*g*) that if the patient recovers volition he should be allowed to leave on giving 72 hours' notice to the person in whose charge he is; (*h*) that if at any time the non-volitional but passive case becomes a resistant case, he must, within a month thereof, be dealt with under the provisions relating to the resistant type of case, or be discharged. He explained that the 72 hours' notice requirement was to allow time to communicate with the relatives of the patient in the event of his having developed dangerous tendencies, so that they would be enabled to take the further steps needed. He said the Board considered that the non-volitional but passive patient should only be received on the footing here stated for a period of six months in the first instance, but that there should be power to give a further six months if two independent medical practitioners recommended that, in the patient's interests, this was desirable, and if copies of the two medical reports were furnished to the Board. If after this year of treatment it was considered that the patient ought to be detained for further care and treatment, this should only be done after he had been fully certified. If the patient should recover volition and was willing to remain as a voluntary patient, he should be allowed to do so, subject to the conditions relating to voluntary patients.

The Resistant Case.

Sir Frederick Willis said the Board considered that the resistant case should only be detained after full certification, on a petition signed by a relative, friend, or public official, and an order signed by a judicial authority, subject to the following limitations: (*a*) that a case may be received on a provisional order signed by a relative, friend, or public official, and accompanied by one medical certificate. Under this, a patient may be detained for 14 days if, in the opinion of the medical officer of the institution or place, or—in the case of a patient under single care—the medical attendant, the case needs detention for that period. A copy of the provisional order and certificate should be sent to the Board on admission. If at the expiration of the 14 days the medical officer or medical attendant should be of opinion that the patient should be detained a further 14 days for observation and treatment, this may be done provided the doctor certifies, in writing, that the further detention is desirable. A copy of this certificate should be furnished to the Board. They recommend that detention of the resistant case beyond the 28 days should only be allowed under an order of a judicial authority on petition. These cases, say the Board, should only be received where suitable accommodation and expert medical treatment and nursing are available. They might go to any public mental hospital, registered hospital, or licensed house, and, if the institution or place had been previously approved by the Board for the reception of cases under a provisional order or certificate, to any general hospital, nursing home, or Poor-law institution, or under single care. They proceeded to say that cases fully certified should be received only in public mental hospitals, registered hospitals, or licensed houses, or in single care. And they might also be received in Poor-law institutions or in nursing homes which had previously been approved by the Board of Control. Sir Frederick Willis said the Board considered that the public responsibility for providing for all mental cases should rest with the visiting committee of the local authority, not with the guardians of the poor, and that if any Poor-law accommodation was used, it should be used in pursuance of a contract between the visiting committee and the guardians.

EVIDENCE OF THE MINISTRY OF HEALTH.

The evidence at the short sitting on Dec. 11th was given by Mr. H. W. S. Francis, O.B.E. (Assistant Secretary of the Ministry of Health), whose work related especially to the Poor-law.

The Chairman explained that under the existing code of lunacy in this country there was an intimate relationship between that code and the Poor-law; and the Royal Commission had been considering the general question of that relationship and possible modifications of it. He asked the assistance of the witness as to any observations the Minister wished to make as to extricating, as far as possible, lunacy administration from Poor-law administration—i.e., whether the element of pauperisation associated with lunacy could be modified or altered. For instance, on the question of accommodation, a considerable number of patients were at present accommodated in Poor-law institutions, both certified and uncertified patients, and he understood these were directly under the charge of the guardians. The witness said this was so, and that some had become pauperised by the fact that a mental malady had overtaken them. The existing machinery provided for the use of Poor-law institutions as receiving houses for lunatics. He did not think there were many lunatics under Section 26 of the Act of 1890.

The Chairman asked where the population in the Poor-law institutions came from, and the witness replied that there were three elements: (1) those who came into the workhouses as receiving houses, perhaps on their way to an asylum, but who might be discharged without going to an asylum; (2) those who were already paupers and who became insane; (3) those who were discharged from the asylum and went back to the workhouse, where they were retained under the old provisions of the Act. Section 26 kept the lunatics in closer touch with county administration. If it were thought desirable to extricate the lunacy administration from its present association with the Poor-law, it might still be necessary to use Poor-law premises for mental patients, and by applying Section 26 the administration could be placed in the hands of the local authority. But in order that the Poor-law premises so used could become ad hoc branches of the lunacy system the Section seemed to need some development. There would have to be a transfer from Poor-law accommodation to asylum authority accommodation. No part of the expense due to this new course would fall ultimately on the guardians, though in the first case theirs would be the expenditure. In reply to a further question Mr. Francis said he did not see why there should be any substantial difficulty in regard to people already receiving Poor-law relief who then were visited by mental illness, as distinct from those who would be sent direct by asylum authorities. The evidence favoured the lunacy authority being responsible for all cases arising in its area, irrespective of the Poor-law. The medical officer of health and his staff offered a practical alternative to the present system, an alternative which was desirable.

The members proceeded to discuss the question of the forfeiture by a lunatic in a rate-aided institution of the old-age pension. Asked by Miss Symonds whether he considered the conditions and facilities now provided by the guardians were satisfactory, Mr. Francis said he thought that, generally, they reached a fair standard.

The Commission adjourned, no announcement as to future meetings being made.

PENSIONS FOR HOSPITAL OFFICERS AND NURSES.

A MEMORANDUM* setting out a draft scheme of pensions for hospital officers and nurses has been prepared by a conference composed of representatives of King Edward's Hospital Fund for London, the British Hospitals Association, the Incorporated Association of Hospital Officers, and the College of Nursing, *Limited*. *Lord Stuart of Wortley*, chairman of the Management Committee of King Edward's Hospital Fund, was the chairman of the conference, which included representatives from the provinces as well as from London.

Draft Scheme.

The draft scheme follows, generally speaking, the lines recommended in the report of a committee of the King's Fund, of which Mr. W. J. H. Whittall, F.I.A., was chairman. This committee reported that the provision of pensions for the staffs of voluntary hospitals, including nurses, was inadequate; that this led to the age of retirement being unduly postponed; and that the loss of all pension rights on migrating from one hospital to another was contrary to the interests both of the officers and of the hospitals. After commenting on the risks that would inevitably attach to any form of mutual pension fund, the committee recommended a scheme on the lines of the Federated Superannuation System for Universities, where policies are taken out with selected insurance companies. The present draft scheme is on the same basis, adapted to the circumstances of hospital and nursing service. The hospitals adopting the scheme would contribute 10 per cent. of salary and emoluments and the officers and nurses 5 per cent. The normal pension age would be 60 for officers and 55 for nurses. There would be a choice between three main types of policy: endowment assurance, giving a fixed rate of annuity at the retiring age or a certain sum at previous death; deferred annuities with return of premiums on premature withdrawal or death; and deferred annuities without return of premiums. The scheme, if adopted, would include the salaried staff, administrative, clerical, and dispensing, and also the whole nursing staff except probationers during their first year. Members migrating from one hospital to another, or from one branch of nursing service to another, would take their policies with them.

To nurses this freedom to migrate without loss of pension rights is specially important, since most of them begin their career in hospitals and then move into other branches of the profession. The scheme would cover the nurse's whole working life, and it would remove a hardship that now deters many suitable women from taking up nursing—namely, the impossibility of making adequate provision for old age. The promoters of the scheme urge the advantages of beginning at an early stage of training, provided that the hospital's contributions do not become the property of the nurse unless she remains in the profession at least five years. Special arrangements are suggested for enabling the policies to be maintained by nurses engaged in private nursing, though the details of this part of the scheme do not concern hospitals. The scheme would be administered by a central council representing the hospitals and the members; and this council, through a special nurses committee, would deal with matters relating to nurses not in hospital service. The memorandum discusses the arguments for and against each of the above provisions, and is issued for the consideration of each individual hospital. The conference itself did not express any opinion other than general sympathy with the principle of a pension scheme, merely adding that, if the draft scheme proved acceptable to the hospitals, the advantages anticipated from it, both to the hospitals and to the officers and nurses, would be the more fully realised the larger the number of hospitals that joined.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Late Reaction after Application of Radium.

AT one of the recent meetings of the Vienna Medical Society Prof. Marschik demonstrated a man of 40, who had been treated by radium 18 months ago for ulceration of the soft palate. Histological examination of an excised portion had proved the presence of cancer, so radium was applied in 13 sittings, with a tube containing 50 mg. radium bromide. Each sitting lasted 30–50 minutes, the other parts of the mouth being apparently well protected. The ulceration slowly disappeared in January, 1925, but three months later it reappeared. Vigorous radium treatment was again instituted, but it was useless; so the patient consented to an operation, performed in July, 1925, which resulted in a cure of the carcinomatous ulceration. But two months later the patient again came, because on the base of the tongue, just opposite to the place of the original ulcus, a slowly growing necrosis had been observed. This ulceration gradually sloughed away, and the mouth is now normal. Prof. Marschik noted that the larynx is specially liable to this late reaction. In his experience the susceptibility of the neoplastic cells to radium varies with their degree of differentiation—the less differentiated the more vulnerable—thus lymphosarcoma is easily affected, whilst epithelial carcinoma or other tumours with highly differentiated cells are much more resistant. He deprecated the use of the method of massive doses, which, in his opinion, should be abandoned. Diathermy was an excellent method for the treatment of late reactions to radium. In the ensuing discussion, Dr. Hofer said that he had seen a similar case of late necrosis in the ethmoid bone six years after the application of massive doses of radium. He said that Kumer and Freund were now very careful in the application of radium to the mouth; Dr. Kumer applied a dental toothplate with a prolongation, in which the radium applicator is hidden, so that the surrounding parts are completely protected.

Sugar as a Preservative of Anatomical Specimens.

At the same meeting of the Vienna Medical Society Prof. Tandler showed a number of anatomical specimens in which the original colours and form were beautifully preserved. These specimens were 8–12 years old, but had not suffered any deterioration. The method is simple. It consists only in the immersion of the preparation or specimen in a concentrated solution of cane- (or beet-) sugar. The vessel is then closed hermetically. The superficial layers of the tissues become quite translucent. The specimens can be exposed to the heat of an epidiascope without suffering damage. Sections through the brain, the kidney, the intestinal canal and the sexual organs were demonstrated. It may be added that the ancients in Western Asia, in Syria, and Mesopotamia used honey for embalming purposes. One of the old historians relates of a king who carried the dead body of his favourite wife with his chariot in all his wars, the body being preserved by means of honey.

Prize for Essay on Cancer.

The Austrian Society for investigating and fighting cancer has again resolved to offer for the year 1925 a prize of about £50 to the author of a paper which is held to promote our knowledge of the cancer problem in a fundamental way. Competition is restricted to Austrian investigators, and the *prize* will be awarded only if the paper is actually an advance on the present state of knowledge. Alternatively, the sum will be used in any way as seems desirable to the chairman of the society. All scholars and scientists of Austria are invited to compete, whether they be medical men or not; the paper must have been published between Jan. 1st, 1925, and Jan. 31st, 1926. The judges consist of the committee of the society.

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* Draft Scheme of Pensions for Hospital Officers and Nurses, published for the King's Fund by G. Barber, 23, Furnival-street, Holborn, E.C., price 1s. net, post free. Copies of a brief summary of the memorandum may be obtained free.

Clinical and Experimental Studies on Serous Cavities.

Dr. Schönbauer, of the Eiselsberg Clinic, recently read before the Gesellschaft der Aerzte in Vienna a paper in which he dealt chiefly with the serous membranes of the different body cavities. He has found that a diseased or injured serous membrane has a much diminished power of absorption, which is lessened still further by the injection of concentrated solutions into the cavity. This lessened absorption does not last long. The observation holds good for the peritoneum, the pleural cavity, or the meninges; but hypertonic solutions (10 per cent. NaCl, or sugar, or urotropine) are not long effective, and experiments have shown that, for instance, in diffuse perforation peritonitis, the liquid cannot be injected except during operation. In his search for a strong bactericidal solution he found that pepsin hydrochlorid answers the purpose best. In 103 cases of peritonitis after perforation, treated with this solution, the mortality was 11·7 per cent., which is only about one-third of the previous mortality. The absorption of poison into the system is markedly retarded by injecting pepsin hydrochlorate into the peritoneal cavity. In paralytic ileus after operation or perforation animal experiments have proved that intoxication is prevented by using a strong antitryptic serum; two successful results have followed its use in human cases. A second series of experiments dealt with the pleural cavity. Here, too, Dr. Schönbauer could prove that absorption is lessened by inflammation, and that it can be lowered further by injection of hypertonic solutions. *Therefore he advises in acute* cases of empyema the use of aspiration of the greater part of the pathological material and the injection of a hypertonic solution before the pyothorax is completely emptied. Similar experiments were conducted on a number of animals with regard to the conditions of the meningeal membranes. Dr. Schönbauer discussed the details of these interesting experiments, which have a bearing upon otologic operations; he showed that in traumatic meningitis lumbar puncture may spread the infection of the meninges, but, on the other hand, by injecting hypertonic solutions of 40 per cent. urotropine into the spinal canal an extension of the infection was effectively checked. The experiments will be controlled shortly on patients in the otologic clinics.

Decrease of Syphilis in Vienna.

Investigations conducted on a large scale in this country have shown, as Prof. Finger recently said in the Austrian Board of Health, that 12–14 per cent. of the entire population were at one time infected with syphilis or gonorrhœa. Since 1922, however, records kept in hospitals and dispensaries show that a rapid decrease of primary syphilitic infection has taken place, at least in Vienna. Systematic instruction and teaching of the public, promoted by the Society for the Prevention of Venereal Diseases, together with excellent facilities for early and intensive treatment of all infected persons, is considered to have brought about this change, coupled with modern methods of diagnosis and prophylaxis and treatment. The early recognition of a primary sore enables the timely and adequate treatment of the patient and thus stops many potent sources of spreading infection. In the country, however, this rapid decrease is not so clearly manifest although it is also evident. It happens now that in several provincial hospitals the number of fresh cases of syphilis exceeds in one month those seen in the Vienna clinic at the same time. Especially the younger people are now oftener affected than formerly, most likely due to the radical change of economics and morals which has taken place in the last ten years. But with the comparative disappearance of primary sores the secondary lesions become more rare—as shown by the reports from competent factors—and we are entitled to the hope that in due time the dreaded disease may be really wiped out. The public is now impressed with the statement that syphilis *can* be cured if treatment is commenced early enough. The more this is hammered into the minds of the population the earlier a radical improvement of public health is to be expected.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Increasing University Fees.

FROM the first day of 1926 fees at the University of Paris will be raised by 50 per cent., the regular trimonthly levy of 40frs. for the undergraduate courses becoming 60frs., and other fees being affected in similar proportion. French students belonging to families including three or more children are entitled to free instruction and generous remission of the ordinary charges. This provision is extended to families which have lost children in recent military or civil service.

Annual Meeting of the Academy of Medicine.

At the annual public meeting of the Académie de Médecine on Dec. 8th the commemorative eulogy was delivered by Prof. Achard on Jacques Raphael Lépine, of Lyons, who died in 1919. Lépine, who looked at medicine from the physiologist's viewpoint, was a pupil and friend of Cruveilhier, Claude Bernard, Vulpian, Charcot, Virchow, Cohnheim, and Pasteur, Among his contributions to medicine were the discovery of centres governing the heart-beat, vasomotor reactions, blood pressure, and movements of muscles in the hand and face; he made a special study of the perivascular channels of the brain, and the causation of pseudo-bulbar paralysis, and the action of caffeine, digitalin, strophanthin, atropine, and sodium benzoate. Lépine helped to establish the unitary character of tuberculous lesions, and his labours on diabetes are familiar. A number of prizes were awarded at this meeting. The Prince of Monaco prize of 100,000frs. went to Laguesse and Hédon for their discovery of the internal secretion of the pancreas. Debré received 4800frs. for his work on convalescent serums, especially in measles. Levaditi was awarded 12,000frs., Maygrier 6000, Marquézy 3000, and Guillaume 3000frs.

Clandestine Sale of Narcotics.

Traffic in cocaine, heroin, and other narcotics continues to be very considerable at Paris. Montmartre is the largest centre. From houses and "merchants" in this part of Paris representatives are distributed rather widely over the city. Four dealers have just been arrested on the charge of homicide by imprudence, death of a young Russian student through heroin poisoning having led to investigation and discovery. Charges are also being filed against several of the clients. The only penalty against the narcotic traffic at present is the occasional infliction of imprisonment for a period not materially embarrassing to the offender.

Milk and Child Welfare.

Since Dec. 1st the Paris milk-supply has become very irregular and insufficient. A number of proposals have been presented to the municipal council, advocating limitation of the sales of milk in cafés and restaurants, use of milk cards for children and the sick and aged, and distribution of milk among the different arrondissements on a population basis. These projects will be considered at once. The Pierre Budin Foundation, of which Prof. Comby is president, provides regular free instruction in prenatal and infant care for students, physicians, nurses, young mothers, and all who may be interested in the subject. It also supplies from its station in the rue Falguière annually some 15,000 litres of milk, sterilised by the Soxhlet-Budin method.

On the motion of the Ministries of Finance, Labour, and the Interior, a census of the French population has been fixed for March 7th, 1926.

A regional anti-cancer centre has just been installed and opened at Rheims. The centre will promote active educational propaganda on the prevention and treatment of cancer.

The new legislation defining the rights of occupants and proprietors of houses cannot come into force until April 1st, 1926. After that date occupants must meet the advanced rents or vacate.

Prof. Widal's clinic at the Hôpital Cochin opened on Dec. 15th. Clinical lectures are given daily at 9 A.M.; lectures in the amphitheatre every Tuesday at 11 A.M.

At the Sorbonne, Dr. Sicard de Plauzolles is giving free public instruction on syphilis, gonorrhœa, tuberculosis, and other social diseases; on Tuesdays in the Milne-Edwards amphitheatre, and on Saturdays in the amphitheatre Edgar Quinet. The time is 5.30 P.M. These conferences are under the auspices of the National Office of Social Hygiene.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

The Doctor and the Changing Order.

THE President of the Rockefeller Foundation, Dr. George E. Vincent, spoke on the above theme recently to the New York Academy of Medicine. A chiefly urban, minutely specialised, and highly interdependent industrial, commercial, and social system confronts the modern doctor, he said, with new problems. His former individualistic neighbours, the merchant, banker, manufacturer, even lawyer and teacher, have been drawn into organisations and have largely lost their independence as self-sufficing units. Must the doctor, who can now master only a part of the vast total of medical knowledge and skill, follow in their footsteps? It is recognised that effective medical care demands insistently an individual relationship between doctor and patient. There is thus created a conflict between the social need for team-work on the one hand and the demand for human insight and sympathy on the other. In seeking a solution Dr. Vincent reviewed the voluntary health insurance schemes of Denmark and Norway and the compulsory insurance in Germany and Great Britain, concluding that "the medical care is probably on the whole inadequate and certainly unorganised." Only in university clinics, in well-developed hospitals, dispensaries, and pay clinics, in true group practice, *and in health centres is there to be found* genuinely organised medicine. But these organisations, too, are *subject to criticism*. Are they not mechanising medicine, eliminating the personal relation? Perhaps, replies Dr. Vincent, but it is clear in any case that the old order is changing. It looks as if society means to insist upon a more efficient organisation of medical service for all groups of people, upon distribution of the costs of sickness over large numbers of families and individuals, and upon making prevention of disease a controlling purpose.

Alcoholism in 1925.

The very impartial report on prohibition recently issued by the Federal Council of Churches was in itself so inconclusive as to the final outcome of the present legislation that the Council has found it necessary to issue a special announcement of its unchanged advocacy of prohibition and law enforcement. The figures on alcoholism for the first nine months of the present year issued by the Metropolitan Life Insurance Company show that the death-rate from alcoholism is 2·8 per 100,000, compared with 3·2 per 100,000 for the corresponding period of 1924. The deaths from cirrhosis of the liver have, however, increased from 673 to 823, a rate of 6·3 *for the first nine months of last year* and 6·9 for the same period in 1925. Poisonings by wood or denatured alcohol have also increased. Since the beginning of 1922 alcoholism (excluding cases of poisoning from wood or denatured alcohol) has accounted for the deaths of 1528 industrial policy-holders in this company. Other items from this report show that the death-rate from typhoid fever continues to decline among the white population but has actually increased among the coloured population, standing at the appallingly high rate of 11·4 per 100,000 in the latter case. There is a continued decline of tuberculosis deaths in both white and coloured. The deaths from automobile accidents continue to increase.

Periodic Physical Examination.

The conference of secretaries of State medical societies to study and promote a scheme of periodic medical examinations was a lively occasion. At the present time while the American Medical Association, the National Health Council, and the Gorgas Memorial are all promoting such examinations, the work is largely done by business organisations for gain. One such corporation speaks of employing upward of 8000 medical examiners, others are no more than the one-room commercial laboratory. The conference deprecated the need for any middleman between physician and patient, and set its face strictly against the commercialisation of medical practice.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics for 1924 of a group, comprising three counties, three county boroughs, and three cities:—

Name of district.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population. All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Death-rates per 1000 births. Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Kent	1,107,800	16·6	11·1	0·93	1·38	1·9	26	53	3·3
Staffordshire .	718,400	21·6	11·4	0·90	0·80	2·8	36	79	2·7
Huntingdonshire	55,700	17·2	12·5	0·82	1·51	2·0	37	60	4·3
Birkenhead C.B.	154,100	21·1	11·9	1·21	1·16	2·9	36	95	2·8
South Shields C.B. .. .	126,600	24·3	14·6	1·02	0·98	3·8	42	102	5·2
Bournemouth C.B. ..	84,450	13·2	13·8	1·10	1·80	2·3	26	45	0·9
Norwich C. ..	123,000	17·5	11·6	1·22	1·51	2·0	26	62	1·9
Carlisle C. ..	54,010	20·3	13·8	1·25	1·31	2·5	30	95	2·7
Gloucester C. .	53,090	19·6	12·6	1·32	1·20	2·3	34	83	3·8

C.B. = County borough. *C. = City.*

Kent.

Dr. Alfred Greenwood reports that the death-rate from cancer remained at the same high level as in the preceding year. Some very high rates were recorded in the various districts; thus, Deal borough had a rate of 2·13 for 1924, New Romney a rate of 2·03, and among the rural districts Elham had a rate of 2·11 and Tenterden a rate of 2·20. Dr. Greenwood assisted the publicity work by giving popular lectures on this subject to the lay public in various centres of population in the county. These lectures, illustrated *by lantern slides and framed in simple language*, proved to be a great attraction. The arrangements were made by the local medical officers of health in each case. Very large audiences were addressed and the modest cost was borne by the local council.

Successful administration of the county tuberculosis scheme continues, but, says Dr. Greenwood, "still further benefits may accrue when it is possible to ally with our work in this direction greater expedition in the provision of houses, with consequent improvement in home conditions and less overcrowding. Further accommodation for patients suffering from pulmonary tuberculosis in its early stages is now being arranged at the county sanatorium at Lenham, owing to the training section at that institution being discontinued by the Ministry of Health. Forty additional beds will become available shortly. An outbreak of paratyphoid fever in the borough of Dover was traced, after a considerable amount of difficulty owing to the complicated methods of milk distribution, to a "carrier" working on a farm outside the borough. The sanitary defects found on the farm contributed to the spread of infection. The "carrier" was isolated in hospital for two months and left at his own request, giving an undertaking that he would not in future follow an occupation which involved the handling of any foodstuffs used by the public. The work of the county bacteriological and pathological laboratories at Maidstone continues to elicit the cordial appreciation of the medical profession throughout Kent, and the number of examinations again shows an increase.

Continued efforts are being made to provide an efficient midwifery service throughout the county either by making grants to assist in the formation of district nursing associations, or by placing subsidised midwives in districts where a livelihood cannot be obtained from midwifery alone. Some 18 districts are now served by subsidised midwives. A very successful post-certificate course for midwives, comprising lectures and demonstrations, was held at Gillingham from Oct. 6th to 10th, and was attended by 125 practising midwives and 21 health visitors.

Staffordshire.

Dr. W. D. Carruthers reports that there are now only 47 untrained midwives and 225 trained midwives as compared with 438 untrained midwives and 18 trained at the time of the passing of the Midwives Act. The provision of an efficient service has been one of the chief concerns of the public health committee for a considerable period. In the more populous districts, if the midwifery service is inadequate, either a midwife is trained at the expense of the county council on the condition that she practises in a selected area for three years, or a trained midwife is established with a guaranteed income of £120 a year on condition that she does not select her cases. The latter method is the one usually adopted, and experience has shown that such midwives do not require a subsidy for as long as three years. There are 62 local nursing associations affiliated to the County Nursing Association, and eight non-affiliated which undertake midwifery. The smaller nursing associations in the county employ nurse-midwives, who are generally called village nurses. In addition to holding the certificate of the C.M.B., these village nurses have received a six months' training in general sick nursing at the Tipton Training Home. At the October meeting of the health committee a special scheme of post-certificate training was adopted for the practising midwives under which 70 practising midwives annually will attend a refresher course of a fortnight's duration at the Tipton Training Home. Arrangements will also be made to give the pupil midwives one month's practical training in health visiting. Antenatal work is also to be developed at all centres as far as possible.

An examination of the returns of the district medical officers of health has shown that in 9 out of 48 sanitary districts there were more deaths from pulmonary tuberculosis than notifications. Work with regard to the prevention of rivers' pollution makes progress and many of the districts in the county have bio-aeration schemes in hand.

Huntingdonshire.

Dr. C. B. Moss-Blundell says a great deal more should be done to improve the condition of the children. The education committee have provided for the treatment of eye defects, but tonsils and adenoids are neglected. Dental treatment is a crying need. Verminous heads are quite unpardonable, and Dr. Moss-Blundell thinks it would be a "Heaven-sent blessing if fashion dictated the Eton-crop for all time for all school-children." For venereal diseases an additional centre is needed in the north of the county, as also for tuberculosis; and a new clinic for school-children should be established at Fletton. The problem of mental deficiency becomes more acute as there is no suitable institution available. Dr. Moss-Blundell is sorry that the Fowlmere aerodrome was not acquired for this purpose, and suggests that Huntingdon should combine with one or more other counties to acquire a suitable place.

Birkenhead.

Dr. D. Morley Mathieson reports that the regular bacteriological examinations made at the Alwen water-supply showed that the water was of remarkable purity and remained so throughout the year. The revision of the tuberculosis register shows that at the end of 1924 it included 1600 cases of tuberculosis of all types. This is rather more than five times the notifications for 1924, which number 294. Only 62·5 of the cases were notified to the department three months or more before death, but this is a slight improvement on the three preceding years. Owing to the fact that more beds are now available for adults at the Cheshire Joint Sanatorium at Burntwood, it is possible to admit more children suffering from surgical tuberculosis to the Thingwall Sanatorium. These children do very well at Thingwall, and the light treatment has been adopted with much success. Twelve beds are also reserved at Leasowe Hospital for surgical tuberculosis.

A scheme has been approved by the education committee for dealing with crippled children, comprising an orthopædic clinic, hospital accommodation for non-tuberculous cases, the provision of splints, &c., and the services of an orthopædic surgeon, an orthopædic nurse, and a masseuse. The clinic will be held on Saturday mornings at the central premises occupied by the Birkenhead and Wirral Invalid Children's Association, which association is already subsidised by the corporation and employs a masseuse. Hospital accommodation will be provided at Leasowe on the "patient-day" basis and £150 is included in the estimates for the first year. Mr. Hartley Martin, the senior surgeon of Leasowe Hospital, is recommended as the orthopædic surgeon, and for the first year it is estimated that one attendance by him per month at the clinic will be sufficient. On the intermediate days the orthopædic nurse will be in attendance. The added cost of the scheme for the first year is estimated at £270, half of which will be received back in the form of a grant to the education committee. Dr. Mathieson draws attention to the limited scale of the dental inspection and treatment provided for the school-children. Only one group is dealt with—namely, children born in the years 1914, 1915, and 1916. The result to these is excellent, but the other children in the elementary school remain outside the scope.

South Shields.

Dr. W. Nicoll states that the devastating effects of the influenza epidemic, which prevailed in the earlier part of the year, were severely felt on Tyneside. Excluding the memorable epidemic of 1918–19, South Shields was more severely affected during 1924 than in any year of the last 30. Nearly a third of all the notified cases of primary pneumonia died, and about half of the cases of influenzal pneumonia. The influenza epidemic was followed by cases of encephalitis lethargica; nine cases were notified, eight of which died.

As a sequel to the visit of a Medical Inspector of the Board of Education, the question of the school dental service was raised anew and a full-time dentist appointed in place of two part-time dentists. A second full-time dentist will be needed quite soon. Another need of South Shields is increased and improved hospital accommodation for infectious cases. As a makeshift, huts have been erected in the grounds of the hospital. There is no observation block for dealing with doubtful cases and there are no segregation cubicles at the hospital. The death-rate from tuberculosis, which has been very high for some time, showed a drop during 1924. Among the 205 deaths from tuberculosis there were ten of Arab seamen, and Dr. Nicoll points out that they suffer more than the rest of the population. Arabs only constitute about 0·4 per cent. of the total inhabitants. A letter has been addressed to all the midwives, pointing out that when medical aid is required they should send for the medical practitioner desired by the patient. An antenatal clinic, under the charge of Dr. Susan Jamieson, was opened in June.

Bournemouth.

Dr. A. D. Edwards points out that the infant mortality was the lowest ever recorded in Bournemouth, and expresses his appreciation of the excellent work done by the Bournemouth Voluntary Association in all the centres. A fifth centre had to be opened towards the end of the year. The public analyst, Mr. R. A. Cripps, discusses the question of shredded suet. The rice flour in the samples submitted varied from 0 to 23 per cent. The object of the addition is to prevent the granules of fat becoming massed together. For this purpose from 10 to 15 per cent. (according to the hardness of the suet) of rice flour is ample. Consequently, all samples containing more than 15 per cent. must be regarded as adulterated. As the result of the action taken during 1922 and 1923 the use of preservatives is decreasing. Eleven out of 20 sausages contained boron, but only in one case in excess of 0·25 per cent. Five samples of fish paste and 22 of sponge cake were all free from boron. Ten samples of margarine contained boric acid in excess of 0·2 per cent., while 10 out of 11 samples of butter were also boricised but in only three in excess of 0·2 per cent. Nine samples of lemon squash, lime-juice, &c., all contained either sulphurous or salicylic acid. Mr. Cripps expresses his surprise that boric acid, "which has been used for many years under official sanction in preserved cream, butter, &c., and salicylic acid, which has been similarly favoured in various beverages, are now to be forbidden." He is doubtful as to whether the substitution of sulphites for boric acid will be advantageous, especially as the consumer will be liable to take a medicinal dose with less than ½ lb. of sausages.

Norwich.

Dr. H. Cooper Pattin reports that provision has now been made for the dental treatment of nursing and expectant mothers and is already proving beneficial. There is need for increased ward accommodation at the maternity home. The development of the Stanninghall colony progresses slowly. The Ministry does not quite approve of this being used for all types of tuberculosis, but appears to have a preference for a combined eastern counties hospital for surgical tuberculosis. The school dental officers find defects in 65 per cent. of all the children examined. With the appointment of a second dental officer more children now receive treatment, and it is hoped that arrears will ultimately be overtaken. New houses do not meet the needs of the natural increase of the population. The housing scarcity, therefore, becomes aggravated, and the difficulty is rendered greater by the worn-out condition of much of the house property in the city.

Carlisle.

Dr. Joseph Beard reports six notifications of encephalitis lethargica. One was a non-resident who died in the infirmary. Of the remainder three made complete recoveries, one recovered except for a slight dilatation of the pupil, and the fifth made an apparent recovery, which was followed a month later by difficulty in swallowing and other grave symptoms leading to a fatal end. Dr. A. C. B. McMurtrie reports that syphilis is declining and looks forward with confidence to the time when syphilis in Cumberland will be almost a thing of the past. Gonorrhœa, on the other hand, he thinks is increasing. His opinion is illustrated by charts showing the number of new cases treated at the Cumberland Infirmary since 1920.

Gloucester.

Dr. Ronald B. Berry draws attention to the inadequate and extremely inconvenient accommodation provided for the health and school medical departments. During the year there was an outbreak of enteric fever of a mild type among children. Investigations showed that the children had probably become infected by drinking from a brook contaminated by sewage from the second county asylum. The outbreak led to an examination of the city water-supply, some of which was found to be unsatisfactory. The undesirable water came from the Robinswood Hill supply, and, after a survey of the gathering grounds, it was decided to dispense with the water from this source. The report on the dental scheme for expectant and nursing mothers shows that this work is growing in popularity, and that prejudice is disappearing. Treatment consists mostly in extractions, but occasionally the "Ivory Cross," a philanthropic association subscribed to by dentists, helps to provide artificial dentures. The present state of the housing problem makes all branches of the work of the health department exceedingly difficult. Dr. Berry thinks much more could be done in the way of open-air classes at the elementary schools. The school dental officer, Mr. L. Machin, reports that the dental scheme has received a very decided check from the system of charges instituted towards the end of the year. The majority of parents refuse treatment rather than pay.

SCHOOL MEDICAL SERVICE.

THE following table summarises the statistics for Manchester, Birmingham, and Northampton :—

Name of district.	No. on roll.	Average elem. school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.†
Manchester..	—*	—*	20,920	140,341	27·71
Birmingham.	140,738	124,019	42,730	67,354	26·00
Northampton	20,723	—*	6,470	2,183	24·8

* Not given. † Excluding dental defects and uncleanliness.

Manchester.

In addition to the routine work, Dr. A. Brown Ritchie and his staff examined between 6000 and 7000 children prior to their visit to Wembley exhibition —no light task when it is seen that the routine work has been fully and efficiently carried out. The increasing interest and knowledge of the medical work amongst the teachers are shown by the early recognition and notification of many cases of infectious diseases, but cases of defective vision and hearing still escape the teacher's notice. Extensive treatment is carried out by the staff at the various treatment centres—even minor orthopædic cases being treated.

Many special classes, residential, and day schools exist for the abnormal children, but Dr. Brown Ritchie states there is still a shortage of accommodation for blind, deaf, and mentally defective children. Dr. H. Herd reports on the after-results of encephalitis lethargica in 57 children in whom he found 20 cases of Parkinsonian syndrome (14 serious). Dr. J. G.

Woolham carries on from last year his investigation into the fitness of school-boys. He finds that, apart from the psychological development of the boy, his fitness depends on the anatomical proportionality between the parts or "static" state and on the physiological adjustability or "dynamic" capacity. While the "static" state can be measured, actual working experiments must be made to estimate the "dynamic" capacity which, he suggests, depends on the fitness of the vegetative systems and neuromuscular systems. Using his tests, he found that the distribution of 81 boys into seven grades closely corresponded with the numbers which would fall in each division drawn under a normal probability curve. Under similar tests, a "random sample" of boys in poor health were graded and showed close positive association with that found on purely clinical examination. Fully detailed tables are given in this praiseworthy and painstaking piece of research. Dr. G. W. Matthews has found that boys in abnormal standard for their ages have abnormal blood pressure.

Birmingham.

Dr. G. A. Auden's report makes interesting reading. Much work has been undertaken and the conclusions drawn are sound. Drs. B. and J. Alexander report on the remarkable preponderance of short-sightedness amongst Hebrews in comparison with children in non-Jewish schools—30 per cent. of the Jewish children were myopic whereas the non-Jewish children culled from a similar environ showed only 12½ per cent. of defective vision and these were hypermetropic. Commenting on the orthopædic and remedial exercise clinic, Dr. Auden says: "It has been stated on unimpeachable authority that from 80 to 85 per cent. of the crippling now extant can be prevented or cured by appropriate and skilled treatment." The marked reduction in the incidence of ringworm has continued and the X ray treatment has caused a great diminution in the loss of school attendance. It is estimated that the saving on the 300 cases by X ray treatment is equivalent to 139·4 educational years.

Northampton.

Dr. Charles Paget, M.O.H. and school medical officer, states that, owing to illness of his staff, the number of routine inspections is not complete. He reports favourably on the good nutrition of the children, which is being well maintained.

He has a shrewd paragraph on the subject of squint. We are all familiar with the parent who thinks his child will grow out of it and with his consternation when testing of the squinting eye reveals the fact that its vision is already seriously impaired. As Dr. Paget states, glasses should be adopted early and worn constantly and the disused eye regularly exercised by the use of a shade over the good eye. There are apparently no special schools, though there are 151 mentally defective children and many suitable for physically defective and open-air schools. Such provision is undoubtedly difficult in scattered rural areas, but the absence of facilities is hard on the individual children.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 5TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 115 (last week 105); scarlet fever, 1083; diphtheria, 1005; enteric fever, 57; pneumonia, 1776 (previous weeks 1531, 1180, and 889); puerperal fever, 51; cerebro-spinal fever, 5; acute poliomyelitis, 4; encephalitis lethargica, 51; dysentery, 6; ophthalmia neonatorum, 109. There were no cases of cholera, plague, or typhus fever notified during the week.

Deaths.—In the aggregate of great towns, including London, there was 1 death from enteric fever (London), 58 from measles, 11 from scarlet fever, 32 from whooping-cough, 39 from diphtheria, and 100 (previous weeks 73, 61, and 44) from influenza. In London itself there were 28 deaths from measles, 24 from diphtheria, and 22 from influenza.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lts. (D.): O. J. Barrable to *Victory*, for R.N. Barracks, Portsmouth, temp. and to *Impregnable;* and L. B. Osborne to *Vivid* for R.N. Barracks, Devonport, temp.

ROYAL ARMY MEDICAL CORPS.

Capt. E. C. Lang to be Maj.

Capt. R. W. D. Hewson to be temp. Capt. and temporarily relinquishes the rank of Capt.

A. L. Moorby to be temp. Lt.

ARMY DENTAL CORPS.

Capt. R. H. Mills retires on account of ill-health, receiving a gratuity.

TERRITORIAL ARMY.

Maj. F. W. B. Young, T.D., to be Lt.-Col. and to command the 164th (West Lancs) Field Ambulance.

Lt. J. H. Iles to be Capt.

Lt. F. R. Sandford (from Supernumerary for service with the Univ. of Lond. Contgt. O.T.C.) to be Lt.

D. C. Vaughan to be Lt.

DEATHS IN THE SERVICES.

Sir HENRY FREDERICK NORBURY, K.C.B., Director-General, R.N. retd., honorary surgeon to the late King Edward and to King George, died at Eltham on Dec. 10th, at the age of 86. An old Bart.'s man, he qualified with the M.R.C.S. and L.S.A. in 1860, in which year he joined the Royal Navy. Ten years later he graduated M.D. at the University of Malta and was appointed staff surgeon in 1872. While serving in the *Active* at the Cape and West African stations he was landed in medical charge of the Naval Brigade during the Kaffir War of 1877–78. He also served in the Transkei as senior medical officer of six different columns of troops, was present in numerous skirmishes, in the action at the Quorra River, and at the battle of Quintana (mentioned in despatches and recommended for promotion). During the Zulu War of 1879 he was in medical charge of the *Active's* Naval Brigade and was P.M.O. of Colonel Bearson's column, being present at the battle of Inyezane. Later he was P.M.O. with General Crealock's column (mentioned in despatches, medal with three clasps, promoted to Fleet Surgeon and was made a C.B.). For three years he served in charge of the Naval Hospital at the Cape and during that period was awarded the Blane Gold Medal on passing for staff surgeon. Subsequently he joined the Naval Hospital at Stonehouse, Portsmouth, and the *Impregnable* training ship for boys at Devonport, where he remained till 1887, when he was appointed Deputy Inspector-General of Hospitals and Fleets, when he was attached to the Royal Naval Hospital at Plymouth previous to being transferred to the Medical Director-General's Department as an assistant to Sir James Dick, the then Director-General. In 1895 he was appointed senior medical officer at Plymouth Hospital with the rank of Inspector-General. In 1897 he was promoted to K.C.B., and in the following year succeeded Sir James Dick as Director-General of the Naval Medical Service, retiring from that position in 1904. Sir Henry Frederick Norbury, who was the author of "The Naval Brigade in South Africa," was made an honorary Fellow of the Royal College of Surgeons of England in 1900. He was also a Knight of Grace of the Order of St. John and was a member of several learned societies. He was awarded a special pension for good service on the active list. Sir Henry Norbury married in 1868 Mina Legge, daughter of Mr. E. G. Wade-Brown, of Burton Bradstock, Dorset, by whom he had three sons and five daughters. One of the sons, Mr. L. E. C. Norbury, is a well-known surgeon, and three of the daughters are married to medical men.

Surg. Rear-Admiral C. M. Beadnell has been appointed honorary physician to the King, vice the late Surg.-Gen. C. Pearson; and Surg. Rear-Admiral A. Maclean honorary surgeon to the King, vice the late Surg.-Gen. H. J. M. Todd.

STAFFORDSHIRE INFIRMARY.—Last week Sir John Bland-Sutton opened a new operating theatre, which has cost £5000, at the Staffordshire General Infirmary, Stafford. The theatre was designed by Sir Aston Webb.

EXTENSION OF RUGBY HOSPITAL.—The Hospital of St. Cross at Rugby, which at present contains 100 beds, has become so inadequate to the needs of the district that a committee which has been considering the position recommends an immediate extension to 115 beds, with a further addition, a little later, which will increase the total capacity to 150 beds.

Correspondence.

"Audi alteram partem."

PROPHYLACTIC INOCULATION AGAINST "COLDS" AND INFLUENZA.

To the Editor of The Lancet.

Sir,—There are some difficulties and even dangers in carrying out Dr. A. I. Simey's suggestions to inoculate schools wholesale. These are touched upon but not emphasised in his article in The Lancet of Nov. 21st: (1) There is the variation in immunity of individuals; (2) there is the method of administering the vaccine; (3) there is the composition and method of preparation of the vaccine.

(1) Variation in immunity is recognised. Some people are frequently "catching" colds or influenza, some rarely have either colds or influenza. Some have a chronic post-nasal catarrh, which in time infects the larynx and bronchial tubes. Some have no apparent catarrh but the organisms lie latent, ready to develop in virulence and number if the individual gets chilled or overtired. When we have recognised this variation in immunity we might express it thus—individuals may have an immunity ranging from 0 to 100; let us divide them into five groups, A has no immunity, B's immunity may be placed at 25, C's at 50, D's at 75, and E's at 100. We can only roughly guess in any individual case whether he should be placed in group A, B, C, D, or E. If, then, *you proceed to inoculate him with one* of the prophylactic anti-catarrh and anti-influenza vaccines, and if you give it in two doses as suggested by Dr. G. T. Western (The Lancet, Nov. 28th), presumably you give him ½ c.cm. for the first dose. What will happen? If he is in C, D, or E group he will get slight redness at the place of inoculation and possibly slight catarrh next morning and then will be all the better for it; but if he is in A or B group or between B and C he may get a heavy cold with or without a rise of temperature, which lasts on some time and does not produce an immunity; if anything, the immunity is lowered; and, indeed, in some cases bronchitis or pneumonia may follow.

(2) This brings us to the question of the *method* of administering the vaccine. The ideal to aim at is to produce a slight response in the individual by giving a dose which he can easily *overcome. Clinically* this means that if you are uncertain as to the immunity of the individual you must begin with a dose small enough to do no harm and watch its effect; the individual must not risk getting tired during the 24 hours following a dose, for the process is one of interaction between the dose of vaccine and the patient's powers of response. Therefore it *is safest* to begin with a dose of 0·1 c.cm. in adults and perhaps 0·05 c.cm. in children under 12. By observing what has happened during the 48 hours following the dose you are in a position to judge what dose to give next; if there has been a slight reaction following the dose you repeat it again at the end of three or four days *or when the patient* has got over it. Probably after repeating it a second time there will be no reaction and you can proceed to a higher dose. But in some cases where the immunity is very low it requires a great deal of patience before proceeding to higher doses. If, then, you make it your principle never to proceed to a higher dose before the patient has easily tolerated *the present one* you will be on safe ground. Accepting this method of giving the doses, the following are convenient increases after any dose is tolerated. If you have commenced with 0·05 c.cm. go on next to 0·075 c.cm., 0·1 c.cm., 0·15 c.cm., 0·2 c.cm., 0·3 c.cm., 0·5 c.cm., 0·7 c.cm., and 1·0 c.cm. These increases can always be varied according to the sensitiveness or *otherwise of the* patient. When the dose of 1·0 c.cm. has been reached, I believe the immunity lasts for at least one year, and if inoculations are repeated again in *a year's time, it may be possible to immunise* an originally sensitive person by giving three inoculations only.

(3) With regard to the composition and method of preparation of a vaccine, Dr. Simey suggests that specimens of sputum and "cultures" (I presume he means swabs) from the throat and nasopharynx should be sent to a pre-arranged laboratory by a certain date. I do not believe that this is the best way; probably most of the more chronic post-nasal catarrhs are due to either a pneumococcus, micrococcus catarrhalis, or streptococcus, and while there is great value in obtaining an autogenous vaccine for chronic cases, these organisms are of a lower virulence than those where there is pyrexia. A pneumococcus from a pneumonia case makes a far more potent vaccine than a pneumococcus from a chronic catarrh.

If pathologists can provide us with a prophylactic vaccine made from acute cases and made up of two types of pneumococcus as well as *M. catarrhalis*, *streptococcus*, *B. pfeiffer*, *B. pneumoniæ*, and *B. septus*, I believe that it will be far more effective as a prophylactic than if one is made up from the chronic cases. I do not know how far pathologists subculture in making up their stock vaccines; but it stands to reason that the less subculturing there is the more nearly will the organism correspond in its toxin to the organism growing on the mucous membrane. I presume that pathologists would always use blood in the medium when culturing *a streptococcus; and is it possible that organisms* grown on nasgar instead of agar make a more potent vaccine? I believe vaccines keep potent more than four months if kept in concentrated form.

I am, Sir, yours faithfully,

Oxford, Dec. 14th, 1925. Henry T. Gillett.

GANGRENOUS APPENDICITIS:

THE INITIAL SYNDROME.

To the Editor of The Lancet.

Sir,—Can one recognise, at the beginning of the illness, a class of appendicitis which *calls for early* operation to anticipate the certain onset of gangrene and perforation? I think so.

The public is aware and the practitioner knows that there are cases of appendicitis which, coming on suddenly and with acute symptoms, may and do end in resolution under medical treatment within 48 hours. The medical *man called to attend* an early condition which he suspects to be due to an acutely inflamed appendix finds himself in a very responsible position. He may elect to wait upon events and thereby incur disaster, or he may risk the confidence of his client by insisting upon an immediate operation. In this dilemma, what data *are available to enable one to come to a conscientious* decision?

In these circumstances I rely on what I have called the epigastric syndrome. This is a group of signs to be met with quite at the beginning of the gangrenous form of appendicitis. It is well marked during the first six hours and well in advance of the *classic signs in the right iliac* region. *The patient*—a child or young adult most commonly—complains of violent pain referred to the epigastrium. There is usually vomiting and the knees are not drawn up. An abdominal examination shows marked tenderness localised to the left upper epigastric region, with cutaneous hyperæsthesia within the same limits. *The upper segment of the left* rectus muscle is in a state of contraction and feels rigid to palpation. The right iliac region, on the contrary, betrays neither swelling, rigidity, tenderness, nor hyperæsthesia at this stage of the process. The temperature is often only slightly raised—99°–100° F.—and may become normal again as the syndrome passes. *The pulse is a more reliable* guide—90–120—and either does not decline with the fall of temperature, or may become progressively faster, and shows increasing tension. The duration of the syndrome varies; it is most apparent during the first six hours of the attack, but it may still be recognisable in part so long as 18 or 19 hours after the beginning of epigastric pain. The last element to disappear is the tonicity of the left rectus.

I recently saw a case of gangrenous appendicitis in a boy of 12 years with a history of intense pain in the epigastrium together with vomiting. The temperature at the onset was 100° F., falling to 99° 12 hours later; the pain was then passing off and the vomiting had ceased. When seen in consultation 18 hours after the commencement of the illness, there was no abdominal pain in any region, the temperature was normal, and the child was anxious to eat. He was apparently well, and that was the opinion of the parents. But there was still tonicity of the left rectus present in the upper segment, the pulse was 120, and there was the clear history of the rest of the syndrome. As yet there were absolutely no right iliac phenomena and no pain or tenderness in any region of the abdomen. Still, an immediate operation revealed an acutely inflamed appendix of the thickness and length of an adult index finger with a patch of gangrene 1 cm. from the tip.

As regards the ætiology of the syndrome, I have attempted to explain elsewhere[1] why signs and symptoms referable to the greater curvature of the stomach should be caused by a superacute gangrenous form of appendicitis.

The practical point is that the syndrome is transient. This being so, it is important for the family medical adviser to observe and to recognise the epigastric syndrome at the beginning of an attack, since to my mind it is a definite warning of the gravity of the process, and is in itself a formal indication for immediate operation. I would point out that the syndrome is almost never observed in the hospital wards—unless among the personnel—since the patient is seldom admitted early enough. But in general practice the syndrome can be recognised, and when present enables the medical attendant to decide definitely against temporising.

I am, Sir, yours faithfully,
R. M. ROWE,
Surgeon in Charge Out-patient Dept.,
French Hospital, London, W.C.
Dec. 14th, 1925.

AIR EMBOLISM DURING FALLOPIAN INFLATION.

To the Editor of THE LANCET.

SIR,—Air inflation of the Fallopian tubes has become firmly established as a means of investigating cases of sterility, and the chief contra-indication is any evidence of pelvic inflammation: apart from this the *time of the menstrual period* must be carefully avoided and the patient should be a suitable *candidate for pregnancy*. In a paper read before the Gynæcological Section of the Royal Society of Medicine on March 5th, 1925, I gave it as my opinion that air embolism must be regarded as one of the dangers, *more particularly* in those methods which employ high pressures such as 200 mm. Hg and over. At that time I had not seen or heard of a report of such a case; however, on Oct. 15th last I encountered one which *fortunately* did not terminate fatally.

Mrs. A., aged 21, married five years, with scanty and irregular menstruation, came under observation for sterility. The usual examination and procedure showed that she had a small uterus, and the husband was normal. I determined to ascertain whether her Fallopian tubes were patent, and having arranged a date which fell in between periods, she was given glycerine plugs to be applied to the cervix on the two nights preceding the test. *On Oct. 15th* she was placed on the couch in the Trendelenburg position and the hollow dilator passed into the uterus, the bulb being attached to it. The pressure was gradually raised to 150 mm. Hg *approximately*. The patient complained of some pain in the pelvis, but *no air escaped into the peritoneum*; the pressure was maintained for a few seconds when she became very restless, throwing her head about from side to side. Her breathing had become difficult and she was cyanosed, but was able to answer when questioned. Her condition grew worse and she became unconscious with slow and shallow respiration; the pulse could be detected *at the wrist*, but was weak and small. The heart sounds were heard clearly but faintly, and no abnormal sounds could be detected. The corneal reflex was *lost and the limbs were completely relaxed*. She remained in this condition for about 20 minutes and then slowly regained consciousness. She was admitted to hospital and with the aid of cardiac stimulants recovered fully and was discharged the next morning.

I have no doubt that this was a case of air embolism, and it corresponds fairly closely with cases reported by K. V. Trubshaw,[1] R. S. Roper,[2] and A. Fullerton[3] after urethroscopy. I think the reason the symptoms were not more severe was due to the small quantity of air insufflated and the comparatively low pressure employed, and secondly to the immediate *suspension of the inflation and withdrawal of the* tube, thus promptly lowering the pressure and preventing the escape of any more air into the vessels. The symptoms were entirely cerebral and there was no indication of frothing or churning in the heart, therefore the air-block probably occurred in the capillaries of the brain. There was no history of fits in the patient herself nor in the family history, the urine was normal, and the vessel walls were healthy. The possibility of air embolism suggests the importance of air inflation being carried out at a time remote from the menstrual period and in the absence of uterine hæmorrhage, and secondly it is of great importance that the uterine cannula should be free in the uterine cavity and not buried in the wall of the uterus, when one or other or both of the following results would ensue: (1) *the inflation would be negative, (2) there would be a grave risk of producing air embolism.*

I am, Sir, yours faithfully,
SIDNEY FORSDIKE, M.D., F.R.C.S.,
Surgeon to Hospital for Women, Soho-square, W.
Dec. 8th, 1925.

THE TREATMENT OF RHEUMATIC AFFECTIONS BY INTRAVENOUS INJECTIONS OF SODIUM IODIDE AND SALICYLATE.

To the Editor of THE LANCET.

SIR,—For several years past I have been treating rheumatic and other affections by intravenous injection. 15 gr. of (natural) sodium salicylate are boiled in a test-tube with 20 c.cm. of distilled water and 15 gr. of sodium iodide are added. I use a 20 c.cm. record syringe with eccentric nozzle and a sharp needle of No. 17 bore. The injection may be given in the consulting-room and there is usually no reaction. Occasionally there may be a slight feeling of coldness after about half an hour, which passes off in a few minutes. I have never seen thrombosis.

Improvement after injection is rapid and may be dramatic. In a case of acute sciatica within two minutes of the injection the patient could lift his thigh and walk across the room. Two days afterwards there was still tenderness on pressure over a certain place in the course of the nerve which disappeared after a second injection. On the fourth day the patient played a full round of golf. Some years ago I gave one injection to a Parsi doctor who had suffered from sciatica for six months; within half an hour the pain disappeared and never returned. Dr. R. S. Bernard, of Sidmouth, tells me that he has just cured a chronic case of sciatica of four years' duration with two injections and that he is using this method largely for obstinate rheumatic affections. I am treating two cases of osteo-arthritis in this way at present and they are delighted with the relief afforded.

I think these drugs, when given by the mouth, undergo changes which prevent *them from acting* in the way they do when injected intravenously.

I am, Sir, yours faithfully,
F. J. W. PORTER,
Major, R.A.M.C. (ret.).
Budleigh Salterton, S. Devon, Dec. 12th, 1925.

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[1] Le Diagnostic précoce de l'Appendicite aiguë, La Presse Médicale, May 5th, 1923.

[1] Brit. Med. Jour., 1925, i., 112.
[2] THE LANCET, 1925, i., 126.
[3] Ibid., p. 256.

GLYCOSURIA AND LIFE INSURANCE.

To the Editor of THE LANCET.

SIR,—I wish to call attention to the following case. A healthy man, of wiry physique and clear family and personal history, was recently totally rejected by a well-known insurance company on account of alleged glycosuria, the urine having been tested at the office by boiling with a blue solution, and the remainder of the specimen poured down the sink. He was subsequently sent to me by his own medical adviser, when I estimated the sugar content of both blood and urine, after a meal containing a very large quantity of carbohydrate and sugar. The urine contained 0·08 per cent. and the blood 0·101 per cent. of sugar respectively. Not only, therefore, was this man not a diabetic, but his renal threshold and blood-sugar content being lower than normal, he was, if anything, a better risk in regard to his carbohydrate metabolism than the normal man. These facts were given to the company, who simply retorted that they intended to abide by their decision. The injustice of this procedure is evident, especially as the patient's prospects in regard to assurance in another company are prejudiced by his having to disclose his previous rejection.

What remedy has the man against this autocratic ignorance? I should be glad to know.

I am, Sir, yours faithfully,
A. KNYVETT GORDON, M.B.

Bedford-square, W.C., Dec. 14th, 1925.

LIPIODOL IN BRONCHO-PULMONARY DISEASE.

To the Editor of THE LANCET.

SIR,—The value of lipiodol in the diagnosis of broncho-pulmonary conditions and its possibilities in treatment are now being widely recognised. Simplification of any technique for introducing the oil into the bronchi is therefore of the greatest importance. The reports that I have read deal with methods involving puncture of the trachea or the passing of a bronchoscope, but I would point out that it is easily possible in the great majority of adult patients to introduce the lipiodol by means of an ordinary laryngeal syringe without inflicting upon them the very severe discomfort of a bronchoscope. I have practised this at the Royal Chest Hospital and found that after anæsthetising the larynx the patients will tolerate the introduction of lipiodol satisfactorily, and that by making them incline to one side or the other the oil can be made to run into both sides of the lung. It would obviously be very difficult, especially in this country, to persuade patients to accept the repeated passage of a bronchoscope under a local anæsthetic, and there are many who would not tolerate it even the first time.

I am, Sir, yours faithfully,
A. M. ZAMORA.

Devonshire-place, W., Dec. 2nd, 1925.

GLYCERINE AS A LYMPHAGOGUE.

To the Editor of THE LANCET.

SIR,—With reference to your report of a paper read by me on Puerperal Infection at the Section of Obstetrics, Royal Society of Medicine (THE LANCET, Dec. 12th, p. 1220), the sentence "The mixture he used was a 10 per cent. solution of tincture of iodine in glycerine, the iodine promoting the flow of lymph into the cavity of the uterus," should read "The mixture he used was a 10 per cent. solution of tincture of iodine in glycerine, the iodine helping to stimulate uterine contractions." My whole paper was on the effects of producing a flow of lymph into the cavity by using glycerine, the iodine merely being introduced as a stimulant.

I am, Sir, yours faithfully,
H. J. PHILLIPS.

Oldham, Dec. 14th, 1925.

Obituary.

JOHN E. ESSLEMONT, M.B., CH.B. ABERD.

THE death is announced at Haifa of Dr. John Esslemont, who was well known to the medical profession in many capacities, though for the last two or three years the state of his health had prevented him from practising and had necessitated his residence abroad, much of his life lately having been spent in Palestine.

John Esslemont was born at Fairford Cults in 1873, and graduated with distinction in medicine at the University of Aberdeen. He gained the Philip Research Scholarship in 1898 and proceeded to post-graduate work at Berne and at Strassburg. On return to Aberdeen he became assistant to the late Prof. J. T. Cash, the well-known professor of materia medica in that university. But at that early stage his professional career was interfered with by his health. He was forced to leave Aberdeen, and for some seven or eight years he travelled for his health, with intervals of practice, in Australia and South Africa—he was at different times resident surgeon at the Ararat Hospital, Victoria, Australia, and acting district surgeon at Kroonstad, South Africa. In 1908 he returned to England and became medical superintendent at the Home Sanatorium, West Southbourne, Bournemouth. During the 15 years which he held that post he became known as an ardent worker for the prevention of tuberculosis, his published articles including contributions to THE LANCET upon sanatorium treatment and to other medical and scientific journals upon the possible eradication of tuberculosis. He was a strong advocate of the formation of garden cities for the victims of tuberculosis, while another subject on which he thought and wrote much was the institution of a State medical service. In the last years of his life Dr. Esslemont became deeply interested in a religious movement having its rise in Persia, and some two years ago he wrote a full account of the tenets of this cult with the result, it is understood, that in the United States many adherents were attracted to it.

The medical profession has lost in Dr. Esslemont an interesting man, highly equipped on many sides of medicine and medical politics, and possessed of unusual intellectual gifts.

HILDA GORDON JAMESON, M.B., CH.B. BIRM.

WE regret to announce the death of Dr. Hilda Gordon Jameson at the early age of 26. Miss Jameson was educated at the Westbourne Council School, where she won a borough scholarship, after which she studied at Bournemouth College and later at the University of Birmingham. Here she took the degree of Bachelor of Science at a very early age and graduated with the M.B., Ch.B. in 1923, securing the gold medal in clinical surgery. She was appointed junior medical officer at the Birmingham City Fever Hospital and held appointments also at the Women's Hospital, Sparkhill. She was then elected senior house surgeon at the Children's Hospital, Western Bank, Sheffield, where her premature death occurred from pneumonia after a week's illness. Miss Jameson had started her career so well that her death at its outset must be regarded as a distinct loss to the medical profession, while general sympathy will be extended to her family.

GEORGE PADDOCK BATE, M.D. BRUX., F.R.C.S. EDIN., C.B.E.

THE death of Dr. Paddock Bate, by which our profession has lost one of its oldest practitioners, occurred on Dec. 1st, on the eve of his eighty-second birthday, at his residence in Hackney. He was a fine example of a practitioner whose knowledge of hygiene kept abreast of the science, and who developed into an important sanitary authority. A student and prizeman at Westminster Hospital, he qualified over 60 years ago as M.R.C.S. Eng., taking later the F.R.C.S. Edin. and the M.D. Brussels. He carried on a large general practice, and was also divisional surgeon of the J Division of the Metropolitan Police, a certifying factory surgeon, medical referee under the Workmen's Compensation Act, and an examiner in sanitary science to the Civil Service Commissioners. He was appointed medical officer of health for Bethnal Green nearly 50 years ago, and held the appointment until 1919, his position as a sanitary officer being recognised by his election to the presidency of the Society of Medical Officers of Health. He was an expert microscopist, and throughout his life spent much of his spare time in microscopic studies. He was also an expert worker with the lathe, turning in metal and wood, and had a real flair for the comprehension of intricate machinery. His favourite recreation was chess, and he was one of the original members of the Four-handed Chess Club. He held his post of certifying factory surgeon for the exceptionally long period of 35 years, and as far as one thing more than another in his useful career may be considered to have gained him the distinction of C.B.E., it was the thoroughness with which he discharged his factory work. He was also surgeon-lieutenant to the 5th Battalion of the Rifle Brigade.

Dr. Bate married Elizabeth, the daughter of the late Mr. Thomas Farr, and one of his sons, Dr. John Bate, succeeded him in his practice.

Medical News.

UNIVERSITY OF LONDON.—At examinations held recently the following candidates were successful:—

THIRD (M.B., B.S.) EXAMINATION FOR MEDICAL DEGREES.

Honours.—Hannah Billig (*a*), London Sch. of Med. for Women; Roland H. Boggon (*d*), St. Thomas's Hosp.; Margaret Du Boulay Evans (*c*) and Alice M. C. Macpherson (*b*), London Sch. of Med. for Women; Walter R. Spurrell (*b*, *d*, University Medal), Guy's Hosp.; William A. Taylor (*a*), London Hosp.; and Paul B. Wilkinson (*a*, *d*), King's Coll. Hosp.

(*a*) Distinguished in Medicine. (*b*) Distinguished in Pathology. (*d*) Distinguished in Surgery. (*c*) Distinguished in Midwifery.

Pass.—Agnes L. Adam, London Sch. of Med. for Women; Arthur J. Amor, Middlesex Hosp.; Roland G. Anderson, St. Bart.'s Hosp.; Geoffrey Anderton, St. Mary's Hosp.; Colin B. Andreae, Guy's Hosp.; Kathleen J. Atkinson, King's Coll. Hosp.; Diana J. K. Beck, London Sch. of Med. for Women; Margaret A. L. Buckner and Dorothy M. Campbell-Meiklejohn, Univ. Coll. Hosp.; Enid A. Ceiriog-Cadle, London Sch. of Med. for Women; Florence C. Churcher, Univ. Coll. Hosp.; Eileen M. Clarke, Vera E. Claxton, Marian B. Coleman, and Dorothy Collishaw, London Sch. of Med. for Women; Anthony B. Cowley, St. Bart.'s Hosp.; Donald P. Crawford, St. Thomas's Hosp.; Reginald N. Curnow, St. Bart.'s Hosp.; Reginald Y. Dawbarn, University of Liverpool; Mostafa Dia, St. Mary's Hosp.; Ethel Downing, London Sch. of Med. for Women and St. Mary's Hosp.; David M. B. Evans, Charing Cross Hosp.; Desmond W. G. Faris, London Hosp.; Helen E. Ferguson, Charing Cross Hosp.; Cyril F. Fernando, Univ. Coll. Hosp.; Geoffrey R. Ford, Guy's Hosp.; Donald Frost, London Hosp.; Cecil P. R. Gibson, St. Thomas's Hosp.; George S. Hale, St. Bart.'s Hosp.; Frederick J. S. Hall, St. Mary's Hosp.; Kathleen M. D. Harding, London Sch. of Med. for Women and St. Mary's Hosp.; Noel G. Harris, St. Thomas's Hosp.; Constance E. Harrison, London Hosp.; Freda K. Herbert, King's Coll. Hosp.; Margaret R. Herford, St. Mary's Hosp.; Leslie G. Housden, Guy's Hosp.; John C. Hoyle, University of Manchester; Marjorie R. Hubert, London Sch. of Med. for Women and St. Mary's Hosp.; Edward C. Hudson, London Hosp.; Dorothea A. C. Hunt and Adèle H. Jacob, London Sch. of Med. for Women; Maurice E. M. Jago, Guy's Hosp.; Marjorie H. James, London Sch. of Med. for Women; Herbert M. R. Jones, Middlesex Hosp.; Kathleen M. Lankester, London Sch. of Med. for Women; Herbert Lord, Univ. Coll. Hosp.; Catherine B. McArthur, London Sch. of Med. for Women; Douglas G. Martin, St. Bart.'s Hosp.; Cecil P. Miller, St. George's Hosp.; Geoffrey O. Montgomery and Eileen S. Morris, Univ. Coll. Hosp.; David C. Mundy, University of Birmingham; Eric E. Neser, Guy's Hosp.; Frances C. Nicklin, London Hosp.; Muriel L. M. Northcote, London Sch. of Med. for Women; Maurice C. O'Connor, St. George's Hosp.; Milroy A. Paul, King's Coll. Hosp.; Philip R. Peacock, Middlesex Hosp.; Marie Pedersen, London Sch. of Med. for Women; George H. Pitt, Guy's Hosp.; Thomas W. Preston, King's Coll. Hosp.; Montague D. Rawkins, St. Bart.'s Hosp.; Dorothy M. Rees and Nellie H. Reynolds, King's Coll. Hosp.; Eric W. Riches, Middlesex Hosp.; William G. Roberts, Guy's Hosp.; Thomas Robson, St. Thomas's Hosp.; William F. Roper, Guy's Hosp.; William H. Royal, University of Bristol; Navroji K. Sahiar, Grant Medical Coll. and Univ. Coll. Hosp.; Katharine F. E. Sanders, King's Coll. Hosp.; Stephen J. Scurlock, London Hosp.; Mung Bing Seng and Cyril Shepherd, Guy's Hosp.; Kenneth A. Soutar, St. Thomas's Hosp.; Joshua Stein, Univ. Coll. Hosp.; Ruby O. Stern, Charing Cross Hosp.; Leanagé Don John Telesphor and Alan K. Thomas, Univ. Coll. Hosp.; George W. R. Thomson, St. Thomas's Hosp.; Jean S. Thomson, London Sch. of Med. for Women; William G. Thwaites, St. Thomas's Hosp.; Beatrice E. Turner and Bertha Turner, London Sch. of Med. for Women; Neville A. A. van Buuren, Univ. Coll. Hosp.; Edward G. L. Walker, St. Thomas's Hosp.; John H. M. Walker, Univ. Coll. Hosp.; Helen D. Watson, London Sch. of Med. for Women; Mary A. Wiles, King's Coll. Hosp.; and Muriel M. Yates, London Sch. of Med. for Women and St. Mary's Hosp.

The following students have passed in one of the two groups of subjects:—

Group I.—Roderick T. Bannister, St. Bart.'s Hosp.; John R. Blazé, Ceylon Medical Coll. and Univ. Coll. Hosp.; Margaret H. Brown, Charing Cross Hosp.; Dorothy Durance, London Sch. of Med. for Women; William Fletcher-Barrett, St. George's Hosp.; Edith L. Gould, London Sch. of Med. for Women; Francis H. K. Green, St. Bart.'s Hosp.; Kempton P. Hare and Dorothy M. Howse, Univ. Coll. Hosp.; Ruth T. Hurnard, London Sch. of Med. for Women; Iorwerth H. Jones, Charing Cross Hosp.; Ambrose J. King, London Hosp.; Nora M. Leesmith, St. Mary's Hosp.; Gwynedd M. E. Olive and Catherine E. Orr-Ewing, London Sch. of Med. for Women; Howard L. Peake, Guy's Hosp.; John Pearce, Westminster Hosp.; Charles E. Pearsons, St. Bart.'s Hosp.; Elsie E. A. Ridley, London Sch. of Med. for Women; Aaron G. Silver, Middlesex Hosp.; Norman R. Smith, St. Thomas's Hosp.; Kenneth H. Southall, Univ. Coll. Hosp.; Frederick O. T. Strange, King's Coll. Hosp.; Herman Treissman, St. Bart.'s Hosp.; Kathleen E. Tresillian, London Hosp.; Reginald L. Waterfield and William S. Whimster, Guy's Hosp.; Emily A. C. Wilson, Charing Cross Hosp.; and Jessie Wiltshire and Ada R. Winter, Univ. Coll. Hosp.

Group II.—Harold C. Beccle and Louis F. Beccle, Guy's Hosp.; Philip S. Bell, Westminster Hosp.; Samuel Berman and Eric H. J. Berry, Guy's Hosp.; Frank A. Bevan and Ernest J. Blackaby, St. Bart.'s Hosp.; Margery G. Blackie, London Sch. of Med. for Women; Louis N. R. Comty, London Hosp.; Anne A. Craig and Victoria M. Crosse, London Sch. of Med. for Women; Evelyn J. Curtis, King's Coll. Hosp.; Gweneth M. Daniel, Westminster Hosp.; David J. Davies, Middlesex Hosp.; Howell J. Davies, St. Mary's Hosp.; Thomas D. Deighton, St. Bart.'s Hosp.; Margaret H. Duncan, London Hosp.; Harry G. Estcourt, Middlesex Hosp.; William G. Evans, St. Mary's Hosp.; Duncan B. Fraser, St. Bart.'s Hosp.; Winefride M. Gibson, Charing Cross Hosp.; Agness H. S. Gray, London Sch. of Med. for Women; John G. Hamilton, London Hosp.; Helen M. Harris, London Sch. of Med. for Women; Frederick C. Haward and William E. Heath, St. Thomas's Hosp.; Thomas R. Hill, Guy's Hosp.; Richard C. Howard, St. George's Hosp.; Leslie I. Hyder, King's Coll. Hosp.; Amelia M. Ison, Charing Cross Hosp.; Herbert N. James, St. Mary's Hosp.; Isabel E. S. James, King's Coll. Hosp.; Robert O. Jones, Middlesex Hosp.; Frances M. Kenyon, King's Coll. Hosp.; Howel Lewis, Guy's Hosp.; Reginald H. Little, St. Thomas's Hosp.; James H. Macpherson, King's Coll. Hosp.; Joan G. Malleson, Charing Cross Hosp.; John P. Monkhouse, St. Mary's Hosp.; Mary A. Monro, London Sch. of Med. for Women; Margaret I. Neal, London Hosp.; John O. Oliver, St. Thomas's Hosp.; Stephen M. Power London Hosp.; Janet McL. Robertson and Constance G. Sloan, St. Mary's Hosp.; John S. Symons, London Hosp.; Josephine I. Terry, St. Mary's Hosp.; Janet Welch, London Sch. of Med. for Women; and John C. Young, Guy's Hosp.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary meeting of the Council of the College was held on Dec. 10th, Sir John Bland-Sutton, the President, being in the chair. Mr. Charles Herbert Faggo (Guy's Hospital) was re-elected, and Mr. Russell John Howard (London Hospital) was elected a member of the Court of Examiners in Surgery.—With reference to the resolution carried at the annual meeting of the Fellows and Members, the following reply was adopted: "The Council has fully and earnestly considered afresh, at ordinary meetings and at a specially convened meeting, the question of the direct representation of Members on the Council, and has arrived at the following decision. In view of the urgent need for greater facilities for carrying on the examination work of the College, the Council proposes to proceed with the application for a Supplemental Charter to effect some modifications of the existing arrangements and at the same time to remove inequalities in the status of men and women holding the Diplomas of the College. The Council has confined this proposed Supplemental Charter to points which it believes could not reasonably be regarded as controversial, and is not prepared to apply in this Charter for an alteration in the constitution of the Council of the College, having regard to the difference of opinion prevailing on that question."—Diplomas of Fellow were conferred upon 33 candidates as the result of the examination held from Nov. 19th to Dec. 3rd, for which 105 candidates presented themselves. Thirty-six were successful at the examination, but three—H. Burt-White

(St. Bart.'s), N. L. B. V. Eckhoff (Guy's), and A. C. Maconie (St. Bart.'s)—not having attained the requisite age are not entitled to receive the diploma. The following are the names and medical schools of the successful candidates :—

John R. Barnett, Birmingham and St. Mary's; Martin D. S. Button, London; George H. Caiger, Cambridge and St. Bart.'s; Jivan D. Dhruv, Bombay and St. Thomas's; Charles Donald, Aberdeen and London; Hugh Donovan, Birmingham; Keith M. K. Duff, Guy's; Norman L. Edwards, Manchester and St. Bart.'s; John D. Grierson, Edinburgh and London; Frank W. Harlow, Durham; Francis J. Jauch, Middlesex and London; Norman A. Jory, St. Bart.'s; Arthur R. Lister, Cambridge and London; Andrew C. McAllister, King's Coll.; Eric E. Mackay, Melbourne and London; Norman S. Macpherson, St. Thomas's; Leslie Morris, Manchester and St. Bart.'s; John A. Panton, Manchester and Guy's; Reginald T. Payne, St. Bart.'s; Andrew McK. Reid, Liverpool and London; Owen W. Roberts, King's Coll.; Clifford H. C. Searby, Melbourne and London; George S. Sinnatamby, Ceylon and St. Bart.'s; Archibald G. Smith, Glasgow and Middlesex; Francis A. R. Stammers, Birmingham; Edward P. Stibbe, Charing Cross; James W. T. Thomas, Cardiff and Middlesex; Trevor M. Thomas, Cambridge and St. Bart.'s; Guy L. Thompson, Cambridge and London; Basil M. Tracey, St. Bart.'s; Alfred S. H. Walford, Cambridge and St. Thomas's; Hugh A. B. Whitelocke, Oxford and King's Coll.; and Charles Paul Wilson, Middlesex.

Licences in Dental Surgery were also conferred upon 79 candidates who have passed the requisite examinations and have complied with the by-laws. The following are the names and schools of the successful candidates :—

G. Allen, London; F. L. Anthony, Royal Dental; S. D. Badman, London; I. A. Barlow, Guy's; M. A. Bassett, Royal Dental; Doreen E. Bath, Royal Dental; A. E. J. Berry, Manchester; C. B. Boyd, Guy's; J. M. W. Boyd, Liverpool; R. N. Bragg, Royal Dental; L. J. Brown, Guy's; J. M. Bruce, Royal Dental; W. S. Carey, Bristol; P. S. Clarence, Guy's; D. L. Collier, Univ. Coll.; L. C. Darch, Royal Dental; T. S. Davidson, Guy's; Ivy G. Dey, Royal Dental; E. F. S. Dodd, Guy's; O. B. Easom, Univ. Coll.; J. C. A. Edmonds, Royal Dental; C. H. Edney, H. Falk, M. Farwell, and G. C. Ferguson, Guy's; J. A. Flitcroft, Manchester; W. C. G. Ford, R. D. G. Gain, and P. Gerrard, Guy's; Florence A. Hagen, Univ. Coll.; E. A. Haigh, Manchester; R. H. Hancock, Guy's; F. C. Hatherill, Royal Dental; H. Hazell, Bristol; L. de P. Henriques, London; D. R. House, Bristol; J. E. Inman, Royal Dental; E. R. Irish, Guy's; L. C. Isbill, Royal Dental; H. A. Johnson, Birmingham; R. R. Jones, London; H. D. Joyce and Mary M. Kelham, Royal Dental; H. D. Kendrick and J. W. Kingston, Guy's; Elsie E. Lennone, Royal Dental; J. Levi, Univ. Coll.; R. C. Lilleran, Guy's; F. J. Lord and W. Martland, Royal Dental; W. I. Matthews, Liverpool; H. Metcalfe, Manchester; H. Middleburgh, London; V. R. Morgan, Birmingham; E. A. Moss and H. Myers, Guy's; Vakia Isobel Neish, Royal Dental; B. W. C. New, Univ. Coll.; R. M. Phillips, Guy's; C. E. Place, London; A. W. Y. Price and T. L. Quinn, Royal Dental; R. E. Rix, Guy's; F. D. Robinson, Liverpool; W. R. Rowland-Hill, Guy's; R. B. Samolsky and G. M. Sanderson, Royal Dental; A. Schultz, London; B. M. Shaffner and J. F. R. Sheahan, London; F. W. M. Siems, Royal Dental; H. S. Smyth, Univ. Coll.; P. M. Taleyarkhan, Royal Dental; A. W. Thorne, Bristol; J. D. J. Visser and C. M. White, Guy's; G. C. L. Wildsmith, Royal Dental; S. Wood, Manchester; and E. C. Woodhead, Guy's.

UNIVERSITY OF DUBLIN, SCHOOL OF PHYSIC, TRINITY COLLEGE.—At examinations held recently the following were the successful candidates :—

FINAL MEDICAL EXAMINATION.

Part II., Medicine (M.B.).—*Charles R. Boland, *Seymour F. Heatley, *James W. Bowden, *Ernest E. Satchwell, Robert L. Forsyth, Ransome M. Allardyce, Derek St. Clair Mackenzie, Henry J. Roche, Arthur B. Brooks, Richard G. Keays, John H. M'Lean, Denis J. Cussen, Robert V. Franklin, James C. C. Boyle, Aileen Fair, George A. Miller, Wilfred Sinclair, William J. A. M'Mahon, Frances E. O'Connor, Mary C. Livingston, Charles E. M'Causland, Cicero G. Nel, Launcelot W. R. Haskins, William G. S. Maxwell, Mabel E. Brittain, Gideon J. Joubert, Dorothy A. M'Entire, Grace J. Rankin, Barend P. Pienaar, Wolsey C. Sloan, William R. G. Gallagher, Howard St. George M'Kenny, William J. Van Zijl, William Magowan, Mary S. Miller, William Russell, Elspeth V. D. Howat, William O. Maule, Philip Coleman, Margaret W. Pike, Norah E. Fenton, Margaret E. Pedlow, Henrietta Armstrong, Jane D. Fulton, John Johnston, Patrick Wallace, and Charles H. Wilson.

Surgery (B.Ch.).—*William B. Rountree, *James E. M'Cauley, *Malben A. W. Roberts, Philip B. Robinson, James W. Bowden, Jack M. Selkon, William J. A. M'Mahon, Grace J. Rankin, John E. Stokes, William G. S. Maxwell, James J. Cusack, Gladys M. A. Colquhoun, Elias Rakoff, Alexander D. M'Lean, Harry Nelson, Angel V. B. Crawford, Henry M. Nevin, George A. Walmsley, Robert A. J. Holmes-Ievers, Francis H. M'Kenna, John St. Clair, Wilfred Sinclair, William R. G. Gallagher, Kathleen M. Ball, Carel R. J. Roland, George G. McFarland, Philip Coleman, William O. Warrington, James C. C. Boyle, Aileen Fair, Philip F. Palmer, Margaret E. Pedlow, William J. Van Zijl, Cecil H. Keller, Daniel J. Roux, Denis J. Cussen, Francis V. Duke, Charles E. M'Causland, Jane D. Fulton, Elspeth V. D. Howat, Dorothy A. M'Entire; Christopher Lord-Flood, Barend P. Pienaar, Patrick Wallace, William H. Coen, Margaret Hill, Frances E. O'Connor, Ahmed A. Shafik, and Harris Tomkin.

Midwifery (B.A.O.).—*Henry O. Clerke, *Robert E. Hadden, Arthur B. Brooks, Arthur J. Conlin, George S. Gardner, Kathleen I. Purdy, Gilbert T. L. Archer, Robert A. J. Holmes-Ievers, Thomas J. W. Keown, Robert H. Mitchell, Desmond Blewitt, Roy K. Carson, Arthur R. Gray, John C. T. Sanctuary, Edward H. Harte, George E. Dodds, James F. MacMahon, Margaret H. Donaldson, Johan N. S. Gouws, Silver Margaret E. Deane-Oliver, Richard T. P. Tweedy, Annette K. Wood-Martin, Thomas F. M. Woods, Victor G. Horan, Andrew E. A. O'Byrne, George W. H. Townsend, Cicero G. Nel, Arthur N. H. Odbert, Ernest H. Hall, Myer Hoffman, Isabella K. M'Neilly, Edward W. Bingham, Gerald V. A. Griffith, Daniel A. O'C. Quinlan, Victor St. George Vaughan, Herbert A. Brittain, Menzies L. M'Cauley, Mabel E. Brittain, Kathleen R. Byrne, James G. M'Dowell, Donal B. O'Sullivan-Beare, Lionel B. Somerville-Large; and Robert C. U. Warrington.

* Passed on high marks.

FINAL DENTAL EXAMINATION.

Dental Surgery and Pathology; Dental Mechanics and Metallurgy; Orthodontics.—William G. Martin, Frederic D. Matthews, George A. Cowan, Robert H. McKeag, and Maurice C. Cowan.

UNIVERSITY OF OXFORD: *Radcliffe Travelling Fellowship*, 1926.—An examination for a Fellowship of the annual value of £300, and tenable for two years, will begin on Feb. 16th, 1926. The examination will occupy four days. Papers will be set in physiology, pathology, and preventive medicine, and a subject will be proposed for an essay. There will also be a practical examination in pathology. Candidates must have passed all the examinations required by the University for the degree of Bachelor of Arts and for the degree of Bachelor of Medicine. They must not have exceeded four years from the time of passing the last examination required for the degree of Bachelor of Medicine. The successful candidate must before election declare that he intends to devote himself during the period of his tenure of the Fellowship to the study of medical science and to travel abroad with a view to that study. Intending candidates should send their names, addresses, qualifications, &c., to the Regius Professor of Medicine, University Museum, on or before Feb. 3rd.

OLD EPSOMIAN CLUB.—The annual meeting was held at the Trocadero Restaurant on Dec. 10th, followed by the annual dinner. The routine business of the meeting showed that the club was in a flourishing condition, over 50 new members having joined during the past year. The dinner was attended by nearly 100 members, and a most pleasant evening resulted. Amongst the guest present were Sir Humphry Rolleston and Mr. Bernard Lamb, secretary of Epsom College. During the dinner a presentation was made to Mr. S. Maynard Smith of a George II. cream jug, in recognition of his services as hon. secretary of the club during the years 1910–24, during which time the club was entirely reconstituted.

NORTH-EAST LONDON POST-GRADUATE COLLEGE.—This college is holding a special post-graduate course at the Prince of Wales's General Hospital, N., from Jan. 11th to Jan. 23rd. This will consist of demonstrations of present-day clinical methods in the mornings from 10.30 A.M. to 1 P.M. each day, demonstration of groups of selected clinical cases from 2 to 2.45 P.M., general hospital work, clinics, operations, &c., in the various general and special departments of the hospital from 2.30 P.M. onwards, and a clinical lecture each day from 4.30 to 5.30 P.M. These lectures, which are free to members of the Fellowship of Medicine as well as to members of the college, will be given by Dr. Eric Pritchard, Prof. Hugh MacLean, Dr. Frederic Thomson, Dr. P. Manson-Bahr, Dr. F. G. Crookshank, Mr. H. W. Carson, Dr. C. E. Sundell, Mr. A. B. Giles, Dr. L. R. Yealland, and Mr. W. E. Tanner. On the two Saturday mornings there will be demonstrations of illustrative cases at the L.C.C. Mental Hospital, New Southgate, N., and at the North-Eastern Fever Hospital, St. Ann's-road, respectively. A syllabus of the course, with full particulars, may be obtained from the Secretary of the Fellowship of Medicine, at 1, Wimpole-street, W. 1, or from the Dean of the College.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Several courses have been arranged under the auspices of the Fellowship of Medicine for January, 1926, including an intensive course in general medicine, surgery, clinical pathology, and the special departments from Jan. 11th to 23rd at the Prince of Wales's General Hospital. From Jan. 4th throughout the month a series of lecture-demonstrations on Tuesdays and Saturdays at 11 A.M. will be given at the Bethlem Royal Hospital on psychological medicine. On the same date at the West End Hospital there will begin a month's course in neurology, including lectures and demonstrations of selected cases, at 5 P.M. The North-Eastern Hospital will hold a three weeks' course in infectious fevers on Wednesdays at 2.30 P.M. and Saturdays at 11 A.M. A course in diseases of children will take place at the Queen's Hospital from Jan. 18th to 30th. Classes will be held from 10 A.M. throughout the day in the various departments. At the National Hospital for Diseases of the Heart a whole-day course will take place from Jan. 18th to 30th. It is intended to hold special demonstrations in clinical surgery weekly throughout the year, and those arranged for next month are: Jan. 11th, 5 P.M., Mr. J. P. Lockhart-Mummery at St. Mark's Hospital; 19th, 2 P.M., Mr. H. S. Souttar at the London Hospital; and the 27th, 2 P.M., Mr. Rock Carling at the Westminster Hospital. Subsequent announcements of these will appear in the Medical Diary. The Fellowship of Medicine has arranged a further series of lectures from January to March on general subjects of interest. The opening lecture will be given by Dr. Herbert Spencer on Abdominal Palpations in Pregnancy (with lantern demonstration), on Jan. 21st, at 5 P.M., in the Hall of the Medical Society of London. A copy of each syllabus and of the Fellowship General Course Programme may be obtained on application to the Secretary of the Fellowship, 1, Wimpole-street, London, W. 1.

LONDON HOSPITAL.—At a meeting of the Court of Governors held last week Lord Knutsford announced that an anonymous donor had given £50,000 for research work at the hospital. The Queen has consented to succeed Queen Alexandra as President of the Hospital.

SOCIETY FOR THE STUDY OF INEBRIETY.—A meeting will be held in the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W., on Jan. 12th, 1926, at 4 P.M., when Dr. F. S. D. Hogg will open a discussion on Legislative Measures for the Control of Alcohol and Drug Addicts.

ROYAL SANITARY INSTITUTE.—This institute will celebrate its jubilee by holding an imperial congress in London from July 5th to 10th, 1926, over which Mr. Neville Chamberlain will preside. The opening meeting will be held in the Guildhall. Among those who will preside over the various sections and conferences into which the work of the congress will be divided are Sir William Pryke, Sir George Newman, Sir Charles Ruthen, Sir William Hardy, F.R.S., Sir Charles Wakefield, Sir William J. Collins, Mr. W. Phene Neal, Mr. G. W. Humphreys, and Dr. G. F. Buchan.

PEOPLE'S LEAGUE OF HEALTH.—The lecture programme for 1926 is now arranged and lectures will begin at the end of January next. Among those taking part in the courses are Sir Frederick Mott, F.R.S., Sir Maurice Craig, Sir Robert Armstrong-Jones, Dr. Bernard Hart, Dr. A. F. Tredgold, Dr. T. Beaton, Dr. R. H. Cole, Dr. W. A. Potts, Dr. Leonard Hill, F.R.S., Prof. R. H. A. Plimmer, Prof. E. Mellanby, Dr. M. J. Rowlands, Sir Henry Gauvain, Dr. P. C. Varrier-Jones, and Dr. F. E. Wynne. Lectures will be delivered at the house of the Medical Society of London, Chandos-street, W. 1, and at the Regent-street Polytechnic, London. Further particulars can be obtained from Miss Olga Nethersole at 12, Stratford-place, London, W.

ROSS INSTITUTE AND HOSPITAL FOR TROPICAL DISEASES, Putney Heath.—Sir Ronald Ross, Director-in-Chief of the Institute, sailed last week on the s.s. *Yorkshire* for Ceylon to set in motion a scheme which should, with the coöperation of all plantation companies, drive malaria out of the island. In certain parts of Malaya, Southern India, and Assam, groups of plantation companies are already dealing effectively with the cleansing of small areas. Sir Ronald Ross's intention is to deal with Ceylon as a whole, grouping plantation companies geographically, each group to be dealt with by a president malarial expert, who will carry out control measures adapted to the conditions peculiar of the particular locality, reporting from time to time to a central committee the progress made and difficulties encountered. Every facility will be given to individuals to take part in the campaign.

MEDICO-LEGAL SOCIETY.—The annual dinner of this society, held at the Holborn Restaurant on Dec. 11th, was well attended, professional women being present for the first time. Earl Russell, a past president of the society, took the chair in the absence of Lord Justice Atkin through illness. Lord Riddell proposed "Medicine and the Law," to which Sir StClair Thomson and Mr. T. R. Hughes, K.C., responded. Both foreshadowed a closer understanding between doctors and lawyers. Sir Ernley Blackwell, in proposing the "Medico-Legal Society," illustrated the mercifulness of the law by the fact that in a single year 75,000 convicted persons were set at liberty without punishment. Lord Russell, in reply, said that it was hoped in the next year or two to advance the scheme of a medico-legal institute for London, with laboratories and museum, the investigating side to be under the control of the Home Office, the teaching side to be associated with London University. Sir Bernard Spilsbury proposed "Our Guests," to which Dr. Vincent Dickinson and Sir A. W. Renton replied.

Lord Cave has been appointed a trustee of the Beit Memorial Fellowships for Medical Research.

THE Board of Governors of St. Mary's Hospital, London, have unanimously elected the Earl of Balfour to the office of President of the hospital.

LEEDS MEDICAL CHARITIES APPEAL.—The results of the appeal made in 1923 by Sir Edwin Airey, then Lord Mayor, has now been published. £90,327 was subscribed, all classes of the community contributing, and the money has been allocated as follows: the General Infirmary, £63,889; the Hospital for Women and Children, £10,003; the Public Dispensary, £9,935; and the Maternity Hospital, £6500. The first object of the appeal was to wipe off the hospital debts. This has been done, and the institutions receive also a valuable addition to their funds.

BRITISH LEGION: *British Serbian Units Branch.*—The annual dinner of this branch was held on Dec. 11th, Sir James Purves-Stewart, the President, being in the chair. Those present included Sir James Berry and Lady Berry, Dr. Alice Hutchison, Prof. Louise McIlroy, Lieut.-Colonel J. Johnston Abraham, Sir William Simpson, and Miss Flora Sandes, and all civil and military units were represented. Dr. Hutchison proposed the toast of the British Serbian Units Branch, Mr. C. R. Cooke-Taylor, chairman of the committee, replying. Miss Nina Boyle proposed the guests, Mr. Diouritch, minister plenipotentiary of the Serbs, Croats, and Slovenes in London, in reply, said that Serbia, like Great Britain, now wanted to forget the war and to live in peace. Bishop Keating and Sir William Simpson also responded for the guests. The health of the President was proposed by Prof. McIlroy and Sir James Purves-Stewart briefly replied.

DONATIONS AND BEQUESTS.—Mr. Henry Franc, of Fielden Park, West Didsbury, left £1000 each to the Manchester Royal Infirmary, to Ancoats Hospital and Dispensary, to St. Dunstan's Hostel for the Blind; £500 each to the Salford Royal Hospital, St. Mary's Hospital, Manchester, the Royal Manchester Children's Hospital, and the Manchester Victoria Memorial Jewish Hospital.—Mrs. Eleanor Emma de Wael, of Grange-gardens, Eastbourne, left £1000 to the London Hospital for naming a bed in perpetuity in memory of her son, Cecil Hubert.—Mr. James Shorrock, of The Beeches, Bowdon, Cheshire, left £2000 to the Manchester Royal Infirmary; £2000 to St. Mary's Hospital, Manchester; £1000 to the Altrincham Provident Dispensary and Hospital. His wife having predeceased him, a sum of £100,000 is to be divided between certain people and institutions, including the Manchester Royal Infirmary, the Altrincham Dispensary and Hospital, and St. Mary's Hospital, Manchester.—At a Court of Governors of the London Hospital on Dec. 9th, Lord Knutsford announced the receipt of a gift for research work of £50,000, from a donor who refused to permit his name to be mentioned. The donor has nominated a gentleman to represent him on a committee of three or four to decide how the money should be utilised.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Smoke Nuisances.

ON Thursday, Dec. 10th, Dr. SALTER introduced a Bill to amend the law relating to smoke nuisances and noxious and offensive gases.

Vivisection.

On Tuesday, Dec. 15th, Lieut.-Commander KENWORTHY presented a petition from 2567 persons resident in Torquay praying that the practice of vivisection might be discontinued.

HOUSE OF COMMONS.

WEDNESDAY, DEC. 9TH.

Ill-health in the Navy.

Sir WALTER DE FRECE asked the First Lord of the Admiralty how many men had been discharged from the navy for ill-health in each of the last three years, including 1925; in how many cases these men had claimed that their disability was due to service; in how many cases these claims had been admitted and in how many rejected; and whether, in any case, the said applicants had had the right of appeal.—Mr. DAVIDSON (Parliamentary Secretary to the Admiralty) replied: The numbers invalided in the three years in question are:—1923, 1474; 1924, 1330; 1925 (from Jan. 1st to Nov. 30th), 1335. Any man invalided from the navy has the right of appeal to the Board of Admiralty, under whose directions the naval medical authorities would give his case careful and sympathetic consideration. As regards an appeal to any medical tribunal beyond the Admiralty, I would refer my hon. friend to the several replies already given in this House on the subject—e.g., on April 1st, Feb. 10th, and Dec. 15th last. I regret that the information asked for in the remainder of the question cannot be given without a detailed examination of the documents of over 4000 cases, for which no margin of staff is available.

Ill-health in the Army.

Sir Walter de Frece asked the Secretary of State for War how many men had been discharged from the army in each of the last three years, including 1925, for ill-health; in how many of these cases the men had claimed that their disability was due to service; in how many cases these claims had been admitted and in how many rejected; and whether, in any case, the said applicants had had the right to appeal and, if so, to whom.—Captain D. King replied: The number of men invalided from the army in each of the last three years ending on Sept. 30th have been 2020, 2073, and 2606 respectively. No statistics are available showing in how many of these cases the men claimed that their disability was attributable to service, but the number of cases in which disability was accepted as due to service were 373, 419, and 317 respectively. Applicants have no right of appeal against the decision of the Chelsea Commissioners. The Chelsea Commissioners are an independent body, who adjudicate upon the soldier's claim, and are not subject to the control of any Government department in administering the pension regulations.

Use of Toxoid in Schools.

Mr. Lindley asked the Minister of Health the names of the schools referred to on pages 57–60 of his report for 1924; whether toxoid was used at the B school as well as at the A school; whether the consent of the parents was obtained at the A school as well as at the B school; and where the toxoid was manufactured.—Mr. N. Chamberlain replied: The report referred to is the Report of the Chief Medical Officer of the Ministry. As regards the first and last parts of the question, I think it is undesirable in the public interest to state the names of these schools or of the laboratory where the toxoid was manufactured. The answer to the second and third parts of the question is in the affirmative.

Thursday, Dec. 10th.

Institutional Treatment of Pension Patients.

Mr. Duckworth asked the Minister of Pensions the number of men who had been in continuous institutional treatment by his department since the war; and whether, with a view to possible speedier recovery, there was any transfer of such patients from one institution to another.—Major G. C. Tryon replied: I regret that I have no record of the number of cases which have been in receipt of continuous institutional treatment since their discharge from service. With regard to the latter part of the question, I may say that all cases in receipt of hospital treatment are subject to periodic inspection and report, and that special attention is given to those cases which have been for a prolonged period in receipt of this form of treatment, with a view to considering whether any other form of treatment or institution is more suitable to their condition.

Panel Doctors and Pension Patients.

Mr. Pielou asked the Minister of Pensions whether he was aware that the Ministry were referring disabled men for treatment to the panel doctor but, in some cases, refusing the recommendation of that panel doctor so far as the payment of treatment allowances was concerned; and whether he would see that due regard was paid by the Ministry to the treatment prescribed by the panel doctor in so far as it affected the treatment allowances regulations.—Major G. C. Tryon replied: I would remind my hon. friend that the conditions governing the grant of allowances under Article 6 of the Royal Warrant are not identical with those which determine certification for the purposes of health insurance, with which the insurance practitioner is concerned. For the purpose of the former allowances, certification by a medical officer of the Ministry is required under the terms of the Warrant. At the same time, any information which may be supplied by a panel doctor with regard to one of his pensioner patients is always taken into careful consideration in connexion with any certificate required to be given by an officer of the Ministry.

Reconsideration of Final Awards.

Mr. Pielou asked the Minister of Pensions the number of cases that had been recommended by local Ministry doctors for reconsideration by the correction of errors board; and the total number of such cases that had resulted in the final award being increased.—Major G. C. Tryon replied: I am unable to furnish statistics on the lines specified by my hon. friend. But I may say that up to Nov. 21st last 2550 cases had been dealt with by the Ministry. In 1402 of these cases a further grant had been made. In the remaining cases considered it had been found, either on local medical advice or otherwise, that there was no ground for disturbing the final award.

Area Deputy Medical Commissioners.

Mr. Montague asked the Minister of Pensions what was the number of medical officers holding the appointment of area deputy commissioner of medical services, and what was the average number of square miles in each area outside the Metropolis; and whether any deputy commissioner of medical services was responsible for more than one area as originally constituted under the War Pensions Act, 1921.—Major G. C. Tryon replied: The number of area deputy commissioners of medical services is 57, of whom five are stationed in the metropolitan areas. The square mileage of the districts covered by these medical officers is irrelevant to the question of their proper distribution which is made and, where necessary, varied in accordance with the distribution and needs of the ex-Service population. In the more densely populated districts, where the work is heaviest, the deputy commissioners are provided with assistants, who number 30 in all. The reply to the last part of the question is in the affirmative.

Pensioners in Mental Institutions.

Mr. Gibbins asked the Minister of Pensions what proportion of the 26,000 in receipt of treatment with allowances were inmates of mental institutions; what was the number of chronic cases which had been more or less under treatment since discharge; and whether, particularly in the case of neurasthenics, he would consider the possibility of awarding a good life pension, and release the men from treatment.—Major G. C. Tryon replied: About 6000 of the total number of cases under treatment are inmates of mental institutions. Apart from this class of case, there are a substantial number of men who have received prolonged periods of treatment since their discharge. Many of them—e.g., those suffering from paraplegia or severe cases of wound and injury—require constant medical attention and skilled nursing. Others, although happily not in this condition, are, in accordance with medical advice, receiving prolonged institutional treatment and care, combined, where possible, with occupation. It is not the intention of the Ministry that cases should indefinitely or unnecessarily remain in an institution, and where it is considered by my medical advisers that any case can more suitably be dealt with by discharge from institutional care, with an appropriate rate of pension, this course is adopted.

Lead Poisoning Among Pasters.

Mr. Robinson asked the Home Secretary how many cases of lead poisoning occurred among pasters engaged in the manufacture or repair of electric accumulators in the years 1921, 1922, 1923, and 1924 respectively; and whether any cases had been reported since the new code of regulations came into force on March 1st, 1925.—Sir William Joynson-Hicks replied: There were 5 such cases reported in 1921, 11 in 1922, 44 in 1923, and 42 in 1924. Since March 1st last there have only been 15 cases among pasters. The new regulations cannot be expected to have their full effect for a considerable time, but they appear to have already caused a substantial reduction in the number of cases.

Cases of Chemical Poisoning.

Mr. Robinson asked the Home Secretary how many cases of poisoning by carbon bisulphide, aniline poisoning, and chronic benzene poisoning had been reported since Feb. 1st, 1925, and what special steps were being taken by his department to diminish the risk of chemical poisoning.—Sir William Joynson-Hicks replied: Two cases of carbon bisulphide, and 80 cases of aniline poisoning have been reported, but no case of chronic benzene poisoning. Special steps are taken to diminish the risk by following up each case, and generally by the enforcement of the special precautions required by the Chemical Works Regulations of 1923. The whole subject is receiving special attention from the medical inspectors.

Medical Students and the Special Constabulary.

Mr. Scurr asked the Home Secretary whether he was aware that at a recent meeting of the medical students of London Hospital the dean of the students' guild stated that he had received a request from the Home Office that he should take steps to enrol the students of the hospital into a special branch of the special constabulary; that this action was taken in view of the possibility of industrial trouble in the spring; and that similar requests had been made to the deans of guild at St. Bartholomew's and Guy's Hospitals; and whether such request had been made by the Home Office, and the reason for the action.—Sir William Joynson-Hicks replied: I have not made any request such as the hon. Member suggests. The Commander of the

Headquarters Central Division of the Metropolitan Special Constabulary addressed an ordinary recruiting meeting of the students at the London Hospital last month, but I am informed that no statements as suggested in the question were made either by the commander or by the dean who introduced him to the meeting.

Epidemics and Closing of Schools.

Sir HUGH LUCAS-TOOTH asked the President of the Board of Education under what authority a county medical officer had the power to override the decision of the managers of a school, in a district infected with an epidemic, temporarily to close the school.—Lord E. PERCY replied: I assume that my hon. friend is referring to public elementary schools. I am advised that Section 20 (1) and Section 20 (2) (*a*) of the Education Act, 1921, enable the local education authority to give directions to the managers of a school as to the days on which the school is to be open. On the question of closure on medical grounds, the authority would act, of course, *upon the advice or with the approval of their medical officer.* My hon. friend will find some useful information on the subject in the memorandum on closure of, and exclusion from school, issued jointly by the Ministry of Health and my department.

The Use of Luminal.

Mr. SCURR asked the Minister of Health what steps, if any, were taken by his department to draw the attention of the medical profession to the dangers arising from the use of the drug luminal, especially as, when used for the treatment of epilepsy, serious danger arose unless the treatment was continued although the epilepsy was cured.—Mr. N. CHAMBERLAIN replied: I am advised that the effects of the drug have been very fully discussed in the medical press, and in view of the amount of attention which it has received it seems justifiable to assume that those doctors who use it are well aware of its action and possible risks.

Diphtheria Mortality in West Bromwich.

Mr. ROBERT RICHARDSON asked the Minister of Health why no reference was made, in the annual reports of the Chief Medical Officer of the Ministry of Health for the years 1922 and 1923, to the exceptionally high mortality and fatality from diphtheria which occurred in the county borough of West Bromwich in the years in question; whether any inquiry was made by his department in regard thereto and, if so, what special causes led to this exceptional incidence of the disease in this locality; how many of the cases were treated in hospital and how many proved fatal; and in how many of the cases treated in hospital was antitoxin administered and how many of such cases proved fatal.—Mr. N. CHAMBERLAIN replied: It is the fact that the mortality from diphtheria in West Bromwich was exceptionally high in 1922 and 1923, but the incidence was fairly constant throughout those years, and the occurrence presented no feature necessitating any special inquiry by my department or reference to the matter in the annual report of the Chief Medical Officer. The high incidence and fatality in 1922 were attributed by the medical officer of health to the fact that in the majority of cases medical assistance was not sought until the third or fourth day of the disease, and there was consequent delay in administering antitoxin. As regards 1923, the medical officer of health reported that more prompt recourse to medical assistance, which rendered earlier administration of antitoxin possible, had resulted in a reduction in the case mortality. In 1922, 96 cases were treated in hospital, of which 18 proved fatal: the figures for 1923 were 150 and 19 respectively. In all these cases antitoxin was administered.

Overcrowding in London Area.

Mr. THURTLE asked the Minister of Health if any statistics were available as to the number of rooms in the London County Council area which were occupied by four or more persons.—Mr. N. CHAMBERLAIN replied: The number of rooms in the administrative county of London occupied by private families at an average density of four or more persons per room was 18,847 at the census of 1921. No figures are available for any later date.

Inquiries into Conduct of Panel Doctors.

Lieut.-Commander KENWORTHY asked the Minister of Health whether, as the National Health Insurance Act, 1924, required that he should exercise his judicial powers in particular cases through special tribunals, whether the committees of inquiry set up to consider whether the continuance of a practitioner on the medical list would be prejudicial to the service were such tribunals; and what other tribunals had been prescribed under Section 91 (*c*) of that Act.—Mr. N. CHAMBERLAIN replied: The inquiry committees in question are appointed in accordance with regulations made under Section 24 (2) of the National Health Insurance Act, 1924, and are not governed by the provisions of Section 91 of that Act. Regulations made under Section 91 provide for the submission of disputes of the kind referred to in Section 90 to a special body of referees. Apart from the body of referees constituted for this purpose, no tribunals have been set up under Section 91.

Lieut.-Commander KENWORTHY asked the Minister of Health whether he was aware that a considerable section of insurance practitioners desired to be given a general right of appeal in the courts against his decisions; that this desire was recently voiced by a public conference of delegates representing not less than 5000 practitioners; whether he had refused to receive a deputation from that conference; and what steps he was taking to allay the widespread feeling of discontent which underlay the desire in question.—Mr. N. CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative. As regards the second part, I have received the resolutions passed at the meeting to which the hon. and gallant Member refers, though I cannot share his estimate of its representative character. The reply to the third part of the question is in the affirmative, and the reason is that I have already discussed the matter with the Insurance Acts Committee of the British Medical Association, which represents the general body of insurance practitioners. As regards the last part, this question is engaging the attention of the Royal Commission on Health Insurance, and I do not propose to take any action pending their report.

FRIDAY, DEC. 11TH.

Death-rates Among Adults.

Colonel DAY asked the Minister of Health the death-rate amongst adults, men and women separately, also that of children, occurring in those European countries of which statistics were available, also those occurring in Great Britain during the years 1922 and 1923, and to the last known date.—Mr. NEVILLE CHAMBERLAIN replied: For England and Wales the figures asked for are as follows:—

Age groups.	Death-rates per 1000 living of each sex.					
	1922.		1923.		1924.	
	M.	F.	M.	F.	M.	F.
21 and over.	16·7	14·7	15·5	13·4	16·2	14·3
Under 5 ..	30·2	24·5	24·3	19·6	25·1	20·2
,, 10 ..	16·5	13·5	14·0	11·3	14·9	12·1
,, 15 ..	11·4	9·4	9·7	8·0	10·3	8·4
,, 20 ..	9·2	7·7	7·9	6·5	8·3	6·9
,, 21 ..	9 0	7·5	7·7	6·4	8·1	6·7

M. = Males. F. = Females.

With regard to Scotland, the hon. and gallant Member should address a question to the Secretary for Scotland. As regards other European countries, while in certain cases figures are available for the numbers of deaths during the years in question, no corresponding estimates of population appear to be available for the purpose of calculating mortality rates.

MONDAY, DEC. 14TH.

Cocaine Dens in India.

Colonel DAY asked the Under-Secretary of State for India if there were at present any cocaine dens in the northern division of Calcutta, and the name of the deputy commissioner in charge of this division; and how long had he occupied that position.—Earl WINTERTON replied: Some information as to the illicit traffic in cocaine and the preventive action taken is given in the report of the Bengal Excise Department, extracts from which I shall be glad to have supplied to the hon. Member if he wishes. The reports do not contain the specific information asked for in the first part of the question, but special inquiry can be made if he so desires. The Deputy Commissioner of Police, Northern District, Calcutta, is Rai Purna Chandra Lahiri Bahadur, who was appointed on March 6th, 1918.

Poisonous Apple Tree Sprays.

Mr. RENNIE SMITH asked the Minister of Agriculture whether his attention had been drawn to the dangers of poisoning arising from the use of certain kinds of sprays on apple trees; whether such sprays were being used in this country; and whether he would take steps to warn fruit-growers as to sprays which entailed these dangerous consequences.—Mr. GUINNESS replied: I have received representations from time to time as to the possible risks involved by the use of poisonous washes on apple trees. Such washes are used in this country, but the applications are made so early in the season that the risk of any appreciable quantity of poison remaining on the apples when they are gathered is negligible. The results of an inquiry into this matter were published in the Ministry's *Journal* for September last, a copy of which I am sending to the hon. Member.

Mr. RENNIE SMITH asked the Minister of Health whether his attention had been drawn to the poisonous spraying of foreign apples imported into this country; what brands of apples were affected; and what steps he was taking to safeguard British consumers of apples.—Sir K. WOOD replied: Yes, Sir; as stated on June 25th last, the matter has been under the observation of my department for a number of years. My right hon. friend is sorry to say that recent analyses have shown the presence of increased quantities of arsenic on certain brands of imported Jonathans. The safeguarding of consumers is in the hands of the Port Sanitary and other local authorities, whom my right hon. friend is reminding of the necessity for strict supervision. He is, however, trying to arrange that measures shall be taken to effect the removal of the contamination before the apples are packed for export to this country.

Release of Asylum Patient.

Mr. ROBERT RICHARDSON asked the Minister of Health if he would cause inquiry to be made into the case of T. J. Hardwick, at present detained as an ex-Service patient in Chatham Asylum, Kent; was he aware that his mother was anxious to have him out on trial for a month under Section 55 of the Lunacy Act; that her own doctor had signified to the medical superintendent his willingness to look after the son, and that a suitable male nurse was available to take care of him while on trial, a course recommended by a member of the Board of Control; and would he take steps to see that no impediment was placed in the way of his temporary release on trial.—Sir KINGSLEY WOOD replied: My right hon. friend has made inquiries in this case. The power to grant leave on trial is vested by law in the visitors of the hospital on the written advice of the medical superintendent. The superintendent is, however, unable to advise the visitors that they should permit Mr. Hardwick to be absent on trial. A report made within the last few days shows that this is a dangerous patient, who is not fit at present to be discharged from institutional care. I would like to add that last year this patient was allowed out on leave in the care of his mother, but had to be brought back on the following day to the institution.

Constitution of the General Medical Council.

Lieut.-Commander KENWORTHY asked the Prime Minister if the Lord President of the Privy Council had been approached by any section of the medical profession with regard to the constitution of the General Medical Council; and what steps, if any, he had taken or proposed to take in this matter.—Major HENNESSY (Vice-Chamberlain of the Household) replied: The reply to the first part of the question is in the negative, and my noble friend, the Lord President of the Council, considers that the case for action, as suggested in the second part, does not, therefore, arise.

Powers of the General Medical Council.

Mr. BASIL PETO asked the Prime Minister whether he would consider the necessity of amending Sections 26, 28, and 29 of the Medical Act of 1858, in view of the obscurity of the procedure under the Act and the confusion of the powers of examining colleges and bodies and the General Medical Council, whereby persons whose names had been removed from the Register were required by the General Medical Council to prove that they possessed degrees of which they had been deprived, in consequence of the General Medical Council having removed them from the Register, before their names could be restored to the Register.—Major HENNESSY replied: I am asked by my noble friend, the Lord President of the Council, to state that he is informed that there is no difficulty in interpreting the sections of the Act of 1858 to which my hon. friend refers. It must be remembered that the General Medical Council cannot confer medical degrees or qualifications, nor can it annul such when once conferred. Moreover, it cannot place a man on the Register unless he possesses a degree or qualification. When, therefore, a practitioner has been deprived of his degree or qualification by the body which originally conferred it, that body must restore it before the General Medical Council can reverse its own previous decision.

Mr. BASIL PETO asked whether, when the General Medical Council removed any person from the Register for reasons given, the consequence was that the colleges or other examining bodies automatically withdrew that person's degree. If that were the case, how could such a person get on to the Register again, unless the original examining body acted in the matter.—Major HENNESSY replied that he must have notice of that question.—Mr. PETO pointed out that that was the original question on the paper.

Infant Mortality at Market Drayton.

Sir CHARLES OMAN asked the Minister of Health whether he was aware that the high infant mortality of Market Drayton still persisted and had persisted for 10 years or more; would he now publish the recommendations for its diminution made by the report of his medical inspector, omitting those which he considered confidential if there were any such; and, if not, would he send another medical inspector to inspect and report.—Mr. N. CHAMBERLAIN replied: I am aware that the infant mortality-rate in Market Drayton has generally been in excess of the average rate for the whole country, although this has not always been the case in the past ten years. As regards the second part of the question, I would refer my hon. friend to my previous answers on this subject. The county council are taking steps to provide a new infant welfare centre in this district, and the further inspection suggested in the last part of the question does not, therefore, seem to be necessary.

Treatment of Consumptives in Scotland.

Mr. SCURR asked the Secretary for Scotland whether he could state which local authorities in Scotland afforded sanatorium and other treatment to tuberculous persons without charge.—Sir J. GILMOUR replied: No local authority in Scotland, so far as I am aware, makes a charge to tuberculous patients or their relatives for sanatorium or other treatment provided by the authority.

TUESDAY, DEC. 15TH.

Tuberculosis Hospital near Bristol.

Captain GUNSTON asked the Minister of Health whether he was aware that the proposal of the corporation of Bristol to use Blaise Castle as a tuberculosis institution for advanced cases was strongly opposed by the inhabitants of Henbury, whose houses, school, &c., surrounded Blaise Castle, and would he have this matter further inquired into.—Sir K. WOOD replied: My right hon. friend has received a letter from the Henbury Parish Council objecting to this proposal. In the event of the Bristol Corporation applying for his approval to the use of the premises for the treatment of tuberculosis, this objection will be considered. My right hon. friend is advised, however, that there is no ground for considering that a properly conducted institution for the treatment of tuberculosis is an any way a danger to the health of the community among whom it is situated, and that no risk is incurred by living in the immediate neighbourhood of such an institution.

Institutional Treatment of Neurasthenia.

Mr. ROBINSON asked the Minister of Pensions the number of men in receipt of institutional treatment for neurasthenia, where the hospitals were situated, and what was the estimated total yearly cost of providing treatment for pensioners suffering from neurasthenia.—Major G. C. TRYON replied: The number of men in receipt of in-patient treatment for neurasthenia in the first week of the present month was 1800. The yearly cost of the treatment given in Ministry hospitals for this class of case is approximately £250,000. The following are the hospitals: Craigleith, Edenhall, Scotland; Castle Leazes, Newcastle; Harrowby Camp, Grantham; Saltash, Plymouth; Coombe Park, Bath; Ewell, Epsom; Orpington, Kent; Leopardstown Park, Dublin; and Craigavon, N. Ireland.

Disease Germs in Public Vehicles.

Colonel APPLIN asked the Minister of Transport whether he was aware that public vehicles were upholstered in rep, velveteen, and other soft and clinging material, and whether, as such material collected dirt and disease germs, and broadcasted them among the passengers, he would take steps to ensure the use of leather or other washable material in future.—Colonel W. ASHLEY replied: This is a matter for the individual licensing authorities, but I will bear in mind the suggestion that my hon. and gallant friend has made.

Deaths of Seamen.

Dr. WATTS asked the President of the Board of Trade whether he had received a resolution, adopted by the Council of the Royal Sanitary Institute, based on resolutions passed at a congress of that institution at Liverpool in July, 1924, to the effect that the classification in the *Report of Deaths of Seamen*, published by the Board of Trade, was antiquated and should be remodelled; and whether he was taking any steps in respect to this resolution.—Sir P. CUNLIFFE-LISTER replied: I have received a resolution from the Royal Sanitary Institute and also their detailed suggestions regarding the death statistics of seamen. The Permanent Consultative Committee on official statistics has appointed a special subcommittee to advise whether any alteration in the classification of these death statistics is necessary.

Pensions for Neurasthenia.

Mr. ROBINSON asked the Minister of Pensions the number of officers and other ranks that had been in receipt of pension for neurasthenia for four years or more; how many of these were in receipt of life pensions; and whether he would arrange for the men not in receipt of a final award to be boarded with a view to the award of life pensions, having regard to the psychological effect that a permanent pension would have on their disability.—Major G. C. TRYON replied: The number of pensions at present in payment for neurasthenia is about 32,000 of which about 12,000 have been awarded for life. Of the balance about 17,000 pensioners have been in receipt of pension for four years or more and I can assure the hon. Member that the possibility of making final awards in these cases is constantly kept in view in connexion with the medical re-examination of cases.

Appointments.

GRAY, E. E. D., M.B., B.S. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Teddington District of the County of Middlesex.

University of Sheffield: WILSON, J. B. F., M.B., M.S. Lond., F.R.C.S. Eng., to one of the combined posts of Lecturer in Surgical Pathology and Assistant Curator of Pathological Museum.

Vacancies.

For further information refer to the advertisement columns.

Ascot, Heatherwood Hospital.—Res. Asst. M.O. £300.

Birmingham City.—Laboratory Attendant. £250.

Blackburn and East Lancashire Royal Infirmary.—Third H.S. £150.

Bombay, Gokuldas Tejpal Hospital.—Hon. P. and two Hon. S.'s.

Bristol General Hospital.—Hon. Asst. S. to Ear, Nose, and Throat Dept.

Durham, Holywood Hall Sanatorium.—Med. Supt. £850.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Morning Cas. O. At rate of £120. Also H.S. At rate of £125.

Elizabeth Garrett Anderson Hospital, 144, Euston-road, N.W.—Asst. Radiologist. £100. Also Anæsthetist. £5 5s.

Hospital for Sick Children, Great Ormond-street, W.C.—Res. Med. Supt. £300. Also H.S. £50.

Huddersfield, Royal Infirmary.—Jun H.S. £150.

Ipswich, East Suffolk and Ipswich Hospital.—H.P. and H.S.'s. Each at rate of £100.

Keighley, Victoria Hospital.—Res. M.O. At rate of £180.

London Temperance Hospital, Hampstead-road, N.W.—Cas. O. At rate of £120.

Manchester Ear Hospital, Grosvenor-square, All Saints.—Hon. Res. H.S. At rate of £150.

Manchester, Monsall Hospital for Infectious Diseases.—Jun. Med. Asst. £350.

Manchester, St. Mary's Hospitals.—Five H.S.'s. Each at rate of £50.

Middlesex Hospital, Mortimer-street, W.—Dental H.S. At rate of £50.

Norwich, Norfolk and Norwich Hosp.—Res. Anæsthetist. £150.

Plaistow Fever Hospital, E.—Second Asst. M.O. £200.

Plymouth, Didworthy Sanatorium, South Brent.—Res. M.O. £600.

Portsmouth Education Committee.—School M.O. £750.

Reading, Royal Berkshire Hospital.—Three H.S.'s. At rate of £150. Also Hon. Anæsthetist.

Royal Free Hospital, Gray's Inn-road, W.C.—Dist. Obstet. Asst. £100.

St. Mark's Hospital for Cancer, &c., City-road, E.C.—Anæsthetist. £25.

St. Mary's Hospital, W.—Asst. M.O. in charge of X Ray Dept.

Salisbury General Infirmary.—H.S. £150.

West London Hosp., Hammersmith-rd., W.C.—Hon. Obstet. Reg.

Westminster Hospital, Broad Sanctuary, S.W.—Obstet. Tutor and Registrar. £50.

The Secretary of State for the Home Department gives notice for a Medical Referee under the Workmen's Compensation Act for Falkirk District (Sheriffdom of Stirling, Dumbarton, and Clackmannan). Application should reach the Private Secretary, Scottish Office, not later than Jan. 5th, 1926.

Births, Marriages, and Deaths.

BIRTHS.

HUGHES.—On Dec. 9th, at Woodville, Epsom, the wife of
Alfred Morgan Hughes, M.C., M.R.C.S., of a son.

SCHAFFTER.—On Dec. 12th, at Isfahan, Persia, the wife of
C. M. Schaffter, M.B., F.R.C.S.E., of a son.

SPERO.—On Dec. 8th, at Lancaster Gate-terrace, W., the wife of
Dr. G. E. Spero, of a son.

MARRIAGES.

SALISBURY—WRIGHT.—On Dec. 9th, at St. Mary's Church,
Broughton, Lincs, Walter Salisbury, M.S., M.D. Lond.,
F.R.C.S. Eng., of Grimsby, younger son of Mr. and Mrs.
F. G. Salisbury, of Bristol, to Constance Mary, only child of
Mr. and Mrs. Wm. Wright, of Broughton Vale.

DEATHS.

BISHOP.—On Dec. 13th, after short illness, at his residence,
North Dene, The Park, Beckenham, Walter Beacall Bishop
(of Alfred Bishop, Ltd.), aged 72.

EDWARDS.—On Dec. 4th, at 137, Withington-road, Whalley
Range, Manchester, after long illness patiently borne, Emily
Louisa Frances, the dearly beloved wife of the late John
Edwards, M.R.C.S., L.R.C.P., late Senior Medical Officer,
H.M. Prison Service.

NORBURY.—On Dec. 10th, at "St. Margarets," Eltham, Sir
Henry Frederick Norbury, K.C.B., M.D., F.R.C.S., Hon.
Surgeon to the King, Inspector-General of Hospitals and
Fleets, Royal Navy (retd.), aged 86.

PALGRAVE.—On Dec. 13th, Edward Francis Palgrave, M.R.C.S.,
F.R.C.P., Cheniston-gardens, Kensington, aged 49.

RITCHIE.—On Dec. 10th, at Craigowan, Colinton-road, Slateford,
Edinburgh, James Ritchie, M.D., in his 85th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE DIAGNOSIS OF EARLY NERVOUS DISEASE.*

BY MARJORIE A. BLANDY, M.B., B.S., M.R.C.P. LOND.,

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IT is the common experience of neurologists that the first manifestations of disease of the nervous system are not sufficiently recognised by practitioners. It is not essential for the practitioner to be an expert in the differential diagnosis of organic nervous disease, but he should be able to recognise its presence. In neurology perhaps more than in any other branch of medicine is a careful case-history of paramount importance, and the so-called negative symptoms may be especially important. Diagnosis can frequently be made on the history alone; indeed, frequently has to be made on the history alone, for example, in cases of epilepsy and some cases of the post-encephalitic syndromes. It is often found by neurologists that some early but important symptom has been omitted by the patient in giving his history, because he thought it so slight and so transient as to be of no significance. Hence leading questions must be asked, such as whether there has ever been transient double vision, weakness of a limb, or even so impressive a symptom as temporary blindness. Unfortunately this belief in the triviality of such symptoms is sometimes shared by the medical attendant. Sometimes, however, a history may be perversely misleading though entirely accurate; for instance, the symptoms of cervical rib, a congenital abnormality, may appear at any age, generally following a change of occupation to one of increasing strenuousness and entailing pulling on the arms. A short while ago I had as patient a woman of 45 who had come down in the world and who only developed the symptoms of cervical rib after going to work in a boarding-house, where she had to carry heavy trays and pails up and down stairs.

It is not enough to look for a symptom or sign with a name, such as Romberg's sign or Babinski, or even to be satisfied with the presence or absence of the knee-jerk, but it is essential to be on the look out for deviations from the normal, or differences in the responses of the two sides of the body in one individual. The type of knee-jerk is of as much importance as its exaggeration or diminution. In early paralysis agitans the diagnosis of "nervous breakdown" is frequent in the absence of alteration in the reflexes, lack of tremor, and the characteristic rigidity. These cases may be labelled hysteria because of their slowness, their awkward movements, and the uselessness of their limbs. Similarly slight ataxia in early cerebellar disease may be considered functional in the absence of marked organic signs.

Psychological Changes.

The first sign of disease of the nervous system may be a psychological one—a change of disposition noticed by the patient's friends, and sometimes even apparent to the patient himself, but beyond his control. Such an alteration in character may occur in intracranial tumour, cerebrovascular disease, disseminated sclerosis, encephalitis lethargica, neuro-syphilis, and to some extent in severe cases of subacute combined sclerosis. In intracranial tumours there may be change in temperament preceding the onset of any physical sign, and certainly occurring before the patient seeks medical advice.

During the six years I recently spent as R.M.O. and Registrar at the National Hospital for the Paralysed and Epileptic, Queen-square, I was increasingly impressed by the localising value of the type of temperament displayed by patients suffering from tumours of the cerebrum; each type being characteristic of a certain locality.

Patients with extensive *frontal tumours*, and especially with left-sided ones, are slow and dull. If the corpus callosum is involved they tend to be curiously apathetic and vegetative. For example, Miss C., a doctor's sister, had been sent to a convalescent home by the sea for a year before admission with the diagnosis of neurasthenia, because, 18 months previously, she had had a few fits, following which she had become dull, had lost interest in what had usually interested her, and had lost all initiative. Only when vision began to fail, vomiting accompanied her headaches, and weakness of one side of the body began to develop did the nature of her trouble suggest itself to her brother. She had a large glioma of the left frontal lobe involving the corpus callosum. If the tumour be smaller, leaving intact a good proportion of frontal tissue, but quickly growing and hence irritating the surrounding frontal substance, the patient shows periods of excitability with great physical restlessness. He is quick to resent and to exaggerate fancied slights, such resentment amounting at times to delusions of persecution. These patients have to be approached with the greatest tact and self-control if they are to submit to examination. Time must be spent in gaining their confidence, they must be continually humoured, and each step of the examination has to be explained to them beforehand. If not they may resist, even with violence. I remember one man who collected his dinner plates and threw them at the nurse who, he fancied, had been inattentive. These patients are filled with suspicions. They are, however, jocose and facetious and inclined to make heavy jokes at which it is wise to be amused. They may be the life and soul of the ward. Oppenheim gave the name "Witzelsucht" to this symptom. Sometimes their jokes are quite good. A woman I saw at hospital, who had, incidentally, been allowed to go blind before seeking medical advice, remarked, on hearing the visiting physician mention the number of diopters of swelling of her discs, "My husband will be amused; fancy plus-fours in my eye." Another woman, who, with frontal lobe intact had been a shy retiring creature, was enabled through the presence of a tumour in that region to attempt coquetry with a member of the staff on his ward round.

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* A paper read at a meeting of the London Association of the Medical Women's Federation on Dec. 8th, 1925.

Patients with *temporo-sphenoidal* tumours, on the other hand, are facile, pleasant people, remaining undisturbed by alarming symptoms, such as dimness of vision, and soon forgetting each headache. They are incapable of taking very seriously the gravity of their condition. They are friendly, easy of approach, and amused by the examination, but seem lacking in depth of character. They are quietly behaved and free of spontaneous humour and facetiæ, nor are they physically restless.

It is obvious that temperamental changes, occurring early as they do, and in persons hitherto normal, are of significance, and in addition of definite localising value, especially where the physical signs are ill-marked. In *cerebral-vascular degeneration* psychological changes commonly occur in later life, producing the symptoms classed under the head of senility; but frequently the sufferer's age hardly entitles them to be classed among the aged. Local thromboses causing at the time temporary paralyses or aphasias may clear up, leaving some striking alteration in disposition or loss of recently acquired accomplishment. An instance is a male patient who had been a schoolmaster and lay preacher. This man, after recovery from a slight stroke, entirely lost his religion, to his wife's deep distress. I also remember a woman linguist who on recovery was unable to speak a word of French, in which language she had previously been proficient.

The smiling euphoria of *disseminated sclerosis* is almost pathognomonic. Once seen it is unmistakable and typical of that disease. There are depressed people among sufferers from disseminated sclerosis, but these are rare. The more hopelessly paralysed and incontinent these patients get, the more cheerful and patient they seem to become. This euphoria is an early, common one, and it may be said a merciful symptom. Actual psychoses do, very occasionally, occur in disseminated sclerosis, as the result of a plaque in the cerebral cortex. I have myself seen one such case—a girl in the early twenties with delusional depressive insanity of recent origin coupled with the typical signs of this disease.

In children, psychological changes following upon *encephalitis lethargica* are fairly common. The mental changes may be so characteristic as to leave no doubt as to the diagnosis; and yet all history of the actual attack itself may be lacking. The psychic changes may or may not be accompanied by neurological findings, nor is there any correlation between the severity of the mental disturbances and the physical signs. Indeed, as a rule, those cases showing most disturbance of conduct have the fewest physical signs. In two such cases published recently in America by B. I. Beverly and Mandel Sherman the interval between the appearance of the psychical change and of the onset of a Parkinsonian syndrome was in one case six months, and in the other two years. Both these children were referred by the juvenile court on account of disobedience, lying, fighting, stealing, and cruelty to children and animals; they were said to be entirely uncontrollable. One boy had a history of an illness three years previously during which he slept a good deal; the history of the second was entirely negative. In F. C. Shrubsall's cases of L.C.C. school children, the changes in conduct ranged from diminished power of attention at school to mental deficiency or to loss of moral sense. In a case of the latter quoted, three years after the attack, a girl of 10 took suddenly to lying, stealing, spitefulness, and wanting her own way in everything. In this case and in many others the intelligence tests showed no lowering of the intellectual level.

Uncontrollable outbursts of involuntary laughing or crying may be a symptom of organic brain disease before the physical signs of any cerebral lesion become manifest. Féré reports the case of an elderly man of 61 who used to become convulsed with laughter over trifles and was entirely unable to control the performance. A few months later this was followed by first a right and then a left hemiplegia. Patients with cerebral arteriosclerosis causing diffused patches of softening especially in the basal regions of the brain, likewise often show signs of an abnormal emotional state, which is undoubtedly the direct outcome of the disease. In these cases as a rule the stimuli are often inadequate and inappropriate, and the outbursts are irrelevant to the feelings of the patients. The patients are aware of this and resent their helplessness to control themselves, and it often leads to misunderstandings. Dr. S. A. Kinnier Wilson tells the story of a man with this affliction. He lost his heart to the ward maid; when her father demanded his intentions he burst out laughing.

Cerebral syphilis may often be ushered in by an acute psychosis with delusions and hallucinations.

Occasionally *subacute combined degeneration of the cord*, if running a very rapid course, is accompanied by mental symptoms, confusion, depression. I saw a case of this nature recently which had been provisionally regarded as functional, owing to her mental confusion accompanied by somewhat indefinite signs. The disease developed rapidly, however, and when I examined her she showed the typical signs, with jaundice. Three weeks later the findings were confirmed at autopsy.

Objective Appearances.

Quick appreciation of the outward details of a patient's appearance and manner is essential to the neurologist, since the diseases with which he has to deal are usually much more objective than diseases of other systems of the body. An accurate diagnosis is often revealed at a glance to the trained eye, and only confirmed or perhaps modified by the detailed physical examination which follows. A waitress was dismissed from her employment for becoming slow, her leisurely movements exasperating her employer. This poor woman had had an attack of so-called influenza six months before. On being questioned she admitted having had double vision at the time, but had thought nothing of it. What brought her to hospital was the recent onset of involuntary tremors in the right hand. In appearance she was an obvious case of post-encephalitic Parkinsonian syndrome, of hemiplegic distribution. Examination confirmed this diagnosis, and the slowness of gait and action that her employer complained of was due to the muscular rigidity consequent upon this disease.

Frequently after an attack of encephalitis lethargica the first thing that obtrudes itself into the patient's consciousness is that she is getting slow; slow in walking, slow in performing any customary act, and she is slow also in attributing her condition to any possible illness. A milder attack of the disease may leave even less trace. A detailed history and minute observation of very slight changes in muscle tone, in gait, in the lines and mobility of facial expression, may decide the diagnosis and save the patient from being labelled functional. In the absence of any indicative history in a middle-aged person such findings would suggest the idiopathic type of paralysis agitans.

Other objective signs of which the patient is unaware are weakness of the emotional movements of one side of the face, while the voluntary contraction remains unaffected. This is usually an early sign in tumours of the temporal lobe, is of great localising value, and is most apparent when the patient is chatting. The commencing enlargement of the nose, and bones of the jaw, and of the extremities in pituitary hypersecretion is obvious to the observer, though insidious enough to be unnoticed by the patient or his friends.

J. P. Martin points out that luxuriant iron-grey hair without trace of baldness in a man of middle age, the subject of some nervous lesion, suggests neurosyphilis. A glance should note myosis, inequality of pupils; the toxic colour and lack of expression together with the slightly inquiring eyebrows of the tabetic. This lack of expression, due to loss of tone in the facial muscles, is quite characteristic and cannot be confounded with that of the Parkinsonian, in whom it arises from hypertonus and loss of mobility.

Subjective Symptoms.

Subjective symptoms are very important in early nervous disease. These sensations frequently precede the appearance of a paresis or sensory loss, and may be misconstrued. When one thinks of the intricacies of motor coördination that are performed by means of the pyramidal tract, for instance, it is clear that clinical tests can only disclose crude defects. The first sign of the impairment of some skilled acquired movement can be apparent to the patient alone. A man with a slow-growing endothelioma of the left frontal and rolandic areas was aware that his writing had deteriorated, whereas at the time the physical examination was negative. In F. M. R. Walshe's series of cases of polyneuritis following upon diphtheritic infection of wounds, the patients in many cases were already aware of fatigue of the legs and aching of the calf muscles on exertion with painful cramps at night, when clinically only tenderness of these muscles could be found. Such symptoms may precede by weeks the disappearance of the tendon-jerks; indeed, the latter undergo a preliminary exaltation. In cases of polyneuritis and frequently in tabes and subacute combined, the ankle-jerks disappear before the knee-jerks. I would therefore emphasise the desirability of adding the ankle-jerk to the routine neurological examination of any case. I would also like to interpolate here a plea for more precision on the part of the medical profession in general in the use of the term "neuritis." Any vague and intractable pain is called neuritis, usually as a cloak of ignorance and a placebo to the patient, who is immediately proud to think she is suffering from something so high-sounding and at the same time she knows, from the discussions of her friends, that she need not expect a rapid cure. Fibrositis is a longer word, can be uttered with due significance, and is at least more likely to be accurate. The term "neuritis" should be reserved for interstitial neuritis, such as brachial neuritis, sciatica, &c. Diphtheritic polyneuritis would be more correctly termed "neuronitis" as the whole neurone including its spinal cord termination is involved.

Pain.—When patients complain of pain, the nature of the pain, its duration, and its localisation is important. Farquhar Buzzard maintains that an accurate description of lightning pains is diagnostic. He says the pains are a sharp stab at right angles to the limb in which they occur, and they may be present for months or years before the onset of any of the physical signs of tabes. In spinal tumours again the nature of the pain felt is suggestive of the diagnosis. There is almost invariably a definite thermal element in addition to the constricting element; that is, they feel a band round the affected part which is "burning hot," usually, sometimes cold, or both hot and cold. Fixed intractable pains of central spinal origin occur in disseminated sclerosis, in syringomyelia, and in other cord lesions. It is necessary to differentiate pain from an organic source from sensations of neurasthenic origin. These latter are usually described as pains, but questioning will elicit that they are rather unpleasant sensations than true pains.

Headache is an early symptom in many nervous diseases. Persistent severe headache, unyielding to treatment, in a young adult should suggest syphilis as the cause. A man who had been treated symptomatically for headache when young at the National Hospital returned ten years later a well-marked case of tabes. True headache must be differentiated by the history from neuralgia, and the cephalic sensations so common in neurasthenia and psychasthenia, and in women at the menopause. The "headache" in these cases proves to be not painful at all, but is a feeling of pressure, of fullness, a weight or a band round the head, &c. It is present on waking and improves as the day draws on, the reverse of what happens in the organic type. However, true paroxysmal headaches of a migrainous nature frequently do occur in women for the first time at the menopause. They may be accompanied by vomiting and coincide with the period of menstruation, and are probably due to a compensatory hyperplasia of the pituitary. In many of these cases the sella turcica is partially bridged over, which may interfere with the enlarging of the gland and so cause the symptoms.

Migraine should, of course, give rise to no confusion.

Sleep is frequently disturbed at the onset of many nervous illnesses. The man suffering from cerebral syphilis is drowsy by day, but mildly delirious by night. The man with a pituitary tumour yawns in your face, or falls asleep during your examination. Even those interesting cases of narcolepsy have almost certainly an organic basis. In these cases the pituitary fossa is abnormally small. A girl in the twenties complained that she was always falling asleep, but more especially when she laughed would sleep suddenly overcome her. She would "dog-nap," as she called it, over her work, and once she laughed when cycling, and immediately fell both asleep and off.

In the acute stages of encephalitis lethargica the patients may be almost impossible to rouse, or they may suffer from sleeplessness and restlessness by night, attaining in some instances to the wildest maniacal delirium.

Fits may be the first intimation of organic nervous disease of the brain. They occur as a first symptom in a definite number of cases of disseminated sclerosis when there is cortical or subcortical involvement. I have now a patient suffering from disseminated sclerosis who was quite well until she had a fit 11 years ago. After the fit she had diplopia and weakness of one limb, both of which cleared up. The diagnosis at that time was "nervous breakdown." I have seen several other cases of disseminated sclerosis who have had fits from time to time throughout the course of their disease. More frequently fits occur as an early symptom in intracranial tumour, and may precede the physical signs of tumour for many years. One boy had fits, apparently of a generalised epileptic nature, since the age of 15 years. These generalised fits became gradually interspersed with local seizures until these formed the majority and he rarely lost consciousness. He still had no physical signs that might not be attributed to the frequency of the fits, nor had he any papillœdema until just before he was operated on at the age of 25, when a huge endothelioma weighing about 200 g. was removed from his right frontal area. That interesting type of seizure, the temporo-sphenoidal fit, may occur in both idiopathic epilepsy and in organic intracranial lesions of this region, and in the case of tumours the attacks may precede by months the onset of any physical sign of tumour. These attacks are liable to be considered purely of psychological origin, so that a brief description of them here may not be out of place. The attacks consist of an olfactory aura, sometimes attended by a gustatory aura and followed by what is known as the dreamy state. The smell is usually nauseous, resembling that of burning feathers or organic matter, more rarely it is pleasant. In one case removal of a tumour resulted in the change of a pleasant to an unpleasant smell. I think the following description in the patient's own words is better than anything I can say. (The rather unusual style of the language is due to his being a Dane.) "I get a sort of feeling like a taste in my mouth. It is not exactly nasty, but it is not nice. I have a smell at the same time of similar nature. I then get a sensation as if I were living in a second or third world of life, when this other life happens I know it. I want to remember the occurrences in between (i.e., when normal), but I cannot. I usually hear a melody to start with; I know the melody at the time, but I cannot remember it afterwards. I often hear voices, men's and women's voices, who are not behaving haphazard; there is some point and sequence in what they are doing and saying. And I remember an old voice scolding and a little child's voice. I can see the people, and I know whether they are sympathetic or antipathetic to each other, and I know who they are during the attack, but after I cannot recollect."

Disturbances of Vision.

Sudden unilateral blindness is commonly a first sign of disseminated sclerosis. It may precede the general attack by as long as 20 years or more, but is often not mentioned unless inquired for. Again, a history of blindness may be given when what has actually occurred has been a complete ptosis. These patients seem unable to realise that they can still see. The ptosis may occur in hysteria, when it is usually bilateral, in neoplasm of the skull or brain, in syphilis, myasthenia gravis, and at the onset of encephalitis lethargica. A history of diplopia is highly significant. It is an early symptom in a large number of organic nervous diseases, and is comparatively rare in hysteria, where if there be multiplicity of vision it is more commonly a polyopia. The patient is conscious of diplopia when the causal ocular palsy is so slight as to be almost or quite impossible to detect by the gross methods at our service.

Conclusion.

I would like, in conclusion, to protest against that terminological abomination in diagnosis the "nervous breakdown." What is a nervous breakdown? In my personal experience among diseases thus diagnosed have been intracranial tumour, disseminated sclerosis, encephalitis lethargica, cerebral syphilis and neurisyphilis, paraplegia, cerebrovascular disease, psychosis, hysteria with or without paralyses, neurasthenia. What happens when nerves break down is Wallerian degeneration; but this physiological fact does not appear to be in the mind of the physician who makes this facile and meaningless diagnosis.

Two positive suggestions I would make are (1) that ophthalmoscopic examination of the fundus oculi should be part of the routine examination of every patient; (2) that lumbar punctures should be done in cases of suspected nervous disease. A properly carried out qualitative and cytological examination, including the Wassermann reaction, yields information upon which the diagnosis of the nature of the disease often rests and negative findings are of an almost equal value.

Two Lectures

ON THE

EFFICIENCY OF THE HEART

AND ITS MEASUREMENT.

University of London Advanced Lectures in Physiology, delivered at University College, Nov. 30th and Dec. 1st, 1925,

BY YANDELL HENDERSON,
PROFESSOR OF APPLIED PHYSIOLOGY, YALE UNIVERSITY.

LECTURE II.*—APPLICATIONS AND RESULTS ON MAN.

THE problem which we are considering is essentially that upon which the greatest of English physiologists made his supreme contribution. In this city (London) in the year 1628 William Harvey published the discovery of the circulation of the blood. Harvey solved the problem qualitatively. It is only now, 300 years later, that physiology has achieved its quantitative solution—the volume of blood that the heart pumps in a minute.

With the general problem now solved, the next step must be the application of measurements of the circulation to physiological study and clinical use. But it is only against a background of the principles of respiratory metabolism, and the mechanical conditions of the circulation, as set forth in the preceding lecture, that we can properly appreciate the significance of the data that are now becoming available from investigations on man himself, the best of all subjects for physiological study.

FAILURE OF PHYSICAL METHODS.

All mechanical methods of measuring the volume of the circulation have failed. When we learned, about 20 years ago, to measure arterial pressure on man, it was thought that perhaps the amplitude of the pulse—that is, the pulse pressure—would be proportional to the stroke volume of the heart. If so, the product of the pulse pressure and the pulse-rate for different times and conditions would indicate the relative volume of the circulation. But the elasticity and capacity of the arterial system are too variable for any reliance to be placed on this method.

Another line which I tried to develop depends on the recoil of the entire body under the impulse imparted to it by the discharge of blood from the heart at each beat. This device would be analogous to determining the weight and velocity of a cannon ball by measuring the extent to which the cannon recoils when the ball is fired out of it. You may see the principle the next time you weigh yourself on a spring balance. After you have dropped your penny in the slot, stand quite still and, if the machine is delicately adjusted, you will see the pointer over the dial vibrating with each stroke of the heart. If you have been exercising it will vibrate more widely. But no very practical results have as yet developed.

SUCCESS OF METHOD BASED ON METABOLISM.

For the beginning of a real solution of the problem we are indebted to the physiologist Fick. Some 40 or 50 years ago he laid down the principle upon which the greater part of what was said in my first lecture is based. It is that we can calculate the circulation from a determination of the amount of oxygen a man or animal is consuming a minute, and from analyses of the gases contained in the arterial blood and in venous blood from the right heart. The oxygen consumption of the body divided by the arterio-venous oxygen difference gives a quotient which is the volume of the circulation. Thus, for example, if the arterio-venous oxygen difference is 5 volumes per cent. and the volume of oxygen absorbed in a minute is 500 c.cm., the volume of the circulation must be 10,000 c.cm. or 10 litres, because 500 c.cm. is 5 per cent. of 10 litres, that is, 500/0·05 = 10,000. The same simple calculation can be applied in order to measure the circulation on the basis of the volume of carbon dioxide exhaled and the arterio-venous carbon dioxide difference.

Zuntz and Hagemann,[1] in their classical investigations on the metabolism and energetics of the horse, first tried to put this principle into practice. Much of the procedure was then new and complicated, and it is not surprising that their results were not very concordant one with another. It is amusing to recall a controversy between Zuntz and Bohr over the results, a controversy which still has a certain significance. Bohr believed that a considerable amount of combustion, at least during muscular work, occurs in the lungs. He argued that the volume of the circulation found by Zuntz would be insufficient to transport to the tissues the oxygen consumed by the animal. If oxygen were consumed in the lungs the Fick principle would not be valid. Conversely, if the circulation is actually smaller during hard work than the Fick procedure shows it, then oxygen is consumed in the lungs, as Bohr believed. In reality, as nearly as we can now figure from the results obtained by Zuntz and Hagemann, although the arterio-venous oxygen differences during rest were certainly much too high, the stroke index of a horse amounts to about 2 c.cm. per kilo per beat—a figure quite close to that which we now know to be correct for all vigorous mammals, large and small.

In the 27 years since Zuntz demonstrated the feasibility of the Fick principle great technical advances have been made, so that analyses which were then difficult and inaccurate are now comparatively easy and exact. We have learnt better how to determine the respiratory gaseous exchange on men and animals; and many investigators can now insert a needle into an artery even of a man and can draw a sample of arterial blood for analysis. From animals it is a simple, painless, and generally harmless operation to draw blood directly from the right heart also by means of a hypodermic syringe inserted through the body wall. As regards the results from animals obtained by many investigators recently, it suffices to say that during rest, probably not very complete rest, the arterio-venous oxygen difference found is usually 4 or 5 volumes per cent. and sometimes as low as 3 volumes per cent. Such figures combined with the oxygen consumption and the body-weights of the subjects (dogs) calculate out to stroke indices of about 1·3 to 1·8 c.cm. per kilo per beat. These figures are for the normal, unanæsthetised, unoperated, healthy animal. But as a rule, under anæsthesia, and especially under operation or experiment, the stroke volume and circulation are decreased far below normal. The arterio-venous oxygen difference rises, therefore, far above normal. Such a depression of the circulation gradually develops towards tissue asphyxia and death.

APPLICATION OF THE FICK PRINCIPLE ON MAN.

On man cardiac puncture is not done, and even the withdrawal of blood from an artery is often a rather troublesome operation. Accordingly, much time and effort have been devoted by many investigators in recent years to developing what we may call respiratory procedures to afford similar data. An essential step was the discovery by Haldane and Priestley in 1905 that by making a sudden very deep expiration through a tube we can obtain in the tube, and can draw off for use, a sample of air from the depths of the lungs; and that this alveolar air is in gaseous equilibrium with the arterial blood. Plesch (1909) gave us the first indication as to how we may obtain air from the lungs which would be virtually in gaseous equilibrium with the venous blood.

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* Lecture I. appeared in the last issue of THE LANCET.

[1] For references to literature see note at the end of this lecture.

The simplest procedure developed from this idea is to put into a rubber bag 2 or 3 litres of air, or much better oxygen, containing an amount of carbon dioxide between 5 and 6 per cent. After an initial deep expiration to empty the lungs as far as possible, the contents of the bag are inhaled and blown back into the bag three or four times in 10 seconds. The gas mixture is analysed for its percentage of carbon dioxide; then it is again inhaled for 20 seconds this time and analysed; and again inhaled for 30 seconds and analysed. If these three analyses show the same percentage of carbon dioxide, this agreement indicates that the amount of carbon dioxide in the bag is in equilibrium with that in the venous blood coming to the lungs, after that blood is fully oxygenated, but without at the same time either gaining or losing carbon dioxide.

Such air we call "virtual venous pulmonary air," and the difference between the pressure of carbon dioxide in it and that in "arterial pulmonary air" obtained by the procedure of Haldane and Priestley, gives the datum that we need. It is usually a little more than 1 per cent. of an atmosphere for a normal man at rest. In order to put this quantity into terms of volumes per cent. of arterio-venous difference we must multiply it by a factor for the capacity of the blood to absorb carbon dioxide. This factor is the amount of carbon dioxide that blood will take up and give off for each change of 1 mm. of pressure, or 1 per cent. of an atmosphere, of carbon dioxide. It is obtained from the well-known carbon dioxide dissociation curve of Christiansen, Douglas, and Haldane, and is 0·4 volumes per cent. for 1 mm., or 2·88 volumes per cent. for 1 per cent. of an atmosphere difference of pressure.

There are now available many observations by different investigators by means of methods of this general character. Some have employed more elaborate measures yielding venous pulmonary airs equilibrated in respect both to oxygen and carbon dioxide. Douglas and Haldane measured the circulation in this way on normal men and found in some vigorous persons that the stroke volume during rest is so large that, even up to a metabolism of ten times the basal rate, the oxygen requirements may be met wholly by the increased rapidity of the pulse and the increased percentage utilisation of oxygen from the blood. During exercise their data indicated that the stroke volume in Douglas was not appreciably increased. Both during rest and work his stroke index was 1·9 c.cm. His resting arterio-venous oxygen difference was only 3·2 volumes per cent., thus affording a very large reserve in the oxygen capacity of the blood.

THE STROKE VOLUME OF THE HEART IN MAN.

If this is an accurate indication of the circulation in some vigorous persons, the behaviour of the heart is in accord with a theory which I advanced nearly 20 years ago covering two points: (1) that the stroke volume of the heart during rest is much larger, and the arterio-venous oxygen difference therefore much smaller, than had previously been supposed; and (2) that the stroke volume for all normal heart-rates for any vigorous individual during rest and exercise is a uniform or only slightly varying quantity. These propositions were based on observations and measurements of the volume curves of the hearts of dogs. As shown in Fig. 2 of the preceding lecture, the strokes have an amplitude of about 2 c.cm. per kilo of animal and have a sufficient interval of diastasis (the pause between beats) at slow pulse-rates, so that by an abbreviation of diastasis at more rapid rates a sufficient number of beats of unvarying size could be obtained to afford the largest circulation (as I then thought) needed during vigorous muscular exertion.

The first part of this theory has now been fully confirmed by observations on man, not only those of Douglas and Haldane, but also by similar and somewhat simpler methods by Meakins and Davies, by Henderson and Prince, by Barcroft, Roughton, and Shoji, by Robinson and Burwell, by Bock and his associates, and by a number of others. Thus we now know with a high degree of certainty and precision that the arterio-venous oxygen difference may be even below 4 volumes per cent. in a vigorous person during bodily rest. The stroke index during rest must therefore be 1·5 c.cm. per kilo per beat or more.

Until a few years ago the evidence available indicated that the arterio-venous oxygen difference was of the magnitude of 6 or 7 volumes per cent. From such figures, with those for the basal oxygen consumption at 250 c.cm. per minute, the conclusion followed by simple arithmetic that the circulation was only 3·5 to 4 litres a minute. A circulation of this volume with a pulse-rate of 70 a minute would make the stroke volume of the heart of a man at rest only 50 or 60 c.cm., a stroke index of only about 0·7. When the size of stroke was then calculated for the 10- or 15-fold increase of oxygen consumption during hard work, no conclusion was possible for Zuntz and the other investigators of those days, except that the strokes of the heart are several times as large during exercise as in rest.

We now know that the arterio-venous oxygen difference in a vigorous man or animal is only half as large, and therefore that the circulation during rest is twice as large, as they then supposed. For vigorous exercise we can figure that an athlete of 60 kilos consuming 3 litres of oxygen a minute, with his heart beating 180 times a minute, would just balance his oxygen account if his stroke volume were 100 c.cm. and his circulation, therefore, 18 litres. But there would then be very little oxygen left in his venous blood, less than 2 volumes per cent. The arterio-venous oxygen difference would be more than 16. If in such a man each stroke of the heart during exercise discharged the same volume as during bodily rest, that is the way the factors would balance.

Man is a very vigorous animal, and his vigour is largely based upon the factors of safety, or reserves, afforded by a low arterio-venous oxygen difference during rest and a correspondingly large stroke volume. It is wholly unnecessary and contrary to fact for such an organism, or mechanism, to have to increase the stroke volume 400 or 500 per cent. during muscular exercise as everyone believed only a few years ago. It seems probable that during all moderate activities about one's room or office or laboratory, with pulse-rates from 60 to 80 or 90, or possibly a little more, the circulation in vigorous individuals varies in proportion to the pulse-rate, and that the stroke volume of the heart is not appreciably increased. During more vigorous muscular work, however, I have come to doubt that this uniformity of stroke volume is maintained, and to regard it as probable that at a pulse-rate of 150 beats per minute, or 180 during an athletic contest, the stroke index may be increased to as much as 3 c.cm. per kilo per beat, or about double the stroke volume during rest. But it was only when a better method became available that this point was established.

On the whole, the results that have been derived from the application of the Fick principle to man are clear and important. But the method is really one solely for the laboratory, for research and instruction purposes. It requires special precautions and the coöperation of a trained subject; and even then the error of the method is 10 to 20 per cent. It becomes quite unreliable as soon as, owing to muscular activity or disease, the capacity of the blood to absorb and transport gases is altered.

THE NITROUS OXIDE METHOD.

Accordingly, Krogh and Lindhard attempted some years ago to develop a method based on the rate at which nitrous oxide is absorbed into the blood, when it is inhaled with air somewhat as in the procedure of Plesch above described. This method, in the form in which its inventors describe and use it, is not only more difficult, but far less accurate than the application of the Fick principle. Many other investigators have tried to use the method of Krogh and Lindhard, but all have given it up. Its results are often widely discordant, not only with the now known volume of the circulation, but also with each other. In successive determinations on the same subject under uniform conditions, the results are often twice as large in one as in the next, instead of nearly identical as they should be. Krogh and Lindhard regard these variations as indicating the variable volume of the circulation, but they are in reality errors inherent in the method. It was considered by Krogh and Lindhard to be necessary that the whole procedure or inhaling and exhaling the gas mixture should be completed in a time (30 or 40 seconds) less than that in which some of the blood makes the round of the circulation and returns to the lungs again. They argued that after this period, not only would nitrous oxide be going into the arterial blood from the air in the lungs, but some of the gas would be returning to the lungs in the venous blood. In fact, however, so brief a period renders it impossible to attain complete mixture of the inhaled gas with the air in the lungs and accurate determinations of the concentrations of the gas at the beginning and end of the period.

In spite of the failure of their method, physiology is greatly indebted to Krogh and Lindhard for this first gallant attempt to use a foreign gas as the means of measuring the circulation. To a certain extent my own recent investigations take their origin from it; for noting its defects I determined to use much longer periods of inhalation, to use a gas which could be more easily analysed, and to try to work out a correction (which has by good fortune proved unnecessary) for the amount brought back to the lungs by the venous blood.

PRINCIPLES CONTROLLING THE ABSORPTION OF GASES.

Consequently, I have now to describe a method, recently developed by my associate Dr. H. W. Haggard and myself, which seems, on the basis of the rather extensive data already available, to afford a simple, accurate, and almost universally applicable solution of the problem of measuring the circulation in man. For more than 20 years I have been searching for such a method. I had reached the point that I never expected to find it, and an equally fixed determination never to cease searching. The discovery was the result of a bit of good luck happening in the course of a systematic search.

In my laboratory we have been for some years past studying the action on man of all the varieties of gases and vapours which occur in modern industry, and which we all inhale (from motor-cars, coal smoke, illuminating gas, &c.) to some extent. Haggard had also made a very thorough study of the absorption and elimination of ethyl ether in connexion with anæsthesia. Out of these studies we had developed certain principles governing the absorption and elimination of volatile substances through the lungs, and particularly some mathematical formulæ, from which a number of important considerations became evident. All of the considerations thus derived proved on experimental test to be sound and practical. I have discussed them and have given the formulæ quite fully in some lectures* on anæsthesia and related matters recently. So only a few of the formulæ need be repeated now. The quantities considered and their symbols are as follows:—

(L) Effective pulmonary ventilation in litres per minute, that is, respiration minus the volume of air which merely enters the dead space.

(C) Concentration of the gas in milligrammes per litre of inspired air, when warmed to body temperature and saturated with moisture, as it is in the lungs.

(K) Coefficient of distribution of the gas between equal volumes of lung air and pulmonary blood.

(G) Litres or kilos of blood in active circulation in the body. In other words, the effective blood volume at the time.

(B) Circulation, defined as the number of litres or kilos of blood flowing through the lungs in one minute.

(W) Body-weight in kilos.

By combining these quantities we obtain the following formulæ:—

(1) LC = the amount of the gas inhaled into the lungs per minute.

(2) $LC \times \frac{L}{BK + L}$ = amount of the gas again exhaled from the lungs per minute.

(3) $LC \times \frac{BK}{BK + L}$ = amount of the gas absorbed per minute into the blood, before any of the blood completes the round of the circulation and returns to the lungs from the venous side; that is, the initial rate of absorption.

(4) $\frac{LCK}{BK + L}$ = amount of gas in milligrammes absorbed per litre of blood flowing through the lungs.

(5) $\frac{LCKG}{BK + L}$ = amount of gas absorbed during the first complete circulation of the blood, which is accomplished in the time $\frac{G}{B}$, a period less than one minute even during bodily rest.

(6) $\frac{LCKG}{BK + L} \times \frac{G}{W}$ = the amount of the gas brought back to the lungs by the venous blood during the second round of the circulation.

In these formulæ, the solubility of the gas in the blood (usually nearly the same as its solubility in water and expressed by K) exercises a dominating influence. If we examine this influence as revealed in the formulæ, we find that the rate at which a quite soluble gas (with a high value of K) is absorbed into the body, is determined to a very large extent by the volume of breathing (L), and to a very small extent by the circulation (B). Gases and vapours of a high solubility are therefore quite unsuited to use for measuring the circulation. On the other hand, with gases and vapours for which the coefficient of solubility (K) is small, the rate of absorption from the air of the lungs into the blood is little affected by variations in breathing (L), but depends almost wholly on the blood flow through the lungs. With this principle to guide us, we undertook to make a systematic test of all organic gases and vapours of low solubility. This search might have kept us busy for years but for the chance which led us early to try the vapour of ethyl iodide.

THE ETHYL IODIDE METHOD OF MEASURING THE CIRCULATION.

Ethyl iodide is a liquid with an odour somewhat like chloroform. It is as volatile as alcohol; and the vapour, as we have determined, has a solubility, or coefficient of distribution between air and blood in the lungs, which is expressed by 2; that is, when the alveolar air contains a certain number of milligrammes, or fraction of a milligramme, per litre, the blood flowing from the lungs always contains twice this amount per litre.

Ethyl iodide vapour, even when only minute amounts are contained in the air, can be determined, as we have found, with ease and accuracy by the use of iodine pentoxide to liberate iodine. Determination of the amount of this iodine by titration with thiosulphate is one of the most accurate methods of analysis that chemistry affords. The vapour of ethyl iodide mixed with the inspired air is so dilute that an experiment involves the absorption into the body of an amount of iodine corresponding to only about 0·2 g. of sodium iodide. Most important of all is the fact, as we were fortunate enough to discover, that ethyl iodide is decomposed in the tissues, presumably into sodium iodide and alcohol. The amount of ethyl iodide returned to the lungs in the venous blood is therefore so small that no correction seems necessary on this account even when periods of inhalation of 10 to 20 minutes are used.

A few drops of liquid ethyl iodide are vaporised in about 100 litres of air, or correspondingly more for experiments on exercise and large volumes of

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[*] To be published in the British Medical Journal and in the annual volume of the Dental Board of the United Kingdom.

breathing, in a large spirometer. The subject inhales this vapour and air through a rubber tube, mouthpiece, and valves, and the expired air passes through a mixing chamber. The technique is essentially like that for the determination of the basal metabolism. It is convenient to combine the two determinations. By a device attached to the mouthpiece, a sample of alveolar air is automatically collected. This sample and equal volumes of the inspired and expired air are analysed iodometrically as above indicated and the circulation is calculated by a simple arithmetical formula—viz., the volume of air breathed per minute (as measured on the spirometer) is multiplied by the difference in the amount of ethyl iodide in the inspired and expired air, and is divided by twice the amount found in the alveolar air. A complete determination takes 30 or 40 minutes, including the calculations. It requires no training or coöperation on the part of the subject. It is a method which seems to be as well suited to the clinic as to the laboratory. It has been subjected to every test and control that we could devise, both on men and on animals, to test its accuracy. Perhaps the best test of all is the concordance of results obtained by this method with each other. In successive tests on the same individual under the same conditions closely agreeing measurements are obtained.

Summary of Results obtained with the Ethyl Iodide Method.

Many data have already been collected by this method and more are accumulating rapidly. The persons examined range from athletes to patients with well-marked heart disease. The general aspects of the results obtained have been indicated already in the course of these lectures. Thus physical vigour is found to be correlated with a large capacity in the circulation to transport oxygen even during bodily rest and consequently by a low arterio-venous oxygen difference. The athlete in complete rest has a circulation so large in relation to his oxygen consumption that his venous blood contains only a few volumes per cent. less oxygen than the arterial. At the other end of the scale it is found that even the ambulant cardiac patient has a circulation so much slower than normal that the difference in the oxygen content of the arterial and venous blood, even during rest, may amount to 6 or 7 volumes per cent. He has about the volume of circulation that we used, not many years ago, to assume in healthy people.

The athlete is characterised by a heart which during bodily rest makes large beats at a slow rhythm. Thus his stroke index is 1·5 c.cm. or more per kilo per beat. With moderate activity there appears to be little increase in the size of stroke. The increased blood flow is afforded chiefly by the acceleration of the pulse. With increased muscular exertion the stroke volume also increases, so that an athlete whose stroke index at rest (sitting) may be 1·5 c.cm. per kilo per beat, increases to double this volume during vigorous exertion. The total circulation, which is 5 to 7 litres per minute during rest, rises above 20 litres a minute during vigorous exercise, and may even exceed 30 litres (8 gallons) a minute in an athlete of the type that rows in a university crew and during a closely contested race. At the same time, as we have found in collateral investigations, such an athlete is doing an amount of work with his oar amounting to 0·6 horse-power. He is breathing 80 litres of air a minute and consuming between 3 and 4 litres of oxygen per minute. At such intensities of effort as these, and in fact above about 2 litres of oxygen, the reserve chiefly drawn on is the oxygen-holding capacity of the blood, so that the blood may have had more than half of its oxygen absorbed as it rushes through the tissues. When the circulation encroaches on the lower third of this reserve the athlete comes to the end of his physical power.

Observations have been made on a number of women ranging from athletic young girls up to women in middle life. During rest or moderate exertion their circulation is in every way comparable to that of men of corresponding weight, muscular development, and manner of life. For both men and women a sedentary life and overweight show their effects in a smaller stroke index of the heart and more rapid pulse even during rest. The most striking result of these investigations on the circulation in man has been the demonstration of the extraordinary difference between the volume of the circulation when the individual is lying down or standing. This difference in many persons who on every other score would be adjudged healthy may be as much as 40, and in some even 50, per cent. In comparatively few persons it is less than 20 per cent. Thus the circulation may be 8 or 9 litres a minute when the individual is at rest in bed and only 5 or 6 litres a minute after he has been standing quite still for some time. The effect of position on the circulation in animals was studied some 20 years ago by Leonard Hill, and these results on men are entirely in accord with those which he obtained on animals. It should be added that this effect on men was first observed by Bock and Field, whose work has not yet been published, but who called my attention to this important matter. It explains why rest in bed plays so great a part in recovering from fatigue. It affords the strongest evidence that in no occupation should a man, woman, or child be kept standing in one spot and still for more than a very brief period.

Finally, mention may be made of the effect of hot baths on the circulation as revealed in these investigations. As compared with rest in an ordinary temperature, a hot bath increases the volume of the circulation so much that the arterio-venous oxygen difference falls to a lower figure than under any other conditions. Thus it appears that a hot bath involves an intensive hyper-oxygenation of the tissues of the body.

Conclusions.

Now at last we know with precision the stroke volume of the heart and the volume of the circulation. We know the range of variation in normal men and women, and in general in all mammals. On the basis of such data the activity of the heart and the volume of the blood-stream are here correlated quantitatively with the size, vigour, and gaseous exchange of men and animals during rest and muscular work. The principles underlying this correlation are formulated. The volume of the blood-stream through the lungs is determined from the rate of absorption of ethyl iodide vapour. This method affords an efficient and clinically practicable means of measuring the circulation, not only in normal persons, both those of athletic and those of sedentary habit, but also in patients with moderate cardiac impairment.

Thus the problem of measuring the volume of the blood-stream—the problem which was in effect defined by William Harvey when he discovered the circulation nearly 300 years ago—is now solved.

For bibliography, see Henderson: Physiological Reviews, 1923, iii., 166. For detailed data and tables of measurements, see Henderson and Haggard: American Journal of Physiology, 1925, lxxiii., 191.

Yorkshire Appeal for Cancer Research.—The Yorkshire Council of the British Empire Cancer Campaign, at a recent meeting at Leeds General Infirmary, resolved to issue an appeal next month for £75,000 for research work in the county. The appeal is to follow a meeting of the Council on Jan. 18th. The hon. secretary of the Council reported that the county had been divided into 18 districts, and each district would have three or more representatives on the Council. It would probably cost about £5000 a year to run a cancer research laboratory on up-to-date lines. Sir Berkeley Moynihan said that the idea was to have a cancer research centre in Leeds, and they had every right to expect that work done there would be very fruitful. It was their desire to work in association with the University department of pathology. The University was prepared to offer substantial financial help for a limited period, and to appoint a professor as a member of the full-time University staff to be at the head of the department.

A CLINICAL STUDY OF THE DICK TEST.

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A PAPER was published in THE LANCET from the Edinburgh City Hospital in January of this year by Ker, McGarrity, and McCartney, giving details of *their preliminary work with the Dick test.*[1] The results obtained at that time were highly suggestive and warranted a continuation, the first essential being to try out a further series of filtrates with a view to finding a reliable toxin. I had been associated with Dr. Ker in testing with one or two of the toxins whose results were recorded in the former paper, and we *continued our work with a batch of toxins,* prepared as previously described by Dr. J. E. McCartney. We had experimented with five different toxins in addition to those reported on in the previous paper, when we lit on one that we thought was giving critical results, but we had only completed about 100 tests with it when I suffered the very severe reverse of the loss of my chief. *Later on,* however, *I was able to continue* the work, and this paper embodies the experience obtained in the carrying out of over 1400 Dick tests.

Variation in Results obtained with Different Filtrates.

It is obvious that the question of choice of toxin to be employed is one of the very highest importance, and a method of accurate standardisation is essential before the test can find its fullest application. The following gives some idea of the varying results obtained with different preparations, and I think it may be fairly inferred from them that the test is quantitative.

For descriptive purposes I have named the filtrates with which these comparative tests were made A and B. Toxin A was supplied me by Dr. R. A. O'Brien and is a product of an American strain of the hæmolytic streptococcus. Toxin B was made by Dr. McCartney from a strain of the organism isolated in the Edinburgh City Hospital. It will be remembered that this toxin was obtained by growing hæmolytic streptococci isolated from scarlet fever throats in rabbit blood broth for five days, separating the organisms from the filtrate by centrifuging at high speed, and then passing it through a Berkefeld filter. The test dose in all the following experiments was 0·1 c.cm.

A series of 34 scarlet patients, whose day of illness ranged from the fourth to the twenty-ninth, were tested with different concentrations of Toxin B. In 1 in 1000 dilution there were 21 positives thrown up, whereas with 1 in 500 every one of the 34 was positive. Moreover, the negatives obtained with the 1 in 1000 dilution occurred in cases from their fifteenth day onward, with the exception of two in which negatives were obtained on the eleventh and thirteenth days.

Toxin A tried on a batch of 17 diphtheria patients in a dilution of 1 in 1000 gave 14 positives, but this was reduced to 12 when a dilution of 1 in 9000 was used. In 12 scarlet convalescents, however, each dilution showed the same number of positives—viz., 4.

It would also appear that different strains of scarlatinal hæmolytic streptococci produce toxins of varying potency. In a batch of 17 diphtheria patients mentioned above as giving 14 positives when Toxin A was used in a dilution of 1 in 1000, Toxin B in the same dilution gave only 9 positives. Also in the same series of 12 scarlets reported as giving 4 positives with Toxin A we only got 2 positives with a similar dilution, 1 in 1000 of Toxin B.

These examples could be multiplied. Our final choice lay with Toxin B (Toxin No. 1 of McCartney's series). It gave positive results with all the early scarlets in our initial trials, negatives in convalescent scarlets that we were satisfied had been typical cases clinically, and it seemed to be giving a fair proportion of positives in our diphtheria patients. The reaction itself was clear-cut, very few ambiguous or difficult readings being *found*—the reaction on one occasion being very easily read in a negro baby. Finally the organism was derived from the type of scarlet prevalent in our district. From evidence which is accumulating this would not appear to be a point of great importance, but in view of our knowledge at the time we thought it well to be on the safe side.

Criteria of a Satisfactory Toxin Preparation.

A point that will be uppermost in the minds of those who have become interested in this work and propose to investigate the test for themselves, is the question of the potency of the filtrates used in the test. This will apply especially to those who have experience in the Schick test, where the toxicity of the test-substance can be estimated with great precision. Since, unfortunately, up to the moment of writing, no laboratory method has been devised for the standardisation of the toxin preparation used in the Dick test (chiefly owing to the extraordinary and complete absence of response on the part of laboratory animals to the filtrates), it is essential that workers should have some criterion of a satisfactory toxin, and the optimum concentration in which that toxin is to be used. Although I am aware that I am treading on *contentious ground,* I would venture to suggest that each toxin should be tried out on the basis of its behaviour towards the disease itself. That at least gives us a starting-point. Different dilutions of a filtrate should be employed by those experienced in intradermal work, and that one selected for further exploitation which gives first, at least 95 per cent. of positives in *early scarlets before* the end of the fifth day, and secondly, at least 70 per cent. of negatives by the thirtieth day. As we have seen in a previous experiment, the use of a more powerful toxin simply increases the percentage of positives in the later stages of the disease. But we already know from our experience with blanching tests, and from the therapeutic *application of* convalescent sera, that by this time the immunity response has become considerable. It would be wise therefore to take this fact into consideration if we are to regard the Dick test as a measure of immunity to scarlet fever. It is not to be supposed that these figures should be rigidly adhered to. They are simply put forward as a suggested scheme for gauging an appropriate toxin, and the strength in which it should be used. For example, the negative percentage of 70 is, of course, a purely arbitrary one, and as our knowledge of the immunity process increases will require no doubt to be modified. As will be noted subsequently my percentage of negatives in the convalescent stages is much higher, but it seems safer to err on the side of using too strong a toxin than too weak, particularly if the toxin is to be employed later on as an indicator of immunity conferred by the injection of toxin.

It is obvious, of course, that the value of such observations must depend on the number of cases tested and the accuracy of technique. Undoubtedly the latter is a matter of first-class importance, for as we have seen, the doubling of the dose of toxin had a marked effect on the positive rate. Comparable results might be introduced unless *very great care* was exercised in the measurement of doses, by imperfections in syringes, and so on. The above procedure would limit the titration of filtrates to workers in *fever hospitals* willing to take the responsibility. In the present state of our knowledge I do not see what other course is open to us.

Method of Applying the Test and Observing the Reaction.

The filtrate was supplied in a dilution of 1 in 100 and kept in the ice-chest until required. On each occasion that a *series of patients* was to be tested I made up a 1 in 1000 dilution sufficient for the test. A similar quantity of the same dilution was made up to act as a control. This was inactivated by heating in the water-bath for one hour at 100° C., any loss that occurred in the process owing to evaporation being made good by the addition of sterile distilled water. These diluted filtrates, active and inactivated, were employed throughout in a test dose of 0·1 c.cm.

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[1] THE LANCET, 1925, i., 230.

Practically every series of individuals in whom the test was done consisted partly of scarlets, both early and late, and some other class of patient suffering from diphtheria, measles, whooping-cough, and a small number from chicken-pox. It was felt in this way that if the results in the scarlet patients were working out as they should, the results in the other class could be accepted as reliable. Readings were made of the reaction at intervals of 8 hours and 24 hours from the time of making the test. This was found necessary, as a number of cases that were definite positives at the eight hours reading had disappeared at the 24-hour interval, while it was also found that definite positives at the end of the 24 hours had been indefinite, or even quite absent, at the earlier reading. Generally, however, as most workers have already noted, the reaction was quite visible at the end of five or six hours, and in one case of a lady medical student who drew my attention to it, I saw a brilliant reaction at the end of an hour and a half standing out prominently from the surrounding exanthem. At the beginning of the work in a series of cases, 48-hour and 72-hour readings were also made, but it was decided that these were unnecessary, although it gave an opportunity of noting in a few cases pigmentation after the original brightness of the reaction had faded. I should also add in this connexion that I saw a case recently in a nurse where a reaction was quite definite in the test area and completely absent from the control area at the end of 48 hours. The routine readings were definitely negative at 8 and 24 hours, and she had given a history of having suffered from scarlet 15 years previously.

With regard to the reaction itself there is little to add to the former description given by Ker. Attention has been drawn to the occurrence of a "partial" positive by Okell and Parish,[2] by which is meant a reaction from half to a quarter as large as the usual size. Similar reactions were observed, especially in scarlets about the third week, and were noted as weak positives. In the tables given in this paper they have been included as positives, since in most cases in which this type of reaction occurred in scarlet when the test was repeated at a later date it was definitely negative. I believe, however, that such a result denotes a certain degree of immunity, as in one case in which such a reaction occurred the serum was secured for a Schultz-Charlton test, and produced a certain amount of blanching.

In my experience of the test, having been chiefly in children, pseudo-reactions have not been very common, and I cannot say that I have seen more than half a dozen, though on various occasions minor degrees of the phenomenon have appeared. It seems not unlikely the presence of pseudo-reactions depends on the nature of the protein present in the culture medium for preparing the toxin, which as used throughout this work was prepared from a rabbit blood broth, as previously described by McCartney.

Presence and Persistence of the Reaction in Scarlet Fever.

Table I. shows the results of 740 tests in scarlet patients, in many cases the test being made on the same patient at different stages of his illness. I have been able in this way to collect 110 cases who were tested on two, three, or even four occasions, and all of whom gave positives in the early stages, and later became negative. The percentage of 95·15 of positives in early scarlets is highly satisfactory, and the gradual diminution of these towards the thirty-fifth day is also striking.

Dealing with the large number of notifications of scarlet fever as we do in Edinburgh, allowance must be made for a certain small percentage error in diagnosis. That would account partially for the anomalous results at either end of the illness. But it must also be mentioned that not all the cases that were typical scarlets clinically developed a negative in convalescence. For instance, one case which was tested on the ninth and fifty-first days, and on two separate intervening occasions, remained consistently positive. On the other hand, special notes are available of two cases where consideration of the fact that positive Dick tests were obtained throughout the illness cast doubt on the diagnosis, inasmuch as it had been reported at the time of their appearance that the rashes were not convincing and desquamation not characteristic. Another experience of these persistent positive reactions is worth recording. During the time this work was in progress three cases were admitted to the wards notified as scarlet, but continued to show positive reactions. All developed definite attacks of scarlet while in the ward, and thereafter the reaction became negative. One of these, however, was a typical scarlet on admission, and I have not the least doubt that this was a true relapse. On reviewing the case notes of the other two the impression was obtained that there may have been room for doubt with regard to the original diagnosis.

TABLE I.—*Showing the Persistence of the Dick Reaction during Five-daily Periods of Scarlet Fever.*

Day of disease.	Total number of cases.	Positive.	Negative.	Percentage positive.
1–5	103	98	5	95·15
6–10	110	87	23	79·10
11–15	103	57	46	55·33
16–20	101	33	68	32·67
21–25	116	19	97	16·38
26–30	82	9	73	10·97
31–35	66	3	63	4·76
36–139*	65	4	61	6·15

* All others tested.

Fourteen cases came under my notice of patients taking scarlet fever whose reaction to the Dick test had been previously determined as positive. As an offset to this, one case of scarlet occurred in a patient whose reaction had been read as negative.

Incidence of Dick-positives in Individuals not Suffering from Scarlet Fever.

These tests were performed on patients in the diphtheria, measles, whooping-cough, and chicken-pox wards. The total number, 634, is perhaps small enough to generalise upon, but I must confess to a little disappointment with the findings, considering how well the toxin was working on the scarlet side, when I saw how the results worked out. (Table II.)

TABLE II.—*Showing Results of the Dick Test in 634 Individuals not Suffering from Scarlet Fever.*

Age period in years.	Total.	Positive.	Negative.	Positive per-centage.	Positive per-centage in diph-theria patients.
0–½	10	2	8	20	—
½–1	28	15	13	53 57	33·3
1–2	64	38	26	59 37	64·2
2–3	87	52	35	59·77	61·7
3–4	50	30	20	60	72
4–5	53	30	23	56 60	72·2
5–10	150	77	73	51·33	63·1
10–15	74	30	44	40·54	36 6
15–20	37	12	25	32·43	34 6
20–30	59	15	44	25·42	17·9
30–40	18	2	16	11 11	—
40–50	4	1	3	25	—
	634	304	330	47·95	—

It will be seen at once from the table that the percentage positive rate nowhere approaches that given by Zingher as the result of his investigations in New York.[3] He found as many as 70 per cent. in his most susceptible age-group, 1–2. Ker, McGarrity, and McCartney found their highest positive percentage rate, 67·8, in the 2–3 age-group. While my figures bear out the expectation that the highest percentages appear at the time when scarlet fever is most likely to occur, I had been hopeful of results more closely approximating to Zingher's. It should be borne in mind, however, that the total number of persons examined contains a large proportion of measles and whooping-cough patients, 285 out of 634, very nearly one-half of the total. These patients are recruited from the less well-to-do section of the population, and might be expected, as Zingher has already demonstrated, to contain a high proportion of non-susceptibles. I accordingly worked out the percentages in 340 diphtheria patients, and have included them in a separate column. They show a much higher incidence of positives, and indicate, what Ker concluded from his figures, that children take longer to acquire their immunity in this country, and also what those responsible for the conduct of fever hospitals are only too painfully aware of from time to time—namely, the very high susceptibility of these patients to scarlet fever.

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[2] THE LANCET, 1925, i., 712.

[3] Jour. Amer. Med. Assoc., 1924, lxxxiii., 432.

Included in Table II. are the reactions of persons giving a previous history of scarlet. These numbered 76, of whom 67 were found negative, a satisfactory percentage of 88·16.

Relationship between the Dick Test and the Schultz-Charlton Phenomenon.

It was anticipated that some interesting results might emerge from a comparison of the Dick test with the results of injecting the serum from the same patient intradermally into the rashes of acute scarlets. In all 27 sera were tested in this way, involving the performance of 54 Schultz-Charlton tests. Each serum was tested on two bright rashes in typical scarlets, the amount of serum used varying from 0·5 c.cm. to 1 c.cm. in each rash.

The first series of cases consisted of patients in the 4th, 7th, 21st, 28th (two cases), 30th, 57th days of disease, and one with a previous history of scarlet at a remote date. Serum from the first three cases mentioned, who were positive Dick reactors, failed to blanch the scarlet rashes on which they were tried, and though carefully watched for, especially in the first two cases, there was no appearance of the reaction described by Blake and Trask. These authors described a reaction, similar to that of the Dicks, produced in susceptibles by injecting intradermally serum obtained from early cases of scarlet fever. One of the 28th day cases, the 30th day case, and the patient with a previous history of scarlet gave negative Dick reactions, and their sera gave excellent extinction phenomena in all rashes. The 57th day case and the other 28th day patient, both typical scarlets clinically, were Dick positive, but their sera produced blanching in every case.

The next series of cases consisted of two groups of 9 patients in each, one group being negative, the other positive Dick reactors. All gave a history of not having suffered from scarlet. The sera from the negative reactors succeeded in all cases in blanching the rashes upon which they were tried; the sera from the positive reactors failed in every instance.

Finally a serum was tried from a case which had given a weak positive reaction. In both rashes in which it was tried blanching was produced.

Apart, therefore, from the two exceptions in the first series, a definite correlation was established between the Dick test and the Schultz-Charlton phenomenon. The surprising thing to me is that there were not more exceptions, because there can be no comparison between the delicacy of the tests. Assuming that by the Dick test we can estimate individual immunity to a specific hæmolytic streptococcal toxin, the amount of toxin used in the test is purely an arbitrary one, and it is reasonable to suppose that a person might give a positive reaction and yet his serum contain sufficient antibody in the comparatively large amount of serum employed in the Schultz-Charlton test to neutralise the toxin over the comparatively limited area affected by the intradermal injection.

Blanching Effects of Antitoxic Sera.

Dr. O'Brien was anxious that we should experiment with his antitoxic sera with a view to investigating their capacity for extinguishing scarlet rashes. In the experiments detailed below, only rashes varying from bright to brilliant were employed, none were later than the third day of disease, and the intradermal dose in every case 0·5 c.cm. in the skin of the pectoral region. Where neat serum was employed, the test was controlled with a scarlet serum known to produce blanching, and with normal horse serum. No higher dilutions than the ones mentioned were tried.

Serum A 4156 was used in three cases undiluted, on two in a dilution of 2 in 5, and in three in a dilution of 1 in 10. Blanching was produced in every instance. In a case of facial erysipelas in the early stages, with a well-marked spreading margin, 0·5 c.cm. of this serum was injected intradermally half an inch beyond the raised edge in two separate sites. In 10 hours the edge had passed over both injected areas, and the erysipelatous flush in the neighbourhood of the needle marks remained of the same intensity as the rest.

Serum A 4200 was tried in one case undiluted, and in two cases in a dilution of 1 in 200. In the former case and in one of the cases where a dilution of 1 in 200 was employed blanching was observed. In the other case, which had a brilliant rash of the "boiled lobster" type, no extinction appeared, and it is of interest to note that this patient gave a positive Dick reaction on his 9th day, which was negative on the 23rd day of his disease.

Serum A 4177 was tried undiluted on two cases, in a dilution of 1 in 50 in two cases, in 1 in 100 in two cases, and in 1 in 200 in four cases. In every instance blanching was observed.

In all cases in which the neat antitoxic serum was used the control convalescent scarlet serum produced blanching, while the normal horse serum produced no effect in the direction of blanching. In three instances, however, the horse serum caused irregular areas of blotchiness.

From time to time in experiments with the Schultz-Charlton test I have noted that with serums obtained from various patients the area and the depth of the blanching has shown a certain degree of variation. While this may be partly attributable to the differences in level at which the needle was introduced, there can be no overlooking the possibility of different immunity responses on the part of various individuals to the disease. In the above cases in which undiluted serum was used one could not fail to be struck by the fact that the blanching effect was more marked than that usually brought about by a convalescent serum.

In two cases, both when serum A 4156 undiluted was injected, there appeared areas of blotchiness at the periphery of the blanching, and also encroaching irregularly on the blanched area. In neither case was the extinction phenomenon masked by this appearance.

Effect of Antitoxic Serum in Neutralising Toxin.

This experiment was undertaken to determine the effect of mixing antitoxic serum with the filtrate used in the tests reported in this paper. Twelve diphtheritic patients were chosen who had given good positive reactions four days previously. The test mixture consisted of 0·5 c.cm. toxin (1 in 100), 3·5 c.cm. normal saline, and 1 c.cm. serum of A 4156. A control mixture was made up by adding 0·5 c.cm. toxin (1 in 100) to 3·5 c.cm. normal saline, heating for one hour at 100° C., and making up to the original bulk of 4 c.cm. by the addition of sterile distilled water. After cooling 1 c.cm. serum A 4156 was added. The test and control mixtures were allowed to stand at room temperature for ten hours before use. In this way the toxin was at its usual concentration of 1 in 1000, and the antitoxic serum in a dilution of 1 in 5.

Of the 12 children tested in this fashion eight gave straight negatives, two gave combined pseudo-negatives at the eight hours reading, and one a combined pseudo-negative at the 24 hours reading. The remaining case showed nothing at the eight hours reading, but at 24 hours a reaction was present in both test and control areas, the test reaction being slightly larger than the control. The net result was, therefore, that in 11 out of 12 cases this serum was able to prevent the toxin reacting.

Passive Immunity with Antitoxic Sera.

Having definitely assured myself that these sera could extinguish scarlet rashes, and of the capacity of one of them to neutralise the toxin I was employing in my routine testing, I next turned my attention to passive immunity experiments with two of these sera.

The first group consisted of eight patients who at some previous date had been found positive. This was confirmed by retesting and each received 5 c.cm. serum A 4200 intramuscularly. An interval of 24 hours was allowed to elapse and all were again tested. Two of the eight were found negative, the remainder positive. Retested at the end of four days all were positive, one of the previous negatives only showing a weak reaction however. Bearing in mind the failure of Ker to achieve a passive immunity with 5 c.cm. of convalescent serum I considered the possibility of my dosage being too small, and tried another batch of four Dick positive patients with an intramuscular injection of 10 c.cm. of the same serum. The 24-hour and the fourth day retests were all positive. Three other Dick positive patients were thereupon given 20 c.cm. intramuscularly. Two gave positive reactions at both 24-hour and 4th day retests, while the third was negative at the 24-hour and weakly positive at the 4th day retest.

Another serum, A 4177, was employed with better results. Following the same procedure with regard to the retesting of 14 cases previously giving positive reactions, I followed by injecting 10 c.cm. intramuscularly. At the 24 hours retest I found all except one were Dick negative, and this individual remained positive at intervals of four and eight days. At the 4th day retest 13 were still Dick negative; at the 8th day retest four more positives reappeared, whilst two having been discharged from hospital, seven negatives were left. On the 11th day after receiving the serum three of these seven were now positive; two had left hospital, leaving two negative. These negatives were not again retested till the 18th day, when both were found positive.

The above results are interesting in view of the failure of serum A 4200 and the comparative success of A 4177. Unfortunately only two blanching experiments were done with A 4200 in a dilution of 1 in 200, but it seems noteworthy that it should not have succeeded in one of two cases, whereas the more successful serum A 4177 should have been able to extinguish all of four scarlet rashes in the same dilution.

Conclusions.

1. In performing the Dick test the choice of toxin is a matter of great importance, and careful preliminary trials are necessary before embarking on testing on a large scale. From variations in the number of positive reactions obtained by the use of filtrates from different strains of organisms, and by the same filtrates in different dilutions, it is suggested that the reaction is quantitative. The particular toxin selected was employed in a dilution of 1 in 1000, the test dose being 0·1 c.cm. intradermally.

2. The reaction with the particular toxin employed required to be read on two separate occasions, intervals of 8 and 24 hours having been found the most suitable times.

3. Scarlets in the first five days of illness yielded a positive percentage of 95·15 per cent., whereas from the 31st to the 35th day of illness 1·76 were found positive. Between these two periods there was gradual declension in the positive percentage rate.

4. In 631 patients not suffering from scarlet the highest percentage positive rate was 60, obtained at the 3–4 age-period, the age-periods showing the next highest incidence being between 2–3, 1–2, and 4–5, in the order given, all these showing a percentage positive rate of between 55 and 60. In persons with a previous history of scarlet 88·15 per cent. were found negative. The Dick reaction had been previously determined in 15 patients who subsequently took scarlet, and of these 14 were positive, the other having been noted as a negative reactor.

5. A correlationship was established between the Dick test and the Schultz-Charlton phenomenon in 25 out of 27 cases.

6. Three antitoxic sera were tested with regard to their ability to extinguish scarlet rashes. One blanched in all cases in dilutions up to 1 in 10, another in all cases up to 1 in 200, while a third succeeded in one case when undiluted, and in one case in a dilution of 1 in 200, but failed in one case in a dilution of 1 in 200.

7. An antitoxic serum in a dilution of 1 in 5 was able to neutralise the action of the filtrate employed throughout these tests, as judged by its capacity to prevent the filtrate reproducing the reaction in 11 known positive reactors out of 12.

8. Passive immunity experiments were undertaken with two antitoxic sera. One practically failed in doses of 5 c.cm., 10 c.cm., and 20 c.cm. intramuscularly. The other succeeded in 10 c.cm. doses intramuscularly in producing a passive immunity lasting in 13 out of 14 cases up the 4th day, in seven cases up to the 8th day, and in two cases up to the 11th day.

I would like to place on record my appreciation of the help given by the resident and nursing staff of the City Hospital, Edinburgh, whose coöperation in a time of stress alone rendered this work possible. Also to Dr. McCartney for a never-failing supply of toxin, to Prof. T. J. Mackie for much helpful advice, and to Dr. O'Brien for his generosity in supplying various preparations.

THE DICK TEST AT A FEVER HOSPITAL.

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Scarlet fever is thought by many now to be a localised disease of the nasopharyngeal mucosa, due to a certain specific strain of hæmolytic streptococcus which produces a toxin locally which is absorbed into the blood-stream, giving rise to the constitutional symptoms and the erythematous rash.

Where secondary infection occurs it is due to the action of the toxin so formed and absorbed lowering the resistance, and thus making the patient an easy prey either for the hæmolytic streptococcus itself or for any of the other nasopharyngeal bacteriological inhabitants. Immunity to scarlet fever must be antitoxic mainly, and cases in which a secondary rash develops during the course of an attack might be explained by the fact that this specific antitoxic immunity had not been developed sufficiently or not at all, and instances of a second attack might be explained in a similar way. As one attack usually confers immunity it would appear that the immunity is mostly antitoxic in nature. In my opinion the comparative immunity shown by adults might be explained, on this hypothesis, by the fact that adults usually have a good antitoxic immunity to scarlet fever, as is evidenced by the fact that the constitutional disturbances resulting from an attack of this disease are usually less marked in adults than children.

The Dick Test for Susceptibility to Scarlet Fever.

Dick and Dick[1] first described an intracutaneous immunity test for scarlet fever, using a soluble toxic filtrate of an hæmolytic streptococcus obtained from cases of that disease. Various modifications in the manner of preparation of this toxin have been recommended. Through the kindness of Dr. Abraham Zingher, of the Department of Public Health, New York, U.S.A., I was supplied in September, 1924, with some of the toxin recommended by him. Zingher's method of preparing it is briefly as follows. Pneumococcus broth containing 5 per cent. citrated horse blood is inoculated with a 24-hour-old culture of the specific hæmolytic streptococcus. This is then incubated for five days and then removed from the incubator and 0·5 per cent. carbolic acid is added to the culture. The resulting precipitate is allowed to settle, and the supernatant fluid decanted and forms the toxin.

The Toxin.—*The strength of toxin requisite for* the skin test is estimated by comparing the relative results *re* its local action on the skin of a susceptible person in known dilutions. The diluent used is physiological normal saline solution. In the case of the particular toxin used by me the dilution was 1 in 1000. The toxin keeps well both diluted and undiluted, if kept in a cool, dark place, and I found it as potent after eight months as when fresh.

Control.—This is made by heating the toxin as prepared above in a water-bath for one and a half hours at 100° C., and then allowing it to cool.

Technique of the Test.—The skin on the anterior aspect of the middle third of both forearms is cleaned with ether soap and then with ether. 0·2 c.cm. of the diluted toxin is injected intracutaneously into the left forearm, and a similar amount of the diluted control into the right forearm. I used an "Agla" hypodermic syringe, and number 26 gauge rustless steel needles. When the injection has been made there appears immediately at the site of it a raised white weal, varying in diameter from 7 to 10 mm. in diameter. The openings of the cutaneous glands show as small depressions in this weal, and the latter disappears in five minutes or so. Readings of the test and control areas were taken in every case at 6, 12, 24, 48, and 72 hours from the time of injection.

Table I. gives the results of the Dick test on cases clinically diagnosed as scarlet fever at different stages of that disease. The figures show that the majority gave a negative reaction on and after the tenth day of scarlet fever; 190 cases were tested from the tenth day of illness onwards with the results shown in Table II.

TABLE I.

Duration of disease in days.	Number tested.	Percentage—	
		Positive.	Negative.
1 to 5	48	68·8	31·2
6 to 9	16	50·0	50·0
10 to 12	11	18·2	81·8
13 to 15	11	54·5	45·5
16 to 30	69	10·15	89·85
31 and over ..	99	7·07	92·93
Totals	254	24·8	75·2

TABLE II.

Stage of disease.	Total number positive.	Percentage positive.	Total number negative.	Percentage negative.
10 days and over ..	22	11·6	168	88·4

Many of the scarlet fever cases gave a positive reaction up to the tenth day of disease, after which the majority gave a negative reaction. In most of the positive cases during the first five days of the disease the reaction was distinct (+), and in a few cases a markedly positive one (+ +). After five days practically all cases gave a gradually less marked positive reaction till after the tenth day, when 88·4 per cent. gave a negative one. I noticed that in severe cases with marked rash and early and well-marked desquamation a negative reaction was developed sooner than in mild cases. One case gave a positive reaction on the nineteenth day of disease, and also again on retesting ten days later, although desquamating when tested, and admitted with a good scarlatiniform rash and mild symptoms to hospital. A similar case was noted on the twenty-fifth day of disease, the reaction remaining positive although desquamating. These two cases might be examples of persons who do not develop antitoxic immunity even though attacked by scarlet fever.

Sixty-five cases were retested one or more times later during convalescence, owing to the fact that there was either an element of doubt *re* original diagnosis or the Dick test when first applied was positive, and might become negative later on. Five cases gave a persistently positive reaction, and did not desquamate or show any complications suggestive of scarlet fever.

In Table III. a comparison is given of the results of the Dick test on 281 cases of scarlet fever as tested by Zingher[3] at the Willard Parker Hospital, New York, and 251 similar cases tested by the same toxin at Leicester Isolation Hospital. From this table it would appear that antitoxic immunity is developed more slowly in Leicester than in New York, but that in the end the former cases develop a greater percentage of immunes. This is possibly accounted for by the fact that well-marked cases are rare in Leicester, and the present type of case is mild and, therefore, it takes longer for it to develop sufficient antitoxin to become immune. I have already remarked on the earlier development of a negative reaction in well-marked cases with a good rash and early desquamation.

TABLE III.

Duration of disease.	Percentage Dick-positive, New York.	Percentage Dick-positive, Leicester.
1 to 5 days	98	68·8
6 days and over ..	20	14·56

Table IV. gives the results of the Dick test on normal persons not suffering from and without a previous history of scarlet fever. From this table it would appear that the greatest susceptibility is between the ages of 3 to 15 years.

TABLE IV.*

Age-group in years.	Number tested.	Dick-negative.	Dick-positive.	Percentage positive.
1 to 3	2	2	—	Nil
3 to 6	20	7	13	65·0
6 to 9	26	11	15	57·7
9 to 12	26	11	15	57·7
12 to 15	11	6	5	45·5
15 to 20	7	6	1	14·3
20 to 25	12	9	3	25·0
25 to 40	7	6	1	14·3
Totals	111	58	53	47·74

* This comprises 58 females and 53 males.

Zingher,[3] over a much larger number of cases in New York, gives the number Dick-positive for all ages as 34·4 per cent., whilst Ker[4] gives 51·5 per cent. for Edinburgh, Nesbit[5] gives 50 per cent. in Gary Schools, Indiana, U.S.A., and Okell[6] gives 74 per cent. for 100 medical students in London. The figures are expressed comparatively in Table V.

TABLE V.

Percentage Dick-positive in—				
Leicester.	New York (Zingher).	London (Okell).	Gary, Ind. (Nesbit).	Edinburgh (Ker).
47·74	34·4	74·0	50·0	51·5

Results of Dick Test on Cases of Diphtheria Undergoing Treatment.

I performed this test on 132 cases of diphtheria, composed as follows: faucial (diph.), 99; nasal and faucial (diph.), 19; nasal (diph.), 5; laryngeal (diph.), 3; faucial and laryngeal (diph.), 2; faucial carriers of diphtheria, 4.

Of this number three cases, all from one family, were suffering from well-marked scarlet fever and faucial diphtheria concurrently, and all three gave a negative reaction Seven of the cases had had scarlet fever previously and all gave a negative reaction. Amongst this group my personal experience of the test might be worth mentioning. Whilst carrying out these tests I was warded with faucial diphtheria, and, having had scarlet fever six years previously, I thought it would be interesting to see if at any period during my attack of diphtheria I would give a positive reaction. Although I tested myself on six different occasions I always gave a negative reaction to the test. I might add that I had on three occasions, previously to contracting diphtheria, performed the test on myself with a similar result. Four of the diphtheria cases were faucial carriers only, and all gave a negative reaction. One diphtheria case giving a negative Dick reaction had been detained in hospital 108 days for complications, when tested, and his throat condition was quite healthy. This case would presumably not be specially susceptible to scarlet fever, as it was well over the convalescent period of diphtheria. Allowing for the last three groups (comprising 12 cases) as not being specially susceptible to scarlet fever, or having had that disease previously, we get 120 cases of diphtheria remaining.

In Table VI. the results are given of the Dick test on 120 cases of clinical diphtheria (all without a previous history of scarlet fever).

TABLE VI.

Age-group in years.	Dick-negative.					Dick-positive.					Per cent. pos.
	F.	N. & F.	N.	F. & L.	L.	F.	N. & F.	N.	F. & L.	L.	
1 to 3	3	1	—	—	—	4	1	1	—	—	60·0
3 to 6	4	2	—	1	—	26	7	3	1	1	84·4
6 to 12	10	2	—	—	—	15	2	1	—	1	61·3
12 to 20	4	1	—	—	—	7	2	—	—	—	64·3
20 to 30	7	—	—	—	—	7	—	—	—	—	50·0
30 and over ..	6	—	—	—	—	—	—	—	—	—	Nil
Totals ..	31	6	0	1	0	59	12	5	1	2	65·8

F. = faucial. N. = nasal. L. = laryngeal.

Table VII. gives the result of the Dick test in diphtheria cases—all age-groups—as displayed by different types of that disease. From this table it will be noted (1) that the most susceptible age-group in diphtheria to scarlet fever is the period 3 to 6 years; (2) the age-group 20 years and upwards, at which there is usually a lessened susceptibility to scarlet fever in normal persons, is least affected by the incidence of diphtheria; (3) nasal as well as nasal and faucial cases would appear specially prone to scarlet fever; (4) the immunity conferred by a previous attack of scarlet fever holds good, even if one contracts diphtheria at a later date they would not appear again susceptible to scarlet fever; (5) the four faucial diphtheria carriers all gave a negative Dick reaction, but whether there is a common antitoxic immunity or not could not be said from such a small number of cases.

TABLE VII.

Region affected.	Number tested.	Dick-negative.	Dick-positive.	Percentage positive.
Faucial	93	34	59	63·4
Faucial and laryngeal	2	1	1	50·0
Nasal and faucial ..	18	6	12	66·6
Nasal	5	—	5	100
Laryngeal	2	—	2	100
Totals	120	41	79	65 8

Table VIII. gives the relative susceptibility to scarlet fever of normal persons and of diphtheria cases—in age-groups—as shown by the Dick test. From this table it would appear that there is a marked increase in susceptibility to scarlet fever shown by diphtheria cases as a whole, as well as at every age period.

TABLE VIII.

Age-group in years.	Percentage positive—		Percentage increase.
	Normal cases.	Diphtheria cases.	
1 to 3	Nil	60·0	60·0
3 to 6	65·0	84·4	19·4
6 to 12	57·7	61·3	3·6
12 to 20	33·3	64·3	31·0
20 and over ..	21·05	35·0	13·9
Totals	47·74	65·8	18·06

In Table IX. the Schick test for susceptibility to diphtheria was performed on 105 cases of scarlet fever undergoing treatment with the results shown. From the figures in Table IX., contrasted with those in Table VIII., one sees that there is an increased susceptibility to scarlet fever shown by diphtheria cases as a whole, as compared with that shown by scarlet fever cases to diphtheria; the percentage being 65·8 for diphtheria cases to scarlet fever; 58·09 for scarlet fever cases to diphtheria; 7·71 increase for all age-groups.

TABLE IX.

Age-group in years.	Number tested.	Schick-positive—	
		Number.	Percentage.
½ to 1	1	1	100
1 to 2	3	3	100
2 to 3	3	3	100
3 to 5	25	18	72·0
5 to 10	50	26	52·0
10 to 20	22	10	45·4
20 and over ..	1	0	Nil
Totals	105	61	58·09

General Observations on the Dick Test in Diphtheria Cases.

(1) The test appears to be as reliable an index of susceptibility to scarlet fever in these cases as in ordinary normal individuals, and in all cases with a previous history of scarlet fever a negative reaction was noted. (2) Both in normal persons and in cases suffering from diphtheria there is a very small percentage of positive reactors above the age of 20 years. (3) In four cases an antitoxin (diphtheria) serum rash developed at the same time as the Dick reaction was manifest. This did not interfere with the readings, and the former faded in all cases before the latter, leaving the reaction well marked. (4) The reaction seemed much better marked and defined from the surrounding normal skin area in diphtheria cases than it did in both normal and scarlet fever cases. (5) In 21 cases out of the number of diphtheria cases tested there was a well-marked positive reaction (+ +) = 17·5 per cent. of marked positives. (6) The number of pseudo reactions (both negative and positive) was less than in scarlet fever and normal cases.

Five cases of erysipelas were tested by the Dick reaction also. Of this number four were cases of the facial type and one of the leg. The latter case gave a positive reaction on the third day of illness, and a negative one when tested on the twenty-seventh day of illness. All the remaining four cases gave negative reactions. It might appear that there is some relationship between scarlet fever and erysipelas, but owing to insufficiency of clinical material it would be impossible to draw conclusions till a much larger number of cases had been tested. Clinically the two diseases have often appeared to me to be allied.

The Dick Test as an Aid to Diagnosis of Scarlet Fever.

(1) A positive reaction during the first ten days of illness, gradually getting less markedly positive from the fifth day, would be in favour of a diagnosis of scarlet fever—more especially so if the reaction became negative after the tenth day. (2) A positive reaction persisting after the tenth day of illness would be against the diagnosis of scarlet fever, as also would a markedly positive reaction after five days. (3) The results of the Dick test in normal people bears out the statistics as to the age-incidence of scarlet fever—e.g., a positive reaction during the first ten days of illness in a suspected case, aged 25 years or over, would be in favour of the diagnosis of scarlet fever.

In conclusion I would like to express my thanks to Dr. Zingher, and also to Dr. Okell, of the Wellcome Research Laboratories, Kent, for their kindness in forwarding me samples of Dick toxin for carrying out the tests. I found that the former's preparation gave better results with our cases, and all of this series were tested with it.

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SOME PROBLEMS CONNECTED WITH THE DICK TEST.[*]

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AND

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WE know from the results of recent work in England, which broadly agree with those obtained in America, that the Dick toxin with which we are working is specifically related to the scarlet fever prevalent here. In the first few days of the disease a suitable dilution of the toxin will give a high percentage of positive reactions; these same patients will during convalescence change their reaction from positive to negative; the toxin is neutralised by the serum of patients convalescent from scarlet fever, and the toxin, if given in sufficiently large doses to volunteers, will produce what is in some essential characteristics (temperature, vomiting, and rash) a miniature attack of scarlet fever. We know also that the serum of horses immunised with this toxin contains an antitoxin giving the specific Schultz-Charlton reaction. We may go further and say that the accumulating evidence leaves little doubt that, at least in certain severely toxic cases of the disease, the antitoxin has a definite therapeutic effect. There are, however, a great many points still unexplained, and it is by the close study of these that progress will be made.

It is necessary to avoid changes in toxin while doing experimental work; one must, therefore, have a large volume of liquid toxin available. Scarlet fever toxin is strikingly resistant to heat, and of a much higher order of stability than other well-known bacterial toxins. It is not known at present whether dried toxin, or toxin precipitated by one of the well recognised methods of precipitation, would be more stable than the liquid toxin. Presumably it would be.

The Question of Dilution.

We know fairly closely what are the most suitable dilutions of toxins for use. The question is an interesting one. As Park has pointed out: "If a toxin is a little too strong there will be too many positives; if it is too weak there is a possibility of having people who are susceptible pronounced as immune."

We commenced working with a dilution of 1/6000 of our large bulk of toxin, for with this dilution several of the laboratory staff gave clear positive reactions. Several physicians in fever hospitals have kindly compared the two dilutions 1/6000 and 1/1000. One worker found in the first week of scarlet fever 12 per cent. of positive reactions with dilution 1/6000, while a 1/1000 dilution gave 60 per cent. of positive reactions; for the second week the figures were 6 per cent. and 12 per cent. It is therefore evident that 1/1000 is the better strength to use when testing patients considered to be suffering from scarlet fever. It may, of course, not be the optimum.

Percentage of Positive Reactions.

Different observers, when testing patients admitted in the first two days of the disease, have obtained different percentages of positive reactions. Most workers give a percentage of from 66 to 100, while two clinicians, working with small groups of patients, obtained percentages as low as 22 and 42. Probably a close study of these differences would give information of value. The change from a positive to a negative response to a 1/1000 dilution of the toxin during the disease appears to occur in the average case about the fifth to the eighth day. One point of some interest is that amongst 678 reactions there were but 10 (1·5 per cent.) "pseudo and positive," and 25 (3·7 per cent.) "pseudo and negative." This low percentage we probably owe to the fact that Okell and Watson chose for the growth of the streptococcus ordinary digest medium containing no blood, and, from a study of the growth and metabolism curves, harvested the toxin at 18 hours.

With a 1/1000 dilution of toxin the percentage of positive reactors in different ward staffs varied from 7·5 in a large hospital (106 nurses) to 10 amongst 31 nurses and probationers. Evidently the great majority of nurses of long experience in scarlet fever wards are negative to the Dick test and non-susceptible to the disease. We do not know accurately what percentage of nurses in such wards would give a history of having contracted scarlet fever during their hospital life. It is probably fairly large, but many have no such history. Evidently, as in diphtheria, nurses (and others) may become immune through minute unrecognised infections with the scarlet fever organism. Nurses with positive reactions are generally newcomers. Two nurses in fever hospitals who gave a positive response to the test developed scarlet fever later. We would not be surprised to find that practically every nurse who has been several years in scarlet fever wards has either suffered from an attack of the disease during her hospital career or has already become immune from unrecognised infections either during or prior to life in the wards.

Significance of a Negative Response.

We know broadly that a negative response to the Dick test indicates a high degree of non-susceptibility, but we are not convinced that a positive, and particularly a "partial positive," reactor may not possess some immunity. It will be of great interest to ascertain how high the immunity represented by a negative reaction is. We have already reported that in one hospital, during a certain period, eight patients wrongly diagnosed as suffering from scarlet fever who gave a negative Dick reaction were admitted to the scarlet fever ward, but none developed the disease from ward infection, whereas of six positive reactors similarly admitted four developed the disease within a short period of admission to the ward. In another hospital a case of scarlet fever made its appearance amongst a group of 50 convalescents who were closely associated; 37 of these were "Dick-negative," none developed the disease, while of 13 who were "Dick-positive," six developed scarlet fever. On the other hand, we have notes of two instances in which patients were apparently negative to the Dick test when 1/1000 dilution of toxin was used, yet shortly afterwards developed an attack of what was considered to be typical scarlet fever. Such instances do not materially affect the main thesis; for the moment we simply place them on record.

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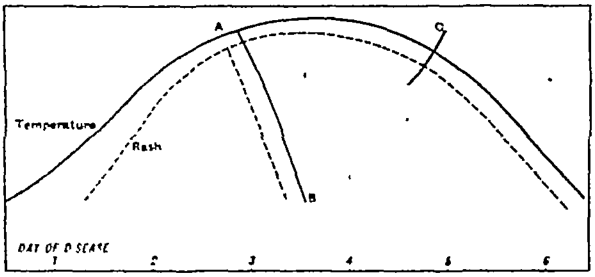
[*] A paper read at a meeting of the Fever Group, Society of Medical Officers of Health, Nov. 27th, 1925.

With regard to the application of the Dick test to diagnosis in the disease, it will be necessary to get a clear idea of the immunity curves of the disease. This will not be completely and satisfactorily done until one can as easily measure the toxin and antitoxin of scarlet fever in the laboratory as those of diphtheria. We have constructed a hypothetical curve which may well record what happens during an attack of scarlet fever.

In Curve 1 the heavy line diagrammatically records the temperature and toxæmia in an ordinary attack of scarlet fever, while the interrupted line records the development of the rash. Results recorded in England, as well as many observations from America, justify one in saying that if one gives at point A a sufficient dose of scarlet fever antitoxin produced in the horse, the temperature and rash will rapidly fall as at B, and the patient's serum will be found to contain sufficient antitoxin to give the Schultz-Charlton blanching in fresh cases of scarlet fever. We may therefore reasonably assume that at point C in an ordinary case of scarlet fever, untreated with antitoxin, the temperature and rash rapidly fall, because the patient has himself produced a large quantity of antitoxin which has been made in those cells of his body that manufacture antitoxin, and has there accumulated until it has been given off into the circulating blood to such an extent that the patient's serum will now give a Schultz-Charlton phenomenon when tested on a fresh patient.

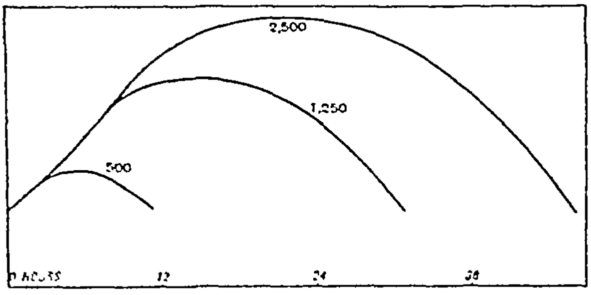
FIG. 1.



Scarlet fever.

Curve 2 represents observations made with our toxin. 500 skin reacting doses will produce either no temperature or a disturbance scarcely recognisable, and lasting only perhaps a few hours; 1250 doses will produce in some instances a miniature attack of scarlet fever—i.e., slight sickness, temperature, and rash, lasting 24 to 48 hours—while 2500 doses will produce in most instances vomiting, fever, and rash lasting about two days. We can from this get a quantitative idea of the *minimum* amount of toxin produced in an ordinary attack of scarlet fever.

FIG. 2.

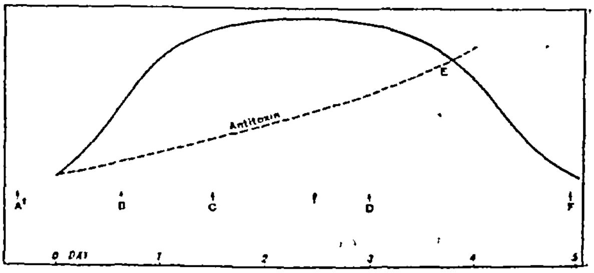


Miniature scarlet fever produced by toxin.

In Curve 3 we have represented what we conclude is occurring in an ordinary attack of scarlet fever. At point A—i.e., just before infection, or in the very earliest stage of the incubation of the disease before any symptoms have been produced—it is probable that weak toxin—e.g., 1/6000 dilution of our standard toxin—would yield a positive reaction. If we test again at point B the patient has begun to produce a minute amount of antitoxin in response to the toxin stimulation which has been going on for some 24 or 48 hours; we now find that the antitoxin is sufficient to neutralise a toxin dilution of 1/6000 but not 1/1000, for this latter dilution gives a positive reaction, while 1/6000 yields a negative. If we wait until point C we might find that the rapidly increasing antitoxin in the patient's blood or skin cells would neutralise a dilution of 1/1000 but not 1/200; at point D it might take 1/10 to produce a reaction; while at point E sufficient antitoxin has accumulated in the cells or blood to neutralise all the toxin secreted by the attacking organisms during the disease; and after point F the patient gives a permanent negative response.

We would suggest that attention should be concentrated on the study of the earliest period of the disease. If the patient is not admitted until the second or third day and gives a negative response to *1/1000 dilution. will* he give a positive response to 1/500 or to 1/100? If when admitted on the second or third day he fails to give the Schultz-Charlton test when 0·2 c.cm. of 1/10 dilution of a good horse antitoxin is injected intracutaneously, will he give a positive Schultz-Charlton test when 0·5 c.cm. of 1/10 dilution is injected or even 0·5 c.cm. of undiluted horse antitoxin? (With this latter dose it would, of course, be necessary to use a control intradermic injection of undiluted horse serum containing no streptococcus antitoxin—e.g., diphtheria antitoxic serum.)

FIG. 3



Scarlet fever.

Are There Different Types of Scarlet Fever?

Are all scarlet fever toxæmias due to the same toxin or are there different toxins in true scarlet fever—in other words, are there immunologically different types of the disease? One of us (C. C. O.) has long felt that there might easily be an overlapping of antigens between the so-called true scarlet fever streptococcus and other streptococci, at least other hæmolytic streptococci. Recently a hæmolytic streptococcus, isolated by Sir Frederick Andrewes from a spreading lymphangitis of the arm, has yielded, when grown on the same media as the Dick and Dochez coccus, a filtrate which gives a typical positive Dick reaction in a known Dick-positive reactor, and a negative in a known Dick-negative reactor. We do not know yet if the toxin is neutralisable by true scarlet fever antitoxin. As yet the relationships between the various streptococci and their toxins have not been sufficiently investigated. This field is rich in interest.

Dr. C. Rundle has had the idea that there may be two or more types of scarlet fever, and has worked particularly by the Schultz-Charlton method Furthermore, Dr. Park has in a recent paper suggested that there may be a wide antigenic overlap between the different streptococci, that—e.g., while the ordinary scarlet fever toxin contains antigenic or toxin components *a*, *b*, *c*, *d*, others may exist which contain *a*, *b*, *c*, *e*, and so forth.

It is stated that during convalescence after what seems to be typical scarlet fever a certain number of patients continue to give a positive Dick reaction. The point needs further investigation. If such patients exist, have they cured themselves of their fever by producing antitoxin which is still locked up intracellularly, and are the cells slow to excrete the antitoxin into the blood-stream? Will they become later negative to the Dick test? Have they responded to the primary stimulus of the toxæmia and, if injected with, e.g., 500 skin doses of toxin during convalescence, will they rapidly produce sufficient antitoxin to make them negative to the Dick test? These and many other interesting points can be worked out only by those having the opportunities of making clinical observations. In the laboratory, until a satisfactory test is discovered, we can do but little.

We may here mention an interesting question for investigation. How stable are the dilutions of toxin? We have considerable evidence that they are stable for at least two weeks. This is a small practical point, but one it is important to know in order to avoid fallacies in making a series of observations. It is obvious that the old and the new dilutions must be tested on the same subject.

THE HEPATIC ASPECT OF EPIDEMIC ENCEPHALITIS.

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The association of hepatic cirrhosis with disease of the basal ganglia is well known, the outstanding example being found in Wilson's progressive lenticular degeneration. Other amyostatic syndromes, such as torsion dystonia, paralysis agitans, &c.—each presenting definite clinical features—are less clearly defined from the pathological standpoint, and it is doubtful to what extent, if any, hepatic derangement takes a part. Clinically, there is but little to suggest an insufficiency of the liver in the majority of instances—even in advanced cases of progressive lenticular degeneration. There are but scanty reports of chemical investigations as to the efficiency of the liver during life; the researches of Dresel and Levy on paralysis agitans and of Ivens on Wilson's disease suggest, however, that defective liver function does occur and can be demonstrated by laboratory methods, although absent clinically.

The object of the present investigation is to ascertain whether evidence exists, suggestive of hepatic involvement in the amyostatic manifestations of encephalitis. Most of the cases chosen have been examples of the Parkinsonian syndrome arising late in the course of a chronic progressive lethargic encephalitis.

Clinical Evidence of Hepatic Derangement.

It is rare to encounter, either during the acute or chronic manifestations of the disease, clinical evidence of hepatic derangement. Although continental writers have occasionally drawn attention to such phenomena, the experience of most English neurologists has been that encephalitis is rarely characterised by signs suggestive of liver involvement. Mlle. Lévy, however, in her recent monograph, states that she has observed jaundice several times in the course of the disease. Van Bogaert (1924) has recorded a case of post-encephalitic respiratory disorder in which jaundice appeared nine months after the onset of the illness, and persisted for a fortnight; there was no discoloration of the stools, but bile-salts were detected in the urine. Ottonello (1924) found signs of enlargement of the liver in eight out of 15 cases of Parkinsonism. Pedrinoni (1925) found clinically an increase in the hepatic dullness in several cases of chronic encephalitis; in one case the liver was apparently diminished in volume. Some ascites was found in one instance.

No clinical evidence was found in any of our cases to suggest a disordered function of the liver. We have never met with jaundice, ascites, pallor of the stools, or abnormal areas of hepatic dullness in any case, either during or after the acute attack.

Histological Evidence.

Unfortunately, there is but scanty reference in the literature of epidemic encephalitis to the post-mortem appearance of the liver. This fact alone suggests that an absence of gross naked-eye changes in that organ is the rule; the evidence of macroscopic cirrhosis is sufficiently striking at an autopsy to invite comment and more detailed examination.

Reports as to the microscopic structure of the liver in these cases are even rarer, and most of the records at our disposal are the work of Italian physicians. In one fatal case of epidemic encephalitis, in which the patient died three weeks after the onset, Ada Harris (1921) reported œdema, cloudy swelling, and fatty degeneration in the liver. The blood-vessels were engorged, a few of them showing perivascular hæmorrhages. There were areas of necrosis around some of the interlobular vessels. Pierantoni (1923) recorded an autopsy on a man of 29, dying in a state of Parkinsonism of three and a half years' duration. The liver was found to be markedly cirrhotic; there was no previous history of syphilis or alcoholism. D'Alessandro (1921) also found vascular stasis and incipient fatty degeneration in the liver of a fatal case of encephalitis.

Rizzo (1924) found in the liver of one case, which perished on the fifteenth day, patchy colliquative degeneration of the parenchyma. The blood-vessels were congested, and here and there were traces of fatty degeneration. No evidence of connective tissue reaction was observed. In two cases of Parkinsonism in chronic encephalitis, of two and a half and three years' duration respectively, he found definite histological changes. Patchy colliquative rarefaction of the parenchyma was observed; in one case there was some venous congestion. Both cases exhibited a definite connective tissue reaction of fibroblastic and fibrous character.

We have had the opportunity of examining the liver in two fatal cases of encephalitis.

Liver 1.—M. N., male, aged 56 (patient of Dr. Gordon Holmes).

(Very advanced case of Parkinsonism following encephalitis; acute onset three and a half years previously.)

Naked Eye.—The liver was normal in size and consistency, and of smooth surface.

Histological.—On microscopical section the capsule appeared slightly thickened. There was a little increase in fibrous tissue in the portal spaces and between the cells. This cirrhosis was universal except in the case of the intercellular increase, which was patchy in distribution and but slight in degree. Associated with this connective tissue proliferation there was a small round-cell infiltration of the portal spaces. No cells were present between the liver cells or around the blood-vessels. There was no dilatation of the ducts or canaliculi. The majority of the cells appeared healthy; in some there were fatty changes, the fat being present in large globules staining brick red with Scharlach R. The nuclei remained intact and were deeply stained. There was perhaps some diminution in the number of Küpffer cells, which in many places appeared flattened against the sinus walls. Bile-pigment was seen in the cells and ducts.

Liver 2.—L. B., male, 5½ years (patient of Dr. Wilfred Pearson).

(Acute onset of encephalitis 12 months before death. Patient gradually passed into a stage of chronic nocturnal chorea with diurnal lethargy; stiffness of legs; dysphagia; mouth gaping widely; marked respiratory arrhythmia. Gradual onset of unconsciousness with head retraction before death.)

Naked Eye.—The liver was normal in size, shape, colour, and consistency. No surface irregularity was present, and there was no thickening of the capsule.

Histological.—In this case there was little or no increase in the amount of fibrous tissue in the portal spaces, and no pericellular fibrosis whatever. There was no round-cell infiltration. The veins were slightly engorged; the great majority of the liver cells were normal, but in some occasional traces of fatty degeneration were detected; the fat was present in the form of very fine droplets, staining brick red with Scharlach R. No abnormality could be noted in the Küpffer cells.

These two livers afforded no evidence of impairment of any of the hepatic functions—secretory, excretory, glycogenic, or detoxicatory. The changes described are such as might be present in any fatal case of toxæmia, and there was nothing to suggest damage to any appreciable proportion of the liver cells.

Biochemical Evidence.

Various metabolic aspects of encephalitis have been studied, particularly by continental workers, who have concentrated upon the question of liver efficiency. In this country Ellis (1924) investigated the excretion of nitrogen and phosphorus in epidemic encephalitis. He found increased amounts of ammonia in the urine and an absence of phosphoric acid; in many cases albumosuria was encountered. He considered these changes to be due to intestinal or more probably liver derangement. Meyer-Bisch and Stern (1923) found urobilinuria in each of 11 cases of progressive encephalitis. Ingestion of 100 g. of lævulose caused lævulosuria in five out of six patients, together with an increased output of urobilin. They do not believe that the probable lesion of the liver was caused by the central nervous process. Xavier (1923) carried out hepatic efficiency tests on ten cases of chronic encephalitis; urobilinuria was present in one case. The Van den Bergh test was negative in each of five cases. Widal's hæmoclastic crisis gave a positive result in two patients, one of whom was advanced in pregnancy and the other had recently been treated with neo-salvarsan. The author concluded that there was no alteration in hepatic function.

Liver function has also been studied in 15 cases of Parkinsonism by Ottonello (1924). He found urobilinuria in six cases; urea excretion was diminished in all 15 cases, but there was an increased urinary output of ammonia nitrogen. In ten cases the urine failed to contain glycuronates after the administration of sodium salicylate. Alimentary glycosuria occurred five times. Ottonello concluded that defective liver function was a constant feature of chronic encephalitis.

The blood-sugar in this disease has been studied by de Giacomo (1924), who found a hyperglycæmia in every one of his eight cases. Pedrinoni (1925) performed liver function tests in 16 cases of chronic encephalitis; he found urobilinuria in 11, and in 10 cases uroerythrin was detected in the urine. The production of urea was below normal in all; indicanuria was found in every patient. The glycogenic function was normal in nine out of 14; the hæmoclastic crisis test was carried out 64 times, always with a positive result; the various components of the tests, however, were dissociated and incomplete. Halliday (1925) reports that in the acute stages of the disease the fasting level of the blood-sugar is normal; in some cases, however, the blood-sugar curves after the ingestion of glucose indicated a delay in liver storage.

Results in our Series of 34 Cases.

Out of the very numerous tests that have been suggested as indications of hepatic efficiency we have chosen for this present investigation five—namely, examination of the urine for bile-salts and pigments, the hæmoclastic crisis test, Van den Bergh's reaction, the lævulose curve, and Roger's test (examination of urine for presence of glycuronates after an injection of 5 gr. of camphor).

Bile-salts and Pigments in Urine.—This investigation was carried out on 33 patients with uniformly negative results.

Hæmoclastic Crisis.—Twenty-five patients were submitted to Widal's hæmoclastic crisis test; of these 12 gave a positive result. In nine of them the fall in the leucocyte count was 2000 or over. Eight patients gave equivocal results, and five were quite negative. In several patients a leucopenia was found at each examination; thus, counts of 4400, 3533, and 1633 were found in F. G., R. F., and A. McG. respectively.

Van den Bergh's Reaction.—This test was carried out on 13 patients with completely negative results.

The Lævulose Curve.—In 30 cases examined by this test, a resting blood-sugar level above 0·13 per cent. was found in all. In 21 cases the level lay between 0·14 per cent. and 0·18 per cent., and in two cases it lay higher than 0·2 per cent. The average reading for all the cases examined was 0·158 per cent.

Table showing Results of Tests in Epidemic Encephalitis.

Name.	Sex and age.	Duration (months).	Clinical state. P. = Parkinsonism.	Urinary bile-salts.	Urinary bile-pigments.	Roger's test.	Hæmoclastic crisis.	Lævulose test. R. = rise F. = fall.
LJ.	F 32	12	P.	0	0	+	+‡	R., 0·05 in 60′
CMcG.	F 19	24	P.	0	0	+	±	R., 0·01 in 45′
AW.	F 23	24	P.	0	0	+		
FM.*	M 24	12	P.; resp. disorder.	0	0	+	+	R., 0·02 in 30′
WC.	F 28	48	P.	0	0	+		
HH.	M 15	14	Slight P.	0	0	+	+	F., 0·02 in 30′
IT.	F 28	12	P.	0	0	+	0	R., 0·02 in 20′
WM.*	M 36	12	P.	0	0	+	0	R., 0·03 in 60′
ES.	M 19	13	Mild P.; resp. disorder.	0	0	+	+	R., 0·04 in 30′
IC.	F 23	12	P.; contractures; resp. disorder.	0	0	+	+	R., 0·06 in 60′
RF.	F 42	36	P.	0	0	+	+	
WE.	M 14	10	Torsion spasm; inverted sleep rhythm.	0	0	+	±	R., 0·02 in 30′
WR.	M 33	12	Severe P.	0	0	+		R., 0·02 in 30′
WW.	M 22	10	P.	0	0	+	±	F., 0·02 in 120′
CD.	M 30	12	P.	0	0	+	+	R., 0·01 in 20′
RF.	M 10	24	Moral change; inverted sleep rhythm.	0	0	+	0	F., 0·01 in 30′
GW.	F 32	48	P.	0	0	+		R., 0·02 in 20′
JK.	F 24	36	P.	0	0	+	+	F., 0·02 in 40′
LS.*	M 22	13	P.	0	0	+	±	No change.
AS.	F 41	10	P.	0	0	0		R., 0·04 in 40′
FG.	M 22	9	P.				±	R., 0·06 in 30′
AJ.	M 41	12	P.	0	0	+	0	R., 0·05 in 60′
CM.	M 40	7	Mild P.; chronic alcoholic.	0	0	+	±	R., 0·03 in 00′
LG.	F 26	12	P.	0	0	+	0	F., 0·02 in 30′
CP.	M 20	50	P.; moral change.	0	0	+		R., 0·03 in 60′
EB.	F 16	13	Myoclonus; resp. disorder.	0	0	+	±	R., 0·01 in 30′
TC.*	M 12	24	Mild P.; dysarthria.	0	0	+		R., 0·02 in 60′
FG.	M 22	18	P.	0	0	+	+	No change.
DS.*	M 35	36	Severe P.	0	0	+	+	R., 0·05 in 30′
ME.*	F 34	36	P.	0	0	+	+	R., 0·01 in 30′
WP.*	M 42	24	P.	0	0	+	±	R., 0·01 in 30′
CL.*	M 17	36	P.	0	0	+	+	R., 0·02 in 30′
GS.*	M 40	15	Slight P.	0	0	+		R., 0·04 in 30′
GR.*	12 20	F	Severe P.	0	0	+		

* Van den Bergh: 0. ‡ Weakly.

After the administration of lævulose (25–35 g., according to patient's weight) a rise in the curve occurred in 23. The elevation varied in degree from 0·01 per cent. to 0·06 per cent.; and in time of appearance from 20 minutes to one hour: three cases gave a rise of 0·01 per cent.; three cases gave a rise of 0·05 per cent.; one case gave a rise of 0·06 per cent. In the others the rise lay between 0·01 per cent. and 0·03 per cent., which may probably be considered within normal limits. Owing to the variable kidney threshold for lævulose present in normal individuals, routine examinations for lævulosuria were not made. Two patients showed absolutely no change in the blood-sugar level after the ingestion of lævulose; in five others there was actually a fall of from 0·01 per cent. to 0·02 per cent., extending over a period of from 30 minutes to two hours.

Roger's Test.—In 33 cases glycuronic acid appeared in the urine after the administration of 5 gr. of camphor. In one case only was an abnormal reaction found, no glycuronates being detected by Tollen's reaction.

The value of these various tests is still disputed, and some of them—e.g., the pigmentary reactions—though genuine tests of hepatic function, are probably gross, a positive result indicating severe damage to the liver. It is possible that Roger's test and the lævulose curve are more delicate criteria of the slighter degrees of liver defect. The value of the hæmoclastic crisis test is still debatable, and there even is some evidence to suggest that it is worthless as a liver function test.

In our present series all the cruder pigmentary tests have been uniformly negative; of the more sensitive tests, such as Roger's, 32 out of 33 gave normal responses. The lævulose curves were, in 26 cases, within the limits of normality, although every one of the 33 cases examined had a high resting sugar. Seven cases showed a rise in the blood-sugar of from 0·04 per cent. to 0·06 per cent. The results in the hæmoclastic crisis test were certainly abnormal, but it must be pointed out that a leucopenia has been found in many of our control cases after the ingestion of milk, and hence no deductions are permissible from these results. It is worthy of note, moreover, that no parallelism could be traced between those cases showing elevation of the blood-sugar curve above 0·03 per cent. and those cases with a positive hæmoclastic crisis.

Discussion.

The subjects of these biochemical investigations have been patients exhibiting various sequelæ of epidemic encephalitis. Most of them were examples of Parkinsonism, but a few cases presented psychical changes without gross organic defects. The patients varied in age from 10 years to 42, and the intervals between the acute attack and the investigation ranged from seven months to five years. The accompanying table attempts to correlate clinical data with laboratory findings. The results of these investigations have broadly indicated: (1) that there is no biochemical evidence of any gross derangement in the functions of the liver, and (2) that in many cases the resting blood-sugar is increased.

The metabolism of glucose has attracted most attention in respect to its presence in the cerebrospinal fluid in increased amounts. Although by no means a constant feature, nor yet confined to encephalitis only, nevertheless a "hyperglycorrhachie" is well known to be a frequent and striking phenomenon in both acute and chronic encephalitis. The figures obtained have never been very high, and have also been lower than the blood-sugar readings. Little attention has been given to the estimation of glucose in the blood in this disease. De Giacomo (1925) investigated this point in eight cases of Parkinsonism following encephalitis, and obtained in each case a definitely high figure; in five cases of senile paralysis agitans there was but a slight hyperglycæmia, which was inconstant in appearance.

During the acute stages of the disease, high blood-sugar readings have been recorded by Bourges, Foerster, and Moncandier (1920), and by Talheimer and Updegraff (1922). Normal results, however, were obtained by Foster (1921) and by Halliday (1925). From the estimations in our series it appears that a slight but definite increase in the amount of glucose in the fasting blood is of frequent occurrence. Thus all of our 31 cases have presented a mild hyperglycæmia. The average resting blood-sugar percentage for all cases has been 0·158 per cent. as opposed to 0·12 per cent. in our controls.

In spite of the definitely high amount of sugar in the resting blood, a lævulose meal produces as a rule no rise. Periodic estimations of the blood-sugar level after the ingestion of 30 g. of glucose produced in the majority of cases but little rise in the figure; the curve, moreover, rapidly "flattened out," and did not exhibit any striking deviation from the curves obtained in control cases. The cerebro-spinal fluid glucose after the ingestion of sugar was not estimated as a routine measure, but in one case in which repeated lumbar punctures were made at the same time as the blood was taken the two curves were seen to run parallel courses.

Although one of us in a previous paper has called attention to the presence in the urine of a Fehling-reducing substance in many cases of chronic encephalitis, in no instance in the present series has any constant glycosuria been observed. Two hypotheses have been suggested to explain the alterations in glucose metabolism in this disease; on the one hand, it has been supposed that the encephalitic virus has damaged various secretory elements in the extra-neural systems—in particular, the liver parenchyma. On the other hand, a derangement of the sympathetic system has been suspected. The present investigations fail to support any conception of a visceral origin for these changes. Thus our hepatic efficiency tests, though admittedly crude and of unproved value, do not suggest any obvious liver insufficiency. This has tallied with our clinical observations. Uranalysis, blood-pressure readings, and renal function tests, though not reported here, have not given evidence of any kidney derangement. We have found, moreover, a normal utilisation of glucose by the tissues, in spite of the elevation of the initial reading.

It appears, therefore, more reasonable to regard these metabolic changes as evidence of sympathetic involvement. It is improbable that an infection of the central nervous system, so diffuse in its activity, would spare the various sympathetic "centres" which probably lie in the diencephalon and along the base of the fourth ventricle and medulla oblongata. Clinical manifestations of altered sympathetic activity may be pointed out in such symptoms as seborrhœa, hyperhidrosis, and vasomotor derangements.

Conclusions.

We have been unable to find any clinical, histological, or biochemical evidence to suggest an hepatic involvement after epidemic encephalitis. The amount of sugar in the resting blood, however, tends to lie at a slightly higher level than normal; it is suggested that this hyperglycæmia is the result of sympathetic dysfunction.

We beg to express our gratitude to the physicians of the National Hospital, upon whose patients these investigations were carried out.

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THE AVOIDANCE OF PAIN AFTER TONSILLECTOMY.

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IN the following article I have endeavoured to focus attention on one point only, the avoidance of pain after tonsillectomy. It may seem a comparatively small point, but in reality it is very important, especially from the patient's point of view. Everyone recognises that the unhealthy tonsil is one of the main portals for the entrance of infection, and one of the chief breeding grounds for micro-organisms. Complete removal of septic tonsils is recommended, with justification, for a great variety of pathological conditions, including enlarged glands of the neck, chronic rheumatism, anæmia, "neuritis," heart disease of toxic origin, chorea, epilepsy, persistent conjunctivitis, goitre, and many others. Septic tonsils in adults are more common than is often supposed, and are undoubtedly the cause of many obscure toxæmias; but if such a cause is to be discovered it must be looked for. The throat must be examined with two spatulas, one holding down the tongue, and a smaller one exerting steady pressure outwards and backwards on the anterior pillar of the fauces, causing the tonsil to emerge fully into view, and, when it is septic, squeezing pus out of it.

Many adult patients—and I find, nowadays, that in private practice, though not in hospital, I have to perform tonsillectomy more frequently for adults than for children—are inclined, however, to refuse operation on account of fear; they know of friends who were laid on their backs after the operation, in pain and unable to swallow, for ten days or more; or they expect to remain in a nursing home for a fortnight or longer, and cannot spare the time. It is therefore of great importance to be able to assure a patient that the operation can be performed painlessly, or practically so, and that he should be able to leave the nursing home quite well after three or four days. I admit that I have given this subject considerably more attention since I had my own tonsils enucleated, and have been able to realise personally the difference in comfort that attention to small and almost trivial details can make.

The question of whether a tonsil should be enucleated by the guillotine or by dissection may be considered from the same point of view. Dissection under a local anæsthetic is a method I have never employed; I have heard surgeons speak of it enthusiastically, but I have never yet known a patient do so. It may be painless at the time of operation, but it is certainly not so afterwards. At one time I used the guillotine invariably, employing the Whillis-Sluder method. I now prefer dissection, but I still frequently employ the guillotine for children with enlarged (but not with flat) tonsils; and in hospital "tonsil clinics" it must inevitably be employed if one is to get through a large number of cases in the time available. The guillotine method, however, does cause bruising of the fauces, by squeezing the tonsil through the aperture of the guillotine and then manipulating it against the mandibular eminence, and sometimes a piece of the anterior pillar must be removed in order to enucleate a flat tonsil completely.

The avoidance of bruising and tearing means the avoidance of subsequent pain. In adults, therefore, I invariably dissect out the tonsils, employing a technique which I have modified from a method I first saw employed by Dr. George Cathcart, and which has also some points of resemblance with the method popularised by Mr. G. E. Waugh. By this technique a minimum amount of damage is done to the throat, and the wound soon epithelialises; there is little or no bleeding; stitching is never necessary, and ligaturing of vessels seldom so; and patients tell me that they have no pain—at the worst they may have some discomfort while swallowing during the first few hours after the operation. The technique may be criticised as being an elaboration of what ought to be quite a simple operation, and as requiring a somewhat longer anæsthesia than is necessary for other methods of enucleating tonsils; but I feel quite certain that the good results which it invariably ensures, the prevention of bleeding, and the avoidance of pain, make it well worth while.

Before the Operation.

The steps taken to avoid pain after tonsillectomy begin on the day before the operation, in order to prevent vomiting by minimising acidosis; it is seldom that my patients vomit more than once as they are recovering from the anæsthetic, and many do not vomit at all. Bicarbonate of soda is given three or four times during the day, before food, three or four teaspoonfuls being dissolved in half a pint of water. A child may be given a stick or two of barley sugar to suck. It is also wise to give the adult patient 20 to 30 gr. of ammonium bromide at night, to ensure a quiet sleep on the night before the operation. On the morning of operation a simple enema is given, and the patient is not allowed anything to eat or drink before the operation, not even a cup of tea or a glass of water. The operation should always be fixed, if at all possible, for an early hour, 8.30 or 9 A.M. An injection of atropine, 1/100th gr., is given half an hour before.

At the Operation.

The anæsthetic I prefer is open ether, given with oxygen, and the induction may be begun with nitrous oxide. The patient is placed on his back with a sandbag under the shoulders, and the head is lowered and well extended on the neck. This brings the chin, middle line of the neck, and the sternum almost in a direct line, and the trachea therefore slopes downwards towards the post-nasal space, so that blood cannot get down it. A good big side-to-side bite of the tongue is taken with the tongue clip (personally I use a towel clip), and the tongue is held forwards by the anæsthetist, a pad of gauze being placed between the under surface of the tongue and the teeth.

The jaws are held apart with an ordinary Doyen gag protected with rubber tubing or with O'Malley's gag, being careful not to catch or squeeze the lips. It is worth while taking some care over the placing of the tongue-clip and the gag, as not infrequently the only complaint of pain a patient has made has been of the pain in the tongue or the lips. The operator sits at the head of the table, and the anæsthetist stands on his left. It is a considerable convenience for *both* to have forehead lights, so that at least one light is always focused on the area of operation. Before beginning, a few drops of castor oil are dropped into each eye, to protect them in case any blood runs down.

The Operation.

With a pair of long tenaculum forceps the mucous membrane is picked up about half-way down the outer border of the tonsil, internal to the anterior pillar of the fauces, and as close as is conveniently possible to the tonsil. With a pair of long, straight, sharp-pointed scissors (those I use are 8½ inches long, and were specially made for me by Messrs. Mayer and Phelps) a cut is made into the mucous membrane which has been picked up, exposing the white capsule of the tonsil; the cut is continued first upwards towards the tongue, and then downwards towards the soft palate, round the border of the tonsil. The tonsil is then gently pulled forwards and outwards, and the cut is continued upwards again behind, separating the posterior pillar of the fauces from the tonsil. The operator must be careful merely to expose the capsule of the tonsil all round, and not to cut into it.

With a pair of Waugh's dissecting forceps a strip of gauze is introduced where the incision was begun, and pushed down and round between the tonsil and the anterior and posterior pillars, and then behind, wiping the tonsil in its capsule out of its bed. The tonsil is held at first with the other pair of forceps and then, as it comes farther out, with a volsellum. The dissection is done very gently and quite slowly; there is then little if any bleeding, and any troublesome vessel is secured at once with a pair of long artery forceps, which will stop the bleeding if left on for a minute or two. When the tonsil is free except for its lingual prolongation, this is clamped across with a pair of Birkett's artery forceps, and then cut off with blunt-pointed scissors; the artery forceps are left on for a minute or two to prevent any bleeding. A piece of gauze is then squeezed out of turpentine (as suggested to me—though it is an old-fashioned styptic—by Mr. Harold Kisch), packed into a tonsil bed, and held firmly there for a short time; this acts not only as a hæmostatic, but as an antiseptic, and lessens sloughing afterwards. A pad of dry gauze or cotton-wool is left in the tonsil bed, while the other tonsil is being enucleated in the same way.

When the tonsil is gently dissected out in this manner there should not be any bleeding to trouble about. I no longer apply ligatures, as I found that ligatures in the tonsil bed caused a good deal of discomfort to the patient afterwards. A few minutes devoted to waiting until bleeding has stopped, after securing the bleeding point or points with long artery forceps, will obviate the necessity for any ligatures, although I always have linen thread ligatures ready on my instrument table in case of unexpected trouble. The mucous membrane is cut all round close to the tonsil so as to preserve as much mucous membrane as one can, and to leave as small a wound as possible; instead of the wound being left gaping the mucous membrane forms a rounded border to it, and from its edge epithelialisation over the surface of the tonsil bed soon takes place, without any contraction.

After both tonsils have been removed, the throat, mouth, and tongue are cleansed of blood with warm saline solution, and any blood clot removed from the post-nasal space. A last careful inspection is made of the tonsil beds, to make sure that no bleeding point has been overlooked, before the patient is put back to bed.

After the Operation.

When the patient begins to come round I give him a hypodermic injection of heroin, $\frac{1}{12}$ gr., or omnopon, $\frac{1}{3}$ gr.; a child is given aspirin 10 gr. and potassium bromide 10 gr. per rectum or by the mouth. This gets him comfortably through the greater part of the day. When he has recovered from the effects of this, in the early afternoon, I spray the throat and all round the mouth with glycothymoline and warm water, half and half. I also give the patient an aspirin "throat bath," as Dr. Georges Portmann calls it: 10 gr. of aspirin powder is flung on the surface of half a tumbler of warm water, and before the aspirin has begun to dissolve it is held in the throat, first on one side and then on the other, as if the patient were going to gargle, but without gargling, which would hurt the throat. The aspirin powder thus gets right into the tonsil beds, where it has a very soothing effect. The patient should maintain complete silence. If he must speak at all he should speak in a whisper only, so that the sides of the fauces are not brought into play.

At tea-time, and again later in the evening, the patient may have some ice cream, or if he prefers he may drink some lemon-water or barley-water; but for the first 24 hours he should not drink very much, as swallowing may be uncomfortable. The glycothymoline sprays are continued every hour or two, the aspirin throat baths three or four times daily. At night the patient may be given aspirin, 10 gr., with potassium or ammonium bromide, 10 gr.; but he often settles down to sleep without any sedative.

Having got the patient comfortably through the first 24 hours he usually complains very little, if at all, of discomfort afterwards. He must keep as silent as possible for the next two days, speaking only in a whisper. The glycothymoline sprays and the aspirin throat baths are continued regularly every few hours as long as he is in the nursing home. An aspirin throat bath, or, as time goes on, an aspirin gargle should always be given immediately before a meal, and the food can then be swallowed without discomfort. On the second day the food should consist of bread and milk, custards, junkets, ice cream, jellies, tinned pears (which are the most easily swallowed fruit), and he may have barley-water and similar drinks. Milk must not be given, as it gets sticky and uncomfortable in the throat.

On the third day he may have, in addition, some fish or chicken. This should not, however, be pounded up into so-called fish or chicken creams; when prepared in this manner little particles get into the tonsil beds and cause considerable irritation. The patient should get out of bed on the third day, and may also have bread and butter, tea, or fruit. On the fourth day he should be able to eat ordinary food and drink ordinary drinks. He should be able to go home on that day or the next, and should begin to use his voice in the ordinary way, but without tiring it. Singers should begin to practise again at once, to assist in preventing any contraction of the pillars of the fauces.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF DERMATOLOGY AND STUDY OF DISEASE IN CHILDREN.

A COMBINED meeting of these Sections was held on Dec. 17th, Dr. J. H. SEQUEIRA, President of the Section of Dermatology, being in the chair, when Dr. A. M. H. GRAY opened a discussion on the

Ætiology and Treatment of Infantile Eczema.

He confined himself to those varieties of eczema which attacked the face, dividing them into three classes: (1) those starting on the cheek or forehead, (2) those starting on the scalp, (3) those occurring in association with a general eczema starting on the body. In the first class an intensely itchy patch was usually followed by urticarial or erythematous lesions, not resembling bacterial infection. The prominent parts of the face suffered more than the hollows, suggesting that friction played an important part. Most of the infants were breast-fed, fat, and healthy looking. The second type often followed the rubbing of scurfy patches, and the face, when involved, usually broke out suddenly, suggesting a sudden breaking down of skin resistance rather than a spreading local infection. The type of the eruptions seemed much the same in all groups, and the clinical features depended more on the nutrition of the patient and the stage of the disease than on its place of origin.

The Underlying Diathesis.—In 40 cases of eczema seen at Great Ormond-street, 24 were of type (1), and of these ten subsequently developed asthma or recurring bronchitis; eight were of type (2) and six of type (3), and in these no chest trouble was reported. Thus it seemed that the primary facial cases had some specialised form of hypersensitiveness which was not present in the others which had only that form of acquired hypersensitiveness met with in adult eczema. The figures also supported the view that most scalp cases were infective or "seborrhœic." Five of the facial cases gave some history of recurrent rash, but always on the cheek, and there was no flexural eczema. Possibly that would develop later, as a large number of adults suffering from this gave histories of infantile facial eczema and asthma. Cyclical vomiting and hay fever had also been associated with these conditions, and the speaker was convinced that infantile eczema was one expression of an underlying diathesis which did not cease when the facial eruption got well.

Death in Eczema.—Five of the 40 children had died, one from encephalitis lethargica in later life, the others all in infancy from epidemic diarrhœa, empyema following multiple boils, and convulsions. The latter was in a scalp case and was the only one that raised the question of "eczema death."

Exciting Cause.—Some definite cause could usually be found for the primary eruption; in the scalp cases a bacterial infection was the starting-point but the facial cases were less easy to account for. Protein sensitiveness and digestive disturbance were the two theories. Most cases occurred in breast-fed children, so any protein-irritant must come from the mother's milk, but cutaneous tests with human milk had been extraordinarily inconclusive. It might be that the offending protein had been ingested by the mother and was not necessarily present at the time of testing. Several observers had found a tendency in eczema patients of all ages to give positive cuti-reactions to two, three, or more proteins, which suggested that the hypersensitiveness was not specific in infantile facial eczema. Recently certain observers had thought that different clinical types of eczema could be associated with indigestion of sugar, starch, and fat respectively. Nevertheless, as Towle and Talbot had pointed out, so many infants with indigestion of fats and sugars presented no skin lesion that there must still be some underlying condition. A large number of cases showed symptoms of over-feeding and improved considerably when the quantity of food was reduced. It seemed probable that indigestion might cause flushing and itching of the face and that the subsequent rubbing would produce in the child with a diathesis the chain of symptoms included in the primary face type.

Treatment.—The main point was to stop friction, and this could only be partially done by restraint. Change of temperature was the most potent cause of itching and should be avoided as far as possible. In non-septic cases zinc paste formed the best basis; in septic cases starch and boric acid or flavine poultices. Crude coal-tar was far the best anti-pruritic, and could be used on a face-mask, 3 per cent. coal-tar in Lassar's paste, with good results. No definite improvement followed the use of drugs, though bromide was sometimes useful, and reduction in the feeds was the only dietetic measure necessary. In early scalp cases sulphur and salicylic ointment was valuable.

The Problem of Idiosyncrasy.

Dr. H. C. CAMERON limited his remarks to the problem of what underlay the idiosyncrasy of particular infants to produce their tendency to eczema. How were we to explain the regularity with which an attack of measles would clear the skin absolutely and instantly of eczema? the curious association between vaccination and eczema? the risk of implanting a generalised vaccinia in an eczematous patch? He had seen one eczematous child who took chicken-pox perfectly normally. The "eczema death" might be septicæmic or due to interference with the respiratory function of the skin by the excessive use of ointments and bandages. Most of the fatal cases died with hyperpyrexia.

On the whole, the eczematous child was one who readily retained water in the tissues; it put on weight very fast and appeared very fit with a high colour, but was really an atrophic infant with the atrophy masked by the water, which might suddenly be turned out with great loss of weight. Judged by what they could do these children were not healthy. Eczema might be put into two groups: (1) that occurring in the very young, thin baby, a generalised form, and (2) that occurring in the older, fat child, on the cheeks. By fattening the first class and making the second thin the eczema would be cleared up. Many eczematous babies were spasmophiliac with a low calcium content in the blood and a tendency especially to tetany and laryngismus stridulus, and even when there were no gross manifestations the "latent signs" could very often be found in the eczematous baby. There were three conditions in which sudden inexplicable death might occur in the young child—eczema, spasmophilia, and status lymphaticus. Status lymphaticus was the post-mortem equivalent of the clinically hypolabile child, and these children had often had eczema during life. If such a child died a slow lingering death with dehydration there would be no trace of lymphoid hyperplasia post mortem. The eczematous diathesis of Czerny was the clinical analogue of status lymphaticus. In older children there were two diatheses (and in both a history of infantile eczema was often found). One was the type of child with a high lymph content in the body, an ill-defined margin to the hairy scalp, and an inveterate tendency to impetigo and chronic mucous catarrh of the lung and bowel; if there was a secondary infection with tuberculosis, as often happened, this type became the "scrofulous child." Czerny had written volumes on the ill-effect of milk in such children. The second was the intellectual, meagre, thin child, exhausting itself by the energy it put into everything, suffering from vasomotor troubles, pallor, prostration, and abdominal discomfort passing into cyclical vomiting. This child's condition was improved by cutting out milk-fat; on a high fat content in the diet they did badly and got acetonæmia, smelly breath, furred tongue, and constipation. There seemed to be some connexion between eczema and a milk diet; if the eczematous infant of 7–8 months were put on to a mixed diet with the minimum of milk it was much improved. The "diaper rash" was due to ammoniacal urine and could be put right by large doses of alkalies. Finkelstein had tried the substitution of his albumin milk, a high concentration of casein with reduction of whey and salt, and had been successful with the fat, watery infant but not with the thin type. In spite of the importance of breast-feeding, supplementary or mixed feeding was the right treatment for eczema.

Discussion.

Dr. H. G. ADAMSON defined infantile eczema as an eruption starting on the scalp, both cheeks and forehead, avoiding the orbits, nose, and mouth with a characteristic mask-like distribution. Usually, sooner or later, it involved the outer surfaces of the forearms and legs and sometimes the trunk. It consisted of circumscribed red areas covered with minute weeping points. The whole thickness of the skin was swollen to two or three times its normal. There was intense itching, which aggravated the condition. With careful protection from irritation it subsided and might never recur. If not cured in infancy it might last into childhood or adult life. A small percentage of uncured cases developed asthma in conjunction with the chronic eczema of childhood, but cured cases did not. Pathologically, it was a catarrhal inflammation characterised by serous exudation into the whole thickness of the skin. His experience was that it was quite independent of any digestive disturbance or food idiosyncrasy and was never influenced by dietetic measures. He inclined to the view that external irritants were the sole factor. It started on the parts exposed to changes of temperature, imperfect drying, and contact with the perspiring skin of the mother. Sudden change of temperature would produce flushing, and the irritation would lead to a dermatitis and finally an eczema. When the skin had become eczematised it became hypersensitive in other parts. Ninety-five per cent. of Dr. Arthur Hall's cases began in winter. Scalp cases always followed on scurf. The only fact against a purely external ætiology was the occasional association of eczema and asthma, but eczema might attack only one child in a family, or one of twins, and could be cured only by external treatment. Sudden death was very rare and probably due to chill, as in burns.

Prof. F. S. LANGMEAD said that the term "eczema" included many conditions—traumatic lesions, lesions due to heat, cold and vascular disturbance, and diseases of the nerves. It was a satisfying word, but if translated into English as "a weeping" or a subacute catarrhal dermatitis would be less satisfying and less likely to interfere with progress in discovering its cause. Irritants causing it included soap, wind, heat, scratching, &c.; excretions, stools, and urine: discharges; bacterial infections and irritations from within, sweat, and possibly blood. The eczema beginning about the buttocks of small babies was due to irritant excretions, especially ammoniacal fæces, and should not be treated purely as an external condition. These children took carbohydrate badly and the stool could be made alkaline by giving excess of protein; this was one of the best uses of a whole milk diet. Another type was the facial eczema, spreading over the body, in the well-nourished child with the full-moon face. It was in these that the sudden death occasionally happened. Probably there was some underlying constitutional factor in this class. A third group was associated with a protein idiopathy and the protein reactions of these should be explored. Epileptic convulsions might be heralded by a patch of eczema. In treatment something could be done with alkalies and a great deal with calcium lactate, especially if combined with parathyroid.

Dr. J. M. H. MACLEOD said that eczema was not a disease but a type of reaction; in the infant it was pure and more easily studied than in the adult. It was a local condition produced by scratching and rubbing. Temperature was an important factor; the majority of cases occurred in winter and yet gastro-intestinal disturbances were much commoner in the summer. He had never known it definitely produced by diet. It was extremely rare on the buttocks, which were subject rather to a papular urticaria or streptococcal infection. As soon as the local reaction had been produced the skin became hypersensitive all over and reacted more readily to minor irritants. The line to take was to concentrate on avoiding things that made the child scratch.

Dr. G. H. LANCASHIRE said that the majority of cases were simply the expression of a skin sensitive to external irritation, which was the only factor common to all cases. When the child was again exposed the eczema reappeared. In many cases the skin was in a neglected condition and must be cleansed first of all with starch-boric poultices, &c. Coal-tar was most useful; he preferred a 5–6 per cent. preparation with starch, vaseline, and zinc oxide. Much depended on the quality of the coal-tar. Death might be due to injudicious dressing with cold evaporating lotions.

Dr. H. HALDIN-DAVIS said that injudicious feeding might lead to scurfy lesions and spots, which would get better when the diet was put right, but the eczema with which dermatologists had to deal was a much more severe thing and could not be treated by diet or medicine. Protection and antipruritic measures were the sheet-anchor of treatment. We did not yet know enough to say what the constitutional defect was that underlay it. He had found that in some cases there was excess of sugar in the blood, and that the blood-sugar curve after a glucose meal showed a "sugar lag."

Dr. J. MURRAY BLIGH said that there was a local belief in Lancashire that if you got rid of the eczema too quickly the child died. There seemed to be something in this idea; pneumonia had some part in most of the fatalities. He had never seen eczema of the buttocks. The worst cases did not occur among the poor. For treatment a good nurse who could keep olive oil constantly applied to the whole body was the first essential. Three layers of butter muslin saturated with the best oil obtainable should be kept on the child and chloretone given to keep it quiet. Alkalies should be given as a routine because the children always developed another non-eczematous rash on the buttock. By this means the condition could be cured in about six weeks without change of diet. He was not satisfied that taking the baby off the breast had ever helped.

Mr. FRANK COKE said that he had obtained a history of eczema in 18 per cent. of his cases of asthma. Of 1000 cases, 225 were sensitive to food proteins, and in this group 37 per cent. had had eczema. He thought that wheat-sensitiveness played a large part. Eczema could be cured by a diet free from substances to which the patient was sensitive. On the face it was often due to sleeping on a feather pillow. Manganese and calcium cleared it up and kept it cleared.

Dr. S. E. DORE said that the seborrhœic type might be due to direct infection from the mother brushing her hair over the child. This could be cured locally. Thyroid was beneficial in some cases. He would divide eczema into (1) simple or traumatic, due to the infant's own secretions, and (2) seborrhœic—a very large percentage.

Dr. M. S. THOMSON said that the insomnia and exhaustion resulting from eczema upset the digestion, and the eczema could not then be cured until this was attended to. Hypnotics might be given more; chloral and potassium bromide was very useful. He did not see how the irritation theory could explain the sudden acute eczema in flexures. He had not seen cyclical vomiting associated with eczema, but he had with lichen urticatus.

HUNTERIAN SOCIETY.

THE second dinner meeting of the Hunterian Society was held on Dec. 14th at Simpson's Restaurant, with Dr. HOWARD HUMPHRIS, the President, in the chair. After dinner Dr. CAMPBELL McCLURE opened a discussion on

INDIGESTION.

He said he would define indigestion, for the purpose of these remarks, as symptoms more or less connected with the upper abdomen and due to disorders of the stomach and intestines. Good functioning depended on two things, motility and secretion; but the stomach and bowels could either move too fast or too slowly and their secretions could be in excess or deficient, and all indigestion was due to one or other of these causes. The commonest initial symptoms were nausea, and pain varying between trivial and acute, in the upper abdomen. Pain in the epigastrium did not necessarily connote a severe lesion, but nevertheless called for careful observation, since there was a tendency for pains seated in remote parts of the abdomen to be referred to the epigastric region. Pain caused by pressure on the pylorus was referred to the middle line, slightly to the right, near the xiphisternum; that of gall-stones to the region of the ninth rib; and that of appendicitis to McBurney's point. A symptom of duodenal ulcer was severe gastric pain, and bad stomach-ache was also one of the signs of appendicitis, cervicitis uteri, and (in children) phimosis.

Difficulties of Diagnosis.

Apparent indigestion might, therefore, have nothing to do with the stomach, and the real trouble was often extremely hard to diagnose. Even after a close clinical examination the physician had to seek the help of the radiologist and the chemist, and even these experts might not be much more accurate than the clinician. Since the symptoms of pyloric and gastric cancer could both be produced by minor conditions, the necessity for close observation and reasoning was obvious. Many physicians tended nowadays to rely far too much on aids to diagnosis and did not think enough for themselves. Incredible though it might seem, there were still practitioners who left low corsets and underclothes in place when they examined an indigestion patient, and he had recently had three patients sent to him for indigestion, one of whom had an abdominal aneurysm and two acute appendicitis. These were bad examples of faulty examination. Moreover, X rays could rarely tell the clinician more about a case of indigestion than he knew himself, and for some radiologists the barium shadow had a fatal fascination. They would follow the advancing meal carefully down into the intestines and neglect the empty parts that it had left, and sometimes report free from organic disease a patient who suffered from functional dilatation of the stomach and duodenum and from pyloric spasm, whose cardia could be found by percussion right up to the fifth interspace well after the meal and who had been suffering from severe pain and tachycardia. Surgical interference would be disastrous to cases of this kind, and it was quite wrong to say that the physician cannot diagnose them.

Chronic Dyspepsia and the Long Stomach.

Graver forms of indigestion were due to gross lesions. Gastric ulcer, for instance, was a serious and painful condition that sometimes led to deformity such as the hour-glass stomach, and often called for surgical interference. In the many cases where the trouble came on without warning it was obvious that some factor was at work beyond mere irritation of the mucous membranes by unsuitable food. One man could eat and drink his fill for a long lifetime, another suffered from dyspepsia as a youth and died early; one would break down gastrically from worry and another would escape. In his opinion many of these cases suffered from a long stomach and a redundant colon from the day they were born. A long muscle lost tone more easily than a short one, and a long stomach, although it gave no trouble under good conditions, lost its tone directly the system encountered strain. Dyspeptics were nearly always deficient in calcium and their vitality was low; they were easily exhausted and fell ready victims to infection, which had a severe and rapid effect on the alimentary system and was often the cause of ulcers. This type of constitution was badly equipped from the start and when it came under stress the sympathetic system was liable to get out of hand. This lack of nervous control might depend on a lack of endocrine balance. The trouble was sometimes a failure to assimilate certain substances and sometimes a failure to eliminate others. The bulk of the treatment must be medical and not surgical. Admittedly gross lesions should be handed over to the surgeon, but after the operation they should be returned to the physician so that he could correct the remaining faults and obviate the danger of a relapse.

The Surgeon's Part in Diagnosis.

Mr. H. W. CARSON, in opening the discussion from the surgical side, said that he was cheered by Dr. McClure's ready admission that surgery had a definite place in the treatment of indigestion. When he first went to St. Bartholomew's Hospital the number of abdominal operations performed in a year was not more than 30, and none of these had as its object the cure of indigestion. In his last year the figure was 96, of which only nine were for other complaints. The mortality at first was 70 per cent., and it spoke highly for the courage of the surgeons that they carried on in the face of this tremendous mortality until they reached the firm ground on which they now stood.

The surgeon was not a mere carpenter. diagnosis was an important part of his work. His power had been enormously increased by the fortunate advent of radiology and biochemistry soon after he began to deal with the problem of indigestion. It was now possible to say fairly accurately in any given case what had happened, but our knowledge about causation was still almost negligible. The nose, teeth, tonsils, and other potential foci of sepsis had long been suspect, but a more recent object of suspicion was food. There was no doubt that indigestion was on the increase, and it was very probable that the cause was the present faulty method of preserving food. Hardly any food escaped manipulation in some way; eggs were always suspect and milk was known to be very dangerous. Unfortunately, almost any attempt to improve the milk-supply immediately became the subject of acute political controversy and was blocked at the outset.

The most important kind of indigestion from the surgeon's point of view was that caused by gastric and duodenal ulcers. If it were true that the surgeon had no part in the treatment of any but chronic and recurring cases, the physician must claim the power of curing these ulcers, but the hospitals were packed with dyspeptics who had refused to get well and had been "thrown to the lions" for them to do their best. Duodenal ulcer was now treated by gastro-jejunostomy, often with appendicectomy and the removal of any causes of sepsis. 85 per cent. were cured, but the remainder became definitely worse, as some types of duodenal ulcer persisted in spite of gastro-jejunostomy. It was time, he thought, to ask whether the present method had not better be replaced by duodenectomy, which had a mortality of 10 per cent. but gave a positive result in the remainder.

Operations for gastric ulcer tended to become more and more radical. Results had been very poor except when the ulcer had been separated close to the pylorus, and the question arose whether gastric ulcer was not the first stage of a potential gastric cancer. The bulk of the evidence was certainly against this theory, but it underlay most of the partial gastrectomies of to-day. Whether the policy was justified only time could show. It was wrong to regard gastric and duodenal ulcers as fortuitous conditions, to be treated as well as possible. They were stages in a long course of toxæmia, which was not necessarily ended by operation, and they still required long and careful treatment after they left the surgeon's hands. It had been once believed that brain workers were especially liable to angina pectoris, but they were now known to suffer chiefly from duodenal ulcer. It was highly probable that many diagnoses of angina pectoris had been wrong, and that the pain felt near the heart was referred from the duodenum. Many physicians maintained that gall-stones were a medical complaint and could be cured by medical treatment. This belief was quite unjustified, for only surgery could remove them. It was, moreover, highly dangerous to delay the operation, as many cases showed serious complications. The difficulty lay in diagnosis, and none of the promised tests had given more than 15 per cent. of results. It was not possible to attempt a radical cure in more than 20 per cent. of cases of cancer of the stomach or 40 per cent. in cancer of the colon. Nearly all the cases that came to him had advanced growths in the stomach or obstruction of the colon, and this was because the early signs of this condition were not known, or at any rate not taught. The diagnosis was not difficult, and the fact that they escaped diagnosis was simply due to ignorance. One of the pitfalls of surgery was the right-sided abdominal pain. The origin was nearly always obscure and the surgical results disappointing. In spite of the surgeon's definite knowledge that appendicitis pain was always referred to the epigastrium, a pain in the right iliac fossa always seemed to attract him irresistibly to the appendix. Tenderness at the right iliac fossa was a reliable sign, but not pain. Diagnosis of appendicitis should never be made until the patient had had a severe attack, and certainly not on the right iliac fossa pains alone. In visceroptosis the scope of surgery was becoming more and more confined. The stomachs of many healthy people came below the umbilicus and their colons below the pelvic brim, and many had been made invalids by indiscriminate fixation. Every organ must have latitude, and it was better to cut loose structures that were normally fixed than to fix structures that were normally loose.

The Vicious Circle of Fear.

Dr. H. CRICHTON-MILLER spoke of the vicious circle of fear and its effect on dyspepsia. When there was a possibility of grave and secret conditions the patient frequently gave way to great psychic exaggerations, and before we assessed the symptoms we should discount those that can be removed by reassurance and reason. A great many patients feared heart disease and a great many insomnia, which might come from visceral pains, heart pains, or nightmare. He protested against the habit of giving hot milk to dyspeptic patients for insomnia. They were totally unable to digest it, and inevitably woke up with pain due to fermentation and distension. Fear of the return of pain or hæmatemesis prevented us both from digesting and from seeing straight, and thus established the vicious circle. Any shock suspended the gastric processes, and could also be interpreted in terms of fear. It brought the mechanism of the adrenal into play and threw out the balance of the sympathetic and parasympathetic systems and affected either the secretory or the motor functions of the stomach. Atonicity did not depend upon any particular organ, and could only be remedied by patience. The mechanism by which fear generated wind was that the prolonged suspense caused prolonged inhibition of the adrenal secretion and therefore a vagotonic condition. During that time dilatation and fermentation were taking place. When the effort was over a sympathetico-tonic reaction occurred which compressed all the unstriped muscles and expelled the wind. Everything that made for emotional poise promoted good digestion, and all psychological methods had their value; sometimes mere reassurance was enough to break the vicious circle. The speaker deprecated the practice of dieting the dyspeptic as though he were a diabetic or a nephritic, and recommended that the patient should be encouraged to think for himself and help to work out his own dietary scheme. No group of diseases was so susceptible to "spiritual" healing as the dyspeptic group. Much quack healing flourished because a patient would give up self-pity in exchange for self-importance, which was stimulated by ceremonial and elaborate treatment, but this principle was thoroughly unsound.

Discussion.

Dr. A. C. JORDAN mentioned the alimentary health of certain Indian hill tribes and indicted as the cause of indigestion civilisation and the introduction of sugar and manipulated foods. That the colon especially had suffered much from highly refined cereals was shown by X rays. Chronic neuritis was one of the sequelæ of chronic dyspepsia.

Dr. D. M. BARCROFT pleaded for some system of adequate treatment. Alkalies were mere palliatives; the patient was probably not secreting the right kind of fluid in the stomach, but the practitioner did not know when to supply diastase, pepsin, or acid. The last-named often gravely increased the symptoms. He recommended suitable exercise and general hygiene to raise the tone.

Dr. E. YOUNG stated that in his experience nausea was a very unusual symptom. He did not agree that a gall-stone patient should be immediately sent to the surgeon; if he were free from symptoms after medical treatment he should not be subjected to the risk of operation. The large quantities of undigested starch often found in the fæces of dyspeptics showed the prevalence of dietetic error. Hot water and bicarbonate of soda were a better night-cap than milk.

Dr. McCLURE pointed out, in reply to Dr. Crichton-Miller, that fear was first felt in the epigastrium and that flatulence and dilatation of the stomach were its early signs; the first thing to do, therefore, was to get the stomach right. Psychotherapy was as valuable for correcting misinterpretation of symptoms as it was in definite mental disturbance.

LONDON ASSOCIATION OF MEDICAL WOMEN'S FEDERATION.

A MEETING of this Association was held on Dec. 8th at the house of the British Medical Association, Dr. CHRISTINE MURRELL, the President, being in the chair, when Dr. MARJORIE BLANDY read the paper on

Recognition of Early Nervous Disease,

which appeared in full in the last issue of THE LANCET.

Dr. HELEN BOYLE deplored the attempt to segregate into different hospitals cases of organic nervous disease and those of early mental disorder. The nervous system could not be split up; it should be regarded as a whole, since the separation of neurological and psychological factors could not in any case be attained. She was convinced that every mental hospital contained many cases suffering from encephalitis not necessarily encephalitis lethargica, but the form which might follow influenza or toxic disease.

Dr. ELEANOR LOWRY suggested that those cases with subjective olfactory symptoms should have the antra transilluminated to exclude local disease.

Dr. IRENE YATES spoke of the difficulty in diagnosing early disseminated sclerosis. Plantar response was difficult to obtain in the out-patient department.

In reply, Dr. BLANDY said that a true ankle clonus was pathognomonic of nervous disease, and if that were obtained it mattered less about the plantar response. She always contrived to warm the patient's feet by some means before testing their plantar response.

Dr. ELEANOR SCARBOROUGH read a paper on the influence of

Thyroid Feeding on Chronic Morphine Poisoning,

in which she described experiments on albino rats designed: (1) to combine thyroid feeding with chronic morphine poisoning, and to compare the susceptibility of rats to morphine with that of rats under the same doses of morphine without thyroid feeding. (2) To compare, during life, the influence of morphine, with and without thyroid feeding on the behaviour, body-weight, and temperature of the rats, and on the condition of the skin appendages; also, post mortem to compare the weights of certain organs and the structure of the thyroid glands. (3) To examine these results in relation to the various hypotheses which have been put forward to explain the relation between the activities of the thyroid gland and morphine poisoning.

She described the experiments in detail and gave the following summary of results obtained: (1) Chronic morphine poisoning when associated with thyroid feeding is not accompanied by any accentuation of the depressant action of morphine on the central nervous system, but rather by an increase in the signs of excitement of the cord. (2) The metabolic effects produced by combined morphine poisoning and thyroid feeding are more marked than those produced by either drug alone, and resemble the effects of pronounced hyperthyroidism. (3) The weights of organs concerned in metabolism are low in chronic morphine poisoning. The combination of chronic morphine poisoning with thyroid feeding tends to check the hypertrophy of these organs which otherwise accompanies thyroid feeding. (4) Chronic morphine poisoning is not associated with any change in the structure of the thyroid gland.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on Dec. 3rd, Mr. H. J. WALKER, the President, in the chair, when Mr. HAROLD F. SEYMOUR read a paper on

Some Recent Methods of Investigating the Patency of the Fallopian Tubes in Sterility.

Mr. Seymour said that it was only within the last two or three years that a technique had been worked out which satisfactorily showed whether the tubes were blocked or not. After mentioning the various contra-indications, he described these methods. (1) That of Dr. Rubin, of New York: The injection of carbon dioxide gas through a uterine cannula, the pressure of the gas being indicated by a manometer. The apparatus was fully described and shown. The advantage of carbon dioxide over air was that the former was absorbed so much more rapidly and consequently it was more comfortable from the patient's point of view. Mr. Seymour commended the water displacement meter used by Rubin as it allowed the gas to flow very gently. (2) Mr. Victor Bonney's simple method of using air was referred to. (3) Demonstrations given to the speaker by Mr. Sidney Forsdike at the Soho Hospital for Women were described—the method of injecting air through a hollow uterine dilator. By any of these means, Mr. Seymour said, it was an easy clinical test to determine if there was a free passage through the tubes or not, a test which had now become a recognised gynæcological procedure. That insufflation of the tubes had a therapeutic effect, as well as a diagnostic side, was illustrated by one of Mr. Seymour's cases. A woman, of 32, married for three years, having had no children, desired a child and sought advice. She suffered from dysmenorrhœa and had retroflexion of the uterus. A round ligament shortening operation was done curing the retroflexion and the dysmenorrhœa. A year after the operation, as she had not become pregnant, her tubes were tested and the gas did not run away at 100 mm. pressure as it did in patent tubes, but mounted to between 150 mm. and 160 mm. before it began to run off, which showed a partial block. This patient has now a healthy child, having become pregnant immediately subsequent to the gas inflation. Some of Rubin's figures were given, further illustrating this therapeutic effect.

When the tubes were shown to be blocked the next procedure was to localise the block in collaboration with the radiologist. The methods employed were as follows: (1) Injections of lipiodol, as performed by Mr. Forsdike. Lantern slides of eight cases were shown illustrating this method. (2) Injections of barium sulphate emulsion into the body of the uterus. Mr. Seymour preferred Rubin's apparatus for diagnosing the block and Forsdike's lipiodol method for locating the position of the block.

Mr. Seymour then read a short paper on the possibilities of

Endoscopy of the Uterus.

and described his own hysteroscope. He said that for some months he had been experimenting with various means of examining the cavity of the uterus endoscopically under anæsthesia after dilating the cervix. A hysteroscope, made after the style of Chevalier Jackson's bronchoscope, with two suction tubes and the light at the distal end, had given very good results. The suction tubes rapidly removed any blood and mucus which obscured the view. A Mennell's electric vacuum pump was used for suction and the instrument was made in two sizes, one with a bore of 6 mm. and the other with a bore of 9 mm., the length of the tube being 28 cm. With a special pair of forceps a snipping of any growth seen could be removed for microscopic examination.

Mr. Seymour considered that endoscopy of the uterus was going to be useful as an aid to diagnosis of the various kinds of endometritis and to differentiate between a submucous fibromyoma and a carcinoma. It was easy to see a polypus up in the fundus and the opening of the tubes could be viewed. Diagnostic curettage was far from satisfactory, and endoscopy would, he thought, eventually supersede it.

Discussion.

Mr. H. J. McCurrich emphasised the unsatisfactory results from the point of view of diagnosis obtained by curettage as usually performed.—Dr. C. G. Whorlow expected that barium sulphate emulsion injected into the uterus would pass into the abdominal cavity and remain there as a foreign body and not be absorbed in 72 hours.—Mr. J. Griffith suggested the use of adrenalin as a hæmostatic in place of the suction apparatus.

Reply.

In reply, Mr. Seymour said that regarding the use of adrenalin for stopping the dripping of blood during an endoscopic examination of the uterus, he had tried it and found it to fail, whereas continuous suction was successful.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

A clinical meeting of this Society was held on Dec. 3rd, with Dr. James Crombie, the President, in the chair.

Exhibition of Cases and Specimens.

Mr. A. Mitchell showed a boy, aged 8, suffering from Perthes's disease of the hip-joint, with accompanying skiagrams. He pointed out the difficulties of early diagnosis of tuberculous disease of the joint and the difficulty of differentiating between tuberculous lesions and Perthes's disease. In his opinion this patient had recovered much too rapidly to have had a tuberculous lesion. He also showed a girl, aged 18, with fusion of the bodies of the fifth, sixth, and seventh cervical vertebræ with practically no impairment of the movements of the neck. In this case there was a history of a fall when aged 6 months.—Mr. William Anderson confirmed Mr. Mitchell's opinion as regards the early diagnosis of hip-joint disease.

Mr. William Anderson showed a case of diffuse carcinomatosis of the breast, where the only complaints were stiffness of the shoulder and œdema of the arm, the duration of symptoms being two weeks. There was no palpable tumour in the breast, but marked cancer en cuirasse in the lower segment. The axillary glands were markedly enlarged. Microscopic examination of a small piece of skin showed extensive infiltration of the deeper layers with carcinomatous cells. Operative treatment was not advised.

Mr. G. H. Colt showed a man, aged 68, with marked fixation of the lower jaw following removal of a recurrent tumour of the right cheek and alveolar margins. The contracture was evidently not due to any affection of the temporo-mandibular joint, but rather to adhesion of scar tissue in the cheek, which had been split at the time of operation, to the upper and lower jaws. Mr. Colt asked for suggestions as to further treatment, his own suggestion being to divide the constricting bands and to insert an epithelial graft which could be kept in place by a stent mould with the jaw half open.

Mr. Andrew Fowler showed a girl, aged 13, whose fifth metacarpal bone of the left hand had been removed intact for a possible sarcoma. A tibial graft, including periosteum, had been inserted with very little shaping, and in the space of 19 months this graft had almost assumed the shape of a metacarpal bone with a head and new "metacarpo"-phalangeal joint. The usefulness of the hand was not impaired, there being two-thirds normal flexion at the new joint, and the patient, according to her own statement, is able to play octaves on the piano. On microscopic examination the tumour was found to be an osteochondroma. A series of skiagrams illustrated the changing appearances of the graft.—Mr. Mitchell emphasised the importance in these cases of beginning active and passive movements at an early date after operation.

Dr. P. Howie showed two cases of deformities of the hands, one of brachydactyly of the ring finger of each hand, and one of megalodactyly. He also showed two patients who had been operated on for carcinoma of the stomach, a male in July, 1921, and a female in 1909. The male patient until recently had no sign of recurrence when he had a hæmorrhage from the bowel. The female patient looked very well and had no signs of recurrence.—Dr. A. G. Anderson, Dr. J. Cruickshank, Mr. F. K. Smith, and Mr. William Anderson discussed the authenticity of the pathologist's findings in these cases. Dr. Cruickshank suggested that when a patient was alive a considerable period after an operation for carcinoma of the stomach the sections of the tumour ought to be sent to at least six pathologists for confirmation.

Mr. G. S. Davidson exhibited a case illustrating one of the rarer causes of neonatal hæmorrhage. The case was one of a vaginal hæmorrhage in a 5 days old child. He indicated the points in diagnosis and postulated an explanation of the cause of the condition.—Dr. Edward Walker asked if Mr. Davidson could explain the cause of engorgement of the breasts in the newly born.

Dr. J. Craig exhibited a boy of 6 years who had during the last 18 months shown all the manifestations of rheumatic infection—viz., carditis, arthritis, chorea, and subcutaneous nodules. In Dr. Craig's opinion subcutaneous nodules of rheumatic origin are not so rare in this part of the country as is commonly supposed, he having seen three cases during the past year.—The case was discussed by Dr. A. G. Anderson, Dr. W. Brown, and Dr. H. R. Souper.

Dr. A. C. Fowler showed skiagrams of a gall-bladder containing numerous stones. Definite indentation of the pyloric antrum by the gall-bladder was seen during a barium meal investigation. The case was one of unexplained diarrhœa.

Dr. J. F. Christie showed a man of 70 with a slowly-growing ulcer on his left ear. The duration was 6 months without active treatment. On section the report was not definitely epithelioma. The Wassermann reaction was negative. There were no enlarged cervical glands. Dr. Christie asked for suggestions as to the diagnosis.—The opinion of the meeting was in favour of epithelioma and removal of the whole ear suggested as the treatment.

Election of Officers.

The following office-bearers and members of Council have been elected for the ensuing year:—President, Dr. J. Crombie; vice-president, Dr. J. F. Christie; secretary, Dr. H. Edgar Smith; treasurer, Dr. G. Rose; editor of transactions, Mr. G. H. Colt; librarian, Dr. W. Clark Souter; recording secretary, Mr. Andrew Fowler; assistant secretary, Dr. Robert Richards; members of Council, Dr. A. G. Anderson, Mr. F. K. Smith, Dr. H. R. Souper, Dr. G. M. Duncan, Dr. P. Howie, Dr. T. Fraser, Dr. J. Ross Mackenzie, and Mr. William Anderson.

PATHOLOGICAL SOCIETY OF MANCHESTER.

At a meeting of this Society on Dec. 9th, Prof. E. D. Telford in the chair, a discussion on

Occult Sepsis

was opened by Dr. E. M. Brockbank, who referred to the various conditions of oral sepsis which produce metastatic affections of pyrexial and apyrexial nature in almost any organ of the body and which may be of slight nature or severe enough to cause death. He paid special attention to disease at the roots of old filled or crowned teeth which can only be recognised by X ray films taken and interpreted by experts in such work. This is a most dangerous dental lesion because there is no evidence of any disease about the teeth or gums to be seen by the unaided eye. The pyrexia which accompanies such foci or occult sepsis may vary from simple septic swinging temperature to a daily rigor of 105° F. or more lasting for weeks. Removal of such teeth leads to recovery from complications even after the lapse of several months.

Mr. Barron J. Rodway, who illustrated his remarks with a number of excellent slides, spoke of the difficulty of deciding how far oral sepsis was responsible for the causation of general illnesses, but drew attention to the frequency with which cases were seen where marked improvement followed dental treatment, which, prior to this, had come to a standstill under medical treatment. He described three types of dental condition likely to lead to a general infection—the neglected mouth, where the infection was chiefly the result of swallowing contaminated saliva and food; the mouth in which insufficiently treated non-vital teeth were present, where the infection took place entirely via the bone; and the mouth in which pyorrhœa was present, where the infection took place both from the swallowing of the products of the disease and also through the periodontal membrane. Reference was made to the question of deciding when to extract and how extensive an operation to make; and a comparison was made of the prospects of a possible cure of general disease at the price of having to manage with artificial dentures which, at the worst, would enable a selected diet to be dealt with, or the almost certain prejudicial effect of the continued presence of a definite source of infection by the retention of probably only partially efficient natural teeth in an unhealthy condition.

Mr. F. Holt Diggle, after briefly dismissing the question of sepsis in the middle-ear cleft as a site for sepsis frequently overlooked—though in his opinion more commonly associated with disorders of malnutrition than arthritis or allied conditions—then considered the question of sepsis in the faucial tonsil. He pointed out that the submerged variety of tonsil was the greatest offender, and drew attention to the anatomical arrangement of the long, narrow, tortuous crypts, and the large absorptive area of the capsular surface of the tonsil, as factors rendering the tonsils peculiarly liable to the harbouring of unsuspected sepsis. After briefly considering the experimental and clinical evidence in support of the assumption that the tonsils may be the source of a systemic infection, he considered the results to be obtained by total enucleation of the tonsils. It was pointed out that tonsillectomy performed in cases of chorea did not yield such good results as those to be obtained in cases of arthritis, and particularly in cases of acute rheumatic infections. Mr. Diggle then dealt with the diagnosis of a septic tonsil, and pointed out that swabs taken from the tonsils of apparently healthy people were never sterile. He referred to the work of Howarth and Gloyne on this subject, and considered that factors other than bacteriological examination must be taken into account. He stressed the value of squeezing the tonsil to express material from the crypts, the bleeding from the crypts after moderate pressure, the local redness of the tonsil, and particularly the narrow red streak along the anterior faucial pillar, as perhaps less obvious evidences of tonsillar infection. He further considered that before a tonsil was sacrificed in cases of systemic infection we must be reasonably sure, first, that the tonsil is diseased; secondly, that the tonsil is the only source of infection; and, lastly, that if the tonsil is infected it is the source of the general infection.

In his opinion dental sepsis should be corrected before tonsils were removed, and a complete bacteriological examination of the intestinal and genito-urinary tract as well as the coöperation of the dentist and radiographer should be essentials in the investigation of every case. The question of sepsis in the nasal accessory sinuses was very briefly considered. It was pointed out that the absence of a purulent nasal discharge did not exclude the existence of pus in one of the sinuses. Mr. Diggle stressed the value of examination of all the sinuses by means of the suction syringe in doubtful cases.

Corrigendum.—Prof. Arthur Ellis wishes it to be known that he did not take part in the discussion on Nephritis at the Section of Medicine, R.S.M., on Nov. 24th. The remarks attributed to him in our issue of Dec. 5th (p. 1168) were made by Dr. H. A. Ellis.

Appointment of a New Vivisection Inspector.—The Home Secretary is about to appoint an inspector under the Cruelty to Animals Act, 1876. The post is permanent and is pensionable in accordance with the general rules governing the grant of pensions in the Civil Service, and the appointment will be subject to a period of probation. The salary will be £800 a year, together with bonus on the scale authorised for the Civil Service and travelling allowances at the usual Civil Service rate. The inspector will be required to give his whole time to his duties, and to reside at Edinburgh for the time being. Candidates for the post who possess the scientific qualifications required for the work and are not over 50 years of age, should apply to the Private Secretary, Home Office, Whitehall, London, S.W. 1, from whom further information may be obtained. Applications should be accompanied by one or two testimonials and particulars of the candidate's qualifications, and should reach the Home Office not later than Jan. 15th, 1926.

Reviews and Notices of Books.

BIOCHEMISTRY.

Applied Biochemistry. By WITHROW MORSE, Professor of Physiological Chemistry and Toxicology, Jefferson Medical College, Philadelphia. London: W. B. Saunders Company, Ltd. Pp. 958. 32*s.* 6*d.*

Prof. Morse's book aims at covering the whole field of biochemistry, both from its physiological and pathological aspects. Physical chemistry, methods of analyses, and even recent views on the structure of the atom and matter are dealt with. The range of the author's task thus will be appreciated, and Prof. Morse has succeeded to a really remarkable extent in fulfilling it. The book opens by defining the aims of biochemistry in general and tracing out the scientific ancestry of the great American biochemists. The author proceeds to a general but thorough consideration of the structure of matter, including the electron and proton theory. The lattice structure of crystals is discussed. Physical chemistry of solutions is next dealt with and particular reference is made to hydrogen-ion concentration. This section is an excellent, clearly written account of the physical chemistry of ionisation, and the author points out its application to the acid-base problems arising in the body. Enzymes and colloids are next reviewed, after which the elementary composition of tissues is dealt with. The three succeeding chapters are taken up with the chemistry of proteins, fats, and carbohydrates, whilst the fourth is devoted to the chemistry of tissues in general. The following chapter concerns the chemistry of foods, and then digestion, absorption, and metabolism are discussed. The biochemical aspects of urine, ductless glands, and nutrition are also dealt with quite fully. Under the title of Practical Exercises on Urine and Blood a scheme for practical work is included, and in an appendix methods for the preparation of various reagents and solutions are given. After each chapter a series of selected references is included, and throughout the text appear portraits of many of the workers referred to, in many cases short biographical notes being given.

From this outline it can be understood that here is no ordinary volume. The conception of providing a complete work on so huge a subject is admirable, and the author has succeeded in conveying to the reader the idea that biochemistry is an active dynamic subject. Some minor points are open to criticism. To the English reader the renaming of proteins, fats, and carbohydrates as proteids, lipids, and glucids is distasteful. There are a few errors in the biographical notes; for example, Dr. F. G. Donnan would undoubtedly be surprised to see himself described as a professor of physiology. Some few of the illustrations are redundant. But these things amount to nothing. Prof. Morse has performed a wonderful service to biochemistry and its students, and any reader equipped with his volume could be regarded as being well armed.

Monographs of Biochemistry. Edited by R. H. A. PLIMMER, D.Sc., and Sir F. G. HOPKINS, M.A., M.B., D.Sc., F.R.S. *Hexosamines and Mucoproteins.* By P. A. LEVENE. Rockefeller Institute for Medical Research, New York. London: Longmans, Green and Co. 1925. Pp. 163. 10*s.* 6*d.*

THIS volume consists for most part of a summary of the author's own researches. Dr. Levene has performed so much pioneer work himself in this field that the excellence of the volume goes without saying, and since he has published many recent papers, it is expedient to have his results in a monograph. In the present volume the subject of hexosamines and mucoproteins is dealt with very thoroughly and the historical summaries are full and useful. One of the most interesting chapters is that dealing with the Walden inversion. This difficult subject has received little attention in the English language, and Dr. Levene's account of its importance in relation to the hexosamines forms one of the most valuable features of the book. Dr. Levene points out in his introduction that there need be no apology for writing a volume on such a specialised subject, since mucoproteins are constituents of every tissue.

SEWAGE PURIFICATION AND DISPOSAL.

Second edition. By G. BERTRAM KERSHAW, M.I.C.E. Cambridge Public Health Series. Cambridge University Press. 1925. Pp. 339. 18*s.*

THE appearance of the second edition of this useful book will be welcomed by all who are interested in the subject of sewage disposal. Much work has been done since 1915, when the first edition appeared, especially with regard to the so-called activated sludge process. The new chapter entitled Activated Sludge Processes, Sludge Digestion, contains an account of the Sheffield bio-aeration process, which it is intended to apply to the whole of the sewage of Sheffield. We regard this as an important inclusion, because we believe that Mr. John Haworth, the manager of the Sheffield works, was the first to show that sufficient oxygen for biological purposes could be introduced into the sewage by mechanical agitation without the necessity for blowing in air. Mr. Kershaw, in his capacity as engineer to the Royal Commission on Sewage Disposal, had an excellent opportunity of familiarising himself with all methods, and he has utilised that opportunity to the full.

The new edition has been brought thoroughly up to date, and we commend it to all who have to deal with sewage purification and disposal.

SKULL FRACTURES.

Roentgenologically Considered. By WILLIAM H. STEWART, M.D., Roentgenologist to the Lenox Hall and Harlem Hospitals. New York: Paul B. Hoeber. 1925. Pp. 64. $12.

IN this volume by means of a series of fine skiagrams practically every possible fracture of the skull is illustrated. Each illustration is accompanied by a short clinical account of the case and the nature of the accident from which the injury resulted. A brief chapter on rontgenographic technique indicates precisely the method adopted, but we fear the surgeon might follow its instructions implicitly without obtaining such results, unless he possessed the supreme skill which these must have required. The plates are in every instance superb, and, quite apart from their surgical value, they present a remarkable series of studies of the human skull which should be of great interest to the anthropologist. The book is magnificently produced.

PRACTICAL PHARMACOGNOSY.

By T. E. WALLIS, B.Sc. Lond., F.I.C., Ph.C., Lecturer in Botany to the Pharmaceutical Society of Great Britain. London: J. and A. Churchill. 1925. Pp. 115. 7*s.* 6*d.*

THE work of the student of medicine is now far removed from that of his predecessors, who manufactured their own drugs, this work to-day being undertaken by the manufacturing chemist. He cannot, however, altogether afford to neglect any of the links in the chain of the healing art. This book of practical pharmacognosy will make an appeal to the doctor who takes interest in drugs as well as to the student in pharmacy, to whom it is of more vital interest. Mr. H. G. Greenish, who writes a commendatory foreword, points out that, too often, the teacher of pharmacognosy is contented to lecture on the subject and to leave the student to examine the crude drugs at his leisure, without systematic instruction or guidance, with the result that he acquires but a superficial acquaintance with the drugs at his disposal. In this book the earlier portion is devoted to 18 schedules of instructions, which state fully but concisely the details of practical work for each day of the course. The descriptions are clear and free from unnecessary material. The later part is devoted to the description of 45 medicinal plants indigenous to Great Britain; this sets out their characteristics and makes their recognition easy.

The writer is to be congratulated on his book and especially on the illustrations, largely by himself and his wife, which make the volume attractive.

PREVENTIVE MEDICINE.

Second edition, revised. By MARK F. BOYD, M.D., M.S., C.P.H., Member of the Regular Field Staff, International Health Board of the Rockefeller Foundation. London: W. B. Saunders Company, Ltd. 1925. Fully illustrated. Pp. 420. 20s.

THIS book, the first edition of which appeared in 1920, bears impress of a somewhat different outlook on public health from that of this country. Thus the subject of meat inspection is dismissed with a few words because "in the United States but little progress in meat inspection has been made"; on the other hand, rather more attention is paid to tropical diseases, such as malaria and uncinariasis. Interest attaches to a statement that "thanks to national prohibition this disease (alcoholism) will soon be a matter of historical interest in the United States." The book has not been written for the specialist but for practitioners whose daily work is causing them more and more to require general knowledge of preventive medicine, and the perspective is good. One of the most difficult subjects to deal with in an elementary way, that of statistics, is clearly and simply discussed. The book may be recommended to medical students who to-day in certain schools have to face a separate examination in public health; they can easily supplement their knowledge by reference to English standard text-books, many of which are not presented in so simple or so readable a form. The volume is profusely illustrated; for the most part the illustrations are good, but some are not informative.

EVOLUTION AND GENETICS.

By T. H. MORGAN. Princeton: University Press. 1925. Pp. 211. 9s.

Prof. Morgan says: "It has been pointed out that the power to reproduce itself puts the problem of the construction of a living organism on a different footing from the construction of a complex machine out of inorganic material." It is easy to believe that a problem is likely to reproduce itself a good many times if it is written about in this way. Unfortunately, Prof. Morgan's most interesting defence of the possibility of Mendelian mutants being the origins of new species is spattered with sentences more appropriate to those mystics of biology on whom he pours so much scorn. The book is a robust statement of his belief and is framed mainly as an answer to Bateson's statement that modern genetics had thrown no light on the production of fresh species of animals and plants. It is true that no observed mutant has shown the hybrid sterility of natural species; it is equally true that most mutants which have occurred under observation would have apparently no chance of survival in the real competitive world. But it is only necessary to suppose that one or both of these things happens very occasionally, and it may well be that it is necessary for permanent establishment that a hybrid should be sterile with the original stock so that the fresh form may have a position in nature delimited from that of its progenitors. And in a general way Prof. Morgan puts forward a strong case for looking on animals and plants as compounded on a gene basis. But it is not really necessary to his argument to show that Lamarckians are wholly wrong—which, indeed, he plainly fails to do. It seems much more likely that both views are partly right.

With some reservations we can commend the book as a stimulating critique of evolution theory from a modern point of view.

THE PHYSIOLOGY OF MIND.

An Interpretation based on Biological, Morphological, Physical and Chemical Considerations. By FRANCIS X. DERCUM, A.M., M.D., Ph.D., Professor of Nervous and Mental Diseases in the Jefferson Medical College, &c. London and Philadelphia: W. B. Saunders Company. 1925. Pp. 287. 10s.

Prof. Dercum believes that he has solved the great problem of mind and body. This he does by a series of ingenious speculations, based upon the findings of physiology and chiefly concerning neurones, which renders unnecessary the conceptions of psychology; in fact, he says in his preface that there is an inherent objection to the term "psychology," for psychology can only be regarded as a department of brain physiology. An example will show the apparent simplicity of this point of view, which is not novel, though the author uses the latest advances in knowledge to elaborate his explanations. He points out how "the retraction of the dendrites and axones of the neurones explains the palsies and anæsthesias of hysteria" (p. 225), and then describes how Babinski showed that the anæsthesia arises because of the method of examination. So we may imagine the examiner saying, "Do you feel this?" when straightway the dendrites and axones retract and the anæsthesia comes into being. There is no doubt that every human action, thought, or emotion can, with some ingenuity, be explained by a similar postulate. But is this helpful? And is it physiology?

WELFARE WORK IN INDUSTRY.

Edited by ELEANOR T. KELLY, B.A. London: Sir Isaac Pitman. 1925. Pp. viii.+110. 5s.

THIS volume has been written by members of the Institute of Industrial Workers, under the editorship of its President, Miss E. T. Kelly. It contains a concise outline of the principles and practice of welfare work in factories, and while chiefly intended for those engaged in industry, is of considerable interest to all whose work brings them into contact with cognate problems. The book is written from an idealistic standpoint, and the chapter dealing with the activities of the works' doctor demands an extremely high standard of service from this hard-worked officer. A valuable section is the appendix, containing, amongst other things, specimen record cards for medical inspection, for the categorisation of accidents, and an interesting section on industrial fatigue.

The book is a reasoned attempt to establish a philosophy which will be a guide to the student and a basis for the professional worker.

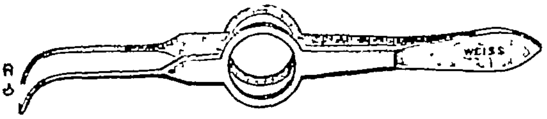
JOURNALS.

QUARTERLY JOURNAL OF EXPERIMENTAL PHYSIOLOGY. Vol. XV., Nos. 3 and 4. 1925. Pp. 201–450. 25s.—Among the articles appearing are the following. *The Effect on the Stomach of Stimulation of the Peripheral End of the Vagus Nerve*, by E. D. McCrea, B. A. McSwiney, and J. S. B. Stopford. The authors give a summary of the facts elicited by previous workers on the effects of vagal stimulation as regards (1) motor effects, (2) inhibition, (3) on the fundus and cardia, (4) on the pyloric sphincter, (5) the vasomotor phenomena, (6) on the duodenum, and (7) the relation of vagal stimulation to tonus. They discuss advantages and disadvantages of their technique, which consists of the introduction into the stomach of a balloon with an air system, or with a water system, or the water distension method, the observations being made by means of X rays. The main conclusions reached are as follows: The primary effect of stimulation of the peripheral cut end of either vagus on the stomach is dependent on the existing condition of the peripheral mechanism ("tonus"), and may be inhibitor or augmentor. The inhibitor or augmentor effect may involve both "tonus" and movement. The final effect of stimulation is to bring about augmentation of existing movement or to initiate movement. "Tonus" and contraction may vary inversely or directly.—The Effects of Fatigue and Temperature on the Adrenal Bodies of the Rat, by Swale Vincent. If white rats are exercised at room temperature in winter by means of a revolving drum made of wire netting and driven by a motor, their body temperature will fall and the chromaphil reaction of the adrenal medulla will be markedly reduced. If they are exercised at higher temperatures their body temperature will rise and the chromaphil reaction will not be reduced. At about from 18° to 20° C. the body temperature neither rises nor falls with exercise, and the chromaphil is unaffected. Considerable reduction of the temperature of the surrounding medium may, independently of exercise, cause a diminution of the chromaphil reaction if the animal's temperature becomes lowered, but this does not occur very frequently in the case of white rats. It seems, then, that the effect of exercise on the chromaphil reaction is not direct but secondary to the lowering of the animal's temperature.—The Active Principles of the Posterior Lobe of the Pituitary Body, by Walter Schlapp. Uncertainty exists as to whether the many physiological responses known to be evoked by extracts of the posterior lobe of the pituitary body are to be attributed to one or to more than one active principle. Histological and physical means have been employed. The author reviews the results already obtained and then describes his own method of preparing extracts from desiccated pituitary material. He finds that when depressor-free extracts are boiled with dilute hydrochloric acid, the oxytocic, pressor, and melanophore responses evoked by them are destroyed slowly and simultaneously. By treating depressor-free extracts with N-butyl alcohol it is possible to separate a fraction into which the greater part of the oxytocic activity has passed. By producing precipitates of lead sulphide in extracts by passage of sulphuretted hydrogen gas through suitable concentrations of lead acetate all the active principles are to some extent adsorbed. But the quantity of pressor and melanophore substance adsorbed exceeds that of oxytocic adsorbed by a significant amount. These results show that the oxytocic response on the one hand and the pressor and melanophore activities on the other must be attributed to distinct substances. The experiments, however, provide no positive evidence that the pressor and melanophore responses are due to distinct substances.—The Structure and Function of the Spleen, by John Tait and Martin F. Cashin. The authors give a full review of the literature of the subject as regards structure, the phagocytosis of particles, the reticulum, arteries, ellipsoids, veins, injection of vessels, the course of blood in the spleen, and its contractility. The spleens, chiefly of dogs and cats, were perfused by the arteries and veins with warm Ringer's fluid charged with specially prepared Indian ink particles. The authors find that the spleen is divided into segmental zones or lobes, corresponding to the branches of the arteria lienalis which enter it. These zones are at once arterial and nervous units. The scheme of subdivision of the splenic nerve corresponds to these segmental zones, and stimulation of a branch of the nerve causes only a section of the spleen to contract. Central to the cœliac ganglion (e.g., in the splanchnic nerve or in the anterior spinal roots) there is no such segmental representation in the branches proceeding to the spleen. The splenic vein is conspicuously larger than the splenic artery, that of the ox being five times the diameter of the artery. When a short section of the vein is electrically stimulated it contracts and remains in strong contraction for an hour or more, the outflow of blood being greatly impeded. When the spleen is perfused with Indian ink the particles may come to rest in four different situations: (1) in the ellipsoids, (2) in the spleen phagocytes, (3) on the ordinary reticulum, (4) on the walls of the venous sinuses. In the living animal deposition in the ellipsoids is temporary. Within three hours after intravenous injection of the ink phagocytes have begun to clear the particles from the spaces within the ellipsoids. Twenty-four hours later the ellipsoids are free. The phagocytes of the pulp retain the particles for weeks on end. At first they clear the ink off the reticulum. After a month they can be seen to have undergone a rearrangement, and some have migrated into the Malpighian corpuscles. The ellipsoids act as valves, readily allowing the blood to flow in the normal direction—i.e., from the interior to the exterior of the ellipsoid—but instantly closing against higher pressure applied to their exterior. The existence of these valves accounts for the difficulty of perfusing the spleen backwards—i.e., from vein to artery. Each ellipsoid is surrounded by a number of venous sinuses which become dilated when the venous pressure is increased.—The Appearances of Mammalian Erythrocytes under Dark-ground Illumination, by W. G. Millar. No sign of internal structure can be seen in the human erythrocyte.—Technical Points Important for the Study of the Metabolism of Rabbits, by V. Korenchevsky.—The Pancreas of Teleostean Fishes and the Source of Insulin, by Swale Vincent, E. C. Dodds, and F. Dickens.—The Sensitivity to Different Regions of the Spectrum of Individuals with Hypochromatic Vision, by H. N. Bradbrooke and H. E. Roaf.

New Inventions.

RING GRIP FORCEPS.

There is perhaps no more delicate piece of manipulation in all surgery than that required of the left hand of the ophthalmic surgeon when he picks up with his forceps a minute strand of the iris preparatory to iridectomy. The tissue to be gripped is so slight, it is so often obscured by overlying tissues or blood, and the margin of safety in the movement of the iris is so narrow that the mastery of the forceps through which the actual movement has to be made should be as perfect as is possible. For a perfect success the instrument—the forceps—should be a part of the hand of the surgeon, as much part of it as ungual appendages to his fingers. There are many excellent iris forceps in use, but they all remain an instrument in the hand—they do not become part of the hand. In the forceps, of which an illustration is here given, the customary solid side plates or bows are expanded so as to allow a ring to be cut through the flat of each side. These rings are 8 mm. in diameter inside, their edges are square and not bevelled. They are cut in the positions into which the thumb or first finger naturally falls when holding the forceps. When the forceps are taken up as in use the pads of the extremities of the thumb and index-finger fill these holes in the forceps, and at the moment that the teeth of the forceps engage the skin of the thumb and finger come into contact, so that one feels that the forceps are almost a part of the hand and that the points are just the extensions of the finger-tips. The sense of direction and security this gives is remarkable. The grip is applicable to any form of forceps.



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[*See also pp.* 11 & 19.

THE LANCET.

LONDON: SATURDAY, DECEMBER 26, 1925.

THE EFFICIENCY OF THE HEART.

PROGRESS in the study of any fundamental principle in science may conveniently be divided into three stages. The enunciation and qualitative proof of the principle naturally marks the first stage. In the second greater elaboration of technique leads inevitably to a quantitative interpretation of the particular phenomenon studied. This in its turn stimulates the imagination to a still deeper and more intricate examination of the intermediary steps involved and finally to a re-examination from a quantitative point of view of the facts thus brought to light. The study of metabolism, as was pointed out by NOORDEN, forms an excellent illustration of progress along these lines. The qualitative period may be said to have been inaugurated by Wöhler's synthesis of urea and by his proof of the synthetic capabilities of the organism in respect to hippuric acid. The quantitative period of VOIT and PETTENKOFER followed, and the gross chemical principles laid down by them are now being analysed in terms, qualitative and quantitative, of intermediate metabolism.

The study of the circulation is proceeding along comparable lines. It is nearly 300 years since WILLIAM HARVEY made his supreme contribution to biology by showing that "it is absolutely necessary to conclude that the blood in the animal's body is impelled in a circle and is in a state of ceaseless motion; that this is the act or function which the heart performs by means of its pulse; and that it is the sole and only end of the motion and contraction of the heart." In two lectures on the efficiency of the heart and its measurement, the second of which we print in this issue, Prof. YANDELL HENDERSON points out that by means of a method introduced by Dr. H. W. HAGGARD and himself it is at long last possible to measure the circulation rate in man under a variety of physiological conditions and even in cases of moderate cardiac impairment. All the methods which have been used hitherto on man, and which at the same time may lay claim to some degree of accuracy, are based on FICK's principle—namely, that if we know the difference in the oxygen contents of the arterial and venous blood coming from and going to the lungs and at the same time the oxygen consumption of the individual under examination, the ratio of the latter to the former of these two figures gives us a true measure of the cardiac output, assuming, of course, that no oxygen is utilised in the lungs themselves. An exactly analogous method has also been adopted in which the ratio of CO_2 production to arterio-venous CO_2 difference is determined. The oxygen or CO_2 content of the arterial and of the venous blood is determined from analyses of arterial and venous alveolar air respectively, the gaseous tensions so found being interpreted in terms of blood oxygen or carbon dioxide content from the oxygen or carbon dioxide dissociation curves of the blood of the person investigated. These methods are complicated, and since they require the active and intelligent coöperation of the subject under examination are entirely unsuited to clinical use. KROGH's nitrous oxide method suffers from the same drawbacks. In ethyl iodide, however, Prof. HENDERSON and Dr. HAGGARD have found a volatile substance which not only possesses a low solubility coefficient, but also has the great advantage of being destroyed in the tissues, there being thus no necessity to limit the experiment to the time of one circulation. It has been shown that the partition coefficient of this gas between air and blood is 2. Given, therefore, the amount of ethyl iodide absorbed over a given period of time and a knowledge of the content of the alveolar air in this gas, we can readily calculate the volume of blood which has passed through the lungs in that time. The method is simple, accurate, and involves no more coöperation on the part of the patient than a simple basal metabolism determination.

The chief function of the heart is to supply oxygen at a high pressure to the working tissues. That is to say, *the mean capillary oxygen unsaturation* of the blood must be maintained at a low level by a correspondingly rapid rate of blood flow. Clearly the first indication of circulatory failure will be a rise in the arterio-venous oxygen difference. As Prof. HENDERSON states in his lecture, "the arterio-venous oxygen difference is the best possible index and measure of functional efficiency of the heart." Prof. HENDERSON's great contribution to medicine is that he has made it possible accurately to measure this difference not only in persons under varying conditions of physiological stress, but also in patients suffering from moderate degrees of cardiac impairment. He has determined that this difference is constant at a value of 3 to 4 volumes per cent. in dogs and men of very varying size, and appears to be a fundamental mammalian "constant" comparable to that of body temperature, of hydrogen-ion concentration of the blood, and of arterial pressure. On account of this constancy in the arterio-venous oxygen difference in all vigorous mammals and of the direct proportionality between basal metabolism and body surface, it is interesting to note that the volume of the circulation also becomes a function of body surface and not of body weight. Small animals therefore have a relatively more vigorous circulation than large, and this relative increase in the circulation rate with diminution in size is conditioned not by an increase in the stroke volume of the heart, but by an increase in rate. Indeed, Prof. HENDERSON has shown that the output of the heart in all healthy vigorous animals during bodily rest is 1·4 to 1·8 c.cm. of blood per kilo per beat. This figure is known as the stroke index. With moderate activity there appears to be very little increase in this index, the increased blood flow being mainly determined by acceleration in the pulse-rate. In more vigorous exertion, however, the second and third reserves of the circulation are called up—namely, an increase in the arterio-venous oxygen difference and an increase in the stroke index. Of extreme interest to clinicians is the relatively enormous increase (40 to 50 per cent.) in the circulation rate occasioned in normal men by a change from the upright to the lying posture.

Prof. HENDERSON has accumulated a large stock of data on the circulation in health, and these figures must prove of great value as a base line from which to compute the significance of corresponding figures found in pathological states. Should the method which he now places in the hands of physiologists prove as valid 300 years hence as HARVEY's immortal discovery proves to-day, his contribution will indeed be significant.

SCARLET FEVER AND THE DICK TEST.

THE control of scarlet fever is still unachieved. Since the passing of the Public Health Act of 1875 hospital isolation has afforded individual patients a better chance of recovery, but it has done nothing to diminish the incidence of the disease. This was admitted quite freely at a recent meeting of the Royal Society of Medicine,[1] when Dr. M. GREENWOOD stated that the only hope lay in immunisation, and there was none to disagree with him. Fortunately the publication of the work of the DICKS in 1924 has opened up an entirely new prospect, and the three papers on the Dick test which appear in our present issue will serve to illustrate what has already been done and what still remains to do. The first thing needful is to know who are and who are not susceptible to infection. We know broadly, write Dr. R. A. O'BRIEN and Dr. C. C. OKELL, that a negative response to the Dick test indicates a high degree of non-susceptibility, but it is not so clear that a positive reactor may not possess some immunity. As Dr. ALEXANDER JOE points out, the choice of toxin is of the utmost importance, and we are still far from possessing a standardised test material. Nevertheless, the toxin he used gave 95 per cent. of positive results in clinically recognised cases of scarlet fever during the first five days of illness, and 88 per cent. of negative results in persons with a previous history of scarlet fever. Dr. F. A. E. SILCOCK tells us that five of his cases at first clinically diagnosed as scarlet fever were found to give a persistently positive reaction, and none of them desquamated or showed any complication suggestive of scarlet fever. Further than this a strong positive reaction in contacts suggests that the disease is incubating. Negative reaction means either that the individual is immune, or that there are sufficient quantities of antitoxin circulating in the blood, as a result of previous infection or subinfection, to prevent development of the fever. Only about 20 per cent. of persons fail to acquire this immunity before 20 years of age. The test is undoubtedly effective in separating the susceptible from the immune. Recent work from the Birmingham City Fever Hospital continues[2] the work of the DICKS on the toxin of *Streptococcus scarlatinæ*. Although this organism does not completely fulfil KOCH's postulates, it is pretty generally accepted as the causal parasite of scarlatina, and Dr. H. HENRY and Dr. F. C. LEWIS have concentrated on the preparation and standardisation of the toxin of this micrococcus. Their work indicates that the value and reliability of the Dick test is relative, and relative also is the immunity to the *S. scarlatinæ*, whether natural or acquired. A sufficiently small dose of the toxin will produce a negative reaction in all subjects, and a sufficiently large one will make them all positive. While they aim at the standardisation of the dose in some form of unit, they opine that the toxin-antitoxin combination on which the immunity depends is itself unstable and liable to dissociation.

The use of the Dick method for immunisation is on a less proven footing. The general conclusion seems to be that it is possible to produce immunity in 90 per cent. of susceptible persons by introducing large doses of scarlatinal toxin. Dr. GEORGE BUCHAN, in his recent presidential address to the Society of Medical Officers of Health, stated his opinion[3] that the Dick test and immunisation, or some modification thereof, should be made available in this country for those who would secure protection for their children against scarlet fever. He regards the task as a matter for local sanitary authorities, and points out that it would well repay these bodies to employ an epidemiologist to devote himself to the prevention and control of infectious diseases. Acting on this view the health department of the City of Aberdeen has issued a memorandum by Dr. J. P. KINLOCH (dated Nov. 23rd) describing Dick testing and immunisation with a schedule of biological products for diphtheria and scarlatina which can be obtained on request at the City Hospital Laboratory. From China comes a report[4] of a new serum prepared from throat swabs of severe cases by a method radically different from that of the DICKS. Dr. S. P. CHEN, superintendent of the Government Isolation Hospital at Peking, found the varieties of antiscarlatinal serum previously used of little value in the toxic type of scarlet fever, of which there is a large proportion in North China. Instead of using a *toxin as antigen*, Dr. E. T. H. TSEN and Dr. P. Z. KING, of the Central Epidemic Prevention Bureau, used washed whole bacterial bodies, first dead and then living, after passage through a horse. The animal was immunised with 12 doses of dead cultures, and subsequently with 14 doses of living bacteria, in gradually increasing amounts. In the absence of a conclusive protection test for the scarlet fever streptococcus these investigators found it satisfactory to use in mice a virulent strain of hæmolytic streptococcus from a case of erysipelas. It may here be recalled that O'BRIEN and OKELL found the hæmolytic streptococcus isolated from a case of lymphangitis to give all the DICK reactions. Nineteen different strains of scarlatinal coccus were used by the Chinese workers as there seemed to be trifling differences in growth among them. The serum has only been in use for a year, but as some of the cases regarded at first as hopeless made a good recovery, Dr. CHEN issued a preliminary report. Improvement sets in within 48–72 hours after an intramuscular dose of 25–50 c.cm. of the unconcentrated serum, and in spite of continuance of the pyrexia, the patients evidently had turned the corner. Given early, the serum seemed to ward off serious complications and to cut short erysipelas.

DENTAL RESEARCH.

IN no department of medicine is inquiry into the nature of disease likely to be better rewarded than in dentistry. Pragmatism is increasingly the spirit of research. Four years ago the Medical Research Council set apart a committee to investigate dental disease on a broad basis, and the second report[1] of this committee has just appeared, containing the results of an inquiry by Mr. N. J. AINSWORTH, L.D.S., into the teeth of 4000 children in public elementary schools. The investigation has been of a very arduous and complete character, the statistical reduction of the data being carried out by Dr. MATTHEW YOUNG, a member of the Research Council's department of statistics. Definite replies are given to the main questions investigated. The calculated dates of eruption of the various teeth were found to correspond fairly closely with those given in dental text-books and generally accepted. The incidence of caries in the permanent teeth was found to be roughly the same in boys and girls, the tooth most often affected being the lower second molar (28·2 per cent. at 12–13 years), the upper lateral incisor being the most immune (0·1 per cent. at 9–10 years). Of the permanent molars the occlusal surface is by far the most frequently attacked; in the pre-molars the occlusal and distal surfaces equally, while it is the mesial surface of the upper incisors which suffers. Caries was found spontaneously arrested in a negligible proportion of the 6753 carious teeth examined—only about ¼ per cent., in fact. Hypoplasia was associated with a double susceptibility to caries, and it is the hypoplastic area of the tooth that is attacked. Gingivitis, including slighter forms, was found in one-third of the children examined, older children having a larger proportion of the severer forms. In 23·2 per cent. of all children examined some degree of malocclusion was found.

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[1] Section of Epidemiology and State Medicine, THE LANCET, Oct. 31st, p. 919.

[2] THE LANCET, April 4th, p. 710, and Sept. 19th, 1925, p. 587.

[3] Public Health, November, 1925, p. 33.

[4] National Medical Journal of China, August, 1925.

[1] Medical Research Council: Reports of the Committee for the Investigation of Dental Diseases. II. The Incidence of Dental Disease in Children. Special Report Series No. 97. H.M. Stationery Office. 1925. 1s. 6d.

The recent report[1] of the Research Committee of the Dental Board of the United Kingdom contains the interim reports of the various workers engaged in research under the auspices of the Board. Though the majority of the work is incomplete, it is obvious that dental science will be much enriched by these investigations which have only been made possible by the financial help of the Board. A very important piece of research is being carried out by Dr. W. W. Rosenhain and Dr. E. E. Walker for the Department of Scientific and Industrial Research, to whom the Board entrusted a series of investigations on dental alloys and amalgams and on substitutes for vulcanite. The work on the silver-tin amalgams is now completed, and the report will shortly be published. It is stated that new facts have been obtained which may throw valuable light on the ageing of silver-tin alloys. Amalgam fillings play so large a part in conservative dentistry that this research is of special importance, and the dental profession is awaiting the results of the investigation with interest. Of equal importance is the research into vulcanisable rubber and its possible substitutes. Dr. Walker states that he has been engaged on the development of a synthetic product capable of acting as a complete substitute for vulcanite in dentures, and that considerable progress has been obtained. The investigation into the histology of enamel caries by Mr. H. C. Malleson has been recently published and has attracted much attention. Mr. Malleson has been successful in devising a technique whereby sections of enamel can be cut after decalcification. This has enabled him to demonstrate the features of caries in enamel with great clearness and to add much to our knowledge of the microscopical phenomena of caries. The work initiated by Dr. J. K. P. Clarke on the bacteriology of dental caries has been continued by Dr. Maclean, who is now engaged in a series of comparative experiments on the *Streptococcus mutans* of Clarke and the *Bacillus acidophilus odontolyticus* of McIntosh and his fellow workers. Dr. Maclean is also investigating the types of streptococci in pyorrhoea. Mrs. M. Mellanby is continuing her investigations into the dietetic and hygienic factors concerned in the calcification of the teeth in puppies, and is now attempting to produce caries in the teeth of dogs and other animals under experimental conditions with a view to studying the factors affecting the immunity of erupted teeth. Prof. J. C. Brash, whose work on the growth of the jaws has already proved so valuable, is continuing his madder-feeding experiments in pigs in regard to the growth of the jaws and the eruption of the teeth. An independent investigation by Mr. Wilson Charles on the growth of bone, also by madder-feeding, makes piquant reading, for Mr. Charles suggests that experiments with madder are of doubtful utility in demonstrating *bone growth*. Statistical and anthropometric investigations are being carried out by Mr. Ainsworth, Miss V. H. George, and Miss K. C. Smythe. Of these Mr. Ainsworth's report has now appeared and is summarised above. Dr. E. W. Fish has commenced an investigation into the nutrition of dentine during adult life. In his report he states that so far the analyses of dentine show that there is a definite increase in the calcium content during adolescence and a corresponding withdrawal of salts in later life. This would suggest that the structure of the teeth plays an important part in deciding the occurrence of caries, a view strongly supported by the investigations which have been carried out over a long period by Mrs. Mellanby.

Mr. J. T. Carter is investigating the structure of enamel in modern and prehistoric mammals and reptilia. He finds that the enamel pattern is very distinct in the lower primates and insectivora. Mr. Carter has been engaged for a considerable time in studying the comparative structure of enamel. At the time when the tooth of *Hesperopithecus* sustained its disastrous fall, Prof. Elliot Smith suggested that here was an opportunity of putting to the test the views of Mr. Carter, and seeing whether the enamel structure shed any light on the affinities of the owner of the tooth. Mr. Carter's researches have not become widely known, so that the announcement that a memoir on the enamel of fossil mammalian teeth will shortly be published will be welcome news to all interested in dental anatomy. An application for a grant was received from Messrs. R. A. Broderick, H. Round, and Hervey Wyatt to study the association of gastric ulcer and oral sepsis. They proposed to attempt to reproduce gastric lesions in rabbits by inoculation of cultures from patients with gastric ulcer associated with oral sepsis. In other words, this research was intended to repeat Rosenow's theory of elective localisation of bacteria and to test its validity. It is somewhat surprising that the Board, after consultation with the Dental Committee of the Medical Research Council, refused the grant on the grounds that the work did not appear "primarily to be concerned with dental research." Rosenow's views have attracted wide attention both in America and here, and it seems highly desirable that his experiments should be repeated in this country. It *is true that their significance is not limited to dental* sepsis, but it is chiefly in connexion with infection from the teeth that Rosenow's theory is discussed. It has so important a bearing on focal infection that we cannot understand the attitude which would deny to such an investigation as that proposed by Broderick and his fellow workers the right to be considered as a piece of dental research.

It is sure that all the various researches will not be equally fruitful, but it is certain that dental science will gain much from these investigations which cover so wide a field. Without the financial encouragement of the Dental Board many of these investigations could not have been commenced. Though many dentists have grumbled at the imposition of an annual fee by the Board, yet the fact that the revenue so obtained has enabled the Board to subsidise research on a scale never before approached in the dental profession in this country should reconcile them to this small recurrent obligation.

ARTIFICIAL LIGHT AND X RAY THERAPY IN SCOTTISH HOSPITALS.—The Scottish Board of Health has issued an interim report on Artificial Light and X Ray Therapy so far as they are used in Scottish hospitals and sanatoria, signed by Dr. Lewis D. Cruickshank, and Dr. Ernest Watt. At the moment, the report says, there is no necessity to press for the installation of more equipment for artificial light in sanatoria, but the authorities should not be discouraged from providing it if they wish to do so. It is, however, recommended that a few of the larger tuberculosis clinics in industrial districts should be encouraged to provide suitable light equipment for the treatment of outdoor cases, and that some of the larger child welfare clinics should be equipped with mercury-vapour lamps. In the case of new X ray equipment a certificate of safety should be obtained from the National Physical Laboratory.

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[1] Minutes of the Dental Board. Constable and Co., Ltd., 12, Orange-street, W.C.

Annotations.

"Ne quid nimis."

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

WORK upon the foundations of the new School, which is to be erected in Bloomsbury to the design of Mr. Morley Horder, F.R.I.B.A., and Mr. Verner Rees, A.R.I.B.A., will shortly be commenced, the contract for this work having just been placed. While this work is in progress the working drawings of the building will be completed and the scheme for the engineering services, which have been entrusted to Mr. T. J. R. Kiernan, M.Inst.C.E., will be drawn up. Concurrently with these developments the board of management of the School are taking such steps as are immediately possible for supplementing the facilities at present available for D.P.H. students. A course in Parasitology is already being given to students in the laboratories of the Tropical Division of the School, and it is interesting to learn that arrangements have now been made by the authorities of the School with Prof. R. J. S. McDowall to deliver—with the consent of the King's College delegacy—a course of lectures in Physiology as applied to Hygiene. These will also be given in the premises of the Tropical Division (the old School of Tropical Medicine) at Endsleigh-gardens, Euston. In the Tropical Division itself some important changes are taking place. The School is shortly to lose the services of Lieut.-Colonel A. W. Alcock, F.R.S., the Director of the Department of Entomology, who is retiring under the age-limit. He is to be succeeded by Dr. P. A. Buxton, who has been selected for the post from among ten applicants. Dr. Buxton is now on his way home from Samoa where, for the last two years, he has been engaged upon a research expedition sent out by the former managers of the School of Tropical Medicine. The post of assistant in the Department of Entomology has also fallen vacant through the retirement of Lieut.-Col. H. J. Walton, I.M.S. (retd.), but this post will not be filled until Dr. Buxton has taken over his new duties at some date early in the new year. In the Tropical Division, also, the extended course, which commenced in October, and has attracted students from all parts of the world up to the full capacity of the accommodation, has been strengthened; the Director has been able with the assent of the Air Ministry to secure the services of Wing-Commander H. E. Whittingham for a series of lectures on Biochemistry, and a short course by Lieut.-Colonel A. J. Gage, I.M.S. (retd.), on Poisonous Plants is being added to the curriculum. The appointment of Lieut.-Colonel G. E. F. Stammers, R.A.M.C. (retd.), to the post of lecturer in tropical hygiene marks a further notable development in the work of the School. The following subjects will be embraced by this course: Tropical and subtropical climatology, personal hygiene, maternity and child welfare, housing in the tropics, food and dietetics, hygiene of food, water, excreta and refuse, disinfection and disinfestation, health measures, hygiene of native labour in the tropics, disposal of the dead, public health administration, and organisation in the tropics. In addition to the lectures given on these subjects at Endsleigh-gardens the students will be taken by Colonel Stammers to see demonstrations, in and about London, in milk-supply, water-supply, sewage and refuse disposal, disinfection, and meat inspection, and a whole day will be given to a visit to the Army School of Hygiene at Aldershot. This extended programme in the study of tropical hygiene, although forming part of the general course of the Tropical Division, will be a self-contained course for which the School are prepared to accept a limited number of students at a fee of £6 6s. The lectures and demonstrations will extend over a period of about three weeks from Jan. 13th to Feb. 4th, 1926. The subject of hygiene as applied to tropical medicine has not received in the past its due share of attention, but this has now become possible owing to the extension of the length of the School course, which we have already brought to the notice of our readers.

RECENT CANCER RESEARCH IN ITALY.

Prof. G. Tizzoni and Prof. E. Centanni, of the Universities of Bologna and Modena, have lately published a joint preliminary note on the Modifications produced by Radium on the Pulp of Adeno-carcinoma in Mice and its Transformation into a Curative Vaccine.[1] They base their researches on the principle that the most efficient weapon with which to attack a disease caused by a virus lies in the pathological products evolved by the development of the virus itself. It is not necessary that the nature of the virus, to which Gye and Barnard have drawn attention, should be known. In many diseases due to a filterable virus, such as rabies, small-pox, infantile paralysis, encephalitis lethargica, glanders, &c., practical scientific results have been achieved, although in ignorance of the morphological characters of the virus. In these cases the essential solution of the problem consists in finding, for such products as contain the virus in a natural culture, the conditions under which the death of the virus can be effected without injuring its vaccinating properties. With this idea the present researches were undertaken, using the mammary adeno-carcinoma of mice as the subject and pure radium bromide, one-tenth of a gramme, as the destructive agent. It was found that cancer pulp subjected to radiation for not less than 24 hours when injected into the tissue surrounding the tumour in quantities of ½ c.cm. arrested its growth and caused a gradual regression ending in complete disappearance. Cancer pulp subjected to radiation for a less time was found not to have this property, and when radiated for 40 hours was likewise inactive, having lost both its pathogenic and vaccinating power. These results seem important and are comparable to the attenuation of the virus and its transformation into a vaccine which was one of Pasteur's greatest discoveries. Control experiments were made with the pulp which had been frozen for 24–40 hours without being exposed to the action of radium and also with saline solution in doses of ½ c.cm. which had been irradiated. Both these proved to have no effect on the neoplasm. The control experiments led to the conclusion that the effect of the radiated pulp is not due to induced and acquired radio-activity, nor to its preservation on ice, but to its transformation into a curative vaccine. What these observers appear to have achieved is to have been able to destroy entirely by means of radium the pathogenic power of cancer pulp while retaining either completely or in large proportion its vaccinating properties. Prof. Tizzoni and Prof. Centanni are continuing their work on this vaccine to ascertain more particularly if and under what conditions it retains its activity, and if equally in a dry or liquid state; if a greater concentration and conservability is possible; if it can be purified from inactive and extraneous matter; if it acts only locally and in the zone surrounding the tumour, or whether it has the same efficacy when injected at a distance so that its use would not be limited to external tumours or those in easily accessible situations. Another important matter is to solve the question whether every vaccine is specific exclusively for the tumour from which it is derived, or whether the vaccine from one tumour has the polyvalency necessary to make it of use in other varieties of tumour. In the light of the discoveries of Gye and Barnard this particular vaccine may be able to attack either the generic factor, in which case its task would be rendered easy, or, on the contrary, the specific factor, in which case great and sometimes insurmountable practical difficulties would be met with, and it would be necessary to establish precisely the amount of radiation to be used in each special case So far we have been summarising without comment the work of the Italian investigators. The method of inducing resistance to tumour growth by the introduction of irradiated tumour material is, however, not new It was first used by Contamin in 1910 and subsequently by Russ and his collaborators in 1914 and 1922, with results which seemed to show that such a procedure induced resistance against subsequent inoculation, and even against the growth of unestablished tumour. But quite recently experiments on a large scale[1] have shown all these claims to be unfounded.

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[1] La Riforma Medica, Oct. 19th, 1925.

THE PHYSIOLOGY OF TASTE.[2]

This book is, we believe, the first complete translation into English of Brillat-Savarin's famous "Physiologie du Gout," and appears exactly 100 years after the completion of the famous original The publisher has made of its production in appropriate and shapely form a labour of love, and has, we understand supplied the translation himself, an exploit upon which he is to be thoroughly congratulated, for Brillat-Savarin is not an easy author to follow justly and fully in any language but his own The 'Physiology of Taste" is a long book, though not so long as might have been expected from the probability that its preparation occupied many years and much note-taking in totally different milieux As a rule, when the great epicurean is quoted the extracts are taken from two particular chapters, one treating of gourmandism as a whole and dealing with the pleasures of the table, and the other dealing discursively with gastronomy Such excerpts give only the slightest indication of the range of Brillat-Savarin's knowledge, eloquence, wit, and multiplicity of personal experience, as evidenced by his familiarity with classical authors and English novelists, the princes of French literature, and a host of other French writers All these are laid under contribution, while the medley is kept interesting throughout by appropriate anecdotes, amusing renderings of personal sensations, sound physiology, and records of life and travel in various parts of the world The reader will gain from this book, therefore, a very different impression of the author than he is likely to have derived from the frequent allusion to him and his work in general literature, where he usually appears as a great cook, a sort of rival to Ude or Francatelli, *especially to the former, who himself wrote a treatise* entitled "La Science de Gueule" Brillat-Savarin was not a cook any more than he was a doctor, he was a barrister who held high legal offices, a municipal authority, a politician and perhaps a trifle of conspirator, an antiquary, a country gentleman and sportsman, a frequent host, and an honoured guest at distinguished tables. All these sides of him appear in the "*Physiology of Taste*," and though in the sense in which the word is used by science he cannot be called a physiologist, there are passages and, indeed, whole pages in his work which will be appreciated by medical men.

Brillat-Savarin awards a high place among 'gour*mand professions" to that of medicine* Its members, he says, 'are gourmands by seduction, and would need to be made of bronze in order to resist the force of circumstances. The dear doctors are the more welcome wherever they go, because health . . . is the most precious thing in the world Always anxiously awaited, they are sure of the most flattering reception A pretty patient summons them, youth greets them with caresses; a father, a husband, surrenders his dearest to their care Hope turns their right flank, gratitude their left, they are fed at the beak like pigeons, and must needs submit; in six months the habit is upon them, and they are gourmands past redemption '

Mr Davies's fine translation is embellished with some excellent designs by Mr Andrew Johnson

HEALTH ON BOARD SHIP.

The latest report of Dr J. Howard Jones, medical officer to the Newport Port Sanitary Authority, contains an indictment of the Board of Trade as the Government department responsible for looking after the health conditions of seamen. Dr Jones points out that the 1923 Instructions to Surveyors as to the Survey of Masters' and Crews' Spaces do not differ materially from those issued in 1913, and that many of the British regulations, in contrast with some of those issued by other countries, are merely suggestions which can be and are ignored by builders. Section 15 states that officers' and engineers' quarters should be so placed that they are entered from a passage-way rather than from the open deck In spite of this, several new vessels have been at Newport with cabin entrances so exposed that the cabins cannot be kept dry under bad weather conditions. Section 15 also advises that the men should be berthed above decks in houses or poops rather than in forecastles. "Yet," writes Dr Jones, "on a ship recently built for local owners the seamen and firemen were housed in a narrow confined forecastle in which two of the berths or cots were placed in the narrow triangular space at the forward end of the forecastle, consequently there was hardly room for the men to move about in their quarters, and those berths had to be unshipped to allow of access to the forepeak through the hatchway in the floor for the lowering of ship's gears' stores into the forepeak.' The vessel referred to contained many other flagrant defects, rendering her living quarters unsatisfactory, but she had satisfied the Board of Trade owing to the fact that the Board only suggests certain things, which should be strict requirements. As to the lighting of crews' spaces, the new regulations are, says Dr Jones, less satisfactory than the old, in that the use of electric light instead of daylight is permissible to a greater extent than formerly In view of the prevalence of tuberculosis among seamen, especially Lascars, a better standard of lighting is very necessary Section 20 states that in new foreign going ships suitable bath rooms and washing places should be provided for the men This is not compulsory, however, *for recently a new foreign going ship visited* Newport without such accommodation The old practice of whitewashing the walls of crews' spaces is dying out and being replaced by the much better practice of using white paint or enamel Dr Jones describes the testing of a certain distemper or water paint advocated for this purpose, for which antiseptic properties were claimed It was found that staphylococci and diphtheria bacilli grew quite freely on culture media when mixed with this distemper made up according to the instructions. Dr Jones gives a description of the crews' spaces of a new vessel to illustrate the lack of common sense frequently shown in designing

> "The lighting on the men's quarter in the poop was seriously affected by the placing of four berths in both the firemen's and sailors' quarters against the ship's side, in consequence of which the lower bunks and most of the lower parts of the quarters were very dark. The quarters were cramped owing to the fact that the passage-way between the firemen's and sailors quarters leading to the stores was unnecessarily wide There was sufficient space available in the poop to provide two excellent berth cabins, a mess room and bath room or wash house. Owing to the lack of bath room or wash house, the washing in wet weather would have to be done outside or in the combined living, feeding, and sleeping rooms or in a foul w c"

Dr Jones refers to the incomplete mortality tables for seamen published by the Board of Trade and the Registrar-General respectively The Board returns give no idea of the fatality of certain diseases among seamen because the deaths only refer to so called bona fide seamen who die at sea and to those who are discharged from their ships on account of illnesses or injuries which prove fatal. Dr. Jones does not think that more than 10 per cent. of the deaths of seamen from tuberculosis are included in the Board's returns. He sums up the position by saying that the time is long overdue for a thorough revision of standards and of sickness statistics of seamen in the mercantile marine.

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[1] F. C. Wood and R. E. Prigosen: Jour of Cancer Research vol. ix., September 1925, J. C. Small M. J Evans, and E. B Krumbhaar, ibid

[2] The Physiology of Taste, or Meditations on Transcendental Gastronomy By Brillat Savarin With an introduction by Arthur Machen and embellished with designs by Andrew Johnson London Peter Davies 1, Bedford-street, London, W C. 1925 Pp 326 2 guineas.

SMOKE ABATEMENT.

THE chief obstacle in the way of public health authorities who desire to effect an abatement of the smoke nuisance within their areas is contained in Section 91 of the Public Health Act, 1875 (repeated in Section 24 of the Public Health London Act, 1891), wherein it is laid down that before smoke can be deemed to be a nuisance within the terms of the Act it must be "black" smoke. A factory chimney, whether in London or elsewhere, may belch forth volumes of dense, acrid, brown smoke of a suffocating character and in quantities which cause a pall to hang over the neighbourhood, and yet, under the terms of existing Public Health Acts, no notice can be served by the local authorities. It is possible that some manufacturers deliberately dilute their black smoke with steam in order to keep within the letter of the law. The Public Health (Smoke, &c., Abatement) Bill, introduced by Dr. A. Salter in the House of Commons on Dec. 10th, provides that any chimney emitting smoke in such quantity as to be a nuisance shall be deemed to be a nuisance notwithstanding that the smoke is not black smoke. Dr. Salter's Bill further provides that the term smoke shall include soot, ash, grit, and gritty particles. At present a chimney may emit immense quantities of thick dust or grit which may descend and cover everything in the neighbourhood with a heavy layer of dust, yet the offender cannot be dealt with because his chimney had not given forth black smoke. In order to have some criterion in case of prosecution the Bill provides that every local authority shall make by-laws prohibiting the emission of smoke in excess of a standard fixed by the Minister of Health, and the Minister is directed to fix such standard to which every local authority shall have regard when making the by-laws. It is intended that the Minister shall issue a colour test card to guide the inspector in making his observations and in deciding on a prosecution. Such graded cards are already well known in public health circles. Present penalties for contravention are too trivial to command attention from big manufacturers; increases are suggested from £5, £2, and 10s. to £50, £5, and £1 respectively. In London the suggested authority for the administration of the Act is made the London County Council rather than the borough councils, which are more susceptible to pressure from ratepayers and factory owners. A chimney is defined as including smoke-stacks, structures, or openings of any kind whatsoever capable of emitting smoke, as in the past there have been technical difficulties under this head. Chimneys of private dwelling-houses are specifically excluded, as the promoters of the Bill do not deem it practicable at the present time to issue a general prohibition of open coal fires. Should the low carbonisation treatment of coal at the pithead, the extraction of by-products, and the production of smokeless fuel become an economic possibility, the Act could be extended to deal with domestic chimneys. Section 4 of the new Bill runs: "It shall be the duty of a local authority on submitting proposals for the provision of houses for the purposes of the Housing Acts, 1890 to 1924, to satisfy the Minister that suitable arrangements are to be made for heating or cooking as are calculated to prevent or reduce the emission of smoke." In several recent housing schemes arrangements have been made either for (1) the complete elimination of coal fires and the substitution of gas or electricity for heating, or (2) central heating on the Dundee system. Outside London the County Council is to be given power to supersede any local authority which fails to carry out its duties under the Act of 1875. Any local authority is also to receive power in coöperation with manufacturers or others: (1) to inquire into or devise upon the methods employed in the prevention of smoke and the treatment of smoke in manufacturing operations, and as to the heating arrangements of large buildings; and (2) to arrange for the training of stokers in the best method of stoking. Certain authorities in the North have voluntary schemes on these lines without statutory sanction. Section 3 of the Bill provides for the extension of the list of noxious and offensive gases as enumerated by Section 27 of the Alkali, &c., Works Regulation Act, 1906. The Minister of Health may, after a public inquiry and after consultation with the local authorities or other interests concerned, make orders extending this list and amplifying the list of works mentioned in the first schedule of the Act. These are the main points in a Bill whose beneficent intent is beyond question.

A GRAPHIC SCHOOL REPORT.

IN his annual report for 1924 to the Cheshire County Council Dr. Meredith Young represents school medical service as by no means the dull, routine, wearisome work that it is sometimes painted, but as crowded with human interest. It is easy through his eyes to visualise the mother who "could not make" her child, aged 5 and suffering from "nerves," go to bed before she did; the parents whose children will not sleep in daylight; and the health visitors whose tact is tried to the utmost in efforts to convert "unclean" children into clean. The reported value of X ray for ringworm is generally accepted, but the statement that school lighting seems to affect the number of children with defective vision calls for statistical verification. A special inquiry into thyroid enlargement is of interest; the condition is most prevalent in the west and south of the county; at age 8 it is about equally prevalent in boys (2·3 per cent.) and in girls (2·5 per cent.), but at age 10 the percentages are 3·4 and 13·0 respectively, and at age 13, 4·0 and 16·0. Iodised salt is to be given a trial in the county. The rural child is reported not to compare favourably with the town child. "The rosy-faced, chubby country child is conspicuous by its absence. Instead we find children who are commonly pale, thin, and tired-looking . . . . overcrowding is very general and the older cottages are often vermin-ridden. . . . Villages send their milk, butter, and eggs to the large towns; there is not always left the supply sufficient for the villagers themselves." The children, badly shod, often walk in all weathers long distances on a hasty breakfast carrying with them a lunch of sorts. A dietary lacking in fresh vitamins is customary and anæmia is more prevalent than among town children; efforts to supply mid-day dinners are on foot. It is not a happy picture, but even so the rural child is rather better nourished and suffers less from rickets than the town child in the county. Bad clothing, poor nutrition, and unsatisfactory home conditions are found highly correlated; nevertheless, continued unemployment has not exerted an adverse effect on child physique. Rheumatism was found "equally common in urban and rural districts, in hilly and low-lying country; . . . it may well be considered pandemic." A positive correlation is reported between the stigmata of rickets and those of acute rheumatism. "I would almost hesitate," writes Dr. Young, "to diagnose a rheumatic condition in their absence." The combination of brilliant mentality and debilitating rheumatism is not uncommon, and a vicious circle is established when the child prefers to sit at home reading. Over-scholarship, combined with lowered vitality, is a real danger to these future brains of the country. Such problems are no doubt present in large measure in other parts of the country, but they are set out very pointedly in the report of the chief school medical officer for Cheshire.

PHYSICAL RESEMBLANCE AS EVIDENCE IN CASES OF DISPUTED PATERNITY.

THE Scottish law courts have once more rejected evidence of physical resemblance between child and alleged parent in a case where paternity is in dispute. In preliminary proceedings in his claim to the Seafield peerage Mr. Alexander Grant, who seeks a judicial declaration that he is the eldest lawful and legitimate son of the seventh Earl of Seafield, proposed to offer evidence that not only he himself but also his daughter and other members of his family resembled his alleged parents in feature, gait, and personal mannerisms. Lord Ashmore made an interlocutory order excluding these averments; from that order Mr. Grant appealed, but the Second Division of the Court of Session has (according to a report in *The Times* of Dec. 19th) dismissed his appeal with costs. It will be recalled that ten years ago in the Slingsby case an attempt was made to establish in the English High Court the legitimacy of a boy of 4 years of age by offering evidence inter alia of physical similarities between the child and his reputed parents. On appeal the House of Lords did not look with much enthusiasm upon evidence of this kind; Lord Shaw in particular, speaking with the authority of a Scottish lawyer, pointed out that in Scotland such evidence had been rejected for more than a century on the ground that it was "loose and fanciful," and added that in England it was open to the same objection. In the Seafield peerage claim Lord Anderson repeated Lord Shaw's two epithets, while the Lord Justice Clerk commented on the remoteness of investigating alleged resemblances unto the third and fourth generation. It was proposed, he said, to find resemblances to her grandfather in a grand-daughter. When he surveyed the vista opened up by these averments, he thought in Prof. Bell's phrase, that the situation would make wild work of the law of legitimacy. English law is not quite so rigid as Scots law in excluding evidence of this kind. It will be remembered that photographs were produced in the Russell divorce case to suggest the resemblance of baby to father, and that in the Slingsby case Sir George Frampton, the sculptor, acted as a kind of informal assessor in assisting the judge to detect details of physical similarity. English law seems to allow that, in cases of disputed paternity, the phenomenon of facial resemblance between parent and child is one which a jury may take into account and may weigh along with other evidence. But even English law must draw the line somewhere, and if in an English court it was sought to trace this resemblance through three or four generations, the judge, if he did not exclude the evidence altogether, would doubtless warn the jury not to pay too much attention to it.

PARATHYROID EXTRACT.

IN discussing the treatment of spasmophilia in young children in THE LANCET of Dec. 12th last, Dr. J. C. Spence commented on the recent work of J. B. Collip and his collaborators in the preparation of an extract from parathyroid glands and in the experimental demonstration of its active properties. In the early part of this year Collip published[1] the method of preparation. This consists in collecting fresh parathyroids from oxen and, after dissection, freezing them at −4° C. The active substance is prepared by extracting the glands with 5 per cent. HCl in a boiling water bath. On cooling, the fat is skimmed off and the fluid is rendered alkaline by the addition of caustic soda solution. Hydrochloric acid is added very carefully until the maximum precipitation of proteins at the iso electric point occurs. This precipitate is separated off, redissolved in alkali, and the procedure is repeated. All the solutions are combined, and herein lies the active principle. The administration of this substance, either by mouth, subcutaneously or intravenously, causes a marked increase in the blood calcium. The actual quantity injected does not seem to matter, but frequency is of the utmost importance. Injection into a parathyroidectomised animal in tetany resulted in rapid cure. Very remarkable general results are described: the viscosity of the blood is greatly increased, the osmotic pressure + 10 per cent., phophates + 100 per cent., non-protein nitrogen up to 400 per cent., blood halogens are decreased 10 to 15 per cent. Cases of infantile tetany and of œdema due to acute nephritis were greatly assisted by the extract. Collip stated[2] that it was possible to kill an animal through hypercalcæmia, the blood calcium rising to 20 mg. per 100 c.cm. In his earlier papers Collip maintained that the substance was of a simple nature, but in later contributions he expresses the opinion that it is probably a complex substance. In later papers the rises in blood calcium content induced by the injection of the extracts are not so great as those described in the earlier papers. The provision of a standardised reliable extract of parathyroid for therapeutic purposes is probably now a matter of time only, though, as we pointed out recently (THE LANCET, 1925, i., 89), it will take many animals to meet even a small clinical demand.

PART II. of the Registrar-General's Statistical Review, giving civil tables of statistics for the year 1924, price 5s., is now on sale at H.M. Stationery Office. It follows close on Part I., recently noticed in our columns, and gives tables of population, of births, of infant mortality, of marriages and places of their solemnisation, for different parts of England and Wales. Public health officials will find it indispensable to consult the tables in Part II. as well as in Part I. for serious study of the vital statistics of their own and other areas. This volume also gives the number of Parliamentary and local government electors in each area of England and Wales. Part III. has still to appear.

AT a recent meeting of the managers of the Royal Infirmary, Edinburgh, reference was made to the retirement from the active staff of Sir Norman Walker, and a minute of thanks and appreciation was read, setting out his association with the infirmary as house physician in 1885, assistant physician for diseases of the skin from 1892–1906, and full physician in the skin department from 1906–1924. The minute goes on: "As treasurer of the Royal College of Physicians, as a member of the General Medical Council, as a medical educationist, and in many other positions of professional responsibility, Dr. Walker exhibited also great administrative and business qualities, and has played a leading part among his contemporaries." In conclusion the managers invited Sir Norman Walker to remain as consulting dermatologist to the Royal Infirmary.

MIDDLESEX HOSPITAL.—The rebuilding fund has now reached £250,000, a fraction over half the estimated cost of £500,000. The women of the Empire are being asked to contribute £50,000 for the Queen Alexandra Memorial Wing. The old Alexandra Ward, which sheltered French refugees during the Revolution, is about to be closed. A complete wireless installation for the 90 beds of the hospital's cancer charity was last week presented by the Wireless for Hospitals Fund.

HOSPITAL POLICY OF THE LABOUR PARTY.—At a conference of the provincial centre of the National Union of Trade Union Approved Societies at Manchester last week a report was presented from the Research Department of the Labour movement on the work of voluntary hospitals. The report declared that the present methods of workers' contributions, patients' payments, and letters of recommendation from lay subscribers are "unfair and objectionable," and that the hospitals ought to be "financed from the rates with substantial grants-in-aid from the National Exchequer." Consideration of the report was postponed.

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[1] Amer. Jour. Physiol., 1925, lxxii. (Proc. Amer. Physiol. Soc.), 182; Jour. Biol. Chem., 1925, lxiii., 89.

[2] Collip, J. B., Clark, E. P., and Scott, J. W.: Jour. Biol. Chem., 1925, lxiii., 439; Collip and Clark: Ibid., 1925, lxiv., 485.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CLIII.—MASTURBATION IN YOUNG WOMEN.

THE term masturbation is here used to cover all means employed in order to experience, through the individual's own body, pleasure which is normally gained in sex intercourse. These means include manipulation of the genitals manually or with instruments, crossing and rubbing the thighs, and indulgence in erotic phantasies without handling the genitals.

When a patient presents herself for treatment, our first concern is to help her to understand the true significance of the habit, for it is merely an outward sign that mental and spiritual development have not advanced hand in hand with physical development. It is permissible for the small child to love his own body and all the pleasures associated with its functioning, but if the growing girl and young woman are to add each her contribution to the evolution of the race, then they must forsake the paths of childhood, where self-love is the dominant note, and advance to a new viewpoint from which they have vision of personal insignificance in comparison with racial development. That this is a true interpretation is proved by the patient's attitude of childish evasion of all the problems of life, and the extreme disharmony into which she is thrown by the ever-recurring remorseful conflict provoked by indulgence in what she regards as a sinful habit. Our duty it is to help her to achieve harmony by facing responsibilities, great and small, and by directing all her faculties in unison to the art of living. A thorough physical examination is absolutely essential in this as in all psychological states, since high endeavour may be brought to naught by the backward pull of physical debility. Any weight or tension in the pelvis must be relieved by attention to constipation, to tight clothing (including the present-day weight-reducing rubber corsets), and to dysmenorrhœa. The latter point is of extreme importance, as the period of congestion preceding the onset of the menses is a critical time, during which an orgasm may occur in sleep, even if temptation has been resisted by day.

Before entering on further details of treatment, it is helpful to trace the habit back to its roots, which may be in early childhood or in girlhood. This at once destroys the plea put forward by the patient that she is helpless in the grip of an inborn or, as she may say, hereditary weakness, against which resistance is futile, and *thus she can be led to accept personal* responsibility. And investigation of the origin of the habit may in other ways prove helpful. In one case, for instance, a patient, badly in the grip of masturbation, expressed great disgust at the obsessive power in her thoughts of enema-syringes in association with certain shops in Charing Cross-road, where these and other appliances are displayed. On carrying back her thoughts to childhood, her earliest recollections of self-abuse were found to be inseparable from the administration of enemata for an extreme degree of constipation. An enema syringe was thus found to be (in the subconscious) not a thing she hated but the motif of her sex-phantasies and the instigator of indulgence. *The Charing Cross-road shops were also* proved to give, in reality, an additional fillip to her phantasies, and to heighten the pleasure of masturbation.

Early to bed and early to rise is an excellent adage to recommend, while the tonic effect of a morning cold plunge (for those who react with an exhilarating glow) is undoubted. A sedentary life sets an obstacle in the path of progress, not only because it produces, or retards recovery from, constipation, but also because periodically it gives rise to a pent-up feeling which demands an outlet and finds it most easily through indulgence in masturbation. Although the opposite point of view has been put forward—i.e., that an exhilarating walk has a provocative effect on one who is predisposed to masturbate, it is the general experience that subsequent fatigue negatives the initial sense of desire (should it occur), so that we can confidently recommend physical exercise in excess.

Strict avoidance of enervating atmospheres (moral as well as material), of openly or subtly erotic literature, plays and conversation, must be earnestly urged, so long as the patient is still traversing marshy ground, since these may turn victory to defeat. Many women have found, to their dismay, that intellectual work which has not proceeded smoothly is apt to provoke sex feelings. If this be the experience of the patient under treatment, then every effort must be made to reorganise her life till she is on terra firma. But it is absolutely essential that the alternative work suggested should demand a keen coördination of all her energies in achievement and thus provide an adequate outlet for her sex urge.

It may be well to repeat here, what has been said often before, that the modern psychological attitude towards masturbation as retarded development and not a sin must be made very clear to the patient, since the object of treatment is to concentrate on development and to discourage the negative attitude of resistance to temptation and remorse over failure. It is frequently necessary to repeat the explanation with varied phraseology and, as the patient's confidence is gained, to drive it home with illustrations gleaned from her own account of struggle and failure. However much we endeavour to capture the patient's imagination with the lure of an adventure in development, she must at the same time feel the support of practical ideas. To one patient, incredibly childish in her outlook on life, the suggestion was made to attack the problem of growth by making a list of minor evasions of responsibility. Among them she included: failure to brush the teeth regularly, inability to rise when wakened, dawdling over dressing, and unpunctuality.

Many authorities have advocated manual, outdoor labour as the most satisfactory solution for refractory cases, but it is possible, when such an arrangement is not feasible, to provide the right atmosphere in quite other surroundings, as proved by a report received recently from a woman of 41 who had masturbated since childhood, and for some years earned her living with the minimum of effort in wealthy families. Writing from the institution in which, at the suggestion of the writer, she had accepted work, she said the life there had been incredibly hard and even painful, but that never once, since her arrival six weeks previously, had she even experienced any temptation to masturbate.

From these few suggestions on treatment, it is obvious that atmosphere is the most important element in successful handling, and that even at the first interview the patient should, so to speak, experience the tonic effect of a bracing wind. Everything depends on the physician's capabilities as regards successful investigation, initiative to meet the needs of individual cases, or even the varying needs of one case, sympathetic understanding which begets confidence, and a certain driving force which carries the patient along and which both inspires and energises her. The response to treatment is sometimes very rapid, but some cases make a grave demand upon the physician's patience, initiative, and staying power.

Certain views which are frequently put forward upon the subject of masturbation demand critical attention. Some, for instance, contend that the harmfulness of masturbation is grossly exaggerated, and that it serves a useful end in providing an outlet for sex feelings till marriage becomes possible. Three objections can be opposed to this contention. *(a)* That the injuriousness of the habit consists in the fact already pointed out, that it is an indication of arrest of growth, whereas the world has need of men and women who have attained to the full stature of development; *(b)* that the social ideal to be aimed at is an increasing inter-dependence of the sexes, whereas masturbation renders a woman sexually independent of men; (c) this independence may, later, wreck a woman's chances of married happiness, for some women have, even early in married life, fallen back on masturbation because through it they experienced greater satisfaction. Others suggest that an outlet should be found in an irregular union, but overlook the fact that this is a pitiful evasion and not a solution of the patient's problem, if we accept it to be one of growth. Such a course inevitably increases the sense of conflict and disharmony, and brings with it an added burden of secrecy. Still others put forward what appears to be a plausible suggestion in advising the woman to avail herself of an opportunity of marrying, marriage being thus offered as a cure for masturbation. This is surely a poor conception of marriage. If we hold the function of wifehood and motherhood in high esteem, is it not well that the woman in question should first put from her childish things and plough the furrow of self-education with earnestness of purpose, before she attempts the difficult task of adjustment to marriage and motherhood? Also, in view of the fact that marital intercourse may offer a lesser satisfaction than masturbation, is it not better that the woman should first on her upward climb arrive at the point where she discovers that the habit of masturbation has fallen from her life as a worn-out and useless garment? For in some such words has many a one expressed to me the consciousness of increase in mental and spiritual stature.

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Special Articles.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

A MEETING of the President and General Council of King Edward's Hospital Fund for London, for the purpose of awarding grants to the hospitals and convalescent homes for the present year, was held at St. James's Palace on Dec. 15th under the presidency of the Prince of Wales.

Death of H.M. Queen Alexandra.

Lord Stuart of Wortley (Chairman of the Management Committee) moved the following resolution:—

"That the General Council of King Edward's Hospital Fund for London desire to record their deep sorrow at the death of Her Majesty Queen Alexandra, and their sense of the great loss which all connected with hospitals, in common with the rest of the nation, have suffered thereby. The Council desire respectfully to tender to His Majesty the King, Patron of the Fund, and the Royal Family, their heartfelt sympathy in the sad bereavement which has befallen them, and to offer the humble assurance of their loyalty and devotion."

Lord Somerleyton (hon. secretary) seconded the resolution which was carried unanimously, the Council rising in their places.

The Financial Position.

Lord Revelstoke (the hon. treasurer) said that it had been decided that the total of the ordinary distribution should be increased from £235,000 to £245,000, while it was also proposed that the special grants which they were able to distribute as the outcome of the legacies of the late Mr. and Mrs. Wells should amount to £57,000, the two distributions together making a total of £302,000. The increased distribution of £245,000 would be provided out of the income for the current year. Receipts from legacies were again considerably below the average; but, on the other hand, the Fund had received some most timely donations, including £0000 and £2250 from donors who wished to be anonymous, in addition to £5000 from Lady Strathcona. The British Charities Association, which gave £15,000 last year for distribution amongst hospitals in London, had this year given £20,000. A further amount of £85,485 10s. in connexion with the estate of Lord Mount Stephen had also been received. Apart from considerable funds retained for certain annuities, to which the Hospital Fund would be entitled to an eventual reversion, the sum he had the pleasure of reporting as already actually received in this connexion was no less than £000,880. A further £1500 had also been received from the estate of Mr. Samuel Lewis. These sums had, like previous receipts from the same sources, been placed to capital account. From the Wells Legacies, which were estimated at £200,000, the amount received to date was £102,240. If this year's grants were added to last year's, the total allocated so far was £138,000.

League of Mercy.

Sir William Collins, in making the annual statement on behalf of the League of Mercy, said the League approved the policy in regard to contributions from patients, so far as they were voluntary thank-offerings; but they associated themselves with Lord Cave's Committee in the hope that the policy would not work to the detriment of the indigent sick or prevent the admission of the very poor for whom the hospitals were primarily intended. So far as it was possible to estimate from the amounts already received, the League would be in a position this year to hand over £15,000 to the King's Fund, which was £500 more than last year. That would make the total of the contributions by the League of Mercy to the King's Fund £383,031. In addition, they were making grants of £0845 to extra-metropolitan hospitals, and in that they had to acknowledge the assistance of the British Charities Association, which gave £5000 towards that distribution. That made a grand total of the amount distributed by the League of Mercy in its 26 years to voluntary hospitals of £457,084.

Grants to Hospitals and Convalescent Homes.

The Chairman of the Distribution Committee (Sir Cooper Perry) presented the report of the Committee on the distribution to hospitals (including recovery and convalescent branches). The report stated that the amount placed at the disposal of the Distribution Committee for allocation amongst hospitals and their recovery and convalescent branches at the present distribution was £243,000, as against £233,000 last year. The number of hospitals applying for grants was 133, as against 118 in 1924. Taken as a whole, the hospitals continued to maintain in 1924 the improved financial position which had been gradually reached since the crisis in 1920, but additions were being made to the number of beds available, and the Distribution Committee found it necessary to make a considerable increase in the amount allocated to maintenance grants, the total being £214,075, as against £197,275 in 1924.

Prof. Winifred Cullis seconded the report, which was adopted.

Major Wernher (hon. secretary) presented the schedule containing the list of awards to hospitals (including recovery and convalescent branches) as follows:—

*List of Awards.**

	£
Acton Hospital (of which £500 to deficit on extension, in accordance with the scheme submitted to the Fund) ..	1,000
All Saints' Hospital	50
Baldos' Hospital (Deptford Fund)	25
Baby Clinic Hospital (Kensington)	25
Beckenham Cottage Hospital	400
Belgrave Hospital for Children (of which £1000 towards the provision of new nurses' accommodation, in accordance with the scheme submitted to the Fund) ..	2,350
Blackheath and Charlton Hospital (of which £50 towards kitchen improvements)	250

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* The Distribution Committee draw attention to the fact that it must not be assumed that the reduction or absence of a grant implies dissatisfaction.

	£
Bolingbroke Hospital (of which £1000 towards erection of new ward block, in accordance with the scheme submitted to the Fund)	2,350
Brentford Cottage Hospital (of which £500 towards rebuilding and extension on new site, in accordance with the scheme submitted to the Fund)	525
British Hospital for Mothers and Babies, Woolwich	500
Bromley Cottage Hospital	100
Carshalton and District Hospital	100
Central London Ophthalmic Hospital	600
Central London Throat and Ear Hospital	150
Charing Cross Hospital	4,000
Chelsea Hospital for Women (including Convalescent *Home at St. Leonards*)	875
Cheyne Hospital for Children (including Country Branch at St. Nicholas-at-Wade) (of which £250 towards increased accommodation for artificial sunlight treatment and other improvements, in accordance with the scheme submitted to the Fund)	500
City of London Hospital for Diseases of the Heart and Lungs (Victoria Park) (including Convalescent Home at Saunderton)	3,850
City of London Maternity Hospital	1,250
Clapham Maternity Hospital	350
Dreadnought Hospital (Seamen's) (including Albert Dock Hospital, Hospital for Tropical Diseases, Sanatorium at Liphook, and Convalescent Home at Cudham) (of which £100 towards provision for artificial sunlight at the sanatorium at Liphook)	2,650
East End Mothers Lying-in Home (of which £1000 towards acquisition of adjoining building and its adaptation for nurses' quarters, in accordance with the scheme submitted to the Fund)	1,500
East Ham Hospital	150
East London Hospital for Children (including Convalescent Home at Bognor) (of which £100 to complete the extension and improvement of the X ray department)	3,350
Elizabeth Garrett Anderson Hospital (including Recovery Branch at Barnet) (of which £1000 towards extension, in accordance with scheme to be approved by the Fund)	2,725
Eltham and Mottingham Cottage Hospital	25
Enfield War Memorial Hospital	200
Evelina Hospital	1,000
Finchley Memorial Hospital	275
Florence Nightingale Hospital for Gentlewomen	300
Forest Hospital, Buckhurst Hill	175
French Hospital	350
General Lying-in Hospital	650
German Hospital	350
Gordon Hospital for Fistula	50
Grosvenor Hospital for Women (of which £500 towards provision of accommodation for resident medical officer and for nurses, in accordance with scheme to be approved by the Fund)	1,000
Guy's Hospital (of which £2000 towards recent improvements)	12,500
Hampstead General and North-West London Hospital (of which £250 towards improvements, in accordance with the scheme submitted *to the Fund*)	3,000
Hanwell Cottage Hospital (of which £25 towards provision of X ray department, in accordance with the scheme submitted to the Fund)	75
Hendon Cottage Hospital (of which £250 towards extension of ward *block, in accordance with the* scheme submitted to the Fund	550
Hornsey Cottage Hospital (of which £100 to deficit on extension, in accordance with the scheme submitted to the Fund)	250
Hospital for Consumption, Brompton (including Sanatorium at Frimley) (of which £250 towards removal of X ray department from basement, in accordance with the scheme of improvements submitted to the Fund)	1,250
Hospital for Diseases of the Throat	100
Hospital for Epilepsy and Paralysis (of which £500 towards extension of in-patient department, in accordance with the scheme submitted to the Fund)	2,250
Hospital for Sick Children	4,000
Hospital for Women (Soho-square)	1,000
Hospital of St. John and St. Elizabeth	750
Ilford Emergency Hospital	300
Infants Hospital (of which £150 to reduce debt)	500
Invalid and Crippled Children's Society Hospital (Canning Town) (of which £250 towards extension of out-patient department, in accordance with the scheme of extension submitted to the Fund)	700
Italian Hospital	300
Jewish Maternity Home	35
Kensington *Dispensary* and Children's Hospital (of which £500 towards removal and extension, in accordance with scheme to be approved by the Fund)	525
Kensington, Fulham, and Chelsea General Hospital (of which £1000 towards rebuilding and extension, in accordance with the scheme submitted to the Fund)	1,100
King Edward Memorial Hospital (Ealing)	500
King Edward VII.'s Hospital for Officers	250
King's College Hospital	7,500
Kingston-upon-Thames *Victoria Hospital*	100
London Fever Hospital (of which £25 towards ward kitchen)	525
London Homœopathic Hospital	1,750
London Hospital (including Recovery Branch at Reigate) (of which £1,000 to improvements, in accordance with the scheme submitted to the Fund)	14,625
London Jewish Hospital (of which £500 towards extension, in accordance *with the scheme submitted to* the Fund)	750
London Lock Hospital (of which £500 to maintenance of Harrow-road hospital and £100 to maintenance of Dean-street hospital, and £1000 towards the *building of an extension of the out-patient department* at Dean-street, in accordance with scheme to be approved *by the Fund*)	1,000
London Temperance Hospital (of which £750 to reduction of debt)	2,500
Maternity *Charity* and *District Nurses'* Home (Plaistow) (to the hospital: of which £250 to deficit on rebuilding and extension, in accordance with the scheme submitted to the Fund)	650
Medical Mission of the Good Shepherd, Babies' Home (Hoxton) (of which £25 to maintenance of babies' ward, and £25 towards improvements)	50
Metropolitan Ear, Nose and Throat Hospital	25
Metropolitan Hospital (of which £2000 towards new nurses' home, in accordance with the scheme submitted to the Fund)	6,000
Middlesex Hospital (including Convalescent Home at Clacton)	7,400
Middlesex Hospital Cancer Charity	1,000
Mildmay Memorial Hospital	450
Mildmay Mission Hospital (of which £500 towards nurses' home, in accordance with the scheme submitted to the Fund)	1,700
Miller General Hospital for South-East London (including Convalescent Home at Bexhill) (of which £1650 towards extension, in accordance with the scheme submitted to the Fund)	5,225
Mothers' Hospital of the Salvation Army (of which £400 to deficit on extension, in accordance with the scheme submitted to the Fund)	900
Mount Vernon Hospital (Fitzroy-square and Northwood)	1,200
National Hospital for Diseases of the Heart (of which £500 towards extension of out-patient department, in accordance with the scheme submitted to the Fund)	800
National Hospital for the Paralysed and Epileptic (including Convalescent Home at Finchley)	4,000
Nelson Hospital (South Wimbledon) (of which £250 to deficit on extension, in accordance with the scheme submitted to the Fund)	950
Northcourt Hospital and Home for Sick Children (Hampstead) (in consideration of the fact that curable cases are admitted)	75
North Islington Infant Welfare Wards	50
Norwood and District Cottage Hospital	450
Paddington Green Children's Hospital (including Convalescent Home at Slough)	1,100
Passmore Edwards Hospital for Wood Green, &c.	100
Phillips Memorial Homœopathic Hospital, Bromley	15
Poplar Hospital for Accidents (including Convalescent Home at Walton-on-the-Naze) (of which £250 towards new nurses' home, in accordance with the scheme submitted to the Fund)	475
Prince of Wales's General Hospital (including Convalescent Home at Nazeing) (of which £500 to reduce debt and £100 towards new mortuary, in accordance with the scheme submitted to the Fund)	5,200
Princess Louise Kensington Hospital for Children (*see* Kensington Dispensary and Children's Hospital)	
Queen Charlotte's Maternity Hospital (of which £500 to reduce debt)	2,000
Queen Mary's Hospital for the East End (including Convalescent Home at Theydon Bois)	4,150
Queen's Hospital for Children (including Convalescent Home at Bexhill)	4,250
Royal Dental Hospital of London	250
Royal Eye Hospital	750
Royal Free Hospital (of which £1000 to reduce debt)	6,000
Royal Hospital (Richmond) (of which £250 towards extension, in accordance with the scheme submitted to the Fund)	1,000
Royal London Ophthalmic Hospital (of which £500 to reduce debt)	3,500
Royal National Orthopædic Hospital (including Country Branch at Stanmore) (of which £1000 towards extension of out-patient department, in accordance with the scheme submitted to the Fund)	5,500
Royal Northern Hospital (including Royal Chest Branch in City-road, Recovery Branch at Southgate, and Convalescent Home at Clacton) (of which £750 to reduce debt, and £500 towards additional heating apparatus, in accordance with the scheme of extensions and improvements submitted to the Fund)	8,700
Royal Waterloo Hospital for Children and Women (including Convalescent Home at Whippingham) *(of which £1000 towards new nurses' accommodation,* in accordance with the scheme submitted to the Fund)	3,275
Royal Westminster Ophthalmic Hospital	650
St. Andrew's Hospital (Dollis Hill)	250
St. Bartholomew's Hospital (of which £1000 towards new nurses' accommodation)	7,000
St. Columba's Hospital	350
St. George's Hospital (including Recovery and Convalescent Branch at Wimbledon)	7,000
St. John's Hospital (Lewisham) (of which £100 towards extension of out-patient department, in accordance with the scheme submitted to the Fund)	1,100
St. John's Hospital (Twickenham)	100
St. John's Hospital for Diseases of the Skin (of which £100 towards improvements, in accordance with the scheme submitted to the Fund)	400

	£
St. Luke's Hospital for Advanced Cases (of which £100 towards extension of nurses' accommodation) ..	400
St. Mark's Hospital (of which £250 towards extension of out-patient department, in accordance with the scheme submitted to the Fund)	550
St. Mary's Hospital	6,000
St. Mary's Hospital for Women and Children (Plaistow) (of which £250 to deficit on new nurses' home, in accordance with the scheme submitted to the Fund)	2,000
St. Monica's Home Hospital	100
St. Peter's Hospital for Stone (of which £250 towards new lift)	600
St. Saviour's Hospital for Ladies of Limited Means (Osnaburgh-street) (of which £100 towards improvements)	225
St. Thomas's Hospital (of which £1000 to improvements)	11,000
Samaritan Free Hospital for Women (including Convalescent Home at Amersham)	1,300
Santa Claus Home..	75
Seamen's Hospital Society (*see* Dreadnought Hospital)	
South-Eastern Hospital for Children (Sydenham) (of which £750 towards new nurses' home, in accordance with the scheme submitted to the Fund)	1,550
South London Hospital for Women (of which £500 towards new out-patient department, in accordance with scheme to be submitted to the Fund)	1,500
Stoke Newington Home Hospital for Women	75
Streatham Babies' Hospital	25
University College Hospital (of which £1000 to reduce debt)	8,500
Victoria Cottage Hospital (Barnet)	100
Victoria Hospital for Children (including Convalescent Home at Broadstairs)	2,700
Walthamstow, Wanstead, and Leyton Children's and General Hospital (of which £1000 towards extension, in accordance with the scheme submitted to the Fund)	1,000
Weir Hospital, Streatham	100
West End Hospital for Nervous Diseases	1,000
Western Ophthalmic Hospital	300
West London Hospital	5,500
Westminster Hospital (of which £1000 to reduce debt)	6,150
Willesden General Hospital	1,750
Wimbledon Hospital (of which £200 to deficit on new nurses' home, in accordance with the scheme submitted to the Fund)	650
Winifred House Invalid Children's Convalescent Hospital Home	25
Woodford Jubilee Hospital	75
Woolwich and Plumstead Cottage Hospital	25
Woolwich and District War Memorial Hospital Building Fund (special grant towards provision of general hospital, in accordance with the scheme submitted to the King's Fund)	1,000
Total	£243,000

Summary.

Total Grants to Hospitals (including Recovery and Convalescent branches) out of the ordinary distribution	£243,000
Total Grants to Hospitals, January to December, 1925, out of the special distribution of the legacies of the late Mr. and Mrs. Wells	57,000
Total grants to hospitals and branches ..	£300,000

The motion was put and carried unanimously.

Distribution to Convalescent Homes.

The Chairman of the Distribution Committee (Sir Cooper Perry) then presented the report of the committee on the distribution to convalescent homes not attached to particular hospitals, which stated that the President and General Council had fixed the sum available for distribution amongst convalescent homes not attached to any particular hospital in London at £2000, being the same amount as last year. The number of applications eligible for consideration amounted to 42, also the same as last year.

Lists of Awards.

The list of grants were presented by Major-General Sir Cecil Lowther (hon. secretary) as follows:—

	£
All Saints' Convalescent Hospital (Eastbourne) ..	100
All Saints' Convalescent Home (St. Leonards).. ..	25
Baldwin Brown Convalescent Home (Herne Bay) ..	25
Beau Site Convalescent Home (Hastings)	25
Brentwood Convalescent Home for London Children (Brentwood)	25
Brooklands Home (Invalid Children's Aid Association) (Worthing)	50
Bushey and Bushey Heath Children's Convalescent Home (Bushey)	25
Children's Convalescent Home (Beaconsfield)	25
Children's Cottage Hospital (Cold Ash, Newbury) (in consideration of the fact that convalescent cases are admitted	25
Children's Home Hospital (Barnet) (in consideration of the fact that convalescent cases are admitted) ..	25
Clevedon Sanatorium (Invalid Children's Aid Association) (Broadstairs)	50
Convalescent Home for Children (Hawkenbury, Tunbridge Wells)	25
Convalescent Home for Poor Children (St. Leonards)..	75
Convalescent Police Seaside Home (Hove)	75
Edgar Lee Home (Invalid Children's Aid Association) (Willesden)	50
Florence Emma Home (Invalid Children's Aid Association) (Dover)	25
Friendly Societies' Convalescent Home (Herne Bay)..	25
Hamilton House (Invalid Children's Aid Association) (Seaford)	50
Home for Invalid Children (Brighton)	50
Kurandai Home (Invalid Children's Aid Association) (Hartfield, Sussex)	75
London and Ascot Priory Convalescent Home (Bracknell)	75
London and Brighton Female Convalescent Home (Brighton)	50
London Homœopathic Convalescent Home (Eastbourne)	25
Mental After-Care Association Homes (Fairlight) ..	150
Metropolitan Convalescent Institution (Bexhill, Broadstairs (Children) and Walton)	100
National Sunday School Union Convalescent Homes (Clacton)	50
Ranyard Mission Convalescent Home (St. Leonards)..	25
St. Andrew's Convalescent Homes (Folkestone) ..	75
St. Andrew's Convalescent Hospital (Clewer)	50
St. John's Home (Kemp Town, Brighton)	50
St. Luke's Homes (Children) (Woodley, Reading) (in consideration of the fact that convalescent cases are admitted)	25
St. Mary's Convalescent Home (Birchington)	25
St. Mary's Home for Children (Broadstairs) (in consideration of the fact that convalescent cases are admitted)	50
St. Michael's Convalescent Home (Westgate)	50
Seaside Convalescent Hospital (Seaford)	75
Suffolk Convalescent Home (Felixstowe)	50
Sunshine Convalescent Home for Children (Felpham, Bognor)	25
Surgical Home for Boys (Banstead) (in consideration of the fact that convalescent cases are admitted) ..	25
Tilford Convalescent Home for Children (Farnham) ..	50
Victoria Home for Invalid Children (Margate) (in consideration of the fact that convalescent cases are admitted)	25
Total	£2,000

The motion, having been seconded by Lord Mildmay, was then put, and carried unanimously.

Wells' Legacies Distribution: Lists of Grants to December, 1925.

The Chairman of the Distribution Committee (Sir Cooper Perry) then presented the report of the committee on the special distribution to hospitals out of the Wells legacies to date, in aid of extensions, and Mr. Leonard L. Cohen (hon. secretary) presented the schedule containing the list of awards to hospitals out of the Wells legacies to date, as follows:—

Beckenham Cottage Hospital.—£3000 towards extension—viz., £1000 towards the deficit on the earlier stages of the scheme, increasing the number of beds from 25 to 40, £1000 to be payable on the completion and opening of the final stage, and £1000 to be the last £1000 required to free the whole scheme of debt; on condition that the final stage is put in hand by the beginning of October, 1925.

Belgrave Hospital for Children.—£2000 towards erection of new wing to be used temporarily for nurses' accommodation so as to enable the hospital to open 12 beds, thus increasing the number available from 62 to 74; to be the last £2000 required in order to secure a conditional donation of £10,000.

Bolingbroke Hospital.—£2500 towards extension from 60 beds to 92, to be the last £2500 to enable the extension to be opened free of debt, on the understanding that the balance is raised by the hospital and that, when the extension is opened, 10 beds will be reserved for accident cases.

Brentford Cottage Hospital.—£1000 towards the building of the new hospital, increasing the number of beds from 7 to 16; on condition that the contract is signed by Jan. 1st, 1926.

Invalid and Crippled Children's Society's Hospital.—£500 towards extension, increasing the number of beds from 28 to 40, as a grant to start the appeal for the scheme.

Jewish Maternity Hospital.—£1000 towards extension *from 19 beds to 30, to be the last £1000* required to render the extension free of debt.

Kensington Dispensary and Children's Hospital.—£500 to first stage of rebuilding as Princess Louise Kensington Hospital for Children, on condition that beds are provided as well as an out-patient department.

King Edward Memorial Hospital, Ealing.—£2000 toward extension from 62 beds to 102; being £1000 to start the appeal for the scheme, and £1000 to be the last £1000 required to render the extension free of debt, without depleting the hospital's free capital, on the understanding that the work is put in hand by March 31st, 1926.

London Jewish Hospital.—£2500 towards extension, increasing the number of beds from 51 to 84, and including separate nurses' home and extension of out-patient department; £1250 of the grant to be payable when the nurses' home and out-patient department are begun, and £1250 when the whole scheme is finished.

London Lock Hospital.—£1000 towards the building of the extension of the out-patient department at the Dean-street Hospital.

Metropolitan Hospital.—£5000 towards new nurses' home and accident ward of 9 beds; to be payable as soon as a further £5000 has been raised by the hospital from other sources; on the understanding that the nurses' home will be put in hand by Jan. 1st, 1926, and that, when the ward is opened, 9 beds will be reserved for accident cases.

Middlesex Hospital.—£10,000 in July, 1925, as a first grant to the reconstruction scheme; and £10,000 in December, 1925, as a second grant.

Royal Free Hospital.—£1000 towards new children's ward providing 18 additional cots, on the understanding that, as a result of the consequent rearrangement of hospital beds, 9 beds will be provided for accident cases.

Royal Hospital, Richmond.—£1000 towards extension, increasing the number of beds from 66 to 82; to be the last £1000 required to enable the extension to be opened free of debt; on the understanding that the balance is raised by the hospital without drawing on investments now held for other purposes, and that, when the extension is opened, 4 beds will be reserved for accident cases.

Royal National Orthopædic Hospital.—£5000 towards extension of out-patient department at Great Portland-street; to be the last £5000 required to enable the extension to be opened free of debt, on condition that the work is put in hand by Jan. 1st, 1926; and £3000 towards extension of country branch at Stanmore from 100 beds to 252, to be the last £3000 required to complete the first £40,000 for the scheme; subject to the conditions of the grant of £5000 to the out-patient department extension being fulfilled first.

Royal Waterloo Hospital for Women and Children.—£3000 towards final stage of extension scheme, including new nurses' accommodation, to be the last £3000 required to enable the extension to be opened free of debt.

Willesden General Hospital.—£3000 towards extension, increasing the number of beds from 78 to 100; to be the last £3000 required to open the whole building free of debt; on the understanding that the balance is raised by the hospital without drawing on general fund cash or investments, and on condition that the new ward block is put in hand by the middle of October, 1925, and that, when the ward block is opened, 8 beds will be reserved for accident cases.

The total grants to December, 1925, were therefore £57,000, and the number of additional beds to be provided 396. The number of beds to be reserved for accident cases totalled 40.

Sir Walter Lawrence, Bart., having seconded, the motion was put and carried.

The Prince of Wales here read a message sent by His Majesty the King, the Patron of the Fund, which was as follows:—

"The King is glad to hear that the Fund has been able to increase its distribution from £235,000 to £245,000, and that with the extended area of its operations it now makes grants to no fewer than 133 hospitals. His Majesty is grateful to Lord Stuart of Wortley for all he has done as chairman of the Management Committee, and, indeed, ever since the foundation of the Fund, of which he was one of the original honorary secretaries."

Remarks by the Prince of Wales.

Continuing, the Prince of Wales said that the distribution this year covered a wider field than ever before, for the King's Fund area was now 380 square miles instead of 255, while the number of hospitals helped had gone up from 118 to 133. The amount of the ordinary distribution had increased from £235,000 to £245,000, apart from the grants out of the Wells legacies. The combined total was £302,000. The ordinary distribution of £215,000 came from various sources. About two-thirds of it was secured by income from investments under the care of Lord Revelstoke and the Finance Committee. But about £82,000 had to be raised in the year. The annual subscriptions had always been smaller than hoped for, but this year they showed a welcome increase, largely in the form of seven-year agreements, many of them so worded that the subscriber gave the King's Fund the benefit of any income-tax saved by the agreement. The League of Mercy provided, as usual, a large sum, made up of innumerable small ones, while donations again included some of those unexpected gifts without which distribution could not be maintained. For the second year in succession the British Charities Association had entrusted the Fund with the distribution of a large sum. Last year the proportion allocated by the Association to London was £15,000. This year their receipts were greater, owing mainly to a competition organised with the coöperation of the *Daily Mail*, and the amount granted to the King's Fund for the hospitals of London was £20,000.

If, however, the income had increased, the demands on the funds were also growing. There were 15 more hospitals on the list, including 11 brought in by the enlargement of the area, and the expenditure of the hospitals was being continually increased by the discoveries of medical science, and by the provision of additional beds. That people sometimes forget. His Royal Highness hoped that no one would think, because the hospitals had, by a great effort, improved their position, that this was any reason for ceasing to subscribe. For every new extension that was opened, and every new discovery in hospital treatment meant a fresh call for expenditure. Taking extensions alone, the King's Fund, by devoting the Wells legacies largely to this purpose, had been helping to provide 697 additional beds, which would all have to be maintained. The Management Committee went into the whole question of extensions last year at the request of the Voluntary Hospitals Commission. Their conclusion roughly was that, whatever might be the total number of beds required, the immediate need was to expedite the schemes for the provision of the next 2000 beds, after which it would be time enough to face the more distant future. The Commission, in their recent report, accepted this estimate for London, and added another 8000 for the rest of England and Wales. The Distribution Committee had kept in mind the provision of more accident beds. Another 40 would be added with the aid of this year's grants, making, with 53 last year and 20 provided without assistance from the Fund, a total of 113 since the report of the Fund's Ambulance Cases Committee was published. His Royal Highness, in his conclusion, referred to the memorandum on pensions for hospital officers and nurses (vide THE LANCET, Dec. 19th, page 1299), in the preparation of which the Fund had taken part, and to the revision of the revised uniform system of hospital accounts, which the Hospital Economy Committee had now nearly finished. Referring to the year 1926, His Royal Highness said that he had appointed Lord Donoughmore as a successor to Lord Stuart of Wortley, who had found the detailed work of management more than he could continue to undertake. He had also appointed Mr. J. H. Thomas, M.P., a member of the Council in the place of Mr. Frederick Hall, M.P., and had added the names of Dr. Louisa Garrett Anderson and Mr. F. W. J. Jackson, while Dr. Morley Fletcher would become an additional medical member of the Distribution Committee.

The meeting closed with the usual votes of thanks.

WESTMINSTER HOSPITAL.—Mr. Austin Taylor, formerly M.P. for East Toxteth, has been appointed chairman of Westminster Hospital, in succession to the late Sir Edward Pearson. Mr. Taylor has for many years been a member of the House Committee of the Hospital.

PROVISION FOR CRIPPLED CHILDREN.—A movement is on foot to provide a hospital and other treatment for crippled children in Devon and Cornwall, and a site near Exeter has been given anonymously. It is stated that between 500 and 600 children in the area are awaiting treatment.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.

(*Continued from p. 1248.*)

Evidence as to the Question of Proof of Unemployment.
(App. CII. and Q. 23200–23305.)

Mr. J. F. G. Price, a principal Assistant Secretary of the Ministry of Labour, gave evidence with regard to a suggestion which had been made that insured contributors under the Health Insurance scheme who are "genuinely unemployed" should be enabled to have their Health Insurance contribution cards impressed with a stamp at an employment exchange with a view to being relieved of penalties which would otherwise arise under the Health Insurance scheme because of failure to stamp.

Mr. Price's evidence was to the effect that, while it would be practicable to endorse with a rubber stamp the Health Insurance cards of unemployed workmen, it would dislocate the work of the exchanges and that his Department would prefer to give certificates of unemployment on application when loss of sickness benefit was directly at stake. There would be difficulties in any event with regard to agricultural workers and domestic servants, as these classes were not covered by the Unemployment Insurance scheme.

The examination of this witness was directed in the main to establishing that the automatic record at the time of unemployment would be easier in the long run, but the witness was not prepared to assent to this.

Sir Walter Kinnear's further Evidence.
(Q. 23306–23820.)

The Controller of National Health Insurance, Sir Walter Kinnear, was examined with regard to suggestions which had been put to the Commission on various questions other than those relating to medical benefit. The substance of his replies is given in the following paragraphs. The suggested exclusion of bank clerks and insurance officials who may cease to be insured on passing the income limit at an early age would involve difficult questions of demarcation, and there was no reason to think that the workers themselves desired to be excluded. A better way would be for their societies to provide out of their surpluses for treatment benefits for a limited period after the income limit had been passed.

Many persons belonging to the wage-earning classes as ordinarily understood, but not under contract of service, might well be brought within the Act.

> We might provide for compulsory insurance in the case of employment under a contract for the performance of manual labour for the purposes of a trade or business, and that the person for whose business the work is performed should be deemed to be the employer.
>
> The demand for voluntary insurance has been intensified by the passing of the Pensions Act.

The proposal to drop the manual labour test and determine insurability simply by rate of remuneration—possibly increasing the limit to £300 per annum—was open to objection on many grounds. Manual workers, earning high wages, are not in as stable an economic position as non-manual workers, and cannot be expected themselves to make the same provision for insurance.

> A high rate of remuneration does not necessarily mean continuous employment, and . . . you might find that the docker, who was earning a high rate of remuneration for two or three days in the week, would be cut out of insurance, although his total income may not be very much larger than £250 a year.

With regard to the present age limits of 16 and 70, any reduction of the commencing age limit would be a retrograde step, and there is no widespread demand for it; the limit at the other end becomes 65 with the operation of the new Pensions Act. Insurance will cease at 65, and if a man is insured until then he will be entitled to medical benefit for the rest of his life.

A period during which a person is genuinely out of work and may be receiving unemployment benefit should not be counted against him for the purpose of his qualification for Health Insurance benefits.

> It is indefensible that where under one State scheme a man is getting unemployment benefit because of genuine unemployment, concurrently with the receipt of that benefit he should be piling up arrears with the possibility of reduced sickness benefit under another State scheme.

Many witnesses, particularly those representing Friendly Societies, had suggested that a limit should be placed on the extent to which the standard rates of benefit should be allowed to be increased by way of additional benefit. The Department did not think it desirable to place a statutory limit; the Minister's present powers for approving schemes of additional benefits were considered adequate to meet the case.

The Department considers that it would not be practicable or desirable to merge the Workmen's Compensation scheme in the Health Insurance scheme. Such a system could not be worked in conjunction with a general scheme of insurance based on flat contributions. In any case, the Department considers that it would not be practicable for Approved Societies organised on their present lines to administer workmen's compensation insurance.

The provisions with regard to late notice of incapacity might be made less stringent—e.g., in cases where a member had gone into hospital.

With regard to the control of Approved Societies, further powers were necessary for dealing with minor irregularities, withdrawal of approval being much too drastic a remedy in such cases. Where on investigation general laxity was found a reduction might be made in the amount which a Society should be allowed to expend on administration. The Department has no evidence which suggests that the administration of benefits through Approved Societies is not acceptable to the insured population generally. Indeed, the administration of cash benefits by societies works, on the whole, quite well, and from the audit reports it is to be gathered that the standard of their administration has now reached a high average. The administration of schemes of treatment benefits is still largely in the experimental stage. The marked increase in the amount of money devoted to treatment benefits is accentuating the necessity for the administration of these benefits being coördinated through one local committee in each area.

As to the democratic control of large centralised societies, some improvement might be effected by ensuring notification to members of the general meeting and by facilitating the holding of district meetings, but the extraordinary apathy of the insured persons themselves must be recognised.

The original intention of Section 21 of the 1911 Act was to enable Approved Societies and branches without any question of receiving an equivalent return, to make subscriptions or donations to hospitals or charitable institutions which serve the interests of public health.

> The section is now used by a number of societies for the purpose of providing benefits in the nature of additional benefits to all members, whether qualified to receive additional benefits or not, by paying quite considerable sums in anticipation of surpluses to organisations specially set up to receive such payments. . . .
>
> We think the legislature really intended by "charitable institutions" to refer to hospitals and dispensaries and other institutions which provide on a voluntary basis benefits for the population as a whole, and not organisations purely set up for National Health Insurance.

The number of deposit contributors is steadily diminishing and the Deposit Contributors Fund has gradually become a clearing house for the societies except as regards the comparatively small number of persons who either in principle object to joining societies, or are unable to obtain admission to a society by reason of ill-health. Special provision might be made on lines, suggested by the witness, for giving a more effective insurance to those who had tried to get into a society and had failed, but the Department did not recommend the establishment of a State Society.

It is not considered possible to extend to insured women who cease employment on marriage the ordinary provisions as to a free year's insurance.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Responsibility of Medical Men in Germany.

A MEDICAL man in a country town was recently consulted by a mother because her 5-year-old child had broken its humerus near the elbow. He applied a starch dressing with a splint and told the woman to come back in a week unless the child had pain, in which case she should bring it at once. Although the child complained, was sleepless and feverish, the mother did not bring it up for a week, when it was ascertained that gangrene had set in, and eventually amputation had to be performed. The doctor was prosecuted. In court a local expert, giving evidence for the prosecution, said that the medical man should have examined the dressing on the first or second day instead of telling the mother to come in a week; he would then have ascertained that owing to the swelling of the arm the dressing had become too tight and had caused strangulation. Surgeons of great renown, such as Prof. Sauerbruch, of Munich, however, gave evidence for the defendant, saying that the gangrene was probably caused either by thrombosis or by a compression of the brachial artery by the fracture rather than by the dressing. Prof. Sauerbruch stated that in the out-patient department of his hospital the patients in similar cases were always directed to come in a week and to present themselves at an earlier date only if pain was felt. In his opinion the fault lay with the mother and not with the medical attendant. Notwithstanding this evidence the defendant was found guilty of bodily injury by neglect and fined 600 marks; moreover, an action for damages was brought against him by the mother. This verdict is the more remarkable in that the mother, living rather far from the medical man's residence, and notwithstanding the advice of her neighbours, had declined to come earlier on grounds of economy. The Director of Public Prosecutions, Ober-Reichsanwalt Dr. Ebermayer, discusses the legal position in the case in the *Deutsche Medicinische Wochenschrift*. He says that the term "malpraxis"—Kunstfehler—which is so often used in medical and lay circles is not contained in any of the German laws. Malpraxis may be described as an offence against the generally recognised rules of medical science either by insufficient knowledge or insufficient care. A medical man may be prosecuted for that misdemeanour by the Public Prosecutor and is, moreover, liable to pay civil damages to the injured patient. This is, however, only the case when, according to general experience, he could have foreseen that damage might result from his treatment. The damages he has to pay include the prejudice done by his action to the working strength and to the career of the patient. He is held responsible not only for his own mistakes, but also for those of his assistants. Hospitals may be held responsible for the action of their appointed staffs. A medical man may insure himself against the financial consequences of his mistakes. He may also be prosecuted when he has operated on a patient against his will, even when the operation has been performed lege artis and has been successful.

Medical Service in Prisons.

The defects of the prison medical service in this country have recently aroused attention. A former Minister had been arrested for alleged fraud committed whilst in office, and although cardiac debility had been certified by his private medical attendant, he was kept in prison until his death. Apart from the political side of the matter, it was stated in the course of a Parliamentary inquiry that some time ago the Minister of Justice had instructed the medical officers to give a certificate of unfitness for imprisonment only if there was no danger that the prisoner might escape, and not merely for reasons of health. They were further warned against attaching too much importance to private medical certificates, but it was left to their absolute discretion to advise the judge concerning a release on bail of the prisoner. The Parliamentary Committee further stated that the whole medical service in prisons was very unsatisfactory. There existed no whole-time medical officers for prisons; in the greater cities the law court medical officers and in the country the district medical officers of health had to attend prisoners besides their other numerous duties. In the case quoted above it was ascertained that the medical officer lived at a great distance from the prison and that when informed of the bad condition of the patient he gave his prescriptions by telephone. Before the Parliamentary Committee he gave evidence that the hospital connected with the prison contained 200 beds for which four nurses were appointed. He had on several occasions asked the authorities to appoint a resident medical assistant, since he was quite unable, owing to his other work as an expert in lawsuits, to give the patients the necessary attention; his demand had always been refused. Further evidence proved that as a consequence of the inadequate nursing staff the nurses, to keep the patients quiet, gave them indiscriminately quantities of narcotics, which in the case quoted above led to a fatal issue. The result of the inquiry was that the instructions of the Minister to the medical officers were withdrawn and that the number of the medical as well as of the nursing staff was increased.

Mortality of Insured Medical Men.

Dr. Freudenberg has published an interesting statistical record on the mortality of medical men insured in the Medical Life Insurance Company connected with the Hartmann-Bund. The period covered is from 1919 to 1923 and is compared with a similar record of the Gotha Life Insurance Company for the years of 1829 to 1885. The number of medical men involved is 3940 with 217 deaths. Infectious diseases, especially enteric fever, showed a great diminution compared with the Gotha record, owing to the general improvement of hygiene and the successful fight against infectious diseases. Diseases of the central nervous system have also diminished owing to the more efficient treatment of syphilis, and so have pneumonia and pleurisy. The percentage of malignant growths has undergone no change. It is interesting that the percentage of diseases of the heart and the circulatory organs in medical men has exceeded that of the general population, whilst formerly, according to the Gotha record, the contrary was the case. This is ascribed by the author to the circumstance that during and after the war the scarceness of spirits has produced a decrease in the mortality from cardiac diseases in the general population; on the other hand, in the medical profession deaths from those diseases are due not to an abuse of spirits, but to over-exertion connected with medical practice, which now involves a more strenuous life than it did. The distressed condition of the medical profession is, moreover, illustrated by the fact that of the 217 deaths recorded 16 were due to suicides committed between the ages of 46 and 61 years. Formerly suicides at that age were very rare; the average medical man was, as a rule, then able to retire from practice or at least to limit its scope and to enjoy the rest earned by his former work. Now the great mass of medical men must work until their death, and if unable to do so are likely to end as paupers or suicides.

Opilaçao or the Chagas Disease.

The head of the Brazilian Health Office and of the Hygienic Institute in Rio de Janeiro, Prof. Chagas, who is making a tour of Europe,[1] recently visited Berlin and read before the Berlin Medical Society a paper on the disease called after him, which is a form of trypanosomiasis common in Brazil. Prof. Chagas's paper was translated by his countryman, Dr. Rocha de Lima, of the Hamburg Institute for Tropical Diseases. He explained that the parasite which gives rise to the disease was detected before its clinical features were recognised. Its habitat is the intestines of a bed-bug which is found in native huts. In the night the bug bites men and animals, and in this way the disease is conveyed. The acute form of the disease occurs more particularly in children. Fever is always present, and a characteristic symptom is a swelling of the face. When the parasites in the blood are very numerous the patients nearly always die. If the disease enters a chronic stage the parasites are found not in the blood, but in the heart and in the central nervous system. Prof. Chagas is of opinion that a connexion exists between trypanosomiasis and goitre, which is endemic in Brazil.

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[1] See THE LANCET, Nov. 7th, p. 988.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Vital Statistics for the Third Quarter of 1924.

PROVISIONAL figures for the 90 French départements are compared for the third quarters of 1924 and 1925 by the Minister of Labour as follows:

	1924.	1925.
Marriages	36,095	35,011
Divorces	5,061	4,909
Living births	188,114	189,292
Stillbirths	7,437	7,307
Deaths under 1 year	15,193	17,007
Deaths, 1 year and over	124,228	134,275
Total deaths	139,371	151,282
Excess of births over deaths	48,303	38,010

Vaccination in France in 1924.

In a well-documented report, Dr. L. Camus, director of vaccination at the Academy of Medicine, sets out the story of vaccination and revaccination in France during 1924. Reports from the departments show that obligatory vaccination has been accepted without hesitation except in a few places. Among those who presented themselves voluntarily for revaccination a percentage of 65 of positive results was noted, showing that vaccinal immunity is transient and that it is prudent to renew it from time to time. The percentage of success at primary vaccination was practically 100 per cent. Foreigners have been vaccinated in great number on their entrance into France. At Modane the number was 30,043; at Hendaye, 19,773; but the organisation has not been so complete at the other frontier stations. Forty-seven cases of small-pox were recorded in 1924. There were two small epidemics, one at Limoges and the other at Carcassonne, due to the sorting of rags. Six deaths were recorded: one at Marseilles, of a seaman who died five days after debarkation, four at Limoges, and one at Carcassonne.

Idiopathic Rise of Temperature.

Dr. Remlinger, director of the Pasteur Institute at Tangier, in a communication to the Academy of Medicine, has described persistent febrile attacks of which searching clinical and biological examination failed to determine the cause. He regards them as idiopathic, arising in subjects of thermal instability as a result of upset of heat regulation. He queries whether climatic factors are not concerned in their production, for in several of the cases, the febrile attacks ceased in France to reappear on returning to Tangier, a town with severe marine climate, the action of which, far from being sedative like the purely marine climate, is particularly bracing. It would be interesting to find out if parallel records of unexplained rises of temperature have been made on the shores of the North Sea or of the English Channel, which have a similar bracing marine climate. It may be that the marine fever of old writers has been denied wrongfully by too fervent disciples of thalassotherapy.

Measles in Paris: The Course of an Epidemic.

Dr. René Martial's account of the evolution in time and space of an epidemic of measles in the environs of Paris is not devoid of interest. The epidemic spread from south to north of the city and was held in check on the west by the Seine and on the east by a line of railway. On the south it was limited by a large tract of waste land and on the north by the Marne. The epidemic progressed slowly, taking nine months to reach from south to north, a distance of only five kilometres. The total number of cases was between 700 and 800 with 12 deaths. A maximum of 159 cases notified during April fell to 23 during June, the school holidays contributing to the disappearance of the epidemic.

A celebration is being organised for the seventy-fifth birthday of Charles Richet, professor of physiology at the Faculté de Médecine, which will also mark the completion of his fiftieth year as teacher and laboratory worker. Subscriptions may be sent to Mr. Pettit, treasurer of the committee of arrangements, 70, rue Jullien, Vanves, Seine.

Dr. Verger and Dr. Mauriac have reported four cases in which oral vaccination against typhoid, adopted preventively, was followed by typhoid. The periods elapsing between the final vaccination and appearance of the typhoid were 24 days, a few hours, eight days, and eight days.

The chairs of bacteriology and of experimental and comparative pathology at the Paris Faculté de Médecine are vacant. New appointments will soon be made.

The Conduct of Medical Practice.

XXV.—COVERING.

OF the duties imposed upon the General Medical Council by the Medical Acts, the disciplinary procedures against members of the profession convicted of unprofessional behaviour are the most difficult of comprehension by the public. And this is regrettable because the actions taken are taken entirely in the public interest. The offences, whose punishment is most frequently commented upon, may be grouped under improper advertisement and improper association with unqualified practitioners, and here the measure of impropriety must be estimated by the Council in accordance with its public duties, but for professional reasons, the force of which will not appeal always to the layman; and, if a particular case attract the attention of the lay press, it is sadly true that a large number of newspapers take the invariable line of assuming that hardship has been done, while ill-informed persons, often with much ability, take a pleasure in describing the Council as tyrannous. Further, as medical men themselves read daily papers, and meet the promoters of the agitations, the reiterated criticisms of the Council may have their effect upon them, if they are not conversant with the actual facts. When this occurs immediately the criticisms of the Council become more bitter, because it appears that the professional standards employed to protect the public do not give satisfaction to professional men; in short, those who regard the maintenance of professional standards as inimical to the public welfare view with satisfaction what they regard as a division of the medical forces.

WHAT IS COVERING?

While far more sympathy is always manifested by the lay press for the medical man who is removed from the professional roll for advertisement, it occasionally happens that the circumstances where a practitioner loses his professional status for association with unqualified healers attracts public attention. This has happened, for example, in the case of Dr. Axham, because the unqualified man with whom he entered into intimate relations has received a knighthood while Dr. Axham's punishment for having entered upon those relations has not been relaxed. If, however, the story is considered from the beginning, it will be seen, first, that the Council had little or no option when they removed Dr. Axham's name from the Register, and secondly, that the method of restoration does not depend primarily upon the Council. Under the Medical Act of 1858, the Council is enjoined, at its discretion, to delete from the official roll the names of medical men whose conduct in professional respect is derogatory to accepted standards. To ensure that medical men shall not err through ignorance, the Council issues warnings, and among these one has appeared pointing out that association by a qualified medical man in medical practice with an unqualified person would render the medical man subject to penalty. Dr. Axham was associated in practice with Sir Herbert Barker—then Mr. Barker—who treated patients without possessing statutory medical qualifications, and the association was not denied. The circumstances were brought before the General Medical Council by the Medical Defence Union, and the Council finding the offence proven—it was not denied—decided to remove Dr. Axham's name from the Register unless he terminated his arrangement with the unqualified man. Dr. Axham then preferred to maintain the existing position, but he is now anxious to re-obtain registration. Being of advanced age, there is no doubt that he is no longer committing the offence for which he had to answer; the position of the Council, however, is that only qualified persons can be entered on the Register. Now Dr. Axham has lost his qualifications, for his diplomas were taken away from him by the Royal Corporations which had previously granted them in response to examinations. Unless and until the diplomas are restored the Council has not the power to act in the way it is insisted upon in some quarters that it should. It can be understood readily enough that this point might not be clear to the laymen who have attempted to advance the cause of Dr. Axham by abuse of the General Medical Council, but it is a little surprising to find medical men equally ill-informed as to the Medical Acts and as to the constitutional position and duties of the General Medical Council. On the general need of action by the disciplinary body of the profession against covering there cannot be two opinions, for if a man who is not qualified can practise as a doctor through association with one who is qualified, the Register ceases to protect the public against irregular practice. Again, to the question of whether a particular unqualified person can have exceptions made in his favour there can be but one answer—any exception would frustrate the whole of disciplinary procedure.

Ancillary Medicine.

Medical men who are careful to help in the maintenance of professional standards, and who are rightly jealous of the privileges conferred upon them in return for a strenuous and lengthy training, have many of them recognised, and recently with increasing force, that there are certain quasi-medical services, ancillary to scientific medicine, which are rendered properly by those without medical qualifications. The public can take advantage of such services, if that is desired, in a way that is of the greatest use to them, if the services are given upon medical advice as the need arises. There is then no doubt that the public obtains the assistance in response to medical advice, persons who do not need the particular treatment are not mulcted of fees, cures for non-existent conditions are not bruited abroad, specifics for cancer are not made the medium of false hopes, and lastly real benefit is obtained through the rightful exercise of special attainments.

Correspondence.

"Audi alteram partem."

THE EXTRINSIC ORIGIN OF CANCER.

To the Editor of THE LANCET.

SIR,—I have been greatly interested in Prof. Blair Bell's noteworthy paper on the Specific Character of Malignant Neoplasia, published in your issue of Nov. 14th. I believe he has made a contribution to our knowledge of cancer that will prove of very great value.

At the Memorial Hospital in 1915, following the lead of Loeb of St. Louis, we made an extensive experimental study of the effects of colloidal copper upon various types of malignant disease. However, the effects were so slight that we abandoned the method after several months' trial. Evidently Prof. Bell has proved that the inhibitory action of colloidal lead is much more marked than that of colloidal copper. His striking success in a considerable number of cases is of the utmost interest and importance. If these successful results prove permanent, as seems to be true in a few cases at least, and the method can be carried out without too high a mortality, we shall have added to our present very limited means of controlling cancer the only systemic method of attacking malignant tumours—with the exception of the administration of the mixed toxins of erysipelas and *Bacillus prodigiosus*, the value of which is restricted chiefly to sarcoma.

The larger part of Prof. Bell's paper is devoted to a discussion of the nature of cancer which, he believes, is far more important than a study of the specific cause of the disease. To quote him: "It is the result rather than the cause, as I hope to show, that is important, for undoubtedly malignant neoplasia is a specific process, but that is not to say that because a process is specific the cause must also be." He believes that the results of his method of treatment with colloidal lead strongly support, if they do not actually prove, his theory of the cause of cancer—i.e., that "malignant neoplasia in the human subject is a biological atavism," or, in other words, that the disease is due to intrinsic causes.

I do not believe that the rapidly accumulating evidence in favour of the extrinsic origin of cancer that has been presented within the last year by Glover, of Toronto and New York, by Young, of Edinburgh, by Nuzum, of Chicago, and last and most important, perhaps, of all, by Gye and Barnard, of London, can be so easily ignored or cast aside. The clinical evidence in favour of the extrinsic origin of cancer is, I believe, even stronger than the laboratory evidence. This clinical evidence was outlined at the annual meeting of the American College of Surgeons in October, 1924, in a symposium devoted to a discussion of Nuzum's paper.

I believe that Prof. Bell's success with the colloidal-lead method instead of supporting his view that cancer is of intrinsic origin actually furnishes another and very strong link in the chain of evidence in favour of the extrinsic origin of cancer. Assuming malignant tumours to be of extrinsic origin, or due to some micro-organism or virus, it would be the most natural thing to expect such micro-organism or virus to be influenced by chemical changes in the body fluids or by some chemical substance introduced by intravenous injection. We could ask for no better analogy than the effect upon syphilitic tumours caused by the introduction of salvarsan.

I can find nothing in Prof. Bell's experiments or results to confirm the belief expressed by himself that "causes are as nothing in comparison with the importance of the realisation that malignant neoplasia is a specific process of the nature, and subject to the control I have described."

Whatever be the final solution of the great issue, whether the theory of the extrinsic or intrinsic origin of cancer be the correct one, we should do nothing to discourage further research upon the problem; for the greatest hope of ever controlling the disease or of lowering its steadily increasing mortality rests upon the discovery of a specific cause.

I am, Sir, yours faithfully,
New York, Dec. 5th, 1925. WILLIAM B. COLEY.

PROFESSIONAL CRITICISM OF THE GENERAL MEDICAL COUNCIL.

To the Editor of THE LANCET.

SIR,—The very interesting leading article in your last issue deals adequately enough with public misapprehensions as to the constitution and functions of the General Medical Council, but, I would venture to suggest, fails to appreciate the whole of the professional case against this tribunal. Possibly you had intended to deal with these on another occasion, but in any case I should be glad if you would permit me a few remarks on the subject.

"It is not enough," you say, "that justice should be done; it is essential that it should seem to be done." It is very difficult from the information supplied by the medical press to form any definite view as to whether justice has or has not been done. In the first place there is a complete absence of that valuable précis—the judge's summing up. The charge is stated to be proved—i.e. the defendant is found guilty of infamous conduct in a professional respect. But no information is available as to exactly which of the alleged actions can be regarded as satisfactorily established. For example, was Dr. Lloyd at fault in permitting publication of his views (if he did so) or in accepting patients directed to him in this manner (if he did so, for none but the members of the G.M.C. know what facts were considered proved) or did the conjunction of the two create the offence? Secondly, we are never told what the penalty is intended to be—erasure of a name for a few months, or years, or for ever. Many members of the profession will be surprised to find restored to the Register the name of a gentleman who seems to have deliberately courted expulsion and who has not, so far as any one of your general readers can be aware, modified his attitude or purged his offence.

Those acquainted with the actual procedure of trials know that the mere physical circumstances and general atmosphere impose a definite hardship. I have commented elsewhere on the jury's letter-writing habits and would add that, if the jury must remain at 10 or thereabouts, it would be the barest justice to so arrange them that the defendant and his counsel might have them all properly in view. Nor is it desirable that counsel should be obliged to pause from time to time in his remarks until he may have the attention of the court—as certainly happens now.

It is sometimes said and thought that the G.M.C. is both accuser and judge. There is not lacking some ground for this misapprehension. His Majesty's judges administer a law made by others, the G.M.C. administers a law made by itself—the law of warning notices. This law is of a very general character and it is difficult for a defendant to argue that he has not infringed a law of whose detailed implications he cannot well be aware. Indeed, it may well happen that he will not learn the law applicable to his case until he has already been convicted, and he cannot altogether be blamed if he feels that the law may have been made to fit his case—especially if that case be some exposition of the modern art of advertising not hitherto brought to the notice of the G.M.C. And anything approaching an atmosphere of informality will certainly much increase any feeling of grievance which he may experience.

Then, again, it is known to those who have considered the matter that the G.M.C. may have great difficulty in ensuring that proper cases be brought before it. The Registrar receives from members of the profession press cuttings and other information. He cannot bring cases before the G.M.C. unless someone will prosecute. Potential prosecutors are few and willing prosecutors fewer still. Yet the facts brought to his notice and perhaps to his alone may clearly call for action. What is he to do? What in fact does he do? I will not answer this question, but I think it will be seen that prosecutor and judge may be forced into a juxtaposition very disagreeable to both of them.

This difficulty of a prosecutor sometimes seems to lead to a rather curious selection of cases. For example, where a doctor has appeared as co-respondent in a divorce case, it is often possible for a husband so inclined to secure his appearance before the G.M.C. On the other hand, if the husband does not know what is possible or is disinclined for action, the erring doctor may continue in practice and on the Register. The crime may be the same, but whether just retribution shall follow depends on chance and not on the G.M.C. This, I suggest, inevitably detracts from the dignity and status of that tribunal.

Finally, I would draw attention to the very small representation on the jury of those who can be considered peers of the accused. Those who experience in their daily lives the many difficulties and complexities of general practice are in a small minority. Yet, if professional standards of what is infamous are to adapt themselves to changing times, it is these very persons who are best able to judge of what adaptations are properly admissible. The majority of the G.M.C. cannot so easily judge from the standpoint of a life which they have never shared. A certain loss of touch with realities seems to be shown by the warning notice and other pronouncements about certificates. National Health Insurance is so administered that perhaps the majority of practitioners give with considerable frequency certificates which, although false, seem to be necessary if patients are to receive the benefits due. There is also a frequent certificate which requires the doctor to certify that he has seen all the children of so-and-so alive on this date. It may be that one of the children is not at home; it is seldom that the children are produced for inspection. Every circumstance in both cases conspires to prompt the doctor to an action which, in 90 9 per cent. of cases, is no more fraudulent or unethical than the subscription of "Yours sincerely" to an entire stranger. The G.M.C. does not seem to be aware of this particular source of trouble in medical practice. It is very prevalent and seems to increase. One would wish to see some sign that the distinction between technical inaccuracy and fraud or carelessness was better appreciated.

I must apologise for the length of this letter, but the matter is one of great importance to the profession. It is very necessary that the profession should feel confident in the G.M.C. I am less concerned about the public at the moment, the case for the public would follow different lines. It will be seen that there is a good deal which might be remedied without any alteration of the law. I do not impute any blame to the individuals who compose the G.M.C. except in so far as they have permitted a regrettable informality where a man's livelihood is at stake. But I and many others will be justified in imputing blame if we feel that no attempt is made to meet honest criticisms, and it is to avoid that unwanted justification that I have written at some length.

I am, Sir, yours faithfully,
Sevenoaks, Kent, Dec. 18th, 1925. GORDON WARD.

AN APPEAL FOR HUMAN EMBRYOS.

To the Editor of THE LANCET.

SIR,—We are in process of forming here a collection of serial sections of human embryos which will be available for study by all competent investigators. No reference collection such as we contemplate exists anywhere in England. It can only be got together through the active coöperation of medical men in practice, and we accordingly appeal to them for aid in the collection of the material. Year by year hundreds of specimens are wasted simply because the medical men into whose hands they fall do not realise that there is any demand for them, or that they are of value for embryological purposes. Our knowledge of human development and of the processes and conditions that result in abnormal development is still very incomplete, and it is only by the study of properly preserved specimens that the blanks in our knowledge can be filled up. Abundant human material of the kind we want is really available, and all that we ask is that such specimens as may from time to time come into the hands of practitioners should be preserved and sent to us, together with such clinical data as may be available.

We wish particularly: (1) *Embryos* passed in abortion, together with the membranes and decidua; where no embryo *is apparent, the decidual fragments should* be carefully preserved. (2) *Tubal pregnancies*, if possible unopened. (3) *Pregnancies in utero*, where the entire uterus is removed for surgical reasons; in such cases, the uterus should be opened by a median incision along the anterior wall and should then be placed in a large vessel filled with 10 per cent. formalin. (4) Under favourable conditions, the *uterus* and *ovaries* from P.M. subjects. (5) *Curettings* from cases where one or more periods have been missed. (6) *Stillborns*, particularly abnormal subjects.

Preservation of Specimens.—The most convenient preserving fluid is 10 per cent. formalin (ordinary formalin, 1 part, water or preferably normal saline, 9 parts). It is essential that specimens should be put into *plenty* of the formalin solution *as soon as possible* after they are obtained and that the solution should be *changed for fresh after 24 hours.* When forwarding the specimen, the bottle should be completely filled with the fluid; this prevents damage to the specimen through shaking.

We are prepared to send suitable bottles filled with preserving fluid, in containers for posting, on receipt of a post-card, or when the specimen is large, to arrange for its collection in the London area. The clinical data relating to the specimen are of great value and should be sent with it. We will send the practitioner a short report immediately on receipt of the specimen, and later on a more detailed report should it be desired. It is only by enlisting the help of practitioners in preserving such specimens as turn up in practice that we can hope to build up a really representative collection of human embryological material.

Specimens should be sent to the undersigned, Department of Embryology, Institute of Anatomy, University College, Gower-street, London, W.C. 1.

I am, Sir, yours faithfully,
JAS. P. HILL,
Professor of Embryology.

Dec. 17th, 1925.

MASSAGE OF THE MIDDLE EAR.

To the Editor of THE LANCET.

SIR,—In reference to your annotation upon Massage in the Treatment of Middle-Ear Deafness, it may interest your readers to know that I have, during the past 30 years, made use of this treatment in many forms, from the primitive Siegle speculum and its off-shoot the Delstanche otomasseur to various kinds of instruments worked by hand, water-power, or electric motor. As you very wisely point out, their effect is mostly upon the more mobile parts of the membrane and ossicles, and they have little, if any, influence upon *adhesions* or upon *ankylosis* of the ossicles of long standing. Some years ago I tried pneumatic otomassage in selected cases after mobilisation of the malleus, or following such operations as exploratory tympanotomy with severance of adhesions. The results were disappointing. In no case have I ever found the pneumomasseur in any form to have other than transient effects, and I am of opinion that when this temporary improvement occurred it was due to the equally transient hyperæmia induced.

Judging by a recent symposium in the United States, however, it would appear that most otologists are agreed that vibratory massage of some sort offers the best chance in the treatment of chronic middle-ear deafness. The whole question lies in the nature of the massage to be employed. With the instruments referred to the movements are too coarse to be of any real value; what is required is a movement of extremely short wave-length. The only instrument that I know which furnishes such a movement is the electrophonoide of Dr. Zünd-Burguet. This method of treatment, so unfairly criticised by British otologists until G. C. Cathcart's paper appeared in your columns,[1] is giving excellent results in my hands. It is a method of auditory massage which is eminently adapted to the ear because it is performed by sound waves, which are obviously the proper physiological stimulant for the hearing organ. As Dr. Zünd-Burguet points out in his "Principes d'Anacousie," the method is both pedagogic and therapeutic. On the one hand, it teaches the patient to listen and to hear; on the other, by its local action in causing hyperæmia, it stimulates the tympanic mucosa and intratympanic muscles, and causes a regeneration of tissues, analogous to the action of massage upon a wasted, stiffened limb, whereby the ossicular joints are freed and adhesions stretched. In one case recently a young lady, whose hearing was reduced to R.=6 in. and L.=0 for the whisper and R.=4 ft. and L.=1 ft. for the ordinary voice, and whose case was pronounced to be hopeless by two well-known provincial otologists, improved after 12 sittings to R.=4 ft., L.=1 ft. for the whisper and over 20 ft. R. and L. for the low voice. After the full 30 sittings her paracusis Willisii disappeared, and she could hear everything in a theatre from the middle of the stalls.

I have no experience of Dr. Braun's new method mentioned in your annotation, but I would venture to suggest that the Zünd-Burguet method is superior and far less uncomfortable than massage of the nasopharynx and Eustachian tubes by wool-tipped probes.

I am, Sir, yours faithfully,
MACLEOD YEARSLEY.

Wimpole-street, W., Dec. 10th, 1925.

The Services.

ROYAL ARMY MEDICAL CORPS.

MILITIA.

Maj. (*Bt. Lt.-Col.*) W. H. G. H. *Best retires on attaining* the age limit, and retains his present rank.

TERRITORIAL ARMY.

General List.—Lt.-Col. (Bt.-Col.) F. Hawthorn, having attained the age limit, is retired, and *retains* his rank with permission to wear the prescribed uniform.

Lt.-Col. J. Barkley and Majs. L. A. Mackenzie, A. Coleridge, W. S. Richardson, and L. J. E. McHugh, having attained the age limit, relinquish their commns. and retain their rank.

General Hospitals.—Maj. C. A. S. Ridout, having attained the age *limit, relinquishes his commn. and retains his* rank.

Supernumerary for Service with the O.T.C.—Maj. W. J. A. Laird (Res. of Off.) to be Maj. and to command the Med. Unit, Belfast University Contingent Senr. Div. O.T.C.

TERRITORIAL FORCE.

General List.—Maj. (Prov.) H. Forrest is confirmed in his rank.

ROYAL AIR FORCE.

E. A. Aslett and H. M. Levy are granted short service commissions as *Flying Officers, for three years on the active* list.

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[1] THE LANCET, 1925, i., 968.

KINGSTON-ON-THAMES HOSPITAL.—The board of guardians have decided to proceed with a scheme for the extension of Kingston and District Hospital and the erection of a nurses' home, at an estimated cost of £100,000.

Obituary.

SIR RICHARD DOUGLAS POWELL, BT., M.D., F.R.C.P. LOND., K.C.V.O.,

PHYSICIAN-IN-ORDINARY TO H.M. THE KING; CONSULTING PHYSICIAN TO THE MIDDLESEX AND BROMPTON HOSPITALS.

WE announced last week the death after a short illness of Sir Richard Douglas Powell, which occurred on Dec. 15th at his residence in London in the eighty-fourth year of his age. He had for many years been an outstanding and deeply respected leader of the medical profession. His broad outlook on medicine in general, his attainments in special clinical fields, and his sincere regard for the best ideals before the profession which he adorned, had made of him in the medical world, as in the world without, a veritable type of the wise consulting physician.

SIR RICHARD DOUGLAS POWELL.

Richard Douglas Powell was born at Walthamstow in 1842, being the second but only surviving son of Captain Scott Powell, an officer in the Royal Welsh Fusiliers. Educated privately, he received his medical training at University College, London, and graduated in the University of London just 60 years ago as M.B., proceeding to the M.D., which he took with honours in the following year. Quite shortly afterwards he was appointed assistant physician to the Brompton Hospital for Consumption and Diseases of the Chest, and as active member of the staff and consulting physician he served the hospital for 57 years.

His first position on the staff of a London general hospital was at Charing Cross, where he was elected assistant physician and lecturer on materia medica in 1871, a post which he occupied until appointed in 1878 assistant physician at Middlesex Hospital. Here he became full physician three years later, and during 30 years was a mainstay of the scientific, educational, and charitable activities of the institution.

In three different directions throughout his long professional life Douglas Powell occupied a prominent position to the satisfaction of all who worked with or under him. He was a great Court physician; he was a great President of the Royal College of Physicians of London, and he was a great clinician. His introduction to the Court was due to the high opinion which Sir William Jenner had formed of him in the early stages of his career when he was filling the junior posts at University College Hospital. The connexion between his distinguished master and Powell was an intimate one, and led to his appointment as physician-in-ordinary to Queen Victoria at a comparatively early stage in his professional career. He became at once an acceptable figure at Court, where no doubt his distinguished and graceful personality were appreciated in common with his wide range of ability. He attended Queen Victoria in her last illness, and subsequently was physician-in-ordinary successively to King Edward VII. and to the present King.

His connexion with the Royal College of Physicians of London began with the Membership, which he took in 1867. He was elected Fellow in 1873, served as Senior Censor in 1902, and as President for five years—namely, 1905 to 1910. He is on all accounts allowed to have been a successful President, maintaining the dignity of the office, and sparing no pains to insure that the College should take an intimate part in professional progress.

As a physician he was a leading figure not only in London, but in all medical society at home and abroad for more than half a century. His early association with Brompton Hospital dictated the fact that it was as a specialist in pulmonary and cardiac conditions that he became most widely known, but throughout the greater part of his professional life his work at the Middlesex Hospital enabled him to maintain legitimately the position of an all-round man, and to look upon the large and particular branches in which he may be said to have specialised as a chapter, if a very large and far-reaching one, in the general story of pathology. It goes without saying, therefore, that he spared no pains to keep abreast of medical technique and medical literature. His work upon the physics of the chest, which appeared as long ago as 1875 in the Transactions of the Medical and Chirurgical Society, showed both the general and special knowledge which he had already acquired.

Thus Douglas Powell, both in personality and in achievement, looms large in the medical history of his generation, and there will be none to cavil at the high measure of success he secured. At a time when specialism was less the rule than at present, he was at once an accomplished general physician and a specialist of world-wide renown. His long association with the Brompton Hospital probably served to determine his special bent towards the study of diseases of the lungs and heart. His was an eminently practical turn of mind, and it is therefore not surprising that his interest was more especially directed to the clinical features of these diseases and particularly to their treatment. His well-known "Text-book of Diseases of the Lungs," was one of the earlier special monographs. That it has fulfilled a useful purpose is shown by the fact that it has reached a sixth edition, in the preparation of which Sir Percival H.-S. Hartley has collaborated. It is worthy of note that the careful clinical and pathological study of disease by the generation of physicians of which he was so distinguished a representative rendered possible the modern advances which have been achieved by instrumental and experimental methods and by the more scientific means of investigation now available.

A mere enumeration of the more important of his contributions to the study of diseases of the lungs and heart affords a striking testimony not only to his industry, but to his profound acumen in these matters.

His earliest communication to the Royal Medical and Chirurgical Society, on Some Effects of Lung Elasticity in Health and Disease, discussed the problems of the negative pressure in the pleural space and its effects in a way which indicate the new purview of diagnosis. He subsequently read papers or published notes on pulmonary tuberculosis, pleuritic effusion, pneumothorax, and hæmoptysis. He delivered the Lumleian lectures before the Royal College of Physicians on Principles which Govern Treatment in Diseases and Disorders of the Heart. These lectures were published in THE LANCET and are a model of what such disquisitions should be—they were clear, informatory, based on constructive work and not on routine.[1] In his Harvein Oration, delivered at the same College in 1914, he dealt with the principal Advances in Knowledge Regarding the Circulation and Attributes of the Blood since Harvey's Time. The oration was at once simple, eloquent, and learned; the résumé of modern knowledge as to the influence of the internal secretions and the defensive attitude of the blood, with which it closed, being a model of the attitude which a great healer should take towards progressive developments in his science and art. Other subjects which engaged his special attention and interest were angina pectoris, aneurysm of the aorta, and mediastinal tumour, on all of which he contributed articles to "Reynolds's System of Medicine"; in the last his summary of the pressure signs of aneurysm was singularly clear and practical. His style was cultured and polished, without being pedantic. His clinical lectures were always worth listening to. They often included descriptions of cases rather in the manner of Sir Thomas Watson or Trousseau, with admirable practical hints in regard to treatment. Since the war he delivered an emeritus lecture at the Middlesex Hospital on the Problems of Blood Pressure, which showed that he retained his keen interest in the problems of diseases, and that he was still keeping in touch with the modern advances.

His tenure of the post of the President of the Medical and Chirurgical Society was marked by the successful carrying out of the scheme for amalgamation of the metropolitan societies which had been ventilated 12 years previously by Sir John MacAlister, with Sir Andrew Clark behind the movement. The scheme received the approval of a large group of leaders of the medical profession within and without the metropolis, but the interests involved were not always identical, and there is no doubt that the universal respect in which Douglas Powell was held, and the tactful manner in which any negotiations which fell to his share were carried out, counted enormously in the institution of the Royal Society of Medicine.

We have received a tribute to him from one who had known him for over 30 years, and been in close association with much of his work. The letter runs: "Sir Richard Douglas Powell was a very reserved man, but to one who was privileged to work with him and for him for many years he revealed himself as one of the most kind-hearted and generous of men as well as the dignified and courteous personality that all could observe. His courtesy was of deed as well as of word, and was the expression of a beautiful and unselfish character, and not a veneer. His kind-heartedness was displayed in his readiness to help any who asked his advice, and he entered into their difficulties in such a way that his counsel became of value because so well directed. At the same time his consideration for those who assisted him was marked; indeed, he always seemed surprised and even grateful for the smallest service rendered to himself. His watchwords were self-constraint and self-control, and he acted up to his principles. Good-tempered, he kept his temper completely under control save where occasionally it flashed out in scorn of mean or self-interested actions, or of slackness, of which he was quite intolerant. For the rest his knowledge of human nature and its foibles was so wide that his sympathy was always extended to those who were doing their best, whatever the accomplishment; and though he could, and would, rebuke where he considered this was deserved, the rebuke would be so tempered as to stimulate rather than to humiliate. His strong character made it impossible to turn him from a course of action while he was convinced that it was the right one, an aspect of him which was better known to his intimate circle than without, where his graciousness of manner obscured to superficial observation his determination."

To him honours came in profusion. His Court appointments have been mentioned. He was an Hon. D.Sc. in the University of Oxford, an Hon. M.D. in the University of Dublin and the Royal University of Ireland, Aberdeen and Birmingham Universities gave him an LL.D., and he was an Hon. F.R.C.P. Irel. He was created a baronet in 1897 and appointed K.C.V.O. in 1901.

Sir Richard Douglas Powell married in 1873 the second daughter of the late Sir John Bennett, by whom he had three sons and two daughters. He is succeeded in the baronetcy by his eldest and only surviving son, Lt.-Col. Douglas Powell, C.B.E., the two other sons having given their lives for their country, the second son being killed in action in the South African War and the youngest one dying of wounds in Mesopotamia in 1916. The tragedies tried the father deeply, but his patriotic courage suppressed resolutely his deep sufferings. He married secondly in 1917, Edith Mary, daughter of the late Mr. Henry Wood, of Cleveland-square, who survives him, and to whom we tender every sympathy.

EDWARD FRANCIS PALGRAVE, M.R.C.S. ENG.

Dr. E. F. Palgrave, who died in London on Dec. 13th, was son of the late William Gifford Palgrave, of the Foreign Office Service, and was born at St. Thomas's Island in 1875. He was a nephew of Francis T. Palgrave, professor of poetry at Oxford, of Sir Reginald Palgrave, Clerk to the House of Commons, and of Sir Inglis Palgrave, the well-known economist. He was educated at Clifton where he gained an entrance exhibition, entered St. Bartholomew's in 1892, qualified in 1897, and was appointed by Sir William Church as his house physician. After passing through the Tropical School of Medicine, he practised at Sunbury, Middlesex, for six years, after which he obtained an appointment in the school medical service of Middlesex, where he remained for four years. In 1912 he was appointed to the school medical service of the London County Council, where his ability soon manifested itself; while pursuing his routine duties he made several reports which attracted attention, in particular dealing with the causes of malnutrition in school-children.

Dr. Palgrave joined the Royal Army Medical Corps in 1914 and was put in charge of the Officers' Hospital at Havre for 12 months when, owing to the absence of many senior officers, the need for some one with exceptional clinical knowledge was experienced at the headquarters of the London County Council, and he was withdrawn from the school medical service in order to work at the head office. New administrative duties allotted by statute to the Council necessitated an increase in senior officers, and in 1920 Dr. Palgrave was promoted to the office of divisional medical officer. In this capacity he directed the administration of the Midwives Act and the sections of the Children Act dealing with children below school age. He also took a large share in the new and responsible work connected with the public provision for the treatment of venereal diseases.

For the past 18 months his health had been visibly failing, nevertheless he made heroic efforts to carry on his duties. "Palgrave's geniality and unselfishness," writes one of his colleagues, "had endeared him to all who worked with him, while his clinical acumen and administrative ability had earned their deep admiration and respect."

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[1] THE LANCET, 1898, vol. i.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Bethlem Hospital Bill.

ON Wednesday, Dec. 16th, a motion was agreed to in the House of Commons carrying over to next session the Bethlem Hospital Bill. Mr. J. F. HOPE, Chairman of Committees, stated that the Bill had been objected to from time to time, and he had adjourned it in the hope that a settlement might be arrived at. No settlement had yet been reached, but he had every hope that if the measure was carried over to next session a settlement might be arrived at. On Friday, Dec. 18th, in the House of Lords a similar order was agreed to.

Asylum Officers' Superannuation.

Mr. TAYLOR presented a Bill in the House of Commons on Friday, Dec. 18th, to amend the Asylum Officers' Superannuation Act, 1909, which was read a first time.

HOUSE OF COMMONS.

WEDNESDAY, DEC. 16TH.

Vaccination Exemptions.

Mr. GROVES asked the Minister of Health whether, in view of the fact that the ratio of exemptions from vaccination was progressively increasing and the ratio of small-pox deaths correspondingly decreasing, he would consider legislation to amend the obligatory vaccination laws and put them in such a way that persons who themselves desired or desired their children to be vaccinated should apply for such publicly assisted service, not, as at present, that those who desired to be exempt must apply.—Mr. N. CHAMBERLAIN replied: I am not prepared at present to consider the question of legislation on the lines suggested by the hon. Member.

Deaths from Small-pox.

Mr. GROVES asked the Minister of Health if he would present statistics to show the number of persons in England and Wales who, in the ten years ending with 1921, died of small-pox although admittedly successfully vaccinated; the number of persons who died of small-pox in the same period and were classified as not vaccinated; the number classified as doubtful who died of small-pox; and the percentage of births vaccinated in that period of ten years.—Mr. N. CHAMBERLAIN replied: The records in the possession of my department show that, of the 122 persons who died of small-pox during the ten years ending with 1921, 13 had been vaccinated, 59 had not been vaccinated prior to exposure to infection, and in 20 instances the vaccinal condition was doubtful. The 43 vaccinated cases included no person under the age of 12, 4 persons between the ages of 12 and 25, and 4 between the ages of 25 and 35, the remainder being in each case over the age of 35. The records show that only 4 of the vaccinated cases had been revaccinated, the ages of those persons being 26, 35, 58, and 61 respectively. Of the 59 unvaccinated persons, 20 were under the age of 12, 18 between the ages of 13 and 25, 9 between the ages of 25 and 35, and 6 over the age of 35. The percentage of births vaccinated during the period in question was 43·5.

Sanatorium Treatment for Pensioners.

Mr. PIELOU asked the Minister of Pensions the amounts spent by his department upon sanatorium treatment for pensioners suffering from tuberculosis during the last five years.—Major TRYON replied: The aggregate expenditure of my department upon the treatment of pensioners in sanatoriums during the five years ending March 31st, 1925, was approximately £2,500,000.

Duties of D.C.M.S.

Mr. ROBINSON asked the Minister of Pensions what area deputy commissioners of medical services were responsible for more than one area as constituted under the War Pension Act of 1921, and in what town was the office of the area deputy commissioner of medical services situated; and what were the areas for which area deputy commissioner of medical services was responsible.—Major TRYON replied: Each of the deputy commissioners of medical services is responsible for more than one area with the exception of the deputy commissioners stationed at Aberdeen, Gloucester, Leicester, Belfast, and Bristol.

Final Pension Awards.

Mr. DAVID GRENFELL asked the Minister of Pensions whether, seeing that of 6230 appeals heard against final awards made by the Ministry 3881 were successful, he would take steps to ensure that more careful consideration of the men's disabilities was given by the medical final awards board and awarding officers, so that men were not under assessed and/or their pensions terminated without sufficient cause.—Major TRYON replied: I would remind the hon. Member that about half the cases in which the appeal is regarded as technically successful are cases where the Ministry's assessment was not modified, but finality of the award was for the time being set aside for further consideration. The existing instructions of the Ministry provide for the fullest consideration of all cases and a final award is not made where the prognosis of the case is doubtful or there is prospect of deterioration.

Pensioners and Chronic Chest Trouble.

Mr. RADFORD asked the Minister of Pensions the approximate number of ex-Service men in receipt of pension for chronic chest trouble; and would he consider the advisability of providing establishments for such cases in parts of the country with a salubrious climate where these men, particularly those from the industrial areas, might proceed for a period during the winter months when they suffered most severely from their home climatic conditions.—Major TRYON replied: About 50,000 men are in receipt of pension in respect of a disablement arising from one or other form of chest affection. Rather more than half the total number are cases of pulmonary tuberculosis, for whom treatment is by statute the concern of the local health authority acting under the Ministry of Health. As regards sanatorium provision for these cases, I understand that the climatic factor is always considered. Cases, however, of chest affection other than tuberculosis are, where necessary, provided for in Ministry institutions situated in various parts of the country, and in the event of a change of climate being essential in any individual case transfer from one hospital to another can be effected. The results of treatment of these cases in Ministry institutions do not, I am advised, indicate any need for the setting up of further institutions in other localities.

School-children and Dental Treatment.

Colonel DAY asked the President of the Board of Education whether his attention had been drawn to the fact that of 2,000,000 school-children inspected in 1924, 67 per cent. of whom were found to be in need of dental treatment, only 55 per cent. received such treatment; and what action was contemplated in order to deal with those not receiving dental care.—Lord E. PERCY replied: I assume that the hon. Member refers to the statement on p. 60 of the report of the Board's chief medical officer for the year 1924. As regards the second part of the question, this is one of the matters that local authorities have doubtless been considering in connexion with their programmes.

Ex-Service Men and Tuberculosis.

Mr. PIELOU asked the Minister of Health whether, in view of the fact that over 21,000 ex-Service men had died from tuberculosis as a result of their war service, he intended to adopt the recommendation of the Inter-departmental Committee of 1919 and expend the amount suggested for the purpose of increasing village settlements throughout the country.—Mr. N. CHAMBERLAIN replied: In the present financial circumstances of the country I could not contemplate expenditure on the scale which would be required to carry out the recommendation referred to by my hon. friend. I may, however, say that extensions and improvements of the two existing village settlements are now being carried out with Exchequer assistance and I shall not lose sight of the matter.

Value of Primary Vaccination.

Mr. GROVES asked the Minister of Health whether he could state the considered judgment of the medical advisers of his department with regard to the utility or otherwise of primary vaccination; and whether he contemplated any measures for the obligation to revaccinate quinquennially.—Mr. N. CHAMBERLAIN replied: The answer to the first part of the question is that, in the judgment of my medical advisers, primary vaccination is of great and amply-proved utility. The answer to the second part of the question is in the negative.

Ministry of Health and Small-pox.

Mr. GROVES asked the Minister of Health the reasons why the words about the tragedy of a widespread epidemic of small-pox being realised had been omitted at the end of the first paragraph in the 1924 edition of the Ministry of Health's pamphlet, No. 8, on the subject of small-pox and vaccination.—Mr. N. CHAMBERLAIN replied: The words in question were omitted in view of the general mildness of the type of small-pox prevalent in this country at the time the pamphlet was revised.

Protection against Diphtheria.

Mr. DUNCAN asked the Minister of Health whether the three nurses who contracted diphtheria while attending a case of that disease in the Brentford urban district in March, 1924, as mentioned on p. 55 of the Annual Report of the Chief Medical Officer of the Ministry of Health for the Year 1924, had been previously immunised against that disease in any way; and whether any of the cases proved fatal.—Mr. N. Chamberlain replied: The answer to both parts of the question is in the negative. I am, however, informed that one of the nurses, seven months before attending the case referred to, had received a dose of diphtheria antitoxin, but that this dose would not confer immunity for more than one month after it was administered.

Medical Services in Africa.

Dr. Shiels asked the Secretary of State for the Colonies how much below establishment strength were the medical and sanitary services of Nigeria, Gold Coast, Sierra Leone, Kenya, and Tanganyika, respectively; what steps were being taken to fill the vacancies; and who was responsible for recruiting and selecting the required personnel.—Mr. Ormsby-Gore (Under Secretary for the Colonies) replied: As regards the West African Medical Staff, at present there are 19 vacancies in Nigeria, 13 in the Gold Coast, and none in Sierra Leone. Nine selected candidates are receiving instruction in this country in tropical medicine and eight more will commence instruction in the new year. There are no vacancies in Kenya and only one in Tanganyika. The vacancies and terms of service are advertised regularly in the medical press, and the attention of the universities and teaching schools is drawn to these services periodically; while advantage is taken of the presence of senior medical officers on leave in this country to visit the medical schools and interest the students in the colonial services. Selection of candidates is made by the Secretary of State with the assistance of a small subcommittee containing two medical men of distinction who advise as to the suitability of candidates who are interviewed by them.

FRIDAY, DEC. 18TH.

Housing.

On the motion for the adjournment,

Mr. T. Thomson raised the question of housing. He said that under the various Housing Acts there had been erected from 400,000 to 500,000 houses. It was a foolish idea to suppose that that had, or was likely to do away with the shortage which existed in 1919. As a matter of fact the houses which were required to meet requirements and overtake arrears since the Armistice was over a million. The complacent attitude of the Ministry of Health that they were not satisfactorily overtaking the arrears was not a view held by everybody. As the arrears amounted to 500,000 houses it would be another ten years before they could regard the position with equanimity. He was sure that the Minister could not be satisfied with the progress made, and he invited him to tell the House what he proposed to do to expedite building.

Sir Leslie Scott said he found himself in agreement with a great deal which Mr. Thomson had said and he regarded that as symptomatic of the attitude of the House to the housing problem. To a great extent it was getting outside the arena of party politics. They had solved the broad problem of the supply of housing accommodation in the country, though he agreed with Mr. Thomson that they had not yet caught up, or anything like, to the point at which they ought to be and which they must use every possible endeavour to attain as soon as they could. Six years had now passed since the end of the war and the time had come when the slum problem, as a problem somewhat separate from the main housing problem, ought to be tackled in grim earnest. It was a problem which was vitally affecting the efficiency of the whole of our labouring population, and one which they could not afford to leave as it was without using every conceivable effort that either Parliament or the local authorities could possibly make to assist in its solution. A large proportion of the workers of each great city must be housed in more or less the centre, and they must find houses for these people in the centre. The medical officer of health for Liverpool, in his report for the current year, stated that in Liverpool there were at present approximately 2246 houses of the worst type—i.e., back-to-back houses—which were absolutely unfit for anyone to live in for a week. Yet they had been inhabited for years. In addition to that there were some 9000 houses, not back-to-back houses, which the medical officer described as "in such an insanitary condition in respect to structure and sanitary arrangements that they called for improvement." The difficulties in the way of slum clearance were roughly two: In the first place they had to rehouse the displaced population, and that had been in the years since the war the greatest difficulty because of the dearth of houses elsewhere. In the second place there was the cost of acquiring those parts of an unhealthy area which were not actually occupied by insanitary houses and of acquiring land elsewhere within the centre of the city to house the displaced residents during the period while their own area was under reconstruction. If they were going to rehouse on the cleared area anything like the density of population which they were displacing they could not put back small houses. The Act of 1924 and the circulars under the previous Act aimed at 12 houses to the acre, which was too low a number for practical purposes in a large city, much as they would like to attain to it. The only thing was to have large tenement blocks, such as those that have been erected by the London County Council. The practical question was how to make those large tenement blocks as much like real houses as they could. In Liverpool they were proposing to adopt a system of something in the nature of a clearing-house where they could invite the displaced residents to go temporarily while the area was being demolished and rebuilt. They could build the clearing-houses in large tenement blocks of the right kind so that when they were no longer needed as clearing-houses they could be used as permanent houses. A great many local authorities had been prevented from embarking on slum clearance schemes because the cost was prohibitive. There was need for the reconsideration of the whole financial question of the cost in regard to slum clearances. There must be some way of getting on with this question of slum clearances. Either they must tempt local authorities by additional financial assistance, or they must impose upon them greater responsibilities and the Minister must have greater powers to see that those responsibilities were carried out. There ought to be powers of compulsory requisition for the purpose of acquiring sites in connexion with rehousing. Greater powers of town planning and road construction might be given in connexion with large improvement schemes. Thirdly, in regard to such schemes there ought to be a provision for betterment. He thought that the House should ask that this problem should be tackled with a view to the introduction of legislation next session.

Lieut.-Colonel Fremantle said that they had got over most of their legislative difficulties in regard to housing and the main thing that they wanted now was good will. They must consider the distribution of housing from a radical point of view. The only ideal at which they ought to aim, the only solution of the problem in the long run, was the creation of new towns on properly selected sites according to schemes well thought out beforehand. They had to persuade factories to move out to such places as Welwyn, and if they did so the workers would be delighted to move out. They had just discovered that the Trade Facilities Act was available to assist factories to be moved out in this way. Let them start this new idea; they had the opportunity now.

Mr. N. Chamberlain (Minister of Health) said that in the five years period ending 1904, which was the peak period of house-building in this country, the average number built per year was 116,370 of all kinds of houses. In the years 1905 to 1909 the number was 102,706. The figures applied to England and Wales. From 1909 to 1914 the average was 60,918. If one compared that with the 150,000 odd houses built this year and bore in mind that this was a gradually rising figure, he though that the Mrs. Gummidge of the Liberal Party (Mr. T. Thomson) must take heart. They did not need any fresh legislation to get new houses; they were getting them at an increasing rate, and they might be satisfied that they were on the right road, because they were certainly eating into the arrears at a very considerable rate. Every year as some of the more remote places got their needs filled there would be labour and materials released which would come to the assistance of some of the blacker and more difficult spots where there was a great amount of arrears to be made up. They were also making some progress in slum clearances. In the 24 years from 1890 until 1914 only 43 local authorities put forward 71 schemes in all. But in the six years 1919 to 1925, 71 local authorities had submitted 92 schemes, of which 83 had been confirmed. There was also an enormous amount of repairs, alterations and renovations going on all the time. In urban areas alone in the last year for which the complete figures were available—namely, 1923—250,000 houses were made habitable after the service of statutory notices by local authorities. In addition there were a number of houses which were made fit by the urban authorities themselves. Another 253,000 houses had been made fit as a consequence of informal notices given to the owners by the local authority. Something of the same sort of thing was going on in the rural areas. In the same year 49,530 more houses were put into habitable conditions in rural areas under similar proceedings. As regarded the housing of the population in large centres, he did not see at the moment any alternative but to contemplate to some extent the erection of flats, possibly what were called high flats, in some of the more crowded areas to provide for those who found it necessary, or who desired, to live near their work. But they should not imagine that it would always be the case that people would desire to live near their work, nor should they put themselves in a position so that it would be impossible if conditions changed to make better provision for the future. The slum problem was a social as well as a building question. Some education was necessary in the case of some of the slum dwellers to enable them to appreciate surroundings so different from those to which they had been accustomed.

Mr. BALDWIN (Prime Minister) said that for some reason or another which he did not pretend to diagnose it was quite evident that the offer he made in Glasgow in September with a view to encouraging the building of houses in Scotland had failed in its effect. Whereas he had made an offer applying to 4000 houses, the burghs had put in for less than a quarter of the number proposed. The counties had not yet been in a position to advise the Government. In these circumstances he had to announce that the £10 special subsidy scheme lapsed. In its place the Government intended to proceed forthwith with the erection of 2000 houses by alternative methods. They proposed in the first place to utilise the Scottish National Housing Company. The Government would finance the development and take every necessary step to secure its accomplishment. The number of houses was not large and represented barely 1 in 50 of the estimated shortage to-day in Scotland. But he hoped and believed that it would give a push to enterprise in Scotland, whether it be private enterprise or enterprise on the part of the local authorities, so that they might assist in bringing what was in the way of becoming a national scandal in Scotland to an end.

Mr. STEWART (who was Under Secretary to the Scottish Board of Health in the Labour Government) said he would beg the Secretary of State for Scotland and the Board of Health, in the interest of the well-being of the country and its citizens, to prevent, as far as they could, the erection of tenements and above all the development of the room-and-kitchen house. In Scotland they had already 113,000 room and-kitchen houses out a total of 235,000. In Glasgow they were spending in health administration more on the treatment of tuberculosis than Birmingham was spending on the whole of its health administration. It cost them a quarter of a million pounds to deal with the effects of tuberculosis. At the moment they were building a sanatorium that would cost them £500,000, to house 400 people after they had been lucky enough to contract tuberculosis. They would spend over £2 per week per patient to cure them, and then they would send them back once more, with the foolishness that was characteristic of the country in many respects, to the rooms-and-kitchens, and single apartments. In three months, in six months, in nine months they would be back again, and then at the end of five years, after all their money was spent, they would be dead, every one of them.

MONDAY, DEC. 21ST.

Opium Control in India.

Mr. THURTLE asked the Under Secretary of State for India whether the Government of India agreed at Geneva to allow an independent committee of the League of Nations to visit India to examine the control of the opium traffic.—Earl WINTERTON replied: Under the protocol to the Geneva Convention a commission will be appointed by the Council of the League of Nations to decide at the end of five years whether control in the signatory countries is sufficient to prevent completely the smuggling of opium from constituting a serious obstacle to the effective suppression of the use of prepared opium in those territories where such use is temporarily authorised. The protocol has been accepted by the Government of India.

DONATIONS AND BEQUESTS.—Mr John Buchanan Hinshaw, Woolton, Liverpool, after certain legacies and subject to a life interest, gave the residue of his property as to £500 to the Royal Infirmary, Liverpool, and as to £500 to the Bluecoat Hospital, Liverpool.—Mr. Henry Peech, of Ridgway, Wimbledon, Surrey, steel manufacturer, and of Sheffield, who left £107,388, left the greater part of that sum for "such charitable institutions or benevolent objects as he may name in any memorandum and subject thereto as his sister-in-law, Vera Millicent Peech, may select"; but £10,000 is to be paid to Lord Mayor Treloar's Crippled Homes and £5000 to the Sunshine Home for Blind Children, Chorley Wood.—Miss Ellen Jane Sandys, Hove, besides other bequests, left £500 each to the Royal Hospital for Incurables and All Saints' Convalescent Hospital, Eastbourne.—Mrs. Katherine Louisa Ricketts, of Exmouth, who left £18,030, gave £125 each to the British Home for Incurables at Streatham and the Royal Hospital for Incurables, Putney, and the residue of the property as to three-twentieths to the Homes for Aged Poor instituted at Kensington, Paddington, Hammersmith, Battersea, and Norwood in the year 1860; two-twentieths to the Exmouth Local District Nursing Association; six-twentieths to the Home for Incurables at Streatham; six-twentieths to the Royal Hospital for Incurables, Putney; and three-twentieths to the Seamen's Hospital, Greenwich.—Mr. Alfred Frederick Ikin, of Crewe, a brakesman in the employ of the L.M. and S. Railway, has left in his will £1000 to the Crewe Cottage Hospital, with the wish that a bed should be named the Alfred Frederick Ikin bed, in memory of his late wife and himself.

Medical News.

UNIVERSITY OF OXFORD.—In the recent examinations for the degrees of M.B. and B.Ch. the following candidates passed in the undermentioned subjects:—

Medicine, Surgery, and Midwifery.—Francis J. Bach, New Coll.; Leslie J. Barford, Queen's; Reginald H. B. Bettington, New Coll.; Vernon H. Brink, Hertford; Noel Chilton, Brasenose; Alan C. Gairdner, University; Stanford Howard, Christ Church; Raymond Lewthwaite, Magdalen; Richard G. Mathews, Queen's; Charles W. Simpson, Balliol; David O. Williams, Jesus; Kathleen G. Norton, St. Hugh's; and Nancy R. Ockenden, Lady Margaret Hall.

Materia Medica.—Henry H. Aitchison, Brasenose; John C. K. Chilcott and Cuthbert L. Cope, Exeter; Alan W. Cubitt, Wadham; Samuel B. Davis, Non-Collegiate; John L. Glover, Queen's; Robert E. Havard, Keble; Ensor R. Holiday, Trinity; Harry E. Mansell, Pembroke; and André J. M. Melly, University.

Pathology.—Michael D. Bower, Trinity; Vernon H. Brink, Hertford; Cuthbert L. Cope, Exeter; Walter N. Dickenson, Pembroke; Otto Hooper, University; William H. Hudson, Brasenose; Robert Illingworth, Exeter; Arthur J. Leslie-Spinks, Oriel; Robert G. MacGregor, Worcester; Ripley Oddie, Oriel; David I. Rees, Exeter; Grace Batten, Lady Margaret Hall; and Rosaleen L. Graves and Constance I. Pattullo, Society of Oxford Home Students.

Forensic Medicine and Hygiene.—Reginald H. B. Bettington, New Coll.; Michael D. Bower, Trinity; Vernon H. Brink, Hertford; John C. K. Chilcott, Exeter; Noel Chilton, Brasenose; John H. Chitty, New Coll.; James A. Eyres, Lincoln; Eric L. Fothergill, Keble; Alan C. Gairdner, University; Kenneth A. Hamilton, Christ Church; Reginald A. Haythornthwaite, Keble; Stanford Howard, Christ Church; Thomas C. Hunt, Magdalen; Richard G. Mathews, Queen's; Frederick J. Sale, Christ Church; Samuel Segal, Jesus; Charles W. Simpson, Balliol; Arthur G. Wilson, Brasenose; Edward M. Wright, New Coll.; Margaret N. Jackson, Somerville; and Constance I. Pattullo, Society of Oxford Home Students.

UNIVERSITY OF CAMBRIDGE.—Mr. Joseph Barcroft, M.A., F.R.S., Fellow of King's College, has been elected to the Professorship of Physiology left vacant by the death of Prof. J. N. Langley. Mr. Barcroft gained first-class honours in the Natural Sciences Tripos, Part II., in 1897, with distinction in physiology. He won the Walsingham Medal in 1899 and the Gedge Prize for original observations in physiology. He has held the posts of Oliver Sharpey lecturer at the Royal College of Physicians, University Reader in Physiology, and Fullerian Professor of Physiology at the Royal Institution.

UNIVERSITY OF LONDON.—At a meeting of the Senate held recently, Prof. E. A. Gardner, Vice-Chancellor, being in the chair, it was announced that Prof. A. V. Hill, F.R.S., has, on his appointment by the Royal Society to a Foulerton Chair, resigned the Jodrell Chair of Physiology tenable at University College. He will carry out his research work at University College, and the Senate have resolved that he shall continue to hold the title of Professor of Physiology in the University of London in respect of the functions to be discharged by him at that College.

The following Doctorates have been conferred:—

D.Sc. in Embryology: Mr. A. S. Rau, an internal student, of University College, for a thesis entitled Contributions to Our Knowledge of the Structure of the Placenta of Mustelidæ, Ursidæ, and Sciuridæ.

D.Sc. in Physics: Mr. W. B. Haines, an internal student, of University College and the Rothamsted Experimental Station, for a thesis entitled Studies in the Physical Properties of Soils.

Dr. W. E. Gye was awarded the William Julius Mickle Fellowship for 1926 in respect of the work which he has carried out during the past five years.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—As the result of the Primary Examination for the Fellowship held from Dec. 8th to 17th, for which 130 candidates presented themselves, 40 were approved and 90 were rejected. The following are the names and schools of the successful candidates:—

J. C. B. Allen, Sydney and Middlesex; H. G. Armstrong, Toronto and Middlesex; N. Asherson, Middlesex and Univ. Coll.; M. R. Barrutt, Cambridge and St. Thomas's; Geraldine M. Barry, Univ. Coll. and Royal Free; H. O. Blauvelt, Dalhousie and Univ. Coll.; D. H. Brinton, Oxford and St. Mary's; R. C. Brown, Durham and St. Mary's; A. J. W. Chamings, Cambridge and Middlesex; A. E. De Chazal, Univ. Coll. and Middlesex; A. S. El-Katib, Cairo and Middlesex; J. St. C. Elkington, Cambridge and St. Thomas's; E. S. Evans, St. Bart.'s; I. J. Fraser, Belfast and Middlesex; C. R. E. Freezer and G. F. Gibberd, Guy's; J. Gore, Birmingham and Middlesex; G. M. Gray, Aberdeen and Middlesex; E. V. Greeves, Belfast; G. J. Griffiths, Middlesex; S. J. H. Griffiths, Bristol and London; K. H. Hadley, Melbourne and Middlesex; C. W. Harris, Toronto and Middlesex; A. L. P. Jeffery, St. Thomas's;

R. W. Kenney, Dalhousie and Middlesex; D. McKelvey, Edinburgh and St. Mary's; J. D. McLaggan, Aberdeen and Middlesex; I. McPherson, Middlesex; T. J. Millin, Dublin; M. F. Nicholls, Cambridge and St. George's; A. B. Nutt, Sheffield and Middlesex; T. Y. Pearce, St. Thomas's; S. R. C. Price, King's Coll.; R. W. Reid, St. Thomas's; M. Rothkopf, Middlesex; H. H. Stewart and G. S. Storrs, Cambridge and St. Thomas's; A. J. Watson, Middlesex; A. S. Wesson, Univ. Coll.; and W. J. Wilkin, Cambridge and St. Bart.'s.

UNIVERSITY OF SHEFFIELD.—At examinations recently held the following candidates were successful:—

FINAL M.B., CH.B. EXAMINATION.

Marjorie T. Crookes, Richard L. Flint, Thomas H. Harrison, John L. Jago, Phyllis A. Moore, and Elisabeth S. M. Sykes.

UNIVERSITY OF MANCHESTER.—At examinations held recently the following candidates were successful in the subjects indicated:—

FINAL M.B. AND CH.B. EXAMINATION.

R. L. Holt (first-class honours, distinction in Medicine and in Forensic Medicine), Louise Aronovich, H. K. Ashworth, Marion L. Bainbridge, C. H. Bamford, A. R. Barber, J. R. Beal, Agnes M. Bodoano, Frances H. Bowden, John Crook, L. F. Evans, S. J. Firth, Beatrice N. Fletcher, J. B. Fulton, Riad Girgis, T. S. Hanlin, Barnett Hirsh, J. T. C. Keddie, Annie T. Leigh, Annie E. Mackintosh, W. D. Mitton, R. J. Owen, R. M. Pearce, Francis Reynolds, Raphael Shaffer, Agnes G. Smiley, Graham Stenhouse, J. K. Thomas, and J. C. Wilson.

Forensic Medicine.—Marguerite E. Cliff, I. H. Freedlander, John Hunt, Harry Pigott, W. S. Slater, and Olive de la W. Turner.

Medicine.—I. H. Freedlander.

Hygiene and Preventive Medicine.—Florence M. Blades, F. S. Hawkins, John Hunt, T. J. Kay, Harry Pigott, and Olive de la W. Turner.

Obstetrics and Surgery.—J. K. Anderson, Frank Appleton, H. K. Ashworth, Frances H. Bowden, George Bridge, Marguerite E. Cliff, T. K. Clifford, Joseph Crowther, Alec Fleming, Beatrice N. Fletcher, C. F. Garfit, Zaky Hanna, G. W. Jones, Annie T. Leigh, Annie T. Mackintosh, C. T. Mills, G. S. de W. Moll, Joseph Parness, Richard Pendlebury, L. C. Peringuey, Harry Pigott, Mary I. Prentice, Francis Reynolds, B. R. Sandiford, Kathleen Sheehan (distinction in Obstetrics), Maurice Sheehan, J. K. Thomas, W. C. D. Walmsley, J. T. Whitley, and Florence Whitrow.

Obstetrics.—R. H. Barnes, J. F. Caithness, A. F. C. Davey, Margaret Dyson, G. D. Hithersay, and J. H. Kitson.

THIRD M.B. AND CH.B. EXAMINATION:

Pathology.—S. K. Appleton, Dorothy Arning, Harold Arstall, A. H. Baker, Dorothy M. Bradley, E. H. Brooks, Agnes N. Buckley (with distinction), M. A. Chamberlain, Frank Cort, E. B. Davies, H. V. Crabtree, Ralph Edmondson, Muriel M. Edwards, Amy H. Herbert, I. M. Hughes, J. H. Jones, J. A. Longworth, Jean McD. Marshall, H. E. Martin, J. S. Miller, J. W. Murray, Robert Newton, Stanley Nowell, J. R. Nuttall, R. P. Osborne, H. A. Palmer, G. H. Racklyeft, Norah Regan, Marshall Robinson, Eleanor B. Schill, Lucy Stokoe, C. E. Sykes, Alfred Thomas, Herbert Townley, Joseph Vine, F. F. Waddy, Josephine Walmsley, K. H. Watkins (with distinction), and Raymond Whitehead.

Pharmacology.—Leslie Bold, E. H. Brooks, Mary G. Davies, Kathleen McGowan, J. W. Murray, G. L. Normington, H. A. Palmer, Henry Tickle, Joseph Vine, and Raymond Whitehead.

UNIVERSITY OF EDINBURGH.—At the graduation ceremonial on Dec. 18th the following degrees were conferred:—

DOCTOR OF MEDICINE.

*George Buchanan, †Andrew J. M. Butter, David D. Dunn, (in absentia), John B. Ferguson, †Robert M. Galloway, Henry D. Hayes, *Andrew F. Hewat, Eleanor H. Kelly, †James M'Intyre (in absentia), †William F. Mair, John D. Robertson, †John P. Stewart, ‡Philip H. J. Turton, and *Alexander B. Williamson (in absentia).

* Awarded gold medal for thesis. † Commended for thesis.
‡ Highly commended for thesis.

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

William G. Annan, Jack Belnashowitz, George Black, Elisabeth Brearley, Janet H. Brown, Charles D. Bruce, Jean K. Burnie, Alexander Cairns, Elizabeth F. Clark, George H. Clement, Donald M'M. Crawford, John W. Crichton, James P. Dunlop, Thomas MacF. Edward, Phyllis M. Edwards, Sadik L. El-Zik, Stanley Ford, Ian B. Georgeson, Jack Greenstein, John N. Hay, Isabelle W. Horsley, Alan W. Howarth, Evelyn B. B. Humphreys, William A. F. Hurst, John S. Ingles, Norman Kerr, Rachel Knox, Hugh MacCallum, Margaret A. Mackenzie, Alastair K. Mackintosh, Benjamin A. Meyer, Robert S. Mitchell, Makwane C. C. Motebang, Mungo Park, Alexander G. Paton, George F. Saunderson, John A. R. Selby, William D. M. Sim, Hilton T. Smith, William Steel, Marjorie Steven, Donald Stewart, Meta H. Thomson, and Dorothea E. Walpole.

DIPLOMA IN PUBLIC HEALTH.

Sisir Chandra Chatterjee, John Edgar Haine, John Telfer Smeall.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College held on Dec. 15th, Dr. A. Logan Turner, President, in the chair, the 25 successful candidates out of 67 entered, who passed the requisite examinations between Sept. 28th and Oct. 5th, were admitted Fellows:—

Harold E. Alexander, Nathaniel Beattie, Mervyn H. Elliot-Smith, Frederick G. Gibbs, Christian F. Krige, Ian H. McClure, Archibald D. McKenzie, Eric S. McPhail, David M. Mitchell, William B. R. Monteith, William Morrison, Douglas L. Muir, Clarence E. Nelson, Edwin R. Ormerod, David R. Owen, John A. Panton, Douglas W. L. Parker, Arnold Perry, Douglas C. Pigdon, James G. R. Scarff, Ian D. Stronach, Thakurdas Chuharmal Ramchandan, Robert Whillis, Rowland P. Wilson, and Dadabhoy Dinshaw Variava.

UNIVERSITY OF DURHAM: FACULTY OF MEDICINE. At examinations held recently the following candidates were successful:—

THIRD EXAMINATION FOR DEGREES OF BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Materia Medica, Pharmacology, and Pharmacy; Public Health; Medical Jurisprudence; Pathology and Bacteriology.—Harold C. Beck, Thomasina Belt, Thomas S. Blaiklock, Ida M. Dodds, Walter Foskett, William A. Kirkpatrick, Leonard H. Lerman, Jerome A. O'Callaghan, William Stevenson, Alfred T. G. Thomas, Edward C. Vardy, and Thomas Welsh.

The Duchess of York has consented to become President of the South London Hospital for Women, Clapham Common.

ROYAL SANITARY INSTITUTE.—The courses of lectures and demonstrations arranged for next term will begin early in January. The first lecture of the course for sanitary inspectors will be delivered on Jan. 4th by Dr. Charles Porter, and the first lecture of the course for meat and food inspectors will be delivered on Feb. 5th by Mr. J. R. Hayhurst. Further information can be obtained from Mr. E. White Wallis, director and secretary, at the Institute, 90, Buckingham Palace-road, London, S.W. 1.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A further series of open lectures has been arranged from Jan. to March on general subjects. Dr. Herbert Spencer will give the opening lecture on Abdominal Palpations in Pregnancy (with lantern demonstration) on Thursday, Jan. 21st, at 5 P.M., in the Lecture Hall of the Medical Society of London, 11, Chandos-street, W. From Jan. 11th to 23rd the Prince of Wales's General Hospital will hold an intensive course in general medicine, surgery, and the special departments. The daily lecture at 4.30 P.M. is free to members of the Fellowship of Medicine. During January, beginning on the 4th, a series of lecture-demonstrations on Psychological Medicine has been arranged for Tuesdays and Saturdays, at 11 A.M., at the Bethlem Royal Hospital. Also beginning on Jan. 4th a four weeks' course of lectures and demonstrations in the Diagnosis of Nervous Diseases will take place at 5 P.M. at the West End Hospital. At the North-Eastern Hospital a three weeks' course in Infectious Fevers will be given on Wednesdays, at 2.30 P.M., and Saturdays, at 11 A.M., from Jan. 11th to 30th. An all day course has been arranged in Diseases of Children at the Queen's Hospital from Jan. 18th to 30th. Another whole day course will take place from Jan. 18th to 30th at the National Hospital for Diseases of the Heart. From Jan. 11th onwards it is intended to hold special weekly demonstrations in clinical surgery. The first of these will be given at 5 P.M. at St. Mark's Hospital by Mr. J. P. Lockhart-Mummery, and subsequent announcements will appear in the Medical Diary. A copy of each syllabus of the foregoing courses and of the Fellowship General Course programme may be obtained on application to the secretary at 1, Wimpole-street, London, W. 1.

ROYAL INSTITUTION OF GREAT BRITAIN.—The one hundredth course of Christmas lectures adapted to a juvenile auditory will be delivered at 3 P.M. on Dec. 29th and 31st, and Jan. 2nd, 5th, 7th, and 9th, by Sir William Bragg, F.R.S. The title of the lectures is Old Trades and New Knowledge, and the individual lectures deal with the following trades: (1) the trade of the sailor; (2) of the smith; (3) of the weaver; (4) of the dyer; (5) of the potter; (6) of the miner.—The first Friday evening discourse in 1926 will be held at 9 P.M. on Jan. 22nd, when Sir William Bragg will speak on the Work of the Davy Faraday Research Laboratory. On the 29th Sir William B. Hardy, F.R.S., will speak on Films.—Among the general courses of lectures to be delivered before Easter, 1926, is one on Jan. 19th and 26th, at 5.15 P.M., on X Rays and Living Matter, by Prof. J. A. Crowther. Dr. Eric K. Rideal will lecture on Surface Action at 5.15 P.M. on Feb. 2nd and 9th. Prof. Joseph Barcroft, F.R.S., will lecture at 5.15 P.M. on Feb. 16th, 23rd, March 2nd and 8th on the Egg—(1) introductory, (2) the shell, (3) the yolk, and (4) the white. On March 16th and 23rd, at 5.15 P.M., Prof. Cecil H. Desch, F.R.S., will lecture on the Growth of Crystals. Prof. Charles J. Patten will give two lectures at 5.15 P.M. on Jan. 21st and 28th, one entitled the Language of Birds, and the second the Breeding Factor in Birds. Further information may be obtained from the secretary at the Royal Institution, Albemarle-street, London, W. 1.

POPLAR HOSPITAL FOR ACCIDENTS.—At the festival dinner last week Sir Alan Anderson stated that during the past year the hospital had broken records in annual subscriptions, donations, and out-patients' attendances, while the dinner collection, £13,600, was the largest that had ever been known.

APPROVED INSURANCE FUNDS AND MANCHESTER CANCER APPEAL.—At a meeting of the National Union of Trade Union Approved Societies, it was stated that having regard to the *occurrence of cancer of the scrotum in the spinning room*, the executive of the Operative Cotton Spinners' Association desired to contribute to the appeal recently made. An application was made to the Ministry of Health regarding a proposed gift of £1000 to the Cancer Fund from the approved insurance funds. The Ministry replied that such a gift could not be made under Section 26 because the Manchester Cancer Research Committee was not a charitable institution.

Appointments.

CUMMING, W. M., M.B., Ch.B. St. And., D.P.H., has been appointed Senior Assistant Medical Officer, Grove Park Hospital for Tuberculosis.

LITTLE, O. E., M.B., Ch.B. St. And., to be Certifying Surgeon under the Factory and Workshop Acts for the Rhyl District of the County of Flint.

Vacancies.

For further information refer to the advertisement columns.

Ascot, Heatherwood Hospital.—Res. Asst. M.O. £300.

Bedford County Hospital.—Asst. H.S. At rate of £150.

East Sussex County Mental Hospital, Hellingly, Sussex.—Pathologist. £500.

Hospital for Sick Children, Great Ormond-street, W.C.—Res. Med. Supt. £300.

Ipswich, East Suffolk and Ipswich Hospital.—H.P. and H.S.'s. Each at rate of £100.

Keighley, Victoria Hospital.—Res. M.O. At rate of £180.

Leeds Public Dispensary.—Jun. Res. M.O. £150.

London Lock Hospital, 283, Harrow-road, W., and 91, Dean-street, W.—Hon. P.

London Temperance Hospital, Hampstead-road, N.W.—Cas. O. At rate of £120.

Manchester, Ancoats Hospital.—Visiting Dental S.

Manchester City Education Committee.—Asst. Sch. M.O. £600.

Manchester Hospital for Consumption, &c.—Res. M.O. £200.

Maudsley Hospital, Denmark Hill, S.E.—Deputy Med. Supt. £850.

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Radiologist.

Plymouth, Didworthy Sanatorium, South Brent.—Res. M.O. £600.

Royal Free Hospital, Gray's Inn-road, W.C.—Second H.P.

St. Mark's Hospital for Cancer, Fistula, &c., City-road, E.C.—Radiologist. £25.

St. Mary's Hospital, Institute of Pathology and Research, Paddington, W.—Research Studentship. At rate of £200.

St. Mary's Hospital, W.—Asst. M.O. in charge of X Ray Dept.

Salisbury General Infirmary.—H.S. £150.

Southport Convalescent Hospital and Sea Bathing Infirmary.—Res. Med. Supt. £600.

West London Hosp., Hammersmith-rd., W.—Hon. Obstet. Reg.

Wolverhampton and Staffordshire Hospital.—Res. Surg. O. £250.

Births, Marriages, and Deaths.

BIRTHS.

ANDREW BIRD.—On Nov. 22nd, at Lumeah, 101 Kitano-cho, 2-Chome, Kobe, Japan, the wife of Dr. G. Andrew Bird—a daughter.

BAILEY.—On Dec. 13th, at Denburgh Park, Banstead, the wife of R. J. Bailey, L.D.S., of a son.

MARRIAGES.

DUNLOP—HEATH.—On Dec. 11th, at Old Greyfriars, Edinburgh, Gavin Alexander Dunlop, M.B., Ch.B., to Rosamond, daughter of Mr. and Mrs. Heath, Hanworth, Middlesex.

TUNBRIDGE—RODDY.—On Dec. 15th, at Holy Trinity Church, Leamington Spa, William Stephen Tunbridge, M.A., M.B., B.Ch. Oxf., to Mildred Emma Leathes, the younger daughter of Colonel Roddy, C.B., and Mrs. Roddy, of Bareilly, Leamington.

DEATHS.

McILROY.—On Dec. 10th, at The Priory, Roehampton, John Morrison McIlroy, M.R.C.S., L.R.C.P., in his 65th year.

POWELL.—On Dec. 15th, at Cleveland-square, W., Sir Richard Douglas Powell, Bart., K.C.V.O., M.D., aged 83.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

AN ALPINE THERMAL STATION

BY T. N. KELYNACK, M.D. MANCH., M.R.C.P. LOND.,

SENIOR PHYSICIAN TO MOUNT VERNON HOSPITAL.

LOUECHE-LES-BAINS, Leukerbad—or simply Baden as it is known locally—occupies a unique position among European thermal stations. Its natural hot springs are in character and therapeutic properties similar to the famous waters of Bath.

Situation and History

Leukerbad, with a normal population of 600 souls, is situated in the Canton of Valais in the picturesque valley of the Dala at an altitude of 4630 feet, just below the impressive Gemmi Pass surrounded by green flower laden pastures, high alps on which cattle graze, and mules climb in summer, dense forests of pines, sparkling glaciers, and snow fields with rocky peaks from which unrivalled panoramas of the snow-clad mountains of the Bernese Oberland and the giants which lie to the south of the Rhone can be obtained. The village, tucked away as it is on the north side of the Rhone Valley, can yet be readily reached. The Simplon Express from Calais passes through Leuk, from whence a narrow gauge electric and rack and pinion railway bringing the traveller direct to the baths of Leuk in an hour. There is a good road 17 km. long up the valley suitable for skilled motorists.

Loeche les Bains with the rocky wall of the Gemmi behind.

Leukerbad, there is reason to believe, was known to the ancient Gauls and, like our own Bath, was discovered by the Romans. It is thought that in the first centuries Christian sick folk resorted to the hot springs, but it was probably not until the end of the fifteenth century that the fame of the waters extended to other countries. By 1500 the bathing establishments had developed into important and valuable properties.

The Thermal Springs

The natural hot springs known to exist are over a score in number; of these the most important are now associated with five hydrotherapeutic establishments, giving systematic courses of baths. Each of the principal baths is connected by covered ways with one or more of the chief hotels, so that the patient can pass directly from his own room to the hot waters. The principal hotels and baths are under one control. The season extends from early in May to the beginning of October, and during recent years endeavours have been made to develop the place as a winter sports station with a season extending from Dec. 15th to the end of February.

The temperature of the water varies from 102° to 121° F. It is conjectured that the depth of the springs is at least 5000 feet, but the conditions which give rise to thermal springs of such constancy are not exactly known. The water is clear and almost tasteless. Chemical analysis shows the presence of sulphates of calcium, magnesium, sodium, and strontium; carbonates of calcium, magnesium, manganese, and iron; chlorides of potassium, sodium, ammonium, and lithium; with traces of alum, silica, arsenic, carbonate of copper, and sulphate of barium. Recent investigation has shown that the waters have radio-active properties.

Bathing Régime

Patients entering on a course of hydrotherapeutic treatment are expected to consult one of the two doctors in residence during the summer—Dr. A. Bayard and Dr. R.

Zen-Ruffinen—with a view to direction regarding the form, application, and duration of the baths with such other treatment as may be desirable. A full course of baths extends usually over three weeks. The baths are open from 5–12 A.M. Patients generally take their petit déjeuner (coffee and milk, fresh rolls and butter, and conserves) at 7 A.M. while in the bath, served on a tray placed on wooden floats. In addition to the public baths there are family and private baths for individuals. Patients remain in the baths for periods up to several hours, afterwards resting for some considerable time in their own rooms. Thus, in the majority of cases the whole morning, up to déjeuner at 12.30, is devoted to treatment. Along one side of the Grand Bain, connected with the Maison Blanche, is a gallery to which spectators on removing their hats are admitted and who are expected to drink of the waters and contribute a trifle pour les pauvres. At each of the baths are experienced attendants who carry out special forms of hydrotherapeutic treatment and massage. In addition to the baths patients drink the waters and have their rest and exercise regulated. The dietary varies considerably according to the hotel chosen. In addition to the larger hotels and hydropathic establishments, there are a number of inns frequented by tourists.

Indications.

Among the diseases for which the baths at Leuk have proved beneficial are various forms of chronic inflammatory affection, rheumatoid and other arthritis, gout, lumbago, fibrositis, sciatica, and other neuritic conditions; varicose veins, phlebitis, and chronic ulceration of the lower extremities; catarrhal states involving the mucous membranes of respiratory and urogenital tracts; certain skin diseases and renal affections; neurasthenia and convalescence from various acute diseases. For overworked, brain-fagged men and women a course of treatment in this restful mountain station with its invigorating air is often of benefit.

There is a public bath hospital with which is associated, in a separate building, a series of baths. Residence in the hospital, which is under the care of Catholic sisters, and treatment in the baths is available at low fees for suitable necessitous cases from all countries.

On the north side of the village, close to the main road which descends to the Rhone Valley, is an open spring where hot water bubbles up. Simple wooden benches have been erected over the water, and at this spring, open to all comers free of any charge, are to be seen children and village folk side by side with men and women of all sorts and conditions. Partial immersion in this spring produces marked local reaction and is quickly followed by a general reaction. Immersion of feet and legs in the hot spring after a mountain excursion brings about a sense of warmth and comfort. I noticed an old lady with marked arthritis of the knee-joint spreading over the swollen part some of the fine alluvial deposit to form a kind of radio-active paste.

Amenities and Access.

For the young and vigorous there are numberless charming walks and climbs, while for the delicate and elderly there are many and varied walks on easy gradients. There is a Roman Catholic parish church, a Protestant chapel at which services are held in English and French, a chemist and shops in which all the requirements of the visitor can be met. Guides and porters with mules can be obtained by those desiring excursions in the high mountains.

Loeche-les-Bains is a favourite resort with Swiss doctors, and the thermo-mineral springs at this picturesque mountain health station might be better known by British practitioners. The manifold forms of rheumatism, osteo-arthritis, fibrosis, neuritis, and allied affections would reap benefit by a holiday at Loeche-les-Bains and a course of its wonderful thermal baths. Mr. Wattelet, director of the Société des Hôtels at Loeche-les-Bains, will furnish English doctors with full particulars regarding the baths and hotel facilities. A return ticket from London to Loeche-les-Bains costs first-class from £10 0s. 5d. to £8 18s., second-class, £7 11s. 8d. to £6 6s. 7d., according to route. Full particulars regarding travel can be obtained from the various travel agents or from the London office of the Swiss Federal Railway, 11B, Regent-street, S.W. 1.

THE NEW HEALTH SOCIETY.

A NEW Health Society, or rather "The New Health Society," of which Sir W. Arbuthnot Lane is president, was launched on Dec. 11th at a luncheon given by the Aldwych Club, whose president, Alderman Sir Charles Wakefield, was in the chair. Lord Oxford and Asquith said the aim of the society was not so much to cure the ill as to keep the people well. In England and Wales £12,000,000 were spent annually on sickness and disability benefits for illness that might be prevented. Many diseases were due to artificial methods of our civilisation, and in particular to diet; 80 per cent. of the most disabling forms of illness were due not to malnutrition, but to wrong feeding, too much meat, too little milk. The society would work with the family doctor and the specialists. Its main business was to disseminate knowledge of the laws of health and the causes of disease. New methods had reduced the prison population, new methods would, he hoped, lessen the strain on the voluntary hospitals. Mr. Philip Snowden said that we lost in industry, from physical weakness, £100,000,000 worth of work every year. To advise more milk was good, but to provide more milk for the children was more important. He hoped that the alcohol question and waste therefrom would not be forgotten. Subscriptions were asked for, and £525 at once given.

On the evening of Dec. 12th Lady Oxford and Asquith broadcasted an appeal from London on behalf of the new society. She had just read how Queen Elizabeth got herself a bathroom, in which she expected to be able to have a bath every three months, whether she needed it or not. That was in the bad old days, as they should be called, when medicine was superstition mainly, when people believed in witchcraft, and no one knew how to get rid of diseases like plague, rampant everywhere. Our present outlook was wide, hospitals were nearly perfect, and our great hope was in prevention, and we wanted all to be fit. But not everyone knew how to keep fit; it was part of the work of this society to show them. It would bring benefits to large employers of labour, whose staffs are reduced by illness, to mothers whose children it would save. It would, Lady Asquith concluded, help the doctors, and would financially benefit the country as much as 2s. off the income-tax.

A STOLEN CAR.

To the Editor of THE LANCET.

SIR,—My car was stolen yesterday by the following *modus operandi*. One confederate stands by the surgery door whilst the other hides on the remote side of the car, and, if disturbed, the former says, "Will you come round to Mrs. Collins—a midwifery case—*not* at once, but after surgery will do." And whilst the doctor is investigating the particulars (which were lies) the confederate starts the car and they go off together. Will anybody assist in detaining this man if he calls with such a cock-and-bull story.—I am, Sir, yours faithfully,

R. LARKIN, M.D.

Trinity-sq., Southwark, S.E., Dec. 16th.

*** We are glad to learn that Dr. Rance Johnson of Hampstead, whose car was stolen while he was seeing a patient in Bedford-square on Dec. 17th, has recovered it through the police, albeit in damaged condition. Dr. Johnson suggests that companies insuring motor-cars for medical men should insert a special clause in the agreement making an allowance for hire during the temporary loss of a car from accident or theft.—ED. L.

CALENDARS AND DIARIES FOR 1926.

A CONVENIENT block calendar for 1926 (The A.F.D. Diary) has been issued by the Anglo-French Drug Co. (238A, Gray's Inn-road, London, W.C.1). There is provided for each day throughout the year a sheet of white paper, 4 inches square, for written memoranda, and the stiff hinged cover provided preserves the privacy of the notes and lends the calendar the appearance of a bound book. A certain number are available gratis to medical men on application to the company.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 12TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 141 (previous weeks 115 and 105); scarlet fever, 1902; diphtheria, 986; enteric fever, 37; pneumonia, 1917 (previous weeks 1176, 1531, 1186, and 889); puerperal fever, 63; cerebro-spinal fever, 10; acute poliomyelitis, 10; acute polio-encephalitis, 1; encephalitis lethargica, 44; dysentery, 9; ophthalmia neonatorum, 112. There were no cases of cholera, plague, or typhus notified during the week.

The cases of small-pox were reported from the following counties: Derby, 21 (Derby C.B. 6, *Bolsover* 2, Blackwell R.D. 13); Durham, 87 (Gateshead C.B. 2, South Shields C.B. 1, Sunderland C.B. 1, Blaydon 52, Ryton 2, Seaham Harbour 1, Stanhope 2, Whickham 4, Chester-le-Street R.D. 3, *Easington* R.D. 3, Houghton-le-Spring R.D. 6, Lanchester R.D. 5, Sunderland R.D. 5); Northumberland, 5 (Newcastle-upon-Tyne C.B. 4, Castle Ward R.D. 1); Nottingham, 16 (Nottingham C.B. 3, Hucknall 2, Mansfield 1, Sutton-in-Ashfield 7, Southwell R.D. 3); Yorks, East Riding, 6 (Kingston-upon-Hull C.B.); Yorks, West Riding, 9 (Rotherham C.B. 1, Sheffield C.B. 2, Hipperholme 1, Rawmarsh 1, Halifax R.D. 1).

Deaths.—In the aggregate of great towns including London, there were 7 deaths from enteric fever (London 4), 71 from measles, 17 from scarlet fever, 44 from whooping-cough, 38 from diphtheria, 116 from influenza (previous weeks 100, 73, 61, and 44). In London itself there were 21 deaths from measles, 12 from diphtheria, and 22 from influenza.